Book Reviews

NUCLEAR MEDICINE

Edited by Robert E. Henkin, with six others. 1724 pp. in two volumes, illustrated. St. Louis, Mosby, 1996. $275. ISBN 0-8016-7701-7.

DIAGNOSTIC NUCLEAR MEDICINE

Third edition. Edited by Martin P. Sandler, R. Edward Coleman, Frans J.T. Wackers, James A. Patton, Alexander Gottschalk, and Paul B. Hoffer. 1547 pp. in two volumes, illustrated. Baltimore, Williams and Wilkins, 1996. $279. ISBN 0-683-07503-9.

A NUMBER of comprehensive general textbooks of nuclear medicine have been published in the past few years. At least one and possibly two are slated for revision in the near future. The addition of the two textbooks reviewed here does not make the selection of a preferred work easier. *Nuclear Medicine* and *Diagnostic Nuclear Medicine* have about 150 contributors each, 20 of whom are common to both, and the writing reflects the fundamental strength of nuclear medicine in the various organ systems, which is the assessment of function rather than anatomy. The assessment of anatomy has by default largely been taken over by ultrasonography, computed tomography, and magnetic resonance imaging. Both books devote substantial space to descriptions of nuclear cardiology, positron-emission tomography, and nuclear oncology, corresponding to major developments in clinical medicine and research.

Diagnostic Nuclear Medicine contains extensive discussions of historical considerations; physics and instrumentation; radiopharmaceutical agents, protection against radiation, and dosimetry; cardiovascular uses; pulmonary applications; bone applications; gastroenterology; hematology; endocrinology; neurology; nephrology; oncology; transplantation; inflammation; and legal issues. *Nuclear Medicine* has eight parts: an introduction and sections on the scientific bases of nuclear medicine, including physics and radiopharmacy; immunologic aspects of nuclear medicine; clinical organ systems, encompassing the cardiovascular, gastroenterologic, genitourinary, musculoskeletal, neurologic, and pulmonary systems; special oncologic studies; the diagnosis of inflammatory disease; pediatric radiopharmacy; and skeletal imaging.

Both textbooks are well written and amply provided with high-quality illustrations and graphs. All major aspects of nuclear medicine are covered, although there are some differences in emphasis and detail, as might be expected. *Nuclear Medicine* has a useful section on radionuclide synovectomy, the installation of unsealed radioactive fluids into the joint cavity — a treatment of refractory synovitis that is gaining interest. It is difficult to choose one of these fine textbooks over the other; having access to both will solve the dilemma.

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FINAL REPORT OF THE ADVISORY COMMITTEE ON HUMAN RADIATION EXPERIMENTS

620 pp. New York, Oxford University Press, 1996. $39.95. ISBN 0-19-510792-6.

THE last time I devoted my summer holiday reading to a single book was when *War and Peace* was assigned in high school. In addition to bulk, the similarities between the *Final Report of the Advisory Committee on Human Radiation Experiments* and Tolstoy's classic include a large cast of characters and a more than occasional tone of moral indignation. The action in both takes place in war and peace.

The *Final Report* is the work of a distinguished panel appointed by President Bill Clinton in 1994, mostly comprising academics in the medical and radiation sciences, law, ethics, and other disciplines and chaired by Ruth Faden, director of the Bioethics Institute at Johns Hopkins University. Some 50 staff members assisted the panel. It reviewed experiments conducted between 1944 and 1974 that involved exposing humans to ionizing radiation from various sources. The experiments, some intentional and some accidental, had a wide range of formats and covered a variety of research topics, medical and nonmedical.

The report begins with a primer on radiation, radioactivity, and effects of radiation and a historical perspective on the ethics of research on human subjects. It proceeds with case studies that I would group in three categories: studies of the health effects of the Manhattan Project, assessments of the psychological and somatic effects of putative nuclear warfare, and clinical investigations involving radionuclides. The panel distinguishes among these categories, but grouping them all under the rubric of "human radiation experiments" has some confounding consequences. In the case of the Manhattan Project and nuclear warfare, the chief concern should be acts committed in the name of national security, with their attendant secrecy; as for clinical investigation, the principal interests are parity in the patient–doctor relationship, experimentation on vulnerable populations, and informed consent.

The book has a central premise, perhaps a dogma — that certain ethical principles are so basic that they are not temporally limited and should have been applied throughout the period under study, independently of evolving standards. These principles are the six "one oughts": not to treat people as mere means to an end, not to deceive others, not to inflict harm or a risk of harm, to promote welfare and prevent harm, to treat people fairly and with equal respect, and to respect others' right to self-determination. Judged against these six principles, many of the experiments described in the *Final Report* fail or falter.

Yet, except for the most egregious examples, the authors do not unduly castigate and seem more intent on informing than on scolding. And they provide considerable information, including oddments such as the informed-consent requirements laid down by the Weimar Republic's Ministry of the Interior in 1931 for therapeutic and nontherapeutic medical research and the 1953 top-secret memorandum of Secretary of Defense Charles Wilson, reiterating the Nuremberg Code and requiring that informed consent be written and witnessed. A copy of Wilson's memorandum was sent to the Joint Chiefs of Staff, but initially it was disseminated

no lower than the three secretaries of the armed services because of its security classification. Informed consent is the banner held aloft throughout the *Final Report* and reemphasized by Jay Katz, a panel member who keenly believes that the matter has not been sufficiently addressed in evaluating current behavior. Katz also points out that the dignity of the subjects, rather than physical injury, should be our principal concern in reviewing past practices. Indeed, most instances cited in the *Final Report* seem to have caused little physical harm.

The panel's staff members themselves conducted two experiments. In the first they examined contemporary proposals for research (using radiation or not) with regard to the level of risk, the degree to which the subjects understood the research, the factors likely to affect their voluntary participation, and the inclusion of those with a limited ability to make decisions. All these were issues in experiments conducted between 1944 and 1974. Among the panel's findings was that research using radiation is not more risky or ethically problematic than research that does not use radiation; actually, research using radiation may be controlled more strictly than other research, because of the double review by institutional review boards and radiation-safety committees. But the panel also found substantial deficiencies in the current system with regard to the protection of human subjects. In the second study by the panel, 1900 patients were interviewed. Among the conclusions was the following:

> . . . nearly 40 percent of the patients we talked with either believed they were or had been subjects of research . . . almost all of these patients said they had enrolled in research because they thought it was their best chance of personal medical benefit — [but] many patients also said that they had participated in research to help others.

The panel concludes with 23 findings and 18 recommendations. Some are technical, and others are general and not beyond contention. But whether one agrees with all of them or not, this thick book tells a cautionary tale. The great knowledge of disease processes, powerful diagnostic methods, and useful treatments derived from the radioactive materials that became available after World War II came at a price that with greater wisdom and thoughtfulness might have been avoided.

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COMPREHENSIVE HUMAN PHYSIOLOGY: FROM CELLULAR MECHANISMS TO INTEGRATION

Edited by R. Greger and U. Windhorst. 2527 pp. in two volumes, illustrated. New York, Springer-Verlag, 1996. $135. ISBN 3-540-58109-X.

THIS two-volume textbook of human physiology is indeed comprehensive. The editors and the 102 other contributors have produced an excellent treatise that integrates a vast amount of molecular, cellular, and systemic physiologic information. The editors do not identify the intended user, except by stating that the work is "not an introductory text and aims at a more advanced readership." I think the book is more appropriate for an advanced graduate course in physiology than for a first-year course in medical physiology, largely because of the sheer mass of material. More important, it is a valuable reference work for research physiologists, cellular and molecular biologists, and biochemists, because it fills the need for information on physiology and pathophysiology to be integrated with the enormous volume of information on cellular and molecular biology published in recent years. A feature rarely found in other textbooks of physiology is the historical survey in the opening chapter. It starts with the ancient Greeks, continues with the physiologists of various 19th-century schools, and ends with the current state of the discipline and its relation to biochemistry and cellular molecular biology. There is an assessment of the research of the 20th-century Nobel laureates in physiology giving evidence that physiology encompasses many current areas of cell and molecular biology.

The editors have organized this textbook according to organ systems. The initial chapters cover regulatory principles in physiology and concepts of control. The next eight chapters take up cellular mechanisms, including the functions of various membrane-bound organelles, transduction processes (i.e., second-messenger systems), cell communication, membrane transport, and nonmuscle motility. These chapters present basic information that the later chapters use in describing the function of organ systems. The rest of volume 1 contains 46 chapters on all aspects of nervous-system physiology. Volume 2 encompasses intake and excretion (gastrointestinal function), the kidney, fluid and electrolyte balance, cardiovascular and respiratory function, and the life cycle (reproduction, development, aging, and death). The emphasis on cellular processes is evident in the subsections under the heading of vascular smooth muscle, which include syncytial structure, filaments, interactions between actin and myosin, and the intracellular handling of calcium. Many of these topics involve material that has appeared as late as 1995, but is not yet included in standard textbooks of human physiology. This is one example, among many, of the immense effort the authors have made to include the latest information on cell function to explain the function of organ systems.

Molecular, cellular, and systemic integration is the overall theme of this textbook, but the final result is somewhat uneven, because the integration was not always followed by every author. This is perhaps understandable, considering the large number of authors and the extremely long gestation period for the project; the earlier and the later chapters are based on literature from very different periods. Also, the textbook's usefulness is compromised by the lack of an index in volume 1. Every two-volume textbook of physiology with which I compared this one had an index in both volumes, a convenience that allows volume 1 to be used without having volume 2 close at hand.

This comprehensive textbook of human physiology makes a valuable contribution because of its heavy emphasis on the integration of molecular and cellular biology with organ-system physiology and pathophysiology. It performs

a worthwhile service for physiologists that sets it apart from most other standard textbooks of human physiology.

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MOTOR VEHICLE COLLISION INJURIES: MECHANISMS, DIAGNOSIS, AND MANAGEMENT

By Lawrence S. Nordhoff, Jr. 373 pp. Gaithersburg, Md., Aspen, 1995. $100. ISBN 0-8342-0727-3.

MOTOR Vehicle Collision Injuries is an ambitious book with multiple objectives aimed at multiple audiences with various levels of background knowledge. The challenge of explaining cephalgia and sciatica to nonmedical readers while stimulating the interest of trauma surgeons, orthopedic surgeons, or emergency physicians is daunting.

The author has developed a thoughtful, practical guide for physicians in private practice for ranking the severity of neck and back injuries. He describes a fairly detailed physical examination for head injuries and provides a comprehensive discussion of multiple syndromes after trauma to various parts of the body. There is also a useful review of the literature on the subject. Some figures, especially those on different trigger points for symptoms from muscle groups, are small and difficult to read.

The discussion on teaching the physician to collect pertinent information is informative, but the recommendations would be difficult to follow in a busy emergency department or trauma center. Nonetheless, readers learn about the detail and extent of paperwork necessary in the medicolegal environment. The chapters on imaging, especially of the spine, are comprehensive. Similarly, there is a useful discussion of the current studies and techniques of the neurodiagnosis of neck injuries. The chapter on disabilities after car crashes is a helpful review of a complex and poorly understood subject. The chapter on medicolegal reports will be helpful to practitioners who deal infrequently with the medicolegal system. It recommends a helpful method of reporting that will withstand medicolegal scrutiny. The comprehensive discussion of the forces involved in different types of crashes and the predicted injuries to occupants in different positions in the vehicle is very well written and easy to read.

In sum, this book spans a broad range of topics and manages to sustain the interest of the readers as well as to educate them.

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BOOKS RECEIVED

The receipt of these books is acknowledged, and this listing must be regarded as sufficient return for the courtesy of the sender. Books that appear to be of particular interest will be reviewed as space permits. The Journal *does not publish unsolicited reviews.*

BIOMEDICAL SCIENCE

Biochemistry: A case-oriented approach. Sixth edition. Edited by Rex Montgomery, Thomas W. Conway, Arthur A. Spector, and David Chappell. 683 pp., illustrated. St. Louis, Mosby, 1996. $54.95. ISBN 0-8151-6483-1.

Biomedical Functions and Biotechnology of Natural and Artificial Polymers. Edited by Manssur Yalpani. 283 pp., illustrated. Shrewsbury, Mass., ATL Press, 1996. $225 (cloth); $124 (paper). ISBN 1-882360-02-8 (cloth); 1-882360-32-X (paper).

Chromosome Abnormalities and Genetic Counseling. Second edition. By R.J. McKinlay Gardner and Grant R. Sutherland. 478 pp., illustrated. New York, Oxford University Press, 1996. $59.50. ISBN 0-19-510615-6.

Essential Endocrinology. Third edition. By John F. Laycock and Peter H. Wise. 409 pp., illustrated. New York, Oxford University Press, 1996. $34.95. ISBN 0-19-262471-7.

Handbook of Physiology. Section 12: Exercise — regulation and integration of multiple systems. Edited by Loring B. Rowell and John T. Shepherd, with five others. 1210 pp., illustrated. New York, Oxford University Press, 1996. $195. ISBN 0-19-509174-4.

Human Anatomy: Color atlas and text. Third edition. By J.A. Gosling, P.F. Harris, J.R. Humpherson, I. Whitmore, and P.L.T. William. Approximately 350 pp., illustrated. St. Louis, Mosby, 1996. $39.95. ISBN 0-7234-2657-0.

Molecular and Developmental Biology of Cartilage. (Annals of the New York Academy of Sciences. Vol. 785.) Edited by Benoit de Crombrugghe, William A. Horton, Bjorn Reino Olsen, and Francesco Ramirez. 367 pp., illustrated. New York, New York Academy of Sciences, 1996. $110. ISBN 1-57331-010-7.

Molecular Diagnosis of Cancer. (Methods in Molecular Medicine.) Edited by Finbarr E. Cotter. 218 pp., illustrated. Totowa, N.J., Humana Press, 1996. $69.50. ISBN 0-89603-341-4.

Molecular Diagnosis of Genetic Diseases. Edited by Rob Elles. 356 pp., illustrated. Totowa, N.J., Humana Press, 1996. $69.50. ISBN 0-89603-346-5.

Mycobacteria and Human Disease. Second edition. By John M. Grange. 230 pp., illustrated. New York, Oxford University Press, 1996. $75. ISBN 0-340-64563-6.

New Directions in Vestibular Research. (Annals of the New York Academy of Sciences. Vol. 781.) Edited by Stephen M. Highstein, Bernard Cohen, and Jean A. Büttner-Ennever. 739 pp., illustrated. New York, New York Academy of Sciences, 1996. $145. ISBN 1-57331-006-9.

The Protein Protocols Handbook. Edited by John M. Walker. 809 pp., illustrated. Totowa, N.J., Humana Press, 1996. $124.50 (cloth); $89.50 (paper). ISBN 0-89603-338-4 (cloth); 0-89603-339-2 (paper).

Radiation Therapy Physics. Second edition. By William R. Hendee and Geoffrey S. Ibbott. 556 pp., illustrated. St. Louis, Mosby, 1996. $69.95. ISBN 0-8016-8099-9.

Renal Physiology. Second edition. By Bruce M. Koeppen and Bruce A. Stanton. 252 pp., illustrated. St. Louis, Mosby, 1996. $27.95. ISBN 0-8151-5202-7.

Textbook of Endocrine Physiology. Third edition. Edited by James E. Griffin and Sergio R. Ojeda. 396 pp., illustrated. New York, Oxford University Press. $55 (cloth); $27.95 (paper). ISBN 0-19-510754-3 (cloth); 0-19-510755-1 (paper).

Transplantation Biology: Cellular and molecular aspects. Edited by Nicholas L. Tilney, Terry B. Strom, and Leendert C. Paul. 740 pp., illustrated. Philadelphia, Lippincott–Raven, 1996. $159. ISBN 0-397-51683-5.

EDUCATION, HISTORY, BIOGRAPHY, AND PUBLIC PRESS

Advances in Biometry: 50 years of the International Biometric Society. Edited by Peter Armitage and Herbert A. David. 473 pp. New York, John Wiley, 1996. $59.95. ISBN 0-471-16018-0.

Answering Your Questions about AIDS. By Seth C. Kalichman. 271 pp. Washington, D.C., American Psychological Association, 1996. $9.95. ISBN 1-55798-339-9.

The Beta Virus. By Robert A. Kloner. 250 pp. Greenwich, Conn., Le Jacq Communications, 1996. $9. ISBN 0-96260204-3.