thetized Man, J. Appl. Physiol. 21: 1471 (Sept.) 1966.)

PULMONARY ARTERY LIGATION The left main pulmonary artery was ligated for periods of 2 to 98 days in dogs. Studies on subsequently excised lobes revealed a 40 to 50 per cent reduction in lung volume for the first 35 days which returned to normal by 98 days. Pressure-volume studies with both air and saline showed non-inflatable areas in ligated lobes, increased retractive force of inflatable alveoli, but no increase in tissue elasticity. Minimum surface tension of saline extracts from ligated lobes remained elevated for 25 to 35 days. Chronic pulmonary artery ligation causes increase in surface tension forces of inflatable alveoli for the first two weeks as well as mechanical obstruction of airways for the first month. These changes revert to normal after 50 days of pulmonary artery ligation. (*Chernick, V., Hodson, W. A., and Greenfield, L. J.: Effect of Chronic Pulmonary Artery Ligation on Pulmonary Mechanics and Surfactant, J. Appl. Physiol. 21: 1315 (July) 1966.*)

PULMONARY VENTILATION Studies in 14 patients with chronic obstructive disease of the lungs were made at rest, during intermittent positive pressure breathing, and during voluntary hyperventilation. Arterial blood gas changes measured during air breathing were correlated with changes in nitrogen washout curves measured during oxygen breathing. Intermittent positive pressure breathing and voluntary hyperventilation had the same effect on arterial blood gases, raising arterial oxygen saturation to a normal value and lowering arterial carbon dioxide tension to a subnormal value. During both procedures there was an increase in oxygen consumption that was about four times as much per liter of added ventilation during voluntary hyperventilation as it was during intermittent positive pressure breathing. During intermittent positive pressure breathing about one-tenth of the extra ventilation was directed into the slow space. This was enough to account for the observed rise in arterial oxygen saturation. During voluntary hyperventilation the increase in ventilation of the slow space was less than one-tenth and was not enough to account for the rise in arterial oxygen saturation. It is suggested that during voluntary hyperventilation the rise in arterial oxygen saturation was partially due to a reduced fractional perfusion of the slow space. (*Emmanuel, G. E., Smith, W. M., and Briscoe, W. A.: The Effect of Intermittent Positive Pressure Breathing and Voluntary Hyperventilation upon the Distribution of Ventilation and Pulmonary Blood Flow to the Lung in Chronic Obstructive Lung Disease, J. Clin. Invest. 45: 1221 (July) 1966.*)

SURFACE TENSION Rate of fall of lung compliance during constant volume artificial ventilation in rabbits and newborn lambs was markedly decreased by raising transpulmonary pressure by 2 cm. of water. Failure to find trapped nitrogen in the lung and the examination of histologic sections of frozen lungs indicated that the observed difference was not due to airway closure. Isoproterenol or ventilation with 100 per cent oxygen or CO_2 in air did not affect the results. Occasional large inflations which replenish surface active material are required for maintenance of low surface tension in alveoli. Increasing surface tension may cause change of air space configuration and eventually lead to atelectasis, and small changes in transpulmonary pressure may greatly affect rate of decrease of lung surface area. (*Williams, J. V., Tierney, D. F., and Parker, H. R.: Surface Forces in the Lung, Atelectasis, and Transpulmonary Pressure, J. Appl. Physiol. 21: 819 (May) 1966.*)

PULMONARY CIRCULATION Previous work has shown that distribution of pulmonary blood flow depends on relationships of pulmonary arterial, alveolar, and venous pressures. In the present study, pulmonary blood flow rose higher in isolated, erect dogs' lungs when a given volume was approached from the deflated state than when the same volume was approached from the fully expanded state. Pulmonary vascular resistance was higher in the deflation state than in the inflation state. It is concluded that surface tension changes in the alveolar lining plan an important role in

controlling distribution of pulmonary blood flow. (*Pain, M. C. F., and West, J. B.: Effect of the Volume History of the Isolated Lung on Distribution of Blood Flow, J. Appl. Physiol. 21: 1545 (Sept.) 1966.*)

FIBROTIC LUNG DISEASE Subjects with diffuse pulmonary fibrosis or granulomatous disease do not generally have disease specific functional pulmonary impairment. In sarcoidosis the duration of the disease is correlated with severity of airway obstruction. In nonspecific interstitial fibrosis often only diffusion is impaired. Nearly all subjects with clubbing have arterial hypoxemia, but the converse is true in less than 40 per cent of subjects. Right heart failure refractory to therapy is seen as a pre-terminal event in about 20 per cent of these subjects. Reticular as opposed to nodular patterns on chest films are associated with greater physiologic impairment. (*Sharp, J. T., and others: Clinicophysiologic Correlations in Diffuse Pulmonary Fibroses and Granulomatoses, Amer. Rev. Resp. Dis. 94: 332 (Sept.) 1966.*)

GRAM-NEGATIVE PNEUMONIA In a study of 522 autopsies it was found that 7.9 per cent had a necrotizing lung lesion characteristic of *Pseudomonas*. Compared to a control group, these patients had received significantly more aerosols (possibly contaminated), penicillin, anti-gram positive agents, broad spectrum antibiotics and steroids. Shock and anemia had also been significantly more frequent in these patients. (*Pierce, A. K., and others: An Analysis of Factors Predisposing to Gram-Negative Bacillary Necrotizing Pneumonia, Amer. Rev. Resp. Dis. 94: 309 (Sept.) 1966.*)

PULMONARY PAPILLEDEMA Physiological abnormalities resulting from profound disturbances of respiratory function include retention of carbon dioxide and anoxia. Increased carbon dioxide has a much greater effect upon cerebral and ocular blood flow than does decreased oxygen saturation. It has been suggested therefore, that hypercapnia primarily determines the ocular changes in pulmonary insufficiency. The mechanism for the changes in circulatory dynamics is believed to be a prompt decrease in cerebrovascular resistance followed by a subsequent increase in cerebral and ocular blood flow. This sustained increase in flow is associated with dilatation and increasing tortuosity of the retinal vessels. Papilledema may develop as the CSF pressure becomes elevated and as vascular permeability increases. When the ventilatory failure is chronic or develops over a long period of time with gradual increases in the arterial carbon-dioxide levels, the patient may be entirely asymptomatic and present only vague complaints of fatigue and somnolence. It is in this latter group that far-advanced retinopathy with papilledema would most likely be found. It is particularly in this group that primary intracranial disorders, especially space-occupying lesions, may be suspected because of the presence of papilledema; the respiratory symptoms become minimal. Awareness of this clinical fact and consideration of blood-gas abnormalities in the diagnostic search for the etiology of papilledema may spare the patient from costly, time-consuming, and often hazardous diagnostic procedures. The retinopathy may be reversed by improvement in ventilation. (*McCormack, W. M., and Spalter, H. F.: Muscular Dystrophy, Alveolar Hypoventilation, and Papilledema, J.A.M.A. 197: 957 (Sept.) 1966.*)

BLOOD GAS ANALYSIS On the basis of a laboratory evaluation of the Radiometer system for determining P_{CO_2} of blood by the interpolation method, several suggestions on technique are made which resulted in a high degree of accuracy and reproducibility. When P_{CO_2} of tonometer equilibrated blood was measured with both interpolation technique and a CO_2 sensitive electrode no systematic difference was found between the two methods, but the random error for the CO_2 sensitive electrode was slightly smaller. (*Kelman, G. R., Coleman, A. J., and Nunn, J. F.: Evaluation of a Microtonometer Used With a Capillary Glass pH Electrode, J. Appl. Physiol. 21: 1103 (May) 1966.*)