because of the afferent sciatic stimulation) indicates that many other factors must operate to influence the definition of "depth of anesthesia." It would seem that definition of the status of observable functions would facilitate the transfer of information presently lost by the use of terms such as "lightly or deeply anesthetized." [*Supported by USPHS Grant B-1079.*]

A Method of Indirect Blood Pressure Measurement During Cardiopulmonary Bypass. DOUGLAS W. EASTWOOD, M.D. *Department of Anesthesiology, University of Virginia Hospital, Charlottesville, Virginia.* To circumvent the difficulties of detecting blood pressure during cardiovascular bypass, a method utilizing a photoelectric cell has been developed and used satisfactorily during most of our "heart pump" operations. Each arterial pulsation fluctuation in the blood volume of the vessel network causes fluctuating changes in the density of the tissue. Using a sensitive photoelectric cell, a low voltage light bulb and a transistorized, battery powered amplifier, these fluctuations were picked up from any vascular mass of tissue through which the light could be transmitted. These amplified fluctuations were recorded on a graphic recorder, or used to produce an audible tone. The time constant of the system was adjusted so that only rapid fluctuations in density will be detected. A technical description of the instrument has been reported (*Anesthesiology 20: 74, 1959*). The photoelectric cell and light source were placed on opposite surfaces of the finger of an adult or the wrist of a baby and the light intensity and amplifier sensitivity adjusted to produce an intermittent tone or movement of the needle on the meter with each pulse. A pneumatic cuff was wrapped around the arm and inflated above the point at which the signal of the fluctuations disappear. The cuff is then slowly deflated. The point at which the signal again appears approximates the systolic pressure. During the use of a pump oxygenator for heart surgery a pulse may be felt and Korotkow sounds heard if the pulse pressure is high. This is especially true if the heart is beating and the aorta is not clamped. When the blood flow is dependent entirely on the "heart pump," the pump stroke volume is small, the pulse pressure is small and not detectable by palpation or auscultation. The pulse monitor was capable of detecting the systolic pressure in these circumstances. During the past ten months cardiopulmonary bypass techniques were used in 57 cases in our hospital. The anesthesia was nitrous oxide to which was added one or more of the following: halothane, meperidine, succinylcholine, curare, and thiopental. In most of these cases the systolic arterial pressure was measured by this indirect technique. The patients ranged in age from 4 months to 51 years. The highest systolic pressure measured during use of the "heart pump" was 100 mm. Hg. Pressures were obtained by this method as low as 35 mm. Hg. When pressure fell below this point this method of pulse detection became unsatisfactory. Vasoconstriction was found to make the changes in tissue density too small to be detected, however a routine digital nerve block will remedy this situation. The validity of this technique was checked by direct arterial pressure measured by means of a Statham strain gauge and compared to the pressure recorded simultaneously by this indirect method. This method has been used also to measure systolic arterial blood pressures in infants and children, during hypothermia, and in obese patients.

Influence of Anesthetic Agents and Adjuvants Upon Intestinal Tone. JAMES E. ECKENHOFF, M.D., AND THOMAS H. CANNARD, M.D. *Department of Anesthesiology, University of Pennsylvania, School of Medicine, Philadelphia, Pennsylvania.* Measurements of intestinal tone were sought in 12 patients scheduled for abdominal operation whose intestinal tracts had been intubated with a Miller-Abbott tube. In the operating room, that portion of the tube leading to the balloon was connected to a strain gauge and intraluminal pressures were recorded on a Brush Recorder. Sufficient air to obtain an adequate recording was injected into the system to inflate the balloon. This was 30–60 ml., yielding a pressure of 5 to 15 mm. Hg. Control recordings were made for 10–30 minutes. Anesthesia was then induced and observations made of the influence of the various agents and adjuvants on bowel pressures. The posi-