

techniques. However, for those who already understand radioimmunoassay and wish to develop familiarity with the increasingly popular nonisotopic immunoassays, it is enjoyable reading.

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CRANIOFACIAL AND UPPER CERVICAL ARTERIES: FUNCTIONAL, CLINICAL AND ANGIOGRAPHIC ASPECTS. P. L. Lasjaunias. Baltimore, Williams and Wilkins, 1981, 199 pp, \$57.00

The subspecialty of interventional neuroradiology has made astounding progress in the past decade with the development of superselective angiography, detachable and flow-guided coaxial balloon systems, and intravascular and embolization agents. The treatment of carotid-cavernous fistulae, vertebral jugular fistulae, deeply seated arteriovenous malformations, and juvenile angiofibromas are just a few of the many lesions of the head and neck that are amenable to treatment by interventional techniques. A detailed understanding of the vascular anatomy of the craniofacial region is an obvious prerequisite for anybody who desires to become involved in the use of these sophisticated and complex therapeutic systems. Dr. Lasjaunias' elegant text provides an ingenious new approach to the anatomy of this area by stressing flow relationships and regional blood supply rather than static anatomic and morphologic structure.

The book begins with an introduction to the basic concepts of hemodynamic balance, vascular pedicles, and regional blood supply. The next six chapters detail the arterial anatomy of the internal maxillary system, the pharyngo-occipital system, the upper cervical regional, the musculocutaneous elements of the head and mouth, and the transosseous peripheral nervous system. A dynamic approach to the vascular anatomy is consistently adhered to throughout the book. The author is to be commended on the excellent quality of the numerous line drawings, magnification-subtraction angiograms, and color photographs of anatomic preparations. All of the illustrations are of high quality and are clearly labeled. Since no more than two illustrations appear on a page, the figures are large and very legible. There are numerous tables included in the book that aid in defining some of the complex vascular relationships discussed. The subject index is quite complete and the up-to-date bibliography is extensive.

Perhaps the most important critical shortcoming of the book relates to Dr. Lasjaunias' somewhat convoluted use of the English language. For example, in the preface he writes, "Although theoretical arterial sources might appear too numerous, not every solution to a hemodynamic constraint is viable: only a certain number of them are encounterable. Therefore, anatomic variants are not unquantifiable, because they obey a phylogenetic and ontogenetic logic." With concentration and frequent reference to the excellent illustrations, the meaning usually becomes clear. In spite of this single shortcoming, this book should be valuable to the radiologist now engaged in or contemplating practice in the field of interventional neuroradiology. No doubt neurosurgeons, otolaryngologists, ophthalmologists, and others interested in the study of head and neck disease will benefit from Dr. Lasjaunias' unique approach to the vascular anatomy of this region.

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FUNDAMENTALS OF RADIATION DOSIMETRY. (Medical Physics Handbook 6.) J. R. Greening. Philadelphia/London/Rheine, Adam Hilger Ltd. (Heyden & Son, Inc.), 1981, 160 pp, \$27.00

Fundamentals of Radiation Dosimetry is one volume of an ongoing series of handbooks devoted to medical physics. The publisher, Adam Hilger Ltd., has begun a collaborative effort in the U.K. with the Hospital Physicists' Association, which has resulted in nine volumes, approximately 1500 pages of material, having appeared since 1979. John Greening's contribution, devoted entirely to ionizing radiation, is divided into 12 chapters with an appendix discussing physical quantities and units.

Physicists in radiation therapy will appreciate this volume. The author emphasizes the evolution of the dosimetric concepts described. Obviously he has had an extended and thorough association with these developments, generally from the point of view of the International Commission on Radiation Units and Measurements (ICRU). Such a historical approach is particularly useful during the present transition from the older systems to SI units.

Concise, well-written chapters are allocated to the concepts of fluence, radiation interactions, exposure, kerma, absorbed dose, cavity theory, and specific methods of dosimetry. The longest chapter (29 pages) is devoted to the physical description of the interaction of ionizing radiation with matter. Neutral particles, both photons and neutrons, as well as charged moieties are included in this discussion. A short section on neutron dosimetry is also available.

The most relevant chapter for nuclear medicine personnel is 13 pages long and entitled "The Dosimetry of Radionuclides." Much of this exposition is devoted to implantable therapy sources and includes Sievert's integral analysis and the Paterson-Parker strategies for tumor treatment. There are, unfortunately, only five pages allocated to calculations on "unsealed sources" of radionuclides. Although several MIRD publications are referenced, no sample computations of radiation doses associated with typical nuclear medical protocols are included. There is a tendency to be rather parochial about this as well. In lieu of such calculations or even a table of their results, the author cites "widely distributed" National Health Service Circulars.

The obvious omissions from Greening's work are in some contradiction to the information on the flyleaf, which explicitly states the intent of having "radiodiagnosticians" as part of the book's audience. Although dosimetry can mean different things to different people, it is unclear why diagnostic applications get so little coverage. There may be forthcoming companion volumes on nuclear medicine and diagnostic x-ray. If not planned, the editor should certainly add such titles to the series in the near future.

Other readers may be somewhat disappointed by the use of the word "handbook" in the complete title of this volume. Useful tabulations of expected entities such as gamma-exposure rate constant, roentgen-to-rad conversion factor f , or even typical depth-dose relationships are lacking. Numerous references are used instead, and the reader is left with the impression of receiving an enthusiastic literature survey. One limiting omission is a cognizance of other titles in the series. As an example, Greening spends several pages discussing thermoluminescent dosimetric (TLD) devices but gives no reference to the companion volume by A. F. McKinlay, *Thermoluminescence Dosimetry*. The paragraph on radiation therapy doses has no connection to R. F. Mould's *Radiotherapy Treatment Planning*, which is number 7 in the series. The lack of cross-references is disappointing. If one were to select a general medical physics topic, there presently appears to be no simple way to find it other than by going to each possible volume and checking the respective index.

In summary, this volume is useful in the training of physicists and radiation dosimetrists. It will probably not satisfy the typical diagnostic radiologist except as a source book for the concepts of

exposure and absorbed dose. The points regarding the integration of the entire series and cross referencing should be addressed by the publisher and editor. A fractionated handbook can readily resolve itself into its component parts without such an approach.

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THERMOLUMINESCENCE DOSIMETRY. (*Medical Physics Handbook 5*). A. F. McKinlay. London/Philadelphia/Rheine, Heyden & Son Inc. (Adam Hilger Ltd.), 1981, 170 pp, illustrated, \$28.00

The purpose of this handbook, as stated by the author in the preface, is to provide an introduction to the use of thermoluminescence dosage meters (TLDs) for determination of ionizing radiation dose measurements with particular emphasis on clinical dosimetry. There are three main themes covering some basic theoretical aspects of thermoluminescence and characteristics of TL phosphors, applications, and instrumentation in the seven chapters of the book. A rather superficial treatment of the theoretical aspects of the phenomena of luminescence and thermoluminescence is provided in the first two chapters. Chapter 3, one of two important chapters in the book, adequately examines the important characteristics of commonly used TL phosphors. In Chapters 4 and 5 the use of TLDs for specific measurement applications is discussed, and the principles of design and operation of TLD readers are well described in Chapter 6. The final chapter, which is the other important chapter in the book, identifies practical problems, pitfalls, and solutions in the routine use of TLDs.

This well-written, easily read, small book meets the intended goal of providing an introduction to the subject with current updated information. Also, the selected references to publications in the scientific literature are well chosen and should allow the interested research scientist to pursue the subject to greater depth. The book, however, does not adequately present the use of TLDs with particular emphasis on clinical dosimetry. The material covering clinical dosimetry, both in terms of concepts and application, is rather elementary and weak, reflecting in part the author's noninvolvement in the clinical area. The usefulness of thermoluminescence dosimetry as a methodology for clinical dose measurements has now been well established. Numerous papers in clinical journals have presented data on various applications, and these should have been researched and included in this book if the main emphasis was intended to be on clinical applications. Also, some of the subtle, but important, factors that must be considered when calculating absorbed dose from exposure measurements or absorbed dose for high-energy photons and electrons have been overlooked. This omission is significant particularly when modern day radiation therapy practices require an accuracy of $\pm 5\%$ in establishing the delivered dose.

Overall, the young physicist, new to the field of radiation dose measurements, may find this handbook valuable, especially since a monograph on this same subject was last published back in 1968. The experienced medical physicist, however, will find little new in this handbook, since he will have easy access to the proceedings of the international conferences held at three-year intervals.

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BOOKS RECEIVED

Nuclear Medicine Technology. Continuing Education Review. Second Edition. E.V. Dubovsky, Ed. Garden City, NY, Medical Examination Publishing Co. Inc., an Exerpta Medica Company, 1981, 210 pp, \$16.50

Bone and Bone Seeking Radionuclides: Physiology, Dosimetry and Effects. (EULEP Symposium. Rotterdam, The Netherlands, August 29, 1980.) V. Volf, Ed. Oxford, England, Harwood Academic Publishers (for the Commission of the European Communities), 1981, 153 pp, \$32.00 (80 DFL)

Functional Mapping of Organ Systems and Other Computer Topics. P.D. Esser, Ed. New York, Society of Nuclear Medicine, 1981, 272 pp, illustrated, \$28.00

Physics and the Circulation. Medical Physics Handbook 9. J.O. Rowan. London, Adam Hilger Ltd. (Heyden & Son Inc.), 1981, 125 pp, illustrated, \$28.00, Members, \$19.00