

## LETTER TO THE EDITOR

Sir:

In opening, may I applaud Doctors B. Kay and T. Allen in their investigation of "Humidification of Anaesthetic Gases," *Canadian Anaesthetists' Society Journal*, Volume 18 (5): 571-575, September, 1971.

It is my intention in this communication to humbly make several comments, hopefully accepted favorably. In your Journal, July, 1967, Dr R. Dery proposed approximate requirements for humidification of inspired anesthetic gases.<sup>1</sup> This value approximated 30 milligrams of water vapor per liter of minute ventilation. I have demonstrated that the Bennett Cascade humidifier will amply deliver a 100 per cent saturated gas at 86°F (30°C), measured in proximity to the endotracheal tube, which satisfies Dr Dery's proposed requirements.<sup>2</sup> In addition, I have used the authors' Mapelson D system, adding a Bennett Manifold thermometer at the fresh gas inlet to the T-piece, with success. My Cascade, contrary to the authors, will reach 120°F within the pot; therefore, the length and dependent position of tubing from the Cascade to the T-piece is important to allow proper cooling and condensation drainage. The Bennett Cascade, although bulky, requiring electricity, and temperature control, has the advantages of requiring no high pressure source of nebulization and appears to be the most physiologic method of artificially adding controlled water vapor to the tracheobronchial tree. In fact, delivering saturated gases at body temperature may be detrimental to ciliary mucosal function.<sup>1,3,4</sup> An incidental disadvantage to the Cascade humidifier pertains to its explosive hazard, precluding the use of flammable anesthetics. Finally, I am surprised at the authors' inability to reach 100 per cent saturation with the Bennett Cascade humidifier.

In conclusion, I wave the banner of adding known water vapor content rather than nebulized water droplets to the inspired gases of patients subjected to endotracheal intubation and dry gas exposure.

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### REFERENCES

1. DERY, R.; PELLETIER, J.; JACQUES, A.; CLAVET, M.; & HOUDE, J. Humidity in Anaesthesiology. III: Heat and Moisture Patterns in the Respiratory Tract During Anaesthesia with the Semi Closed System. *Canad. Anaesth. Soc. J.*, 14: 287-298 (1967).
2. WEEKS, D.B. & BROMAN, K.E. A Method of Quantitating Humidity in the Anesthesia Circuit by Temperature Control; Semiclosed Circle. *Anesth. & Analg.*, 49 (2): 292-296 (1970).
3. INGELSTEDT, S. Studies on the Conditioning of Air in the Respiratory Tract. *Acta Otolaryng. (Stockholm) Suppl.* 131: 7-80 (1961).
4. MODELL, J.H.; GIAMMONIA, S.T.; & DAVIS, J.H. Effect of Chronic Exposure to Ultrasonic Aerosols on the Lung. *Anesthesiology*, 28: 680-688 (1967).