effect of the oculocardiac reflex upon the carotid circulation is abolished. *Method:* Fifteen patients were investigated. Observations included: (1) direct ophthalmoscopy, (2) retinal artery pressure measurements with Baillart Ophthalmodynamometer utilizing the Magitot-Baillart conversion table for pressure readings in millimeters of mercury, (3) intraocular tension with Schiotz tonometer, (4) radial or femoral artery pressure by intraarterial catheter and straingauge. A self-retaining eyelid retractor was used with continuous saline humidification of the cornea. Readings were obtained before, during, and after cardiopulmonary bypass when clinical parameters appeared stable and uncomplicated. Anesthesia consisted N_2O-O_2-halothane and a muscle relaxant-combination. Three patients received 0.1 mg. phenylephrine intra-arterially introduced into the oxygenator. *Results:* The eyegrounds were very pale at the moment of the shift from pulsatile spontaneous circulation to nonpulsatile bypass circulation. In the first few minutes, it was difficult to observe any color difference between retinal arteries and veins, and in five patients there was a "fragmentation" of the blood columns in the peripheral retinal vessels. Normalization of the retinal circulation usually coincided with the return of the EEG to its pre-bypass pattern. Mean values and standard errors of intraarterial, retinal arterial, and intraocular pressures had an approximate ratio of 4.70: 1.27:1, respectively, and were similar before and after extracorporeal circulation. During extracorporeal circulation, a drop in all mean pressures occurred, without essentially altering the above described ratio. Phenylephrine administered during bypass increased markedly the mean level of intra-arterial pressure. There was only a slight change in the mean levels of the retinal arterial and intraocular pressures, and the ratio changed to 9.0:1.70:1. *Comment:* The reliability of the ophthalmodynamometric readings which are not absolute measurements, may be limited by excessive scleral rigidity, abnormal intra-cranial pressure, fatigue of the observer, refractive abnormalities, and slow replacement of the aqueous humor in the anterior chamber of the eye. However, these measurements are useful for comparative purposes. According to Poiseuille's Law, the pressure in the retinal arteries should be a resultant of the difference between the pressure in the internal carotid artery and the resistance to flow in the peripheral cerebral arterial network, which is essentially determined by the diameter of the cerebral arterioles. (Duke Elder, S.: System of Ophthalmology. St. Louis, Mosby, 1963, pp. 355–362.) We assume that the failure of phenylephrine to raise the retinal arterial pressure is due to cerebral arterial vasodilatation with decreased peripheral resistance, as a consequence of general anesthesia, low perfusion pressure, heparinization, and absence of pulsatile flow. Also, the vasoconstrictive response in the internal carotid tributary of man to neurogenic stimuli and pressure amines is minimal.

Tissue Thiopental Concentrations in the Newborn. Mieczyslaw Finster, M.D., Hisayo O. Morishima, M.D., Ph.D., Lester C. Mark, M.D., Peter G. Dayton, D.Sc., and L. Stanley James, M.D., *Departments of Anesthesiology, Obstetrics and Gynecology, and Pediatrics, College of Physicians and Surgeons, Columbia University and New York University Research Service, Goldwater Memorial Hospital, New York City.* It is well known that thiopental readily crosses the placenta and appears in significant concentrations in umbilical vein blood. However our study of plasma thiopental concentrations in the newborn following delivery under thiopental-nitrous oxide anesthesia (Amer. J. Obstet. Gynec. 95: 621, 1966) indicated that the drug administered during labor or delivery usually does not reach the fetal brain in concentrations sufficient to cause depression. Uterine contractions and compression of the cord may both be important in impeding free entry of thiopental into the fetal circulation. A third factor could be the progressive dilution of the drug before it reaches the arterial side of fetal circulation. Finally accumulation of thiopental in the liver, either by vascular stasis or by binding to liver proteins could also occur. *Methods and Results:* In order to test this last hypothesis, thiopental levels were determined in the plasma, liver and other organs of an anencephalic infant and in newborn guinea pigs. A highly sensitive and specific spectro-

photo fluorometric method was used for thiopental analysis. *Anencephalic infant:* The malformation having been diagnosed radiologically during labor, the mother was given a total of 2.250g. of thiopental in divided doses over a period of 2½ hours preceding delivery. Blood samples were obtained promptly after birth from both umbilical vessels and again at the age of 20 minutes (cardiac puncture). A maternal venous sample was withdrawn at delivery. The infant, weighing 2,200 g. expired 22 minutes after birth, tissue samples were obtained shortly thereafter. The highest concentration of thiopental was found in the subcutaneous fat, undoubtedly due to prolonged administration of the drug and its very high lipid solubility. Both lobes of the liver contained similar and substantial amounts of the barbiturate. On the other hand thiopental concentration in the spinal cord was surprisingly low. *Guinea pigs:* Distribution of thiopental in fetal tissues was determined following intermittent administration of the drug to the mother, or after its single injection into the umbilical vein of individual fetuses. For the intermittent intravenous technique 2 pregnant guinea pigs received injections of 0.5 ml. of 1.25 per cent thiopental totaling 50 and 62.5 mg., respectively, over a period of 45–60 minutes preceding abdominal delivery. Fetuses were stunned upon delivery, blood samples obtained (cardiac puncture) and organs removed for analysis. For the single injection into the fetal circulation two pregnant guinea pigs anesthetized with an intravenous injection of secobarbital (10 mg./kg.) were used. Prior to delivery of each fetus a loop of umbilical cord was exteriorized through a small incision in the amniotic sac and 2.5 mg. of thiopental 0.5 per cent was injected into the umbilical vein over a period of one minute. The cord was clamped at the end of the injection and the fetus sacrificed 2 minutes later. *Summary:* Thiopental concentrations in the fetal brain and spinal cord were equally low in both groups of experiments. When thiopental was injected directly into the fetal circulation extremely high levels were found in the middle lobe of the liver. This lobe is perfused mainly by the umbilical vein and on a weight basis contained almost one half of the injected dose. The fetal liver thus occupies a strategic position and decreases the amount of thiopental reaching the central nervous system during the peak placental transmission.

Antagonism to Neuromuscular Block by Germine Acetates. WERNER FLACKE, M.D., and MILTON H. ALPER, M.D., *Departments of Pharmacology and Anesthesia, Harvard Medical School, and Peter Bent Brigham Hospital, Boston.* Germine mono- and diacetate, semisynthetic ester alkaloids of the Veratrum family, markedly increase tension output of skeletal muscle in response to stimulation at subtetanic frequencies. Unlike previously investigated veratrum alkaloids, they do not cause bradycardia and hypotension in any dose. Their basic action is the conversion of the single muscle action potential normally elicited by a single conducted impulse into a brief period of tetanic firing. Since this also occurs in denervated muscle, the effect is, at least in part, located in the muscle proper and not at the neuromuscular junction (Flacke, W.: Arch. Exp. Path. Pharmakol. *240:* 396, 1961; J. Pharmacol. Exp. Ther. *141:* 230, 1963). *Methods:* The sciatic nerve was stimulated supramaximally in anesthetized cats at a basic rate of 0.1 second. Tension output of the gastrocnemius muscle was measured isometrically. Blood pressure, and in some experiments respiratory movements and inspiratory force, were also recorded. Drugs were given intravenously or intra-arterially. *Results:* When given during complete neuromuscular block, produced by d-tubocurarine, gallamine, decamethonium, or succinylcholine, the germine acetates had no effect on the muscle. However, when neuromuscular block was not complete, the injection of one of the germine acetates (1 to 3 mg./kg.) caused a prompt increase in tension output. The magnitude of the increase depended upon the magnitude of the block present. When one of the neuromuscular blocking agents was given as a single injection, subsequent administration of a germine acetate shortened the duration of the block and increased tension output to a level considerably higher than that existing during the control period. The duration of the block caused by a single injection of curare was shortened when curare was given in the pres-