An Insider's View of Soviet Nuclear Research

History of the Soviet Atomic Industry

Arkadii Kruglov
(Translated from Russian by Andrei Lokhov)
Taylor & Francis, New York, 2002. $95.00 (282 pp.).
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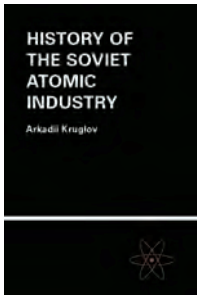
Reviewed by David Holloway

Arkadii Kruglov worked for many years in the Soviet nuclear industry. When his book *History of the Soviet Atomic Industry* was published in Russia in 1994, it provided the first detailed account of how the Soviet atomic industry had been set up.



Although Kruglov's book does touch on developments after 1950, most of it is devoted to the years leading up to the first Soviet atomic bomb test in August 1949. Unfortunately, the translation is rough, and the manuscript did not receive the careful editing it deserves; and one could certainly argue with some of Kruglov's judgments. But this is an essential work of reference on past decisions whose consequences we still live with, and it remains the single most comprehensive report on the Soviet atomic industry.

After providing brief introductory chapters on nuclear research in the Soviet Union before and during World War II, Kruglov's book describes the creation and early operation of the country's key nuclear facilities. There are chapters on the first experimental reactor, the first plutonium production reactor, the first reprocessing plant, and the first plant for producing nuclear explosives. In addition, the book covers the first Soviet atomic bomb test and the Semipalatinsk test site in Kazakhstan, the first uranium enrichment efforts, the first heavy-water reactors, the supply of uranium for the nuclear project, and the production of uranium metal and other materials for the atomic industry. The final chapter deals with nuclear and radiation safety, a topic Kruglov also discusses throughout the book.

In the 1930s, nuclear physics was a strong discipline in the Soviet Union, and Soviet physicists, like their colleagues elsewhere, greeted the discovery of nuclear fission with excitement. Nuclear research halted following the German invasion on 22 June 1941. In September 1942, Soviet leader Joseph Stalin authorized the renewal of nuclear research to see whether an atomic bomb was feasible. Soviet intelligence gathered remarkable information about the progress of research in Britain and, later, in the US. As a result, Igor Kurchatov, the scientific director of the Soviet atomic project, had a clear grasp of the progress the US was making.

Soviet nuclear research expanded during the war, but it was only after the atomic bomb was dropped on Hiroshima that Stalin made the decision to convert the project into a high-priority industrial effort. On 20 August 1945, Stalin established the Special Committee on the Atomic Bomb. Lavrentii Beria, who also oversaw the Soviet police apparatus, chaired the committee. Stalin was determined that the Soviet Union have the bomb as quickly as possible, and he put enormous pressure on the country's atomic industry to achieve results quickly.

In his book, Kruglov emphasizes the urgency with which the Soviet atomic industry was established and shows how resources were mobilized to build up the industry. The text provides figures on the numbers of people who worked at the different sites—hundreds of thousands in the late 1940s, if one includes building workers, many of whom were prisoners. The author discusses how Soviet intelligence contributed to different parts of the industry and writes about the role of German scientists and engineers, who were mainly involved in work on uranium enrichment. Kruglov also describes the urgency with which technological choices and design decisions had to be made.

Kruglov does not question the need for urgency: He takes it as a given that the Soviet Union had to acquire the atomic bomb as quickly as possible. He does, however, make it clear that the urgency of the project carried a heavy cost. He describes in some detail the start-up problems with the plutonium production reactor and the gaseous diffusion uranium enrichment plant. More important, Kruglov shows how the determination to achieve results quickly led to damaging effects on the environment and neglect of the health and safety of workers.

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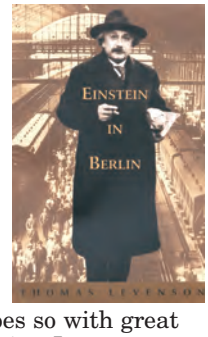
Einstein in Berlin

Thomas Levenson
Bantam Books, New York, 2003. $25.95 (486 pp.).
ISBN 0-553-10344-X

When Albert Einstein arrived in Berlin in the spring of 1914, he was at the height of his intellectual powers. Not yet a household name, he was already a force to be reckoned with in the European physics community. Five years would pass before he achieved true celebrity status with partial confirmation of the general theory of relativity in 1919, and almost 20 years would go by before his 1932 departure from the city with which his name has become inextricably linked. Thomas Levenson situates Einstein in that German metropolis, and he does so with great intimacy and sensitivity. In contrast to earlier biographies, *Einstein in Berlin* is the story of a man and a city. The book is a novel approach to Einstein historiography that, for the general reader, magnifies interest in the physicist's life.



Levenson begins with a brief prologue and first chapter on Einstein's life before he arrived in the city. For the most part, the account is straightforward and accurate. Some factual errors and misunderstandings, however, have crept in. The most significant error Levenson has made is perpetuating the myth that Einstein's work in 1905 arose completely out of the blue. Because of the rediscovery, almost two decades ago, of the letters to his classmate and future wife, Mileva Marić—