

extension of any trend due to P_{aCO_2} change would not return them to a normal range. It was concluded that in the intact human subject (P_{aCO_2} 30 to 40 mm Hg), normal values for the parameters measured in this study resulted from the local effects of airway CO_2 rather than from the systemic effects of arterial CO_2 . (Patterson, R. W., and others: Comparison of Effects of Airway Versus Systemic Carbon Dioxide Tension on Human Airway Mechanics, *J. Thorac. Cardiovasc. Surg.* 58: 209 (Aug.) 1969.)

CO_2 DIFFERENCE It has been suggested that there is a difference of several mm Hg between P_{CO_2} of alveolar gas and P_{CO_2} of capillary blood when gas exchange is arrested during rebreathing. Measurements of CO_2 tensions in pulmonary arterial blood were compared with estimates of mixed venous P_{CO_2} ($P_{\bar{V}CO_2}$) and P_{O_2} by a modified rebreathing technique in three healthy men at rest and during exercise. Rebreathing $P_{\bar{V}CO_2}$ values were higher than blood measurements, and the difference widened as $P_{\bar{V}CO_2}$ increased with exercise. P_{O_2} differences were inconsistent. Rebreathing estimates for $P_{\bar{V}CO_2}$ predict more acceptable values for cardiac output than direct blood analysis, suggesting that P_{CO_2}/CO_2 content equilibration in mixed venous blood is incomplete at the time of sampling. This conclusion contradicts the suggestion of others that equilibration between alveolar gas and pulmonary capillary blood during arrested gas exchange does not occur because of a pH gradient maintained across the alveolar membrane. (Denison, D., and others: Comparison of Rebreathing Estimates with Direct Measurements of Mixed Venous P_{CO_2} and P_{O_2} in Man, *J. Physiol.* 203: 75P (July) 1969.)

ATELECTASIS Postoperative atelectasis was found to be primarily related to upper abdominal surgery. Preoperative bronchitis played a contributing role, especially in patients undergoing surgical operations on the

lower abdomen. An adequate history was more valuable than spirometry as a screening technique for significant respiratory disease. IPPB therapy did not prevent postoperative atelectasis. (Forthman, H. J., and Shepard, A.: Postoperative Pulmonary Complications, *Southern Med. J.* 62: 1193 (Oct.) 1969.)

CHEYNE-STOKES RESPIRATION Arterial and jugular venous blood gases were measured continuously in patients with Cheyne-Stokes respiration (CSR). Contrary to what occurs during voluntary hyperventilation, P_{aCO_2} increased while P_{aO_2} and pH decreased during the hyperpnea of CSR. During the apneic phase of CSR, P_{aO_2} increased while P_{aCO_2} decreased. These patterns suggest that the respiratory center is depressed and is stimulated periodically by the increasing P_{aCO_2} and decreasing P_{aO_2} . Periodic breathing reflects a pattern of neurogenic hyperpnea resulting from damage to the central nervous system, in which intense hyperventilation alternates with posthyperventilation apnea. Cerebral venous oxygen values followed closely the changes in P_{aCO_2} , increasing during hyperpnea and decreasing during apnea. Thus, cerebral venous oxygen tension and P_{aO_2} moved in opposite directions. (Gatch, F., and others: Cerebral Venous and Arterial Blood Gases during Cheyne-Stokes Respiration, *Amer. J. Med.* 47: 534 (Oct.) 1969.)

ABSTRACTER'S COMMENT: The apparent paradox of hyperventilation and a rising P_{aCO_2} could be explained by a delayed response of the blood gas electrodes. The authors state that "these differences were shown to be small and corrections were made after measuring them." It would have been useful to have presented these data. In addition, hyperventilation, with its associated blood-gas changes, should have been studied, to demonstrate the rapid response of the electrode system as well as the differences between CSR and voluntary hyperventilation.