alone in claiming that this policy contributed mightily to the disaster that ensued. Kaplan shows that, in spite of the Vietnam failure, this same policy has moved back to center stage as "proved" military doctrine; current nuclear strategy now takes this doctrine as gospel. Forward deployment of tactical nuclear weapons makes sense, at best, in terms of a "finely tuned" games strategy that has never worked. Such weapons are *de facto* under local command, which makes nonsense of the connection between theory and practice.

Operational analysis was tested in combat in World War II, and real deaths were then a real concern of those shaping policy. What has since come into existence is a policy that cannot be tested or reviewed. This is policy that is likely to kill most or all of us without even producing usable data.

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Alan Turing: The Enigma

Andrew Hodges
587 pp. Simon and Schuster, New York, 1983. $22.50

Alan Turing (1912–54) was the English mathematician who, in 1937, gave a mathematical description of a machine (the "Turing machine") that logically closely resembles the modern computing machine. Later, in the period 1945–50, he was involved with two early British computers at the National Physical Laboratory and Manchester University, where he opened up many of the concepts of computer programming. Hodges is thus right in calling Turing "a figure in world history," and this is reinforced by the role of Turing in World War II, in breaking the German *Enigma* cipher, and undoubtedly affecting if not the outcome, at least the course of the war. Near the end of his life, Turing wrote a paper on the chemical basis of biological pattern development, which, as Carolyn Cohen of Brandeis University has pointed out to me, is still cited in the literature of morphogenesis.

Andrew Hodges is a mathematician himself, although not in Turing's own field, and thus his book, while not a scientific biography of the depth of, say, Abraham Pais's recent biography of Einstein, has a satisfying technical competence. The section entitled "The Relay Race," which describes the successful struggle of the British to keep up with the German changes in *Enigma*, and their use of early automatic equipment in this effort, is especially fascinating. Hodges writes with an intelligent, slightly waspish style that I found quite enjoyable.

Where the book is somewhat less successful, I think, is on the human side, in the treatment of Turing as a person. I knew him slightly, and he was an extremely vivid person; but the author never quite succeeds in bringing him to life. In particular, as Turing's life seems to have taken a gradual, inexorable downturn after 1943, one would like to know why this should have happened when he was at the height of his powers. As a good but not a professional writer, the author may not quite possess the skills needed for the full-scale portrayal of so complex a character. But there is more to it than that. The book has an important second meaning for Hodges. His view of Turing is, to a large extent, based on his sympathetic perception of Turing as a homosexual in a society hostile to persons of his kind. Let me say that

this has produced from Hodges an extraordinarily interesting and brilliant chapter, "On the Beach," analyzing the climate for homosexuals in Britain in the 1950s, and incidentally coming within an ace, as I interpret it, of suggesting that Turing's death was not in fact a suicide. (It was the time of the cold war, and the suggestion is that Turing may have been perceived as a poor security risk who still possessed important knowledge of British cryptanalytical secrets.) But this strong special orientation toward his subject has, in many respects, it seems to me, worked against Hodges, narrowing his view of Turing in human terms. If so, it is a pity, for it means that Turing's sexual nature has again, in death, exacted a toll from him.

Despite these comments, the book is an excellent one, and can be read with interest and gain by a wide audience.

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book note

Microcomputer Quantum Mechanics

J. P. Killingbeck.
177 pp. Hilger (US Dist. Heyden Philadelphia), 1983. $28.00

For students owning a microcomputer, even a low-cost model such as the Sinclair ZX-81 or a programmable calculator, this book offers an introduction to the application of microcomputers in a wide variety of physical calculations, with major emphasis on quantum mechanics. Some exposure to BASIC is desirable, but even the neophyte in programming will quickly learn the most important techniques, such as subroutines and branching, from the given examples.

Several numerical methods are discussed. Some quantum-mechanical applications are treated more extensively; for example, the Schrödinger equation or the Monte Carlo optimalization. Especially the latter technique shows that a low-cost microcomputer can be an interesting tool in physics (see, for example, Per Bak's article "Doing physics with microcomputers," December, page 25).

This book contains a large number of exercises with solutions and should be of special interest to the undergraduate student who wishes to combine an introductory course in numerical methods or quantum mechanics with the acquisition of computer skills. The author is a reader in theoretical physics at the University of Hull (UK) and published *Techniques of Applied Quantum Mechanics* in 1975. —AH

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Particles, Nuclei and High-Energy Physics

Fundamental Processes in Energetic Atomic Collisions. Proc. of the NATO Advanced Study Institute, September–October, 1982, Maratea, Italy, *NATO Advanced Science Institutes Series.* H. O. Lutz, J. S. Briggs, H. Kleinpoppen, eds. 675 pp. Plenum, New York, 1984. $95.00

Absorption of Ionizing Radiation. D. W. Anderson. 428 pp. University Park, Baltimore, 1984. $49.50 *Text*

Mesons, Isobars, Quarks and Nuclear Excitations. *Progress in Particle and Nuclear Physics 11.* Proc. of the International School of Nuclear Physics, Erice, April 1983. D. Wilkinson, ed. 635 pp. Pergamon, New York, 1984. $102.00

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Beyond the Standard Model, Vol. 2. Proc. of the Leptonic Session of the 18th Recontre de Moriond, La Plagne, France, March 1983. J. Tran Thanh Van, ed. 510 pp. Editions Frontières, Gif-sur-Yvette, France, 1983. $55.00

The Neutron and Its Applications 1982. Conference Series Number 64. P. Schofield, ed. 500 pp. Institute of Physics, London, 1984. $59.00

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