blood pressure waveform and measures the "zero-offset" (also called the "bias" or "DC component" of the waveform. It appears that Marey's device did not satisfy parts 1, 3, and 5 of our definition.

Reference 7 cited by Bruner (O'Rourke *et al.*) does not support his contention that arterial tonometry was invented before 1890. For example, O'Rourke *et al.* state that "His (Marey's) techniques for pulse recording . . . were improved and extended principally in England by Mahomed" (page 6). O'Rourke *et al.* then contrast a modern tonometer with Mahomed's device as follows: "a new instrument . . . unlike Mahomed's instrument depends on the established principle of tonometry" (page viii).

Describing modern arterial tonometry, O'Rourke *et al.* state, "The theoretical basis on which arterial tonometry is founded is solid and has been developed over a period of 20 years. The earliest studies by Pressman and Newgard[25] used . . ." (page 26).

We thank Bruner for pointing out our error concerning the Food and Drug Administration's (FDA) name. We do not dispute his description of FDA approval. We agree that FDA approval is not compelling evidence, but neither is it irrelevant.

Bruner's distaste for "proprietary" drugs is understandable. On the other hand, the manufacturing processes used to produce many drugs are proprietary, and physicians have no reservations about using these drugs. We further submit that numerous medical instruments such as imaging devices and analytical instruments use algorithms that are (at least in part) proprietary. Some balance must be made between the medical professional's "need to know" and the legitimate protection of proprietary technology. We are constrained by the equipment vendor's willingness to divulge details of the algorithms.

We point out that the basic strategy and effects of the "proprietary" algorithm are revealed in our paper: "Mean arterial pressure is taken as the cuff pressure at which the amplitude of the cuff pressure oscillations reaches a maximum. The oscillometric measurements then are used to compute two coefficients (essentially a "gain" and "offset") that are used . . . and so on.

We appreciate Bruner's careful reading of our paper. We hope the above comments will satisfy his concerns.

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# When the Endotracheal Tube Will Not Pass over the Flexible Fiberoptic Bronchoscope

*To the Editor:*—Katsnelson *et al.*[1] point out that it is often necessary to rotate the tracheal tube to facilitate its passage through the glottis. It is interesting to note that Dogra *et al.*[2] made similar recommendations for passing a tube over a gum-elastic bougie.

Their letter suggests that they are using preformed tubes. Tubes with a preformed curve do not rotate well and in our experience can cause the fiberoptic bronchoscope to "flick out" of the trachea. Flexometallic tubes, such as those produced by Mallinckrodt, have very little preformed curve and can be rotated through the glottis without risk of displacing the fiberscope. Also, being flexible, they follow the fiberoptic bronchoscope through the curves formed by the glottis and trachea. When passing the tube one should rotate more than push. We find that flexometallic tubes are much easier to pass, and being softer, are kinder both to the tissues and the bronchoscope.

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# Machine Wars: Another Cause of Pressure Loss in the Anesthesia Machine

*To the Editor:*—As requests increase for anesthesia services outside of the operating room, the potential for equipment-related problems also increases. Technologic advances in medicine have created a literal explosion in the use of electronic mechanical equipment, enhancing the chances of inadvertent machine interaction. We report an incident whereby a fluoroscopic machine disabled an anesthesia machine (Modulus II, Ohmeda, Madison, WI) during a vascular procedure performed in the radiology department.