sistently higher blood pressure (as much as 15 mm. of mercury) in the right arm as compared to the left in these subjects. Prolonged recording of blood pressures was carried out in three subjects who wore the apparatus up to eleven hours without unusual discomfort. Wide variations of blood pressure were encountered in these individuals throughout the day, related to changing emotional and physical stresses. (*Hinman, A. T., Engel, B. T., and Bickford, A. F.: Portable Blood Pressure Recorder Accuracy and Preliminary Use in Evaluating Intra-Daily Variations in Pressure, Amer. Heart J. 63: 663 (May) 1962.*)

BLOOD TRANSFUSIONS Transfusions with blood stored less than 24 hours produce 92 per cent survival of transfused cells at 24 hours. The 24-hour survival of transfused cells which have been stored for 21 days is 84 per cent, this survival falls to 6.5 per cent if the blood has been stored in excess of 28 days. Blood which has been stored in the frozen state has a 24 hour post-transfusion survival of approximately 82 per cent. (*Strumia, M. M., Dugan, A., and Colwell, L. S.: Immediate and Subsequent Loss of Transfused Erythrocytes in Healthy Subjects, Blood 19: 115 (Jan.) 1962.*)

WARMING BLOOD Blood should not be warmed before administration except for reasonable qualifying circumstances. Continuous adequate refrigeration of blood is essential for supression of bacterial growth, for reducing hemolysis, and for maintaining the viability and transfusability of the red cells. Two exceptions to this rule exist: (1) blood used for exchange transfusion of the newborn; and (2) massive transfusions in adults. Patients with cold blood group antibodies should be given blood which lacks the corresponding antigen. (*Lesses, M. F.: Warming Blood, Transfusion 2: 88 (Jan.–Feb.) 1962.*)

BLOOD VOLUMES Standard parameters of red cell volume and blood volume, which have been documented in young individuals, do not apply in octogenarians. In these subjects, the range of values is much greater, and prediction of total red cell volume from body weight or body water is unreliable. Surprising blood volume reductions may be detected in lean-appearing, elderly men with normal hematocrits and normal water content. The major clinical import of this finding is the possibility that occult hypovolemia, which is not predictable from hematocrit measurement, may have serious consequences when certain elderly individuals undergo the trauma of accident or surgery. (*Piomelli, S., and others: Relationship of Total Red Cell Volume to Total Body Water in Octogenarian Males, Blood 19: 89 (Jan.) 1962.*)

ACID-BASE CHANGES *p*H, P_{CO_2} and bicarbonate of arterial plasma and lumbar cerebrospinal fluid have been studied in 23 normal subjects. The *p*H and bicarbonate of the cerebrospinal fluid were always lower than those of the arterial plasma, while the P_{CO_2} of the cerebrospinal fluid was always higher than that of the arterial plasma. In six subjects there was little difference between the P_{CO_2} of the cerebrospinal fluid and that of jugular venous blood. No significant difference in *p*H, P_{CO_2} and bicarbonate were found between lumbar and cisternal cerebrospinal fluid. The effect of chronic acidosis on the acid-base characteristics of the plasma and cerebrospinal fluid in patients with renal failure indicated that the depression of the bicarbonate in cerebrospinal fluid from the normal was on the average about half that in plasma. Despite acidemia, cerebrospinal fluid *p*H was always within two standard deviations of the mean value for normal subjects. The effect on cerebrospinal fluid of acute alkalaemia was studied by administering sodium bicarbonate intravenously. Sodium bicarbonate was also given by mouth for longer periods of time to normal subjects and patients with renal failure. The normal ratio of cerebrospinal fluid bicarbonate to plasma bicarbonate was not restored after sodium bicarbonate administration in either the acute or long-term experiments. There was usually a small fall or no significant change in cerebrospinal fluid *p*H. This was because the increase in cerebrospinal fluid bicarbonate was matched by a proportionate or slightly greater rise in P_{CO_2}. Pulmonary ventilation was measured daily before and during five to seven days of bicarbonate treatment. No significant change in

ventilation was found in two normal subjects but a small fall was recorded in the three patients with renal failure. If changes in cerebrospinal fluid *p*H affect ventilation, respiratory changes accompanying alterations of acid-base balance might be incomplete even five days after the onset of new conditions. (*Bradley, R. D., and Semple, S. J. G.: A Comparison of Certain Acid-Base Characteristics of Arterial Blood, Jugular Venous Blood and Cerebrospinal Fluid in Man, J. Physiol. 160: 381 (Mar.) 1962.*)

CARDIOPULMONARY BYPASS Bypass is generally considered to begin when the sutures tighten the caval vessels about the cannulas. Usually lung ventilation is stopped and time elapses before cardiotomy is performed. Time also elapses after cardiorrhaphy before releasing the caval sutures and instituting partial bypass. During this period coronary sinus blood is not diverted to the oxygenator and passes through the right heart to the pulmonary artery. It is not oxygenated in its passage through the lungs and is ejected by the left ventricle into the ascending aorta. There it mixes with the arterial perfusate from the pump. Some of this mixed blood then enters the coronary arteries, thereby perfusing the myocardium with blood of lower than normal oxygen saturation. Cessation and resumption of active pulmonary ventilation should coincide with cardiotomy and cardiorrhaphy if aortic and carotid hypoxemia are to be avoided. (*Pemberton, A. H., and others: When is Cardiopulmonary Bypass Total? J. Thor. Cardiov. Surg. 43: 685 (May) 1962.*)

GLUCOSE PERFUSION Modification and simplification of apparatus to accomplish total body perfusion and hypothermia has allowed priming with 5 per cent glucose in water rather than blood. The tissues are constantly perfused with sufficient oxygen. The blood loss from operation is replaced with ACD banked blood as it occurs. The blood volume is kept constant through hemodilution; although there is a decrease in red cell mass, this is more than sufficient to supply the tissues with oxygen while the body temperature is lowered. The red cell mass is reconstituted as the patient is warmed through the slow return of the contents in the extracorporeal system. (*Greer, A. E., and others: Hemodilution Principle of Hypothermic Perfusion, J. Thor. Cardiov. Surg. 43: 640 (May) 1962.*)

OXYGENATOR The performance of a vertical-sheet oxygenator was studied during 13 clinical perfusions. The film volumes of this sheet and of the screen which had been in use were determined *in vitro*. These data and prior knowledge of screen performance are sufficient to demonstrate that adequately oxygenated blood is delivered from the sheet at a cost of 0.25 ml. film volume per milliliter of blood flow and from the screen at a cost of 0.44 ml. The film volume of the sheet oxygenator can be about 57 per cent of that of the screen oxygenator for equivalent performance at any given flow rate. At a flow of 3.8 liters per minute substitutions of sheets for screens would result in a reduction in priming volume of 760 ml. (*Theye, R. A., and others: Performance and Film Volume of Sheet and Screen Vertical-Film Oxygenators, J. Thor. Cardiov. Surg. 43: 481 (Apr.) 1962.*)

RENAL FAILURE The incidence of acute renal failure after open-heart operation, extracorporeal circulation, and total body perfusion in 1,000 consecutive patients including those with a wide variety of congenital and acquired cardiac lesions, was 3 per cent and carried a mortality of 86.7 per cent. Extracorporeal circulation and total body perfusion *per se* were not responsible for acute renal failure. Hypotension and arrhythmia occurring before or during operation or in the first two postoperative days reduced cardiac output and renal perfusion and were responsible for the production of acute renal failure. (*Doberneck, R. C., and others: Acute Renal Failure After Open-Heart Surgery Utilizing Extracorporeal Circulation and Total Body Perfusion, J. Thor. Cardiov. Surg. 43: 441 (Apr.) 1962.*)

PULMONARY FUNCTION Postoperative pulmonary dysfunction in patients undergoing operation with extracorporeal circulation was evaluated with selected tests. There was a striking decrease in the pulmonary diffusing capacity in the immediate postoperative period which persisted up to eight months. It