

To the Editor:—We concur generally with Dr. Bellville's warning of the complexity of drug interaction. But perhaps the phrases "the dubious assumption" and "*sine qua non*" are unnecessarily harsh and obscure the fact that a real interaction exists which was not found by Steen *et al.*¹ and not found to be statistically significant by Keats *et al.*² in their opioid ataractic experiments.

The 2 × 2 factorial design differs from ours in extent and in power. We thought it unnecessary to add 33 per cent to the extent of the experiment, especially as repeated comparisons of prior control vs. placebo responses of ventilation to CO₂ were made (although not reported) and found indistinguishable.^{3,4}

Neither design would permit analysis of the mechanism of interaction. This requires data on the dose-response curves of the drugs and of mixtures, as clearly illustrated in Dr. Bellville's 1959 letter.⁵ A beautiful example of such analysis is provided by Bellville and Fleischli's explanation of the sometimes puzzling lack of nalorphine antagonism of morphine.⁶ But even here, in retrospect, one could wish that the zero morphine doses had been replaced by very large morphine doses. Such a 3 × 3 design requires nine weekly studies of each subject. Our data were col-

lected over a much shorter time, 10 to 22 days, permitting greater subject homogeneity and complete confounding of order effect, which tend to compensate for the reduced power of the analysis.

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Magnesium and Neuromuscular Blocking Agents

To the Editor:—In the January 1970 issue of *ANESTHESIOLOGY*, Choneim and Long reported on the interaction of magnesium and neuromuscular blocking agents. Using the rat phrenic nerve-diaphragm preparation, they demonstrated that magnesium potentiates the action of both depolarizing and nondepolarizing blocking agents. Their discussion states that, in a review of the literature, only a suggestion was found to indicate that the effect of magnesium may be additive to that

of curare-like drugs. However, using a nerve-muscle preparation in the cat, Giesecke *et al.* showed, by the method of half doses, that the action of magnesium sulfate is additive to that of *d*-tubocurarine as well as to that of succinylcholine (Giesecke, Morris, Dalton and Stephen, *Anesth. Analg.* 47: 689, 1968).

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