

Medicine, Science, and Merck. *By Roy Vagelos and Louis Galambos.* New York: Cambridge University Press, 2004. xi + 301. Index, notes, illustrations, photographs. Cloth, \$30.00. ISBN: 0-521-66295-8.

Reviewed by Arthur Daemmrich

The pharmaceutical industry today is beset by a complex set of challenges. On the one hand, its pricing model is under attack: in the United States, where the direct importation of medicines from Canada is gaining ground; in Europe, Japan, and elsewhere, health ministers and regulators have started to use pricing data in drug-approval decisions. Likewise, insurers around the world are developing reference lists of medicines they will reimburse, based as much on price as on effectiveness. As the industry responds by shifting some aspects of marketing—especially the development of comparative cost and efficacy data—to late-stage clinical trials, it is being pushed to register all trials publicly and to publish even negative results. On the other hand, the industry suffers from an apparent innovation deficit, as is evident in its lack of new first-in-class treatments under testing. According to some analysts, breakthrough drugs are coming out of small biotech startups, not from R&D labs in large pharmaceutical firms.

Merck is no freer of these competing pressures than any other company. In the past year alone, it went through a rare round of layoffs to improve its bottom line and announced that it is looking to form partnerships and launch joint ventures—rather than engaging only in internal research—as an expanded source of new drugs. New perspectives on the firm have been published, not just in newspapers, but also in a recent book, *The Merck Druggernaut: The Inside Story of a Pharmaceutical Giant*, written by business journalist Fran Hawthorne in 2003. Most recently, the company withdrew its arthritis drug Vioxx because of increased cardiovascular risk. The subsequent media storm drove down its stock value and fueled congressional hearings and other investigations.

Though clearly not intended as a rebuttal of current criticisms, the insightful, readable, and often inspiring autobiography of Roy Vagelos, chief executive officer of the company from 1985 until his retirement in 1994 (coauthored by the eminent historian

of science and business Louis Galambos), recounted in *Medicine, Science, and Merck*, nevertheless offers a unique window into the inner workings of the company. This is a rich and elegant book with good referencing that will appeal to a broad audience.

For readers interested in American cultural history, the autobiography offers the story of a son of Greek immigrants who lives a twentieth-century American success story: emerging from a childhood marked by deep roots in a transplanted ethnic community and economic struggles during the Depression; entering his years of academic training, which provided deep grounding in science and medicine, first as an undergraduate at the University of Pennsylvania, then as a medical student at Columbia University, an intern at Massachusetts General Hospital in Boston, followed by research stints at the National Institutes of Health and the Institut Pasteur in Paris; beginning an academic career at Washington University in Saint Louis; and, finally, taking up a business career at Merck, where Vagelos rose from research director to president of Merck Research Labs and eventually to the position of chief executive officer of the company.

For readers interested in the history of science and medicine, Vagelos and Galambos explain, in clear and concise language, the nuts and bolts of the research carried out by Vagelos and his colleagues in fatty-acid metabolism and biosynthesis, microbial genetics, protein chemistry, enzymes, and lipids (including cholesterol). They also offer key insights on drug discovery and testing in the 1960s, 1970s, and 1980s, including Vagelos's involvement in developing cholesterol-lowering agents and ACE inhibitors (both cardiovascular therapies). The authors describe Vagelos's supervision of Merck's research on new antibiotics, antiparasitics for animal health, and vaccines, notably for hepatitis-B, and they reveal the details of Merck licensing-in of the antiulcer drug Pepcid.

This unique combination of personal narrative and lessons in twentieth-century biochemistry would alone make the book worth reading. But, for the benefit of business historians and current business leaders, Vagelos and Galambos offer insights, and perhaps even solutions, to the dilemma identified at the outset of this review. First, it is necessary to understand that the company is in the business of medicine. This means giving up projects despite heavy investment of time and money, focusing on a small

number of promising projects by setting a maximum of five goals for scientists and limiting therapeutic areas of research at the company (pp. 119–20). Second, without undermining the autonomy and credibility of the invention and testing of new drugs, regular communication must be fostered between the research and marketing divisions (pp. 181–3). Third, time must be spent on recruitment in order to identify top-tier scientists and physicians who will fit into the environment of the private-sector pharmaceutical research lab. Fourth, a coherent, but responsive and flexible, corporate culture must be created and maintained. A tradition of deep scientific research, combined with a strong ethic of patient care in clinical trials, helped Merck Research Labs overcome a crisis in the early 1980s when its cholesterol-lowering treatment Mevacor caused serious adverse reactions (pp. 143–51). Likewise, to be a global competitor, the quality of the medicines sold by the company everywhere must be upgraded to meet or exceed the highest market or regulatory standard in any one country. Finally, the corporation must operate as a moral entity. As Vagelos and Galambos elegantly narrate, for Merck this means giving away some treatments (Mectizan for river blindness) and selling others at sharply reduced prices (HIV/AIDS drugs in Africa). While likely motivated by a mix of philanthropy and world opinion, this last point is especially important as the company draws lessons from the Vioxx market withdrawal and works to establish the right balance of research, licensing, and marketing for its future.

Only time can answer whether the current generation of pharmaceutical-industry research directors and CEOs are following the same model in a rapidly changing environment. While business historians and other academics will find this biography of interest, industry insiders would benefit most from reading this book carefully and identifying and applying its lessons to their work.

Arthur Daemrich is policy analyst at the Chemical Heritage Foundation in Philadelphia, where he brings a long-range perspective to bear on the analysis of risk, health, and environmental policy. He holds a Ph.D. in science and technology studies from Cornell University. He is the author of a number of publications, including Pharmacopolitics: Drug Regulation in the United States and Germany.