



Review: [Untitled]

Reviewed Work(s):

The Pencil: A History of Design and Circumstance by Henry Petroski
Jeffrey L. Meikle

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specialists would ever need. He leads the reader through house shingling, windmill repair, evictions, fence mending, filling out of forms, and field inspections, day after day until the reader longs for the relative excitement of a car repair manual or an Internal Revenue Service guidebook.

Clingerman has, however, buried a few jewels. His pay was not bad—\$1,800 a year, plus an expense account, a moving allowance, and a company car. He and his family endured conditions that modern bank employees probably would not tolerate, in that U.S. National required him to leave Omaha, a thriving metropolis compared to the small town where they relocated. He walked on the wild side occasionally, when he encountered lonely—and as Clingerman would have us believe, lusty—farm wives. But the most important revelations in *Field Man* emerge from Clingerman's detailed, and often tedious, discussions of the bank's efforts to work out solutions for the benefit of both the bank and the farmers. The bank had a deep concern for those who had entrusted their savings to the bank, while maintaining a healthy sympathy for the farmers who through no fault of their own found themselves in financial difficulty. As Clingerman aptly characterized the bankers, "They were not stingy, but they were careful, men hard with a buck, and doubly so with other people's money" (p. 13).

U.S. National had written plenty of new farm loans in the 1920s to farmers who wanted to refinance their indebtedness. Clingerman does a workman-like job of explaining the process of making and maintaining those loans. When the loans started to go sour, the bank held on longer than most other institutional investors. As Clingerman explained, "Our recovery of investment objective made us wait until the open land market regained [its] price level" (p. 160). As a consequence, U.S. National had time to rehabilitate the farms and increase their resale value.

Unless readers really want to taste the wheat stalk between their teeth, however, it will not be worth a daily trek to U.S. National's farms with Clingerman to obtain those few small pearls he occasionally leaves lying in the barn.

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The Pencil: A History of Design and Circumstance. By Henry Petroski • New York: Alfred A. Knopf, 1990. xi + 434 pp. Illustrations, appendixes, bibliography, and index. \$25.00.

Reviewed by Jeffrey L. Meikle

Who has not wondered, at least as a fearlessly naive child, how they put the lead into a pencil? This question and many others less simple or obvious are answered by Henry Petroski in this fascinating, sometimes frustrating, historical essay on the evolution of the pencil and of the materials and processes

used by its makers from the sixteenth century to the present.

Petroski begins the story with an account of Henry David Thoreau meticulously listing the equipment needed for an excursion into the Maine woods and neglecting to mention the very pencil with which he scribbled his list. Even Thoreau, an experienced pencil-maker who could grab an even dozen pencils from a bin without having to count them, sometimes took the pencil so much for granted that it effectively became invisible. For Petroski, the attraction of the pencil as an object of study and thought lies in just that misleading simplicity. By revealing the actual complexity of the pencil as an artifact, and of the technical and economic systems that have formed and re-formed it over the years, Petroski intends to evoke no less than the meaning of engineering itself. Although he uses such terms as case study, paradigm, and metaphor to refer to the pencil's relationship to engineering, by the final paragraph he is describing his book as a "history of the pencil and of engineering"—two different histories, in other words, of a vastly different scale. One cannot help celebrating an author so ambitious, especially because his frankly self-confessed "idiosyncratic and quirky" approach makes for a provocative essay—if not a well-rounded cultural history (p. 416).

Exhaustively researched and engagingly written, *The Pencil* provides a definitive history of a common artifact organized around the theme that pencil-making became more efficient and useful as it evolved from an activity of secretive, tradition-bound craftsmen to one directed by scientific method in the service of business. Moving onward from 1565, the date of the first known illustration of a wooden implement for writing with graphite, Petroski describes exploitation of the Borrowdale graphite mine, which long remained Europe's only viable source, and the making of pencils by English joiners who encased solid slivers of graphite in wood. Chronicling the eighteenth-century attempts of foreign competitors to break the British monopoly by devising ways of grinding and bonding inferior graphite particles to form whole pieces of lead, Petroski distinguishes between German craftsmen who used a crude mix of graphite and sulphur, on the one hand, and a French engineer, a product of the Enlightenment, who experimented until he found a successful means of compressing and heating a mixture of graphite and clay. This engineering perspective triumphed during the nineteenth century with American mechanization of the manufacture of wooden pencil casings and German economic rationalization of the industry. Petroski carries the story through to such late twentieth century developments as plastic pencils extruded simultaneously in three distinct concentric layers. In passing, he integrates into the narrative excellent accounts of the leading pencil companies and capsule biographies of their founders and most significant figures. In addition to a recognition and ample demonstration of the mutual dependence of invention and business, the book's strong points include admirably clear descriptions of mechanical processes, an eclectic array of literary and popular references to the pencil, and a strong expressive prose as simple—and complex—as the pencil itself.

As an internal history of progressive developments in the business of pencil-making, Petroski's work is not likely to be superseded. His larger purpose

ultimately proves frustrating, however. Repeatedly mentioning similarities of thought and method required for success in both pencil-making and bridge-building (the index reveals fifteen separate page references to bridges) does not make this work a history of engineering, or of what Petroski refers to as the engineering method. As a somewhat personal essay on the meaning and purpose of engineering, *The Pencil* ironically invites comparison with David Billington's earlier bridge-based meditation on engineering, *The Tower and the Bridge: The New Art of Structural Engineering* (1983).

Unfortunately, Petroski's pursuit of his own larger context leads him to slight the larger historical contexts in which the pencil existed. To mention only one example, a reader might assume after finishing the book that only engineers, artists, and schoolchildren used pencils. But the time of the artifact's greatest development, from the late eighteenth century to the early twentieth, coincided with the expansion of bureaucracies of colonialism, of capitalism, and of war—all of which required efficient writing instruments that could be inexpensively mass-produced. Petroski's discussion of engineering by means of the pencil as a case study reveals formidable associative skills, but he chose not to employ them to make similarly broad historical associations and connections. As a work of history *The Pencil* remains too indebted to a traditional internalist approach; as an essay on what Petroski perceives as timeless dimensions of engineering, it is marked by a restless intellectual curiosity that entertains while provoking debate and stimulating a reader's own associations and connections.

Jeffrey L. Meikle is associate professor of American studies and art history at the University of Texas, Austin. He is the author of Twentieth Century Limited: Industrial Design in America, 1925–1939 (1979) and of Design in the Contemporary World (1989). He is now at work on a cultural history of plastic in America.

Control through Communication: The Rise of System in American Management. By JoAnne Yates • Baltimore, Md.: Johns Hopkins University Press, 1989. xx + 339 pp. Charts, illustrations, tables, notes, and index. \$29.50.

Reviewed by John F. Stover

In the first decades of the nineteenth century, most American firms were small affairs, managed by a family or a partnership, and serving only a local or regional market. Internal operations were generally managed by oral communication and occasional letters to span distance. As corporate America expanded in the last half of the century, most managers realized they could best capture the benefits of growing markets only by adopting a more complex communications system largely dependent on countless letters, reports, and memoranda. An expanding technology of internal communication shifted from quill pens, letter press books, and pigeonhole desks to typewriters, carbon paper, Dictaphones, stencil duplicators, and vertical files, all of which