ACID-BASE BALANCE Changes in acid-base balance in response to the administration of carbon dioxide were studied in five dogs anesthetized with chloralose. A respiratory pump was adjusted to produce a P_{CO_2} in the arterial blood of about 40 mm. of mercury. Carbon dioxide was added to the inspired gas mixture to give a concentration of approximately 12 per cent. During the period of hypercarbia the *p*K value decreased significantly and in an opposite direction to that of blood equilibrated with various carbon dioxide tensions *in vitro*. The change in *p*H with the increase in P_{CO_2} was greater than, and the change in plasma bicarbonate ion concentration less than, that predicted for the behavior of blood *in vitro*. An explanation of this difference in the behavior of the whole animal and blood *in vitro* may be offered when it is considered that both skeletal muscle and extracellular fluid have smaller buffering capacities for carbon dioxide than blood. (*Linden, R. J., and Norman, J.: The Effects of Increases in P_{CO_2} on Acid-Base Balance, J. Physiol. 185: 75P (July) 1966.*)

METABOLIC ACIDOSIS In 50 cases of acute myocardial infarction 66 per cent showed significant metabolic acidosis. Twelve of the 13 patients who died showed a significant base deficit. In patients in shock, correction of acidosis usually resulted in rise of systolic blood pressure. A significant metabolic acidosis developing within 12 hours of infarction was associated with a 28 per cent mortality. (*Neaverson, M. A.: Metabolic Acidosis in Acute Myocardial Infarction, Brit. Med. J. 2: 383 (Aug.) 1966.*)

Respiration

POSTHYPERVENTILATION APNEA Posthyperventilation apnea (PHA) was consistently demonstrated in conscious trained dogs. Although hypoxia and metaboolic acidosis lowered the apneic threshold, PHA also regularly occurred during these states. PHA is due to direct effect of hypocapnea on the respiratory centers rather than to summation of vagal impulses. Evidence for this includes failure to produce PHA when arterial CO_2 tensions were maintained at normal levels during hyperventilation by addition of CO_2 to inspired gas and presence of a few breaths after hyperventilation ceased and before apnea occurred. PHA and the shift of apneic threshold with hypoxia and acidosis are more easily demonstrated in the dog than in man. (*Mitchell, R. A., Bainton, C. R., and Edelist, G.: Posthyperventilation Apnea in Awake Dogs During Metabolic Acidosis and Hypoxia, J. Appl. Physiol. 21: 1363 (July) 1966.*)

LUNG PERFUSION Distribution of lung perfusion was sudied in erect man using ^{133}Xe. The apex of the lung, where alveolar pressure exceeds pulmonary artery pressure was virtually unperfused. Further down the lung, where alveolar pressure was less than pulmonary artery pressure but greater than pulmonary venous pressure, a zone of sharply increasing flow was encountered. Toward the lung bases, where both pulmonary arterial and venous pressure exceed alveolar pressure, increase in flow was less rapid as the bases were approached. These observations in intact man confirm those previously made with isolated dogs' lungs. Pattern of perfusion was altered at both extremes of lung volume by changes in pulmonary arterial and venous pressure. (*Anthonisen, N. R., and Milic-Emili, J.: Distribution of Pulmonary Perfusion in Erect Man, J. Appl. Physiol. 21: 760 (May) 1966.*)

VENTILATION AND PERFUSION Regional subdivisions of lung volume and distribution of pulmonary ventilation and perfusion were studied using ^{133}Xe in 8 healthy conscious volunteers in the supine, prone, left and right lateral positions. In general, findings confirmed previous observations made in erect man that regional distribution of resting lung volume, pulmonary ventilation, and pulmonary perfusion are gravity-dependent and vary with vertical distance from the uppermost part of the lung. Many of the observed differences could be explained by the fact that in the positions studied, vertical dimension of the lung is much less than that in erect man. Evidence was presented that airway closure might occur at higher lung volumes in the lateral position than in the erect position. (*Kaneko, K., and others: Regional Distribution of Ven-*