10751 P

Electrokinesis in Endolymph as Possible Cause of "Galvanic" Falling and Past Pointing.

LEWIS J. POLLOCK, ISIDORE FINKELMAN AND I. C. SHERMAN.

From the Department of Nervous and Mental Diseases, Northwestern University Medical School, Chicago, Ill.

There are a number of differences between the response to the passage of electrical currents through the head and the response of nerves to electrical stimulation. In the former cases responses occur only upon the continuous passage of current and not on the make and break. In the latter the response follows the transient not steady state of current. In the former alternating current or faradic current produces no response, in the latter they are effective stimuli. In the former the direction of response is related to the direction of current, not in the latter. Since stimuli of a duration of .000033 of a second at 15000 stimuli a second were effective to produce a response, if the vestibular nerve were being stimulated directly it would indicate that the irritability of the vestibular nerve was as great or greater than that of a motor nerve, which is unlikely.

Because of these observations we believe that the passage of a current through the head does not stimulate the vestibular nerve or its connections directly to produce falling or past pointing.

It is suggested that some physical change in the endolymph is produced by the passage of current through the head. Using rectangular shaped unidirectional current of variable periods as stimuli, it was found that when the interval was 1 to 1, falling occurred at 2.6 milliamperes, when 1 to 3, at 1.39 milliamperes, and 1 to 7 at 0.71 of a milliampere. It is pointed out that this change is not the production of heat or electrolysis since the current per unit is not a constant in producing falling or past pointing.

Using repetitive condenser discharges as the stimulus, we found

TABLE I.

Voltage	Stimuli, per sec	Duration of stimuli, sec	Duration of interval, sec
120	22.3	.0027	.041
120	19.5	.0044	.050
120	16.4	.0096	.051
120	13.4	.014	.060
120	10.4	.024	.072—No falling

TABLE II.

Voltage	Stimuli, per sec	Duration of stimuli, sec	Duration of interval, sec
57	28.3	.004	.035
65	25.4	.004	.035
74	22.3	.004	.044
76	19.5	.004	.051

that to produce falling or past pointing, when the voltage at which the condensers were being charged was kept constant as the duration of the intervals between stimuli was increased by diminishing the frequency of stimuli, it was necessary to increase the duration of the stimulus.

When the duration of the stimulus was kept constant and the duration of the intervals lengthened, it was necessary to increase the voltage to produce falling or past pointing.

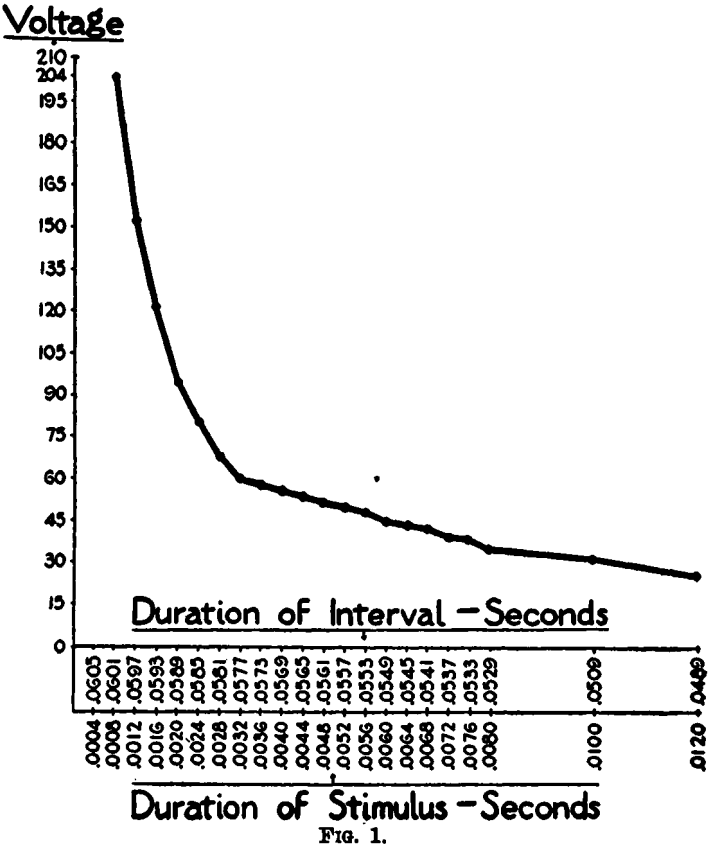

FIG. 1.

When the duration of stimulus was diminished by using condensers of lesser capacities and at the same time the duration of the interval increased, the frequency remaining constant, it was necessary to increase the voltage at which condensers were charged to produce falling or past pointing. (Figure 1.)

Because relationships of current, duration of stimuli and interval between stimuli, similar to those described in electrokinetic phenomena are also found in the production of falling or past pointing when a galvanic current is passed through the head, it is suggested that an electrokinetic change in the endolymph is responsible for the stimulation of sensory end organs, when a galvanic current is passed through the head.

10752 P

Normal Development and Regression of the Prostate Gland of the Female Rat.*

DOROTHY PRICE. (Introduced by Carl R. Moore.)

From Hull Zoological Laboratory, the University of Chicago.

In an earlier paper,[1] the normal embryological and post-natal development of the prostate gland of the male rat was described, and brief mention was made of the embryology of the female homologue. In young males, castrated at birth, the prostate continues to differentiate in the absence of the testes and maintains this differentiation for a limited period of time. The normal post-natal development of the female homologue has now been studied for comparison with the male and a portion of these data will be presented here.

Marx[2, 3] first described prostatic lobes in female rats and Korenchevsky[4, 5, 6] showed that female prostates, hypertrophied by androgens, were histologically identical with the ventral lobes of males. Estrogens produced no stimulation. Androgenic stimulation and

* This investigation has been aided by grants to the University of Chicago from the Rockefeller Foundation.

1 Price, D., *Am. J. Anat.*, 1936, **60**, 79.

2 Marx, L., *Arch. Entw.-mechan.*, 1931, **124**, 584.

3 Marx, L., *Z. Zellforsch mikroskop. Anat.*, 1932, **16**, 48.

4 Korenchevsky, V., *Nature*, 1935, **136**, 185.

5 Korenchevsky, V., and Dennison, M., *J. Path. Bact.*, 1936, **42**, 91.

6 Korenchevsky, V., *J. Physiol.*, 1937, **90**, 371.