BOOKS

Forty Years after his Death, Finally a Life of Fritz London

Fritz London: A Scientific Biography

Kostas Gavroglu
Cambridge U. P., New York, 1995. 299 pp. $69.95 hc
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Reviewed by Anthony J. Leggett

Fritz London was arguably the cofounder of not one but two major disciplines in condensed matter: His 1926 paper with Walter Heitler lies at the very roots of modern quantum chemistry, while his 1935 work, with his brother, Heinz, was the theoretical breakthrough that later, in the hands of John Bardeen, Leon Cooper and J. Robert Schrieffer, led to the unlocking of the mystery of superconductivity. In addition, London made seminal contributions to the theory of superfluidity, and his 1938 monograph, with Edmond Bauer, on the problem of measurement in quantum mechanics, is still standard reading among aficionados of that subject. Yet the only major prize that London ever received was the Lorentz Medal of the Royal Netherlands Academy of Sciences, presented to him in 1954, the last year of his life. (Ironically, the prize named for him posthumously has become one of the two major international awards in low-temperature physics.) And 40 years after his death there was still no scientific biography of him.

This major gap has now been filled by Kostas Gavroglu, professor of the history of science at the University of Athens, Greece. In a book that intertwines personal and scientific history, Gavroglu follows London's career from his early essays in philosophy through his work on quantum chemistry in Zurich and Berlin, his nomadic years in Oxford and Paris and his final settlement as a professor of theoretical chemistry at Duke University, where he spent the last 15 years of his life. The work is well written and readable, and the comparatively small amount of formal theoretical physics and chemistry in it should be accessible to, say, senior undergraduates in these subjects.

FRITZ LONDON (right) and his brother, Heinz, in 1953 at the Mond Laboratory in Cambridge, England. (Photograph courtesy of Edith London.)

In his introduction, Gavroglu tells us that ever since reading Thomas Kuhn's influential *Structure of Scientific Revolutions*, he had "become impressed with what appeared to be the easy part: normal science" and had determined, in effect, to see whether it really was that "easy." London's work is indeed "normal" science by Kuhn's classification, in that London did not overthrow any of the existing paradigms but rather built on them. But a point of major interest that emerges from Gavroglu's book is that, nevertheless, neither the history of quantum chemistry nor that of the theory of superconductivity and superfluidity developed in the calm, logical progression that hindsight makes it easy to infer. For example, while modern students of superfluidity may find it natural to view the contributions of London, Laszlo Tisza and Lev Landau as harmoniously fitting elements in what is now the accepted picture, that was not at all how it looked to the protagonists at the time. Indeed, neither London nor Landau, temperamentally diametric opposites but perhaps closer in their intuitive approaches to physics than either would admit, ever really fully appreciated the other's point of view.

This book does belated justice to a towering figure of 20th-century condensed matter physics. It is fitting that its publication should coincide, almost to the month, with the first direct experimental verification—in June 1995—of London's prediction of Bose condensation in a real-life interacting system of atoms.

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The Myth of Scientific Literacy

Morris H. Shamos
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In *The Myth of Scientific Literacy* Morris Shamos examines the public's understanding of and interest in science. He finds no improvement since World War II despite enormous and expensive educational efforts promoting science literacy. He argues convincingly that previous reforms in science education