ticles in the respiratory tree also markedly affect retention. (*Mitchell, R. I.: Retention of Aerosol Particles in Respiratory Tract: Review, Amer. Rev. Resp. Dis. 82: 627 (Nov.) 1960.*)

DIFFUSING CAPACITY OF LUNG The breath holding diffusing capacity and breath holding lung volume of patients two months after thoracic surgery were decreased proportionally in patients who underwent pneumonectomy while in patients who underwent lobectomy, wedge resection or thoracoplasty there was a greater degree of depression of diffusing capacity with subsequent return toward normal. Probably there would have been an even more disproportionate decrease immediately after operation. This disproportionate functional change is correlated with trauma to the remaining lung during surgery and is due either to altered hemodynamics or to acute changes in the alveolar capillary membrane in the traumatized lung. Similar changes with decreases in diffusing capacity of up to 50 per cent may follow open heart surgery. (*Dietiker, F., Lester, W., and Burrows, B.: Effects of Thoracic Surgery on Pulmonary Diffusing Capacity, Amer. Rev. Resp. Dis. 81: 830 (June) 1960.*)

HELIUM THERAPY Ten patients with severe emphysema while breathing a mixture of 80 per cent helium and 20 per cent oxygen showed a 20 per cent decrease in pulmonary resistance of the value obtained with air. There were no significant decreases in static or dynamic compliance of the lungs, functional residual capacity or static transpulmonary pressures. Though no measures of arterial carbon dioxide tension, oxygen consumption or carbon dioxide production were done, the change in resistance alone is therapeutically significant for short term therapy of such patients. (*Grapé, B., Channin, E., and Tyler, J. H.: Effect of Helium and Oxygen Mixtures on Pulmonary Resistances in Emphysema, Amer. Rev. Resp. Dis. 81: 823 (June) 1960.*)

ALVEOLAR RECRUITMENT The deflation pressure volume curve is different from the inflation pressure volume curve since the former represents only the elastic behavior of the elements which were inflated up to a given pressure or volume while the latter represents the elastic behaviour plus the added pressure necessary to open additional alveoli which have closed. The lung has different populations of alveoli which are recruited at different opening pressures. Thus an increase in inflation produces changes in the shape of the pressure volume curve which are eliminated in the next reinflation to the same point in a subsequent immediate reinflation and subsequent serial reinflations. The extent of alveolar closures during tidal respiration between two large volume inflations depends primarily on the number of tidal inflations rather than the length of the interval. The liability of an alveolus to closure probably depends on its compliance and the conductance of its associated airway. (*Bernstein, L.: Indications of Quantal Behaviour in Inflation and Deflation of Rabbit Lungs, Amer. Rev. Resp. Dis. 81: 744 (May) 1960.*)

SURFACE TENSION OF LUNG A mucoprotein film, probably monomolecular, covers the inner surface of the lung and can lower surface tension below 10 dynes/cm. In effect it increases the coefficient of elasticity of the surface and stabilizes the alveolar structure. The film can be removed and since it reforms at finite speed the minimal volume can be varied experimentally to between 5–50 per cent of the total lung volume. Modifications of this film, lowering surface tension in the alveolar structure or raising surface tension in the distal air passages, may be an important mechanism in the production of air trapping. (*Clements, J. A.: Effects of Intrinsic Surface Active Material on Mechanical Properties of Lungs, with Special Reference to Stability of Alveolar Structure, Amer. Rev. Resp. Dis. 81: 742 (May) 1960.*)

PULMONARY FUNCTION Studies of static pressure-volume characteristics of lungs in normal males indicated a decreasing vital capacity and an increasing residual volume but no change in the slope or position of the pressure-volume curve with advancing age. Older subjects were not able to change transpulmonary pressure between residual volume and total lung volume to the same extent as

younger subjects. Changes in pulmonary dynamics with advancing age are more likely due to changes in the compliance or muscle power of the thorax rather than to changes in the pressure volume characteristics of the lungs themselves. (*Permutt, S., and Martin, H.: Static Pressure-volume Characteristics of Lungs in Normal Males, J. Appl. Physiol. 15: 819 (Sept.) 1960.*)

UNILATERAL HYPOXIA When the dependent lung was allowed to breathe 10 per cent oxygen and the upper lung breathed air during spontaneous ventilation in the lateral position no shift of blood from the hypoxic lung to the air-breathing lung occurred. This is in contrast to an identical study done with the subjects supine where there was a significant shift of blood from the hypoxic lung to the air-breathing lung. The hemodynamic changes caused by unilateral hypoxia were probably not sufficient magnitude to overcome hydrostatic and other factors governing the relative distribution of blood between the lungs in the lateral position. (*Aborelius, M., and others: Influence of Unilateral Hypoxia on Blood Flow Through Lungs in Man in Lateral Position, J. Appl. Physiol. 15: 595 (July) 1960.*)

NEGATIVE PRESSURE BREATHING The application of continuous negative pressure of − 10 to − 30 cm. of water to the airway during spontaneous respiration caused a decrease in functional residual capacity. Residual volume remained unchanged, but the expiratory reserve volume decreased to 44 per cent of control value with − 10 cm. of water and to 12.5 per cent of control with − 30 cm. of water. Resistance to air flow increased, probably due to narrowing of the conducting passages at the small resting lung volumes achieved. Engorgement of bronchial vessels may have contributed to increased resistance. The compliance of the lung was not altered by the application of continuous negative pressure. (*Ting, E. Y., Hong, S. K., and Rahn, H.: Lung Volumes, Lung Compliance, and Airway Resistance during Negative Pressure Breathing, J. Appl. Physiol. 15: 554 (July) 1960.*)

INTRAPULMONARY MIXING Intermittent positive pressure breathing does not improve the over-all efficiency of ventilation as measured by Becklake's lung clearance index in normal subjects and only to a small degree in emphysematous patients. A voluntary increase in tidal volume comparable to that produced by intermittent positive pressure breathing affected the changes in the over-all efficiency of ventilation in all normal patients and in those emphysematous patients who could do so. The beneficial effects of intermittent positive pressure breathing on the intrapulmonary mixing of gases are due to the increase in tidal volume obtained and are of particular value in those patients who are unable to maintain an effective tidal volume or to increase it. (*Torres, G., Lyons, H. A., and Emerson, P.: Effects of Intermittent Positive Pressure Breathing on Intrapulmonary Distribution of Inspired Air, Amer. J. Med. 29: 946 (Dec.) 1960.*)

POSTOPERATIVE ATELECTASIS The effect of positive pressure breathing and nebulization of bronchodilators and detergents on the incidence of postoperative atelectasis has been studied in 100 consecutive patients undergoing upper abdominal surgery with endotracheal cyclopropane anesthesia with succinylcholine supplement. Alternate patients were treated with intermittent positive pressure on inspiration with oxygen and nebulization of 0.25 ml. of Isuprel in 1 to 200 dilution with 2 ml. of Alevaire. The presence or absence of altelectasis was determined solely by chest roentgenograms. In the 50 patients receiving inhalational therapy, plate-like atelectasis developed in 14, segmental atelectasis in 10, and lobar atelectasis in one. In the 50 patients not given inhalational therapy, plate-like atelectasis developed in 20, segmental atelectasis in 4, and lobar atelectasis in 2. There was no apparent advantage of intermittent positive pressure breathing in prophylaxis against postoperative atelectasis. The patients treated with routine postoperative management of early ambulation, frequent change of position, coughing, and deep breathing did as well as the specially treated group. (*Becker, A., and others: Treatment of Postoperative Pulmonary Atelectasis*