

Kathleen Broome Williams. *Improbable Warriors: Women Scientists and the U.S. Navy in World War II.* Annapolis, Maryland: Naval Institute Press, 2001. xvii + 280 pp. \$34.95, cloth, ISBN 978-1-55750-961-1.



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Only the Beginning: Short Biographies of Four Women Scientists

American women have always been involved in war work, although they frequently have gone unnoticed. Running the gamut of performing the small and large tasks commonly known as "keeping the home fires burning" to taking up arms and going into battle, women have played essential roles in every war fought by the United States. This is not to say that these roles, although vital, have been understood, appreciated or even acknowledged. In fact, these roles are often soon forgotten or minimized by historians. Often, the women themselves have not recognized the vital nature of their work, saying that they were only "doing what needed to be done."

Luckily, historians like Kathleen Broome Williams understand the value of spotlighting the war work of women. In *Improbable Warriors: Women Scientists and the U.S. Navy in World War II*, Williams introduces us to four women who, while "doing what needed to be done" changed the face of the U.S. Navy and the futures of their respective scientific disciplines. As representative

of the small community of women in science, the work of these women showed that the search for the best minds in science cannot be limited by a prejudiced view of gender.

Williams gives a short overview of the war effort's mobilization of women to be trained in technical fields. By the end of the war, more than 100,000 women served in the Waves alone. Many were trained for highly technical jobs, taking stateside positions to free up men for assignments overseas. The women recruits were well suited for this advanced training; in fact many women who enlisted in the military were better educated than their male counterparts. Special technical training programs designed especially for female recruits were sponsored on many of the top women's college campuses, including Pembroke, Skidmore, Smith, Radcliffe, and Wellesley. The Navy vigorously recruited female college students and faculty in the scientific fields, but women with no prior scientific training also performed vital work. Praised for their attention to detail and their ability to perform even the most monotonous tasks with accuracy and pride, women

showed the desire to "do what needed to be done" no matter how big or small the job.

Women joined the military for a variety of reasons both personal and patriotic. This wide picture of work, duty, and honor shows us that the work of women, though often unheralded, was anything but routine. Within this wider picture, the focus on a few individual women helps us to understand the true importance of the role that each woman played. Williams tells the stories of four improbable warriors, each an academic who left her teaching position to work for the Navy. Dedicating a chapter to each woman, Williams weaves the woman's story with a detailed account of the war work of her respective agency. Three of the women served in uniform, while one served as a civilian employee. Dr. Mary Sears, the Woods Hole Oceanographic Institute's planktonologist, headed the Hydrographic Office's Oceanographic Unit, developing new field and laboratory military oceanographic techniques. Dr. Florence Van Straten, a New York University trained chemist served as an aerological engineer, analyzing the effects of weather on combat and the uses of weather as a combat strategy. Dr. Grace Hopper, a Harvard trained mathematician, was instrumental in advancing programming techniques for the Mark I, one of the first computers. Dr. Mina Spiegel Rees, a University of Chicago-trained mathematician, was the chief technical aide (a title that belies its depth and complexity) to the Applied Mathematics Panel of the National Defense Research Committee.

Williams's stories of each woman's work are inspiring and affecting. Each woman worked within a system that tolerated her presence because of the special circumstances of wartime; brought to her role skills enabling her to make a unique contribution essential to the war effort; and worked well with her male colleagues and was highly regarded by both supervisors and supervisees. None of them was given equal rank or pay with their male cohorts, but all attained high

status among their peers who actually understood the complexity of what they had accomplished. These improbable warriors were women who understood studying and working in fields where they were often unwanted and where they were always in the minority. They were women for whom pursuing their intellectual gifts placed them in fields where many of their dreams would remain unfulfilled, even throughout their long and acclaimed professional lives. They were women whose brilliance was uncontested, whose work was an exemplar of scientific and mathematical excellence, and who served their respective communities with vigor, foresight, humor, and fortitude.

Each of the improbable warriors took pride in her contributions, yet often spoke of these inestimable contributions to their scientific fields and the roles of women in science in self-deprecating terms. At one time or another, each woman noted that she did her work without a thought to a larger feminist agenda. Each broke through innumerable barriers, and consciously or unconsciously challenged the remaining barriers. Williams helps us to understand these women, their motivations, and their work, with a direct and engaging style, reminiscent of the direct, focused desire of the improbable warriors to use their skill to "do what needed to be done."

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