Correspondence

Accuracy of Aneroid Manometers Used in CPPV

To the Editor:—Precise measurements of airway pressures below 20 cm H$_2$O is seldom crucial during ordinary mechanical ventilation with intermittent positive-pressure ventilation (IPPV). When continuous positive-pressure ventilation (CPPV) is used, however, measurement of airway pressures below 20 cm H$_2$O is necessary. Realizing that the ventilators which we were using to deliver CPPV were not originally designed for this use, we suspected that some of their aneroid manometers might be inaccurate at low pressures; that is, some lifted off the peg at 5–8 cm H$_2$O instead of the apparently-intended 2 cm H$_2$O, and there was no external zero-adjustment mechanism.

Therefore, we calibrated the pressure gauges on all our Emerson volume-controlled ventilators with a water manometer during slow increases and decreases of pressure in 5-cm-H$_2$O steps to ±60 cm H$_2$O. We considered inaccuracy greater than 2 cm H$_2$O at any pressure below 20 cm H$_2$O unacceptable. Two of the seven gauges were judged unacceptable by this criterion. Their errors persisted over much of the range tested; that is, the problem wasn't just "sticking" on the limit peg.

The J. H. Emerson Company provided replacements from the same manufacturer (Marshalltown Mfg. Co.) with scales reading ±60 cm H$_2$O. They have a zero-adjusting screw and no zero-limit peg.

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Post-spinal Headache and Air Travel

To the Editor:—Headache is the most frequent complication following spinal anesthesia. Recently, such a headache occurred under highly unusual circumstances.

For a knee operation, an 18-year-old Marine Corporal had spinal anesthesia, induced with a 22-gauge needle without technical difficulty. Postoperatively, he was placed in a walking cast, and on the first day ambulated with crutches. He complained at that time of a mild headache but continued to ambulate without difficulty. In the next six days he had no further complaints of headache, and on the seventh postoperative day departed on convalescent leave by jet airliner. Approximately 5–10 minutes after takeoff he experienced severe headache, which gradually worsened. By the end of the one-hour flight he was prostrate, diaphoretic, nauseated, vomiting, and experiencing weakness and photophobia. In the next ten days the headache recurred each time he was up for more than 15 minutes. Relief was almost always immediate upon lying down. After this ten-day period, the headache progressively diminished and disappeared. The patient had no recurrence on the return flight.

The theory of cerebrospinal fluid (CSF) loss as the cause of post-spinal headache, as well as the roles of needle size, etc., have been well studied. The literature concerning delayed-onset headache under circumstances such as those described is somewhat sparser. Several points could be considered. A persistent dural leak is possible, since dural fistulas have been found as late as 14 days postoperatively. Safar mentions that at high altitude the incidence of post-spinal headache seems to be so