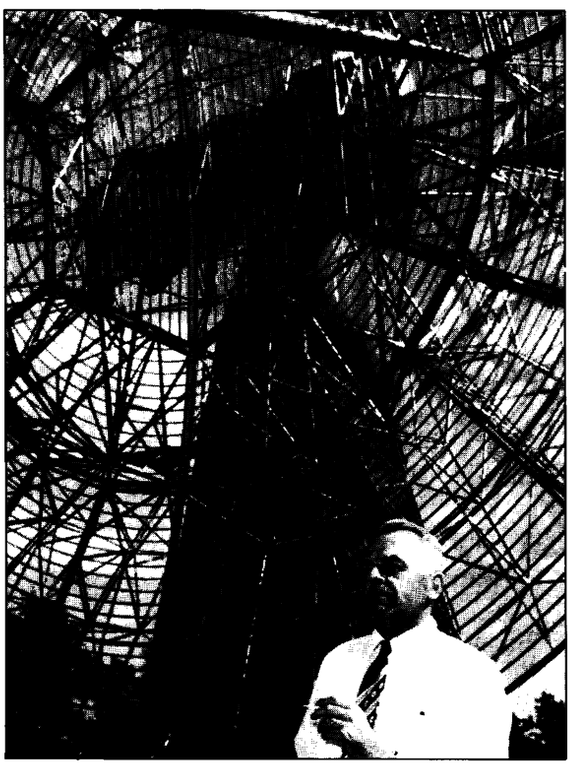
Galactic Enthusiast

The Man Who Sold the Milky Way. A Biography of Bart Bok. DAVID H. LEVY. University of Arizona Press, Tucson, 1993. xiv, 246 pp. + plates. $35.

Bart Jan Bok, a prominent observational astronomer and student of galactic structure, was certainly one of the most memorable personalities in 20th-century astronomy. David Levy's brief biographical romance, *The Man Who Sold the Milky Way*, amply bears this out and can be recommended for the focused impressions it provides of Bok's life.

Though Bok was too young to be a student of J. C. Kapteyn, leader of the Dutch school of statistical astronomy, he was much influenced by Kapteyn's writings and in the mid-1920s trained under his student Jan Oort at Leiden and then under Pieter van Rhijn at Groningen. Bok was typical of the young Dutch astronomers who emigrated to the United States in the second and third decades of the century; his goal was to exploit the observational resources available here for the study of the structure and kinematics of stellar systems. Indeed, along with A. van Maanen, W. Luyten, and P. van de Kamp among others, Bok helped to build the modern specialty of galactic structure research, combining the mathematical training and physical insight of the Kapteyn school with the programmatic data-gathering capabilities of American observatories.

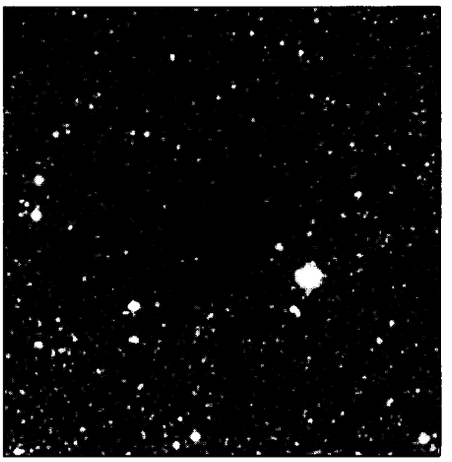


"Bart Bok next to the Agassiz telescope. Circa 1956." [From *The Man Who Sold the Milky Way*]

Bok's blunt and often abrasive style, tempered by his exuberance about astronomy and general love of life, comes through in Levy's biography. Accounts of his whirlwind marriage to the astronomer Priscilla Fairfield, whom he met at the 1928 General Assembly of the International Astronomical Union in Leiden, of his turbulent years at Harvard as a member of a highly capable yet idiosyncratic staff under the quixotic Harlow Shapley, and of his fascination with radio astronomy and subsequent disappointments at Harvard, which ended in his departure for Australia, map out a career laced with political intrigue, scientific ardor, and a zest for controversy. Bok's main legacy, however, seems to lie in his teaching, both public lecturing and at the undergraduate and graduate levels. Anecdotes throughout the biography support the theme suggested by the title—Bok's promotion of astronomy—as do numerous testimonials gathered by Levy through interviews.

Levy, best known as a writer, popular lecturer, and discoverer of comets, employs interviews as his primary documentation, mainly ones conducted with Bok in his last years (he died in Tucson in 1983 at age 77), as well as with students, family, and friends. Better than many writers of impressionistic history, Levy supplements his interviews with a scattering of correspondence and secondary source materials, and though he struggles for independence from his subject, ultimately he is captured by Bok, letting most of the testimony stand untested.

Though Levy's biography is reasonably accurate in the aggregate, there are problems with the details. These will be of concern mainly to historians, though astronomers will wince here and there at the gaffes. The author seems uneasy dealing with technical matters; for instance, he seems not to be able to decide if radio telescopes "see" or "hear" and seriously distorts the *Astrophysical Journal*'s reception of Meghnad Saha's early work. And though there are detailed descriptions of Bok's observing routine, there is little attention to his technique or style that would make the description useful for the historical record. Better editing and proofreading would have caught blunders such as textual material repeated word for word in an endnote.



"Barnard 335, a classic Bok globule. The globule is about four arcminutes in diameter, about a seventh of the diameter of the full moon. Bok discovered that globules represent an early stage in the formation of stars. Photograph by Bart J. Bok, using the 90-inch reflector at Steward Observatory." [From *The Man Who Sold the Milky Way*; courtesy of University of Arizona Library, Special Collections]

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Hörbigerism

Universal Ice. Science and Ideology in the Nazi State. ROBERT BOWEN. Belhaven, London, 1992 (to be distributed in the U.S. by Wiley, New York). xiv, 189 pp. + plates. $59 or £39.50.

In 1912 a successful Austrian inventor and engineer, Hanns Hörbiger (1860–1931), published *Glacial-Kosmogonie* ("The Glacial Cosmogony") in collaboration with Philipp Fauth (1867–1941), a teacher and amateur astronomer. This book outlined a heterodox general theory of astronomy and the earth sciences that Hörbiger had been working out since the 1880s—namely, that the universe was largely made of water ice and that ice infall profoundly affected the Earth and its climate. Hörbiger's cosmogony, which came to be known as the *Welteislehre* (world ice theory) or WEL, also claimed that the Milky Way was largely a ring of ice crystals surrounding the solar system. Using evidence from the Bible and traditional mythologies, plus a doubtful command of geology, Hörbiger further asserted that a number of icy moons had spiraled into the Earth, leading to a series of global catastrophes. In the interwar years, the WEL acquired many lay adherents (but little scientific support) in Central Europe, Britain, and

Vignettes: Public Opinion

I saw the results of a poll conducted by the South Carolina Department of Health and Environmental Control (DHEC). . . . One startling conclusion of DHEC's poll was that the group of people trusted the most on environmental issues was the medical profession. Nurses and doctors received the highest rating. I had assumed that scientists in general and ecologists in particular would have been the most credible groups. I learned the explanation for this apparent anomaly when I called the DHEC unit that organized the survey: Neither ecologists nor scientists were listed as choices on the survey.

—*Whit Gibbons*, in *Keeping All the Pieces: Perspectives on Natural History and the Environment* (Smithsonian Institution Press)

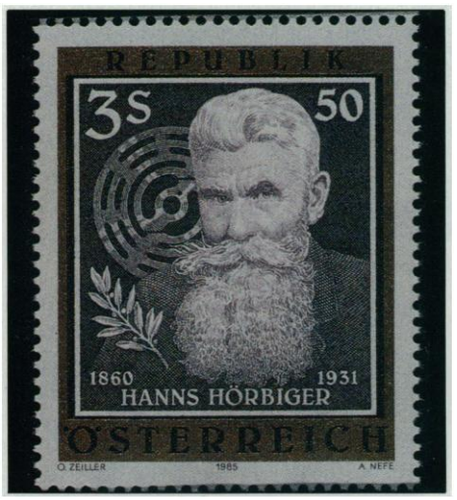
One may seek comfort in the fact that even though only less than half of the U.S. adult population believes in the evolutionary descent of human beings from earlier species, and even though half has trouble finding one side of a square when given one of the other sides, the U.S. public at large reports to pollsters a greater level of belief in the potential of science and technology as a force for the good (at least in the abstract) than equivalent tests have shown for other major industrial countries, such as France and Japan.

—*Gerald Holton*, in *Science and Anti-Science* (Harvard University Press)

the United States. The theory reached its apogee during the Third Reich, when the Sturmabteilung (SA) or Brownshirts promoted it as compatible with ancient Nordic myths and National Socialist ideology. "Hörbigerism" lingered on after World War II, only to die out in the 1970s.

Robert Bowen's *Universal Ice* is the first historical study of this obscure, fascinating, and potentially illuminating topic. Unfortunately, that is the only good thing that can be said about this book. Most of the space it devotes to the WEL consists of two badly written and opaque summaries: first of Hörbiger and Fauth's views, then of a 1937 book by a Nazi pseudoscience popularizer. Bowen does not cover the numerous other "Hörbigerist" authors and publications listed in his bibliography, nor does he provide any proof for his assertion that the theory acquired over a million adherents worldwide. Instead, a large fraction of this slim book is given over to ramblings on topics such as the fate of the Mormons in the Third Reich or the relationship of Martin Heidegger to the Nazis.

Even the relevant parts of *Universal Ice* are terribly flawed. Bowen, a geologist, apparently researched the book in isolation from the disciplines of history and history of science. Notwithstanding a large and subtle literature on National Socialism, he depicts "the Nazis" as a monolithic force with a coherent ideology. He does not seem to understand that the SA's endorsement of the WEL in the mid-'30s does not by any means indicate endorsement by the National Socialist movement as a whole or by the state. The SA was politically impotent after the bloody purge of June 1934, and the Third Reich was a heterogeneous collection of competing Nazi organizations and state bodies. Bowen also provides no evidence to back his claim that Hitler and Himmler were adherents of the WEL. In spite of attempts to depict the WEL as "malignant" and more influential than Lysenkoism in the Soviet Union, he does not prove that the theory was anything but a minor phenomenon in the Third Reich. Equally unconvincing is his conjecture that Hörbiger would have been "a powerful scientific overlord" (p. ix) had he lived.



Hanns Hörbiger. "The Austrian Post Office issued this commemorative stamp in 1985 to mark the 125th anniversary of Hörbiger's birth. The design incorporates a diagram of his patent valve." [From *Universal Ice*; National Postal Museum, Smithsonian Institution, Washington, DC]

This hand-wringing notwithstanding, *Universal Ice* actually bolsters comforting myths about science in Hitler's Germany by depicting "the Nazis" as crackpot persecutors of the scientific community. Bowen gives the usual example of "Aryan physics," which he characterizes as "supported by" the physicists Philipp Lenard and Johannes Stark (p. 115), its two main protagonists. In fact, Lenard and Stark were discredited by 1941, and the physics community had made its peace with the regime to help the war effort and protect itself. In spite of real persecution and the efflorescence of some pseudoscientific theories, the dominant story of science in the Third Reich was one of willing accommodation with National Socialism and its policies.

Finally, Bowen misses a valuable opportunity to examine "Hörbigerism" as a case in the history of heterodox scientific theories. The author appears naively confident in the existence of a fixed and easily determined boundary between science and pseudoscience or, as he would have it, "real" and "false" science. Historians and sociologists of science have shown this boundary to be unstable, negotiable, and permeable. Some theories and disciplines, such as evolutionary thought, have gone from pseudoscience to science, whereas others, such as eugenics, have moved in the opposite direction. Bowen could also have compared the history of the WEL with that of Velikovsky's theories or Lysenkoism, instead of merely mentioning them in an unconvincing attempt to assert the greater importance of "glacial cosmogony." All this is rather unfortunate, since the history of Hörbiger's theory is potentially both informative and entertaining.

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Nuclear Magic

Simple Models of Complex Nuclei. The Shell Model and Interacting Boson Model. IGAL TALMI. Harwood, Langhorne, PA, 1993. xx, 1074 pp., illus. $120 or £68; paper, $52 or £30. Contemporary Concepts in Physics, vol. 7.

Nuclear spectroscopy physics has enjoyed a renaissance in the last 20 years, owing mainly to the development of the interacting boson model (IBM). In this model the low-lying collective eigenstates of nuclei are composed primarily of monopole and quadrupole bosons, and these eigenstates