Ulf Schmidt. *Secret Science. A Century of Poison Warfare and Human Experiments*. Oxford, Oxford University Press, 2015. xii, 637 pp., illus., \$39.95 (cloth).

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The history of chemical warfare has been gaining more interest in the past few years in large part because of the centenary of the first major use of chemicals at the Second Battle of Ypres in 1915. Schmidt's book is a welcome addition to the literature and represents a view of chemical warfare that is focused on the medical and political side rather than the military aspects of the weapons. Before looking at some of the contents, however, it should be noted that the title of the book is a bit misleading. Although *Secret Science. A Century of Poison Warfare and Human Experiments* does, technically, cover the topic from 1915 to the present, only one chapter of ten looks at pre-World War II material. The focus is primarily on British work starting in World War II and ending with the settlement for human test subjects at Porton Down in 2008. There are side trips into German work—particularly chapter 3, “Research without Bounds” about the German gas program and why it did not use its chemical weapons during World War II, and later sections on American research during the Cold War—but these exist largely to provide context for the main investigation.

Within the confines of the actual subject, Schmidt approaches the topic largely as an exploration of the meaning of the creation of these secret weapons. In other words, how did the scientists, military command, and government officials respond to the perceived need for toxic weapons and then deal with the problems associated with the human, environmental, and political costs of such weapons? Much of the analysis looks at the regulatory systems that grew up in the secretive world of military research. The book opens with the dramatic death of Ronald Maddison, a military volunteer, who died in 1953 as a result of exposure to sarin at the top secret test facility at Porton Down, England. This sets the tone for the book, since the reasons for the death of Maddison were in no way clear, either scientifically, ethically, or politically.

Schmidt's background is in history of medicine, particularly medical ethics, and this serves the book well when it looks at the complex issues about the testing of chemical, nuclear, and biological (CNB) weapons. Scientifically, it is incredibly difficult to assess the utility of CNB weapons without testing them on humans, since unlike conventional weapons, CNB weapons interact with the biological systems of living creatures. Although tens of thousands of animals were used, only human testing could reveal the subtle levels of incapacity, length of toxic effect, and utility of prophylaxis or treatment. While the Nazis scientists had few moral constraints about such tests, British scientists and military leaders faced serious ethical and moral problems in the Cold War years. The recurring issue is encapsulated in the report of a meeting of SAC (Scientific Advisor Council) in 1965:

Much of the discussion focused on the question of whether Porton's medical staff was acting with permission when “deliberately dosing healthy men with

drugs specifically designed to induce some malfunction, either physiological or psychological.” For most experts present this seemed ethically justifiable, as long as the intention was that Porton would as a result “develop therapies” against agents that enemy powers might deploy against British armed forces. However, as Ladell [head of Porton’s medical division] had to admit, this was actually not the case: “I had to therefore disclose . . . that we were in fact looking for an agent which we could use under certain circumstances.” Or, to put it differently, Porton was seeking to develop an incapacitating nonlethal chemical warfare agent for offensive purposes. (352–53)

This placed the Porton scientists at odds with Britain’s Medical Research Council rules for human testing and the Nuremberg Code. In addition to the problem of testing toxins on military volunteers, there was the revelation that British and American scientists had conducted secret tests on civilians such as the London Underground ventilation trial in 1963 (using a supposedly harmless bacteria obtained from the U.S. military). The discovery that scientists were doing such experiments confirmed the public perception that scientists were unethical and dangerous.

Schmidt explores a range of Porton’s tests and then moves on to the issue of consent for human experiments. Chapter 10, “The Politics of Medical Memory,” is the best section of the book, weaving together the legal issues, the moral dilemma for scientists, the public response to CNB, and the limits of informed consent. The chapter is anchored by the inquiry into the death of Ronald Maddison, which brought before the public the discussion about the ethics of dangerous experiments and the politics of military research especially in a time of peace. The case also raised the issue of the limits of liability. Could a government really pass a law that shielded it from all legal action in all circumstances? The case had implications around the world since such testing was done by Britain and other Allied countries in Canada, India, the United States, Australia, and other places.

Secret Science ends with an epilogue which explores the meaning of science, medical ethics, and our now seemingly perpetual preparation for war. Schmidt is evenhanded in his treatment of the scientists, recognizing that they felt they were doing their patriotic duty and trying to conduct their work with a high level of safety. Schmidt often lets the people involved speak for themselves, preserving some of the fragmentary historical voices of the period. Citing Michael Ignatieff on human rights, Schmidt argues that only by making the complexity of military science and medicine public can our ethical framework evolve. He points out that the memorials to the Great War, also called the Chemists’ War, have been “turned into monuments opposing war as a rational means of conflict resolution” (479).

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