

slowly, neither hypotension nor hemodilution occurred until 25 per cent of the blood volume was removed. Slow removal of 35 per cent of the blood volume caused only minor blood pressure change and only slight hemodilution. It is concluded that hemodilution is influenced more by arterial blood pressure than by the volume of blood lost. (*Jenkins, D., and others: Experimental Hemorrhage, A. M. A. Arch. Surg. 82: 49 (Jan.) 1961.*)

BRAIN BLOOD FLOW Niacinamide in 3-5 Gm. doses administered intravenously in dogs produced a significant increase in cerebral blood flow and cerebral oxygen consumption but decreased mean arterial blood pressure and cerebral vascular resistance in dogs. The increase in cerebral blood flow is believed to be due to an increase in cardiac output associated with a decrease in cerebral vascular resistance. (*Huang, T. F., and Chao, C. C.: Effect of Niacinamide on Cerebral Circulation, Proc. Soc. Exp. Biol. Med. 105: 551 (Dec.) 1960.*)

ARM BLOOD FLOW Intravenous injection of mephentermine in normal man produces a decrease in blood flow in the forearm and an increase in blood pressure. Venous pressure increases while forearm venous distensibility and venous volume decreases. Experiments indicate the mephentermine increases both peripheral resistance and venous tone in man. (*Horsley, A. W., and Eckstein, J. W.: Effect of Mephentermine on Venomotor Tone, Blood Flow and Arterial Pressure in Forearm of Man, Proc. Soc. Exp. Biol. Med. 105: 569 (Dec.) 1960.*)

PHYSIOLOGIC MEASUREMENTS

Measurement error is defined as the instantaneous difference between the value of the physiological event being measured and the value indicated by the recording system. The measurement errors associated with each of the three major components of a recording system, the transducer, amplifier and recorder, are discussed in detail. Since a pressure measuring system may be thought of as the analog of many other physiologic systems, the problem of pressure recording is treated in detail. A fluid-filled probe leading to a transducer

chamber is assumed to have distributed physical properties. This system is shown to have inherent measurement errors related to: (1) multiple reflection of waves transmitted along the probe, (2) amplitude and phase distortion of waves transmitted along the probe, and (3) errors related to the generation of noise in such a system. A mathematical expression is developed indicating under what circumstances one might expect the behavior of the distributed probe system to approximate the behavior of the simple, single degree of freedom system. Since many physiologic recording systems approach the behavior of a single degree of freedom system, considerable discussion is devoted to a rather complete set of formulas describing the behavior of such a system with the hope that they be useful in determining the dynamic accuracy of a pressure recording system. (*Fry, D. L.: Physiologic Recording By Modern Instruments with Particular Reference to Pressure Recording, Physiol. Rev. 40: 753 (Oct.) 1960.*)

PULMONARY VASCULAR RESISTANCE

In an open-chest dog, pulmonary vascular resistance was usually only slightly greater when the lung was collapsed than during moderate states of inflation. At higher levels of inflation pulmonary vascular resistance increased. At any given state of inflation pulmonary vascular resistance decreased as pulmonary artery pressure and pulmonary blood flow increased. Regional decreases in blood flow occurring in atelectatic portions of the lung could not be explained by mechanical factors alone. The increased pulmonary vascular resistance at high levels of lung inflation was due to the effect of transpulmonary pressure on the vessels surrounding the alveoli. (*Whittenberger, J., and others: Influence of State of Inflation of Lung on Pulmonary Vascular Resistance, J. Appl. Physiol. 15: 878 (Sept.) 1960.*)

CHEMORECEPTORS Dogs anesthetized with chloralose and urethane following morphine premedication were made hypoxic by substituting 7 to 12 per cent oxygen in nitrogen for room air. With the carotid body perfused from the same animal, systemic hypoxia usually caused an increase in respira-