

other: *Reoperation After Resuscitation from Cardiac Arrest, Surg. Gynec. & Obst.* 106: 207 (Feb.) 1958.)

COOPERATION In attempting to avoid cardiac arrest the surgeon can cooperate with the anesthetist in many ways. He can avoid hurrying the induction of anesthesia because haste leads to rapid administration of agents and rough manipulations. He can see that ventilation is not hindered by tight dressings or casts, leaning on the patient's chest, allowing the accumulation of instruments or supplies on the patient's chest, or using large packs or retractors in the upper abdomen. He will not insist on positions of the patient which are unfavorable to the safe conduct of the anesthesia. He can avoid air leaks while closing a bronchus by use of "cut and sew" technique. He should not urge a hasty or premature removal of the patient from the operating room at the end of the operation. (Keeley, J. L., Schairer, A. E., and Carroll, J. P.: *Cardiac Arrest in Surgical Patients, S. Clin. North America* 38: 55 (Feb.) 1958.)

EXPERIMENTAL HEART The transplanted heart of warm-blooded animals is able to function in another's organism from 30-40 minutes onwards, up to 30 days, dying off gradually, depending on the magnitude of the biochemical differences with the recipient's organism. The author points out that the animal with two hearts, the "humoral" and the "neurohumoral," could serve as an excellent object for a comparative analysis of the central and peripheral actions of the cardiac drugs. To solve successfully the problem of homotransplantation in warm-blooded animals it is necessary to consider the positive influence of the central nervous system and of the environment as established in the experiments on the cold-blooded animals. (Sinitzyn, N. P.: *Experimental Transplantation of Heart, Vestn. Khir.* 7: 28, 1956.)

CLINICAL "BYPASS" PROBLEMS The problem of pulmonary hypertension is serious as there are many patients whose hearts can be repaired but whose pulmo-

nary vessels cannot. Despite the useful concept of the high-resistance with high flow reserve and the high-resistance with low flow reserve lungs, pulmonary biopsy does not give a good basis for deciding operability. In ventricular septal defects if the shunt is small because of right ventricular hypertension and pulmonary vascular changes, surgical treatment is hazardous and the results unpredictable. Any patient who has or has had heart failure or has atrial fibrillation receives full doses of digitalis preoperatively. Mortality, criteria for cure and use of the artificial pacemaker are discussed. This article is a must for anyone interested in this field. (Burchell, H.: *Clinical Problems Related to Surgical Repair of Intra-cardiac Defects with Aid of Extracorporeal Pump-Oxygenator, Circulation* 16: 976 (Dec.) 1957.)

HEART-LUNG MACHINE The machine is composed of an arterial pump, an oxygenator, a pump for suction of coronary sinus blood. The arterial pump produces a pulsating type of flow, is able to deliver an output close to the normal cardiac output and causes very little hemolysis of the blood. The oxygenator is a rotating cylinder limited by an artificial membrane; inside this cylinder an aerosol of saline is injected in which oxygen is dissolved; outside the cylinder is the blood which becomes oxygenated by diffusion through the membrane of the oxygen dissolved in the aerosol. The whole oxygenator is sterilized with ozone for one hour; three liters of blood are necessary to prime the apparatus for large cardiac outputs. It has been used successfully in man for intracardiac surgery. (Thomas, J. A.: *Heart-Lung Machine with Membrane Oxygenator, C. rend. Acad. Sc.* 216: 1081 (Feb.) 1958.)

SYMPATHETIC NEUROHORMONE Sympathetic nerves and ganglia incubated with tyrosine or dopa synthesized hydroxytyramine and norepinephrine but only questionable amounts of epinephrine. The neurohormone of sympathetic nerves is norepinephrine. Epinephrine, if present, is of questionable importance. (Goodall, Mc.C., and Kirshner, N.: *Biosynthesis of*

Epinephrine and Norepinephrine by Sympathetic Nerves and Ganglia, Circulation 17: 366 (Mar.) 1958.

PERIPHERAL VENOCONSTRICTION Peripheral venoconstriction is found in a cool environment or after local cooling. Arterial constriction precedes venoconstriction while venodilatation precedes arteriolar dilatation. Congestion of the legs resulted in prompt arteriolar constriction and venous pressure reduction followed by peripheral venoconstriction in the forearm. Relief of congestion resulted in venous pressure "overshoot," venodilatation, and arteriolar dilatation. Reduction in venous volume of the forearm suggests that the remaining blood volume was moved centrally by venoconstriction in the periphery which was more intense than that in the central veins. (*Wood, J. E., and Eckstein, J. W.: Tandem Forearm Plethysmograph for Study of Acute Responses of Peripheral Veins of Man, J. Clin. Invest. 37: 41 (Jan.) 1958.*)

CHRONIC ANEMIA The relationship between severe uncomplicated chronic anemia and the size of the heart was studied in dogs. A significant hypertrophy of the heart was present in the chronically anemic animals. The presence of edema was ruled out as a factor in the increase in heart size. The hypertrophy was found to involve both right and left ventricles and to be accompanied by dilatation of both chambers. (*Paplanus, S. H., Zbar, M. J., and Hays, J. W.: Cardiac Hypertrophy as Manifestation of Chronic Anemia, Am. J. Path. 34: 149 (Jan.-Feb.) 1958.*)

METHYLENE BLUE The respiration of non-nucleated erythrocytes may be greatly stimulated by the addition of methylene blue to the buffer system. Explanations offered for this phenomenon are: 1) increased oxidation of a degradation product of glucose, 2) oxidation of lactate, 3) increased reversible conversion of hemoglobin to methemoglobin, 4) and conversion of lactic acid to pyruvate. None of these explanations account for the magnitude of the increased respiration. *In vitro* experiments confirmed that oxygen consumption varied directly with increasing concentrations of dye, glucose

utilization was increased, and lactic acid formation was decreased. They also indicated that methylene blue activates a cyclic glucose oxidative pathway in mammalian red cells (hexose monophosphate shunt). This mechanism accounts for as much as 85 per cent of the oxygen consumed by human erythrocytes in the presence of methylene blue. (*Brin, M., and Yanemoto, R. H.: Stimulation of Glucose Oxidative Pathway in Human Erythrocytes by Methylene Blue, J. Biol. Chem. 230: 307 (Jan.) 1958.*)

PRESSURE SUIT Inflation around the lower half of the body of a tightly fitting pneumatic suit at a pressure of 75 mm. of mercury produces an acute increase in pulmonary arterial and wedge pressures of about 25 mm. of mercury in normal subjects. In none of these eleven series of experiments on four subjects was the diffusing capacity of the lungs for CO₂ significantly altered. (*Lewis, B. M., Forster, A. E., and Beckman, E. L.: Effect of Inflation of Pressure Suit on Pulmonary Diffusing Capacity in Man, J. Appl. Physiol. 12: 57 (Jan.) 1958.*)

PULMONARY CIRCULATION Human subjects under normal and hypoxic conditions were studied during the infusion of acetylcholine into the pulmonary artery. The infusion resulted in a fall in pulmonary arterial pressure which was more evident after hypoxia had produced pulmonary hypertension. The fall in pressure was not associated with a decrease in cardiac output and there was no change in pulmonary wedge pressure, heart rate, systemic blood pressure, or central blood volume. Apparently, acetylcholine causes pulmonary vasodilatation which is more marked in the presence of an increased vascular tone. (*Fritts, H. W., Jr., and others: Effect of Acetylcholine on Human Pulmonary Circulation Under Normal and Hypoxic Conditions, J. Clin. Invest. 37: 99 (Jan.) 1958.*)

PULMONARY EMBOLISM Review of the literature fails to provide convincing evidence of important reflex effects of pulmonary embolism. In experiments on anesthetized dogs with pulmonary emboli produced by starch and glass beads,