tions, the important fact appears to be that the main amplitude component of the usual clinical EEG can be duplicated by the spread of focal occipital potentials.

Conclusions. It has been shown that the important characteristic *amplitude properties* of the alpha component of the normal human EEG, in the usual monopolar and bipolar derivations primarily depend on the attenuating properties of the tissue through which the potential difference is transmitted. Moreover, noting the correspondence between waveforms seen in the normal EEG and those produced by an artificial occipital electric dipole in the cadaver, it is clear that the spread of an occipital electric disturbance is an excellent model for the production of the amplitude characteristics of the basic alpha component of the normal EEG.

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Serial Studies of Oxygen and Carbon Dioxide Content of Human Cord Blood.

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The reports of human cord blood studies are based on one sample obtained either after vaginal or abdominal delivery. Several investigators obtained blood at cesarean section but so far as we know no one has described a method which permits repeated sampling of fetal blood.

Haselhorst and Stromberger[1] delivered the umbilical cord in 8 cesarean sections, performed under spinal anesthesia on patients not in labor, and stated that the oxygen content of both arterial and venous blood was less than that found after vaginal delivery. They attributed the increased oxygen content to the uterine contractions forcing more maternal blood through the placenta. Their average figures are given in Table I.

Eastman's[2] average figures for blood obtained after vaginal delivery are also listed. He delivered the cord in one cesarean section, clamped off a segment from which arterial and venous bloods were obtained.

We find it feasible in most cesarean sections to deliver the umbilical cord through a small incision in the uterus and either inject drugs into the fetal circulation or withdraw repeated specimens of fetal blood. Since most of our cesarean sections are performed under local anesthesia, ideal conditions are available for obtaining serial specimens of fetal blood with the fetus still *in utero*. We have drawn 2 to 3 cc of blood from the umbilical vein and artery. No more than 30 cc of blood should be taken from term babies and much less from premature fetuses. The time interval in these experiments was 5 minutes, but in some unreported studies of placental permeability it was 15 minutes.

An interval of 30 minutes is probably the maximum because further prolongation of the operation increases the danger of maternal infection. Furthermore, in operations performed under local or continuous caudal anesthesia there is a mental strain due to the operation and the uncomfortable position on the operating table.

The fetal heart rate must be counted frequently either by use of a sterile stethoscope or by palpation of the umbilical arteries. If the rate decreases below 100 per minute the baby's head is delivered, 0.3 cc solution posterior pituitary are injected into the uterine wall and after one minute the fetus is slowly delivered. After the uterus has contracted the cord is

[1] Haselhorst, G., and Stromberger, K., *Z. f. Geburt. u. Gynäk.*, 1932, **102**, 16.

[2] Eastman, N., *Bull. Johns Hopkins Hosp.*, 1930, **4**, 221.

TABLE I.

				No. 1-K		No. 2-M		No. 3-G	
	1	2	3	Control	After oxygen	Control	After oxygen	Control	After oxygen
Cord—Vol. %									
Vein—O_2 content	3.53	10.4	10.5	6.13	8.57	6.8	12.6	12.79	14.73
Saturation %			50.5	30.8	43.1	37.0	69.0	64.3	74.0
CO_2 content			45.9	46.53	43.10	44.55	41.3	42.2	39.10
Artery—O_2 content	0.94	3.40	3.3	2.14	2.83	2.6			
Saturation %			15.8	10.8	14.2	14.0			
CO_2 content				50.13	48.55	50.1			
O_2 capacity			20.8	19.85		18.2		19.9	
Maternal—Vol. %									
Vein—O_2 content			11.0	8.51		10.4		8.10	10.40
Saturation %			71.3	70.7		70.0		54.0	68.5
CO_2 content			43.3	46.04		40.7		40.52	39.24
O_2 capacity			15.4	12.03		14.9		14.8	

Haselhorst and Stromberger—2. Average vaginal. 1. Average cesarean delivery. Eastman—3. Average vaginal delivery.

stripped and clamped close to the fetus. This technic ensures a normal fetal blood volume. The blood for oxygen and carbon dioxide content is obtained with oiled syringes using 22-gauge needles. The usual amount of neutral potassium oxalate is used. The blood samples are kept in an ice bath and the analyses are completed as quickly as possible.

Data for the oxygen content of fetal blood before and after administration of 100% oxygen to the mother for five minutes are given in Table I and demonstrate the practicability of the method. Appreciable increases in the oxygen content are noted in the umbilical vein blood (arterial). The 3 patients were not in labor.

Data for the CO_2 content are also given. The Van Slyke and Neill constant volume apparatus was used. The oxygen capacity was calculated from the hemoglobin which was determined by the carbon monoxide method of Palmer. Eleven patients have been studied. Every experiment cannot always be completed; hemostasis of the uterine wall is at times impossible, the cord may become compressed, cord blood clots rapidly, etc.

Summary. A method is described by which repeated samples of human cord blood can be obtained over a short period of time. Undue prolongation increases the risk of the operation. The oxygen content of fetal blood is appreciably increased by the administration of oxygen to the mother.

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Phosphatase Activity in Chromatolytic Nerve Cells.*

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In nerve cells with axons extending into peripheral nerves, it is possible by simple nerve section to produce profound alterations in cytoplasmic structure and activities without causing cell destruction. These changes are fairly constant in their time course when pro-

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