recorded at the time of cardiac arrest in patients receiving rapid, massive transfusions of cold blood. The incidence of cardiac arrest in the operating room was compared in two groups of patients receiving 3,000 ml. or more of citrated bank blood at a rate of 50 ml. or more per minute (the quantity and rate being critical factors). The difference in results was statistically highly significant. Patients transfused with warm blood were warm, dry, and pink, with readily obtainable blood pressure and pulse; cold transfusion patients were cold and shivering, had mottled skin, extreme vasoconstriction, and prolonged anesthesia effects. The advantages of maintaining normothermia are the avoidance of ventricular fibrillation, altered tissue perfusion, and metabolic acidosis. (*Boyan, C. F., and Howland, W. S.: Cardiac Arrest and Temperature of Bank Blood, J. A. M. A. 183: 58 (Jan. 5) 1963.*)

SODIUM PUMP Isolated red-cell membranes or "ghosts" were used in studying sodium and potassium permeability. Like intact cells, the sodium pump requires extracellular potassium and energy derived from metabolism. The source of energy for the pump has been assessed by incorporating normally impermeable substrates into the ghost interior at the time of the hemolysis. The specific and direct substrate of the pump has been identified as adenosine triphosphate. An enzyme is described which, like the pump, requires both sodium and potassium for activity and is inhibited by cardiac glycosides. The evidence points toward the involvement of this enzyme as an intermediate component of the pump reaction. (*Hoffman, J. F.: Cation Transport and Structure of the Red-Cell Plasma Membrane, Circulation 26: 1201 (Nov.) 1962.*)

ECG LEADS Rapid attachment of electrocardiographic leads is necessary in emergencies. A piece of brass tubing, whose diameter accepts the electrocardiographic lead, is welded to a towel clip. To attach the lead, simply clip the instrument to the skin. (*Derrick, J. R.: Rapid Attachment of Electrocardiographic Leads, Arch. Surg. 85: 911 (Dec.) 1962.*)

POTASSIUM CARRIER Behavior of potassium when employed as a cardioplegic agent varied with the carrier employed. The following results were obtained in dogs where potassium was transported by (1) 10 per cent glucose in saline—all animals survived cardioplegia and only 12 per cent showed fibrillation during resuscitation; (2) whole blood—50 per cent of dogs fibrillated and 71 per cent returned to normal sinus rhythm; (3) normal saline—75 per cent of dogs fibrillated but normal rhythm was established in all; and (4) 50 per cent glucose—100 per cent of dogs fibrillated and 33 per cent failed to survive. Maintenance of myocardial cell reactivity by proper nutrition facilitates cardiac recovery. (*Kaplan, A., and Fisher, B.: Influence of Different Carriers Upon the Cardioplegic Activity of Potassium Ion, Ann. Surg. 156: 869 (Dec.) 1962.*)

AFTER CARDIAC SURGERY Anesthesia is continued after open-heart surgery to avoid myocardial depression and arrhythmia from respiratory insufficiency. The patient is placed on the Engström respirator in the recovery room where the blood gases and *p*H are monitored along with venous and aortic pressures. Minimal anesthesia with the respirator is continued until the electrocardiogram is stable, cardiac output is optimal, arterial oxygen tension is adequate, abnormal acid-base balance has been corrected, and blood volume and peripheral vascular tone no longer fluctuate widely. If necessary, the respirator is used until the next morning. If pulmonary insufficiency is still a problem, a tracheostomy is done and the respirator is used as long as necessary. (*Dammann, J. F. Jr., and others: Management of the Severely Ill Patient after Open-Heart Surgery, J. Thor. Cardiov. Surg. 45: 80 (Jan.) 1963.*)

TRAUMATIC SHOCK Adrenergic and ganglionic blocking agents have been reported to protect against the development of irreversible shock. These agents are thought to protect by blocking sympathetic activity and hence inhibiting reflex vasoconstriction which predisposes to irreversibility. The present experiments were performed to test further this hypothesis by studying the effects of guane-

thidine, bretylium and BTM 10, all drugs which diminish sympathetic nerve activity by inhibiting the release of catecholamines from sympathetic terminals. Traumatic shock was induced in rats by the Noble-Collip drum technique. Some of the animals were pretreated with the three drugs under study. Pretreatment with all three drugs reduced the incidence of mortality to a highly significant degree. (*Lum, B. K. B., and Calvert, D. N.: Protection against Traumatic Shock by Guanethidine, Bretylium and BTM 10, J. Pharmacol. Exp. Ther. 138: 74 (Oct.) 1962.*)

SHOCK Administration of fibrinolysin after hemorrhage can protect significantly against irreversible shock in dogs. A fatal outcome for hemorrhagic shock in dogs may be predicted by the appearance of a prolonged clotting time in the latter part of the shock period. Such prolonged clotting time is most likely due to the appearance of autogenous heparin. The mechanism of the protecting action of fibrinolysin against irreversible hemorrhagic shock is due either to dissolution of established clots in the visceral capillaries or to destruction of fibrinogen, making clotting impossible. (*Hardaway, R. M., and Drake, D. C.: Prevention of "Irreversible" Hemorrhagic Shock with Fibrinolysin, Ann. Surg. 157: 39 (Jan.) 1963.*)

PLASMA IN OLIGEMIC SHOCK In studies on 34 anesthetized dogs made oligemic by acute hemorrhage, autologous and nonautologous plasma were equally effective as plasma volume expanders. Under these conditions there was no problem with the foreign protein type reactions reported with nonautologous plasma used in normo-volemic animals. The reaction seen in normal dogs was histamine-triggered and was suppressed in the oligemic animals by the high level of circulating catecholamines associated with shock. (*Elias, G. L., and others: Comparison of Effectiveness of Autologous and Non-Autologous Plasma in Oligemic Shock in Dog, Circulat. Res. 11: 857 (Nov.) 1962.*)

HYPOTHERMIA Patients under profound hypothermia and circulatory arrest for the repair of an intracranial aneurysm show a depression of cardiac function postoperatively for as long as four days. A short period slight of pulmonary dysfunction, and no metabolic acidosis followed a short period of circulatory arrest of eight to ten minutes. (*Rehder, K., and others: Physiologic Studies Following Profound Hypothermia and Circulatory Arrest for Treatment of Intracranial Aneurysm, Ann. Surg. 156: 882 (Dec.) 1962.*)

HYPOTHERMIA Excretion of bicarbonate during hypothermia was studied in dogs. There was no significant increase in bicarbonate to account for the fall in arterial *p*H. The hypothermic kidney is effective in reabsorbing bicarbonate. (*Kanter, G. S.: Bicarbonate Excretion During Hypothermia, Canad. J. Biochem. 41: 91 (Jan.) 1963.*)

INFANT HYPOTHERMIA A 2.1-kg. infant was delivered in a cyanotic, apneic, and flaccid condition with a heart rate of 100 per minute. Positive pressure endotracheal ventilation was carried out but no spontaneous respiration occurred for 30 minutes. The infant was subsequently placed in a cold water bath until the body temperature dropped to 24° C. At this point spontaneous respiration occurred with a respiratory rate of three per minute and heart rate of 30 to 40 per minute. Oxygen consumption at this time was half of normal with a measurement of 2.7 ml. per kilogram per muinte. Carbon dioxide production was 3.6 ml. per kilogram per minute. Shivering was not observed during the recovery of body temperature which required 16 hours for spontaneous rewarming. No abnormalities in cardiac rhythm were noted in this infant, though they have been reported in adult patients cooled to a similar temperature. (*Auld, P. A. M., and others: Physiologic Studies on an Infant in Deep Hypothermia, New Engl. J. Med. 267: 1348 (Dec. 27) 1962.*)

ROCKETRY HYPOTHERMIA With linear reduction in body temperature, there appears to be a logarithmic reduction in metabolism. In a space vehicle, the saving in weight for life-support systems would decrease in exponential fashion and would rapidly amount to significant figures. Other advantages of hypothermia are the protective effect