



CIRCULATORY PHYSIOLOGY

— *the essentials*

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Dedicated to our parents

James W. and
Catherine Smith

and

Dr. Clifford and
Florence Kampine

They showed us the way.

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Preface

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This book—which is intended for medical students—has evolved from our lectures in cardiovascular physiology to the medical and graduate classes. However, we have also been influenced in the method of presentation by our teaching sessions with nurses and allied health students as well as with residents and physician groups. It seems that all of us share the perennial problem of the increasing volume of material and the pressing need to cull out the relevant in the time allotted. As a consequence we have tried to confine ourselves to the essentials.

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We had two primary aims in the preparation of this book; the first was to present the basics of circulatory physiology mainly for those who are (or will be) charged with the diagnosis and care of cardiovascular patients. As a result, many interesting topics dealing with fundamental mechanisms have usually been omitted or treated only briefly. In further accord with this objective, clinical applications have been emphasized throughout the text and two chapters on the pathophysiology of certain cardiovascular disorders have been included. Physicians and others involved with coronary care units and circulatory stress testing may find this approach useful.

A second objective has been to develop some of the more difficult concepts in an orderly, stepwise and hopefully intelligible manner. Diagrams have been liberally used and physical, chemical and biological principles and analogies incorporated when they seemed useful.

In developing topics rather briefly and bypassing some of the complex issues, the danger is that the student may feel that the subject is straightforward and that most problems are resolved, which of course

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is far from the truth. Not only on questions of diagnosis and treatment but on a number of basic concepts, there is still intensive investigation and considerable controversy.

But it is sometimes helpful to have a small-scale map of the battlefield, which is why we undertook to write this book. And, in any event, for the student, the classroom and the laboratory may be better places to air the unsolved problems. We also hope that the references we have included, many of them reviews by leading authorities, will help to focus attention on current research in this field.

We wish to acknowledge, with very real gratitude, our many colleagues and our own students who have made helpful comments and valuable suggestions. However, in the final analysis, the selection of content and method of presentation must be our own responsibility; such selection is a highly individual process and no doubt others would have made different choices. We would, therefore, very much welcome comments, not only regarding specific errors or omissions but also general impressions and suggestions.

James J. Smith

John P. Kampine

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In a field as broad as circulatory physiology, it has become difficult to prepare a textbook without considerable help. We received not only help but encouragement from many people and to them goes our sincerest gratitude. A number of faculty from different disciplines were kind enough to check parts of the manuscript and make suggestions. From the faculty of other universities we gratefully acknowledge the help of Dr. James P. Filkins and Dr. Walter C. Randall of the Stritch School of Medicine, Dr. Francis J. Haddy of the Uniformed Services University, Dr. Dean C. Jeutter of Marquette University, Dr. Richard A. Kenney of George Washington University, Dr. John B. West of the University of California, San Diego, Dr. Kenneth E. Penrod of the University of Florida, Dr. Robert W. Rasch of East Tennessee State University, Dr. Keith E. Cooper of the University of Calgary, and Dr. John Naughton, State University of New York, Buffalo.

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While we take pleasure in acknowledging the assistance of our colleagues, we of course, take full responsibility for any errors or omissions in the manuscript.

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