tion of time, by six collimated scintillation probes placed over the subject's head. The recording subsequent to the first injection reflected a) the arrival of the labeled oxygen in the tissues; b) its partial conversion into water of metabolism; c) the washout of labeled water from the brain. The ratio of the amount of labeled water formed to the amount of oxygen perfusing the tissues was a measure of fractional oxygen utilization. The second injection provided a measure of blood flow by the interpretation of the washout of the labeled water from brain tissues. The product, fractional utilization × blood flow × arterial oxygen content, gave a value for oxygen utilization rate. The validity of this method was tested by an injection of a nondiffusible indicator, carboxyhemoglobin-^{15}O. Oxygen uptake measurements by these methods were slightly higher (6 per cent) than the values for the whole brain in normal subjects previously reported. *(Ter-Pogossian, M. M., and others: The Measure in Vivo of Regional Cerebral Oxygen Utilization by Means of Oxyhemoglobin Labeled with Radioactive Oxygen-15, J. Clin. Invest. 49: 381 (Feb.) 1970.)*

FUNCTION OF STORED BLOOD Normal hemoglobin function depends on adequate erythrocytic levels of 2,3-diphosphoglycerate (2,3-DPG), a compound that is poorly maintained during bank storage of blood in acid–citrate–dextrose (ACD). Since 2,3-DPG is better maintained at the higher *p*H afforded by citrate–phosphate–dextrose (CPD), degrees of hemoglobin function during storage of blood in CPD and in ACD were compared. Hemoglobin function, expressed as the P_{50} or the P_{O_2} at which blood is 50 per cent oxygenated (an inverse but direct measure of oxygen affinity), was considerably better maintained during storage in CPD than in ACD. The hemoglobin function or P_{50} of blood stored in CPD–adenine was not maintained as well as the Hb function of blood stored in CPD without adenine, but the oxyhemoglobin dissociation curves showed only a small difference compared with the difference between ACD and CPD. Blood stored in CPD–adenine with inosine present initially or added at day 25 had higher P_{50} values late in storage, thus providing better hemoglobin function for more of the storage period. The concentration of 2,3-DPG of erythrocytes might be altered favorably in stored blood to provide the recipient with hemoglobin which functioned more normally. *(Dawson, R. B., Jr., and Ellis, T. J.: Hemoglobin Function of Blood Stored at 4 C in ACD and CPD with Adenine and Inosine, Transfusion 10: 113 (May) 1970.)*

STORED WHOLE BLOOD In extensive tests of the effects of temperature and mechanical agitation of blood with and without plasma, it was found that temperature variation commonly encountered in the clinical blood bank (4 C to 10 C, and short exposure to 22 C prior to transfusion) did not appear to contribute significantly to erythrocytic damage—unless the units were in the oldest stages of storage or had been exposed to warm temperatures for longer than 24 hours. Mechanical stress had minimal adverse effects, but they became more evident when blood was stored as packed cells or when blood had been stored for 21 days or more. However, present blood bank standards provide safeguards to protect stored and shipped blood from excessive temperatures and physical stress. These safeguards must be maintained, especially with longer periods of storage of the blood. Furthermore, despite the apparent resistance of erythrocytes to stress, unreasonable demands can readily produce harmful changes, rendering the blood unusable for transfusion. *(Shields, C. E.: Studies on Stored Whole Blood: IV. Effects of Temperature and Mechanical Agitation on Blood with and without Plasma, Transfusion 10: 155 (July) 1970.)*

MAGNESIUM BLOCKADE Effects of magnesium ion blockade on peripheral circulation were studied in 20 dogs anesthetized with pentobarbital. Following tracheal intubation, the lungs were ventilated mechanically. Superior mesenteric or renal arteries were then exposed and isolated through a midline abdominal incision. In 14 dogs, known concentrations of KCl, adrenergic vasoconstrictors (neosynephrine, norepinephrine and epinephrine) and nonadrenergic vasoconstrictors (angiotensin and pitressin) were infused into either the superior mesenteric or renal arteries in amounts sufficient to cause decreases in

blood flow greater than 50 per cent. Blood flow was measured proximal to the site of injection with a square-wave electromagnetic flowmeter probe. The simultaneous injection of magnesium sulfate (4 mEq/ml) in graded amounts resulted in reversal of vasoconstriction produced by all of the above drugs. In each of the remaining six dogs, one of three vasopressor agents, nonepinephrine (16 mg/l), angiotensin (1 mg/l) or pitressin (20 units/l), was infused intravenously until a sustained systolic blood pressure of 180 to 200 mm Hg or a decrease in renal blood or urine flow, or both, resulted. Infusion of magnesium ion (0.8 to 4 mEq/ml) into the left renal artery prior to or after pressor administration selectively reversed the reductions in blood flow, urinary volume and sodium excretion in the left kidney. It is concluded that magnesium ion is a potent inhibitor of vascular constriction produced by adrenergic and nonadrenergic mediators. *(Levowitz, B. S., and others: Magnesium Ion Blockade of Regional Vasoconstriction, Ann. Surg. 172: 33 (July) 1970.)*

Respiration

AEROSOL CONTAMINATION An outbreak of *Serratia marcescens nosocomial* infections was initiated and propagated by inhalation therapy medication given by aerosol. There were 655 bacterial isolates from 374 patients during a ten-month period: 50.4 per cent of isolates were from sputum, 24.5 per cent from urine, and the remainder from wounds, blood, and miscellaneous sites. Forty-three per cent of a random sample of opened bottles were contaminated with *S. marcescens,* and viable bacterial counts reached 10^7 organisms/ml. *(Sanders, C. V., Jr., and others:* Serratia marcescens *Infections from Inhalation Therapy Medications: Nosocomial Outbreak, Ann. Intern. Med. 73: 15 (July) 1970.)*

ALVEOLAR CAPILLARY BLOCK The authors studied ten patients thought to have alveolar capillary blocks because of dyspnea, hyperventilation and low arterial P_{CO_2}, cyanosis on exertion, rales at the lung bases, and abnormal chest roentgenograms while each patient was breathing four different inspired oxygen mixtures. Data were interpreted using the principle of the Bohr integral isopleth, making it possible to determine the distribution of ventilation and perfusion, diffusing capacity, lung volume, and alveolar and end-capillary blood oxygen tensions in the variously functioning parts of the lung. In two patients shunts were the major factor interfering with oxygen transfer. In four patients inequalities in ventilation:perfusion ratios and in diffusing capacity in different parts of the lung were the factors interfering with oxygen transfer. In the remaining four patients the only disturbance in oxygen transfer was in the total diffusing capacity. A decrease in the diffusing capacity may cause blood-gas disturbances, but the degree of arterial oxygen unsaturation is mild. *(Arndt, H., King, T. K. C., and Briscoe, W. A.: Diffusing Capacities and Ventilation:Perfusion Ratios in Patients with the Clinical Syndrome of Alveolar Capillary Block, J. Clin. Invest. 49: 408 (Feb.) 1970.)*

ALVEOLAR CAPILLARY BLOCK Alveolar capillary blocks were found in four patients with interstitial pneumonitis and one with severe silicosis who desaturated with exercise. The authors did pulmonary function tests and studies of regional pulmonary blood flows and regional ventilation using ^{133}Xe in these patients, six patients with less severe silicosis, and 11 normal controls. Regional ventilation was normal in every subject studied. The five patients with A-C block and more uniform ventilation–blood flow ratios in the apices and bases of the lungs than did the six patients with silicosis or the 11 normal controls. That is, the decreasing ventilation–blood flow ratio from apex to base which occurs normally was not found in the patients with A-C block. Right-to-left shunts of 4 per cent were present in both silicosis and A-C block patients. Single-breath carbon-monoxide diffusing capacities were decreased in the A-C block patients and correlated with alveolar–arterial oxygen differences. A-C block can result from a reduction in total area available for diffusion as well as from thickening of the alveolar membranes. *(Renzetti, A., and others: Regional Ventilation and Perfusion in Silicosis and in the Alveolar-Capillary Block Syndrome, Amer. J. Med. 49: 5 (July) 1970.)*