the expense of operation and installation of such units. (*Research Council Urges Low-Pressure Approach to High Pressure Therapy, Mod. Hosp. 100: 5 (May) 1963.*)

HYPOTHERMIA Maintenance of renal circulation results in improved maintenance of blood pressure and circulation below 22° C. in rats. When renal contribution to the maintenance of blood pressure is removed, either by hypothermia or by ligation of renal vessels, cardiac performance is impaired and blood pressure falls. Infused renin or angiotensin II maintains blood pressure during deep hypothermia more effectively than epinephrine or norepinephrine. (*Hunter, J., and Hurley, D. A.: Influence of Respiratory and Renal Factors on Cardiac Activity During Deep Hypothermia, Canad. J. Biochem. 41: 551 (Mar.) 1963.*)

HYPOTHERMIA In normothermic dogs, thoracotomy decreased renal circulation but systemic circulation remained unchanged. Extracorporeal circulation was followed by decreased systemic blood pressure, but renal circulation increased. In hypothermia with extracorporeal circulation, systemic blood pressure decreased but renal vascular resistance increased five-fold. (*Albrecht, K. F.: Renal Hemodynamics in Extracorporeal Circulation Under Normothermic and Hypothermic Conditions of 10 Degrees Centigrade, Bruns Beitr. Klin. Chir. 206: 145 (Mar.) 1963.*)

HYPOTHERMIA Ventricular fibrillation during deep hypothermia can be overcome in dogs by controlling respiratory chemical balance. Clamping the aorta and vena cava causes cardiac standstill before ventricular conductivity is lost, which greatly facilitates the spontaneous resumption of ventricular contractions after deep hypothermia. Using this method of deep hypothermia alone in a series of dogs it has been possible to perform intracardiac surgery for intervals up to 75 minutes without evidence of neurologic damage. Such a method, if applicable to humans, should have many advantages over extracorporeal bypass techniques. (*Comar, K. D.: Open-Heart Surgery in Hypothermic Dogs Without an Extracorporeal System, Western J. Surg. 71: 55 (Mar.–Apr.) 1963.*)

HYPOTHERMIA Using the technique of separate perfusion of the systemic and pulmonary circulations, by means of two extracorporeal pumps and separate heat exchangers, the hemodynamic effects of changing the temperature of the blood in the pulmonary circuit selectively was investigated while the temperature of the blood perfusing the systemic circulation was kept constant at body temperature. A rise in pulmonary artery pressure was due to changes in the pulmonary vascular resistance caused by the direct effect of cold on the pulmonary vasculature; a drop in systemic blood pressure was due to a reflex decrease in total systemic vascular resistance caused by arteriolar dilatation. The drop in systemic pressure could be abolished by sectioning both vagi and injecting dihydroergocarnine into the systemic circulation. It was not affected by the administration of atropine. (*Goetz, R. H., and others: Hemodynamic Effects of Selective Pulmonary Hypothermia, J. Thor. Cardiov. Surg. 45: 574 (May) 1963.*)

HYPOTHERMIA Venous oxygen saturation has been considered a critical index of the efficiency of extracorporeal circuits. Oxygen consumption decreases under hypothermia but still continues, as evidence by reduction in venous oxygen saturation following cardiac arrest. Oxygen saturations of 45 per cent developed after 45 minutes of arrest at 10° C. Metabolic acidosis will develop if oxygenation is insufficient for the tissue needs. In several patients, vasoconstriction developed with marked increase in perfusion pressures and decrease in flow rates. Cooling should be started with blood at room temperature using as large blood flows as compatible with venous return. The blood pressure is maintained well above the "critical capillary opening pressure" allowing the acid metabolites to be washed out and buffered at the onset of bypass. (*DeGasperis, A., and others: Profound Hypothermia and Cardiocirculatory Arrest For Intracardiac Surgery, J. Thor. Cardiov. Surg. 45: 353 (Mar.) 1963.*)

HYPOTHERMIA Combined internal and external heat exchange for the induction and rewarming of profoundly hypothermic animals greatly reduced the severity and duration of

metabolic acidosis. The liver is able to eliminate the excess lactate produced by peripheral muscle if both are at the same temperature. If the liver is cooler than the muscle, excess lactate accumulates, contributing to metabolic acidosis. The technique of isothermia does not compromise circulation as does the surface cooling technique alone. (*Wolfson, S. K., and others: Isothermic Technique For Profound Hypothermia and its Effect on Metabolic Acidosis, J. Thor. Cardiov. Surg. 45: 466 (Apr.) 1963.*)

HYPOTHERMIA Six patients out of thirteen received hydrochloric acid intravenously to reduce pH during perfusion-induced hypothermia followed by an equivalent amount of sodium bicarbonate during rewarming. There was no statistical difference in the rise of lactate or "excess" lactate as long as perfusion was adequate. (*Ogata, T., and others: Metabolic Changes in Deep Perfusion Hypothermia for Cardiac Surgery, J. Thor. Cardiov. Surg. 45: 610 (May) 1963.*)

DEEP HYPOTHERMIA Hypothermia below 20° C. was induced by immersion. Moderate hypothermia was used for major general, thoracic and neuro-surgery. Temperatures below 25° C. were used in 65 cases of open heart surgery. Safe circulatory occlusion is possible for 10 minutes at 30°, for 20 minutes at 27°, for 30 minutes at 25° and for 60 minutes at 20°. Artificial coronary perfusion was unnecessary during deep hypothermia and, therefore, a completely dry field could be obtained. (*Seta, K. K., Yonezawa, T., and Okamura, H.: Use of Deep Hypothermia in Thoracic Surgery, Der Anesthesist 12: 107 (Apr.) 1963.*)

BRAIN COOLING Electroencephalographic changes occur with hypothermia, and are different with systemic as compared with local cooling. When the whole animal is cooled, the electrical activity of the cerebral cortex decreases. When the brain surface is cooled below body temperature, the sensory evoked potential is increased in amplitude and duration, and the discharge of unitary spikes is augmented. All changes are reversed by rewarming. (*Bindman, L. J., Lippold, O. C. J., and Redfearn, J. W. T.: Comparison of the Effects on Electrocortical Activity of General Body Cooling and Local Cooling of the Surface of the Brain, Electroenceph. Clin. Neurophysiol. 15: 238 (Apr.) 1963.*)

DEXTRAN Following profound hypothermia (10° C. esophageal) and 15 to 60 minutes of circulatory arrest in dogs, multiple focal areas of necrosis developed in the gray and white matter of brains. Such areas were related to the presence of blood in the brains during experimental conditions. If dextran is injected into the common carotid artery immediately after arresting the circulation, the number and size of cerebral necrotic areas are markedly reduced. Systemic injection of dextran also prevented brain damage. No cerebral necrosis due to exhaustion of metabolites or to profound hypothermia occurred without circulatory arrest. (*Edmunds, L. H., and others: Prevention of Brain Damage During Profound Hypothermia and Circulatory Arrest, Ann. Surg. 157: 637 (Apr.) 1963.*)

PROPHYLACTIC DIGITALIS Review of the recent experimental and clinical evidence on the pharmacologic effects of digitalis leads to the conclusion that the drug acts by a positive inotropic action on all types of muscle. This results in increased myocardial contraction, cardiac output and arteriolar pressure, and a drop in right atrial pressure and with splanchnic blood trapping. These changes occur alike in both normal and failing hearts, although there is a quantitative difference. A salutory effect on cardiac arrhythmias in failing hearts results through improved myocardial function. There is no convincing evidence that the long-held objection to its use in the non-failing heart, based on a reduced cardiac output, has any basis in fact. Any such output reduction is fleeting and of no clinical importance. Conversely, there is increasing evidence to suggest its prophylactic use in any heart in which severe stress is anticipated. Toxic effects can be avoided by slow oral administration, reserving rapid digitalization for emergency situations. Digitalizaiton is recommended preoperatively in elderly patients, patients with known heart disease, or patients undergoing