Corporate Doings

Big Blue. IBM's Use and Abuse of Power. RICHARD THOMAS DELAMARTER. Dodd, Mead, New York, 1986. xx, 393 pp. $22.95.

On 17 January 1969, in one of the last actions of outgoing President Lyndon B. Johnson's administration, the Department of Justice filed a civil suit against IBM, alleging monopolization of the general-purpose computer market in violation of the Sherman Antitrust Act. In such a suit, the government seeks a structural remedy such as dissolution of the alleged monopolist or an injunction forbidding specified forms of conduct thought to have created or perpetuated the monopoly. In interpreting the Sherman Act, the courts have defined "monopoly" as the ability of a firm to raise price or exclude competitors. In the absence of criminal charges, no fines or prison sentences are possible.

Thirteen years later, on 18 January 1982, by which time the case had become the most protracted and costly in antitrust history, the Assistant Attorney General in charge of the Antitrust Division under the Reagan administration announced his decision to dismiss the case. In explaining this decision, he noted that the nature of the relevant market had changed drastically between 1969 and 1982 and that dissolution of IBM would be "wholly inappropriate" in what he perceived as a more highly competitive environment. Further, he contended, it would be meaningless or harmful to seek relief forbidding the types of conduct that had been specified in the original complaint as leading to or maintaining IBM's monopoly, since the firm no longer engaged in some of these forms of conduct and it was not obvious that other types of behavior were still anticompetitive under current market circumstances.

Richard Thomas DeLamarter, who was assigned to the IBM case from the time he joined the Antitrust Division as an economist in January 1974 until the case was dismissed eight years later, disagrees. In his view, IBM owes its current and ominous dominance of the newly emerging and vital information industry to long-standing predatory practices that continued even while the government's antitrust case was in litigation.

The most pervasive and persistent of IBM's anticompetitive tactics, as identified by DeLamarter, is predatory price discrimination, involving the below-cost sale or lease of products facing actual or potential competition, with the losses subsidized by profits earned on other, monopolized, products. Supporting tactics have included "full packaging" or tie-in sales in which customers have been required to purchase from IBM components of a system available from competitors in order to obtain components available only from IBM or have been forced to do so by "plug incompatibility" resulting from IBM's design configurations; IBM's refusal to sell but instead only lease some of its basic products; and "preannouncement," or reacting to the introduction of a competitor's superior product by announcing that IBM intended to introduce an even better version in the near future—whether or not IBM had a reasonable expectation of making good on such a claim.

The success of these tactics has depended on IBM's size and financial strength rather than on the quality of its products or the efficiency of its operations. For example, the decision of a monopolist to lease rather than sell its durable products is widely recognized as a device to prevent competition from arising in a secondhand market. DeLamarter argues that, in addition, leasing put the carrying risk on suppliers of computers rather than users. By virtue of its size, IBM was better able to bear this risk than were its smaller competitors. Further, since the cash flow from leasing is more protracted than that from a sale, IBM's greater financial strength gave it an advantage over rivals in a rental market.

There are formidable empirical and theoretical obstructions to the development of DeLamarter's argument—especially his contention that IBM has long relied on predatory price discrimination as its key form of anticompetitive conduct. First, it is not possible to label price discrimination unambiguously as predatory unless sales or rental charges do not cover costs. In the computer industry, direct production costs constitute only a relatively small fraction of total costs. Such overhead costs as R&D, general administration, marketing, field service, and software development must be allocated to various products in ways that are inescapably arbitrary. Profits from leasing are a function of the equally arbitrarily estimated useful life of the product. Nevertheless, in his discussions of IBM's behavior in various product markets, and in his use and interpretations of admittedly questionable data, DeLamarter makes a strong inferential case that IBM has repeatedly engaged in discrimination of this type with the apparent intent of driving competitors from the market. The argument is probably not, however, conclusive enough to constitute legal proof of the allegations.

The theoretical issue is an intriguing one. There is a growing awareness among economists that predatory pricing more often than not is inconsistent with a firm's rational pursuit of profit. Unless barred by the antitrust laws, it should almost always make more sense to "buy off" a rival—perhaps through merger or a sharing of the market—than to impose heavy enough losses on oneself as well as on the rival to drive it from the market. And even if antitrust makes a collaborative solution impossible, it is not rational for a firm to drain profits from one line of business to subsidize another temporarily unless there is a prospect that new entrants can be barred from the currently subsidized market when the price is subsequently raised to recoup the losses. Thus, granting DeLamarter's contention that IBM persistently engaged in this tactic, we must ask, why? DeLamarter answers in the words of IBM's chairman, Thomas J. Watson, Jr., who noted in a 1966 memo, "IBM should attempt to maintain its market share in the immediate and foreseeable future. . . . It would seem to me that any variance from this goal toward the goal of maximizing profit would surely see us, over the long term, reducing the total amount of our profit."

Undoubtedly, predatory pricing, discriminatory or otherwise, can be used to attain or defend a target market share. But while DeLamarter agrees with Watson that the resulting sacrifice of short-run profit has been justified by increased profits in the long run, he does not explain how it is that long-run profit is thereby enhanced. This, to my mind, is the greatest gap in DeLamarter's analysis and represents the greatest opportunity he had to contribute to general economic theory as well as to a specific understanding of the computer market. A possible explanation of how the opportunity was lost is found in the author's acknowledgment of a collaborator whom he thanks for "making the material accessible not just to those technically trained in the complexities of computers, economics, and antitrust law, but also to the general reader." Unfortunately, the requisite analysis would unavoidably be complex and technical.

Ultimately, the economic question, in contrast to the legal one, is what sort of economic and social performance resulted from IBM's market power and behavior. DeLamarter's judgment on this matter is harsh but thoroughly and thoughtfully enough substantiated to deserve careful consideration. IBM has not been a technical leader, he observes, but rather has weakened or eliminated more technologically progres-

sive firms. He finds no evidence of economies of scale justifying IBM's size—although it should be noted that customers gained what competitors lost from the shift in risk and protracted cash flow associated with leasing. IBM's "plug incompatibility" tactic, designed to segment its own markets as well as combat manufacturers of plug-compatible peripherals, has resulted in what DeLamarter depicts as a systems network architecture "mess" of incompatible IBM components. By manufacturing its own semiconductor chips, IBM has denied non-integrated U.S. chip manufacturers experience that he contends gave an important advantage to integrated Japanese manufacturers in outstripping the U.S. industry. Though IBM is less efficient and progressive than the leading Japanese computer firms, DeLamarter nevertheless thinks it possible that IBM will come to dominate the world market through the same tactics that proved so successful at home. Given the growing importance of information processing throughout the economy, he concludes that IBM's market power poses a severe political as well as economic threat.

This book is not the definitive study of IBM, or of appropriate public policy toward that firm and the information industry. It does not, in my opinion, make an adequate assessment of the competition that can be expected in the future from foreign as well as domestic computer manufacturers. DeLamarter's assertion that barriers to reentry into various segments of the industry are and will remain high enough for the continued success of IBM's past tactics is neither substantiated nor convincing. By and large, the analysis is not rigorous where rigor is needed for thorough comprehension, most probably as a concession to the archetypal "general reader." But it is a knowledgeable, perceptive, and significant contribution to our understanding of a firm and an industry that will continue to pose major problems for public policy.

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American Naturalists

The Eagle's Nest. Natural History and American Ideas, 1812–1842. CHARLOTTE M. PORTER. University of Alabama Press, University, AL, 1986. xiv, 253 pp., illus. $24.95. History of American Science and Technology Series.

The editor of a new series in the history of American science and technology presents this first volume as "a splendid picture of scientific endeavors and the American state of mind in the first third of the nineteenth century." So it is, in the same sense in which one may discern splendor in Edward Hicks's *Peaceable Kingdoms*, a succession of canvases analysis of which commands the final chapter of the book. Like them the book abounds in curiosa, queer juxtapositions, seeming irrelevances. And there is more in both than first meets the eye.

In response to Buffon's observation that the New World environment—too hot, too wet—was deleterious to life (though the slander informs every chapter of this book, Antonello Gerbi's magisterial study of it, *The Dispute of the New World*, somehow goes unmentioned), American naturalists organized themselves in societies for the purpose of classifying the native flora and fauna. Focusing particularly though by no means exclusively on Philadelphia's Academy of Natural Sciences, for some years after its founding in 1812 the most vigorous and fruitful of the societies, the author examines the ensuing three decades of transition in American natural history—from the heyday of the individual field naturalist busily affixing labels to new species and genera, his labors usually privately funded, to the emergence, all within a decade, of the Corps of Topographical Engineers, the United States Exploring Expedition, and the Smithsonian Institution and with them the professional, "closet" investigator working in the laboratory on specimens gathered by collectors in the field. Like the contemporary craftsman confronted by the emerging factory system, the field naturalist became an employee. Institutional collections absorbed his cabinet of curiosities and peer review closed off his access to publication. Arrested careers and broken reputations resulted.

At a time when natural history's first concern was taxonomy, the field investigator fell because, necessarily without reference collections and type specimens at hand, he tended to multiply species. Nomenclature ran amok. By thus subjecting American science to ridicule, the field investigator offended the nostrils of the "closet" scientist jealous for its reputation. (Itself a response to Buffon's slander, that jealousy receives little notice here.) When game was scarce Titian Peale and Thomas Say dined on hawk where Asa Gray would gather plants from a railroad car bearing wife and cook. To the unfortunates done in by peer review the author accords her full sympathy, fixing the while a baleful eye on her chosen type specimen of the new professional, Asa Gray.

To dramatize her account the author makes the most of the tension between Philadelphia's Academy, rapidly succumbing to peer review, and those of its members—including its financial angel, the geologist William Maclure—who, deriving a social science from natural history, became "Industrious Producers" at Robert Owen's New Harmony establishment. The stage chosen is really too small to support the cast, and the book would have benefitted from a firmer editorial hand (for byways of fact and interpretation abound). Though it fails to shed sustained light, however, it does throw off a succession of scintillations.

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Webs and Web-Builders

Spiders. Webs, Behavior, and Evolution. WILLIAM A. SHEAR, Ed. Stanford University Press, Stanford, CA, 1986. xvi, 492 pp., illus. $55. Based on a symposium, Knoxville, TN, 1981.

For spiders, webs provide an answer to the question of how to catch prey. For arachnologists, they provide questions about spider behavior, ecology, and systematics. A 1981 symposium provided 16 arachnologists with an opportunity to answer some of these questions. Expansions of their papers form this book's 13 chapters, each of which summarizes the framework, findings, and current directions of a line of research. Within this broader context, most focus on their authors' own research, and together they address four major issues: the evolution of different types of spider webs; the construction, use, and dismantling of webs; web architecture, prey-capturing abilities, and placement; and the importance of webs in mediating spider sociality. Many chapters discuss several of these issues. Persons unfamiliar with spiders will find the book's taxonomic glossary a helpful introduction to the distribution and natural history of all genera and families mentioned in the text.

This volume introduces many new questions. For example, Carico asks, "How does a spider take down its web?" He shows that two methods may be used, one that completely destroys the web and another that simultaneously establishes the framework for a new web.

Coyle demonstrates that even primitive spiders use silk threads to detect prey passing near their burrows and that others extend the silk lining of these burrows to form sheets that both detect and hinder the passage of a prey. The spinning apparatus of more advanced spiders permits them to add