battles lay ahead, maybe I would have dropped the whole enterprise and gone off to do something more peaceful—like being an army general."

HEISENBERG'S WAR: The Secret History of the German Bomb. *By Thomas Powers. Knopf. 610 pp. $27.50*

The great riddle of World War II is why Germany never developed an atomic bomb. The physicists who fled from Nazi Europe—Niels Bohr, Hans Bethe, Leo Szilard, Robert Oppenheimer—warned American authorities that Germany lacked nothing necessary for developing nuclear power. Besides being the birthplace of modern physics, Germany had ample stores of uranium seized from Czechoslovakia. It also had a Führer who would find such a destructive bomb appealing. Most important, it had Werner Heisenberg—winner of the Nobel Prize, discoverer of the uncertainty principle in physics, and the scientist most capable of single-handedly engineering such a bomb. Fear of Heisenberg fueled the U.S. Manhattan Project in its furious race to beat Germany to the bomb. Yet when Americans scoured German military installations after the war, they discovered to their astonishment only a small research reactor, hardly even the first step toward an atom bomb.

We are now in a better position to understand this puzzle. After the war, Heisenberg and other German scientists were interned in England near Cambridge, where hidden electronic devices recorded their conversations. From recently released transcripts, Powers, a Pulitzer Prize–winning authority on American intelligence agencies, has pieced together a version of the story. The principle reason Germany did not develop the bomb—and the hero of Powers's story—is Heisenberg himself. Simply stated, he was afraid to give Hitler such a potentially decisive weapon. Heisenberg said he "falsified the mathematics in order to avoid development of the atom bomb." "Heisenberg had the luxury and the burden of choice," Powers writes, "since no one could challenge him with anything weightier than a contrary opinion." Heisenberg's scrupulous conscience, in Power's narrative, almost puts to shame the physicists of the Manhattan Project, who were largely untroubled by the terrible bomb they were building.

But a closer reading of Powers's materials reveals a more ambiguous story. After the war it was clearly in Heisenberg's interest to exaggerate his opposition, yet during the war he at times expressed his hope for a German victory. Fritz Houtermans, a Heisenberg confidant, in 1941 leaked a message to American scientists, warning that "Heisenberg will not be able to withstand longer the pressure from the government . . . [for] making of the bomb." But the German government oddly never applied that pressure—in part because Hitler expected too swift a victory to justify the long-term research and expense. Heisenberg's luxury was, in fact, that of a Hamlet, indecisive, wavering, his conscience never put to the test. Fortunately for the Allies, Heisenberg's uncertainty principle extended beyond matters of physics.