AN IMPROVED BLOOD PRESSURE APPARATUS

The type of blood pressure apparatus used by most anesthesiologists is the arrangement by which the chest piece of the stethoscope is tied on the arm over the antecubital fossa and connected to the ear pieces by a long tubing. A blood pressure cuff is wrapped above this with one long section of tubing connecting it to the bulb and another long section connecting it to the manometer. This set-up is a continual source of trouble. If the chest piece of the stethoscope is tied on tightly it has a tourniquet effect, and causes intravenous solutions distal to it to run in slowly; if pentothal is given into the tubing it tends to pool in the arm and have a delayed action. If the chest piece is tied on loosely it may slip and after the arm is under sterile drapes the anesthesiologist finds he is unable to obtain the blood pressure. Further, if a portable manometer is used, the length of the tubing permits it to fall on the floor with consequent damage to the instrument. This is especially likely to happen when the patient is being moved from the stretcher to the operating table or when the patient is being turned to give a spinal anesthetic agent.

To avoid these difficulties the apparatus has been modified as shown in the illustrations.

1. The "hook type" cuff is used.
2. One of the tubes from the "hook type" cuff is cut short and plugged; the other is made of such length that when the patient is on the operating table the tubing will end about 6 inches from the floor if allowed to dangle. Into the free end of this tubing is placed a male Luer fitting.
3. The chest piece of the stethoscope is sewed on the inside of the distal end of the "hook type" cuff in such a position that it will be on the medial side of the arm over the brachial artery, just above the elbow. Thus, the veins in the antecubital fossa are available if it becomes necessary to give an infusion in that arm. Comparative tests have shown that this arrangement gives the same blood pressure readings as when the chest piece is tied on over the antecubital fossa and not covered by the cuff.
4. A tubing, which reaches about 6 inches from the floor, is attached to the manometer, either a floor stand model or one mounted on an anesthesia machine. This tubing is cut very close to the manometer and a metal "Y" inserted. The blood pressure bulb is connected to the open end of this "Y." A female Luer fitting is placed in the open end of the tubing. When the two Luer fittings are connected the instrument is ready for use (fig. 2).
5. When this apparatus is used with mercury manometers no difficulty is encountered. When used with the aneroid type manometer it is found that since the blood pressure bulb is so close to the manometer, when the bulb is compressed there is excessive jump of the hand on the dial. This jump does not damage the aneroid instrument but it does cause the hand to slip on the shaft so that it no longer returns to zero. The hand must then be removed and replaced so that it indicates zero. This slippage can be prevented by inserting the hub of a 23 or 24 gauge needle into the tubing between the bulb and the manometer (fig. 1). When the bulb is suddenly compressed the increased pressure passes less rapidly through the small bore of the needle to the manometer, and the jump of the hand is decreased so that it does not slip on its shaft. If the needle hub does not have too fine a bore, there is still sufficient jump to the needle that it can be used to estimate the blood pressure by those who wish to use the visual method. The apparatus has been tested on the same patient both with and without the needle hub in the tubing and there is no difference in the blood pressure readings.

If a spinal anesthesia is to be employed, the blood pressure can be taken, the Luer fittings disconnected, and the patient turned to introduce the spinal anesthetic agent. If the spinal anesthetic is started using a
floor stand manometer and it later becomes necessary to give the patient a general anesthetic agent, the floor stand manometer can be very quickly disconnected, moved out of the way, and the manometer on the anesthesia machine substituted (fig. 2) by merely reconnecting the Luer fittings. We have found it a great convenience to have a manometer mounted on every anesthesia machine in the hospital. With this arrangement there is no breakage of manometers as they cannot be dropped.

There is no breakage of the chest piece of the stethoscopes because they are fastened to the cuff and if dropped the shock is absorbed by the cloth.

We have used the apparatus described for three years and found it quicker and easier to apply, less likely to become displaced during the operation, and less expensive to maintain.

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**CORRESPONDENCE**

To the Editor:

During the past year, the infra-red gas analyser * has been developed in the form of a compact instrument which is capable of giving, instantaneously, direct and continuous readings of the percentage of a given gas in a mixture.

The instrument can be used for nitrous oxide, cyclopropane, ether vapour and so forth, but is useless for oxygen and other homopolar diatomic gases, since these do not absorb the infra-red radiation.

The immense possibilities of the application of such apparatus to research in anaesthesia are at once evident. It seems possible that the final development may be the incorporation of such an instrument in the respiratory circuit of anaesthetic machines in general use, so that the anaesthetists can tell at a glance the composition of the gas mixture which the patient is actually breathing, an obvious advance over the present machines which record merely the amounts of fresh gas added to the circuit.

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* (Manufactured by Grubb Parsons & Co., Newcastle, England.)

To the Editor:

In some recent reading I came across the following paragraph. It is the earliest reference that I have seen connecting curare to anesthesia.

It is of interest that the late Dr. William H. (Popsy) Welch used this paragraph in his closing remarks on October 16, 1896 at the Commemoration of the Fiftieth Anniversary of the First Public Demonstration of Surgical Anesthesia, at the Massachusetts General Hospital, Boston.

The address was entitled, "The Influence of Anesthesia upon Medical Science" and was published in Boston M. & S. J., 1896, CXXXV, 401-403.

"Curara is a drug which has important uses in a certain class of experiments upon animals. It has never been claimed by any scientific man that it is an anesthetic, although it has been found capable of affording great relief from pain in some spasmotic affections of human beings. Its use has led to important physiological discoveries which could not well have been made without it, and in a limited class of cases its employment, either with or without the coincident administration of anesthetics, is indispensable."

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