

Book Reviews¹

Advances in Biomedical Engineering, ed., J. H. U. Brown, Vol. 7, Academic Press, New York, 1979, \$25. This volume contains 5 articles: One about a fundamental problem in physiology, four about clinical and health care problems. The physiological article is written by H. J. Granger and A. P. Shepherd, and is concerned with the dynamics and control of the microcirculation. It is a comprehensive presentation of modeling based on the metabolic hypothesis. Interactions of various factors are clearly demonstrated in this paper, but the justification of some of the basic equations was not discussed, nor are the alternative hypotheses. This is a complicated subject: although the article is already very long (63 pp.), it is still not long enough. Perhaps only a book length treatise can do justice to the subject.

The chapter on Computed Tomography by Waggener and McDavid gives a delightful presentation of the history, principles, industry, market, clinical usage, finances, regulation, and politics of this most expensive medical instrument. A shorter chapter on Environmental Engineering and Protection by Feldman is also very interesting in presenting the conflicting views of the government, industry, and people. Politics and economics are interwoven with science and technology, as any expensive project would.

The other two chapters, on *Telemedicine in a Rural Health Delivery System* by Justice and Decker, and *Quality Assurance in Emergency Medicine* by Gibson, are informative. They deal with problems of evaluation of cost effectiveness.

Al together this is a volume of very good reading.

Biomaterials, an Introduction, J. B. Park, Plenum Press, New York, 1979, \$22.50. This is a concise survey of implantable materials for dental and orthopedic applications or

¹Reviewer: Y. C. Fung, University of California, San Diego, La Jolla, Calif.

artificial internal organs which are exposed to body fluids. It covers both biological and man-made materials. The presentation is lucid, and the material selected is interesting. It can serve as a useful textbook for college students at the undergraduate level. The mathematics and mechanics background required is elementary. The worked out examples and problems for solution should serve as a useful teaching aid.

The Mechanics of the Circulation, C. G. Caro, T. J. Pedley, R. C. Schroter, and W. A. Seed, Oxford University Press, 1978, \$46. This book is a product of collaboration between a physiologist, a mathematician, an engineer, and a physician. The collaboration is remarkably smooth. Like a good sculpture which leaves no chisel marks on the marble, there are no marks of individual specialization in this book. All is well integrated toward the physiology of circulation. Mathematics is avoided whenever practicable, and mechanics is presented in readily comprehensible terms.

The first part presents the basic ideas of fluid and solid mechanics without tears. The style should be especially receptive to physiological and medical students. The second part deals with the mechanics of circulation. In 6 chapters, it discusses successively the blood, the heart, the systemic arteries, systemic microcirculation, systemic veins, and pulmonary circulation. The presentation is masterful and up-to-date. Current concepts are critically evaluated. Many of the original contributions are the author's own.

Stressing mechanics in the study of circulation physiology is not new, but a book dealing exclusively with this subject is. The authors have made the case convincingly that mechanics is useful to physiology. After reading the book, one would wonder how can circulation physiology be understood without such a study of mechanics. One cannot! I recommend this book to all physiology teachers and students.