

relief from low back pain due to a variety of conditions. These investigators ascribe the relief of pain to central inhibition of muscle stretch reflexes by prostigmin. . . . Judovich and Bates . . . found that when pain distributed in a segmental region was associated with skin tenderness, the pain was nearly always due to conditions about the vertebral column. Where the exact pathology could be demonstrated, the appropriate etiological treatment was indicated. When no cause could be found, repeated injections of the corresponding spinal nerves with novocaine frequently resulted in permanent relief. A similar, though more complex process is seen in the typical case of causalgia. . . . Frequently injection of the segmental sympathetic ganglia results in dramatic relief of pain. . . . Livingston suggests that continued bombardment of the 'internuncial pool' by impulses from an irritable focus in the periphery may result in perpetual activity of the reverberating internuncial circuits and as he picturesquely says, the internuncial pool may become a whirlpool. He conceives of the internuncial pool as regulatory mechanism for directing the flow of energy into particular pathways, thus modifying thresholds and intensities of perceived sensations. Propagation of the disturbance to distant segments would thus be possible and may result in pain in areas remote from the original pain.

"This would account for 'mirror pain,' for example. The theory is very attractive and fits in with some facts that are known about analgetic drugs. . . . We can no longer regard the nervous system as a complex but fixed and static electric switch box. On the contrary, the central excitatory state of the nervous system is continually changing, within limits, in response to external and internal unconditioned

and conditioned stimuli. We must therefore regard the nervous system as a whole unit, every part of which, in the process of adaptation, undergoes changes which make it more or less reactive to certain stimuli. In other words, in the treatment of pain, we must recognize a fact which most doctors with a general practice have long known intuitively, that we treat not painful backs, but patients with low back pains." 14 references.

J. C. M. C.

TABOIS, D. W.: *The Treatment of Common Emergencies in Anaesthesia*. Med. Press & Circ. 214: 251-254 (Oct. 17) 1945.

"The large majority of emergencies arising during anaesthesia are respiratory in origin, and if not checked lead to respiratory failure and then circulatory failure, in that order. They can be separated into mechanical and non-mechanical causes. . . . [In] mechanical respiratory failure . . . there is an obstruction to the ingress and egress of air through the trachea. The chest movements continue at first, in fact they increase in depth and frequency, as a result of the carbon dioxide excess. The persistence of chest movements is no evidence of air exchange. . . . Prior to the cessation of respiration there is rapidly increasing cyanosis, except in cases of severe anemia, in which there is not sufficient reduced haemoglobin to show the characteristic colour through the skin, but the intense venous engorgement can readily be seen in the veins of the neck. There is also an increase in muscular rigidity, often first noticed by the surgeon. The pupils become dilated and fail to react to light. With the onset of these symptoms the anaesthetist must seek the cause of the obstruction and apply the appropriate remedy. Clenching of the jaws often arises towards the end of the induction period of anaes-

thetia. In many people with narrow nostrils, adenoids, or congested turbinates, there is insufficient room to carry the full volume of respired air. In such cases it is advisable to place a prop between the teeth before commencing anaesthesia, but if the condition has not been noticed, then it is necessary to insert a gag and open it to a moderate degree only so as not to injure the teeth. . . . As soon as possible a Phillips rubber or a Waters metal oro-pharyngeal airway should be inserted. This should not be attempted too soon, as the patient will retch until the pharyngeal reflex is abolished. In certain cases, in strong, muscular individuals, where it is difficult to open the jaw, a naso-pharyngeal airway may be used if the size of the nares permits. . . . Falling back of the lower jaw and base of the tongue over the epiglottis is always likely to occur when the muscles are relaxed, and later the obstruction is aggravated by congestion of the mucous membrane at the base of the tongue. This is usually remedied by holding the jaw well forward, but in many cases, particularly in edentulous patients, this fails to overcome the obstruction, and a Phillips or Waters oro-pharyngeal airway should be inserted. . . . Blood, mucus or a foreign body, such as an extracted tooth, a dental swab or vomitus, may be inspired into the air passages. . . . Needless to say, false teeth should be removed before commencing anaesthesia. . . . The most common cause of the entrance of a foreign body into the larynx is vomitus. . . . If the patient is supine his head should be lowered by removing any pillows or tilting the operating table into the Trendelenburg position. The head should be turned to one side and, if necessary, the mouth gagged open and the debris cleared away by swabs held in holders; if he is in the dental chair his head should be pushed well for-

ward. . . . Laryngeal stridor, leading on to severe spasm of the vocal cords, is one of the most common and difficult conditions to treat in anaesthesia. . . . Once the condition has arisen in the induction stage it is best to withdraw the anaesthetic altogether, allow the patient nearly to come round, and then restart after rubbing the lips with a rough towel. If it occurs later in the anaesthesia, inhalation of pure oxygen, which should always be available, is often helpful, as a certain amount will pass the spasmodic larynx and prevent the anoxaemia which aggravates the condition. It is always risky to try to relieve the stridor by deepening the anaesthesia, as the condition may persist even to the stage when respiration is on the point of ceasing. Pressure upon the air passages by swellings in the neck, if likely to be aggravated during the operation, is best avoided by endotracheal anaesthesia. . . . If complete obstruction of the air passages by any of the conditions mentioned is not improved by these various procedures, forcible artificial respiration by the Sylvester method with the mouth gagged open and the tongue held forward by tongue forceps may be successful in clearing the obstruction. If this fails, intubation with a Magill tube should be attempted under direct vision, using a laryngoscope, if available. . . . In the last resort tracheotomy should be done by the surgeon, and this should not be too long delayed. . . . Non-mechanical respiratory failure . . . is usually the result of over-dosage with the anaesthetic and is followed by circulatory failure. . . . It is fatally easy to give an overdose of an intravenous anaesthetic, especially in shocked or toxic patients, and the respiratory failure which occurs should be treated by rhythmic ventilation of the lungs with oxygen. . . . There is much debate as to whether such a condition

[as status lymphaticus] exists, but there is no doubt that certain children show an unusual susceptibility to sudden death from trivial causes, amongst which is the administration of an anaesthetic. Many anaesthetists are of the opinion that deaths during anaesthesia, which are attributed to status lymphaticus, are due in reality to an overdosage in a very susceptible patient, and the measures that should be taken, should respiration fail in such types of patients, are the same as in any other cases of respiratory arrest, namely, the provision of a clear airway, and artificial respiration combined with the administration of oxygen. This treatment will be successful if the overdose of anaesthetic has not been too great."

J. C. M. C.

GORHAM, A. P.: *Anaesthesia in Oral and Pharyngeal Surgery*. Med. Press & Circ. 214: 216-219 (Oct. 3) 1945.

"Surgical operations which have to be performed with the patient's mouth open present special problems for the anaesthetist. . . . If a tube is not to be introduced, and it is by no means always necessary or even possible, then the patient will be induced by any well-practised and convenient method and the maintenance carried on by conducting the anaesthetic mixture through a nasal catheter, a small airway in the mouth or the tube on the tongue plate of a Boyle-Davis mouth gag, unless an intravenous route be used. Intravenous agents such as pentothal sodium or evipan can be used, but as they do not abolish the pharyngeal reflex they are not very suitable for this work. . . . For any prolonged or major procedure the use of the endotracheal tube is indicated and this method may also become the one of choice in a comparatively minor operation where there is a danger of

some foreign substance entering the trachea or of the airway becoming occluded." 1 reference.

J. C. M. C.

MANNING, G. C., JR.: *Homemade Anesthesia Machine for Small Medical Facilities*. U. S. Nav. M. Bull. 45: 974-976 (Nov.) 1945.

"The medical and surgical supply allotments to the smaller ships of the fleet are usually quite limited, yet many of these smaller ships, especially LSTs, are frequently designated as auxiliary hospital ships or casualty evacuation ships for amphibious operations. . . . A gas anesthesia machine is never aboard. Although spinal, local, and pentothal anesthetics are sufficient to handle the majority of casualties, an occasional patient requires an inhalation anesthetic, and for patients with thoracic wounds, positive-pressure anesthetic may be of considerable aid. . . . For this reason a gas-anesthesia machine was designed and built on one casualty evacuation ship. As gas cylinders were not attainable, ether was used as the anesthetic agent. The machine was constructed completely from material obtainable aboard ship, and differed in basic design from commercially built machines only in the method of introducing ether into the system. Oxygen was supplied from a cylinder of commercial gas such as is used for an oxyacetylene torch. . . . A tight-fitting old-type Army gas mask was used. All parts except the rubber portion of the mask which covers the nose and mouth, and which contains the inlet and the valve, were discarded. The valve was sealed with adhesive tape, and in order to make the mask easier to handle, the clips holding the head strap to the mask were pulled out on the left side, leaving a small hole through which buttons sewed to the ends of the head strap secured the mask. The rebreathing bag was a