

pressure. Periods of cardiac arrest in this group ranged from 20 to 110 minutes. (Hufnagel, C., and others: *Profound Cardiac Hypothermia*, *Ann. Surg.* 153: 790 (May) 1961.)

HALOTHANE IN CHEST SURGERY

Halothane is an excellent replacement for thiopental or meperidine as a supplement to nitrous oxide anesthesia when an explosion hazard exists. Out of 80 surgical patients, 4 who died showed intraoperative complications referable to the circulatory system. Marked hypotension and delayed recovery from anesthesia were seen in one myxedematous patient. Prior to bypass, ventricular tachycardia appeared in one patient with a ventricular septal defect. Marked hypotension occurred prior to repair of a ventricular septal defect in two patients. Tubocurarine chloride may be administered to patients lightly anesthetized with halothane with no fall in blood pressure. (Zauder, H. L., Hyman, Y. K., and Orkin, L. R.: *Halothane Anesthesia in Intrathoracic Surgery*, *A. M. A. Arch. Surg.* 82: 777 (May) 1961.)

CYANOSIS Infundibular tone produced an increase of functional infundibular stenosis during catheterization of the right heart. Indirect evidence is presented to suggest that norepinephrine secretion is responsible for these attacks. General anesthesia, especially cyclopropane anesthesia, and morphine will terminate these cyanotic episodes. (Johnson, A. M.: *Norepinephrine and Cyanotic Attacks in Fallot's Tetralogy*, *Brit. Heart J.* 23: 197 (Mar.) 1961.)

CARDIAC ARREST Sudden deaths on the operating table are most commonly associated with hypoxia, vagal reflexes or overdoses of anesthetic agents. Other causes are sudden shifts in pH, hemorrhage, massive transfusions of citrated blood, cardiac arrhythmias induced by hypothermia and direct operations on the heart. Outside the operating suite, coronary occlusion is the most frequent cause of death amenable to successful resuscitation. A simple transistorized cardiac monitor has been helpful in detecting cardiac arrhythmias or cardiac arrest in the recovery room. In de-

fibrillation a higher voltage (350-400 volts)-short duration (0.02 second) shock has been successful when lesser shocks have failed and burns of the myocardium have not been a problem. A defibrillator capable of producing 400 volts or more is required for closed-chest defibrillation. (Holswade, G. R.: *Management of Cardiac Arrest*, *Surg. Clin. N. Amer.* 41: 315 (Apr.) 1961.)

CARDIAC ARRHYTHMIAS Improved methods of diagnosis of cardiac arrhythmias have resulted from: (1) the greater availability and use of electrocardiographic apparatus; (2) the more frequent employment of continuous monitoring during surgery, cardiac catheterization and infusion of cardiac drugs in poor risk patients; (3) the training of interns, residents and anesthesiologists in the specific diagnosis of arrhythmias. The following methods are available in the therapy of the most frequently encountered arrhythmias.

(1) Drugs which increase cardiac rhythmicity. These include sympathomimetic drugs (epinephrine, Isuprel), vagolytic drugs (atropine and Banthine), and molar sodium lactate. (2) Drugs which decrease excitability. These include quinidine, procaine amide, potassium salts and digitalis. (3) Drugs which produce parasympathetic effects (Prostigmine, beta-methacholine and emetics) and mechanical stimulation (carotid sinus pressure, ocular pressure, and blowing into a balloon). From the standpoint of therapy, cardiac arrhythmias may be divided into three categories: (1) Slow heart rates, below 36 per minute as in sinus bradycardia, partial or complete atrioventricular heart block, slow idioventricular rhythm, or periods of cardiac arrest. (2) Heart rates ranging from 60 to 110 per minute, as in partial A-V heart block, atrioventricular dissociation, atrial flutter, or atrial fibrillation with varying degrees of atrioventricular block. (3) Heart rates ranging from 140 to 250 per minute, such as atrial or nodal tachycardia, atrial flutter, atrial fibrillation or ventricular tachycardia. Many of the first and most of the cases in the third group require immediate therapy and constitute cardiac emergency. Urgent therapy is not ordinarily required in the second category because there is usually an opportunity to study the patient. (Bellet,