10

PROGRESS IN CARDIOLOGY

PAUL N. YU

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LEA & FEBIGER · *Philadelphia, 1981*

OTHER BOOKS IN THE SERIES

Progress in Cardiology 1—1972—$15.00
Progress in Cardiology 2—1973—$15.00
Progress in Cardiology 3—1974—$17.50
Progress in Cardiology 4—1975—$15.00
Progress in Cardiology 5—1976—$19.50
Progress in Cardiology 6—1977—$15.00
Progress in Cardiology 7—1978—$17.00
Progress in Cardiology 8—1979—$25.00
Progress in Cardiology 9—1980—$15.00

The Library of Congress has cataloged this serial publication as follows:

Progress in cardiology. 1–
Philadelphia, Lea & Febiger, 1972–

v. ill. 26 cm. annual.
ISSN 0097–109X
1. Cardiology—Periodicals.
RC681.A1P74 616.1'2'005 77–157474

ISBN 0-8121-0326-2 (v. 1)
ISBN 0-8121-0409-9 (v. 2)
ISBN 0-8121-0451-X (v. 3)
ISBN 0-8121-0509-5 (v. 4)
ISBN 0-8121-0578-8 (v. 5)
ISBN 0-8121-0596-6 (v. 6)
ISBN 0-8121-0621-0 (v. 7)
ISBN 0-8121-0694-6 (v. 8)
ISBN 0-8121-0728-4 (v. 9)
ISBN 0-8121-0815-9 (v. 10)

Printed in the United States of America

Print No. 3 2 1

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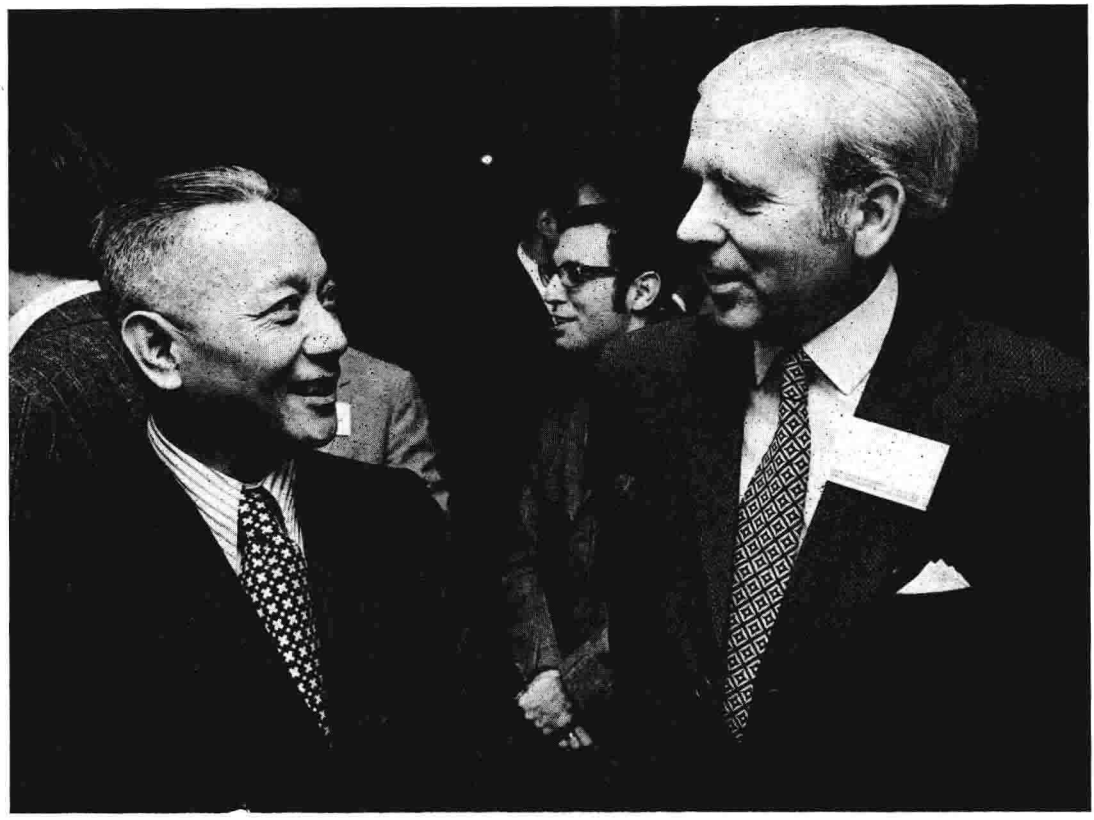

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PREFACE

The editors are proud to announce the tenth anniversary of *Progress in Cardiology* with a commemorative volume in honor of Professor Sir John McMichael, M.D., F.R.C.P., F.R.S.

Sir John's achievements as a medical scientist have justly earned him a worldwide reputation for his wisdom, insight, and originality of mind. His pioneer work on cardiac catheterization early earned him fame, while his original work on digitalis and heart failure was a milestone in cardiologic history. His later work on systemic hypertension pointed the way to present-day treatment. His insistence on high standards of meticulous and critical observation and deduction has been in the greatest traditions of medical science, and his fearless advocacy of what he regarded as the right course of action has always evoked admiration.

Apart from his research work, he has been in the forefront of medical education. His policies of support for the young investigators in his department have borne fruit in the last three decades.

Volume 10 deals with the future of cardiovascular disease. In view of this direction, it seemed all the more fitting to dedicate the volume to Sir John in the light of his interest in new ideas and his support of talented young colleagues.

The editors have adopted an entirely new approach to this volume. Every chapter, with the exception of one, has at least two parts, each written by a different expert. The contributors have been asked (on the basis of their present views and current trends) to predict future advances in their fields without consulting each other in advance. Thus, the views expressed are the result of personal opinion and experience rather than the consensus and should sharpen the debate, particularly in contentious, unresolved areas of cardiology.

The volume opens with a chapter by Dr. Howard Burchell and Sir John McMichael on the future of academic cardiology and

reflects the views of sage elder statesmen on both sides of the Atlantic. The second, and probably most controversial, chapter, on the prevention of coronary heart disease, has four authors: two from the United States, one from the United Kingdom, and one from the Netherlands. In this chapter, the cut and thrust of skepticism and enthusiasm are stimulating and thought-provoking. Chapters follow on sudden death, hypertension, congenital heart disease, the cardiomyopathies, echocardiography, nuclear cardiology, antiarrhythmic therapy, pacemakers, cardiovascular surgery, electrophysiology, and angiocardiography and scanning. The list is intentionally not comprehensive, but we believe that it embraces many of the subjects important to survey at the present time.

We do not wish to jeopardize further the thrill of anticipation by revealing what views and controversies will emerge from the chapters, but we sincerely hope that our readers will appreciate and enjoy them.

We are most grateful to all our contributors past and present for their unstinting help that has enabled *Progress in Cardiology* to enter the 1980's with a flourish.

In volume 11 we shall revert to the usual format and can promise a strong and effective list of contributors with a number of exciting chapters.

We are, as always, much indebted to the staff of Lea & Febiger: Mr. R. Kenneth Bussy, Mr. Francis C. Lea, Mr. Thomas J. Colaiezzi, Mr. Lawrence Bentley, and Ms. Holly Campbell Lukens. We are also most grateful to Mrs. Eleanor Lancet, Mrs. Sharon Postwick, and Miss Elizabeth Bashford for their valuable assistance.

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CONTENTS

Chapter 1

FUTURE TRENDS IN ACADEMIC CARDIOLOGY

Part I.

Howard B. Burchell, M.D.

Neither the voice of authority, nor the weight of reason and argument are as significant as experiment, from thence comes quiet to the mind.

Roger Bacon[2]

To be asked to visualize academic cardiology in A.D. 2000 is an invitation to unshackle one's imagination and generate undisciplined prophecy akin to science fiction. It is exciting to contemplate the same rate of progress in the next 20 years as in the past 20. Long-range predictions are always fraught with error, but, by examining the developments in the past two decades and by estimating the strength and consistency of trends, I can venture some projections.

TEACHING—WHERE AND HOW

The topic of "academic" cardiology limits the field to be discussed, because the focus needs be on those physicians dedicated primarily to teaching and research. The trends in the direct care of the patient are not a main theme in my essay, but some consideration of the practice of cardiology is obviously required. The traditional categories of professional activity—teaching, research, care of the patient—can rarely be rigidly compartmentalized, and some past attempts to so dissociate them have seemed to me artificial. However, clearly, a person's main interest and ability may be identified. My first prediction is that academic cardiologists, leading the learners, in future decades, will be clinical investigators, but there will be room in academe for cardiologists with the combination of a scientific background, bedside experience, and a zeal for teaching. Probably, these persons will be welcomed warmly by the academic hierarchy.

One outstanding change in the United States over the past 50 years has been an increasing number of heart institutes, organized to manage large numbers of patients registering for consultation and treatment, that are not closely associated with a university. This increase has resulted in some impoverishment of certain university hospitals in respect to referred cardiac patients. The self-designated institutions of cardiology with competent staffs have often offered

undergraduate and graduate teaching. The wealth of experience gained by those students in such programs has been worthwhile. Quality has been well controlled in these cardiologic practices, although the emphasis has often seemed to be on stereotyped routines rather than on research on the basic mechanisms of disease and study of the decision-making processes. My prediction is that there will be a shift of emphasis back to these fundamentals in many of these institutions.

Other developments over the past three decades have contributed to a background from which prophecy regarding the advance of knowledge may be ventured. Of particular importance is that a large number of sapient young physicians, well trained in internal medicine and cardiology, have entered the private practice of cardiology. These young persons, after their exposure to organized training programs, should be still interested in teaching, and some surely will have a compulsion to teach. The large percentage of trainees in cardiac medicine who have been attracted to private practice, on finishing their two or three years of specialized training, has been disappointing to many, both inside and outside the medical profession. The forces underlying their decisions have been both economic pressures and apparent disenchantments with academic life. Some also fear that government has lost interest in long-term support of research.

THE FUTURE FOR CLINICAL INVESTIGATORS IN CARDIOLOGY

Medical societies in the United States, whose proper conviction has been that clinical research constitutes the lifeblood of medical institutions and a measure of the optimum care of the patient, have for some years been concerned about an apathy of students and residents toward academic careers, and a recent analysis of possible causes has been published.[6,16] To me, the reasons that more students have not been fired with an all-consuming curiosity about disease mechanisms and possible manipulative interventions remain incomplete. Those physicians established in academic careers usually seem to have been ideal role models, but may not have been idols young physicians would choose to emulate. A disconcerting question arises: Does the smart young resident still suffer from the alleged hypercompetition for medical school admission, and does he fear the competition in the life of a clinical investigator with its minor imbroglios?

ECONOMICS AND EXCELLENCE IN THE SUBSPECIALTY

My old-fashioned views of the academic consultant were initially tarnished by the uncomfortable fact that the new technology, coronary arteriography, specifically, had allowed many physicians completing their training to subspecialize because of the financial base on which to do so. Highly skilled in specific procedures with catheters, such a physician was in danger, however, of entrapment by a narrow technique and of becoming less of a consultant in cardiology and more of an expert technician to whom the generalist sent a patient for a specific test.[12] I know now that these specialists are, for the most part, fully aware of their predicament and have access to, and keep abreast of, other developing areas, such as ultrasound, nuclear cardiology, and computerized tomography. Another prediction ventured from these facts, however, is that when the new techniques become available and compete for priority in practice, the new procedures may be used, but an older one may not be discarded. The outdated method will, at least, not be as quickly replaced as it might have been, had not the physician a vested interest in the old method, in which he had been trained. I hope such current worries will turn out to have been needless over the next decade.

During the early years of my professional life, I always presumed that practices in the university hospital represented the acme of the best medicine technically and ethically. In recent years, I have observed many non-university centers to be competitive in both areas. Indeed, some university hospitals have been at a disadvantage because of the fragmentation of the specialties that has made it potentially difficult to attend to the needs of the patient. The unicentric training of many excellent cardiologists may have been locally advantageous, but sometimes with the risk of complacency and provincialism. I predict that there will be a return to multiple-center training more frequently for the academic cardiologist. A related question is: Will the young physician, with his curiosity stirring, looking for research opportunities, turn to basic science laboratories in the old disciplines, not specifically categorized by disease, rather than to clinical departments for part of his training?

Pertinent to referral matters, a question concerning future trends is this: Will some well-trained internist-cardiologists return to academic hospitals where they will admit their patients, and will the old issues of full-time geographic and salary as income, again arise? The answer is "yes."

THE AMERICAN CARDIOLOGIST DEFINED

It was ten years ago that the American College of Cardiology sought and obtained a contract with the National Heart and Lung Institute to define the role of the cardiologist in the United States, with an assessment of the future needs of the subspecialty. The report, which appeared in 1976, classified cardiologists according to their activities, offered insights into the nature of medical care of cardiac patients, and gave estimates of the number of cardiologists to be needed in the future. Parenthetically, and lamentably, the report's introduction began with a misleading statement: "In 1940, less than 40 years ago, cardiology as a specialty did not exist."[1] It is true that it was in June of 1940 that arrangements were completed by the American Board of Internal Medicine, through collaboration with the American Heart Association, to hold subspecialty examinations, but great cardiologists had been recognized in the United States at least two decades earlier. The recommendations of that report, in respect to "academic cardiology," were not specific, but were of strategic import; it was emphasized that there was a critical shortage of academic cardiologists, and there was the need to recruit physicians with primary career goals in clinical investigation. The need for financial support was also underscored, and this support was considered to be properly the responsibility of the federal government.

In any study of the drift of students' interest away from investigation, their undergraduate years require scrutiny. I suggest that the curtailment of laboratory exercises in physiology, biophysics, and pharmacology may have been deleterious to many young physicians-to-be; they had not been captured by the attractions of model experiments. The teaching of circulatory dynamics by models—mechanical, simple electrical circuitry, and computer simulations—has not been universally adopted. Personally, although some might label it regression, I favor the use of animal preparations, namely, the heart-lung preparation and the isolated heart, on which interventions can be dramatically demonstrated. Despite a return to more animal demonstrations in the animal laboratory, the laws determining circulatory adjustments, I predict, will be taught with computers. Hemodynamic concepts must be brought to the bedside, and the student will more quickly appreciate the complex changes in the patient with basic principles in mind. As a simple example, he will advance more rapidly in his auscultatory skills if he has been introduced to sounds and murmurs on a heart sound simulator.