

sired, a stream of oxygen can be supplied through the tap provided. The definite, smooth control which this vaporiser affords allows one anaesthetist, in an emergency, to supervise with confidence the administration of anaesthesia to several patients by less experienced helpers; it also seems to make the administration of light ether narcosis easier than with any other method known to us. The vaporiser has also proved satisfactory for the production of analgesia. The low concentrations of ether vapour needed are not unpleasant to breathe and the apparatus has proved of value in obstetrical cases.

"Experiments are being carried out to see whether it is worth while incorporating a humidifier in the vaporiser. A saving of the patient's body heat will be effected as the inspired mixture will be saturated with water vapour at almost body temperature. The warm moist vapour will approximate that which obtains during closed-circuit anaesthesia.

"Clinical performance of vaporiser No. 2. The administration of ether with this machine differs in no significant way from the administration of a gaseous anaesthetic. The ether vapour delivered can be used for induction, or can follow induction by any other agent, and can be combined with any desired gas mixture. The one essential is that a sufficient volume of other gases shall flow into the mixing chamber of the Etherometer to take up all of the ether vapour being delivered, so that the concentration of ether vapour in the final mixture shall not exceed the saturation concentration at room temperature.

"One of the more important advantages of these machines is that they enable clinical observations to be correlated with exact data concerning the amount of ether vapour being admin-

istered. Anaesthetists will almost certainly form an entirely new conception of the 'strength' of ether as an anaesthetic, and will realise that our present views of the potency of ether are largely conditioned by the methods of administration hitherto available."

J. C. M. C.

ROOT, W. S., AND McALLISTER, F. F.: *The Circulatory Responses of Chronic Spinal Dogs to Ether Anesthesia*. Am. J. Physiol. **134**: 65-70 (Aug.) 1941.

"The fall in mean arterial blood pressure which occurs when ether is administered to sympathectomized dogs suggests that during ether anesthesia the activity of the sympathetic nervous system is essential for the maintenance of the normal blood pressure level. Since it is known that the isolated spinal cord can mediate some sympathetic activity in response to various types of stimuli it seemed of considerable interest to compare the circulatory responses to ether inhalation shown by chronic spinal dogs with those exhibited by sympathectomized dogs. . . . The administration of ether to dogs with the spinal cord sectioned below the tenth thoracic segment produces the same changes in blood pressure and heart rate that are shown by normal animals. The inhalation of ether by dogs with the spinal cord cut above the seventh thoracic segment results in an immediate fall in blood pressure. This is associated with a marked bradycardia. During surgical anesthesia the mean blood pressure ranges between 40 and 65 mm. Hg. In this stage the degree of cardiac acceleration is related to the amount of the residual cardio-accelerator outflow which remains connected with suprasedgmental centers. The administration of ether to vagotomized, high spinal dogs (cord section C-6 to T-1) causes no change in heart rate and produces the same

blood pressure responses that are shown by high spinal dogs with intact vagi. Etherization of dogs with bilateral splanchnic nerve section produces in general the circulatory responses observed in normal dogs. It is concluded that for the maintenance of normal blood pressure during ether anesthesia, the suprasedgmental control of the sympathetic nervous system must extend below the sixth thoracic segment." 6 references.

J. C. M. C.

MACINTOSH, R. R., AND PASK, E. A.: *Improved Apparatus for Continuous Intravenous Anaesthesia*. *Lancet* 2: 10 (July 5) 1941.

"In a recent communication (*Lancet*, 1940, 2, 650) we described an apparatus for the continuous administration of intravenous anaesthetics. Further experience confirms the advantages of this route in certain operations, and we now present modifications of our original apparatus which make it simpler and safer in use. The new features to which we wish to draw attention are: The use of a standard British Drug Houses or Crookes bottle of saline and/or glucose as a reservoir for the anaesthetic solution greatly increases the applicability of this method. The chosen anaesthetic is added directly to the 560 c.cm. (1 pint) of solution already in the bottle and the mixture is ready for use immediately after it has been well shaken. The 'safety' dropper, which differs from the ordinary dropper in that it has a side tube, contains a glass float the lower surface of which is ground to fit into a seating at the bottom of the dropper. When there is fluid in the dropper chamber the float is kept away from its seating by its natural buoyancy; but if the chamber should become empty of fluid, as it will if the supply in the bottle is exhausted, the float seats down and the air which is under

pressure in the bottle cannot escape into the patient's veins. The whole dropper and float are made from thick Pyrex glass and can therefore be boiled. The rigid tubes, which pass through a rubber bung of correct size to fit the standard bottles, are made of stainless steel to eliminate risk of breakage. The hand bellows provide sufficient pressure to maintain a rapid flow when needed, so that anaesthesia can be rapidly induced or deepened. Once anaesthesia has been induced the bellows act as a reservoir of air sufficient to keep up a slow flow of anaesthetic mixture for many minutes. . . .

"We have used this apparatus for various operations, including major abdominal surgery, and consider it particularly suitable for operations on the head and neck in which it is not desirable to pass an endotracheal tube. . . . Anaesthetic solutions which we have administered by this method include pentothal 0.5-1 per cent, ether 5-7 per cent, avertin 1 per cent, alcohol 33 per cent, and various mixtures of these drugs. The apparatus has also been used to give glucose and insulin in a case of diabetic coma, and should be of value as a readily transportable apparatus for administering blood."

J. C. M. C.

LINDSKOG, G. E., AND SPICER, A. D.: *Lung Volume under Surgical Anaesthesia: The Effect of Avertin on the Subtidal Air*. *J. Clin. Investigation* 20: 355-359 (July) 1941.

"Clinical and experimental evidence indicates that pulmonary hypoventilation and a decrease in pulmonary volume are fairly constant sequelae of operations performed in the abdominal cavity. . . . Beecher first studied the effect of laparotomy on the subtidal lung volume. He demonstrated an average postoperative decrease of about 20 per cent, the drop becoming maximal on the fourth postoperative day,