concentrations. At rapid inspiratory flow rates, starting from higher lung volumes, apical concentration was somewhat higher and basal concentration was somewhat lower than with low inspiratory flow rates. Basilar airways were closed at residual volume and were opened earlier in inspiration by the relatively high transpulmonary pressures required to produce rapid inspiratory flow rates. At higher lung volumes, fast inspiration produced a slightly more even distribution than slow inspiration. (*Robertson, P. C., Anthonisen, N. R., and Ross, D.: Effect of Inspiratory Flow Rate on Regional Distribution of Inspired Gas, J. Appl. Physiol. 26: 438 (April) 1969.*) ABSTRACTER'S COMMENT: The findings that rapid inspiratory flow rates are associated with more uniform intrapulmonary gas mixing in healthy man are certainly contrary to our current thinking and practice. Those who advocate use of slow inspiratory flow rates to promote uniform distribution of inspired gas will be surprised to learn that they may be producing the opposite effect.

VENTILATION IN OBESITY Shunting and ventilation-perfusion relationships in a group of obese subjects were compared with those in a group of subjects of normal weight. Findings in the normal subjects were similar to those previously reported by other investigators. Significant ventilation–perfusion abnormalities were found in some obese subjects in that hypoventilated alveoli were relatively overperfused. In other obese subjects, large anatomic shunts occurred. The anoxemia without hypercapnia found in some obese subjects was related to overperfusion of underventilated areas or to perfusion of completely nonventilated areas. In addition to anoxemia, other abnormalities found frequently in the obese population were low expiratory reserve volumes, low maximum voluntary ventilation, and increased work of breathing, caused primarily by increased elastic work. (*Barrea, F., and others: Ventilation–perfusion Relationships in the Obese Patients, J. Appl. Physiol. 26: 420 (April) 1969.*)

CO_2 TENSION/CONTENT TABLES Tables relating oxygen tension and content under a variety of physiologic conditions, including different *p*H, temperature and hemoglobin concentration values are readily available. Similar tables are now available for the interconversion of carbon dioxide tension and content under various physiologic conditions. Such tables were produced on the line printer of an ICL system 4-50 digital computer. The program, written in ALGOL, was based on a previously-published computer procedure using the same primary experimental data as the Singer-Hastings nomogram, and therefore gives similar results. In addition to carbon dioxide tension or content, *p*H, hematocrit and oxyhemoglobin saturation are required. The most important factor affecting the position of the carbon dioxide dissociation curve is the base excess. For a single value of hematocrit and temperature, each table gives CO_2 contents corresponding to CO_2 tensions ranging from 12 to 100 mm Hg in steps of 2 mm Hg. (*Kelman, G. R.: Computer-produced Physiological Tables for Carbon Dioxide Tension/Content Interconversions, J. Physiol. 203: 30P (July) 1969.*)

LUNG MECHANICS Effects on pulmonary mechanics of varying airway CO_2 tension and systemic arterial CO_2 tension independently were studied in 14 patients undergoing surgical correction of acquired and congenital heart disease with the aid of total cardiopulmonary bypass. Systemic CO_2 was varied while the patients were on pump by "ventilating" the oxygenator with 12 to 14 liters of pure oxygen (average Pa_{CO_2} 25 mm Hg) or with 6 to 7 liters of 2 per cent CO_2 in oxygen (average Pa_{CO_2} 38 mm Hg). End-tidal CO_2 tension (P_{ET/CO_2}) could be decreased (average 2 mm Hg) by ventilating the lungs with pure O_2 and could be increased (average 48 mm Hg) by ventilating lungs with 5 to 10 per cent CO_2 in oxygen. Changes in resistance, compliance, elastic work and flow-resistive work due to changes in Pa_{CO_2} were not significant whether P_{ET/CO_2} was high or low. Significant increases in resistance, elastic work and flow-resistive work and decreases in lung compliance resulted from the lowering of P_{ET/CO_2}. These values were different from normal values (obtained from other studies) and values obtained with high P_{ET/CO_2}. The

extension of any trend due to Pa_{CO_2} change would not return them to a normal range. It was concluded that in the intact human subject (Pa_{CO_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 *p*H 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 spirography 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: 1198 (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, Pa_{CO_2} increased while Pa_{O_2} and *p*H decreased during the hyperpnea of CSR. During the apneic phase of CSR, Pa_{O_2} increased while Pa_{CO_2} decreased. These patterns suggest that the respiratory center is depressed and is stimulated periodically by the increasing Pa_{CO_2} and decreasing Pa_{O_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 Pa_{CO_2}, increasing during hyperpnea and decreasing during apnea. Thus, cerebral venous oxygen tension and Pa_{O_2} moved in opposite directions. (*Gotch, 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 Pa_{CO_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.