

discussion of general principles all the way to the scheme for the detection of hypothetical magnetic monopoles.

At the end of each chapter, there is a set of excellent "real-world" problems.

One final criticism: The author has a tendency to make flat assertions without detailed justifications or derivations. This would not be so bad, if there were adequate references given to sources of more detail. Although there are references at the end of each chapter, it is often unclear which reference one should consult, and many questions fall outside the scope of the references given. I believe any instructor assigning Kadin to students should personally have a copy of van Duzer and Turner, which offers very detailed references.

HERBERT KROEMER

*University of California
Santa Barbara, California*

Einstein's German World

Fritz Stern

*Princeton U. P., Princeton, N.J.,
1999. 335 pp. \$24.95 hc
ISBN 0-691-05939-X*

The title—and the author—of Fritz Stern's *Einstein's German World* might lead a reader to expect an authoritative, exhaustive account of the topic, similar to well-known books like Allan Janik and Stephen Toulmin's *Wittgenstein's Vienna* (Touchstone, 1974). Yet, German-born Fritz Stern, a recent winner of the German publishers' prestigious Peace Prize, approaches the topic with far less ambition. Rather than giving the detailed facets of an enormously rich period of middle European culture in the first decades of the twentieth century, he assembles a small series of fine, mostly previously published essays on eminent personalities surrounding Albert Einstein in pre-Hitler Germany, and some considerations illuminating the changes that followed each of the two world wars. Einstein serves as the central point of reference.

To characterize Einstein's Germany, the author profiled Paul Ehrlich, the founder of chemotherapy, and four of Einstein's special friends: Max Planck, the senior colleague and first active supporter; Fritz Haber, the chemist; Walther Rathenau, the industrialist and politician; and Chaim Weizmann, Zionist, scientist and politician and the only non-German treated. The strength of these portraits does not lie so much in

revealing new features in the professional biographies, but rather in bringing out personal attitudes of the portrayed, their relations to friends and colleagues, and their social embedding. So, while we learn nothing about Planck's physics in the epoch considered, Stern does tell us how he dealt with delicate situations in the Germany of World War I and the Nazi epoch.

In the longest (and strongest) chapter, on Haber and Einstein, the author draws on new material to depict sympathetically his (Stern's) godfather, Haber, the scientist who organized both civil and military efforts in Germany during World War I. By contrast, Stern takes the information on Einstein's life and science from known sources. In the case of the social revolutionary Rathenau and the Zionist Weizmann, he restricts himself to describing their political motivations.

Stern emphasizes the role of World War I as the turning point from "the promise [for Einstein] of German life" to "the consequent terrors." Thus he argues that the responses of some German historians prepare the later Nazi ideology. The final chapters dealing with post-World War II Germany (problems of reunification of the two Germanys, the Goldhagen controversy—whether all Germans were Hitler's obedient helpers—and the German-Polish reconciliation) depict a Germany quite different from Einstein's. Still, in spite of all the troubles and miseries, the period of Einstein in Germany maintains the gloriole of a great epoch of the human spirit.

HELMUT RECHENBERG

*Max-Planck-Institut für Physik
Munich, Germany*

Quasars and Active Galactic Nuclei: An Introduction

Ajit K. Kembhavi

and Jayant V. Narlikar

*Cambridge, U. P., New York, 1999.
463 pp. \$80.00 hc (\$34.95 pb)
ISBN 0-521-47477-9 hc
(0-521-47989-4 pb)*

A quiet revolution has been occurring in the field of extragalactic astronomy. Extraordinary images from the Hubble Space Telescope and data from such high-energy astrophysics missions as the Advanced Satellite for Cosmology and Astrophysics (ASCA) and the Chandra X-ray telescope are changing the way we view the central

engines that power quasars and active galactic nuclei (AGN). At the hearts of these objects are supermassive black holes that convert matter into energy and help form enormous, galaxy-sized jets that expand outward at amazing speeds.

As researchers gain increased access to data from across the electromagnetic spectrum, some basic truths are emerging, such as the existence of massive accretion disks that store the matter needed to fuel the AGN. Yet these objects are still enigmatic; challenging puzzles include the way energy is actually extracted from accretion disks. The field is ripe for insight into what may be the ultimate physics—extreme gravity near the event horizon of a black hole.

Following these strides in AGN research, new books that seek to summarize the state of current research are welcome. Ajit Kembhavi and Jayant Narlikar's *Quasars and Active Galactic Nuclei* is one such book. It is written more from an observer's than a theorist's perspective, although the authors handle both equally well. Intended as an introduction to quasars and AGN, this book is targeted at the advanced undergraduate or beginning graduate student seeking a basic knowledge of the field. As such, it is more advanced than Bradley Peterson's *An Introduction to Active Galactic Nuclei* (Cambridge, 1999) but does not contain the rigid mathematics of more advanced texts such as Julian Krolik's *Active Galactic Nuclei: From the Central Black Hole to the Galactic Environment* (Princeton, 1999). The first third of *Quasars and Active Galactic Nuclei* easily meets its authors' objectives. Within a historical background and cosmological framework, and with an easy-to-read style, the authors state their ideas clearly, introduce important physical and astronomical concepts, and explain their relevance to AGN. In particular, I found the discussion of radiative processes refreshing.

The rest of the book is written in review style, with its primary emphasis on quasars and secondary emphasis on other AGN. The authors present a detailed discussion of quasar surveys, multiwavelength properties, and recent observational results.

The book succeeds as a comprehensive account of quasars, but misses its mark as an up-to-date account of active galaxies. In particular, the section on x-ray astronomy does not accurately reflect the state of the field. A minor problem is that some subjects are covered in almost grueling detail