Figure 2. The bottle containing the blood is shown on the right connected by a Y drip tubing to the saline infusion apparatus. The diagram shows the details of the recipient vent tube.

tubing with the Y drip tube of an intravenous saline infusion which is already running (fig. 2). The heads act as an adequate filter and, unless there are a great many clots, the vent does not become plugged. More than 800 transfusions have been given satisfactorily by this method.

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Cyclopropane Bradycardia. A Case Report

Seevers and his associates (1) were the first to believe that cyclopropane is a parasympathomimetic drug. They noticed in animals that some of the cardiac arrhythmias seen during cyclopropane anesthesia were due to increased vagal tone, and that these arrhythmias were corrected by the administration of atropine sulfate.

Adriani and Rovenstine (2), working on the perfused hearts of turtles and frogs, observed that cyclopropane produced slowing of the cardiac rate and decrease in the amplitude of ventricular contractions; the hearts in eserinized preparations went into immediate asystole. Vagal stimulation produced similar results. When atropine sul-
tate in 1:10,000 solution was added to the perfusion, these effects were nullified or normal rhythm was regained.

Others have observed this parasympathomimetic action of cyclopropane (3) not only on the heart (4), but also on the intestinal tract (5) and on the lungs of human beings (6).

We wish to present a case of extreme bradycardia under cyclopropane anesthesia.

**Case Report**

A 52 year old white male was admitted on August 23, 1942 to the surgical service of Dr. Alfred Ullman, because of persistent nausea and vomiting resulting from pyloric obstruction, which was produced by enteric bands and scars from drinking formaldehyde.

The preoperative blood studies gave negative results. The blood pressure in millimeters of mercury was 106 systolic and 82 diastolic; the pulse rate 60 and respirations 20 per minute.

On August 31, 1942, the patient was given morphine sulfate, ½ grain, and atropine sulfate, ½ grain, at 9:00 a.m. At 10:55 a.m. partial gastric resection was begun under continuous spinal anesthesia. Cyclopropane was administered as soon as retching was produced by intestinal manipulation.

Elevation of the subnormal blood pressure did not result from administration of blood or neosynephrin intramuscularly; the pulse rate was between 40 and 52 beats per minute. Suddenly the pulse dropped to 24 beats per minute; the irregular pulsations were equally slow. The beats were regular and their quality suggested a higher level of blood pressure than was evidenced by auscultation. Remembering that the patient had a slow pulse normally, atropine sulfate 1½ grain, was administered intravenously in the belief that cyclopropane had aggravated this vagotonia. The results were dramatic; blood pressure level, pulse and respiration return to normal. A second drop in blood pressure value and pulse rate resulted when procaine was given just prior to closure; they were easily restored to normal by neosynephrin given intramuscularly.

The patient made an uneventful recovery and was discharged September 17, 1942. However, it was noted that the pulse rate was always slow and dropped to 44 beats per minute during sleep. An electrocardiogram showed sinus bradycardia with a pulse rate of 52 beats per minute.

**Summary**

Many believe that cyclopropane is a parasympathomimetic drug.

A case is reported of a patient with abnormal vagal tone which was aggravated by cyclopropane and corrected dramatically by the intravenous administration of atropine sulfate. This case lends confirmation to the belief that cyclopropane is a parasympathomimetic drug.

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**References**


