tion of succinylcholine, it has failed to associate this with concomitant arrhythmia even in digitalized patients.

Effect of Methoxyflurane upon Myocardial Mechanics. N. SUGAI, M.D., S. SHIMOSATO, M.D., and B. ETSTEN, M.D., *Tufts University School of Medicine and New England Medical Center Hospitals, Boston, Mass.* In the intact dog heart under methoxyflurane anesthesia, the mean ventricular ejection rate was unaltered, while ventricular stroke power and work decreased at any given end-diastolic ventricular pressure. An unaltered ventricular ejection rate with a decreased ability of the ventricle to do work against an afterload can be expressed in the force-velocity curve (Anesthesia & Circulation, F. A. Davis Co., Philadelphia, 1964, p. 56). The mechanics of contraction of the isolated heart muscle were studied before and during the administration of methoxyflurane to determine the mechanism related to this discrepancy between velocity and force of myocardial contraction caused by methoxyflurane. *Methods:* Isometric and afterloaded isotonic contractions of eight papillary muscle preparations taken from the right ventricles of eight cats were recorded by use of an isotonic lever system at 22.0° C. The force velocity curve was obtained by taking the initial steady velocity of shortening (dl/dt) of an isotonic contraction and correlating this with the load. Power and work of isotonic contractions were obtained by multiplying (dl/dt) with the load, and the net shortening with the load, respectively. Dynamic stiffness (dp/dl) was calculated by dividing (dp/dt) (rate of force development) by (dl/dt) taken at the point where isometric changes to isotonic contraction. From the isometric force-time curves, the following time intervals were measured: (1) from beginning of stimulation to beginning of contraction, (2) from the stimulation to peak force development, and (3) from start of contraction to peak force development. *Results:* 1. The maximal force and the rate of force development during isometric contraction of the isolated heart muscle showed a dose-dependent decrease. The time between stimulation and peak force, and the time between the start of contraction and peak force exhibited dose-dependent reduction. However, the time between stimulation and start of muscle contraction was prolonged with increasing concentrations of methoxyflurane. 2. The force-velocity curves shifted to the left during methoxyflurane anesthesia. The decrease of the maximal force on the force-velocity curve was more pronounced than the decrease of the maximal velocity. Net shortening, power, and work of an isotonic contraction also showed a dose-dependent decrease during methoxyflurane anesthesia. 3. Dynamic stiffness was unaltered. *Conclusion:* In view of the findings that the time between stimulation and peak force development of isometric contraction of isolated heart muscle showed a dose-dependent decrease under methoxyflurane, it is reasonable to state that the duration of the active state as well as its intensity decreased under methoxyflurane anesthesia. The shift of the force-velocity curve to the left under methoxyflurane with a more pronounced decrease on its force-axis than on its velocity-axis can be explained by the shortened duration of the active state. (Supported by USPHS Grant HE01711-16.)

Stethoscope Performance in Transduction of Human Korotkov Blood Pressure sounds. C. E. WHITCHER, M.D., CHARLES A. COLE, JR., B.S., and CHARLES S. WEAVER, PH.D., *Stanford University School of Medicine, Stanford, Calif.* Clinical blood pressure measurement depends upon auscultation of Korotkov sounds through the stethoscope. Stethoscope evaluation is one phase of a continuing study which is attempting to relate the structure of Korotkov sounds to cardiovascular performance. Comparison was made between two stethoscope types by determining energy outputs at different frequencies. A microphone sensitive to audible and subaudible frequencies applied directly to the antecubital fossa served as a reference. Response of stethoscopes and microphone to Korotkov sounds was determined by spectral analysis. *Methods:* Subjects were five healthy awake nurses, ages 21–35. All data (Korotkov sounds, ECG, air pressure in blood pressure cuff) were FM-recorded on magnetic tape with a system bandwidth of d-c to 5 kHz. Controls were provided by direct application of the microphone to the fore-