
These Proceedings contain 56 papers with an average length of six pages each, an opening address by the President, Dr. A.W.J.H. Hoitink, a subject index, and an authors’ index. Contributions stem from hospitals and laboratories in 17 countries. A little over 90% of the text is in English, the remainder is in French. The topics discussed may be grouped together under several headings and only the most important contributions will be summarized here.

Instrumentation. In the large majority of the studies reported, use was made of ballistocardiographs of ultra low natural frequency (that is, with a resonance frequency considerably below the heart frequency). In such instruments excess mass and external damping were found to cause distortion at very fast heart rates. New techniques to reduce respiratory artifacts were described. Utilizing the effect of gravity to provide mechanical coupling between subject and support, a new type of high-frequency vertical ballistocardiograph was described.

Physiology. Transmission of forces from the cardiovascular system to the body frame was studied; vibrations set up in the body were detected well in the ballistocardiogram (Bcg). Certain similarities were pointed out between the ultra low-frequency force Bcg and the first time derivative of the carotid pulse. Several investigators argued that frontal plane projections of the actual three-dimensional linear motion of the internal center of gravity provide more worthwhile information than head-foot recordings, particularly when the heart is overloaded. An electrokymographic technique was presented which was designed to record central mass movements to be correlated in the future with Bcgs. The reliability of the lateral Bcg was discussed and it was shown, theoretically, that its amplitude is intimately related to the eccentricity of the heart’s position. Records were presented that had been taken simultaneously in four degrees of freedom on a “weightless” subject in an airplane flying a Keplerian trajectory; the head-foot component resembled very closely normal head-foot Bcgs taken on the earth’s surface with the best ultra low-frequency instruments. The dependence of the amplitude of the displacement Bcg on the phase of respiration was reported to exhibit a hysteresis phenomenon which is not completely understood.

When pulmonary volume was held constant, increasing pulmonary air pressure diminished the amplitude of the Bcg taken during suspended respiration with closed glottis; when pulmonary air pressure was held constant, diminished lung volume also diminished the amplitude of the Bcg. An interesting relation was found between the cardiogenic air pulse and the displacement Bcg taken during suspended respiration with open glottis; the two records resembled each other in certain respects but not in all. In unanesthetized dogs there was a striking demonstration of the sensitivity of the acceleration Bcg to the shape of the cardiac ejection curve measured with an indwelling flowmeter placed around the root of the aorta; the record amplitude followed changes in ejection acceleration when stroke volume remained virtually constant. These in vivo experiments confirmed earlier ones carried out on cadavers and on an electrical analog.

Pharmacology. Several reports dealt with the changes induced in cardiac function by chemical agents in a variety of conditions. A high frequency of positive Bcg smoking tests was found in coronary heart disease and thyrotoxicosis. Radioactive iodine treatment of hyperthyroidism restored abnormal Bcgs to normal. Deleterious effects of anesthetics on the heart were clearly demonstrated. The difference in effect between $\alpha$ and $\beta$-blocking agents after administration of epinephrine was detected. After removal and reinsertion, the dog’s heart often beat normally and daily Bcgs were suggested to determine the need for immunosuppressive therapy in cases of cardiac transplantation.

Clinical Conditions. Bcgs taken in a wide variety of congenital and acquired cardiac malformations were described as well as the effects of surgical correction of such lesions. The Bcg demonstrates the presence or absence of an anatomic anomaly only when such a lesion causes abnormality of the pumping function of the heart; thus, it does not give pure anatomic information. Likewise, surgical interventions improve the Bcg only if function is improved.
Statistical approaches have been applied in studies of the prognostic value of the Bcg, the patients having been followed from 5 to 25 years. When the force Bcg is abnormal in contour, life expectancy is reduced; when such records are normal in contour, low Bcg amplitude is related to reduced life expectancy. By applying statistical techniques it was also shown that the force Bcg is able to discriminate between normals and patients with coronary heart disease of similar age tested between attacks. Combination of selected weighted features of the acceleration record permitted 75% of the group to be correctly classified as normal or having coronary disease. Surprisingly, the most valuable information appeared to come from the largest complexes of the respiratory cycle, although the smaller complexes usually show more abnormality by simple inspection.

Abraham Noordergraaf, Ph.D.


The proceedings of the Fifth Princeton Conference on cerebrovascular diseases, held in January 1966, are contained in this book. The format is the same as that of the reports of the earlier conferences—formal presentations are followed by transcripts of the planned and spontaneous discussions. Meetings of this sort, limited to a relatively small number of invited participants, have at least two functions. The first function, in which the Princeton conferences have been singularly successful, is to provide an opportunity for people interested in different aspects of cerebrovascular disease to meet and inform each other of recent or important developments, of critical evaluations of work already done, and of problems existing in their own fields. The second function, served well by this book, is to disseminate the information to those not at the meeting.

Much of the material of the formal presentations is, or will be, available in greater detail in journals and other publications; such duplication is unavoidable. The discussions, questions, and criticisms, however, will not be found anywhere else. The editors have done more than provide a record of what was said—they have preserved the spontaneity and often the enthusiasm of the discussions.

The sections on epidemiology of cerebrovascular disease and vascular disease in animals are of particular interest to this reviewer, chiefly because of the way the discussers pointed out problems inherent in investigations in these fields. These problems undoubtedly are well known to many. That the book enables others, working in other areas, to become aware of the problems is one of its most valuable features. Other topics are treated similarly; these include the relations between hypertension and cerebrovascular disease, special techniques for clinical diagnosis and measurement of blood flow, experimental cerebral infarction, and rheology. Of clinical interest are the section on bruits and the reports of two cooperative studies—one on subarachnoid hemorrhage and the other on surgery for occlusive cerebrovascular disease.

Much of the material is still fresh because of the relatively short time from conference to publication. This, the modest cost, and especially the record of the discussions make this book well worth having and reading.

Arthur G. Waltz, M.D.


The purpose of this concise, well-organized book is adequately summarized in its preface, which states: "Basically this book is designed for resident surgical, anesthetic and nursing staff, who are confronted with problems covering a wide field and who need a practical manual about why complications occur, how they may be recognized, and what exactly can be done to correct them."

Fundamental physiological principles are discussed in dogmatic fashion so that at least one specific plan of management is presented to the physician or nurse seeking basic knowledge in this field. Chapters covering hemodynamics, pulmonary physiology and chemistry, and renal function are especially well organized to convey an introductory, yet workable knowledge to those confronted with these parameters in the postoperative cardiac patient. Classic references are included at the end of each chapter. A chapter by Mr. Eoin Aberdeen on the special problems encountered in infancy and childhood is of interest.

The intent of this book is well executed. It is likely that it will become the "postop manual" for those entering the field of cardiac surgery and management of patients.

Billy M. Hightower, M.D.

In this monograph, the author presents a careful, scholarly review of the literature on the subject of pulmonary embolism. Though also intended to serve as an up-to-date guide to diagnosis and management for the clinician, the book falls short of this objective.

Emphasis is placed on the nature of pulmonary emboli and their physiological effects. Especially informative is the discussion of nonthrombotic emboli, including fat and marrow, other tissues, formed elements, abnormal proteins of the blood, amniotic fluid and meconium, gas, parasites, and foreign bodies.

In the opinion of this reviewer, the author's concept of pulmonary embolism, as either massive or recurrent multiple, and the case histories chosen for presentation characterize inadequately the clinical manifestations and natural history of pulmonary embolism as encountered by the cardiologist. A noteworthy omission is description of the disease as it commonly occurs in postoperative or post-traumatic states. From the diagnostic standpoint, pulmonary angiography and lung scanning are discussed only briefly, without consideration of specific indications for these procedures and their relative merits.

In the section on therapy, the importance of preventive measures is properly emphasized. However, appropriate guidelines to management, once embolism has occurred, are not presented. Considering the availability of pulmonary arteriography and lung scanning, "a decision on clinical grounds as to whether the embolism is massive or multiple" no longer constitutes a satisfactory basis for the management program of the consulting cardiologist.

The book contains a well referenced compendium of background material which will be useful to the cardiologist, but it leaves something to be desired regarding the clinical management of pulmonary embolism.

James K. Alexander, M.D.


This book is a potpourri of 1,089 reports which, one would guess, could have grown out of the author's card index of unusual case reports and of articles of special interest to him collected over a period of about 15 years.

Perusing the book is somewhat similar to wandering through a museum, and the titles of the reports give the major information, the abstracts adding but little. One could visualize the odd coincidence of a practitioner, too tired to read a difficult paper, skimming through the book, and seeing mention of something which was the counterpart of the problem seen in his office that week or that might appear in his office the following day or so. Apart from the possible stimulus to a physician to be on the alert for unusual conditions and as a spur to further reading, the book seems to have little value.

Howard B. Burchell, M.D.


This text offers a concise and lucid introduction to the subject of electrocardiography and vectorcardiography in congenital heart disease. The early chapters are especially useful because they deal primarily with the basic concepts of electrophysiology, the normal electrocardiogram, and the normal vectorcardiogram in a way that the novice can understand. The quality of the electrocardiograms and vectorcardiographic patterns presented is generally good.

A few suggestions, however, can be offered. The chapter on the mean electric axis observed in various defects would have been more meaningful if the data given had included the number of patients in each group. The discussion of the vectorcardiogram would have been considerably more useful had changes related to age been more clearly stated. In fact, all illustrative cases should have been accompanied by the actual age of the patient. The criteria for right and left ventricular hypertrophy also would have been more useful had changes related to age been included. For example, the value of the horizontal T vector in right ventricular hypertrophy in infants and young children could have been stated more strongly.

However, these criticisms do not detract from the general usefulness of The Electrocardiogram and Vectorcardiogram in Congenital Heart Disease. The chapter on the abnormal vectorcardiogram in hypertrophies and conduction defects is accurately presented, and the beginner should find the latter chapters concerning ventricular hypertrophy patterns in cyanotic and acyanotic heart defects especially valuable. This text can
be recommended to any physician seeking an introduction to the electrocardiographic and vectorcardiographic patterns seen in congenital heart disease.

ROBERT H. FELDT, M.D.


In most patients with abnormality in arterial blood gases, we now believe the cause is most elegantly explained in terms of differences in ventilation perfusion ratio in different parts of the lung, while total ventilation and total perfusion are adequate in amount. Interest in these ratios is relatively new. It developed as the result of the imaginative thought of such pioneers as R. L. Riley and H. Rahn after World War II. Since then, the study of these ratios and their effects has blossomed into a very active field of research.

One of the difficulties about this field is that it is not so much a collection of experimental findings as it is a way of thinking about the lung. It is somewhat abstract and pseudomathematical, and, therefore, difficult to explain briefly without some special language, either jargon, abbreviations, or symbols. The author is to be congratulated on writing this book in English and not in the conventional symbols of the field. These, as the author says, frighten away the uninitiated medical reader. The author is also to be congratulated on several clear statements of physiological truths which are the reverse of widespread clinical beliefs. For example, on page 82 it is emphasized that a raised arterial carbon dioxide tension is not synonymous with hypoventilation: it is most often due to ventilation perfusion ratio inhomogeneity within the lung and without hypoventilation of the lung as a whole. A minor weakness is that many statements are made without documentation. To take only one example, after reading the two sentences on page 28 dealing with ventilation perfusion ratios in mitral stenosis, the reader who would like to learn more about this is not referred to any other publications. None of the twenty-five selected references at the end of the book mentions this topic in its title.

Another possible flaw in this book is that it deals very largely with normal lungs and only very briefly with clinical matters. Even though clinical conditions such as mitral stenosis and sarcoid are mentioned in the text, those accounts were not considered sufficiently important for these diseases to be included in the index.

This book does not pretend to be an introduction to respiratory physiology or clinical physiology as a whole. It does not deal with most of the simple and commonly used lung function tests. It does however give in plain English a lucid and accurate account of the basic concepts of ventilation perfusion ratios that many students have found difficult to grasp in the past. It should be of value to those who wish to be quickly and painlessly indoctrinated into this narrow but important field.

W. A. BRISCOE, M.D.
BOOK REVIEWS

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