A New Look at Old Anesthesia Circuits

To the Editor:—While some may believe that my journals lie unread for months, this is not the reason I comment only now on Dr. Edsall's letter in March 1981 issue of Anesthesiology.¹ My copy, for reasons totally obscure, only reached me on December 8. I am old enough to remember an earlier technology which made it possible to predict with certainty that a letter mailed in New York on a Monday would reach its addressee in London, England, before Friday noon of the same week. Our modern technology does not seem able to rival those achievements of yesterday. Perhaps because so many of us are blind to what history can teach us.

Why, I wonder, have we not yet applied to the clinical situation in anesthesia, those lessons learned by the deep-sea diver with his self-contained under-water breathing apparatus?² Unable to carry extra equipment such as O₂ and CO₂ analyzers along with him, he uses a demand-feed system which supplies an atmosphere prepared in advance to meet expected requirements. He voids all exhaled gas from his breathing system and manages to live and work safely in a very hostile environment.

In the days of the earlier technology, EI McKesson (1910) was busy developing this concept in anesthesia when Dennis Jackson (1915), Ralph Waters (1923), and Brain Sword (1928), wishing to economize, in particular to enable cyclopropane to be used clinically, distracted attention from demand-feed systems which had given preselected dosage on a breath-to-breath basis.² Such systems still exist.²³ They can, and should, be further refined and be adopted universally, not only because they permit far greater precision in prescribing and administering inhalational anesthetics, but also because the voiding of all exhaled gases will allow the development of a total scavenging system to salvage, and store for later re-use, nitrous oxide as well as volatile anesthetic agents. At present all anesthetic gases and vapors, while they may not grossly contaminate the operating suite, certainly do dilute the general atmosphere outside the hospital, representing not only a health threat but a total and major financial loss.

The cryogenic technology essential to achieve massive recycling of anesthetic agents is already available. Its application to anesthesia could effect far more significant savings than the mathematically insignificant difference in anesthetic costs as between the closed and the semi-closed systems discussed by Dr. Edsall.

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(Accepted for publication December 23, 1981)

Epidural Morphine and Ventilatory Depression

To the Editor:—It is recognized that the single most important factor limiting the conventional use of narcotics to treat severe pain is the risk of excessive ventilatory depression. Despite initial speculation to the contrary, it is now evident that small doses of narcotic administered by the epidural route to healthy patients may be complicated several hours later by life-threatening ventilatory depression.¹⁻⁴ However, a recent study reported in Anesthesiology concludes that the ventilatory depressant effect of 10 mg epidural morphine alone is less than that associated with comparable doses of morphine given parenterally, and suggests that severe depression may be of real concern only in patients with "diminished ventilatory reserve" or in those receiving other drugs which reduce breathing.⁵

We wonder if these conclusions are justified. This report contains data on CO₂ responses only, responses were determined after epidural morphine only during the period of analgesic effect. Fundamental ventilatory variables, i.e., ventilation, PETCO₂ or P₅ACO₂, are not pre-

Anesthesiology
56:486-487, 1982