Rediscovering the Forgotten Creators of the German Atomic Bomb (Part 2 of 2)

(As published in The Oak Ridger's Historically Speaking column the week of March 3, 2025)

EDITOR'S NOTE: This "Historically Speaking" column contains the opinions of Dr. Todd H. Rider based upon the research and information contained in his book, "Forgotten Creators: How German-Speaking Scientists and Engineers Invented the Modern World, And What We Can Learn from Them." [https://riderinstitute.org/revolutionary-innovation/]

Bringing you the second part of the story about Germany during the Manhattan Project and World War II era. This story is based on extensive research and is published online for your review…see above link in Editor's Note. Todd Rider has also been featured on *Hidden History: Stories from the Secret City:*

Part 1: https://www.youtube.com/watch?v=E0j4vsrz5XE&t=175s
Part 2: https://www.youtube.com/watch?v=t1pPh048r0o
Part 3: https://www.youtube.com/watch?v=LQ8AQm6kboY&t=20s
Part 4: https://www.youtube.com/watch?v=DHss4fDGCAY&t=76s

Enjoy the conclusion of the two-part series regarding the history of German atomic weapons.

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Spring 2025 is the 80th anniversary of the end of the World War II German nuclear weapons program. Although the standard historical view since the war has been that the German nuclear program was quite small and primitive compared to the U.S. Manhattan Project, recently declassified and rediscovered archival documents reveal a very different story.

Part 1 last week discussed what the rediscovered documents tell us about wartime German methods to produce fission fuel suitable for atomic bombs. According to these archival documents, Germany had large and advanced programs to produce uranium-235 by enriching natural uranium and to produce plutonium-239 from uranium-238 in fission reactors. While the details of that production remain classified even 80 years later, currently available documents shed light on other aspects of the German nuclear program.

During World War II, the U.S. Manhattan Project focused on two major nuclear weapon designs: the cylindrical "Little Boy" type device that used an internal cannon to rapidly combine two pieces of fission fuel, and the spherical "Fat Man" or "Gadget" type device that used an outer layer of conventional explosives to implode a spherical piece of fission fuel at the center. According to recently rediscovered documents, the wartime German program focused on at least three major nuclear weapon designs.

The smallest known wartime German nuclear weapon design was described by Heinrich Himmler's adjutant Werner Grothmann as being about the same size as a German conventional explosive 250-kilogram bomb. According to documents from German army physicists Dr. Erich Schumann and Dr. Walter Trinks, this design would have used implosion from two opposite ends acting on a small central piece of fission fuel, plus possibly a little fusion fuel.

Grothmann said that the expected explosive yield was less than one kiloton (one thousand tons of TNT) and that the weapon would have been used for tactical military targets. After a thorough postwar investigation, U.S. General Thomas J. Betts and U.K. government science advisor Sir Reginald Patrick Linstead stated that German rockets were redesigned to accommodate these small warheads.

A German soldier who worked at Magdeburg (named in other documents as a nuclear production site) was captured by U.S. forces on March 1, 1945, informed Allied interrogators that he had seen a stockpile of such warheads, and gave a detailed and accurate description of the external and internal structure of the warhead.

A number of sources also describe a medium-sized German nuclear weapon that closely resembled the U.S. Fat Man yet had some features that were more advanced. According to Schumann, Trinks, and top-

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level Soviet intelligence reports sent to Joseph Stalin, this device was a spherical implosion bomb weighing approximately 2,000 kilograms (4,400 pounds) with a diameter of approximately 1.3 meters (51 inches).

According to the documents, the center had a sphere of fission fuel and a small amount of fusion fuel. With enough fission and fusion fuel, such a design might have an explosive yield of several tens of kilotons, equaling or surpassing the yields of the first U.S. fission bombs. Postwar reports by Allied investigators prove that this was not merely a paper design: they contain photos of suitable explosive lenses being tested in 1942-43, specifications of suitable neutron initiators that were mass-produced during the war, and information on other German manufacturers that made all the components necessary to assemble such a device.

Most surprisingly, many rediscovered archival sources describe a large German nuclear weapon: a full-fledged H-bomb with a total weight of 6,000 kilograms (13,000 pounds) and an expected blast radius of 10 kilometers (6 miles), corresponding to a megaton-level (millions of tons of TNT) explosive yield! The documents indicate that the weapon would have used a fission bomb to trigger fusion reactions in lithium deuteride fuel. From postwar Allied reports, we know that wartime Germany was producing huge amounts of both lithium and deuterium, and that it was even separating the lithium-6 isotope that is more useful for nuclear applications.

As with the small and medium devices, this large warhead was not a paper project. In 1944 Germany began scouting for a suitable test site in remote Finland, and several sources state that this large design was expected to be tested later in 1945 or early 1946 if the war had continued. Documents mention that both German aircraft and rockets were designed to deliver these six-ton bombs to distant Allied targets. While this large design was not tested before the end of the war, there is evidence that the other designs were.

The earliest reported successful test of a German nuclear weapon occurred in October 1944 on the Baltic coast (two sources thought it was October 12 and on the island of Rügen, although there are other possible locations). After the war, Luigi Romersa described how Benito Mussolini had sent him as his personal representative to observe the test and privately report back to him. Romersa told of witnessing the test alongside German officers in a heavily armored, mostly underground bunker two kilometers from the test site, having to wait in the bunker for several hours afterward for the radioactivity to decrease, and then briefly visiting the test site in a full protective suit to observe the devastation.

Summer 1945 interrogations of Rudolf Zinsser, a German pilot, revealed that he had been assigned to fly near the test site (likely with a plane full of instruments) during the test and again an hour later. Zinsser correctly described many details of the blast wave, electromagnetic effects, and multiple colors from beta decay of the fission products in the mushroom cloud that were not public knowledge at that time. After investigating Zinsser's story for a few months, the U.S. upgraded his interrogation report from Secret to Top Secret. Several other German, U.S. Army Air Forces, Manhattan Project, and Office of Special Services reports also mention this test, yet the details remain classified over 80 years later.

A number of German, Polish, and U.S. intelligence sources reported a second test in Poland in or around November 1944. Currently available documents do not name the test site; Germany had weapons testing areas scattered all over Poland during the war. According to several of the sources, German forces placed many concentration camp prisoners at the test site as human guinea pigs, then delivered the bomb by air, with predictably tragic effects. U.S. Justice Robert Jackson even described this incident at the 1946 Nuremberg trial of Albert Speer. Again, more detailed reports remain unavailable.

The final two reported German nuclear weapons tests occurred in March (some sources report March 4 and 12) 1945 somewhere in Thuringia, most likely at the large and relatively isolated Ohrdruf military base. As with the Polish test, German forces reportedly placed concentration camp prisoners around the test site. These March 1945 tests are described in considerable detail by a series of wartime and postwar

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Soviet intelligence documents at the highest levels. Those details were independently confirmed after the war by Werner Grothmann. The tests are also mentioned in U.S. intelligence documents, although any details remain classified.

It appears that all these test explosions were kept as small as possible by using as little fission and fusion fuel as required, in order to conserve weapons-grade fuel, try to maintain secrecy, and minimize the mess made on German-controlled territory. Each test had a yield on the order of a kiloton or even less, even though the medium weapon design probably could have delivered tens of kilotons with a full load of fuel. After eight decades the resulting radioactivity would have decayed around a billion-fold, making it far below the levels of natural background radiation and undetectable with a Geiger counter now.

If Germany possessed nuclear weapons, why did it not use them against the Allies? Franklin Roosevelt and Winston Churchill made repeated public threats that if Germany employed any kinds of weapons of mass destruction, the U.S. and U.K. would respond by dropping vast amounts of mustard agent and other weapons on Germany, which could have killed millions of German civilians. Clearly that successfully deterred Germany from using its stockpiles of nerve gas, other chemical weapons, biological weapons, and fuel-air explosives. According to several independent sources in Hitler's inner circle, it also successfully dissuaded Germany from employing its nuclear weapons before the end of the war.

Due to U.S./U.K. bombing, the majority of German nuclear production sites were built in the eastern areas of German-controlled territory, so they were taken over by Soviet forces at the end of the war. In the decades since, leaders from the Soviet nuclear weapons program have admitted they acquired from the German programs thousands of scientists, thousands of tons of uranium ore, and huge amounts of materials and information that (along with information from several spies in the Manhattan Project) greatly accelerated the postwar Soviet nuclear program. Other than a few revealing memos, the overwhelming majority of what the Soviets learned about the wartime German nuclear program remains classified in Russian archives.

Despite the geographical limitations, western Allied forces took over a number of German nuclear production sites at the end of the war. Almost all the site inspection reports and personnel interrogation reports from those facilities are still classified 80 years later. The Allies also seized at least six submarines loaded with high-tech weapons headed from Germany toward Japan at the end of the war—and almost all those reports are still classified as well.

Rediscovered archival documents show the United States obtained many key personnel from the wartime German nuclear program. Dr. Hans Kammler, the SS general and engineer in charge of the German nuclear and other advanced weapons programs, secretly surrendered to the U.S. and was interrogated for at least six months after the war. Dr. Siegfried Flügge, the top theoretical physicist of the German nuclear weapons program, was brought to the U.S. after the war at the specific request of Dr. Edward Teller to "be of marked assistance in carrying out" a "physics... program... of interest and importance to the national security."

Dozens of other experts with knowledge of the German nuclear program (including the advanced German H-bomb project) were also brought to the U.S. and/or U.K. after the war. Unfortunately, the details of their wartime and postwar work are also still classified. How much impact did information from the wartime German nuclear program have on postwar nuclear programs in the U.S., U.K., France, Soviet Union, and other countries?

If you found hundreds of pages of reports from a wide variety of reliable sources stating that some modern country suddenly started doing all of the activities described in these two articles, would you conclude that that country clearly had no significant nuclear weapons program, or would you decide that all of that evidence raises real concerns and warrants a more detailed investigation?

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All of the archival evidence mentioned in these two articles and much more is available for free at: https://riderinstitute.org/revolutionary-innovation/ (Everything discussed there and in these articles is based entirely on unclassified and declassified sources.) If you find this evidence of interest, please use it as a starting point and see how much more evidence you can find in public archives and private collections around the world, or (very carefully, with all appropriate precautions, permissions, and procedures!) at some of the suspected wartime sites in Europe.

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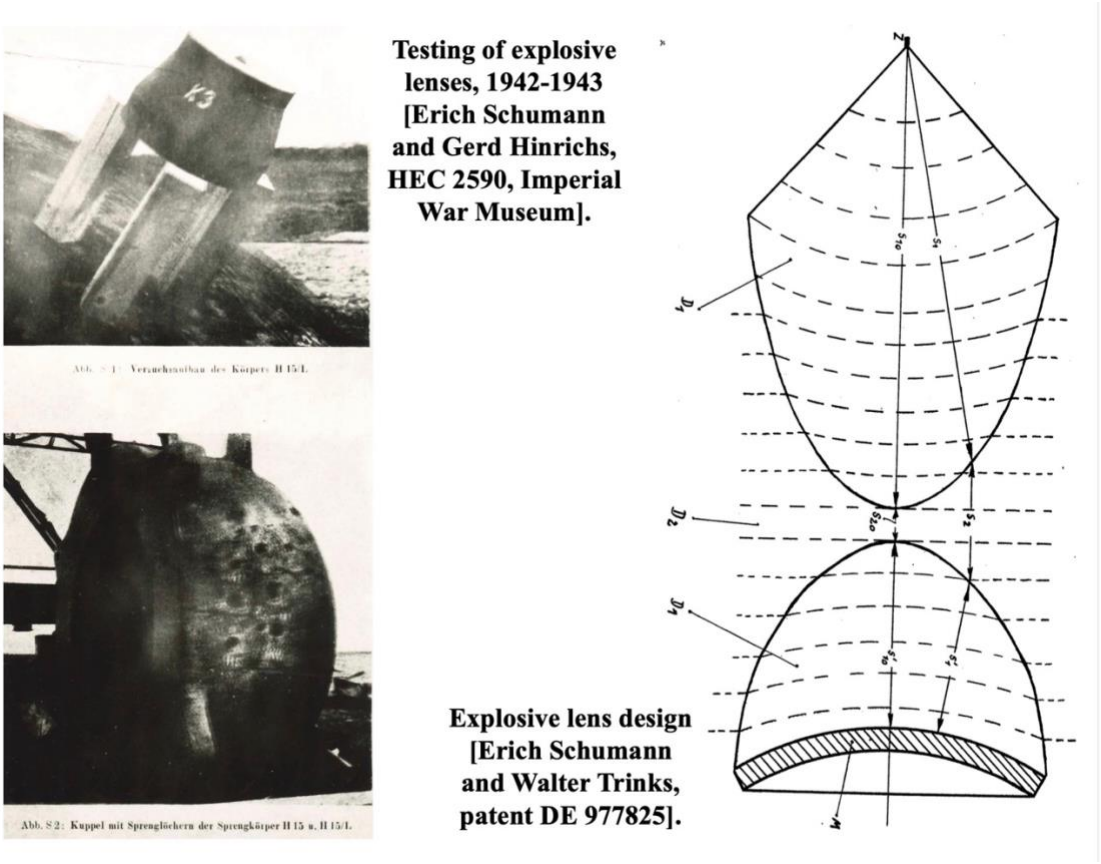
Thanks Todd! Great insights discovered through your research!



Left: Testing of explosive lenses, 1942-1943 [Erich Schumann and Gerd Hinrichs, HEC 2590, Imperial War Museum]. Right: Explosive lens design (Courtesy of Erich Schumann and Walter Trinks, patent DE 977825)

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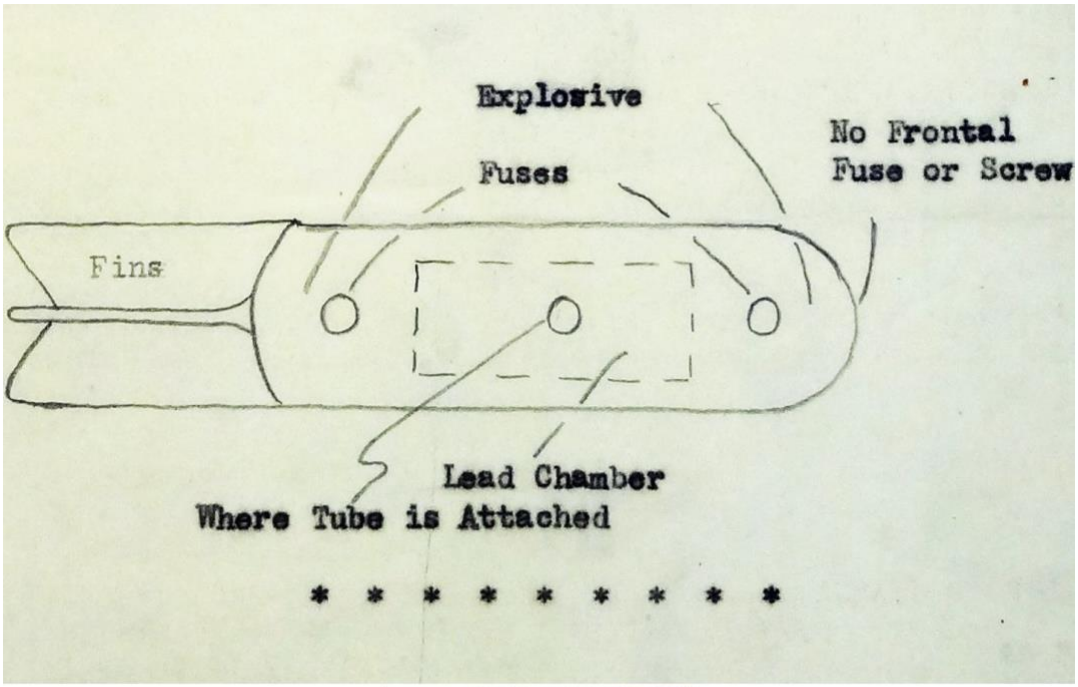

Sketch of a ~250 kg prolate bomb with two-point ignition and a dense metal tamper surrounding a small central pit, by a German prisoner of war who reported handling a stockpile of such weapons at a nuclear site in Magdeburg (Courtesy of NARA RG 165, Entry NM84-187, Box 137, Folder BW 55)

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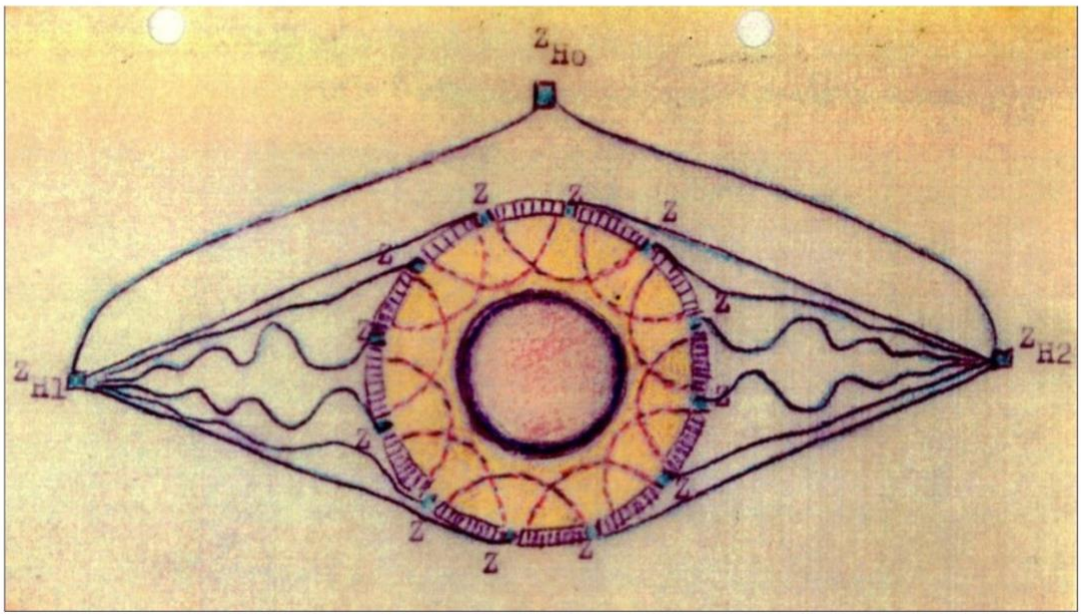
Sketch by Dr. Erich Schumann of a two-ton spherical implosion bomb with ignition wiring [Schumann estate, courtesy of Rainer Karlsch].



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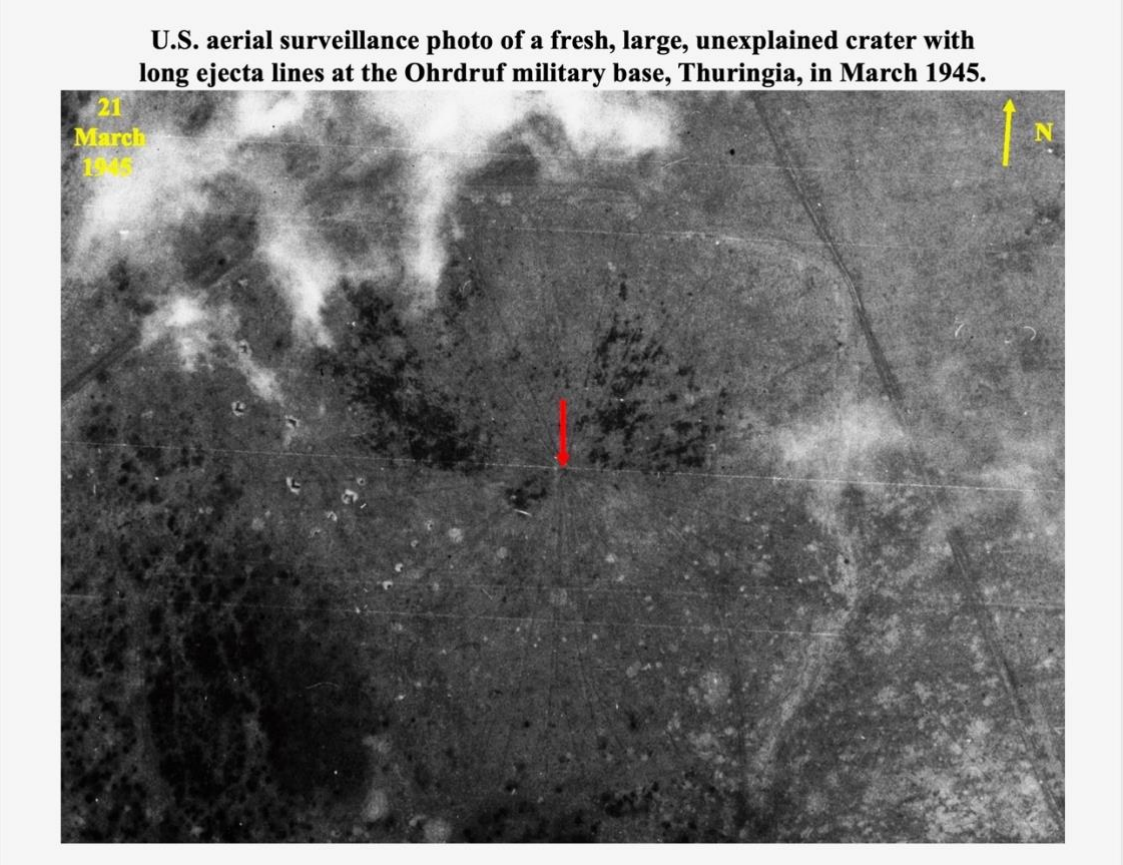

March 21, 1945, U.S. aerial surveillance photo of a fresh, large, unexplained crater with long ejecta lines at the Ohrdruf military base, Thuringia. (Courtesy of Air Force Historical Research Agency via Gunther Hebestreit)

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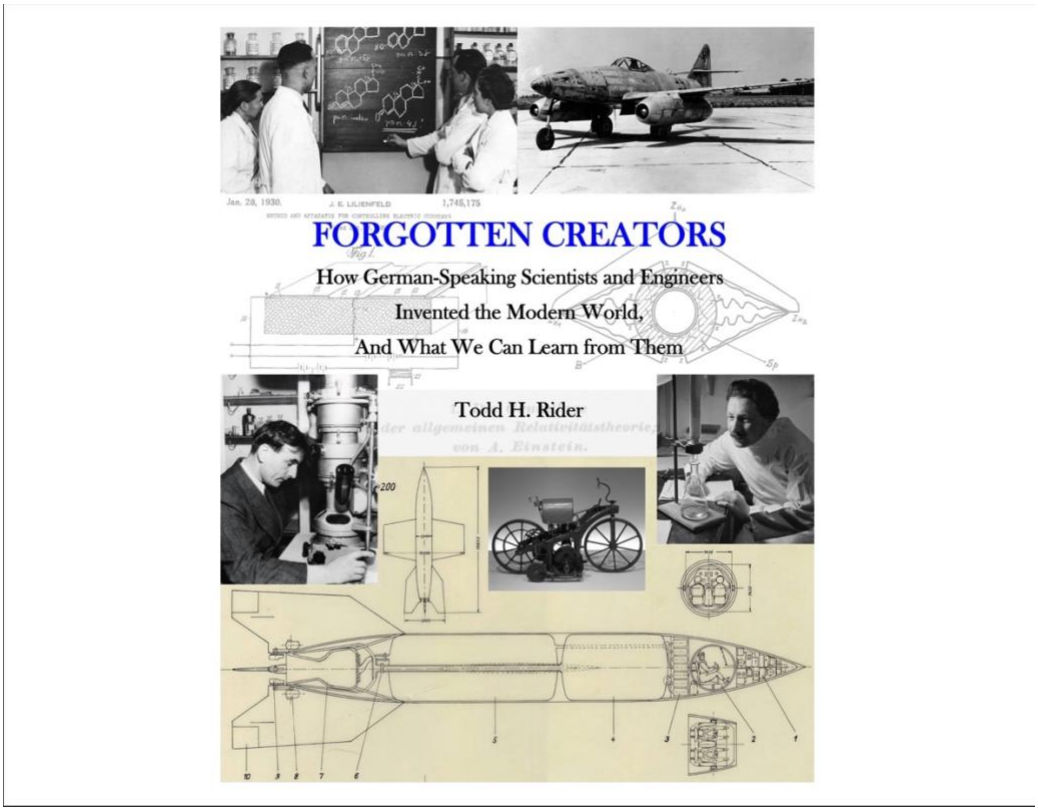

Forgotten Creators: How German-Speaking Scientists and Engineers Invented the Modern World, And What We Can Learn from Them (Courtesy of Todd Rider)

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Dr. Todd H. Rider with the Ohrdruf military base in the background (Courtesy of Lori Rider)