treated with T.H.A.M., *p*H was not changed, arterial P_{CO_2} increased from 37 to 88, arterial oxygen saturation remained 100 per cent and plasma catecholamine levels remained unchanged. Although anuria occurred early in untreated dogs, profuse diuresis occurred in the animals treated with T.H.A.M. The urine contained between 50 and 60 mEq. of carbon dioxide and the total carbon dioxide recovered in the urine during the one hour of apnea amounted to 25 per cent of the carbon dioxide produced by the animal. Most of the carbon dioxide excreted by the kidney was in the form of a bicarbonate-amine. The experiments made it apparent that the vicarious elimination of carbon dioxide by the kidney under conditions of acute hypercapnic acidosis buffered with T.H.A.M. is sufficient in magnitude to be of real therapeutic value. *(Nahas, G., and Jordan, E.: Neutralization of the Acute Effects of Hypercapnic Acidosis by T.H.A.M., Aerospace Medicine 31: 61 (Jan.) 1960.)*

SWEATING Clinical symptoms of carbon dioxide retention were studied during diffusion respiration in 163 completely apneic patients. Premedication consisted of meperidine and atropine; barbiturate-succinylcholine anesthesia was used. After 10 minutes of apnea when *p*H of the blood was about 7.1 and oxygen tension was normal, 25 per cent of the patients showed sweating. It is concluded that sweating in an anesthetized patient is not a dependable sign of respiratory acidosis. *(Barth, L.: Sweating During Carbon Dioxide Accumulation Under Anesthesia, Der Anaesthesist 9: 65 (Feb.) 1960.)*

PULMONARY COMPLIANCE Convalescent poliomyelitic patients and normal subjects show a decrease in pulmonary compliance of 26 to 40 per cent as measured in the tidal volume range during quiet breathing after a series of deep breaths. This change occurs in the prone, supine, lateral and sitting positions. Two or more deep breaths to the limit of inspiration, after the period of quiet breathing, produce an increase in compliance. This increase can be eliminated by forced expirations in the normal subjects. It is thought that these changes are probably due to the opening and closing of various units within the lung. *(Ferris, E. G., and Pollard, D. S.: The Effect of Deep and Quiet Breathing on Pulmonary Compliance in Man, J. Clin. Invest. 39: 143 (Jan.) 1960.)*

VENTILATION In the presence of normal myoneural transmission, the integrated diaphragmatic electromyogram is a direct expression of the inspiratory activity of the respiratory center. Disappearance and recovery of electrical activity of the diaphragm, produced by controlled increases and decreases of ventilation in 11 anesthetized patients, were correlated with end-tidal alveolar carbon dioxide tensions. The onset of apnea occurred at an average P_{CO_2} of 38 mm. Hg. Recovery from apnea occurred at an average P_{CO_2} of 43 mm. Hg. The discrepancy probably results from the slow equilibration of carbon dioxide between the blood and nerve cells of the respiratory center. *(Fink, B. R., and others: Monitoring of Ventilation by Integrated Diaphragmatic Electromyogram, J.A.M.A. 172: 1367 (March 26) 1960.)*

VENTILATORY CAPACITY An apparatus is described which consists of a rotating vane whose rotation against the restraint of a spring varies the orifice available for escape of gases blown against it. The instrument is called a Peak Flow meter and is used to record Peak Flow Rates (PFR). PFR is the highest expiratory flow that can be sustained by maximal effort for at least 10 msec. PFR seems to be a stable and useful measure of ventilatory capacity. Normal PFR values range from above 100 L./min. in four year olds to over 900 L./min. for healthy men. *(Wright, B. M., and McKerrow, C. B.: Maximum Forced Expiratory Rate as a Measure of Ventilatory Capacity, Brit. Med. J. 2: 1041 (Nov. 21) 1959.)*

PULMONARY FUNCTION Regional variations of pulmonary ventilation and blood-flow have been studied in 30 patients by means of a radioactive isotope of oxygen (oxygen-15). This substance has a half life of two minutes. Pairs of scintillation counters are placed on the chest wall to measure radiation from two regions simultaneously. By observation of counting-rates during breath-holding following

a single inspiration of active gas, the relative ventilation and blood flow of the regions has been assessed. This technique has the advantages in that it does not require local anesthesia or tracheal or bronchial intubation. It is also rapidly repeatable. (*Dyson, N. A., and others: Studies of Regional Lung Function Using Radioactive Oxygen, Brit. M. J. 1: 231 (Jan. 23) 1960.*)

ARTIFICIAL RESPIRATION Direct mouth-to-mouth artificial respiration is by far the best and most efficient method in an emergency. Most teachers, however, find it unsatisfactory to demonstrate because of esthetic objections, the fear of infection, and the difficulty in demonstrating it to lay people and rescue teams. A new airway device which includes a plastic Guedel airway, a flexible neck containing a brass bite-block, and a mouth guard is described. A vinyl plastic unidirectional valve assembly is inserted into the flexible neck. This assembly is known as the Brook airway. (*Dobkin, A. B.: Direct Artificial Respiration Training with the Brook Airway, Lancet 2: 662 (Oct. 24) 1959.*)

RESPIRATION An analysis of the mechanisms of respiratory failure falls into three zones of respiratory function. The ventilatory zone is concerned with the maintenance of the alveolar gas tensions. The diffusion zone concerns the passage of oxygen and carbon dioxide across the thin layer of fluid and endothelium which separates alveolar gas and capillary blood. The perfusion zone consists in the flow and pressure of the pulmonary circulation. The diseases that impair respiration can be grouped into similar categories. The principal structural effects of respiratory disease are airway obstruction, stiffening of the lungs, and reduction of the pulmonary vascular bed. The principal functional effects of respiratory disease are arterial unsaturation of oxygen, carbon dioxide retention, retention of sodium bicarbonate, and pulmonary hypertension. (*Arnott, W. M.: Respiratory Failure, Lancet 1: 1 (Jan. 2) 1960.*)

POSITIVE PRESSURE BREATHING Intermittent positive-pressure breathing with peak pressures of 20 cm. of water produced slight but definite decrease in cardiac output in patients with advanced pulmonary emphysema. The changes observed should be well tolerated by most patients. (*Cathcart, R. T., and others: Effect of Intermittent Positive Pressure Breathing on the Cardiac Output of Patients with Chronic Pulmonary Disease, Dis. Chest 37: 222 (Feb.) 1960.*)

TRANSTRACHEAL RESUSCITATION A transtracheal needle may be better than no airway at all and may under certain circumstances be useful (as in the very small infant, the largest needle being used). It probably cannot provide adequate ventilation in the spontaneously breathing person without extremely exhausting effort on the part of the patient. If the only aim is to provide diffusion respiration it is possible to supply an adequate amount of oxygen, but if high flow rates are used, dangerous pressures are necessary. In the rare situation in which the upper airway is totally obstructed, distention and rupture of the lungs appear real possibilities. It is believed that the technique of transtracheal resuscitation with a needle may delay the establishment of an adequate airway (which would be established better either with an endotracheal tube or via a tracheostomy) and in addition provide a false sense of security. In any event its usefulness for diffusion respiration rather than for to-and-fro respiration should be fully appreciated by persons employing the transtracheal needle for resuscitation of obstructed patients. (*Bougas, T. P., and Cook, C. D.: Pressure-Flow Characteristics of Needles Suggested for Transtracheal Resuscitation, N. E. J. Med. 262: 511 (March 10) 1960.*)

RESPIRATORY INSUFFICIENCY Administration of a new carbonic anyhydrase inhibitor, dichlorphenamide, in 15 patients with respiratory insufficiency, produced clinical improvement in all but one. In most cases, marked improvement in arterial blood gas tension was associated with an increased alveolar ventilation. Such improvement appeared to be sustained during prolonged administration of the drug. (*Namark, A., and others: The Effect of a New Carbonic Anhydrase Inhibitor (Dichlorphenamide) in*