

solution of heparin. The flask is again returned to the incubator for 2 or 3 hours. The concentration of the heparin should be just sufficient to keep the plasma in a fluid state over this period. The plasma is next removed and the flask left with a dry clot for another 2 days, when the process is repeated as before. This procedure allows a washing out of accumulated waste products with the Tyrode solution, and a replacement of food materials with the fresh plasma. And if this procedure be carried out regularly, the cells are provided with food materials not very different in quality and quantity from those supplied in the organism.

We have found the rate of proliferation, under these conditions, to be very low. However, cultures which have been so treated, and allowed to remain in the same clot for a month, have, upon histological examination, proved to be in just as healthy a condition as those which were allowed to grow vigorously in embryonic tissue juice according to the usual method. Under these conditions, we have a more ideal relationship between the individual cells of the colony. The cells become dependent upon each other. They adapt themselves to the poorer conditions in such a manner that their metabolism is reduced to a minimum and the rate of proliferation becomes so adjusted that a condition of equilibrium is reached between the supply of nourishment and the elimination of metabolic substances. And finally, it is believed that a condition is ultimately reached where cell death may induce new cell divisions, thus reestablishing the equilibrium.

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The Oestrous Hormone in the Urine of Pregnant Cows.*

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Through the kindness of Dr. L. J. Cole of the Genetics Department a number of pregnant cows were placed at our disposal to make a quantitative study of hormones in the urine. One of the points of interest found in this study was the great amount of the oestrous hormone present. A quantitative determination of the oestrous hormone in the urine of pregnant women has been recently

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reported by Veler and Doisy.¹ Ascheim and Zondek² have mentioned the presence of this hormone in the urine of pregnant cows. The data presented in this report are concerned with the quantitative relationship between the oestrous hormone in the urine of cows and the time of pregnancy. Twenty-four hour samples of the urine were collected and the hormone extracted with ether and then taken up in Mazola oil. A second method was also used in which the urine was neutralized, Berkefelded and injected without further treatment. The method of assaying the hormone was that of Allen and Doisy, rats being used as test animals.* The results obtained by these procedures are presented in the accompanying tables. In general the amount of the oestrous producing hormone increases as pregnancy progresses. The data seem to indicate an enormous increase of the hormone in the later days of pregnancy

TABLE I.
Analysis of Urine of Pregnant Cows.

No. of cow	No. days pregnant	No. cc. per 24 hour sample	No. rat units per 24 hours	Remarks
46B	31	14,150	0	Mazola oil
46B	57	9,100	0	" "
60A	44	6,000	41	" "
61B	188	6,800	186	" "
61B	214	2,750	215	" "
71A	128	11,925	307	" "
71A	154	4,000	266	" "
71A	270	7,100	4733	Injection of urine
62B	254	10,325	667	Mazola oil
62B	280	4,050	3242	" "
43D	261	4,450	483	" "
45A	167	6,000	960	Injection of urine
55A	260	5,850	3250	" " "
25C	280	9,950	6636	" " "

TABLE II.
Decrease of the Oestrous Hormone after Parturition.

No. of cow	No. days pregnant	No. cc. per 24 hour sample	No. rat units per 24 hours	Remarks.
62B	280	4,050	3242	Mazola oil prep.
62B		2,800	112	19 hrs. post partum. First sample post partum. Mazola oil prep.
62B		1,325	0	25 hrs. post partum. Second sample post partum. Mazola oil prep.

¹ Veler, C. D., and Doisy, E. A. PROC. SOC. EXP. BIOL. AND MED., 1928, xxv, 806.

² Zondek, B., and Ascheim, S., *Klin. Woch.*, vii, 1401.

* Three injections of material were made in 36 hours.

with a sudden decrease to little or none within the first 24 hours after parturition. Close analysis of the data shows certain discrepancies between them and the general statement just made. Cows in the same stage of pregnancy do not seem to give the same amount of hormone per day. Further, a cow may give more hormone in the early stages of pregnancy than at a later time as indicated in the case of cow 71A, table I. More data on these and other points are being collected and will be presented at a future time.

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The Histologic Effects Produced in Albino Rats by High Frequency Currents.

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Beginning in March, 1928, with the advice and help of H. R. Hosmer regarding the physical apparatus employed, a series of experiments was begun, the object of which was to ascertain the histologic effects produced in the animal body by high-frequency currents. A current oscillating at a rate of from 5 to 6 million cycles per second under a current strength of 2 to 4 amperes and a pressure of 3000 volts between the plate electrodes was employed. Anesthetized albino rats interposed between these electrodes, spaced from 3.5 to 6.0 cm., for time intervals varying from 4 to 30 minutes demonstrated a body-temperature rise directly dependent upon the duration of the exposure. Both rectal and abdominal temperatures of as high as 45° were obtained before the death of the rats. The most definite and constant cytologic results were produced in these rats, however, by rayings repeated on alternate days at rectal temperatures of from 40° to 42°, and especially when such body-temperatures were maintained over periods of time varying from 10 to 30 minutes.

Upon autopsy there was observable a definite diminution in the quantity of the body fluids and in blood volume. The ventricles of the heart were filled with clotted blood, usually in complete diastole. The periphery of the lungs, of the heart, and of the liver afforded evidences of an incipient coagulation necrosis. The blood vessels, likewise, in these superficial areas were dilated and filled with clotted blood. Such cytologic changes as were presented by the blood and bone-marrow are to be reported at a later date. The spleen was not