edged, was widely shared, if not in Edinburgh. To its credit, at least in the eyes of the foundation, Edinburgh was endeavoring to improve its laboratory facilities and to appoint senior staff with a greater commitment to research. From the latter policy followed the appointment, to the chair of therapeutics, of Jonathan Meakins, a young Canadian physician who was building a reputation for fruitfully applying physiological principles to the investigation of clinical problems.

The answer to Edinburgh's problems, as the Rockefeller Foundation saw it, was further modernization, and the midwife of modernity was to be experimental science. The foundation sought to introduce to Edinburgh the Johns Hopkins model of "academic medicine," whereby the laboratory was central to medical education, to diagnosis, and to the production of new medical knowledge. Preclinical subjects were to be taught by scientists rather than clinicians. Clinical subjects were to be taught by professors, and their assistants, who would ideally be full-time academics, teaching, undertaking patient care, and pursuing research in dedicated university hospitals. Clinical professors should have autonomous control over the beds in their professorial units.

However, Edinburgh's medical school had built its reputation on what Lawrence terms "clinicopathological" medicine, what some other authors have called "hospital medicine." If the lead disciplines of academic medicine were physiology and biochemistry, that of hospital medicine was morbid anatomy. The understanding of disease was based upon physical examination, the use of diagnostic instruments such as the stethoscope, and the correlation of clinical signs and symptoms with pathological lesions observed on postmortem examination. Its principal locus was not the laboratory but the bedside and its dominant authority not science but the clinical acumen of its leading practitioners.

The medical environment of Scotland's capital was unfamiliar to the officers of the foundation in a number of other respects. In contrast to the situation in Baltimore, Edinburgh University was not the sole source of medical authority in the city. The Edinburgh Royal Infirmary was the medical school's principal teaching hospital, but it was not under the direct control of the university. The infirmary had its own board of governors, who jealously guarded their prerogative of autonomous action. This meant, for instance, that the clinical professors were not necessarily able to staff their wards with their own junior appointees, a situation that the Rockefeller Foundation found quite bizarre. The medical school did not even control all the teaching in the city.

Nor could the Americans comprehend the key role played in Scottish medicine by the Royal Colleges. Edinburgh had two Royal Colleges, one for physicians and one for surgeons, proudly independent, ancient institutions experienced in defending their interests and those of their members. The colleges had an important role in examining and licensing, particularly at the postgraduate level. Success in the membership examinations of the relevant college was an essential prerequisite for appointment to a consultant post at a voluntary hospital. Scotland thus had a considerable separation of medical powers. However familiar the Americans might have been with this concept in the political realm, it was an arrangement that baffled and frustrated them when applied to medicine and medical education.

The Rockefeller Foundation saw medicine as scientific teamwork. Edinburgh's ethos valued sturdy clinical individualism. But, in some other respects, Edinburgh's medical culture was more communitarian than that to which the Americans were accustomed. Its senior practitioners saw themselves as civic leaders, working for the welfare of the city—an aspiration that part-time clinical practice in the voluntary hospitals expressed. Full-time commitments to clinical science were, therefore, regarded with a degree of misgiving, quite apart from any financial issues.

Professor Lawrence's book contains much else of value. It provides, for instance, a fascinating microhistoriographical account of the practice of a clinical laboratory in the 1920s. But perhaps it is its exploration of how an American agency struggled, ultimately with some degree of success, to come to terms with an unfamiliar cultural milieu that will be of most interest—and perhaps not solely from a medical perspective.

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Biomedical Informatics

Biomedical Informatics: Computer Applications in Health Care and Biomedicine, edited by Edward H. Shortliffe and James J. Cimino, 3rd ed *(Health Informatics Series)*, 1037 pp, with illus, $79.95, ISBN-13 978-0-387-28986-1, ISBN-10 0-387-28986-0, New York, NY, Springer, 2006.

IN THE PAGES OF THIS JOURNAL IN 1990,[1(p1115)] Robert Greenes from Harvard and Edward Shortliffe from Stanford defined medical informatics as "the field that concerns itself with the cognitive, information processing, and communication tasks of medical practice, education, and research, including the information science and the technology to support these tasks." In that same year the first edition of the textbook *Medical Informatics* was published, edited by Shortliffe and assembled from chapters submitted by pioneers in the field.

Over the course of a decade, the text became the core reference for a small but growing number of graduate training programs in medical informatics (now numbering about two dozen nationwide) and defined the fundamental concepts that underpin the field. The third edition, renamed *Biomedical Informatics* in recognition of the converging

course of clinical systems with systems that support molecular biology and genetics, was published in May 2006 and shows substantial growth in both pages and breadth of coverage relative to earlier editions. New chapters cover cognitive science, natural language processing, imaging informatics, consumer health informatics, and public health informatics. The remainder of the text has been updated and expanded, with both larger pages and around 180 more of them, resulting in a noticeable increase in weight and girth as befits a textbook in a maturing discipline.

The text is organized into three major sections. The first, "Recurrent Themes in Biomedical Informatics," comprises 11 chapters that address fundamental concepts, such as types of biomedical data, limitations of unaided human cognition, basic principles of computing and telecommunications systems, approaches to computerized clinical decision making based on probabilities and uncertainty, methods for automated interpretation of language, standards for data exchange, methods for assessing information technology applications, and ethical issues related to privacy and data sharing. The second section, "Biomedical Informatics Applications," contains 12 chapters that focus on specific types of computer applications, including "Electronic Health Record Systems," "Clinical Decision Support Systems," "Patient Monitoring Systems," "Imaging Systems in Radiology," "Information Retrieval and Digital Library Systems," "Computers in Medical Education," and "Bioinformatics." The final section, "Biomedical Informatics in the Years Ahead," has two chapters that review the historical growth of the field and outline major trends that will affect its continued evolution as an academic discipline. Writing styles differ from chapter to chapter, typical of a multiauthor text, but overall the book is commendably readable for those with nontechnical backgrounds.

In keeping with the book's principal use as a graduate-level textbook, each chapter concludes with "Suggested Readings" and "Questions for Discussion." The bibliography comprises 64 pages, and an 85-page wide-ranging, multidisciplinary glossary defines biomedical terms such as *acquired immunodeficiency syndrome,* analytical terms such as *type I* and *type II error,* and information technology terms such as *wavelet compression* and *eXtensible Markup Language (XML).*

This book is not a how-to guide for developing computer applications. As noted in the preface, it "presumes no health- or computer-science background, but it does assume that readers are interested in a comprehensive summary of the field that stresses the underlying concepts, and it introduces technical details only to the extent that they are necessary to meet the principal goal." It will not teach one how to build a clinical information system or analyze gene sequences, but it does provide a summation of the published experience of those who have done so and the functional requirements for successful applications that are independent of any particular computer program or system.

As a specialty text, *Biomedical Informatics* is unlikely to be of general interest to all clinicians and biomedical scientists—although, ironically, the content touches on information management and technology issues that span settings from the wet-bench laboratory to the hospital, outpatient office, and public health operation. In addition to its primary audience of students who aspire to careers with the word "informatics" in the job title, the text's accumulated wisdom and lessons learned can help educate any health professionals responsible for selecting information systems to be acquired and used in office and institutional settings.

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1. Greenes RA, Shortliffe EH. Medical informatics: an emerging academic discipline and institutional priority. *JAMA*. 1990;263:1114-1120.

RECEIVED

Biography, Memoir

Born on a Blue Day: Inside the Extraordinary Mind of an Autistic Savant: A Memoir, by Daniel Tammet, 226 pp, with illus, $24, ISBN-13 978-1-4165-3507-2, ISBN-10 1-4165-3507-1, New York, NY, Free Press, 2007 (author is the subject of the 2005 BBC documentary "Brainman").

Freud: Inventor of the Modern Mind, by Peter D. Kramer *(Eminent Lives),* 213 pp, $21.95, ISBN-13 978-0-06-059895-2, ISBN-10 0-06-059895-6, New York, NY, HarperCollins, 2006.

Ethics

Social Justice: The Moral Foundations of Public Health and Health Policy, by Madison Powers and Ruth Faden (*Issues in Biomedical Ethics*), 229 pp, $45, ISBN-13 978-0-19-518926-1, ISBN-10 0-19-518926-4, New York, NY, Oxford University Press, 2006.

Hematology

Bone Marrow Diagnosis: An Illustrated Guide, by David Brown, Kevin Gatter, Yasodha Natkunam, and Roger Warnke, 2nd ed, 216 pp, with illus, $149.95, ISBN-13 978-1-4051-3561-0, ISBN-10 1-4051-3561-1, Malden, Mass, Blackwell Publishing, 2006.

Pharmacology-Therapeutics

Handbook of Cannabis Therapeutics: From Bench to Bedside, edited by Ethan B. Russo and Franjo Grotenhermen, 471 pp, with illus, $69.95, ISBN-13 978-0-7890-3096-2, ISBN-10 0-7890-3096-9, paper, $39.95, ISBN-13 978-0-7890-3097-9, ISBN-10 0-7890-3097-7, Binghamton, NY, Haworth Press, 2006.

Psychiatry

Diagnosis Made Easier: Principles and Techniques for Mental Health Clinicians, by James Morrison, 316 pp, with illus, $38, ISBN-13 978-1-59385-331-0, ISBN-10 1-59385-331-9, New York, NY, Guilford Press, 2007.

Rehabilitation

Disability Advocacy Among Religious Organizations: Histories and Reflections, edited by Albert A. Herzog, Jr, 233 pp, $36.95, ISBN-13 978-0-7890-3289-8, ISBN-10 0-7890-3289-9, paper, $18.95, ISBN-13 978-0-7890-3290-4, ISBN-10 0-7890-3290-2, Binghamton, NY, Haworth Pastoral Press, 2006.

Sports-Exercise

Current Diagnosis and Treatment in Sports Medicine, edited by Patrick J. McMahon, 287 pp, with illus, $59.95, ISBN-13 978-0-07-141063-2, ISBN-10 0-07-141063-5, New York, NY, McGraw-Hill Medical Publishing, 2006.