
This is an exquisite two-volume survey of operable heart disease. An international group of 49 well-known collaborators, each with extensive experience and knowledge of their subjects, have contributed to these volumes. The result is one of the most complete treatments of heart surgery to appear to date. The two volumes are of highest quality workmanship, printed on high grade gloss stock. The figures are sharp and illustrate clearly and precisely pathologic or operative details. The text is largely in German, with about seven percent English.

There are chapters dealing with general cardiology, followed by a systematic review of surgery for all congenital and acquired lesions. The chapter on functional anatomy, which deals with embryology and both gross and cellular function, is excellent and well-illustrated; it is one of the finest in any surgical atlas. There is a chapter on electrocardiographic changes associated with various lesions and surgical procedures which is more complete than in most surgical books; in addition, electrocardiographic changes are described in chapters dealing with specific disease entities. Chapters on perfusion apparatus and perfusion techniques and on myocardial protection are excellent reviews of the literature, but suffer from being about three years out of date, an inescapable fact of all reference works.

Each congenital and acquired cardiac lesion is considered in detail from embryo-logic, anatomic, and physiologic aspects, with discussions of diagnosis, operative technique and post-operative care. In many sections, early and late post-operative complications are detailed and results of surgery are reviewed. The weakest chapter is the one dealing with cardiac transplantation, but most cardiac surgeons do not do the procedure and will not find this a serious deficiency.

The list of references at the end of each chapter is exhaustive. In addition, each author cited as a reference in the text is listed in an index, together with the pages on which his name appears. These references would be extremely valuable to the serious student.

This is one of the most complete surveys of cardiac surgery compiled to date. It is as exhaustive in discussion of each subject as is possible in a book of this kind, and (to repeat) the illustrations are superb. All medical and surgical cardiologists, from serious neophyte to teacher, would find it valuable.

Karl E. Karlson, Providence, R.I.


In October 1975, an international group of cardiologists, under the auspices of the European society of cardiology, met for 3 days in Geneva to present data on the evaluation of left ventricular function in man during rest and stress; therapeutic
implications of these findings in the common causes of adult left ventricular dysfunction were assessed. The entire manuscripts and discussions of the group are not printed; rather, 36 abstracts, 1-3 pages in length, with selected graphs and tables are presented in a small book with text in English and German. 5 abstracts are related to the anatomy and physiology of left ventricular function; 11 to the evaluation of left ventricular function in man; 6 to ventricular function in heart disease, and 15 to the importance of these studies to the clinician who treats coronary and valve disease. At the end, a lucid capsule summary of the proceedings is made by the editors. Problems confronting the gathered investigators include the fact that no single parameter is known to characterize heart muscle contractility and that defects in heart muscle contractility are obscured by hypertrophy, the Frank-Starling mechanism, sympathetic drive and other compensating factors that maintain pump function. Questions posed included: do complex studies of left ventricular function provide us with the optimal time for surgical intervention, for example, in aortic valve disease, and do noninvasive techniques, e.g., systolic time intervals, correlate well with catheter techniques in evaluating left ventricular function? These and other topics and questions are well handled. The teaching role of this book might be extended by including 5-10 key references at the end of each abstract. Left ventricular function in mitral stenosis, in systolic pressure overload of the right ventricle, in left to right shunts and during dysrhythmias is not discussed. Right ventricular function after the Mustard procedure or after tetralogy repair or in the presence of pulmonary artery hypertension is specifically excluded. This book is for the cardiologist who wishes an overview of a fascinating but complex area of study. The book presents current problems and hints at future goals; its openness invites the reader and its brevity provokes his interest.

Robert N. Franch, Atlanta, Ga.


In its 20 chapters, this multi-authored volume illustrates the attainment of a different order of sophistication than maintained a few years ago. It can be divided for purposes of discussion into several sections: the initial being devoted to anatomic data obtained from embryonic and fetal hearts as well as heart cells in tissue culture; the second and third deal with several aspects of membrane permeability and electrophysiological considerations of embryonic and cultured avian and mammalian heart cells; the final section takes up physiological correlates of embryonic, neonatal, adult and comparative forms of cardiac muscle.

The anatomy division (six chapters) discusses morphological data derived from studies of embryonic cardiac jelly, sarcoplasmic reticulum and T-system in developing rat heart, cell death in development, as well as DNA synthesis, and cardiac cell aggregation as studied by SEM. Embryonic chick cardiac muscle synthesizes

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many macromolecules of its immediate milieu. In addition to being a muscle, it is a secretary cell in much the same way as a fibroblast. The composition of cardiac matrix is not yet known entirely; embryonic cardiac muscle produces a number of matrix substituents (e.g., hyaluronate, chondroitin sulfate, glycoaminoglycan) and therefore is capable of regulating its environment. The chapter on cardiac cell aggregation was focused on problems such as sequential morphology of heart cell aggregation in iso- and heterotypic cell combinations, glycoalyx regeneration, and
intercellular junction formation in the presence and absence of protein synthesis - the study has demonstrated some of the advantages of SEM when applied to the problem of cell aggregation. Two of the chapters in the second and third sections were most interesting: one addresses calcium exchange in heart cells, the other synchronization of cultured heart cells. The calcium exchange studies are founded on two major proposals with respect to the ionic control of myocardial contractility: (1) that calcium upon which contractile activation is dependent is rapidly exchangeable and kinetically indistinguishable from Ca in the interstitial space, and (2) the amount of calcium that enters the cell in the regulation of contraction is controlled, in part, by the level of intra-cellular sodium present.

In the synchronization of cultured rat heart cells, as a population of isolated single cells developed into a confluent monolayer, an increase in the rate and synchrony of beating was evidenced and only appears when cells grow together. To understand what happens when many beating cells come into contact, Winfree’s theory of weakly coupled oscillators can be applied to the system. The explanation offered for the synchronization of heart cells in tissue culture might also explain the regularity of discharge of the intact isolated S-A node.

The final section deals with the topics of functional cardiac innervation, myocardial ultrastructure of the neonate, caffeine and myocardial contractility in dogs and frogs, rabbit S-A node potentials, and electrogenic pump and resting potential. The results of the quantitative studies of the myocardial ultrastructure of the neonate indicate the proportion of the myocardium occupied by myofibers as well as the relative volumes of all its organelles (with only two exceptions, the nucleus and mitochondria) are remarkably constant; the heart has the ability to maintain fixed volumetric relationships in the process of normal myocardial growth. Use of the voltage-clamp control technique on the hearts of dogs and frogs demonstrated that in dog ventricular muscle, the initial twitch and following rapid relaxation are largely regulated by sarcoplasmic reticulum; in addition, an excess of caffeine reduces the amount of calcium taken up by and hence released from the SR. In bullfrog atrial muscle, Ca current is primarily responsible for the initiation of twitch tension, though some Ca release from remnant elements of the sarcotubular system should not be neglected. The final presentation took up the problem of the existence of an electrogenic sodium pump in chick heart with the conclusion that the concept of such a pump is valid and makes a contribution to the resting potential in different cardiac tissues. This book can be recommended highly to advanced graduate students as well as to persons with a general interest in the field.

S. J. Putnam and J. W. Manning, Atlanta, Ga.