

OXYGEN TOXICITY Central nervous system symptoms of oxygen toxicity at four atmospheres pressure in mice are controlled by THAM. No protection by this dose of THAM was noted at six atmospheres of oxygen. Such protection can be reversed by the addition of potassium and sodium chloride. A mixture of THAM and potassium chloride is lethal to mice. (Gottlieb, S. F., and Jagodzinski, R. V.: *Role of THAM in Protecting Mice Against Convulsive Episodes Caused by Exposure to Oxygen Under High Pressure, Proc. Soc. Exp. Biol. Med.* 112: 427 (Feb.) 1963.)

PREDNISONE IN EMPHYSEMA Ten patients were studied in a double-blind controlled manner to determine the effect of prednisone on air flow obstruction. Prednisone did not produce a statistically significant increase in timed vital capacity. Two of the ten patients did show improvement, however. (Beerel, F., Jick, H., and Tyler, J. M.: *A Controlled Study of the Effect of Prednisone on Air-Flow Obstruction in Severe Pulmonary Emphysema, New Engl. J. Med.* 268: 226 (Jan. 31) 1963.)

DIFFUSING CAPACITY Increases in tidal volume produced significant increases in steady state diffusing capacity in anesthetized, paralyzed, artificially ventilated dogs. Increase in respiratory rate at constant tidal volume decreased diffusing capacity. These findings are interpreted as indicating more uniform distribution of inspired gas and a larger alveolar surface area available for diffusion at large tidal volumes. (Kilburn, K. H., and others: *Effects of Altering Ventilation on Steady State Diffusing Capacity for Carbon Monoxide, J. Appl. Physiol.* 18: 89 (Jan.) 1963.)

NEONATE LUNG COMPLIANCE A marked increase in survival of neonates suffering from tetanus occurred when the inflating pressures in the anesthetized, paralyzed infant were regulated by P_{CO_2} . No deaths could be attributed to overwhelming toxicity, but all were due to technical difficulties or intercurrent infection. At lower inspiratory pressures, pulmonary compliance fell and P_{CO_2} rose. With time static compliance fell and more pressure was required for ventilation. The average compliance was 2.5 ml./cm. water with a range

of 4 to 1.7 ml./cm. Necessary initial inspiratory pressures were from 11 to 15 cm. water and rose in many cases to 15 to 18 cm. water in a few days, in one case rising to 30 cm. water in seven days. Tracheotomy was necessary and special care in removing secretions was of paramount importance. Provided efficient ventilation is maintained, intoxication of severe tetanus seems reversible. (Smythe, P. M.: *Studies on Neonatal Tetanus, and on Pulmonary Compliance of the Totally Relaxed Infant, Brit. Med. J.* 1: 565 (Mar. 2) 1963.)

CO₂ EQUILIBRATION Factors determining whether carbon dioxide equilibration will occur in the lung are the rate of the reactions leading to carbon dioxide production and the time the bicarbonate ions spend in contact with the gas exchange surface. Using a body plethysmograph as a manometer to determine the rate and magnitude of carbon dioxide evolution, it was found that the bicarbonate ions spent an average of 2.2 seconds in contact with the gas exchange surfaces in dogs, a much longer time than the erythrocyte transit time through the pulmonary capillaries. This prolongation of bicarbonate transit time is caused by the presence of a large peri-capillary dilution and reaction space for the bicarbonate-carbon dioxide system, and it is suspected that this prolongation plays a role in the completion of carbon dioxide equilibration in the lungs. (Feisal, K. A., Sackner, M. A., and DuBois, A. B.: *Comparison Between the Time Available and the Time Required for CO₂ Equilibration in the Lung, J. Clin. Invest.* 42: 24 (Jan.) 1963.)

RESPIRATORY HUMIDIFIERS Condenser humidifiers consist of a number of flat wire gauzes, stacked in series in poor thermal contact, through which the patient respire. These humidifiers can produce a substantial degree of humidification of inspired air in patients with tracheotomies or endotracheal tubes by returning to the patient water vapor breathed out in expiration. They perform best when the fresh air is cold and damp rather than hot and dry. If the inspired room air is fairly moist and cool such an apparatus can completely substitute for the humidifying properties of the upper respiratory tract. (Mapleson,