transfer of carbon dioxide from blood to lung. There is a fall in diffusing capacity of oxygen of about 5 per cent of the initial value per degree fall in temperature. There is a fall in oxygen consumption of about 6 per cent per degree, and a similar fall in cardiac output. (*Otis, A. B., and Jude, J.: Effect of Body Temperature on Pulmonary Gas Exchange, Am. J. Physiol. 188: 335 (Feb.) 1957.*)

SHOCK Bacterial toxins may complicate cases of prolonged traumatic shock. The infection must be controlled or damaged muscle excised. The restoration of normal hemodynamics is likely to be achieved only by the combined use of vasoconstrictors with blood, plasma, or dextran. In many cases of severe injury, blood is lost not only externally, but also into the tissues and around fracture sites. Therefore, unless this later loss is accounted for, a blood deficit may persist in spite of what appears to be adequate replacement. In the late phase of hemorrhagic shock, central cardiac failure may occur, with failure of response to transfusion. Normal function can be restored by administration of sympathomimetic drugs, as metaraminol or noradrenalin. The effect of these drugs on the heart is separate from their vasoconstriction action in the periphery. (*Dudley, H. A. F.: Recent Advances in Understanding and Management of Haemorrhagic and Wound Shock, J. Roy. Coll. Surgeons Edinburgh 2: 202 (March) 1957.*)

SHOCK In the differential diagnosis of low blood volume, other causes of signs and symptoms of shock must be considered: (1) paroxysmal cardiac arrhythmia; (2) reflex depression of cardiac activity; (3) chemical or metabolic depression of cardiac function; (4) reflex, chemical or mechanical release or increase in peripheral resistance; (5) interference with venous return to the heart; (6) acute dilatation and failure of either or both chambers of the heart; (7) coronary insufficiency or myocardial infarction; (8) abnormalities of adrenal function and of water, sodium, potassium and protein metabolism. (*Newman, E. V.: Evaluation of Cardiovascular Complications, Ann. New York Acad. Sc. 66: 860 (April) 1957.*)

BLOOD VOLUME As much as 1,500 cc. of blood may be present in tissues of the hip and thigh without outward evidence of its presence. In 111 patients with fracture of the hip 46 per cent had a plasma volume deficit of 300 to 2,000 cc. Studies of blood volume alone can provide information about specific needs of patients with regard to amounts and types of blood and blood substitutes, and can indicate the amount of circulating protein required to replenish deficits. (*Barbour, C. M.: Nutritional and Hematological Factors in Geriatric Anesthesia, Ann. New York Acad. Sc. 66: 844 (April) 1957.*)

BLOOD VOLUME Blood volume dedeterminations were made by the radioactive isotope (iodinated serum albumin) technique in 24 patients who had craniotomies performed. Studies were before and daily after operation. There is a further insidious blood loss following operation that may be greater in volume than the measured loss at operation. (*Smolik, E. A., and others: Blood Volume Changes in Neurosurgical Operations as Determined by Radioisotopes, Surg. Gynec. & Obst. 104: 565 (May) 1957.*)

HEART AND BRAIN PERFUSION The results of perfusing only the heart and brain for right ventriculotomy surgery in 121 experiments are reported. In 11 dogs under normothermic conditions, 7 died, 4 with evidence of cord damage. Eighty-five dogs were cooled to 25–30 C. Thirty-six of the 85 survived. In 27 of the animals, death was due to pulmonary congestion. Twenty-five dogs were cooled to 30–32 C. and lessons learned were applied with only 4 deaths—all of these being due to pulmonary congestion. Blood pressure was maintained at 85 mm. of mercury during perfusion. (*Kay, J. H., and others: Coronary and Carotid Artery Perfusion During Total By-Pass of Heart, J. Thoracic Surg. 33: 265 (April) 1957.*)

VENTRICULAR FIBRILLATION Ventricular fibrillation was induced in 48 dogs with a shock through the heart of 10 volts for ½ to ¾ second. Defibrillation was attempted with electric shocks of various voltages and durations. There was no significant difference in ability to

defibrillate with 130 volts at 1/10 to ¼ second duration compared to 230 volts at 1/10 to ¼ second duration. However, there were more burns and they were more severe when 230 volts at ¼ second were applied to the heart. (*Kaiser, G., and others: Ventricular Fibrillation: Experimental Study Comparing Various Voltages and Durations of Electric Shock in Defibrillation of the Canine Heart, J. Thoracic Surg. 33: 537 (April) 1957.*)

EXTERNAL PACEMAKER A stimulating electrode was placed in the esophagus of 16 patients without premedication or anesthesia and 10 patients under anesthesia. With pacemaker stimuli of 50 volts, pulse duration of 20 milliseconds and frequency of about 80 per minute, there was a good correlation between frequency of the heart beat and the pacemaker. Afterward 3 of the anesthetized patients complained of a dull ache in the chest which subsided in 72 hours. (*Shafiroff, B. G. P., and Linder, J.: Effects of External Electrical Pacemaker Stimuli on Human Heart, J. Thoracic Surg. 33: 544 (April) 1957.*)

CATECHOL AMINES Plasma concentrations of epinephrine and norepinephrine were determined in dogs before, during, and after anesthetization with various general anesthetics. The fluorometric method of Weil-Malherbe and Bone was used for estimation of catechol amines. Ether, chloroform, and divinyl ether increased the levels of both amines. During thiopental anesthesia, amine concentrations were not significantly different from conscious controls. The contractile force of the heart was related directly to the blood level of catechol amines. (*Richardson, J. A., Woods, E. F., and Richardson, A. K.: Plasma Concentrations of Epinephrine and Norepinephrine During Anesthesia, J. Pharmacol. & Exper. Therap. 119: 378 (March) 1957.*)

MUSCLE IONS The view may be rationally entertained that in the original development of the cell the smaller size of the hydrated potassium ion as compared with the hydrated sodium ion allowed a considerable reduction of permeability, and hence of the energy required for electrolyte extrusion, while at the same time securing a free entrance of potassium ions to balance the surplus negative charges on the nondiffusible constituents. But it would appear necessary for the cell to possess an active mechanism for sodium ion extrusion as sodium ions could not be indefinitely excluded. With the occurrence of a high intracellular concentration of potassium ions, enzymatic facilitations of various kinds might well occur as secondary processes. (*Conway, E. J.: Nature and Significance of Concentration Relations of Potassium and Sodium Ions in Skeletal Muscle, Physiol Rev. 37: 84 (Jan.) 1957.*)

GERIATRIC ANESTHESIA Risk in the geriatric patient is increased by the loss of elasticity in the respiratory, cardiovascular, cerebral and renal systems. When regional anesthesia is not feasible, safe anesthesia in the geriatric patient means light planes of general anesthesia. One of the greatest errors prevalent in current anesthesia is the employment of deep planes of narcosis when these are not required. Spinal anesthesia and the judicious use of muscle relaxants drugs accompanied by the maintenance of effective alveolar ventilation is indicated. (*Stephen, C. R.: Choice of Anesthesia for Geriatric Patients, Ann. New York Acad. Sc. 66: 879 (April) 1957.*)

TRANSFUSION REACTION Reaction of a type mediated by endogenous histamine liberation has been observed in dogs given intradermal injections of plasma from other dogs, not previously sensitized. This phenomenon has been observed in humans and may be a factor in unexplained transfusion reactions of the "allergic type." (*Bliss, J. Q., and Stewart, P. P.: Selective Response of Skin to Autologous and Non-autologous Plasma in Nonsensitized Subjects, Canad. M. A. J. 76: 847 (May 15) 1957.*)

CARIOVASCULAR DISEASE The incidence of death (0.05–0.08 per cent) in patients with and without cardiovascular disease receiving electric shock therapy shows no significant difference providing no acute process exists (myocardial infarction, thrombophlebitis). (*Brody, J. I., and Bellett, S.: Use of Electric Shock Therapy*