These data confirm that our patients did indeed have severe cardiovascular disease. The majority, however, withstood the stress of operation with no demonstrable effect on the heart. This was true regardless whether a history of angina, hypertension, myocardial infarction etc. or an abnormal ECG was present. The enzyme studies were not very informative. High and abnormal values were obtained without other evidence of myocardial stress and conversely, normal results were seen in the presence of ECG change. It seems that the enzyme tests are corroborative rather than primary evidence. By these indices it seems that even in this select group the myocardial stress imposed by anesthesia and surgery is not great, and that the predictors are of doubtful value. We cannot predict with certainty in what circumstance and in what manner operation is hazardous.

Drug Contamination of Multi-dose Vials. R. M. Smith, Jr., M.D., J. A. Young, M.D., and A. Manheim, M.D., Division of Anesthesia, Allentown Hospital Association, Allentown, Pennsylvania. Multi-dose vials used in the every day practice of medicine can contain material sufficient for as few as 2 and conceivably as many as 50 or 60 patients. Reviewing the literature, little can be found on bacteriological contamination and no studies can be found on drug contamination of multi-dose vials. Contamination can occur by dilution of the drugs with water, or glucose left in syringe, or by multiple drugs given with the same injection. Observation of the technique on nursing floors, especially on the pediatric floors where small doses of drugs are drawn from large multi-dose vials, suggested possibility of contamination. The usual technique consists of injecting air in the atropine or scopolamine vial equal to the amount of drug to be withdrawn. The needle is then withdrawn and air is injected in the meperidine bottle equal to the solution to be withdrawn. After withdrawing the drug, the needle is again inserted into the atropine or scopolamine bottle and the medicament is then withdrawn. This technique is repeated with the phenothiazine if that drug is to be added. There was no uniformity among the personnel regarding the technique. Method: Multi-dose vials containing promethazine (Phenergan) 10 ml., meperidine (Demerol) 30 ml., atropine 20 ml. and scopolamine 20 ml. were selected at random from the pediatric department when they were within 1 ml. of depletion. Twelve vials consisting of three samples each of the four drugs were analyzed quantitatively by thin line chromatography for drug contamination. This consists of spotting samples at 2 cm. intervals on thin layer plates coated with Silica Gel to a thickness of 250 micron. These plates were inserted in a developing solvent, stained with a detection solution, and compared with a standard known solution of the drug to be analyzed. Results: No contamination was found in the meperidine bottles; however in the promethazine, atropine, and scopolamine bottles, contamination was found. An average 25 mg/ml. of meperidine was found in the promethazine bottle. An average of 35 mg/ml. of meperidine was found in the atropine, while 35 mg/ml. meperidine was found in the scopolamine bottles. Promethazine 1.2 mg/ml. was found in one bottle of scopolamine. Discussion: Techniques of withdrawing drugs from multi-dose vials are important. A small break in technique may cause a large error in dosage by the time the bottle is empty, especially where small multiple withdrawals are made from large bottles by variably trained personnel. Many factors must be considered when withdrawing the drugs, including the dead space inside the needle hub which can account for as much as .05 ml. of solution. It was interesting to note that the amount of contamination of meperidine in promethazine was uniform in all three bottles, while there were varying degrees of contamination of the meperidine in atropine and scopolamine bottles. Conclusion: A plea is made for a more coordinated training program for drug administration. Hospitals should consider use of single dose vials, ampules or prefilled syringes to preclude perpetuating and magnifying a single error to the last withdrawal from a multi-dose vial.

The Growth Inhibiting Effect of Nitrous Oxide on Developing Chick Embryos. S. L. Snegireff, M.D., and D. W. Eastwood, M.D., University of Virginia School of Medi-