

POW!***Fermilab: Physics, The Frontier &***

Megascience, Lillian Hoddeson, Adrienne W. Kolb & Katherine Westfall and published by the University of Chicago Press (2008), pp. xi + 497, \$45.00 hardback.

In the 1989 movie “Field of Dreams,” the protagonist, an Iowa farmer, hears a voice that says: “If you build it, he will come.” This allegorical film mimics the true story of the development of the premier physics research facility in the United States and one of the world’s most famous centers for high-energy physics research. It was a Wyoming-bred individual, Robert Wilson, who thought of himself as a cowboy, who did just that in the plains of Illinois. This is the story of the development of Fermilab from its infancy to the facility it is today.

The three authors lay out in great detail the history of Fermilab, punctuated by numerous photographs, drawings, and an extensive footnote and bibliography section. This book is divided into three segments: the struggle for the development of Fermilab, the Wilson era, and the Lederman era. Each is fascinating in its own right and can be read separately.

The history behind the selection of the site in Illinois reads like a novel since it involves intrigue and human foibles. Scientists are often looked at as being above the ordinary faults of the population at large. However, the authors document the difficulties arising when professional jealousy and politics play a part in the decision-making process. Set against the background of the social and cultural problems plaguing the country in the 1960s, the possibility of selecting a national laboratory site in Illinois sparked spirited debate both in the physics community and in Congress. Wilson’s plan for the accelerator was questioned by the Joint Committee on Atomic Energy of the Congress as being second rate, especially since there was a proposal for a 300-GeV accelerator at CERN. The debate was settled and Wilson was named the laboratory head with the acceptance of his design for an expandable accelerator. His dream to have a community constructed on the facility grounds allowing for interaction among the staff to encourage scientific creativity was deemed as being impracticable. His influence on the building structures, architecture, and management are seen as a monument to his vision.

The Wilson era began in 1969 and concluded in 1978. During that time success came slowly, but when it did a new age of discovery about the nature of matter dawned. The achievements at the NAL were largely due to the management style of Robert Wilson, who inspired the scientists to probe deeper into the heart of matter than ever before. His contributions as a researcher, innovator, and director of the NAL are forever etched in the history of subatomic physics.

Leon Lederman continued the quest for excellence in a facility that was to evolve into a new role in the scientific community. Not only did he lead the NAL into a productive pe-

riod of fundamental research but he added the dimension that was close to his heart—education. It is well documented by the authors that Lederman’s intense desire to bring science to the general public and to children in particular was defined by his own educational experiences. His establishment of science outreach programs, programs for the gifted and talented, and many other forms of opportunities for students and teachers was a model for others to follow. He prepared the facility to make a transition from pure science research to one that dealt with larger social implications. The result was the Loma Linda Medical Accelerator to treat cancer patients, based on an early idea of Wilson’s to treat them with protons. His tenure continued through turbulent times and finally he stepped down in 1989.

The story concludes with the disappointment of losing the bid to construct the SSC, the naming of a new director, John Peoples, Jr., and the discovery of the top quark. So much is packed into the book that in some instances there is some information overload, and the fact that the list of Fermilab Approved Experiments ends in 1992 is somewhat puzzling. Overall, this is a very good history primer for anyone who wants to know if physics and the money spent on experimentation to unlock the secrets of nature are worth the cost.

Raymond Polomski, reviewer

RiverVale, NJ 07675;
R7429@optonline.net

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MicroReviews by the Book Review Editor

- ***Guidebook for the Scientific Traveler: Visiting Astronomy and Space Exploration Sites across America***, by Duane S. Nickell and published by Rutgers University Press, Piscataway, NJ 08854-8099, pp. xiii + 245 (2008), \$21.95 paperback.

After you have visited all the Major League baseball stadiums and are looking for something else, map out a new trip (even if you must do it in your armchair) using this extremely valuable guide to astronomy and outer space sites across the country.

DOI: 10.1119/1.3274381

- ***How to Guard an Art Gallery and other Discrete Mathematical Adventures***, by T. S. Michael and published by The Johns Hopkins University Press, Baltimore, MD 21218-4363, pp. xi + 257 (2009), \$25.00 paperback.

Reminiscent of the columns of Martin Gardner, the author, with a little algebra, and geometry discretely starts with pizza, moves through baseball batting averages, helps prevent crime, works on calendars, solves Bruce Willis’ water problem, Can you order 43 McNuggets?, and a little cryptography to present seven great chapters that make discrete mathematics much more relevant to the real world. DOI: 10.1119/1.3274382