on alternate days in conjunction with the menthol suspension. The urine was collected without catheterization in 24 hour periods, and total nitrogens and glycuronic acids were determined. Twelve amino acids and glucose were fed in this way and their influence upon the excretion of glycuronic acid was studied. The ratio of glycuronic acid to the increase in total nitrogen was noted. Five amino acids which form glucose in the animal body were used, namely: glycocoll, alanine, arginine, cystine, and glutamic acid. Glycocoll, alanine, and arginine had a tendency to increase the glycuronic output, while leucine, isoleucine, cystine and glutamic acid seemed doubtful in their action.

Valine, phenylalanine, and tryptophane, which are non-sugar-formers, have little effect on glycuronic acid increase, as might be expected. Two of the amino acids which appeared to have great influence in increasing the glycuronic acid output are tyrosine and histidine. This is rather unusual, inasmuch as tyrosine follows that path of catabolism leading to acetoacetic acid. Histidine forms neither glucose nor autocetic acid. It probably increases purine derivatives in the urine, such as, uric acid or allantoin.

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* The amino acids used in these experiments were purchased from Eastman Kodak Company.

[1] Mathews, "Physiological Chemistry," 1921, iii, 759. Publishers, Wm. Word & Co.

[2] Sherwin, C. P., *Physiol. Rev.*, 1922, ii, 238. Von Fürth, "Chemistry of Metabolism," trans. by Smith, 1916, 318.

[3] Quick, A. J., *J. Biol. Chem.*, 1926, lxx, 59.

[4] Quick, A. J., *J. Biol. Chem.*, 1926, lxx, 397.

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Differential Count of Leucocytes in Vagina of Rat During Oestrous Cycle.

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The quantitative relations of the types of leucocytes found in the vagina of the rat during the oestrous cycle are not yet clear. Long and Evans[1] state that, during the dioestrous cycle, the leucocytes are chiefly polymorphonuclear. Loewe and Lange[2] found that, though polymorphs are predominant, there are about half as many lymphocytes. No mention is made of the monocyte.

For thirty days I examined the lavages and smears of five apparently normal rats, staining the former with a dilute solution of methylene blue, and the latter with haematoxylin and eosin. Methylene blue could have been used for the smears with much less expenditure of time and energy. The types noted in the first hundred leucocytes encountered were recorded.

A clean pipette is filled with about 1 cc. of physiological salt solution and gently inserted into the vagina. The bulb of the pipette is compressed two or three times, finally released, and the pipette withdrawn. A drop of the lavage is placed on a slide and one drop of a 0.05 % aqueous solution of methylene blue added. A cover slip is applied and the lavage immediately examined. This method was first suggested by Dr. Carl G. Hartman, who found it of great advantage in his studies on the monkey. It is an easy procedure, requiring no elaborate staining technique.

There was no difficulty differentiating monocytes from lymphocytes. A large mononuclear, twice the size of a red blood corpuscle, containing a nucleus of variable crescentic shape, whose cytoplasm is packed with large granules, I considered a monocyte. The lymphocyte generally is smaller than the monocyte; its nucleus is spherical, and the cytoplasm practically clear. The polymorphs, of course, are unique.

A study of this material yielded quite different results from those obtained by Lange.[2] During the 30 days the lavages and smears of 30 metoestrous periods were examined. From the smears the following data were obtained:

Number of smears:	4	2	7	8	3	2	4
Per cent of polymorphs:	100	99	98	97	96	95	94
Number of smears:	12	9	9				
Per cent of lymphocytes:	0	1	2				
Number of smears:	4	6	11	5	4		
Per cent of monocytes:	0	1	2	3	4		

The lavages gave practically the same results as the smears. The polymorphs numbered 95 or more. The lavage may, therefore, be considered as trustworthy a method as the smear.

Conclusion: The predominant type of leucocyte in the vaginal mucosa of a normal rat is the polymorphonuclear; lymphocytes are found in small numbers varying from 0 to 2 %; and monocytes from 0 to 4 %.

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[1] Long, J. A., and Evans, H. McL., Memoirs of the University of California, 1922, vi, 18.

[2] Loewe, S., and Lange, F., *Ztschr. f. exp. Med.*, 1926, li, 289.