

to actual pain. In the remaining three cases, refrigeration anesthesia failed. . . . The value of refrigeration anesthesia in aseptic healing of wounds may best be judged by comparing results of amputations performed at the Sklifosovski Institute prior to and after its use. . . . The difference in post-operative mortality rates following use of anesthesia is also striking. . . . It is routine practice in our hospital to administer 500-750 cc. of cadaver blood to patients admitted in a state of profound shock caused by severe trauma of both extremities. There is almost immediate improvement. Such transfusions have been given to patients since 1930 as a preoperative measure in cases of traumatic shock. Although their efficacy in preventing shock is undisputed, nevertheless cases of severe crushing injuries of the thigh were frequently fatal. . . . Seventeen of the 22 patients died from postoperative shock, despite repeated blood transfusions. Thus preoperative transfusion alone did not prevent post-operative shock. . . . Shock therapy must be directed at the majority of noxious factors producing shock, rather than at a single etiological factor, even if it be a major one. Refrigeration anesthesia satisfactorily treats four of these factors. First, refrigeration anesthesia is superior to all other anesthetics in that it does not introduce an additional toxic agent into the body. Second, the anesthesia is absolutely complete in that it eliminates the conduction of all painful, tactile, and other stimuli along the spinal and sympathetic nerve paths. This is of particular importance, since incomplete anesthesia is a major cause of operative shock. . . . Refrigeration anesthesia . . . gradually reduces nerve conductivity and probably causes it to disappear at a relatively high temperature of the surrounding tissue. Experiments now in progress indicate

that refrigeration anesthesia provides, so to speak, a reserve of superrefrigeration. This superrefrigeration of tissues cools off the deeper structures, such as the bony parts, and, as a result, the superficial layers are excessively cooled. The completeness of the anesthesia prevents operative shock. Third, it appears that the progressive warming of the stump after the operation not only gradually restores conductivity in the severed nerves but also provides a safety valve against excessive stimulation of the receptor centers in the brain, which inevitably occurs when the paralyzing influences of local or general anesthesia are suddenly removed. The gradual return of conductivity also depends on the fact that paralysis in all the excluded nerves is extensive. . . . This complete exclusion of the nerve elements can be accomplished only with refrigeration anesthesia and with infiltration or conduction anesthesia. The fourth useful factor in the prevention of shock is the retarded absorption of toxins from the stump. . . . This method of anesthesia is strongly recommended for use in military hospitals behind the front where later amputations of seriously infected extremities are common."

J. C. M. C.

WHITTERIDGE, D., AND BÜLBRING, E.: *Changes in Activity of Pulmonary Receptors in Anaesthesia and their Influence on Respiratory Behavior*. J. Pharmacol. & Exper. Therap. 81: 340-359 (Aug.) 1944.

"There is a number of conditions in which rapid and shallow breathing occurs in spite of the absence of any recognized change in the chemical stimulus to the respiratory centre. These include experimental starch embolism, perhaps cardiac dyspnoea, and blast injury to the lungs. During some work on these conditions, we encountered complaints of respiratory

disturbance during anaesthesia with trichlorethylene. This anaesthetic produces rapid and shallow breathing which is very readily reversible. We have therefore investigated the effects of trichlorethylene on the vagal afferent systems, and have compared them with those of other anaesthetics which do not usually cause conspicuous respiratory changes. . . .

"The effect of anaesthetics on the pulmonary afferent nerve endings has been investigated by recording action potentials in vagal single fibre preparations. All volatile anaesthetics tested caused an increase in the sensitivity of stretch receptors. This occurred in spinal cats ventilated artificially with constant volumes of air, and also in decerebrate cats breathing spontaneously. Cyclopropane and nitrous oxide caused hyperexcitability of stretch endings throughout exposure. Ethyl chloride, chloroform, divinyl ether, ethyl ether and trichlorethylene caused stimulation followed by paralysis. Chloralose and nembutal caused no stimulation but showed some depression in large doses. The activity of deflation endings was studied in rabbits by selective blocking of the vagal fibres and recording from a diaphragm slip preparation. Those deflation endings which produce acceleration of respiration in the rabbit were first stimulated and then paralyzed by ether, whereas trichlorethylene caused prolonged stimulation." 23 references.

J. C. M. C.

THEIS, F. V., AND RUSHER, M. W.: *The Pilonidal Sinus: Sacrococcygeal Cyst Teratoma*. Surg., Gynec. & Obst. 79: 482-489 (Nov.) 1944.

"The pilonidal sinus is an important and serious problem in the armed forces because of its frequent occurrence, the prolonged period of hospitalization sometimes following surgical procedures, and the number of recurrences with or without surgical treatment. Naval morbidity statistics reveal that nearly as many sick days are recorded for this disease as for appendicitis. . . . Spinal anesthesia with 100 milligrams of procaine is used routinely with satisfactory results. Local anesthesia is contraindicated when closure is contemplated because of the danger of spreading infection." 26 references.

J. C. M. C.

EVERETT, G. M., AND RICHARDS, R. K.: *Comparative Anticonvulsive Action of 3,5,5-trimethylloxazolidine-2,4-dione (Tridione), Dilantin and Phenobarbital*. J. Pharmacol. & Exper. Therap. 81: 402-407 (Aug.) 1944.

"We have investigated N-methylated 5-alkyl and 5,5-dialkyloxazolidine-2,4-diones synthesized by Dr. M. A. Spielman. . . . In this series the hypnotic action is greatly reduced when the alkyl radicals are small, and a definite analgesic effect becomes apparent. The present report concerns the marked anticonvulsive properties of 3,5,5-trimethylloxazolidine-2,4-dione (Tridione) which was also found to be the most potent analgesic in this group of compounds. . . . Comparative experiments with phenobarbital and dilantin revealed that tridione is more comparable to phenobarbital in its action but produces less depression in effective doses." 14 references.

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