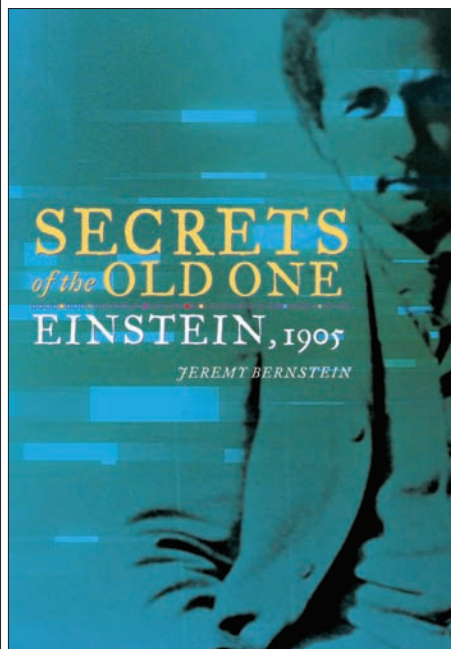


BOOKSHELF

Secrets of the Old One: Einstein, 1905 by Jeremy Bernstein, Springer Science. Hardback ISBN 0387260056, €19.95 (\$25).

Henri Poincaré and Relativity Theory by A A Logunov, Nauka. Hardback ISBN 5020339644.



Bernstein's book is wonderful and, as far as I can judge as a professional physicist, very pedagogical for non-specialists. My only complaint is the title, which I came to understand only on page 163. For me, the "Old One" was Albert Einstein himself and the "secrets" were about his love affairs, including the one with the Russian girl who tried to extract atomic secrets from him (Einstein knew nothing). However, Bernstein gives only a relatively brief account of Einstein's life; on this subject there are many other more complete books available. What the author does instead is to delve into the past, as far as antiquity if necessary, and give the background to the three fundamental papers Einstein published in 1905 – special relativity, Brownian motion and the photoelectric effect – and, in fact, beyond, since general relativity is also mentioned.

In the course of the book Bernstein gives a wonderful lecture on the history of physics and chemistry, with colourful details about the main contributors: Epicurus, Lucretius, Galileo, Kepler, Newton, Bernoulli (one of them), Dalton, Avogadro, Maxwell, Smoluchowski, Perrin, Michelson, Lorentz, Poincaré and so on.

This brings me to Logunov's book about Henri

Poincaré and relativity. The author claims that the role of Poincaré in the advent of relativity was much more important than is generally believed. This does not contradict Bernstein; he is also full of admiration for Poincaré in general and for his contribution to the genesis of relativity theory in particular. Max Born once said, "The theory of relativity resulted from the joint efforts of a group of great researchers: Lorentz, Poincaré, Einstein, and Minkowski."

Einstein never mentioned the contribution of Poincaré, which was slightly anterior and when, says Bernstein, Abraham Pais lent the text of Poincaré to Einstein, the latter returned it later without a word. Somehow it looks as though Einstein had decided to ignore Poincaré, which is difficult to understand when you see them both less than a metre apart at the 1911 Solvay Congress. However it is unclear whether Poincaré made the "big jump", while Einstein certainly did. In a text quoted by Logunov, Poincaré says "If we are to accept the relativity principle...", that is, there is an "if". It should be said, however, that according to Bernstein, Poincaré also ignored the work of Einstein, although he did write a letter of recommendation for Einstein to obtain a position at the Federal Institute of Technology in Zurich in 1909. In this letter Poincaré does not mention the word "relativity" once.

The question will remain forever open. Can we blame Einstein for ignoring Poincaré? No more than we can blame Bach for copying Vivaldi's concerto for four violins to transform it into the concerto for four pianos.

Where I cannot follow Logunov is the part in which he claims that Einstein's theory of general relativity is useless and wrong. Logunov presents explanations of the twin paradox and the Sagnac effect using only Poincaré's relativistic mechanics, but he does not seem to realize that we now have extremely refined tests of general relativity, and that the global positioning system could not work without relativistic corrections.

To conclude, I would say that, since the paternity of the Brownian motion theory is also controversial (what was the role of Marian Smoluchowski?), and since the importance of the 1917 paper on induced radiation was only realized later with the invention of the laser, I believe that the Swedish Academy, contrary to what I thought when I was young, was very wise in awarding Einstein's Nobel prize "for services in theoretical physics, and especially for his

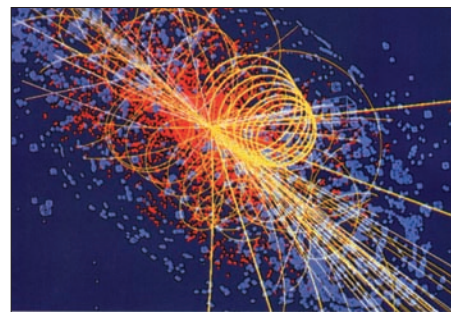
discovery of the law of photoelectric effect". For this Einstein had no competitor. Ironically this work led to quantum mechanics, with which Einstein was so unhappy: "the Old One [God] does not play dice".

André Martin, CERN.

Fisica, Tecnologia, Economia (Physics, Technology, Economy) by Elisabetta Durante (ed.), the Istituto Nazionale di Fisica Nucleare (INFN). Available from Presidenza INFN, Piazza dei Caprettari, 70 - 00186 Roma.

This booklet is a collection of articles published in one of Italy's most important newspapers, *Il Sole 24 Ore @lfa*, to celebrate the World Year of Physics in 2005. The authors are researchers and professors from INFN, the body that funds a major part of particle-physics research in Italy. Throughout the book, it is interesting to see the effort made to show how many important applications of particle physics there are in everyday life, and the strong links that exist between the complicated machines that serve this kind of research and the technological objects that we use every day.

The language is simple, the articles are short and, in my opinion, accessible to the lay public. For example, natural radioactivity is mentioned alongside archaeological lead in order to explain the basic functioning of the Cuoricino experiment in the Gran Sasso Laboratory. Each article about current theory and experiments is



Fisica, Tecnologia, Economia

La fisica fondamentale, le sue tecnologie,
il suo impatto economico

L'Istituto Nazionale di Fisica Nucleare

presenta una raccolta di articoli apparsi su

Il Sole 24 Ore a cura di Elisabetta Durante

followed by a spotlight on the application that has resulted from the research.

Two sentences in the book are particularly striking: the first sentence of all, which states "Physics has already understood all the easy things," and the last one, which reads "Young researchers who have experienced laboratories such as CERN are the best example of an effective technology transfer." I am not sure about what can be defined as "easy to understand" in physics but I do agree with the importance of sharing knowledge and how much this is done in international laboratories such as CERN.

Antonella Del Rosso, CERN.

Books received

Drawing Theories Apart: the Dispersion of Feynman Diagrams in Postwar Physics by David Kaiser, University of Chicago Press. Hardback ISBN 0226422666, (\$80). Paperback ISBN 0226422674, (\$30).

With the use of rich archival materials, interviews, and more than 500 scientific articles from the period, the author uses Feynman diagrams as a means to explore the development of American postwar physics. By focusing on the ways that young physicists learned new calculational skills, the story is framed around the crafting and stabilizing of the basic tools in the physicist's kit, thus offering the first book to follow the diagrams once they left Feynman's hands and entered the physics vernacular.

What is the Electron? by Volodimir Simulik (ed.), Apeiron. Paperback ISBN 0973291125, \$25.

This collection brings together works by a number of authors, with the main purpose of presenting original papers containing new ideas about the electron. It thus provides different points of view on the electron, both within the framework of quantum theory and from competing approaches. Original modern models and hypotheses, based on new principles, are well represented. More than 10 different models of the electron are presented, and more than 20 models discussed briefly.

Accelerator Physics 2nd edition by SY Lee, World Scientific. Hardback ISBN 981256182X, £51 (\$84). Paperback ISBN 9812562001, £27 (\$44).

Intended for use as a graduate or senior

undergraduate text in accelerator physics and science, this book can also be used as preparatory material for graduate accelerator-physics students. The text covers historical accelerator development, transverse betatron motion, synchrotron motion, an introduction to linear accelerators, and synchrotron

radiation phenomena in low emittance electron-storage rings, and introductions to special topics such as the free-electron laser and the beam-beam interaction. Each section is followed by exercises to reinforce the concept discussed and to solve a realistic accelerator design problem.



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