

to ammonium carbamate and is affected in the same way by acid, alkali, ammonia and carbon dioxide. The proof rests on the fact that no cyanate is formed by the enzyme.

We conclude that carbamate is formed in large amounts during the action of urease on urea in alkaline solution and that after the urease has been inactivated the carbamate decomposes to carbonate at a measurable rate. Our experiments indicate that all of the ammonia liberated from the urea passes through the ammonium carbamate stage. We hope to make further analyses investigating this point. There is no evidence of any intermediate product other than ammonium carbamate.

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### Phospholipid Content and Physiological Activity of Tissues.

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In tissues in differing states of physiological activity the phospholipid percentage was greater when the tissue was more active. In the corpus luteum of the pig the phospholipid content was about 3 times as great during its active state in ovulation and pregnancy as in the resting state. Cholesterol was not greatly different. Malignant tumors had about 3 times the content of phospholipid and twice the content of cholesterol as benign tumors. Mammary glands (rabbit) at the end of pregnancy had twice the phospholipid content of the resting gland, cholesterol remaining the same.

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### The Polynuclear Count in the Rat, with Special Reference to Vaginal Smears.

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The presence of polynuclear leucocytes in vaginal smears of the rat has been noted by Long and Evans,<sup>1</sup> who observed the presence

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<sup>1</sup> Long, J. A., and Evans, H. M., *Univ. of Calif. Pub.*, 1922, vi.

of such cells during certain phases of the oestrous cycle, no quantitative measurements being made. The present report deals with polynuclear counts made from blood and from vaginal smears taken simultaneously from the same animal. All data were obtained from healthy rats kept under ordinary laboratory conditions.

TABLE I.  
*Polynuclear count of blood and of vaginal smears.*  
Polynuclear counts

Stage of cycle	Blood					Vaginal					Weighted means
	Weighted means					Weighted means					
	I	II	III	IV	V	I	II	III	IV	V	
Oestrus	88	12	0	0	0						1.12
Metoestrus	93	5	2	0	0						1.09
Dioestrus	86	12	2	0	0	48	27	13	8	4	1.16
Dioestrus	84	15	1	0	0	62	28	7	1	2	1.17

Blood smears were prepared in the usual manner. The smears, upon drying, were fixed with methyl alcohol for one minute and were stained subsequently with Wright's blood stain. A few smears were stained with "Fadicit", only Solution I being used. Either

stain permits an easy identification of the polymorphonuclear neutrophils and counts may be made without difficulty.

Vaginal smears, obtained by means of a wire loop and clean cotton, were stained with Delafield's hemotoxylin. In making a polynuclear count, cells showing fragmentation or obvious distortion were omitted, the count including only cells possessing a distinct cytoplasmic outline.

It will be noted from Table I, a representative cycle, that the blood count is decidedly left-handed as compared to that of normal man, and that the vaginal smear count, while also decidedly left-handed as compared to man, is also somewhat right-handed when compared to the animal's own blood count. The average weighted mean of a group of 35 blood polynuclear counts is 1.09, with a standard error of  $\pm 0.0016$ , while the average weighted mean of a group of 20 vaginal polynuclear counts is 1.69, with a standard error of  $\pm 0.039$ .

The polynuclear count of the rat is similar to the polynuclear counts obtained by Simpson<sup>2, 3</sup> from the cow, the sheep and the horse. Each of these animals presents the interesting condition, therefore, of having most of the polynuclear leucocytes of the blood fall into the first 2 classes of the polynuclear count.

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### Effects of High Voltage Cathode Rays upon Germinal Epithelium of the Rat.\*

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A study was made of the effects of high voltage cathode rays on the spermiogenic epithelium of the male adult white rat. The animals were about 5 months old, apparently healthy and virile. The shaved scrotal area was exposed in front of the anodal window of the Coolidge cathode ray tube to a current of one milliampere, at voltages of 200,000 and 250,000, about equally divided as to number of animals. All raying of more than one second duration was given in one second periods with about one-half second between each.

<sup>2</sup> Simpson, Ethel D., *Quar. J. Exp. Physiol.*, 1929, xix, 309.

<sup>3</sup> Simpson, Ethel D., *Quar. J. Exp. Physiol.*, 1929, xix, 317.

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