Recent Advances in Cardiology. Edited by John Hamer, Baltimore, The Williams and Wilkins Company, 1973, 424 pages, $20.25.

This is a small multi-authored volume which, as the editor states in the preface, is not meant to be comprehensive. Rather, it is meant to deal with new advances in selected topics of interest and importance in medical and surgical cardiology. Since the previous edition of this volume was 1959, this plan would appear to give the editor a great deal to cover and perhaps an impossible task for a small volume.

The editor has arranged the subject matter into three groupings: practical clinical problems and their management; fundamental topics such as myocardial metabolism and performance; and new methods of treatment.

The first four chapters deal with pediatric cardiology, pulmonary embolism, heart disease and pregnancy, and bacterial endocarditis. They are quite good. However, considering that coronary care units were a major development of the sixties and that new data is continuing to come from these units which challenges many time-honored views, the chapter on coronary care could use elaboration. The chapter on the surgery in ischemic heart disease is disappointing since along with coronary care units saphenous vein bypass grafting is one of the major developments of the last decade. Criteria for selection of patients, both clinical and hemodynamic, are very inadequately discussed. There is half again as much written on the Vineberg procedure as on saphenous vein bypass grafting.

The next grouping of fundamental topics is perhaps the strong part of the book, in view of the size of the volume, with fairly comprehensive chapters on myocardial metabolism and performance and on heart failure and shock. The brief discussion of echocardiography is good.

The final several chapters on beta-blockers, electroversion, and pacing are good, but the concluding chapter on valve replacement is disappointing with half again the space on mechanical valves devoted to tissue valves.

In summary, perhaps too much is attempted for a volume of this size written 14 years after its previous edition. With a few exceptions the book offers little more than is available in standard texts of cardiology. However, readers interested in the topics outlined, other than on coronary care and cardiac surgery, might use these remaining chapters as a good introduction to a more extensive review elsewhere.

A book of this size, written for the purpose expressed, might more appropriately be published every one to two years with uniformly brief chapters on a larger number of selected topics. A very up-to-date reference list could then be used directing the reader to recent, more extensive reviews or major articles dealing with the given subject in greater detail.

D. Bruce McCraw, M.D.

Sickle Cell Hemoglobin: Molecule to Man. Makio Murayama, Robert N. Nalbandian. Boston, Little Brown, 1973, 198 pages, $16.50.

The title Sickle Cell Hemoglobin: Molecule to Man is an intriguing one. Much of the practice of medicine is an art. However, in some areas a molecular basis of disease is known and provides a guide for therapy. Even in these areas, however, one often forgets the biophysical basis while applying its conclusions again and again. This book is written to remind clinicians that the development of laboratory tests economical enough for mass screening and the approach to the treatment of the disease are related to the physical properties of hemoglobin S—namely, the formation of hydrophobic bonds which causes the sickling phenomenon.

The first three chapters are devoted to the molecule hemoglobin S. A discussion of the structure of hemoglobin provides an introduction to the description of hemoglobin S, which differs from the normal major constituent of adult hemoglobin by a single amino acid. When this substitution occurs in deoxygenated hemoglobin, the spatial relationships between the α and β chains allow the formation of hydrophobic bonds between the β chains of one hemoglobin S molecule and the α chains of a neighboring one. A discussion of the bioenergetics of this sickling phenomenon follows. These chapters have to be read slowly because they are relatively technical and contain several undefined terms.

The next two chapters discuss population screening programs for detection of hemoglobin S. The positivity of the tests described depends on the formation of hydrophobic bonds. Although five hemoglobins sickle in the deoxygenated state, only two do so by this mechanism; thus, these results are more specific than those derived from the standard metabisulfite method.

The age of children who are screened is important because hemoglobin S is not present in large amounts at birth, a fact which is explained in the context of the embryonic development of hemoglobin. These chapters are detailed enough to provide the basis for organizing a screening program.

The final two chapters deal with urea therapy of sickle cell crisis. Laboratory evaluation of this treatment seemed justified for at least three reasons. Urea penetrates red cell membranes. Urea is relatively nontoxic to man. Urea interferes with the stability of hydrophobic bonds. The success of this work led to preliminary clinical trials and those described in this book are impressive. However, controlled studies of this
treatment have not yet been reported. A carefully controlled national trial of urea therapy is nearing completion and its results should provide a more complete picture. The authors note that cyanate therapy has also been shown to prevent the sickling phenomenon; a large national study of its efficacy in sickle cell crisis is being initiated and it will be some time before a comparison of these two modes of therapy can be made.

In summary, the title Sickle Cell Hemoglobin: Molecule to Man conveys a good approach to sickle cell disease. A potential reader should be aware, however, that the chapters dealing with the molecule in a test tube are difficult and that those dealing with urea therapy will require additional validation before firm conclusions can be drawn.

NANCY W. STEAD, M.D.

The Fourth Conference on the Clinical Delineation of Birth Defects. Part XV. The Cardiovascular System. Edited by Daniel Bergsma. Baltimore, The Williams and Wilkins Company, 1973, 325 pages, $29.00.

The Fourth Conference on "The Clinical Delineation of Birth Defects, part XV The Cardiovascular System" was sponsored by the Johns Hopkins Medical Institutions and the National Foundation—March of Dimes on June 7–11, 1971. The proceedings, edited by Dr. Daniel Bergsma with the assistance of Drs. Victor A. Mckusick, Catherine Neill, Richard Rowe, and Janice Lindstrom, appeared as volume VIII number 5 of the Original Article Series on Birth Defects in August 1972. As noted in the dedication to Dr. Helen B. Taussig, there is relatively little mention of the common types of cardiac defect in this publication. The conditions discussed are those where some knowledge is emerging regarding underlying etiologic mechanisms. The first two thirds of the book consists of 39 relatively short reports on a variety of cardiac malformations which are analyzed with particular reference to chromosomal aberrations, Mendelian-type inheritance and multifactorial combinations of inherited and environmental etiologic factors. There are excellent short chapters on hereditary cardiovascular malformations in dogs and on risk factors and genetic counseling in cardiovascular malformations in humans. Additionally there are discussions concerning cardiovascular malformations associated with heritable metabolic disorders such as mucopolysaccharidoses and hyperlipoproteinemia. The last one third of the book is devoted to 47 case reports of cardiovascular syndromes in which genetic and familial factors may play an important role. Of particular value is the appendix in which are listed heritable cardiovascular conditions and associated syndromes, with suitable references, so that the physician can determine, on the one hand, the type of heart defect associated with a particular syndrome (e.g., chromosome aberrations), and on the other hand, whether the cardiovascular malformation in question and the associated anomalies might fit into one of the reported syndromes. This should be particularly helpful in genetic counseling.

This book attempts to bring together in one volume a large number of relatively rare congenital cardiac disorders, emphasizing the interplay between genetic and environmental factors which may be of etiologic importance. It is a book which should be of considerable interest to pediatric cardiologists and genetic counselors dealing with cardiovascular abnormalities.

JEROME S. HARRIS, M.D.

Neonate Heart Disease. Edited by William F. Friedman, Michael Lesch, and Edmund H. Sonnenblitb. New York and London, Grune and Stratton, Inc., 1972 and 1973, 299 pages.

The chapters in this book previously appeared in the July, September, and November, 1972, and January, 1973, issues (Vol. XV, Numbers 1, 2, 3, and 4) of Progress in Cardiovascular Diseases. The purposes for publishing them as a group, as noted in the preface, are to highlight recent advances in several fields and to apply these to the clinical evaluation and management of infants with cardiac problems. To a considerable extent, the authors have done so.

The resulting volume is arranged so that the initial chapters include discussions of embryology and pathogenesis, intrinsic physiologic properties of the fetal heart, and of alterations of cardiovascular physiology associated with congenital malformations during the fetal and neonatal periods. The next group includes articles on the detection and elucidation of congenital heart disease in the neonatal period, with rather detailed discussions of the nonsurgical management of the sick infant. The remaining chapters are less homogeneous, but include excellent discussions of complete surgical correction of many malformations during the first year of life and of surgical palliation. There is a valuable and informative presentation of the status of noninvasive diagnostic techniques, as well as a review of etiologic aspects of congenital cardiac malformations. Chapters devoted to cardiomypathies and erythrocyte oxygen transport are also included. Erythrocyte oxygen transport has a rather formidable title, but is of more general interest than might be expected, particularly in the implications of therapeutic measures not often considered. At the end of each chapter there is a list of references that on cursory examination seems complete and pertinent, and adds considerably to the usefulness of the volume.

There are several mild criticisms that should be noted. The chapter on the pathogenesis of congenital heart block is of more limited interest to the clinician as is the chapter on cardiomyopathies. The discussions of hemodynamic investigation discuss procedures that are ideal and furnish valuable information on new instrumentation and techniques. Unfortunately, most laboratories are not this well equipped—or manned—and such detailed studies are not practical, particularly in the neonate, the age group designated in the title.

In summary, the volume achieves its purpose of presenting data obtained from rather sophisticated research techniques and applying these data to the management of clinical problems of the infant with
cardiovascular abnormalities. The book is well organized and should be a useful reference book for cardiologists, cardiac surgeons, pediatricians, internists, and generalists.

W. M. THOMPSON, JR., M.D.

Neurophysiology Studied in Man: Proceedings of a Symposium Held in Paris at the Faculté des Sciences. Edited by G. G. Somjen. Amsterdam Excerpta Medica, 1972, 487 pages.

This volume represents a first endeavor to bring together neuroscientists who have in common one interest—the study of man’s nervous system by direct and advanced electronic methods. The book is divided into five parts and presents electrophysiological studies of the cerebral cortical and subcortical regions (Parts I and II), the sensory system (Part III), and the motor system (Part IV). In studies concerning the brain, various authors present material derived both from gross macroelectrode and extracellular microelectrode studies of the cerebral cortex, the amygdalo-hippocampal complex, thalamic and subthalamic structures. In studies of the sensory system the spinal pathways are explored in addition to the above while in studies of the motor control, peripheral nerves, muscle receptors, and the cerebellum are considered. Each of the topics presented is characterized by rich and new material which adds to present-day concepts. Papers on techniques of recording are also present. For instance, in Part I, Brazier presents original observations on naturally occurring theta band activities of the amygdala and hippocampus of awake patients. Utilizing frequency analysis and coherent studies a pacemaking role for the amygdala is postulated in the amygdalathalamic dorsalis medialis pathway, the amygdaloseptal pathway and amygdalo-hippocampal connections. In the same Part I, Jobsis et al. demonstrate the use of fluorometric techniques to monitor the steady state reduction level of NADH in the intact cerebral cortex, illustrating how electrophysiological measurements can be coupled with bioenergetic parameters. In Part II, rhythmic neuronal unit discharges in the ventralis oralis posterior of the thalamus precentral cortex and basal ganglionic regions are time related with Parkinsonian tremors and disrupted with voluntary motion. Umbach, Buser, et al. and Rossi and Gentilomo report correlative studies of surface EEG and stereo encephalograph in the epilepsies while Rayport reviews cortical unit firing patterns in cortical seizure foci of man.

In Part III, Libet leads the discussion on sensory physiology and shows how behavioral responses to a stimulus do not equate with conscious sensation. His experiments suggest that a longer time (0.5 seconds) is necessary for conscious sensory experience in contrast to unconscious transactions. The problem of pain verbalization of responses, pain responses from thalamic stimulation, and the application of the “gate theory” for relief of pain are given importance. Here, an observation which may have far reaching implication in neurobiology is the paper by Hughes et al., who show that coding of odors in the olfactory system is associated with frequency and pattern alterations of action potentials in olfactory nerve fibers. In Part IV the application of single unit recordings from human peripheral nerves is discussed as well as stereotaxic recordings from the cerebellum.

In general, the high quality of papers in this symposium is best stated by H. Jasper who in his closing remarks suggests that this volume is a landmark in its field. While some dangling components of the symposium are present—in particular, Part V seems to be out of place both in terms of the purpose of the symposia and their relevance to concepts of physiology in man—all in all, this volume should be of benefit to the neuroscientist, the neurological surgeon, and the neurophysiologist. Those concerned with the ethics of human experimentation and the use of neurophysiological techniques in possible behavioral disorders will also find this book valuable.

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