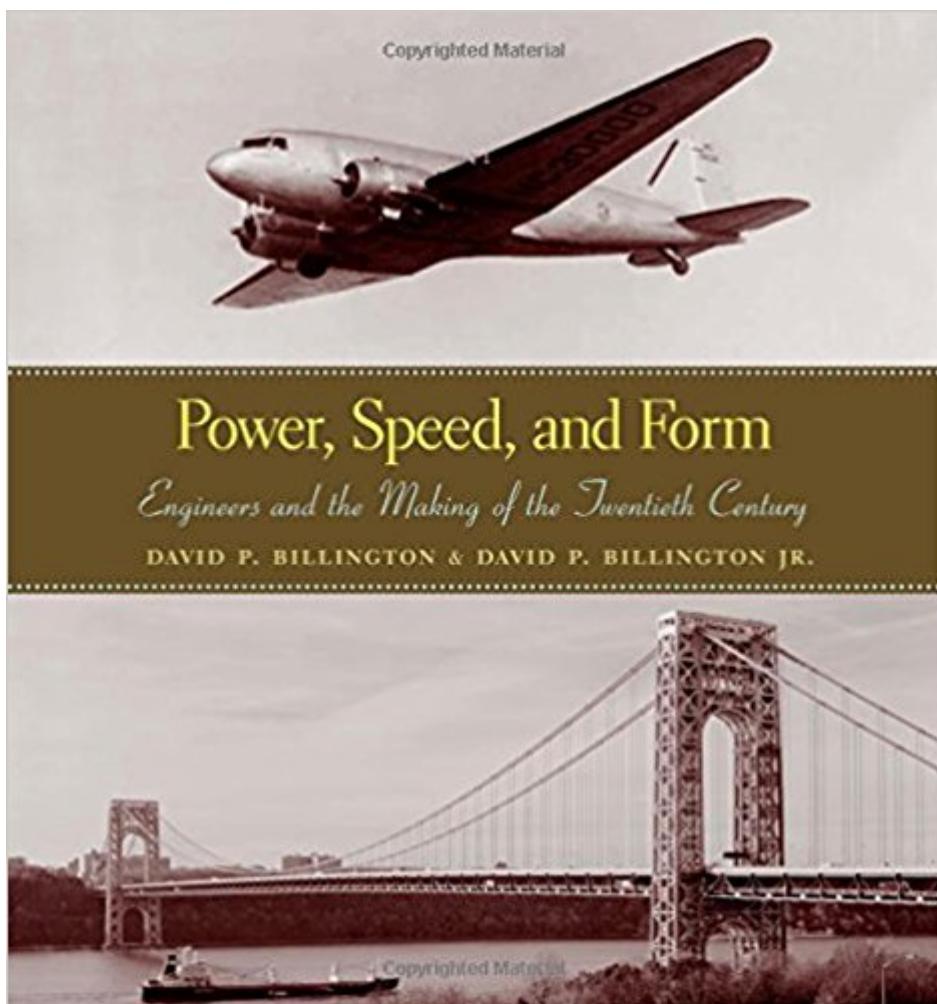


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Power, Speed, And Form: Engineers And The Making Of The Twentieth Century



Synopsis

Power, Speed, and Form is the first accessible account of the engineering behind eight breakthrough innovations that transformed American life from 1876 to 1939--the telephone, electric power, oil refining, the automobile, the airplane, radio, the long-span steel bridge, and building with reinforced concrete. Beginning with Thomas Edison's system to generate and distribute electric power, the authors explain the Bell telephone, the oil refining processes of William Burton and Eugene Houdry, Henry Ford's Model T car and the response by General Motors, the Wright brothers' airplane, radio innovations from Marconi to Armstrong, Othmar Ammann's George Washington Bridge, the reinforced concrete structures of John Eastwood and Anton Tedesco, and in the 1930s, the Chrysler Airflow car and the Douglas DC-3 airplane. These innovations used simple numerical ideas, which the Billingtons integrate with short narrative accounts of each breakthrough--a unique and effective way to introduce engineering and how engineers think. The book shows how the best engineering exemplifies efficiency, economy and, where possible, elegance. With Power, Speed, and Form, educators, first-year engineering students, liberal arts students, and general readers now have, for the first time in one volume, an accessible and readable history of engineering achievements that were vital to America's development and that are still the foundations of modern life.

Book Information

Hardcover: 296 pages

Publisher: Princeton University Press (October 22, 2006)

Language: English

ISBN-10: 0691102929

ISBN-13: 978-0691102924

Product Dimensions: 8.8 x 1 x 9.3 inches

Shipping Weight: 1.8 pounds (View shipping rates and policies)

Average Customer Review: 3.1 out of 5 stars 3 customer reviews

Best Sellers Rank: #266,322 in Books (See Top 100 in Books) #330 in Books > Engineering & Transportation > Engineering > Reference > History #497 in Books > Books > Science & Math > Technology > History of Technology #726 in Books > Books > Science & Math > Earth Sciences > Geography

Customer Reviews

The lofty wingspan of its title might suggest a lavishly-illustrated, 10,000-page exposition on planes,

trains, automobiles and skyscrapers; it's to this book's credit that it isn't. Written by an engineering professor and his son, a history Ph.D., this book is tightly focused on eight groundbreaking engineering innovations that took place between 1876 and 1939 (picking up where Billington's *The Innovators* left off), considering the function and legacy of "the electric light and power network, the telephone, oil refining, the automobile, the airplane, large steel bridges, and reinforced concrete." The methodical prose betrays an engineer's touch, and the focus is squarely on the technical, including careful illustrations and sidebars studded with charts and mathematical formulas. The Billingtons use painstaking detail in discussion of the each 20th-century invention; it seems mundane (and for engineers or technical whizzes, completely redundant), but for the lay-person seeking a basic handle on the major inventions of the time, there's a lot to like here, especially in the unadorned, refreshingly simple presentation of technical information. It's that basic solidity-substance rather than style--that makes this book a fine reference. 77 halftones, 75 line illus.

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The Billingtons' book describes the innovations from 1876 to 1939 that launched the leading technologies three-quarters of a century ago. They are the electric light and power network, the telephone, oil refining, the automobile, the airplane, the radio, large steel bridges, and reinforced concrete. The book is a sequel to *The Innovators* (1996), which covered American engineering from 1776 to 1883; the two books together explain the principal engineering ideas that helped transform the U.S. from an agrarian society in the eighteenth century to the industrial civilization it became in the twentieth century. There are explanations of Thomas Edison's inventions in the field of electric power, Alexander Graham Bell's invention of the telephone, Henry Ford's gasoline--powered Model T, the Wright brothers' airplane, and such milestones as the radio, bridges, and aerodynamics (which resulted in faster cars and planes). The book, with 77 halftones and 75 line illustrations, gives a thorough history of engineering achievements. George Cohen

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Had to get it for a class I took, most of the info is available online and the book is somewhat overpriced.

The book is in excellent condition.

In this case, you can judge a book by its cover, or at least its title. Billington takes a look at the

technologies (created just before or after 1900) which shaped the 20th century. For each he identifies the engineers who made the key innovations that made the technologies successful. The book is partially a history lesson, with mini-biographies of the people involved and a discussion of what the technology meant in the context of the time. But it also partially a simplified discussion of the engineering concepts, with useful sidebars and appendices that give about the same level of detail that you might find in a first year engineering lecture. It is interesting to see how some of the technologies interconnect, such as the telephone being a necessary precursor to the radio (for an understanding of how to carry a human voice over an electromagnetic signal). As an aeronautical engineer, I was mostly familiar with the history of the Wright brothers. Billington did a great job with that chapter, which gives me confidence that the other chapters are just as accurate and complete. The text is not dry and academic, but it does assume at least a practical familiarity with physics and engineering. You don't need to be an engineer to understand the book, but it does help. By the way, this book is not about computers or other things that we think of as "high tech" today. It's about the technologies that are so fundamental to our lives that we don't think of them, like the electrical power grid and the automobile. These had the same relationship to the world of 1900 that the internet has to the world of 2000.

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