BOOK REVIEWS

A Modern Visionary

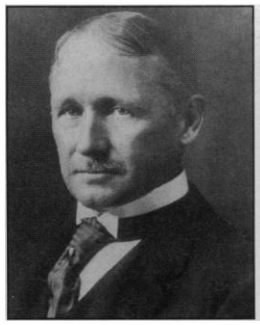
The One Best Way. Frederick Winslow Taylor and the Enigma of Efficiency. ROBERT KANIGEL. Viking, New York, 1997. xii, 676 pp., illus. $34.95 or C$45. ISBN 0-670-86402-1. Sloan Technology Series.

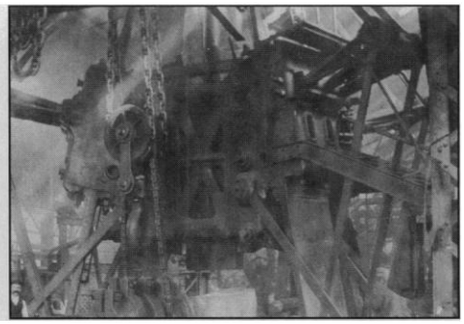
Frederick Winslow Taylor (1856–1915) is best known, as his tombstone says, as the Father of Scientific Management. In this superb book, Robert Kanigel makes the case that Taylor was much more. He was the codifier and promoter of "a system that defines our age" (p. 570). Peter Drucker has maintained that efficiency expert Taylor stands alongside Marx and Freud in "the trinity of makers of the modern world" (p. 501). And given the severe decline in the standing of both Freud and Marx in recent decades, Taylor deserves as much as anyone to be regarded as emblematic of the forces that "helped make modern life what it is—not only in the factory or even in the broader workplace but everywhere" (p. 503).

Taylor became the most prominent symbol of a broad, complex movement throughout the industrialized world to rationalize work and make it more efficient. He was hardly the first (Adam Smith, Charles Babbage, and the numerous American engineers in what was known as the systematic management movement were among many predecessors). He was not even terribly original. He mixed together time-and-motion studies, the disintegration of work into units that could be done by less skilled workers, strict control of work by the bosses rather than workers, the introduction of differential piece-rate pay systems, and the breaking up of the job of foreman into smaller units. He made the stopwatch the often hated symbol of management, and he cloaked the crusade in the mantle of science. He promised that the resulting improvements would yield greater material rewards for all and thus ease warfare between management and labor (the grave social conflict euphemistically termed "the labor problem"). His critics were legion, and they condemned his system as unscientific, undemocratic, and demeaning to workers. His critics were often right. Still, he became one of the most influential figures in the modern world.

Fred Taylor was a child of Philadelphia and New England wealth and breeding. Educated at Phillips Exeter and seemingly destined for Harvard and the law, he detoured suddenly in 1874 into four years of shop-floor apprenticeships to prepare for a career as an engineer. Afterward he always imagined that he had risen from the workplace, that he understood workers because he had been one. He was hardly of the working class, but he was smart and he was driven. Taylor learned at first hand the worlds of pattern-making, lathes, and machine-shop management. After his apprenticeships he went to work at Midvale Steel in 1878. Connections and ability soon moved him into the ranks of management, whence he reorganized work and increased productivity in the machine shop. His solid accomplishments at Midvale, at Bethlehem Steel, and elsewhere included several patents and inventions (his discoveries in high-speed tool steel dazzled the world at the Paris Exposition of 1900 and made him even richer). He became America's best-known management consultant, giving talks and publishing papers, installing portions of "our system" at a variety of businesses, spending owners' money lavishly in pursuit of technical efficiency, and becoming steadily more famous. He promoted his ideas relentlessly, encouraging a circle of disciples at home and abroad, seeing his works translated into many languages and carried around the world. His elixir proved powerful.

The idea that almost any undertaking—not just factory work—could be analyzed, broken down, systematized, organized, made more efficient and more productive, fell on increasingly fertile ground. Because materialism became the 20th century's god, almost any fashionable notion that seemed likely to improve productivity eventually came to be embraced. Taylorism and its variants and successors appealed to persons as different as conservative American executives, Lenin, Trotsky, Louis Brandeis, Mussolini, and eventually even some labor union leaders. Why? Partly because some believed his rhetoric about creating peace between capital and labor. And partly because he was right in thinking that some ways of doing things are more productive than others (though there was hardly ever "one best way"). But mostly because a materialistic civilization frequently proved willing to trade off autonomy, leisure, indeed almost anything, for economic gain. The success of market systems and the lodestar of productivity made Taylor's vision the world's. The gains, and the costs, have been great. As Kanigel concludes, Taylor took "currents of thought drifting through his own time—standards, order, production, regularity, efficiency" and created a "system that defines our age. In its





Left, "Frederick Taylor, at about fifty. Amiable and expansive Fred or biting and combative Mr. Taylor: It all depended on whether he was among friends or enemies, at peace or war, his will accepted or challenged." [From *The One Best Way*; Frederick Winslow Taylor Collection, Stevens Institute of Technology, Hoboken, NJ] Right, steam hammer at work at the Midvale Steel Company, where Taylor began work in 1878. "Taylor designed this forging hammer, which delivered a 75-ton blow, in the mid-1880s. In color, the white cylindrical mass at the bottom would be yellow with heat." [From *The One Best Way*; Frederick Winslow Taylor Collection, Stevens Institute of Technology, Hoboken, NJ]

Left, "Henry Noll, or Knoll, or Knolle, but to the world best known, through Taylor's tale of him in *The Principles of Scientific Management*, as 'Schmidt.' He is probably the most famous laborer in the world, generations of business students having heard how Taylor got him to carry 47 tons of pig iron a day." [From *The One Best Way*; Frederick Winslow Taylor Collection, Stevens Institute of Technology, Hoboken, NJ]

thrall, and under its blessing, we live today" (p. 570).

This portrayal of Taylor is a full one, balanced, critical, adroitly placing events and individuals in the story in a wider context. The writing is lively and evokes the past skillfully. *The One Best Way* is a first-rate biography done in a thoroughly professional manner, and it stands near the top of the enormous literature on Taylor and his followers. Unlike Sudhir Kakar's 1970 psychobiography of Taylor, it does not seek to peer deeply into his psyche. Still, Taylor's character, good and bad, emerges clearly from the story. Both the man and the times are well drawn.

Frederick W. Taylor and his movement are not very lovable, or comforting, subjects. At once an utterly sincere martinet and an unscrupulous huckster, Taylor offered the world Faustian bargains. Kanigel's convincing argument that we accepted them eagerly is yet another demonstration that self-knowledge is always bad news.

Glenn Porter
Hagley Museum and Library, Wilmington, DE 19807, USA

Vignettes: Laughter

Laughter is noisy not because it releases pent-up psychic energy but so that others may hear it; it is a form of communication. Second, laughter is involuntary for the same reason that other emotional displays are involuntary . . . . The brain broadcasts an honest, unfakable, expensive advertisement of a mental state by transferring control from the computational systems underlying voluntary action to the low-level drivers of the body's physical plant.

—*Steven Pinker*, in *How the Mind Works* (Norton)

Laughter is probably most common not in humorous contexts but in uncomfortable social contexts, where it displays both a nonaggressive stance and a kind of group assent. But laughter is not just an expression of emotion. It is a public symptom of engaging in a kind of mental conflict resolution. For this reason, whereas continuous crying is taken as a symptom of a seriously depressed state, continuous laughter is seldom interpreted as a sign of continuous elation, but rather as a symptom of a disturbance of reason, such as confusional or delusional states, and the associated conflicted emotions.

—*Terrence W. Deacon*, in *The Symbolic Species: The Co-evolution of Language and the Brain* (Norton)

Browsings

Equipping Science for the 21st Century. John Irvine *et al.*, Eds. Elgar, Lyme, NH, 1997. xxvi, 604 pp., illus. $120. ISBN 1-85278-606-x. Based on a workshop, Amsterdam, April 1992.

An international group of scientists and others considers needed investments in equipment and facilities in the United States, Britain, Canada, Germany, the Netherlands, Sweden, France, and elsewhere, with case studies of several disciplines, descriptions of current and prospective equipment programs, and considerations of equipment-sharing, the contributions of industry, and the determination of investment priorities.

From Kant to Hilbert. A Source Book in the Foundations of Mathematics. William Ewald. Clarendon (Oxford University Press), New York, 1996. In two volumes. xxxiv, 1340 pp., illus. $375 or £195. ISBN 0-19-853271-7.

Selections from the writings of 28 mathematicians from (the book's title notwithstanding) George Berkeley in 1707 to Nicolaus Bourbaki in 1948, with brief introductions for each author.

Introduction to Geomagnetic Fields. Wallace H. Campbell. Cambridge University Press, New York, 1997. xii, 290 pp., illus. $69.96 or £45. ISBN 0-521-57193-6.

A treatment "designed for those who want a condensed and less techinical coverage of geomagnetic topics than is afforded by existing textbooks."

Making Faces. Using Forensic and Archaeological Evidence. John Prag and Richard Neave. Texas A&M University Press, College Station, 1997. 256 pp., illus., + plates. $39.95. ISBN 0-89096-784-9. Texas A&M University Anthropology Series, vol. 1. Published in the UK by British Museum Press, £18.99, ISBN 0-7141-1743-9.

An archaeologist and a medical artist describe a "muscle-by-muscle and feature-by feature approach" to facial reconstruction as used to reproduce the countenances of mummified ancient Egyptians, kings from Greek antiquity, British bogpersons, and a living subject known to them only from cranial scans.

The National Gem Collection. Jeffrey E. Post. Photographs by Chip Clark. National Museum of Natural History, Smithsonian Institution, in association with Abrams, New York, 1997. 144 pp., illus. $39.95 or C$55. ISBN 0-8019-3690-9.

Color photographs of many of the gems and their settings, with text giving relevant information about mineralogy, gemology, and history, published to coincide with the 20 September reopening of the Smithsonian's gem and mineral hall.

Science in the Twentieth Century. John Krige and Dominique Pestre, Eds. Harwood Academic (Gordon and Breach), Amsterdam, 1997 (U.S. distributor, International Publishers Distributor, Langhorne, PA). xxxvi, 941 pp., illus. $120, £80, or ECU 100. ISBN 90-5702-172-2.

Taking into account the varied meanings attached to the term "science," 50 historians and others offer essays on topics encompassing policy and patronage, the "research dynamics" of particular disciplines and subdisciplines, experimental practices and instrumentation, and national and regional establishments.

Selected Topics in the History of Biochemistry. Personal Recollections, vol. 5. Rainer Jaenicke and Giorgio Semenza, Eds. Elsevier, New York, 1997. xiv, 473 pp., illus. $200 or NLG320. ISBN 0-444-82658-0. Comprehensive Biochemistry, vol. 40.

Memoirs by S. Lifson, M. F. Perutz (on David Keilin), E. C. Slater, A. A. Krasnovsky, G. Schatz (on Efraim Racker), B. G. Malmström, R. Singelton, Jr. (on Harland Goff Wood), and S. V. Perry.

Thinking Styles. Robert J. Sternberg. Cambridge University Press, New York, 1997. xii, 180 pp. $21.95 or £16.95. ISBN 0-521-55316-4.

A psychologist proffers a taxonomy of thinking styles—legislative, executive, and judicial; monarchic, hierarchic, oligarchic, and anarchic; global, local, internal, external, liberal, and conservative—and considers how they work out in practice.

Video Microscopy. The Fundamentals. Second edition. Shinya Inoué and Kenneth R. Spring. Plenum, New York, 1997. xx, 741 pp., illus., + plates. $95. ISBN 0-306-45531-5.

A 1986 work "totally revised to reflect the advances in the tools for electronic imaging, processing, recording, and analysis," including new chapters on solid-state detectors, image intensification, and the color video signal and video cameras.