covery from cardioplegia and ventriculotomy. Data is presented which emphasizes the significance of neurogenic, metabolic and humoral factors in the regulation of myocardial contractility. (*Darby, T. D., and others: Influence of Cardio-Pulmonary Bypass with Cardiac Arrest and Right Ventriculotomy on Myocardial Contractile Force, Ann. Surg. 147: 596 (May) 1958.*)

CARDIOTOMY MONITORING The electrocardiogram and electroencephalogram are helpful monitors in the management of patients undergoing cardiotomy. The electrocardiogram affords immediate evidence of cardiac arrhythmias, the most serious of which are those resulting from high vagal tone or ventricular irritability. The energy output of the brain is revealed by the amplitude and frequency of the electroencephalogram tracing and is seen to decrease with deeper anesthesia, hypoxia, hypotension, hypothermia and hypercarbia. The electroencephalogram summates these effects and indicates changes during anesthesia and surgery which are not specific but indicate the need for reevaluation of the patient's essential physiological functions. (*Hale, D. E., and Moraca, P. P.: Electrocardiogram and Electroencephalogram in Elective Cardiac Arrest, J. A. M. A. 166: 1672 (April 5) 1958.*)

HYPOTHERMIA The purpose of hypothermia is to reduce body metabolism and thus diminish the need for oxygen. Hypothermia may be achieved by external surface cooling (ice water immersion, ice bags, cooling blanket); internal surface cooling (cold solutions applied to the open chest or aorta, or cold fluids circulated through the stomach or rectum); and by cooling the patient's blood externally and returning it either into his arterial or venous circulation. Shivering is inhibited by anesthetics, muscle relaxants, and chlorpromazine. Hypothermia affects many physiologic processes. (1) *Metabolism.*—Oxygen consumption decreases with temperature, but the effect of this reduction upon organ function is variable. In the liver, detoxification of drugs may be prolonged far out of proportion to diminution in oxygen consumption. (2) *Cardiovascular.*—Blood pressure and pulse rate diminishes with temperature. Blood flow and oxygenation of tissues are adequate. The electrocardiographic effects include: decreased amplitude or absent P waves, increased QRS interval, increased length of ST segment, and prolongation or inversion of T waves. Below 28 C varying degrees of heart block, ventricular extrasystoles and nodal rhythms may appear. Ventricular fibrillation is uncommon provided the heart is not manipulated or operated on and correct electrolyte balance and oxygenation is maintained. (3) *Respiration.*—Although reasonably normal respiration can persist to well below 28 C., hypothermia increases the dead space and the oxygen dissociation curve is shifted to the left. (4) *Central nervous system.*—In many, electrical cortical activity progressively diminishes until at about 18 C. electrical silence ensues. The cerebrospinal fluid pressure decreases, the brain contracts and seems to be less vulnerable to operative trauma. (5) *Renal function.*—Urinary output may be increased at 25 C. Reabsorption at the distal tubule is unchanged and excretion of water and sodium is unaltered. (*Eckenhoff, J. E.: Physiology of Hypothermia, Bull. New York Acad. Med. 34: 297 (May) 1958.*)

HYPOTHERMIA Total body cooling in man to 28–30 C. during thiopental-curare anesthesia and hyperventilation was associated with arterial blood electrolyte changes similar to those observed during respiratory alkalosis without hypothermia. Metabolic acidosis did not occur during uncomplicated hypothermia. Shivering, occlusion of major blood vessels and the transfusion of routinely collected blood (citrated) led to moderate to severe metabolic acidosis. (*Henneman, D., and others: Immediate Metabolic Response to Hypothermia in Man, J. Appl. Physiol. 12: 167 (March) 1958.*)

HYPOTHERMIA Observations of cerebrospinal fluid pressure were made in 22 patients during intracranial surgery. Anesthesia consisted of thiopental and nitrous oxide with succinylcholine. Operation began when the rectal temperature was 30 C. Cerebrospinal fluid pressure uniformly rose during the induction of anesthesia and the insertion of the endotracheal tube. The