stimulation, and increased cardiac output; (c) respiratory obstruction, which increases intrathoracic pressure and elevates venous pressure; (d) anesthetics such as cyclopropane and ether, which increase the blood levels of catecholamines; (e) deep anesthesia, which causes myocardial depression and elevated venous pressure; (f) improper body position, which, if the operative site is low, increases blood hydrostatic pressure; and (g) inadequate analgesia with the central perception of pain causing peripheral circulatory stimulation. An anesthetic should be administered with knowledge of these potentials and attempts made to control each in order to minimize bleeding. Automatically, there are three sets of veins draining blood from the brain: the internal jugular veins, the emissary veins, and the vertebral plexus. It seems reasonable to believe that the jugular veins are not always the principal avenue of escape of blood from the brain. The vertebral plexus may contribute significantly and may be important in providing the means for circulatory compensation with change of posture and during deliberate hypotension in the head-up position. This provides a vascular channel of considerable capacity that in the head-up position continually keeps vascular resistance low and facilitates the flow of blood through the brain. (*Eckenhoff, J. E.: Circulatory Control in the Surgical Patient, Ann. Roy. Coll. Surg. Eng. 39: 67 (Aug.) 1966.*)

PROLONGED BED REST Five healthy adult males were studied during a 30 day bed rest experiment. Repeated tilt table tests were conducted before and after the period of recumbancy. Radioisotope blood volume determinations were made prior to, during and after the study. Results indicate that cardiovascular deconditioning occurs after 30 days of bed rest and that two weeks of ambulation is required for reconditioning. Also, blood volume decreases during the first few days of bed rest and returns toward normal at the end of the 30 day rest period. (*Vogt, F. B., and others: Tilt Table Response and Blood Volume Changes Associated with Thirty Days of Recumbency: Aerospace Med. 37: 771 (Aug.) 1966.*)

INSULIN AND PHENYLEPHERINE Cardiovascular and metabolic responses to l-phenylepherine and dl-isoproterenol were studied in acutely pancreatectomized dogs. dl-phenylepherine, in a dosage of 10 micrograms per kilogram, was significantly less effective in increasing myocardial contractile force, systolic pressure and blood glucose levels and in decreasing the heart rate in the study dogs than in the controls. Infusion of 2 micrograms per kilogram of insulin returned the responses toward normal. Recent evidence (Patel, *et al.*, J. Pharmacol. 149: 199, 1965) indicates that part of the cardiovascular actions of phenylepherine is due to release of endogenous catechol amines from intracellular stores. It is postulated that insulin is necessary for release of these stores probably by altering the membrane permeability to phenylepherine. Pancreatectomy did not alter the response to dl-isoproterenol. (*Goldberg, E., and Rosenblum, F.: Reduction in Cardiovascular and Metabolic Responses to Phenylepherine in Acutely Pancreatectomized Dogs, Amer. Heart J. 72: 482 (Oct.) 1966.*)

SICKLING Precision scale models of sickle-cell hemoglobin molecules indicate that the genetic substitution of valine for glutamic acid at the sixth position in the two beta chains allows an intramolecular hydrophobic bond to form. This changes the conformation in such a way as to allow molecular stacking. Optical rotatory dispersion studies and the results of subjection of Hb S solution to temperature change and to propane are consistent with the presence of such a bond. Examination of sickled erythrocytes in a magnetic field and in polarized light indicates that the Hb S molecules are aligned *in situ*. Filaments interpreted are hollow cables of six Hb S microfilaments have been demonstrated by electron microscopy. (*Murayama, M.: Molecular Mechanism of Red Cell "Sickling," Science 153: 145 (July) 1966.*)

BANK BLOOD Blood conserved in ACD solution was subjected to gas analysis and measurements of *p*H and oxyhemoglobin dissociation. The values were correlated with those obtained on fresh blood and blood con-

served with an ACD-IAG solution. The latter consists of 1.34 g. inosin, 0.034 g. adenosin and 0.071 g. guanosin, added to 100 ml. ACD solution. Its activity serves to maintain the ATP content of the red cells, decrease the degree of spontaneous hemolysis and preserve intracellular potassium levels. Oxygen capacity and hemoglobin was significantly higher in IAG than in ACD stored blood during the first few days of storage while the reverse was observed after two weeks. The oxygen content was significantly higher in IAG than in ACD blood throughout the first three weeks of storage. Oxygen saturation was higher in ACD blood during the first three days, but significantly higher in IAG blood in the second and third weeks. The CO_2 tension in ACD blood was above the tension in IAG blood throughout storage time though both values rose by about 50 per cent within four weeks. Oxygen tension was significantly higher in IAG blood. The fall of *p*H in both IAG and ACD blood was parallel: a fall from 7.0 to 6.45 for ACD blood compared to a fall from 7.1 to 6.35 for IAG blood over a period of four weeks, *e.g.*, a somewhat steeper rise of acidity for IAG blood. The shift of the oxyhemoglobin dissociation curve in IAG blood was to the right and ACD blood to the left as compared with fresh blood. It was concluded that stabilization of blood conserved by IAG offers advantages over conservation with ACD in regard to metabolism and function of the red cells. (*Broghammer, H., and Fritzsche, W.: Blood Gas Analysis of Bank Blood Stored in Plastic Bags with Stabilization by ACD and IAG Solutions, Klin. Wschr. 44: 519 (May) 1966.*)

CLOTTING IN OUTDATED PLASMA Assays of several clotting factors were performed on outdated plastic bag, blood bank plasma 25 to 36 days old and after four months of storage of aliquots at 4° C. and −20° C. Findings suggest that outdated blood bank plasma screened for satisfactory AHG levels may be used directly for therapy or as a source of concentrated AHG fractions. It was estimated that approximately 10 per cent of the blood bank blood in the U. S. is discarded annually because of outdating. Utilization of 10 per cent of the plasma from this blood would provide perhaps as much as 50,000 units of plasma annually for replacement of clotting factors. (*Rosenthal, R. B., and Sloan, E.: Assay of Clotting Factors in Outdated Blood Bank Plasma and Its Potential Use for Therapy in Hemophilia and Other Hemorrhagic Dyscrasia, Transfusion 6: 289 (July) 1966.*)

PLASMAPHERESIS Levels of clotting factors compatible with normal hemostasis can be achieved in the plasma of patients with severe congenital deficiencies by transfusion of large amounts of fresh frozen plasma after prior reduction of the plasma volume of the patient by plasmapheresis. The increasing availability of antihemophilic factor concentrates may perhaps leave few indications for the plasmapheresis techniques described in this report, but it remains available for emergencies when no other adequate source of antihemophilic factor is available, and routine plasma transfusions are inadequate. (*Perkins, H. A.: Plasmapheresis of the Patient as a Method for Achieving Effective Levels of Plasma Coagulation Factors Using Fresh Frozen Plasma, Transfusion 6: 293 (July) 1966.*)

EXTRACORPOREAL CIRCULATION A conference on the use of blood and blood substitutes for extracorporeal circulation was held at the National Academy of Sciences, June 18, 1965. The purpose was to review the choice of perfusates to prime pump-oxygenators for cardiopulmonary bypass. The conclusions were as follows: (1) The need for blood banking and other medical resources to obtain blood for extracorporeal circulation reduces the amount of time which can be applied for the performance of other essential functions with general transfusion services. (2) Reports available offer no evidence that whole homologous ACD blood suitably modified with heparinized calcium chloride and properly buffered immediately before use could not provide good results in cardiac surgery if used within four days of collection. (3) The use of homologous whole blood especially in large amounts involved several difficulties: (a) hepatitis, (b) a syndrome during the third to sixth