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 suprasegmental 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. . . . Anesthetic 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 Anesthesia: 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,

and returning toward the preoperative values during the second week. This significant study has suggested to us the necessity of noting the effect of surgical anesthesia alone on the subtidal lung volume before factors incident to surgical manipulation enter the picture. . . . A group of 17 preoperative surgical cases from the general surgical and gynecological services of the New Haven Hospital was selected. When the choice of anesthesia was known to be basal avertin, the past respiratory history of each case was carefully reviewed; any patient having recent or chronic symptoms was rejected, as was any subject with abnormal physical findings in the chest. . . .

"A reduction in subtidal lung volume occurred in 14 of 17 subjects following the administration of avertin (tribromethanol) in basal anaesthetic doses. In the remaining 3, anaesthesia was incomplete. The maximum decrease was observed in the neighborhood of thirty minutes following administration of the drug when the circulating blood concentration of the drug is known to be highest. The probable cause of this decrease is considered to be a diminution in muscle tone, with a consequent disturbance of the normal balance between the elastic lung and the supporting musculature of the thorax and abdomen. Other evidences of respiratory depression are found." 8 references.

J. C. M. C.

ALLEN, F. M.: *Reduced Temperatures in Surgery. I. Surgery of Limbs.* Am. J. Surg. **52**: 225–237 (May) 1941.

"For about ten years I have been trying to make an experimental approach to the problem of diabetic gangrene, and have carried out the observations at intervals whenever the existing obstacles could be circumvented. . . . Prevailing conditions seem to warrant a general outline of ideas and methods, though the work is still in progress and more detailed reports will be published elsewhere. Some statements made here briefly or doubtfully may be subject to correction or amplification with larger experience. . . . In order to study conditions of inadequate circulation, observations were made on tissues deprived of all blood supply by a tourniquet. The essential finding was that the modification of local metabolism by temperature enormously influenced the survival, from a few hours or even minutes at elevated temperatures to fifty-four hours at a temperature near freezing. No attempt was made to attain a maximum time limit, but the preservation of isolated tissues for weeks and months in the icebox is familiar; and if technical difficulties were overcome, it seems possible that attached limbs might be kept bloodless for very considerable periods and then restored to usefulness. It is noteworthy that during fifty-four or more hours of refrigeration the blood does not clot, the vessels do not suffer damage resulting in subsequent thrombosis and the skin and other tissues remain fresh and intact. Paralyses and other nerve injuries are either prevented or minimized by cold. The investigation properly included systemic shock, since this has relations with diabetic surgery on one hand and with diabetic coma on the other. Both primary and secondary shock are abolished by suitably low temperature. . . .

"Correct application of the tourniquet is one of the important details. Empirical judgment has thus far been the only guide for the degree of tension, which should be the least that will positively stop all blood flow. . . . The first clinical employment copied the procedure used in animals, by having the patient sitting up or propped up