pattern was noted, that is, the fraction of CO_2 inspired decreased as V_t/T_i increased.

The purpose of our paper was to demonstrate that anesthesiologists have two agents available that result in significantly different breathing patterns. The clinician is interested in only two facts when selecting an appropriate $\dot{V}_F$: 1) Can rebreathing be eliminated by choosing an agent which results in a favourable waveform?; and 2) Does the prevention of rebreathing with this waveform result in less CO_2 retention at comparable levels of anesthesia? Our study shows that the waveform during enflurane anesthesia (low V_t/T_i and long end-expiratory pause) reduces rebreathing when compared to the sine wave pattern with halothane at any $\dot{V}_F$. The prevention of rebreathing with enflurane, however, does not reduce arterial CO_2 tension, because it is a more potent primary respiratory depressant, and no circuit can compensate for hypoventilation.

Waveform, then, cannot be separated for analysis in a clinical study from $\dot{V}_E$ as Dr. Keenan would like because these two terms are interdependent. This interdependence is recognized by the clinician who can neither control nor select the waveform or $\dot{V}_E$ which is present during spontaneous respiration in anesthetized subjects. The levels of $\dot{V}_E$ in our study with enflurane and halothane are not significantly different from those reported by Spoerel *et al.*[3] The fact is, the clinician's choice of agent largely determines the waveform (including $\dot{V}_E$), and this is a prime determination of rebreathing as we have shown.

In concluding that our "paper implies that the Bain circuit is unpredictable in it's performance", Dr. Keenan has misinterpreted the results. This circuit is extremely predictable! Every patient breathing halothane at a $\dot{V}_F$ of 100 $ml \cdot kg^{-1} \cdot min^{-1}$ rebreathed CO_2. It is the patient's response to this inspired CO_2 load which is unpredictable during halothane anesthesia. In two other studies[4,5] using the same technique, we have demonstrated a significant increase in CO_2 tension in some patients who could not compensate for this inspired CO_2 load during halothane anesthesia. This increase in P_{CO_2} was preventable, by either increasing $\dot{V}_F$,[5] or by using another breathing system.[4]

We thank Dr. Keenan for his interest in the paper and we hope this clarifies his interpretation of the data.

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Hypothermia after Cardiopulmonary Bypass in Man

To the Editor:—We read with interest the article by Noback and Tinker[1] concerning the amelioration of hypothermia after cardiopulmonary bypass with nitroprusside-induced vasodilation. They concluded that the decrease in post-bypass nasopharyngeal temperature could be minimized by the simple procedure of using nitroprusside and increased pump flows during the rewarming period. Although their data show that the group of patients treated with nitroprusside had a smaller decrease (1.5° C *vs.* 2.5° C) in nasopharyngeal temperature than the control group upon termination of bypass, the fact remains that the nitroprusside-treated group did experience a decrease in nasopharyngeal temperature.

We have solved the problem of hypothermia after cardiopulmonary bypass by heating and humidifying the inspired gas. In our system the inspiratory gas is passed through a Bennett Cascade humidifier located between the carbon dioxide absorber and the Y-piece. The temperature of the inspired gas is controlled with

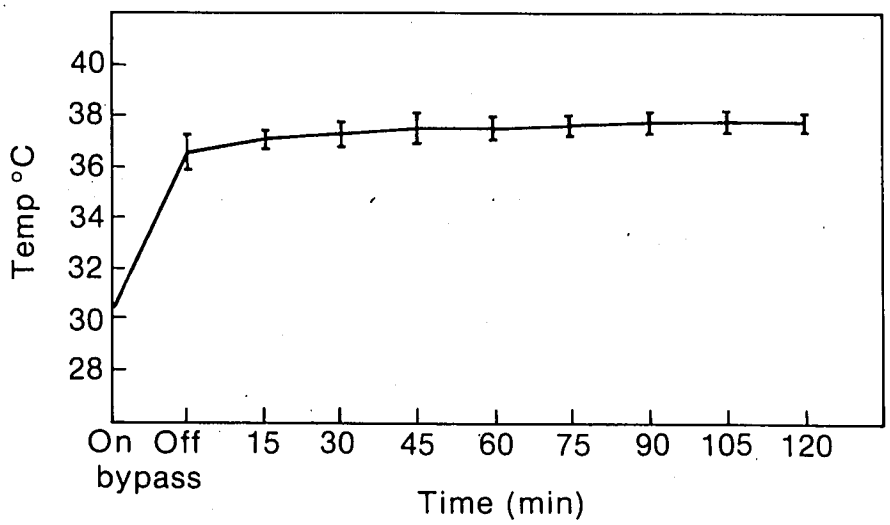

FIG. 1. Nasopharyngeal temperature *vs.* time after cardiopulmonary bypass.

the thermostat on the humidifier and monitored with a thermometer at the Y-piece. The temperature of the inspired gas is typically maintained at 46–47° C. We followed the nasopharyngeal temperatures of five typical patients in the post-bypass period who underwent coronary artery bypass grafting. A plot of nasopharyngeal temperature *vs.* time after bypass is presented in figure 1. In contrast to Noback and Tinker's patients, the nasopharyngeal temperature in our patients remained stable in the post-bypass period and showed a small (1° C) increase over the two-hour period studied. Postoperatively, the patients remained warm in the ICU with good capillary refill and normal temperatures.

We believe that the use of heated humidification of the inspired gas is superior to the use of nitroprusside-induced vasodilation in the prevention of post-bypass hypothermia for the following reasons: 1) the technique is simple and doesn't require the preparation or administration of drugs with potential toxic effects; 2) the patient is not exposed to the effects of increased pump flows for extended periods during the rewarming period; and 3) the technique is a safe and effective way to prevent hypothermia in the post-bypass period.

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Drug Packaging Invites Confusion

To the Editor: — We would like to bring to the attention of the anesthesia community a potential drug packaging problem.

Abbott Laboratories' 0.5 per cent bupivacaine and 7.5 per cent sodium bicarbonate (figs. 1 and 2) are now available in identical cartons and similar and almost identical syringes (except for labels). The main distinguishing feature is the color of the package which may not be recognized by those with certain types of color blindness.

As there have already been two incidences of therapeutic misadventure in our area, because of the con-