arm tourniquet is used will increase still further the safety of intravenous regional anaesthesia.

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UPGRADING ANAESTHETIC MACHINES

DEAR SIR,

Since the publication of our description of the Province of Manitoba Anaesthetic Machine Program,¹ which accommodated the Canadian Standards Association anaesthetic gas machine standard,² we have received a number of enquiries about the scope of upgrading work performed on specific anaesthetic machine models. Table I

summarizes the upgrading work performed on the models we encountered. The goal of the program was to provide every anaesthetic machine in hospitals in the province with the same basic design and safety features: "oxygen right"; characteristic oxygen knob profile; oxygen supply pressure failure device and alarm; standardized "oxygen flush" mechanism; pipeline inlets and pressure gauges; uniform colour coding; standardized common gas outlet; pin indexed cylinder yokes; descriptive labels concerning safety devices; check valves within machine piping. In considering the average cost per unit, it must be recalled that the work was performed in early 1980, and that a "group-purchase" arrangement was made for a total of 127 machines. The current cost per unit for similar upgrading of lesser numbers of machines will likely be higher.

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TABLE I
UPGRADING WORK PERFORMED UNDER MANITOBA PROGRAM

	Medishield - Boyle					Ohio Unitrol	Drager Narkomed Standard
	10	K	INTL	M	MS		
O ₂ Right	X	X	X	X			
O ₂ Knob Profile	X	X	X	X		X	
O ₂ Failure Device		X	X	X		X*	
O ₂ Failure Alarm	X	X	X	X	X	X	X
O ₂ Flush - Non Locking	X	X	X	X		+	
O ₂ Flush Guard	X	X	X	X	X	X	
Single Common Gas Outlet	X					X	
Pipeline Inlets			X*			X*	
Pipeline Inlet Gauges			X*			X*	X
Relocate Pipeline Inlet Non-Return Valves			X	X			
Color Coding						X	
Labels	X	X	X	X	X	X	X
Cost/Unit (Approximate)	\$750	\$900	\$750 to \$1000	\$900	\$500	\$500 to \$1000	\$350

Notes: + Relocate O₂ flush - some units.

* Some units.

Already satisfactory - Penlon Model IM 500.