New Method for Preparing Buffy Coat-Poor Blood. Transfusion 2: 221 (July Aug.) 1962.)

HYPOTHERMIA The dog will tolerate total cerebral ischemia for eight minutes at 37° C., for 25 minutes at 28° to 30° C., and for 60 minutes at 19° to 21° C. without evidence of permanent brain damage. The animal studies were further confirmed in two cases requiring neurosurgical intervention in man. In one instance the brain was cooled to approximately 20° C., with the body remaining at normal temperature and total cerebral occlusion being used for approximately ten minutes. The second patient was selectively cooled to a minimal level of 16° C. and circulation to the brain was completely occluded for 30 minutes. Both of these patients have recovered with no evidence of brain damage from either the brain cooling or the period of total cerebral ischemia. *(Boyd, R. J., and Connolly, J. E.: The Effect of Hypothermia in Experimental Cerebral Ischemia. Geriatrics 17: 522 (Aug.) 1962.)*

POSTOPERATIVE HYPOTHERMIA Reduction of body temperature may be of value for critically ill patients. Hypothermia is mild at 34° to 36° C., moderate at 28° to 33° C., deep at 17° to 27° C., and profound from 4° to 16° C. Bleeding from the gastrointestinal tract is reduced or stopped. Tachypnea is diminished, but effective coughing is impaired and tracheal suction is required. Renal function is satisfactory. Metabolism, cardiac output, cardiac rate, and blood pressure diminish. Defense mechanisms remain intact, but bacterial enzymatic processes and proliferative capacity are reduced. Hypothermia is a useful adjuvant in therapy. *(Hitchcock, C. R., and others: Use of Prolonged Moderate Hypothermia in Postoperative Care. Arch. Surg. 85: 549 (Oct.) 1962.)*

HYPOTHERMIA Because of the beneficial effect on the character and mortality of experimental brain injury, 21 patients with critical brain injury (thought to be incompatible with life, using standard methods of treatment) were subjected to artificial hypothermia (28° to 36° C.) for two to ten days. Nine died and 12 survived, but six of the survivors are permanent invalids with dementia. The hazards are staphylococcal pneumonia, which occurred in eight cases and contributed to all the deaths, and gastrointestinal ulceration with bleeding and perforation, which was fatal in another instance. The results in patients with clots did not differ from those without clots. Youth was the only common factor in the successful cases. Prognosis was hopeless in the presence of large fixed pupils. About one in four of these critical cases will fare well, but it is evident that a large proportion have such gross or microscopic tearing of deep cerebral structures that in the event of survival there will be severe mental and physical handicaps. *(Drake, C., and Jory, T.: Hypothermia in the Treatment of Critical Head Injury. Canad. Med. Ass. J. 87: 887 (Oct. 27) 1962.)*

CURARE AND HYPOTHERMIA Influence of lowered muscle temperature on maximal amplitude of the gastrocnemius muscle in cats was examined. Hypothermia above 23° C. had no influence; below this temperature, the maximal muscular tone shows linear reduction of about 10 per cent per degree centigrade to a temperature of 13° to 14° C., when total paralysis occurs. This course of events is reversible on rewarming. Halothane anesthesia under normothermic conditions, up to 3 volumes per cent, does not influence the reaction of muscle. Effect of *d*-tubocurarine was enhanced tenfold by increasing the halothane concentration from 1.5 volumes per cent to 3 volume per cent. Lowering the muscle temperature increases and prolongs the effect of succinylcholine. Maximal amplitude decreases in direct proportion to the lowering of temperature at a rate of 5 per cent per degree centigrade. *(Kuchar, R.: Influence of Hypothermia on Neuromuscular Effects of Succinylcholine and d Tubocurarine in the Cat. Der Anaesthesist 11: 317 (Oct.) 1962.)*

ACUTE PANCREATITIS Hypothermia is suggested for the treatment of acute hemorrhagic pancreatitis. The rationale is to reduce pancreatic activity. After producing the disease in dogs, 18 were kept normothermic, and 22 were made hypothermic (25° to 30° C.) for 12 to 24 hours. All other therapy was identical for both groups. Blood enzymes and electrolytes were similar in both groups. Con-

trol animals all died, whereas 18 of 22 hypothermic animals survived. Four patients were treated at body temperatures of 33° to 35° C. for two to three days; three survived, and one died of aspiration of gastric contents. Hypothermia may be a valuable adjuvant in treating this serious disease. *Wels, P. B., and Taheri, S. A.: Hypothermia in Acute Hemorrhagic Pancreatitis. Arch. Surg. 85: 817 (Nov.) 1962.*

MATCH TEST Success or failure in blowing out a paper match held three inches from a patient's widely opened mouth effects a fairly distinct separation of patients with maximal breathing capacities above or below 40 liters/minute and maximal midexpiratory flow rates above or below 0.6 liters/second. *(Olsen, C. R.: The Match Test. Amer. Rev. Resp. Dis., 86: 37 (July) 1962.)*

DIAPHRAGM ELECTROMYOGRAM Employing the integrated electromyogram of the diaphragm in cats as an index of ventilation, it was revealed that increase in electrical activity of the diaphragm and an increase in tidal volume produced by rebreathing was linearly related. The integrated electromyogram of the diaphragm can thus be employed and an indirect qualitative measure of ventilation in spontaneous breathing with an unobstructed airway. *(Katz, R. L., Fink, B. R. and Ngai, S. H.: Relationship between Electrical Activity of the Diaphragm and Ventilation. Proc. Soc. Exp. Biol. Med. 110: 792 (Aug.–Sept.) 1962.)*

AIRWAY RESISTANCE Simultaneous volume changes and total lung resistance to air flow of a tracheal length isolated in the neck with nerve and blood supply intact were measured in dogs. Ventilation with 10 per cent oxygen in nitrogen caused a mean increase of 51 per cent in total lung resistance and a mean decrease of 14 per cent in tracheal volume. These responses were prevented either by cooling the cervical vagosympathetic nerves to block conduction, or by tying the glossopharyngeal nerves. It was concluded that the action of hypoxemia on the airways was due to stimulation of the carotid body chemoreceptors with the efferent pathway in the vagus nerves. Inhalation of 8 per cent carbon dioxide in air resulted in a mean increase of 54 per cent in total lung resistance and a mean decrease of 13 per cent in tracheal volume. These responses were prevented by cooling the cervical vagosympathetic nerves but not prevented by tying the glossopharyngeal nerves. Carbon dioxide must act somewhere other than the carotid body chemoreceptors. In view of the absence of significant changes in lung compliance or end-expiratory intrapleural pressure throughout these experiments, it is concluded that the responses were due to changes in airway smooth-muscle tone. *(Nadel, J. A., and Widdicombe, J. G.: Effects of Changes in Blood Gas Tension and Carotid Sinus Pressure on Airway Calibre of Dogs. J. Physiol. 161: 139P (May) 1962.)*

AIRWAY COMPLICATIONS Thirty-one serious airway problems with three deaths are presented. Causes include facial trauma and facial bone fractures, neoplasms, burns, burn scar contractures, tracheal slough, failure to remove pharyngeal packs, laryngeal edema due to sensitivity to tetracaine spray, early removal of endotracheal tube, and severe damage from liquid ether. Early tracheostomy is recommended, and the complications of tracheostomy are listed. *(Gaisford, J. C., and White, W. L.: Airway Maintenance Complications. Arch. Surg. 85: 861 (Nov.) 1962.)*

PEDIATRIC TRACHEOTOMY A statistical review of 294 tracheostomies done in children under 18 years of age is presented. The overall mortality was 20 per cent, with 3.4 per cent of the mortality attributable to the operation or its complications. Forty per cent of all tracheostomies were done on patients less than 2 years of age. Avoidance of tight closure around the tracheostomy, complete hemostasis, the removal of a circular area of cartilage the size of a cross-section of the tracheostomy tube, and general anesthesia after endotracheal intubation has been performed are recommended procedures. High humidity and proper tracheal toilet must be performed for successful tracheotomy. Early removal of the tube once the need for its presence is past is definitely indicated. *(Oliver, P., and others: Tracheotomy in Children. New Engl. J. Med. 267: 631 (Sept. 27) 1962.)*