

ture of the entire chemical industry in the four countries) and by Chandler *et al.* (focusing on the leading companies). These are the best of the six chapters in the “levels of the matrix” section of the book, and Arora and Gambardella provide a particularly good account of the extensive process of rationalization in the European and American industries in the 1970s and 1980s. They offer an especially interesting table of trends in acquisitions in the chemical sector, illustrating the very small number of acquisitions by Japanese firms compared with the far larger number by their European and American competitors.

The failure to discuss the work of Gary Hufbauer on synthetic materials is regrettable. Not only did Hufbauer publish one of the most original comparisons of the innovative performance of the companies and countries included in this book, he also developed an explanation of “imitation lags” that was an important contribution to theories of international trade and company performance. He demonstrated that the leading innovators in synthetic materials were also the fastest imitators—a result highly relevant to the discussion in this book and especially to the longevity of the leading chemical firms and the industries in the four countries surveyed.

Another shortcoming is the relative neglect of the work of Achilladelis—most notably his study of insecticides, but also his analysis of corporate traditions and research specialization in several subsectors of the industry. It is quite understandable that pharmaceuticals were not systematically included, because so much has already been published on this industry and it is impossible to cover all the subsectors, even in a publication of this size. The fortunes of the pharmaceutical industry have been so closely linked to the chemical industry, however, that it is a pity these connections did not receive more consideration.

Horstmeyer's chapter attempts to provide an abbreviated, broad brush review of the “social, political and public policy context” in which the industry evolved in the four countries. Unfortunately, it does not meet this ambitious objective, even though the editors were undoubtedly right that a full understanding of the history of the chemical industry should include this context. Members of the British Labour Party will be surprised to hear of their “Marxist” legacy and its “peeling off” in 1995 (p. 243), and it is generally difficult to follow the abbreviated summaries of political and social history in each country. “British obtuseness with regard to science and tech-

nology,” “British shortsightedness,” and “British hostility to applied science and technology” (p. 239) are a bit too abbreviated for a summary of complex British social developments in the second half of the 19th century. While it is true that “enterprising foreigners with ideas and energy” settled in Britain in the 19th century (p. 234), it is certainly not true that Ludwig Mond, who founded his alkali works in 1873, “was probably among the last of this type.” Marconi and Ferranti are only two of the best-known entrepreneurs among many who belie this statement. The role of “enterprising foreigners” in British, as in American industry, has continued to be important to this day, and the subject of entrepreneurship in the chemical industry deserves better treatment.

Despite these criticisms, *Chemicals and Long-Term Economic Growth* is a considerable achievement. Although there have been some excellent histories of leading chemical companies, there are relatively few of the entire industry. And Arora and Gambardella are correct in claiming that “the fortunes of the industry as a whole are different from those of individual firms” (p. 410). The book is therefore a landmark that helps to fill a very big gap in industrial history.

BOOKS: ORNITHOLOGY

Rainforest “Crows” in Fancy Dress

The 12-wired bird of paradise (right) belongs to a family of “elaborate crows” that inhabit closed humid forests in and near New Guinea. Many are renowned for the males' bizarre nuptial plumes (so strange that some early ornithologists interpreted specimens as glued-together fakes) and their polygynous courtship displays. Frith and Beehler combine thematic chapters—covering the birds' distributions,

The Birds of Paradise

Paradisaeidae

by Clifford B. Frith and
Bruce M. BeehlerOxford University Press,
Oxford, 1998. 643 pp.
\$85, £50. ISBN 0-19-
854853-2.

habitats, ecologies (especially diet, foraging, and plant-bird interactions), reproductive behavior, nesting, and parental care—with individual accounts of all 42 species to comprehensively summarize our knowledge of the family. The excellent descriptions and discussions focus on the birds, but

Frith and Beehler also review a wide

range of topics to demonstrate the broader significance of the group. These summaries, and the considerations of the extent and context of variation within the family, will profit biologists with interests in questions such as sexual selection, mutualism, and evolutionary radiations. The authors' masterful presentation of information, competing explanations, and unresolved questions should effectively stimulate future researchers and naturalists. When trade skins of birds of paradise, prepared with wings and legs removed, first reached Europe in the 16th century, the birds were presumed to live perpetually floating in air, feeding on dew. Frith and Beehler show that the birds' true lives are much more substantial and interesting.

—SHERMAN J. SUTER



CREDIT: WILLIAM T. COOPER/FROM THE BIRDS OF PARADISE