Silvan Schweber's QED and the Men Who Made It is a remarkable and exciting book. The author, an accomplished practicing theoretical physicist, changed directions about 20 years ago and began to study historiography seriously with a view to becoming a similarly accomplished historian of science. He has succeeded. This history of quantum electrodynamics is both the proof and the result. Schweber brings to his efforts the tools of the professional historian (strict reliance on original sources, extended interviews with all the living principals and with just about everyone else who had any light to shed, detailed notes and references) and the tools of a professional physicist who has himself worked on QED, a field as highly technical and abstruse as it is important. That makes him, if not unique, then a pretty rare bird, a physicist-historian.

Schweber's approach is comprehensive and ambitious. He is not content to let the principals be defined by their work but has reached into their family and sociological background, schooling, personalities, psyches, and "philosophies." Neither is he content with a descriptive account of the physical content and ideas of QED, but chooses also to go into substantial and extended technical detail, beginning on page 2. Perhaps 25 percent of the text is mathematics, nontrivial and effort-plagued; my advice to readers (including physicists) is to float lightly above the mathematics, paying just enough attention to pick up the themes. That is not as difficult as it might seem, for Schweber has done a fine job of organizing and presenting his material, beginning at the beginning.

The first third of QED is devoted to indispensable background, primarily theoretical, in which Paul Dirac is seen to be the central figure. But it is one of the virtues of the book that experiment is also stressed, and here it is Willis Lamb who is central. It was Dirac, in 1928, who united quantum mechanics (in the formulation of which he had earlier played a decisive role) and special relativity. The clarity and simplicity of his approach led almost at once to the famous equation that bears his name. The Dirac equation of the electron accounted without further ado for such known properties of the electron as its intrinsic (spin) angular momentum and its magnetic moment. It led inexorably, but with much further ado, to the totally unanticipated idea of antimatter. And it gave the complete spectrum of the hydrogen atom. However, it was observed early on that there were serious and unresolved difficulties with the Dirac equation when it was applied to more complex problems. Even so, these dazzling successes of a formulation so transparently and logically clear as to seem inevitable gave to the Dirac equation an aura of absolute truth.

Such an aura invites and demands challenge, of course, and challenges there were in the form of ever more refined measurements of the spectrum of hydrogen and of the electron's magnetic moment. Eventually, in 1946-47, Lamb, using microwave techniques developed during the war, carried out the exquisitely...