

Review of *Planck: Driven by Vision, Broken by War*

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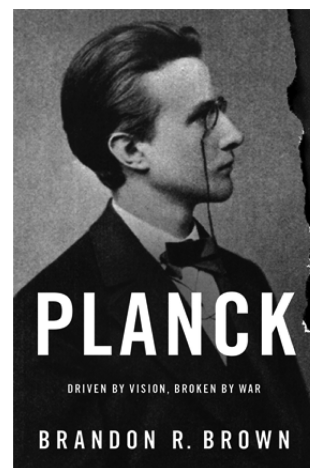
Planck: Driven by Vision, Broken by War, by Brandon R. Brown. Oxford University Press: Oxford and New York, 2015. xx + 258 pp. ISBN 978019021947 (hard cover). \$29.95.

Max Planck is mentioned, and sometimes briefly profiled, in almost every general chemistry and physical chemistry textbook where he is identified as the originator of the quantum theory. In his attempt to provide a theoretical derivation of the equation he had proposed to describe the spectrum of blackbody radiation, Planck had been forced to assume that the energies were quantized in units of what we now call Planck's constant, h . He also introduced a second constant, k . After Boltzmann's suicide in 1906, Planck led a group of physicists in calling it "Boltzmann's constant", a move he would later regret because Boltzmann had actually never used the constant that bears his name. In trying to understand blackbody radiation from the perspective of classical physics, Planck unwittingly gave birth to the quantum revolution and was eventually awarded the 1919 Nobel Prize for his discovery.

But there was much more to Max Planck than blackbody radiation. By 1900 he was a leader in German physics, a full professor at the University of Berlin, and a full member of the Berlin Academy of Sciences who was the world's leading authority on classical thermodynamics. He was one of the first to champion the special theory of relativity and worked to bring Einstein to Berlin as the director of the new Kaiser Wilhelm Institute of Physics. Among his other scientific contributions after 1900 was the Fokker–Planck equation of stochastic dynamics.

This new biography, *Planck: Driven by Vision, Broken by War*, by Brandon R. Brown, a professor of physics at the University of San Francisco, tells the story of Max Planck's life and career in the context of the events of World War II. Planck was widely respected as a scientist and as a human being. He was a person of the highest integrity and a devoted German patriot. Occasionally his loyalty to Germany led to missteps, for example, his signing of the so-called "Appeal to the Cultured Peoples of the World" in 1914, which linked German culture and science to German militarism. After the Nazis came to power in 1933, Planck remained loyal to his country and followed the directive to dismiss his Jewish colleagues, perhaps hoping that going along would give him some influence for good.

Planck's personal life was particularly tragic. His first wife died at a relatively young age after bearing four children. His older son was killed in World War I, and his twin daughters, Grete and Emma, both died before the age of 30, each leaving behind a granddaughter to be raised by Max and his second wife. The worst blow was that his younger son, Erwin, who was his favorite child, was arrested in 1944 because he was peripherally associated with the failed attempt to assassinate Adolph Hitler. Planck did everything he could to save his son but to no avail. Erwin was imprisoned, tortured, brought to trial, convicted, and eventually hanged.



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One of the strengths of this book is that Brown interweaves the human story, Max Planck as husband and father, friend and colleague, with an accessible account of his scientific accomplishments and his role as a leader of German science. He brings out the dilemmas of Planck's life, the conflict between his patriotism and his moral sense. This conflict was exacerbated by the events of the two world wars, the burden placed on Germany by the Treaty of Versailles, and the Great Depression.

In the midst of chaos and tragedy, Planck did his best to stand loyal to his principles but often was ineffective. After Planck's death, Einstein wrote the following words to Planck's second wife, Marga (pp 210–211):

Now your husband has finished his days after he achieved greatness and experienced much bitterness. His gaze was fixed on the eternal things, and yet he took an active part in all that was human and he lived in the temporal sphere. How different and better the human world would be if there were more such unique people among the leaders. So it seems not to be, as the noble characters in every time and every place must remain isolated without being able to influence the events around them.

In *Planck: Driven by Vision, Broken by War* Brandon Brown has written an engaging biography of a scientist whose name is well-known but whose life and extensive scientific accomplishments have almost been forgotten. This is a book well worth reading.

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Notes

The authors declare no competing financial interest.