

during intense hypoxia, the respiratory drive continues to be a consequence of the P_{CO_2} drive, even when the P_{CO_2} has been reduced far below normal. (Honda, Y., and others: *P_{CO₂}* for Respiratory System in Acute Hypoxia of Dogs, *J. Appl. Physiol.* 18: 1053 (Nov.) 1963.)

CARBON DIOXIDE Twenty-one subjects were exposed to 1.5 per cent carbon dioxide in air for 42 days. Respiratory minute volume and alveolar P_{CO_2} were increased throughout the exposure to carbon dioxide. Carbon dioxide retention with uncompensated respiratory acidosis persisted for the first 23 days of the experiment. After transition back to air, the respiratory minute volume decreased while the P_{CO_2} remained elevated for nine days. Carbon dioxide excretion was increased over normal during the nine day recovery period indicating a release of carbon dioxide from stores. (Shaefer, K. E., and others: *Respiratory Acclimatization to Carbon Dioxide, J. Appl. Physiol.* 18: 1071 (Nov.) 1963.)

HYPERVENTILATION Intermittent positive-negative respiration in 10 dogs resulted in a consistent reduction in arterial carbon dioxide content and rise in blood pH. This was accompanied by a fall in cardiac output and blood pressure which remained at a constantly depressed level. An immediate rise in renal arterial blood flow resulted which later fell below control values indicating a marked preferential increase in renal blood flow. (Pollock, L., and others: *Influence of Hyperventilation on Cardiac Output and Renal Blood Flow, Surgery* 55: 299 (Jan.) 1964.)

CONTROLLED VENTILATION Utilizing an open circuit nitrogen washout method, distribution in the lung of inspired gas was compared during spontaneous ventilation in the conscious and the anesthetized patient and also in the artificially ventilated, anesthetized, paralyzed patient. Induction of anesthesia or substitution of artificial ventilation for spontaneous ventilation caused no change in the uniform distribution of inspired gas. (Bergman, N. A.: *Distribution of Inspired Gas During Anesthesia and Artificial Ventilation, J. Appl. Physiol.* 18: 1085 (Nov.) 1963.)

COMPLIANCE AND RESPIRATORY RATE Measurements of pulmonary compliance were made at different respiratory frequencies in adult man. It was found that compliance decreased with an increasing respiratory frequency. The effect was greatest at low lung volumes, least in middle lung volumes, and decreased again at greater lung volumes. (Mills, R. J., Cumming, G., and Harris, P.: *Frequency-Dependent Compliance at Different Levels of Inspiration in Normal Adults, J. Appl. Physiol.* 18: 1061 (Nov.) 1963.)

RESPIRATORY EFFICIENCY Anesthetized paralyzed dogs were given intermittent positive pressure ventilation to a constant maximum inflating pressure using four separate pressure profile curves. The four profiles were: (1) rapid inspiration and rapid expiration; (2) slow inspiration, rapid expiration; (3) rapid inspiration, prolonged expiration; and (4) prolonged inspiration, prolonged expiration. The smallest alveolar-arterial gradients, both oxygen and carbon dioxide, occurred when the mean pressure during the respiratory cycles was high, and it was noted that decreases in mean pressure were consistently associated with increases in both oxygen and carbon dioxide gradients. A significantly high mean pressure during the respiratory cycle might be beneficial and lowering of the mean pressure during intermittent positive pressure breathing in an attempt to minimize circulatory effects might compromise respiratory efficiency. (Bergman, N. A.: *Effects of Different Pressure Breathing Patterns on Alveolar-Arterial Gradients in Dogs, J. Appl. Physiol.* 18: 1049 (Nov.) 1963.)

PULMONARY EFFUSION Pleural effusion reduces chest wall compliance slightly. Pleural thickening with effusion is accompanied by marked reduction in chest wall and lung compliance and reduction in lung volumes and diffusing capacity. Resorption of fluid leads to increasing lung volumes. Decortication may or may not reduce the changes due to pleural thickening. In patients with effusion and thickening, arterial blood gas values at rest are normal. (Yoo, O. H., and Ting, E. Y.: *Effects of Pleural Effusion on Pulmonary*