At high altitude significant pulmonary hypertension presumably causes better perfusion of the normally poorly perfused apical segments thereby facilitating oxygen transfer from alveoli to blood. (*Grover, R. F.: Effects of Hypoxia on Ventilation and Cardiac Output, Ann. N. Y. Acad. Sci. 121: 662 (Mar.) 1965.*)

ACIDOSIS Carbon dioxide breathing caused a greater increase in minute ventilation than acute metabolic acidosis in normal subjects and in patients with obstructive disease of the lung. Augmentation of alveolar ventilation in normal subjects during carbon dioxide breathing becomes relatively greater with increasing hypoxia. Hypercapnea causes diffuse reflex bronchoconstriction in animals which may permit an optimal balance between anatomic dead space and resistance to efficient breathing. Blood hydrogen ion concentration, by altering vasomotor tone of the pulmonary vasculature, affects the distribution of perfusion of the lungs at least in those conditions where there is considerable initial nonhomogeneity of distribution and oxygen transport. (*Enson, Y.: Effects of Acidosis on Respiratory Function, Ann. N. Y. Acad. Sci. 121: 674 (Mar.) 1965.*)

RESPIRATORY DEAD SPACE During bronchospirometry after introduction of a Carlens tube in conscious patients breathing spontaneously, the tube leading to one lung was lengthened by another tube thus creating a dead space of 25 to 50 ml. Alveolar hypoventilation with increased P_{CO_2} and decreased P_{O_2} was found on the dead space side, while the other side showed hyperventilation. (*Hertz, C. W.: Research on Gaseous Exchange in the Functional Inhomogenous Lung After Introduction of an Artificial Dead Space on One Side, Deutsch. Arch. Klin. Med. 210: 183 (Mar.) 1965.*)

ALVEOLAR PERMEABILITY Studies were performed on isolated perfused canine lungs to determine the permeability characteristics of the alveolar membrane to several substances. The test substances, which appeared to cross the membrane largely by diffusion rather than active transport mechanisms, were added to the fluid perfusing the vascular bed of the lung, their rate of diffusion into the alveolar spaces being a function of alveolar membrane permeability. Calculated permeability coefficients were potassium 56, sodium 7, urea 23, glucose 3 and dinitrophenol 400 (a fat soluble substance). This selective permeability is similar to that of usual cell membranes in other tissues, but quite unlike simple capillary membranes. (*Taylor, A. E., Guyton, A. C., and Bishop, V. S.: Permeability of the Alveolar Membrane to Solutes, Circulat. Res. 16: 353 (Apr.) 1965.*)

EMPHYSEMA Electron microscopy of emphysematous human lungs shows capillary lesions identical with those found as precursors to the earliest alveolar lesions in rabbit lungs. This strongly suggests that the earliest lesion in emphysema is in capillaries. (*Martin, H. B., and others: Electron Microscopy of Human Pulmonary Emphysema, Amer. Rev. Resp. Dis. 91: 206 (Feb.) 1965.*)

PULMONARY NORMALS In a large total population study, all male cigarette smokers showed a greater decline with age in one-second forced expiratory volume, forced vital capacity and peak expiratory flow rate than nonsmokers or those smoking less than half a pack a day, suggesting that pulmonary standards for nonsmokers be used as representative of normal. (*Ferris, B. G., and others: Prediction Values for Screening Tests of Pulmonary Function, Amer. Rev. Resp. Dis. 91: 252 (Feb.) 1965.*)

CORD PARALYSIS Following injury of cervical portion of spinal cord there is flaccid paralysis of the muscles of the trunk and extremities despite a normally moving diaphragm. This may produce normal or enhanced excursions of the abdomen with paradoxical inspiratory retraction of the rib cage. Since descent of the diaphragm normally accomplishes only 40 per cent of the tidal volume, ventilation may be inadequate. Not infrequently intermittent cyanosis may develop and during acute infections and other forms of stress, respiratory acidosis may occur. Vital capacity and maximum breathing capacity are decreased. In some subjects lowered arterial oxygen tension and elevated arterial carbon dioxide potential are found, indicating alveolar hypoventilation.

(Bergofsky, E. H.: Mechanism for Respiratory Insufficiency After Cervical Cord Injury, Ann. Intern. Med. 61: 435 (Mar.) 1964.)

EXPERIMENTAL LUNG COLLAPSE Rate, volume, and time of lung collapse following tracheal occlusion in rats breathing 100 per cent oxygen at varying ambient pressures was studied. Rate of lung collapse was proportional to oxygen uptake and increased as barometric pressure decreased. Alveolar carbon dioxide tension and water vapor tension were also determinants of rate of lung collapse. Determination of collapse time is predictable in any species for any given lung volume and rate of oxygen uptake. *(Robertson, W. G., and Farhi, L. C.: Rate of Lung Collapse After Airway Occlusion on 100 Per Cent O_2 at Various Ambient Pressures, J. Appl. Physiol. 20: 228 (Mar.) 1965.)*

MOTOR CONTROL OF LUNG Stimulation of the efferent cervical vagus nerve in cats and dogs increased airway resistance. Response increased with increasing frequency and became maximal at 12/second. Dead space decreased during vagal stimulation. The largest response to stimulation was in the homolateral lung. Rapid freezing of lung tissue and microscopic examination revealed that the primary site of bronchoconstriction was in the lobar bronchi. Smaller bronchi were less uniformly involved and respiratory bronchioles and alveolar ducts were not constricted. *(Olsen, C. R., and others: Motor Control of Pulmonary Airways Studied by Nerve Stimulation, J. Appl. Physiol. 20: 202 (Mar.) 1965.)*

POSTOPERATIVE RESPIRATION Studies of respiratory volumes and mechanics have been made in 22 patients undergoing thoracic surgery and 11 patients undergoing abdominal surgery preoperatively and postoperatively at 1 to 3 hours, 4 to 6 hours, 1 day, and 1 week. In the patients who had had thoracotomy, tidal volume, lung compliance, work per breath, arterial *p*H, and standard bicarbonate were all significantly decreased in the postoperative period. Breathing rate was increased to maintain the preoperative minute volume. The reduced compliance means that increased effort was required to move air in and out of the lungs no matter what its cause. The changes were maximal immediately after the operation, and at the end of a week had not yet completely returned to normal. *(Lewis, J. L., and Welch, J. A.: Respiratory Mechanics in Postoperative Patients, Surg. Gynec. Obstet. 120: 305 (Feb.) 1965.)*

ASPIRATION PNEUMONITIS Effect of aspiration was studied in dogs using different solutions of various *p*H and quantity. Sequelae of aspiration pneumonitis were found to be directly proportional to the acidity and volume of the aspirated solution. Low *p*H and large volumes produced more severe reactions. A syndrome of sudden apnea and hypotension immediately following aspiration was noted in all animals except those in which saline solution was used. This could be abolished with bilateral vagotomy, but not with atropine. Attempted neutralization of low *p*H aspirants did not alter the usual reaction. *(Exarahos, N. D., and others: Importance of pH in Volume and Tracheal Bronchial Aspiration, Dis. Chest 47: 167 (Feb.) 1965.)*

RESPIRATORS Serial determinations of cardiac output, blood gases, and electrolyte values have revealed three basic patterns of circulatory response in 42 patients whose respiratory tidal gas exchange was assumed by a volume displacement respirator for periods up to 12 days. Mechanical ventilation can improve an abnormal metabolic status due to cardiac or pulmonary dysfunction by increasing blood gas exchange. When a normal cardiovascular system is present and capable of responding, cardiac output rises to a value sufficient to satisfy the total body requirements for circulation. By decreasing the perfusion requirements of the respiratory muscles, the total demand for circulation is reduced and perfusion to other parts of the body is improved in patients incapable of elevating cardiac output. *(Clowes, G. H., and others: Patterns of Circulatory Response to the Use of Respirators, Circulation 31: 1-157 (Apr.) 1965.)*

HYPOTHERMIA Renal hemodynamics were studied during hypothermia of the denervated dog kidney while blood viscosity and