

tious enterprise very well. The book merits a broad readership and should endure as a semipopular classic in the scientific and technical literature. If I were asked to express a disappointment, it would lie in the fact that I found no mention of the hand-carried transport from France to England of the highly advanced French cavity magnetron by Maurice Ponte, just as Paris was falling in May 1940. This probably ranks on a par with the transfer of highly secret British technology to the United States a few months later. □

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Rubbing shoulders with giants

Graham Farmelo

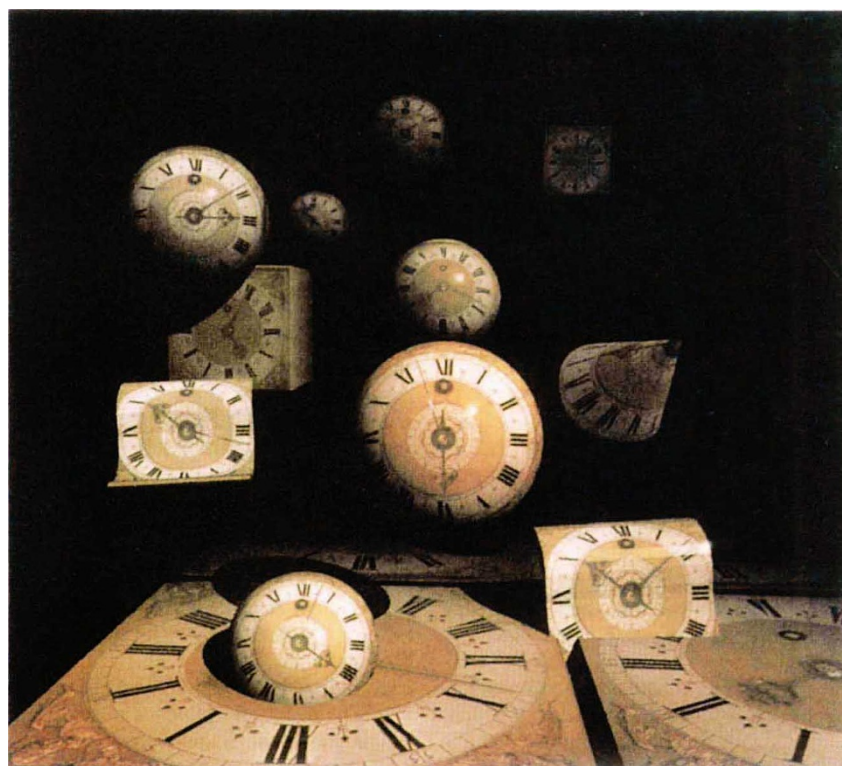
A Theory for Everything. By Jeremy Bernstein. *Copernicus* (Springer): 1996. Pp. 320. \$25, £18.50.

MOST scientists can't write, as any publisher will tell you. The few who can compose a literate, jargon-free essay are constantly in demand by the literati's house journals, always eager to point out that their tastes are so broad that they include practically everything, even science. This favoured coterie includes a good many life scientists, but the supply of physical scientists, particularly chemists, seems to be thinner.

Among the physicists who enjoy favour in US journalistic circles is Jeremy Bernstein. For some 30 years, he has been prolifically writing well-crafted scientific essays for journals as prestigious as *The New Yorker*, *The Atlantic Monthly* and *The New York Review of Books*. *A Theory for Everything* is an enjoyable collection of his factual and fictional pieces from these and other sources, some of them slightly retouched and some with a few editorial cuts restored.

By far the strongest contributions draw on Bernstein's reflections on the great scientists he has known since he was a young physicist in the 1940s. He never won a place in the front rank himself, as he is the first to admit, but he was talented enough to rub shoulders with the likes of Enrico Fermi ("a cold fish") and J. Robert Oppenheimer, who once recalled that he had read Proust as a young man — "in French, and by candlelight, while touring Corsica by bicycle".

As you might expect from someone with these connections, Bernstein is well aware of the overwhelming importance of the contributions made by a small number of exceptionally gifted minds. As he remarks,



"Time and space are now seen as dynamic quantities with each individual particle, or planet, having its own unique measure of time depending on where and how each is moving." From *The Illustrated A Brief History of Time*, an updated and expanded edition of Stephen Hawking's classic, which has sold more than 9 million copies and been translated into 30 languages. Bantam, \$37.50, £20.

perhaps a little nostalgically, "when people like [Julian] Schwinger and [Wolfgang] Pauli were at the height of their powers, giants walked the earth".

Schwinger, aptly nicknamed "His Majesty" by Pauli, is the subject of one of the best essays. Bernstein draws a light, well-balanced pen portrait of this solitary man, one of the architects of quantum electrodynamics, leavening the account with some amusing and unfamiliar anecdotes. He recalls that, at the end of one of Schwinger's talks on his attempts to reformulate quantum theory, the fearsomely critical Pauli remarked "Wasn't that rather trivial?", only to be silenced by Schwinger's reply: "I meant it to be".

One of Bernstein's prime virtues is that he maintains his readability without descending into facile abuse or idolization of his subjects. When he portrays Linus Pauling, for example, he gives appropriate weight to the brilliance of this great chemist, while not flinching from telling us of his eccentricities. Marie Curie is less well treated: in a review of Susan Quinn's biography of her, Bernstein follows the author in giving too much weight to Curie's private life, telling us far too little about how and why she became the century's pre-eminent woman scientist.

In writing of this type, intended to engage a wide audience in fundamental science, the author has sometimes to sail

close to the wind, compromising the standards of accuracy expected by pedants. But Bernstein is occasionally too lax, such as when he tells us that the X-rays first observed by Wilhelm Röntgen were emitted after he had excited a metal plate using his beam of electrons. In fact, as Röntgen knew, the radiation was emitted after the electrons had been slowed down when they struck the wall of his cathode-ray tube.

Factual accuracy is not a problem in the "lighter pieces" of fiction that end this collection. Bernstein introduces them by begging the reader's indulgence, as well he might. These stories are at best slight and at worst feeble — goodness knows how the famously selective *New Yorker* saw fit to publish some of them. To think that the journal accepted Bernstein's stories having rejected Saul Bellow's Nobel-cited *Seize the Day*...

It is a relief to hear that Bernstein has "more or less stopped writing fiction". No doubt he could make a good living by penning still more of his pleasing essays, but perhaps he might be persuaded to apply his considerable talents to something more substantial. He tells us that there is no biography of Schwinger: that would be a wonderful challenge for Bernstein and, if he were to rise to it, a treat for us. □

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