

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 pH 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 cardiomy is performed. Time also elapses after cardiomy 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 cardiomy and cardiomy if aortic and carotid hypoxemia are to be avoided. (Pemberton, A. H., and others: *When is Cardiopulmonary Bypass Total?* *J. Thor. Cardio. 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. Cardio. 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. Cardio. 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. Cardio. 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