Bernstein, Jeremy
Secrets of the old one. Einstein, 1905. (English) Zbl 1096.01008

In this popular book the author is concentrated to a miracle year of Einstein, when he in 1905, as a young twenty-six-year-old patent examiner in Bern, wrote his four revolutionary papers and set the foundations to a century of progress in physics. It is said that with these papers Einstein managed to reveal hidden workings of “The Old One” – the deity.

In the biography there are mainly described the years leading up to 1905 to make clear the context in which the papers were written. This is made in the Introduction: Einstein’s Miracle Year. Then follow four chapters and an epilogue. The first chapter: The Prehistory, is an account of the relevant physics history up to 1905, especially as it deals with electromagnetism and Newtonian mechanics. The second chapter is an account of Einstein’s papers on the theory of relativity, with additional relevant prehistory, and a sketch of what happened to the theory after 1905. The third chapter: Do Atoms Exist? deals with what is known as “Brownian movement”, that is, the random motion of microscopic particles suspended in liquids. This development, and the experiments it led to, persuaded most of the skeptics that atoms existed as real physical objects and not as mathematical abstractions. The last chapter: The quantum, deals with Einstein’s paper which was the first one of the series chronologically; it has been received by Annalen der Physik on March 1905. Its discussion in this book begins with the history of the steam engine. The relativity papers were actually the last ones: the very last one containing the formula \( E = mc^2 \) has been received on September 1905. In the book the discussion of these last papers fills out the first half of its capacity.

The author of the book writes that he wants to explain all this using mathematics no more difficult than that taught in high school, simple geometry and algebra, but this does not mean that he skimps on the ideas. In the Introduction he explains briefly how he got into all this in his university years at Harward under professor Philipp Frank, who had been in personal contact with Einstein; the book is dedicated to his memory. The text contains several reminders and citations, is illustrated with many photos and figures.

Reviewer: Ülo Lumiste (Tartu)

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01A60 History of mathematics in the 20th century
83-03 History of relativity and gravitational theory
82-03 History of statistical mechanics
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Biographic references:
Einstein, A.