Book Reviews

Japanese Medicine

This slim volume offers a surprisingly broad introduction to the cultural aspects of medical care in contemporary Japan. Lock's introduction sets the tone by reminding us that medical practice everywhere is a rich amalgam of both esoteric and popular medical knowledge, since in addition to social and political factors, "in most parts of the world today societies have been exposed to at least one and often two major, literate medical traditions, the ideas of which have been superimposed, often over the course of hundreds of years, upon an indigenous non-literate medical tradition" (p. 2). Japan is a good case in point, as Lock demonstrated in her 1980 book on the use of Asian medical traditions by Japanese physicians trained in modern Western biomedicine (*East Asian Medicine in Urban Japan*, University of California Press, 1980).

The essays here all deal with cultural and social aspects of medicine in a highly developed modern society where sophisticated medical care is widely available. Hence the subject is not the traditional cultural alternatives to modern medical care offered by non-medical practitioners, but rather the ways in which cultural preferences and beliefs are expressed within and through modern medical care. As Lock puts it, "These studies in health and illness reveal from a unique vantage point the way in which the process of modernization has become encoded into and expressed through the body" (p. 4). The topic is explored with regard to such matters as the health care complex, the process of medicalization, the cultural construction of health and illness, changing symptom patterns and the epidemiology of illness, and the social and political uses of illness states.

William Steslicke's opening paper offers a wealth of useful statistics and a cogent description of the overall state of health and medical care in Japan. It is the best brief treatment of the subject available and will probably become the standard reference. The reader can quickly grasp the basic form of Japanese medical care: a system of private-sector providers paid both through national health insurance and through private health plans, within which physicians dispense both medical care and pharmaceutical products—a system that has produced high life expectancy, low infant mortality, and a pattern of mortality and morbidity rates similar to that of other advanced industrial societies.

Japan is a very healthy society, but when people do get sick they spend a long time in the hospital, largely because of traditional cultural beliefs about nurturance and the importance of bed rest. Steslicke guides us through the statistics not just to specifically cultural phenomena of this order, but more broadly to the political economy of contemporary Japanese medical care and the problems that the society is still struggling with.

Some of these problems are taken up in two subsequent short pieces. Susan Orpett Long examines the growing professionalism and technological orientation of Japanese health care providers, and Christie Kiefer assesses how Japan is coming to terms with health care for its rapidly aging population. Both papers carefully note cultural preferences along with the political, social, and economic pressures that shape the changing situation. Taken together, these three papers offer an impressive overview of the Japanese medical care system.

David Reynolds's paper on Japanese models of psychotherapy contains useful new material but is a bit of a disappointment to those who know his work. This piece seems but a pale shadow of the powerful analyses of cultural aspects of Japanese psychotherapy that he has presented in rich detail elsewhere.
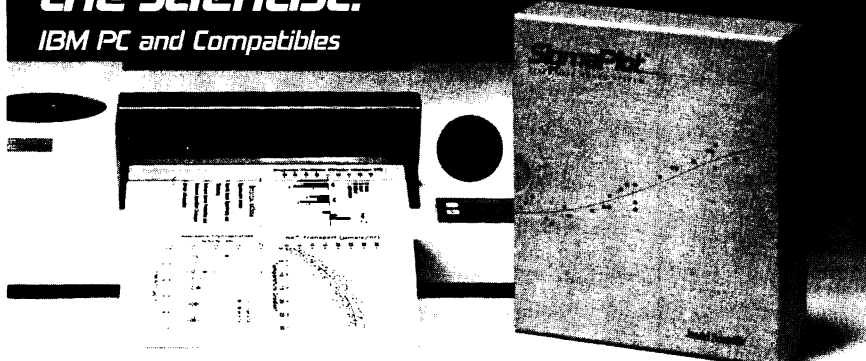
The final two papers in the book are much narrower case studies of specifically female aspects of medical care in Japan. Lock's piece on the medicalization of distress is an intriguing analysis of how women express their personal needs, and their resistance to social arrangements, through medical means. It is a wide-ranging and suggestive treatment but perhaps tries to bring in more tantalizing thoughts than can be subjected to solid analysis in the compass of one short paper.

It also seems to overlap occasionally with Nancy Rosenberger's essay on menopause, which argues that Japanese women focus on menopausal problems to the extent that other important aspects of their gender role

seem to be slipping away from them. Rather than a systematic study of menopausal symptoms, this is an exploration of ideas about menopause and how middle-aged Japanese women use them to redefine their status in urban and rural households.

Both the Lock and Rosenberger papers are fresh and insightful, but their placement at the end of this short volume does not quite work. The sudden narrowing of focus causes the volume to end abruptly, in an unsettled way. The volume might better have been fleshed out with two or three more case studies, perhaps on non-female issues to avoid the unfortunate final impression that "cultural" means "women's problems." There also would have been ample room here for a final essay by the senior editor, who does not appear as an author of any paper.

In short, this is a worthwhile book that leaves the reader wishing there had been a bit more at the end to fulfill the excellent promise of its beginnings. It is a good introduction to the subject for non-specialists, but also contains valuable new material for those already familiar with the work of this fine collection of social scientists.

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Computer Pioneers

The First Electronic Computer. The Atanasoff Story. ALICE R. BURKS and ARTHUR W. BURKS. University of Michigan Press, Ann Arbor, 1988. xii, 387 pp., illus. $30.

In the fall of 1941, shortly after receiving a doctorate in philosophy from the University of Michigan, Arthur Burks took a job as an instructor at the University of Pennsylvania's Moore School of Engineering. There, from 1943 until 1946, he worked on the ENIAC: "the world's first general purpose electronic computer," in his words. Alice Burks was also at the Moore School at that time, as a student and as a "computer": a person who used a mechanical calculator to prepare ballistics tables for the Army. (It was to compute these tables automatically that J. Presper Eckert and John Mauchly of the Moore School proposed building an electronic computer, which eventually became the ENIAC.) Arthur Burks's contribution to the ENIAC included checking the logical consistency of its design and developing the structure of its programming unit. He also was responsible for taking notes at design

meetings and for preparing periodic progress reports. Thus it would be hard to find two persons better suited to write a story of that computer's invention.

But the title of this book refers not to the ENIAC but to another computer, one with which neither Arthur nor Alice Burks had direct experience, and of the details of which they learned only many years later. This book is about a computer built by John V. Atanasoff at Iowa State University between 1940 and 1942. It is the authors' goal to demonstrate that Atanasoff's machine, not the ENIAC, was the "world's first electronic computer" (albeit not "general purpose") and that it was from Atanasoff's work that the ENIAC grew, by a direct transfer of key concepts of computing principles and of electrical engineering.

A case for Atanasoff's priority has already been made, indeed literally so: in 1973 a federal court decided that a patent on the ENIAC was invalid, mainly on the basis of Atanasoff's work. But according to the authors, historians of computing have not accepted this verdict and continue, wrongly, to credit Eckert and Mauchly as the inventors of the computer. And although attorneys for both sides of the patent dispute assembled enormous quantities of documentary material on the ENIAC's history, scholars have not gone to these sources in writing the history of computing and so repeat the errors of an earlier generation of historians. Burks and Burks felt compelled to write this book, then, to call attention to what those sources reveal and to interrupt the flood of bad history before it digs a channel too deep to alter.

The authors have drawn on these materials; in making their arguments they cite both the documentary evidence gathered for the trial and the transcripts of the witnesses' testimony. To my knowledge, other scholars have not drawn on this material as they have, although it has been available for some time. The authors' diligence and energy in going to these sources, which they supplement by an extensive correspondence with Atanasoff himself, more than compensate for the fact that they were not direct participants in this part of the story. (Mauchly died in 1980, before Burks and Burks began working on this book. Their relationship with Mauchly's widow, Kathleen Mauchly, and with Eckert has been strained and lacking in cooperation. An appendix to the book discusses Mrs. Mauchly's response to an earlier presentation of this book's thesis, followed by a response by the authors.)

What Burks and Burks do establish is that Atanasoff conceived and partially executed a design for a partially electronic calculator, which was startlingly original and inge-

nious. It was not a general-purpose computer but was optimized for the solution of systems of linear equations. At least one operation—a division—had to be done off-line by hand to solve a problem, so it was far from automatic. The machine used electro-mechanical devices for timing and number storage, but its arithmetic circuits were wholly electronic. Indeed, for its arithmetic unit Atanasoff invented "the first electronic circuit of any complexity" (p. 20). At the same time it lacked the ability to multiply (or divide), a limitation that the authors feel does not prevent their calling the machine a "computer" but that nonetheless indicates a low level of sophistication. Atanasoff stopped work on it in the fall of 1942, at which time the machine was essentially complete but not working reliably enough to do the kind of work solving physics problems for which it was built.

Relying again on trial evidence and subsequent correspondence with Atanasoff, the authors further establish that Mauchly had made very little progress toward the realization of his own desire to build a computer prior to his visit to Iowa in June 1941. During that visit, as Atanasoff's houseguest, Mauchly examined the machine in great detail, and he conversed at length with Atanasoff on all aspects of computer design and engineering. Upon his return to Philadelphia, Mauchly set in motion the steps that led to the creation of the ENIAC, which was finished in 1945 and did useful work from 1946 until its dismantling in 1959.

In their discussion of this visit and its aftermath Burks and Burks accuse Mauchly of unethical, unpatriotic, and unprofessional behavior. But their case for this is weak, and the book suffers from the stridency of these arguments. Atanasoff hid his invention under a bushel; Mauchly was a promoter. Atanasoff's technical virtuosity could not overcome the resistance to the radical idea that electronic digital computing was in 1940. Mauchly collaborated with J. Presper Eckert, a man whose engineering abilities were as good as Atanasoff's; both Eckert's and Mauchly's abilities were needed to bring the ENIAC into being.

There is merit in the author's criticism of scholars for not using the trial transcripts and related materials to shed light on this important story. But their contention that historians have been too kind to Mauchly is simply not warranted. Neither is it true that historians have ignored Judge Larson's verdict or dismissed it as irrelevant. I cannot share the surprise, chagrin, and bitterness at what Burks and Burks feel is a deliberate shirking of responsibility by historians of computing.