

- 3 Bioelectric Phenomena in Plants
- 4 Human Heart, EKG, Control, etc.
- 5 Respiration
- 6 Nerves and Muscles

In addition, there are several useful appendices on instrumentation literature and lab manuals, on anesthesia, catheters, and shop-made instruments.

The presentation of the fundamentals is very careful. The figures showing actual components in the laboratory are useful. But there are some omissions. For example, p. 35, capacitive reactance is discussed at some length. Why so skimpy on inductive reactance? Then, resistor code is given, so that a student can recognize a resistor when he/she sees one. Why not present the code for capacitors as well?

The discussion on solid state devices is very good. The chapter on electric safety is excellent. Safety is an important subject. Bioengineers can make a great contribution to health delivery by paying attention to and improving safety measures in hospital practice. Not only electric safety, but also the question of how to prevent human errors in the operation of medical instruments, such as respirators, etc.

If a complaint can be lodged, it is that many illustrative figures are so small that it is very difficult to read. But overall, I find this book excellent.

Modern Cardiovascular Physiology, by Carl R. Honig, 347 + xiii pp., \$15.95 (paperback), Little, Brown & Co., Boston, 1981.

The Human Cardiovascular System – Facts and Concepts, by John T. Shepherd and Paul M. Vanhoutte, 351 + vi pages, \$14.95 (paperback), \$25.00 (cloth), Raven Press, New York, 1979.

These two new textbooks are both excellent, yet they are very difficult in style and approach. The difference in contents can be seen from their major divisions.

Honig:

- 1 Properties of Cardiovascular Muscles
- 2 Hemodynamics
- 3 Capillaries, Filtration, and Determinants of Transport
- 4 Regional Circulation and Vasomotor Mechanisms
- 5 Regulation by Central Nervous System

Shepherd and Vanhoutte:

- 1 Components of Cardiovascular System
- 2 Dynamic Behavior
- 3 Local Control of Cardiovascular Function
- 4 Neurohumoral Regulation
- 5 Integrated Responses of the Cardiovascular System to Stress
- 6 Pharmacodynamics
- 7 Hypertension Hyperreactivity
- 8 Diseases of the Endothelium, Supporting Structures, and Active Components of the Cardiac and Vascular Walls
- 9 Circulation in the Fetus, Changes at Birth, and Congenital Heart Disease
- 10 Measurement of Heart Function, Vascular Function and Blood Volume

Thus Shepherd and Vanhoutte is more clinically oriented, but Honig contains clinical applications, too, though not as much. The discussion of pharmacodynamics and pathological situations and their management in Shepherd and Vanhoutte is very good; it makes delightful reading as well as being informative.

Both books have in common an emphasis on the systems

concept. Both display the complexity of the cardiovascular system. Both stress the importance of the transport phenomena. Yet the styles are different. Honig has more mathematical formulas, whereas Shepherd and Vanhoutte has more diagrams of molecular structures. Honig leans more on the physics side of the problem. Shepherd and Vanhoutte leans more on the chemical side. Honig stresses rheology, and considers it to be one of the important advances made in the past 20 years; Shepherd and Vanhoutte does not mention that word. Honig spends considerable space on microcirculation; Shepherd and Vanhoutte are very brief on that. Honig asks his reader to do exercises to solve the problems presented in the book, and considers that as an integral part of the text; Shepherd and Vanhoutte offer no problems for solution. On the other hand, the superior chapters on neurohumoral regulation and pharmacodynamics are not matched by Honig.

I like both books. An instructor selecting a text book can choose according to his/her inclination and judgment as to what is needed by the student.

Structure and Function of the Circulation, Vol. 1., edited by Colin J. Schwartz, Nicholas T. Werthessen, and Stewart Wolf, 819 pp., \$75, Plenum Press, New York and London, 1980.

This book contains 11 chapters. I found them all well written and informative. The contents are as follows:

- 1 The Arteries in Greco-Roman Medicine, by C. R. S. Harris, 20 pp.
- 2 Embryology of the Human Arterial System, by W. Pallie, 74 pp.
- 3 Functional Morphology of Arteries During Fetal and Post-natal Development, by W. W. Meyer, S. Z. Walsh, and J. Lind, 286 pp.
- 4 Abdominal Visceral Circulation in Man, by E. A. Edwards, 44 pp.
- 5 Arterial Circulation of the Extremities, by H. Haimovici, 62 pp.
- 6 Biology of the Collateral Circulation, by D. E. Strandness, Jr., 50 pp.
- 7 Measurement of Blood Pressure, Blood Flow, and Resistance to Blood Flow in the Systemic Circulation, by J. Ludbrook, 50 pp.
- 8 Regulation of Arterial Blood Flow, Pressure, and Resistance in the Systemic Circulation, by J. Ludbrook, 44 pp.
- 9 The Anatomy of the Renal Circulation, by K. Solez and R. H. Heptinstall, 30 pp.
- 10 The Renal Circulation: Physiology and Hormonal Control, by K. Solez and R. H. Heptinstall, 68 pp.
- 11 The Innervation of Arteries, by G. Burnstock, J. H. Chamley, and G. R. Campbell, 40 pp.
- 12 The Blood Supply to Nerves, by W. Paille, 36 pp.

Dr. Harris presents in the first chapter a very interesting account of the Greco-Roman conception of circulation. A mistaken idea, based on a wrongly interpreted observation of fact, prevented the ancients from discovering that blood circulates. The observation was that in dissection of corpses the arteries were found to be patent and filled with air. The interpretation was that the arteries supply the gases to the organs. Following this mistaken idea, all the brilliant achievements of Greek and Roman anatomy were not able to yield a correct assessment of the function of circulation. This discussion is a fitting introduction to the chapters that follow.

The second chapter is devoted to arteriogenesis. It is an excellent presentation with many colored illustrations. The third chapter, by Meyer, Walsh and Lind, treats the morphology of arteries during fetal and post-natal development. It is 286 pages long. The details of the morphology are presented in an unhurried manner. It is one of the most comprehensive treatments of this subject. In today's world of publications, in which the publisher and the editors always try to get the authors to shorten their manuscripts, the appearance of this chapter is a delight. It gives me much pleasure to read the details of the structures of the arterial walls. Information like this is needed if bioengineers are ever going to