sume that 90 per cent of the  $N_2O$  remains in solution.

Third, our inability to substantiate the marked discrepancies with halothane is not surprising when one considers that halothane is five times more soluble than N<sub>2</sub>O and 200 times more soluble than oxygen. On the other hand, diethyl ether is 1,200 times more soluble than O2. In concentrations of 1 to 2 per cent (assuming "successful and complete extraction" of gas from the liquid phase), the error for halothane will be small as compared with ether, but substantial even at high oxygen contents (i.e., 1 per cent halothane equilibrated with a liquid phase is equivalent to a content of approximately 2.4 ml/100 ml). Fortunately, the higher solubility allows for lesser extraction of halothane and, in comparison with the extracted O2, the measurement yields an error small enough to argue against the maneuver recommended by Goldstein et al.2 We do not argue against scientific accuracy; our intent is to place the controversy in perspective.

We appreciate Dr. Theye's comments and the opportunity for a reply. He is quite correct regarding the error introduced by N<sub>2</sub>O for absolute measurements of O<sub>2</sub> content. The solubility characteristics of halothane hardly warrant modification of the manometric technique as originally described. We purposely omitted reference to this matter in our paper since it might have perpetuated a concern for which there appears to be little justification.

MYRON B. LAVER, M.D. Professor of Anaesthesia, Harvard Medical

Anesthetist, Massachusetts General Hospital

Nabil R. Fahmy, M.D., F.F.A.R.C.S. Instructor in Anaesthesia, Harvard Medical School

Assistant Anesthetist, Massachusetts General Hospital Boston, Massachusetts 02114

## REFERENCES

- Theye RA: The determination of O<sub>2</sub> and CO<sub>2</sub> content in blood containing halothane. ANES-THESIOLOGY 30:325–327, 1969
- Goldstein F, Gibbon JH Jr, Allbritten FF Jr, et al: The combined manometric determination of oxygen and carbon dioxide in blood, in the presence of low concentrations of ethyl ether. J Biol Chem 182:815–820, 1950
- Fahmy NR, Laver MB: Hemodynamic response to ganglionic blockade with pentolinium during N<sub>2</sub>O-halothane anesthesia in man. ANESTHESIOLOGY 44:6-15, 1976
- Van Slyke DD, Neill JM: The determination of gases in blood and other solutions by vacuum extraction and manometric measure ment. J Biol Chem 61:523-573, 1924.

Downloaded from http://asa2.silverchair.com/anesthesiology/article-pdf/45/1/106/622649/0000542-197607000-00025.pdf by guest on 17 April 2024

- Theye RA, Kirklin JW, Fowler WS: Performance and film volume of sheet and screen vertical-film oxygenators. J Thorac Cardiovasc Surg 43:481–488, 1969
- Altman PL, Dittmer DS: Biological Handbooks, Respiration and Circulation, FASEB, Bethesda, Md., 1971, p 19

(Accepted for publication February 25, 1976.)

## Early Use of Enflurane in Obstetrics

To the Editor:—Coleman and Downing' state "... there has been no report on use of enflurane in obstetric anesthesia." There was a prior report. Among the first, if not the first, was the work of Westmoreland et al.<sup>2</sup>

RICHARD B. CLARK, M.D.
Professor
Departments of Anesthesiology and
Obstetrics-Gynecology
Obstetrical Anesthesiologist

University of Arkansas Medical Center Little Rock, Arkansas 72201

## REFERENCES

- Coleman AJ, Downing JW: Enflurane anesthesia for cesarean section. ANESTHESIOLOGY 43:354–357, 1975
- Westmoreland RT, Evans JA, Chastain GM: Obstetric use of enflurane (Ethrane). South Med J 67:527-530, 1974

(Accepted for publication February 25, 1976.)