Function, Amer. Rev. Resp. Dis. 89: 55 (Jan.) 1964.)

EMPHYSEMA No reliable clinical criteria are available for separation of obstructive chronic pulmonary diseases, emphysema and chronic bronchitis, asthmatic bronchitis and intrinsic asthma. Epidemiological methods linked to autopsy evidence offer the only valid hope of definitely identifying the causative agent of emphysema. Likely the agent is one producing a vasculonecrotic injury followed by repair with minimal fibrosis resulting in a new membrane lining abnormal tissue spaces. Nitrogen dioxide inhalation can produce lesions in animals which may be the same as those of human emphysema. *(Wright, G. W., and Kleinerman, J.: Consideration of the Etiology of Emphysema in Terms of Contemporary Knowledge, Amer. Rev. Resp. Dis. 88: 605 (Nov.) 1963.)*

HYPERBARIC OXYGEN Administration of high pressure oxygen after carbon monoxide intoxication may be effective in two different ways, mainly dependent on the time at which treatment can be started. If given immediately, it restores the oxygen transport function of the blood. If it can only be started after some time oxygen at normal pressure should be administered while preparations for hyperbaric therapy are being made, and even at normobaricity, relatively little time is needed for recovery of the oxygen transport function to an extent sufficient for proper oxygenation of the tissues. However, there is a marked tendency for secondary hypoxia to develop due to cerebral swelling. Following a mild intoxication, administration of hyperbaric oxygen opposes this secondary hypoxia completely. Following a serious intoxication it takes a subsidiary position. Therefore, high pressure oxygen should be combined with or followed by hypothermia in those cases which fail to improve completely with high pressure oxygen alone. *(Sluijter, M. E.: Treatment of Carbon Monoxide Poisoning by Administration of Oxygen at High Atmospheric Pressure, Proc. Roy. Soc. Med. 56: 34 (Nov.) 1963.)*

OXYGEN THERAPY For treatment of hypoxic patients, a concentration of 45 to 60 per cent oxygen in inspired air is desirable. Higher concentrations can be obtained by the use of masks or other special methods such as the closed box, but for continuous administration to bed patients such methods ordinarily are neither necessary nor practical. If carefully applied and supervised, an oxygen concentration of 50 per cent is readily obtained in both the oxygen tent and open box. Among three other methods, viz., oropharyngeal insufflation by nasal catheter, the double nasal cannula, and the open-top plastic face mask, only catheter insufflation gives reliable results. Although the double cannula and plastic face mask are cheap and comfortable, both are inefficient. At 6 liter per minute oxygen flows, average oropharyngeal oxygen concentration with a catheter is 62 per cent. Marked drying of pharyngeal mucosa can be prevented by keeping the water in the humidification bottle at 125° F. A common cause of failure of the method is leakage, especially from water bottle attachments, and the physician should check for actual delivery of oxygen to the patient by listening at the patient's mouth to hear the hissing of oxygen as it leaves the catheter in the oropharynx. Gastric distention or rupture is a danger which must be prevented by not allowing the tip of the catheter to slip into the esophagus. *(Longobardi, A., and others: Oxygen Therapy on Medical Wards, J.A.M.A. 187: 369 (Feb. 1) 1964.)*

PRONE POSITION Ventilation was studied in patients in the prone position while face mask and muscle relaxants were being employed. Duration of anesthesia varied from 15 minutes to over one hour. Determinations of *p*H and P_{CO_2} proved ventilation to be adequate. Simultaneous measurements of blood samples from the aorta and ear lobes showed satisfactory and comparable results. *(Hessler, O., and Rehder, K.: Determination of pH and P_{CO_2} for Measurement of Ventilation in Prone Position with Face Mask, Der Anaesthesist 13: 3 (Jan.) 1964.)*

TRACHEAL RESECTION Resection of a tracheal tumor is ordinarily carried out with an endotracheal tube advanced beyond the tumor. In reported resection of the trachea

using extracorporeal circulation, oxygenation during the procedure did not depend upon the lungs. The tumor was located close to the carina and was large enough to cause almost complete obstruction. Marlex mesh was used to reconstruct the trachea, and a tracheostomy was performed for postoperative protection of the airway. (*Adkins, P. C.: Resection of Tracheal Cylindroma Using Cardiopulmonary Bypass, Arch. Surg. 88: 405 (Mar.) 1964.*)

TRACHEOSTOMY An improved cuffed tracheostomy tube which is inflated intermittently by the IPPB machine is made by placing multiple holes in the side of the tracheal tube. A thin cuff covers all the side holes. The pressure produced by the cuff on the trachea is never more than that produced by the IPPB machine and is thus equal to that in the remainder of the tracheobronchial tree and only occurs during inspiration. (*Martinez, H. E.: Improved Cuffer Tracheostomy Tube for Use with Intermittent Positive Pressure Breathing, J. Thor. Cardiov. Surg. 47: 404 (Mar.) 1964.*)

OXYGEN CONSUMPTION Oxygen consumption and carbon dioxide ouput were measured in five human subjects cooled for 80 to 210 minutes. Two subjects were normal, one had been almost completely paralyzed below the neck by poliomyelitis and two were unconscious for long periods of time as a result of intracranial damage and were observed with and without paralyzing doses of muscle relaxants. When normal and unconscious subjects receiving no drugs were cooled, oxygen consumption and carbon dioxide output rose. This was usually accompanied by pilo-erection and sporadic shivering. Skin temperatures fell to 24 and 26° C., while deep temperature rose slightly. When subjects paralyzed by disease or drugs were cooled, oxygen consumption and carbon dioxide output were not increased. An increase in oxygen uptake and carbon dioxide output occurred when men with active skeletal muscles were cooled. This did not occur in men whose muscles were paralyzed. In man the increase in metabolism on cooling for periods up to three and one-half hours occurs solely in skeletal muscle. (*Johnson, R. H., Smith, A. C., and Spalding, J. M. K.: Oxygen Consumption of Paralyzed Men Exposed to Cold, J. Physiol. 169: 584 (Dec.) 1963.*)

HYPOTHERMIA Selective cardiac hypothermia in animals during 40 minutes of ischemia was followed by a prompt and effective recovery of myocardial contractility as judged by maintenance of normal arterial and venous pressures, and the response to a brief pressure-work load. In contrast, hearts subjected to potassium arrest or ischemia alone either failed to recover or showed poor recovery. The following findings were common to all types of myocardial ischemia: (a) adenosine-triphosphate and adenosinediphosphate were reduced and declined further in the recovery period; (b) phosphocreatine decreased and rose to above control levels during recovery and (c) inorganic phosphate showed reciprocal changes to those of phosphocreatine. There were no statistically significant differences between control and experimental groups with respect to the changes in the adenine nucleotides, phosphocreatine, or inorganic phosphate. (*Beine, R. M., and others: Evaluation of Selective Cardiac Hypothermia and Potassium Arrest of the Heart, J. Thor. Cardiov. Surg. 47: 283 (Mar.) 1964.*)

HYPOTHERMIA No metabolic acidosis occurred during profound cooling of the circulation of animals to body temperature of 15° C. or during rewarming when the perfusion rate was adequate and the same blood group was used in the artificial circulating system. When blood substitutes were used a metabolic acidosis resulted from a reduction in the buffering power of the blood by the substitute material. Substitutes can be used if appropriate amounts of sodium bicarbonate are added. Tissue oxygenation and metabolite transport by the blood was maintained. (*Schlosser, V., and Grote, G.: Blood Gases and Acid-Base Metabolism With the use of Blood and Blood Substitutes in Artificial Circulation During Hypothermia, Surgery 55: 440 (Mar.) 1964.*)

HYPOTHERMIA From determination of the lactate-pyruvate ratio in dogs during cardio-