OBSTRUCTIVE PULMONARY DISEASE Patients with asthma have less reduction of maximal expiratory flow rate and less increase of expiratory resistance at small lung volumes and during forceful expiration than patients with chronic obstructive pulmonary disease, since in asthma obstruction is due to fixed narrowing of larger airways and in obstructive disease smaller more distensible airways are obstructed. Patients with emphysema have more severe obstruction during forceful expiration at small lung volumes than patients with bronchitis since in emphysema the obstruction is due to loss of support of the smaller airways while in bronchitis it is due to fixed obstruction within them. (*Ting, E. Y., and Williams, M. H., Jr.: Mechanics of Breathing in Chronic Obstructive Pulmonary Disease, Am. Rev. Resp. Dis. 88: 791 (Dec.) 1963.*)

RESPIRATORY-DISTRESS SYNDROME Once the diagnosis of respiratory-distress syndrome, or hyaline-membrane disease has been made, the infant should be maintained in an incubator at an ambient temperature of 32° to 34° C. with a humidity of 80 to 100 per cent. Oxygen should be administered in an amount that is necessary to just clear cyanosis and for only the shortest possible duration. Correction of blood *p*H below 7.20 should be handled with sodium bicarbonate added to glucose solution. Respirators may be necessary to assist or control ventilation through an endotracheal tube or a tracheostomy tube. Both volume-controlled and pressure-controlled devices can be used, although the former may be more effective. Pressures of 25 to 35 cm. of water or more at the endotracheal tube may be necessary to achieve an adequate tidal volume in the range of 6 to 8 ml. per kilogram of body weight at a respiratory rate of 40 to 70 breaths per minute. One of the commonest treatable complications is pneumothorax, which requires immediate thoracentesis. Hyperkalemia generally is controlled with the administration of glucose. (*Cook, C. D., and Cochran, M. D.: The Respiratory-Distress Syndrome of Newborn Infants, New Engl. J. Med. 270: 673 (Mar. 26) 1964.*)

RESPIRATORY DISTRESS SYNDROME Respiratory distress syndrome was encountered in 4 out of 90 rhesus monkey infants after uncomplicated births. A much higher incidence of respiratory distress was observed in an additional 68 infants whose births were complicated by experimental procedures. Oxytocin administered to six mothers was associated with respiratory distress syndrome in all six offspring. (*Windle, W. F.: Respiratory Distress: Relation to Prematurity and Other Factors in Newborn Monkeys, Science 143: 1345 (Mar. 20) 1964.*)

RESISTANCE TO HYPOXIA Increased resistance to hypoxia has been claimed for diverse factors. Of some real value is the production of polycythemia by means other than anoxic hypoxia: (1) by transfusion of red blood cells, (2) by the use of carbon monoxide, (3) by the administration of cobalt chloride. The most practical method for acclimatization and method of increasing tolerance to hypoxia is for an individual to reside for a period of 10 to 14 days at a relatively modest altitude of 8,000 to 10,000 feet. The resistance will last for about 3 weeks, but may be extended indefinitely if the subject goes to altitude daily for one hour. (*Van Liere, E. J.: Resistance to Hypoxia, Arch. Intern. Med. 113: 419 (Mar.) 1964.*)

HYPOXIA AND POLYCYTHEMIA Arterial oxygen tension may be low in patients with polycythemia vera who have no demonstrable co-existent cardiorespiratory disease. The hypoxia may be the result of an abnormality of the pulmonary vasculature. Pulmonary function of 26 patients with polycythemia vera was compared with that of 12 normal subjects. Ventilatory function was normal. The mean arterial oxygen tension was less than 80 mm. in 11 patients and the arterial oxygen saturation was less than 92 per cent in 9 patients. Ventilation to perfusion ratios were altered in some patients and the diffusing capacity was low in all but one of the patients who had a diminished arterial oxygen tension. Hypoxia could not be related to alterations in ventilation-to-perfusion ratios but was significantly related to the diffusing capacity. (*Lertzman, M., and others: Hypoxia*

in Polycythemia Vera, Ann. Intern. Med. 60: 409 (Mar.) 1964.)

HYPERBARIC OXYGEN During compression, ear equilibration has been the most distressing problem which can be handled by slower compression schedules or by myringotomy with an 18 or 20 gauge needle. At maximum pressure, acute oxygen intoxication with confusion, twitching about the mouth, and gradual convulsions may occur unpredictably. It is controlled by removing the oxygen mask and is followed by no sequelae. It may occur in a patient who has been previously treated with no trouble and be subsequently treated with no recurrence. Repeated oxygen administration the same day may be accompanied by recurrent toxicity. The syndrome occurred in 5 per cent of patients treated at three atmospheres with 100 per cent oxygen. On decompression, the only danger is the bends which results from nitrogen leaving the tissues more rapidly than the circulation or lungs can accommodate. Most decompression tables are derived from compression experiences with normal healthy men. Poor ventilation, obesity and circulatory insufficiency will result in slower than normal nitrogen clearing. *(Wallyn, R. J., and others: Treatment of Anaerobic Infections with Hyperbaric Oxygen, Surg. Clin. N. Amer. 44: 187 (Feb.) 1964.)*

HEMOGLOBIN Mammalian hemoglobins are composed of two types of polypeptide chains, alpha and beta. The alpha and beta subunits have different oxygen equilibra and are affected differently by *p*H. The beta chains appear to play a major role in the mechanism of the Bohr effect not shared by the alpha chains. Structural changes in hemoglobin occur upon oxygenation. *(Riggs, A.: Relation Between Structure and Function in Hemoglobins, Canad. J. Biochem. 42: 763 (May) 1964.)*

BLOOD VOLUME Twenty-four hours after transfusion of 500 ml. of stored blood the most common finding is an increase of erythrocyte volume. Since in more than one-half of the patients this increase was greater than the amount of red cells given, the transfusion is believed to cause outpouring of erythrocytes stored in body depots. Normovolemic patients do not show this increase in erythrocyte volume. If a 10 per cent increase in hemoglobin does not occur following transfusion of 500 ml. of blood in an average sized patient, the patient is either normovolemic or is actively bleeding. *(Wense, G.: Changes of the Blood Volume after Blood Transfusions, Der Anaesthesist 13: 33 (Feb.) 1964.)*

SINGULTUS Singultus is considerably more frequent during artificial ventilation than during spontaneous respiration. Arterial P_{CO_2}, *p*H and standard bicarbonate were determined in ten patients who developed singultus during abdominal and thoracic surgery under automatic ventilation. In all patients, there was a considerable, statistically significant decrease of P_{CO_2} and an increase of *p*H. Since ionization of calcium is considerably reduced in alkalosis neuromuscular irritability is increased, facilitating development of singultus. *(Lutz, H.: Intraoperative Singultus with Artificial Ventilation, Der Anaesthesist 13: 82 (Mar.) 1964.)*

LEG VOLUMES Volume studies on the leg below the knee were carried out on 12 supine normal subjects utilizing occlusion plethysmographic techniques in conjunction with tilting ranging from −20 degrees (head-down) to +45 degrees (head-up). Pressure/volume relationships were determined in the foot and calf under varying conditions of position and after the effects of temperature change, sympathetic interruption by nerve block and sympatholytic drugs, as well as increased constrictor tone brought about by blood loss. Postarteriolar foot vessels behave like smooth muscle tubes with a sympathetic innervation, while those within the deep fascial envelope of the calf behave like passive tubes with their volume adjustment determined by tone and activity of the surrounding skeletal muscle. The volume sequestered (more than 250 ml.) below the knees when the upright position is assumed is largely a function of the deep calf veins. *(Ludbrook, J., and Loughlin, J.: Regulation of Volume in Postarteriolar Vessels of the Lower Limb, Amer. Heart J. 67: 493 (Apr.) 1964.)*