

emphasis on blockbuster drugs will not serve the industry well in the long term. The rest of this section, however, is pure old-fashioned pharmacy, which might be hard going for the nonpharmacist. For this pharmacist-reviewer, William Jackson's look at the history of dosage forms is a nostalgic trip. Starting with what was used in ancient times, Jackson briefly describes all the familiar forms — tablets, capsules, and ointments — plus a few bygone favorites, such as cachets, pills, pastilles, and lixivia (body washes).

The fifth and last section of the book ("Pharmacy Today and Tomorrow") stresses the Nuffield Report of 1986 as the turning point in modern British pharmacy. In October 1983, the Nuffield Foundation commissioned a study of pharmacy prompted by the changes imposed by the dramatic growth of pharmaceuticals and the difficulties imposed by the constraints of the National Health Service. The Nuffield Report put forward nearly 100 recommendations for change and reform. It set the scene for an enthusiastic reception for the pharmaceutical care approach of Hepler and Strand during the 1990s, as is mentioned in the final part of the book. *Making Medicines* concludes with some mild optimism about the future, tempered by the recognition that the status of pharmacy today in Britain is lower than in the rest of the developed world.

One point is missing from the book but can be read between the lines: For more than 50 years, the British pharmaceutical industry made important discoveries (such as beta-blockers, H₂-receptor antagonists, and triptan drugs to treat migraine) while working within a system of socialized medicine. Despite the contentions of the Bush administration, drug-price negotiation, which is absent under Medicare Part D, does not necessarily stifle all innovation.

In sum, *Making Medicines* is a worthwhile book for those familiar with or highly interested in the history of British health care. Because some of the authors assume that their readers come equipped with considerable background knowledge, American readers who are not well prepared or motivated may have a hard time appreciating this valuable volume.

Gregory J. Higby, Ph.D.

American Institute of the History of Pharmacy
Madison, WI 53705
higby@aihpo.org

THE QUEST FOR HUMAN LONGEVITY: SCIENCE, BUSINESS, AND PUBLIC POLICY

By Lewis D. Solomon. 197 pp. New Brunswick, N.J.,
Transaction Publishers, 2006. \$34.95. ISBN 0-7658-0300-3.

THIS UNUSUAL BOOK WAS WRITTEN BY A professor of business law at George Washington University Law School. Most other books on human longevity written for a general audience are focused almost exclusively on scientific ideas and breakthroughs in life-extension research, and they typically avoid any discussion of financial profit. According to tradition, scientists are driven largely by curiosity and a noble desire to save humankind from age-related degenerative diseases, rather than by the desire to profit from their research. This somewhat idealistic view is challenged in *The Quest for Human Longevity*, which describes, in great detail, the importance of money in the entrepreneurial business of life-extension and antiaging research. In the view of the author, Lewis D. Solomon, financial incentives often drive scientific innovations in antiaging studies by stimulating researchers to take risks and work hard.

The Quest for Human Longevity lifts the curtain of secrecy regarding financial matters by providing a detailed history of eight corporations that are pursuing antiaging and life-extension interventions: Geron, Juvenon, Eukarion, BioMarker Pharmaceuticals, Elixir Pharmaceuticals, Helicon Therapeutics, Memory Pharmaceuticals, and Cortex Pharmaceuticals. Particularly interesting are the candid profiles of the scientific founders and top executives of these companies, including Michael West, Bruce Ames, Stephen Spindler, Saul Kent, Cynthia Kenyon, Leonard Guarente, David Sinclair, and Eric Kandel, among others. According to this book, it is not wrong for researchers supported by grants based on taxpayers' money to be involved in for-profit businesses and to benefit financially from their research findings. Solomon cites many examples of such activities conducted by reputable scientists who are involved both in life-extension and antiaging research and in related businesses. Opponents of commercialized science may disagree with Solomon, but they may still find this book interesting and useful, because it offers examples of ventures in which

academic scientists form a link between the worlds of research and commerce.

Solomon also examines the issues of intellectual property and financing in relation to each of the eight companies already mentioned, in a discussion that helps the reader to understand how some of these companies manage to survive without introducing any product to the market. Survival is achieved by “marking the territory” — claiming intellectual property through patents and then benefiting from the patents through license agreements and other means. It would be no exaggeration to say that most profits come not from the sale of legitimate antiaging and life-extending drugs, but from the sale of future expectations of these drugs in the form of intellectual property. It is therefore not surprising that many of these companies are struggling to survive — and Solomon describes in detail each company’s dramatic struggle.

Solomon also discusses the science behind antiaging research undertaken by these companies, including such topics as telomere shortening with age and the restoration of telomere length with the use of telomerase; oxidative damage caused by free radicals and antioxidant protection; the slowing of aging through caloric restriction or the modulation of gene expression; and the development of memory-enhancing drugs.

The Quest for Human Longevity will be of interest to medical students, scientists involved in biomedical research on aging, policymakers, and biotech investors, as well as to general readers interested in compelling issues of future life extension and debates over commercialized science.

Leonid Gavrilov, Ph.D.

Natalia Gavrilova, Ph.D.

University of Chicago

Chicago, IL 60637

gavrilov@longevity-science.org

TALKING WITH DOCTORS

By David Newman. 199 pp. Hillsdale, N.J., Analytic Press, 2006. \$32.50. ISBN 0-88163-446-8.

IMAGINE FALLING MYSTERIOUSLY ILL IN A foreign country, in which the language, culture, and customs have no bearing on your own. Imagine trying to find medical help and evaluating your potential healers without understanding the territory, while the shadow of imminent death lingers over your shoulder.

This is roughly the experience that David Newman underwent when he discovered that he had a rare tumor that was hovering precariously near his brain stem. The foreign capital was a certain well-known medical city on the Hudson River. And even though Manhattan was his hometown and English was his native language, Newman was nonetheless a foreigner in the high-octane world of academic medicine. Despite his education, money, connections, and interpersonal skills (he is a psychotherapist), he found himself floundering in frightening waters.

Talking with Doctors covers the two harrowing months that the author spent in consultation with “the best” doctors in “the best” hospitals in New York (plus a side trip to “the best” doctors in that other well-known medical city, on the Charles River). If the subject under discussion had been how to bake the best spinach soufflé, the disagreements, egotism, childish tantrums, rudeness, inconsistencies, and frank errors might have been comical. Unfortunately, the subjects were palliative care versus curative intent, whether to biopsy or not, what the biopsy actually showed, neurosurgery versus endoscopic surgery versus chemotherapy versus radiation — all of which were up for grabs while the 44-year-old Newman tried to figure out whether his three school-aged children would be fatherless by the end of the year.

In trying to decide whom to trust, Newman sought to understand the thought process of each consulting physician, often pressing the doctor to explain his or her medical logic. This attempt was not met with a kind reception. Most of the doctors expected Newman to accept the pronounced verdict with equanimity because of the stellar reputations of the doctors and of the institution. This reaction seemed to hold true whether the physician was an empathic, communicative person or a peremptory, cold-hearted one.

Lacking medical literature on this rare tumor, the physicians were forced to rely on clinical judgment. It is illustrative — and a bit frightening — to learn how divergent those opinions were. (Two experts, when reading the same computed tomographic scan, could not even agree on whether contrast material had been used.)

It is also humbling to note how much of a role serendipity played. Finding the doctor who eventually became Newman’s physician, for example, depended on the author’s accession to the dubious advice of his own patient to call the patient’s best childhood friend in Israel (at 3 a.m.)