High Blood Levels of Methoxyflurane

To the Editor:—The recent case report of Dr. Lowe *et al.* (ANESTHESIOLOGY 30: 471, 1969) concerning cardiovascular stability in the presence of unusually high levels of halothane prompts me to record a similar case of unusual cardiovascular stability in the face of very high blood levels of methoxyflurane.

The patient, a 66-year-old, 200-pound man scheduled for osteotomy of the tibia, underwent induction with 325 mg thiopental. Intubation was facilitated by succinylcholine and anesthesia maintained with oxygen and methoxyflurane, vaporized in a No. 8 Heidbrink vaporizer. Monitoring was carried out with both an ECG and an EEG.

Blood pressure on admission was 130/80 mm Hg. Immediately prior to induction it was 160/80 mm Hg, with a pulse rate of 80. After intubation pressure rose to 200/120 mm Hg for a few moments. Thirty minutes after induction it fell to 110/70 mm Hg. At this time the EEG showed burst suppression of 2–6 sec duration interspersed with low-voltage activity of ½-sec duration. This fall in BP lasted only a few minutes after withdrawal of the methoxyflurane. Apart from these two episodes, the BP varied between 140 and 180 mm Hg systolic during the anesthesia, which lasted an hour and 30 minutes. The pulse rate was 80/minute throughout, and no arrhythmias were observed. Arterial blood samples withdrawn during the operation and estimated for methoxyflurane later showed a high of 53 mg/100 ml at the time of burst suppression and levels between 7.4 and 46.5 mg/100 ml. thereafter. P_{CO_2} values varied between 20 and 30 mm Hg.

After the appearance of burst suppression, methoxyflurane was administered only intermittently for short periods for the rest of the operation. Recovery was not unduly prolonged and the patient was discharged from the recovery room an hour and 30 minutes after the end of anesthesia.

This patient was one of a group of ten anesthetized by this technique. As previously reported (Wolfson, B., *et al.*, ANESTHESIOLOGY 28: 1003, 1967), in four of these patients persistent hypotension supervened before the onset of burst suppression in the EEG. The highest blood level seen in the other patients was 37.0 mg. The present reported level of 53 mg/100 ml with only a very short-lived and modest hypotensive episode suggests an unusually high degree of tolerance for methoxyflurane. It is of some interest that this blood level is equivalent to approximately four times the MAC for this agent.

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Another Close Call with "Crossed Valves"

To the Editor:—The following account clearly illustrates a hazard which has cried out for an engineering solution for a long time. How long must we wait for this?

Two months ago a resident anesthesiologist set up the anesthesia apparatus for an open-heart operation in a cardiothoracic operating room. The attending anesthesiologist also checked the breathing circuit and found it airtight.

When the surgical team had completed the cutdowns under local anesthesia, the resident induced anesthesia with thiopental and succinylcholine. He attempted to inflate the patient's lungs with oxygen before intubation but found he could not do so. The attending anesthesiologist found that the breathing bag would not inflate, checked the circuit, detached the breathing tubing and found that although the bag could be filled, he still could not inflate the patient's lungs. The trachea was intubated rapidly and the patient given mouth-to-tube artificial respiration while another machine was brought in. Anesthesia