

BOOK REVIEW

Mark Walker, *Hitler's Atomic Bomb: History, Legend, and the Twin Legacies of Auschwitz and Hiroshima*

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During the Second World War, German scientists came nowhere close to developing a nuclear weapon; interest in their work now tends to focus on their possible motivations, why their programme failed so spectacularly and how, after the war, some of those involved absolved themselves of complicity with the Nazi regime or depicted themselves as active resisters. Multiple factors played roles in the German failure: lack of coordination, low priority, limited resources, personal and political infighting, Allied operations and the deteriorating military and economic situation after the Battle of Stalingrad. In this readable and meticulously referenced volume, Mark Walker explores all these issues, adding significantly to our understanding of the inside workings of the German nuclear programme.

Walker has devoted his career to studying the German nuclear programme; many readers will know his *German National Socialism and the Quest for Nuclear Power 1939–1949* (1989). This new work draws on material released since, including the Farm Hall transcripts, Kaiser Wilhelm Institute documents repatriated from Russia, Niels Bohr's unsent letters to Werner Heisenberg, Carl Friedrich von Weizsäcker's papers, and Heisenberg's letters to his wife. Heisenberg and von Weizsäcker are the principal characters, but many other prominent figures appear, including an extensive cast of German military, academic, industrial and Nazi leaders.

Walker divides his work into two parts totalling ten chapters, each of which ends with a brief conclusion; some include synopses of simultaneous developments in the American programme. The production quality is excellent, and this reviewer detected no obvious errors.

Part I takes the story from the discovery of fission to the end of the war, describing the origins of the German programme, its uncoordinated work on various pile designs, isotope enrichment experiments, administrative turmoil, and how the breakdown of the Lightning War compounded by Allied bombing raids hobbled progress. Part II deals with how German science came under Nazification and how initially negative post-war assessments of Heisenberg and von Weizsäcker evolved into their being 'rehabilitated' with inflated descriptions of their denying Hitler atomic bombs. The negative view originated with Sam Goudsmit's *Alsos* (1947). The more positive perspectives began to take hold with Robert Jungk's *Brighter Than a Thousand Suns* (1957) and self-serving statements by the principals themselves. The first chapter opens with the intersection between the two parts at Farm Hall in August 1945, where detained German scientists learned of Hiroshima and began concocting the story that, on principle, they focused their wartime work on reactors,

not bombs, beginning the rehabilitation process. Von Weizsäcker was the chief proponent of this argument, which deftly reflected questions of morality back against Allied scientists. Walker analyses Heisenberg and von Weizsäcker's compromises with the Nazi regime, but tempers his judgements with humanity: who among us would wish to have been in such circumstances?

Walker's core argument is that the importance of the German project lies not in what it accomplished but rather in how it was perceived: the fear of a German bomb spurred the Allied effort. Ironically, Heisenberg's assertion that he tried to convince Niels Bohr to encourage Allied scientists not to work on a bomb because German scientists were not doing so would probably have backfired if true; such a message would likely have been considered disinformation, only encouraging the work.

Walker's command of detail is masterful. Some episodes that caught the attention of this reviewer include how the period from the autumn of 1941 to mid-1942 was pivotal for both the German and Allied programmes but in opposite ways, the former being deprioritized based on the conclusion that a bomb would be too difficult to make during the war and the latter being ramped up in anticipation that nuclear weapons could be decisive if the war went on for an extended period; Heisenberg feeling that his work was irrelevant and his intense dislike of von Weizsäcker's philosophical affection for National Socialism; the perversion of science under the Nazis; infighting between research groups; and political involvement in Heisenberg being considered for a position in Munich and then as director of the Kaiser Wilhelm Institute for Physics. Politics, ideology and animosities torpedoed what could have been a technically more successful programme, even if the chance of a bomb was always remote.

This reviewer disagrees with some of Walker's conclusions. He contends that by the summer of 1942, 'Heisenberg hardly demonstrated a comprehensive understanding of bomb physics but during this stage in the war, no one in Britain or the USA had such an understanding either' (p. 76). The Frisch-Peierls memorandum of March 1940, the British MAUD committee report of mid-1941, and the Compton committee report of November 1941 all considered issues of critical mass, yield, triggering, predetonation, tampering, radiological effects and practical engineering considerations; there is no equivalence between the American and German understandings at that time.

Walker includes a helpful list of abbreviations of German organizations. An addition I would have appreciated is a listing of the most prominent German figures and their positions; it can be hard to keep track of who was who. The title 'Hitler's Atomic Bomb' seems overly dramatic for a serious work of scholarship.

Finally, much discussion has revolved around what Heisenberg might or might not have understood about bomb physics. Walker's work reminds us that the impossibility of a German bomb renders such questions largely pointless; there is vastly more to a bomb than calculating a critical mass. A more interesting question may be: if an American bomb had been ready six months earlier, would it have been used in Europe?

This book belongs in the collection of anyone interested in wartime nuclear developments, specialist or general reader alike. After eighty years, there is still much to learn about the world's first nuclear war.