

member of the Communist Party, and Dorothy, along with other British scientists, focused her energy on the socialist solutions to social problems. Even later, in visits to the Soviet Union, she behaved as if she did not recognize the horrors of Stalin's dictatorship. Her correspondence with friends in the early 1950s reveals a striking blind spot on the subject of the political conditions under Stalin. She waxes romantic about children's parks in the Soviet Union and her desires for her own children to grow up in an idyllic Soviet atmosphere.

The culmination of her failure or refusal to acknowledge—it is not clear which—the true nature of repression in the Soviet Union led to her being denied visas in the 1950s to attend conferences and visit colleagues in the US. Her biographer explains her dim-headedness in this regard as a matter of her vision being clouded.

In later years, she refocused her social concerns and was drafted as president of the Pugwash Conferences on Science and World Affairs, and she worked tirelessly to help scientists in the third world.

Georgina Ferry has successfully tackled the problem of weaving the many facets of this gentle, brilliant woman into a warm, inspirational, and encyclopedic biography. More than a biography, this book adds considerably to the historical record of crystallography from 1932 to 1994.

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Adaptive Optics for Astronomical Telescopes

▶ John W. Hardy
Oxford U. P., New York, 1998.
438 pp. \$150.00 hc
ISBN 0-19-509019-5

Adaptive Optics in Astronomy

▶ Edited by François Roddier
Cambridge U. P., New York, 1999.
411 pp. \$80.00 hc
ISBN 0-521-55375-X

For ground-based astronomy, the 1990s surely must be called the decade of adaptive optics. The first adaptive-optics system was installed on an astronomical telescope at the beginning of the decade; by the decade's end adaptive optics had

become an essential astronomical tool and was available at a majority of the world's large ground-based observatories. During the intervening years, the US military voluntarily declassified and shared with astronomers a tremendous amount of research work in adaptive optics, only hints of which had been available before 1991. While the decade of the nineties brought to fruition simple adaptive optics systems—which guide on brighter natural stars—we are now poised to see the same pace of change in the next decade, as adaptive optics systems come to rely on artificial guide stars created by lasers.

There could be no better time than the present for the publication of two new books describing the current state of the art in adaptive optics. These two new offerings expand to four the number of monographs available in this field. [The first was *Principles of Adaptive Optics*, by Robert Tyson (Academic, 1991); the second was *Imaging through Turbulence*, by Michael Roggemann and Byron Welsh (CRC, 1996).] While any of the four is suitable for use in a graduate class in observational astronomy, by far the best of them is *Adaptive Optics for Astronomical Telescopes*, by John Hardy, a pioneer in adaptive optics who, as adaptive-optics project leader at ITEK Corp, led the research and technology effort that culminated in the first operational military adaptive optics system in 1981.

Hardy's book—despite its length and depth of detail—would be an outstanding choice for a graduate class, because each topic is explained completely from basic principles to the ultimate level of complexity. While the presentation at first appears verbose, the aim behind the author's careful and meticulous explanations soon becomes clear. Once one is immersed in the rhythm of the presentation, the book is a pleasure to read. The strengths of Hardy's work include his knowledge of the US military literature in this field and his even-handed presentation of the many competing technologies that contribute to an adaptive-optics system.

The second current addition to the field, *Adaptive Optics in Astronomy*, edited by François Roddier, is more an assemblage of research summaries than a textbook and therefore is better suited to researchers than to graduate students. Roddier's primary contribution to adaptive optics has been his theoretical development and experimental implementation of the curvature-sensing technique, a fact

that is abundantly clear in his choice of topics for his book. The writing style is quite varied, since eleven individual researchers were assigned to write one, two or three chapters each. The editor has made a reasonable effort to coordinate the presentation of topics by inserting numerous and convenient cross-references from one chapter to another.

The most noteworthy sections of Roddier's book are the three chapters written by David Sandler of ThermoTrex Corp, who is another major contributor to the US military's adaptive optics program. Sandler's chapters, which might stand as a short monograph on their own, discuss the design of laser-guided adaptive optics systems. I would recommend Sandler's chapters to any astronomer who wants to see a true insider's view of the most exciting adaptive optics work that will flourish in the next decade.

When my astronomy colleagues now ask me which of the four books on adaptive optics they should read, I will hesitate only slightly before recommending Hardy. The source of my hesitation is the supposition that few astronomers will have the patience to read such a detailed book from cover to cover.

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NEW BOOKS

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ISBN 0-7382-0108-1

The Plutonium Files: America's Secret Medical Experiments in the Cold War. E. Welsome. The Dial Press (Random House), New York, 1999. 580 pp. \$26.95 hc
ISBN 0-385-31402-7

Plutonium Metallurgy at Los Alamos, 1943–1945: Recollections of Edward F. Hammel. E. F. Hammel. Los Alamos Historical Society, Los Alamos, N.M., 1998. 185 pp. \$20.00 pb ISBN 0-941232-20-4

The Principia: Mathematical Principles of Natural Philosophy. I. Newton (translated from the Latin by I. B. Cohen, A. Whitman, J. Budenz). Preceded by "A Guide to Newton's Principia," by I. B. Cohen. University of California Press, Los Angeles, 1999. 974 pp. \$75.00 hc (\$35.00 pb) ISBN 0-520-08816-6 hc (0-520-08817-4 pb)

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