

Atomic Energy: The View from France

Atomic Rivals. BERTRAND GOLDSCHMIDT. Rutgers University Press, New Brunswick, NJ, 1990. xviii, 372 pp. + plates. \$39.95. Translated from the French edition (1987) by George M. Temmer.

Bertrand Goldschmidt, who began his career as a laboratory assistant to Marie Curie, was a member of the wartime Anglo-Canadian atomic research group, and later became head of the division of external affairs of France's Commissariat à l'Energie Atomique (CEA) and French representative on the board of governors of the International Atomic Energy Agency, has added a new book to his already impressive list of publications on the world of the atom. As he describes *Atomic Rivals* it is "the testimony of an eyewitness to the pioneers and beginnings of the French atomic adventure." It certainly is that, but it is much more. Drawing on archival materials as well as the author's own recollections, *Atomic Rivals* is a rich, captivating, and insightful journey through the origins and early development of atomic energy generally. It provides not only a non-Anglo-American view of American, British, Canadian, and French atomic relations during the early 1940s but also a vivid and often entertaining perspective on many illustrious and lesser-known personalities associated with the development of the atom in that time.

In a lively and compelling style, Goldschmidt traces the development of the nuclear age with particular emphasis on the period between 1939 and 1945, during which, as he says, "almost everything that related to the future of atomic energy was discovered, undertaken and decided." There are few, if any, startling revelations, but the book adds substantially to our understanding of events surrounding the discovery of fission and the efforts, spurred by the outbreak of war, to move quickly to master its potential military applications. Particular attention is given to the flight of French scientists to England and then to Canada and to the difficulties surrounding British-supported but American-opposed efforts to establish a program enabling them to contribute meaningfully to the nuclear enter-

prise. The famous episode of the removal from France of the precious stock of Norwegian heavy water, needed as a moderator in conducting controlled atomic reaction experiments, so as to prevent it falling into German hands at the time of France's capitulation, is recounted with all the excitement of a good espionage story. There is for the first time a detailed discussion of the contribution and complex personalities of two of Frédéric Joliot's closest collaborators in splitting the uranium nucleus, Hans von Halban and Lew Kowarski. The former was instrumental in pressing for the creation of the multinational scientific effort in Canada; the latter directed the construction of the Canadian team's first experimental heavy water pile, "ZEEP." Relations between the two were never easy.

Goldschmidt also gives an accounting of the reassembling of the French prewar team in postwar France and of the beginnings and early evolution of the age of the international atom. In doing so he offers the reader a sense of intimacy with those events and an insight into the cross-currents of science, technology, and politics. Nobody, even specialists in the history of the atomic age, will come away from this book without an increased understanding of the events and personalities that dominated this extraordinary episode of human history.

In a brief discussion of the origins of the French bomb, a subject covered in detail in this reviewer's *Atomic Energy Policy in France Under the Fourth Republic*, Goldschmidt recounts how the French team in Canada alerted General de Gaulle to the U.S. atomic bomb project during de Gaulle's visit to Ottawa in July 1944 in contravention of the commitment to secrecy they had made to the British. The actual bearer of the news, Jules Guéron, was a seconded member of the Free French, unlike the other French team members, who had temporary status as British civil servants, but the group collectively drafted the content of the message. The justification was the sense of being treated by the Americans as "potential traitors." On more than one occasion Goldschmidt recalls, with relish, that the true villains in this regard turned out to be Alan

Nunn May and Klaus Fuchs—British nationals—both of whom were received by General Groves in the center of bomb project activities while the "unreliable" French were kept out.

Goldschmidt also deals with the unwillingness of Joliot, as head of the CEA, to lend his expertise for military nuclear purposes, while noting the absence of pressure on Joliot or the CEA to do so in the early years of the latter's existence; the decision in 1951, without any serious discussion of turning it to military ends, to produce plutonium; and the eventual decisions of the Mendès-France and Mollet governments to proceed with a prototype explosive device. Goldschmidt argues that from the beginning, as reflected in the filing in France and Great Britain of patents for a "device for energy production" and procedures for "stabilizing" such a device, France's main focus was the production of atomic energy, an effort that was remarkably successful, leading her to be the country in which nuclear energy today makes the largest contribution in the world to electricity production.

In a discussion of the Baruch Plan, Goldschmidt makes the interesting observation that the origin of the non-proliferation regime that underlies the effort of the last three decades to control the spread of nuclear weapons can be traced to a 1947 Soviet initiative that called for retaining the principle of national authority over nuclear activity subject to international control—a proposal that was rejected by the very states that subsequently became its ardent promoters and advocates, particularly the United States, which at the time dismissed it as "completely unrealistic." Goldschmidt remarks that the Soviet plan would have been even more comprehensive than what we have today, as all uranium mines would have been subject to international control and the Soviets would have submitted themselves to international inspection. Of course, that proposal was made on condition that the United States first give up its nuclear weapons.

For this reviewer, who has known the author for 30 years and has read several of his works in French, this book reads like vintage Goldschmidt. The translation is excellent, capturing all the nuance of Goldschmidt's wry humor. In short, this is an autobiographical tour de force and a book that should be read by anyone interested in the origins of the modern nuclear age, the relations of Western states in the wartime period, or the general history of science.

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