the concentrated solution is added alcohol until the solution becomes quite cloudy. On standing in the icebox canavanine crystallizes out. The crystals are washed with alcohol and placed in a desiccator. M. P. 171° C. (decomposition). Although this is a lower decomposition temperature than that reported by Kitagawa[2] and co-workers and by Gulland and Morris[3] who found the free base to decompose at 182° C., a sample kindly furnished me by Dr. Kitagawa behaved in the same manner in my hands as the samples prepared by me.

The values found for carbon and hydrogen 34.14% and 7.01% respectively agree closely with the theoretical values 34.08% and 6.87%. The value found for nitrogen 31.21% was somewhat lower than the theoretical value of 31.81%. It may be noted that the preparation used by Gulland and Morris in their study of the structure of canavanine gave a value of 30.7% for nitrogen. Kitagawa has reported values similar to that obtained by me. However the low nitrogen value does not perceptibly affect the data presented in this report.

Conclusions. The spatial configuration of dextrorotatory canavanine has been determined by the method of Lutz and Jirgensons. It was found to be in agreement with that of the other naturally occurring amino acids and should therefore be designated as l(+) canavanine. A simplified procedure for the purification of the canavanine flavianate prepared from Jack Bean has been described.

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Effect of Subtotal Nephrectomy upon Estrous Cycle of the Albino Rat.

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In a previous study of experimental hypertension in the rat,[1] it was found that subtotal nephrectomy was followed by a progressive increase in blood pressure over a period of 3 to 4 months. Daily vaginal smears from a few females that had developed hypertension as a result of this operation revealed marked abnormalities in the

2 Kitagawa, M., *J. Biochem.* (Japan), 1937, **25**, 23.

3 Gulland, J. M., and Morris, C., *J. Chem. Soc.*, 1935, 763.

1 Diaz, J. T., and Levy, S. E., *Am. J. Physiol.*, 1939, **125**, 586.

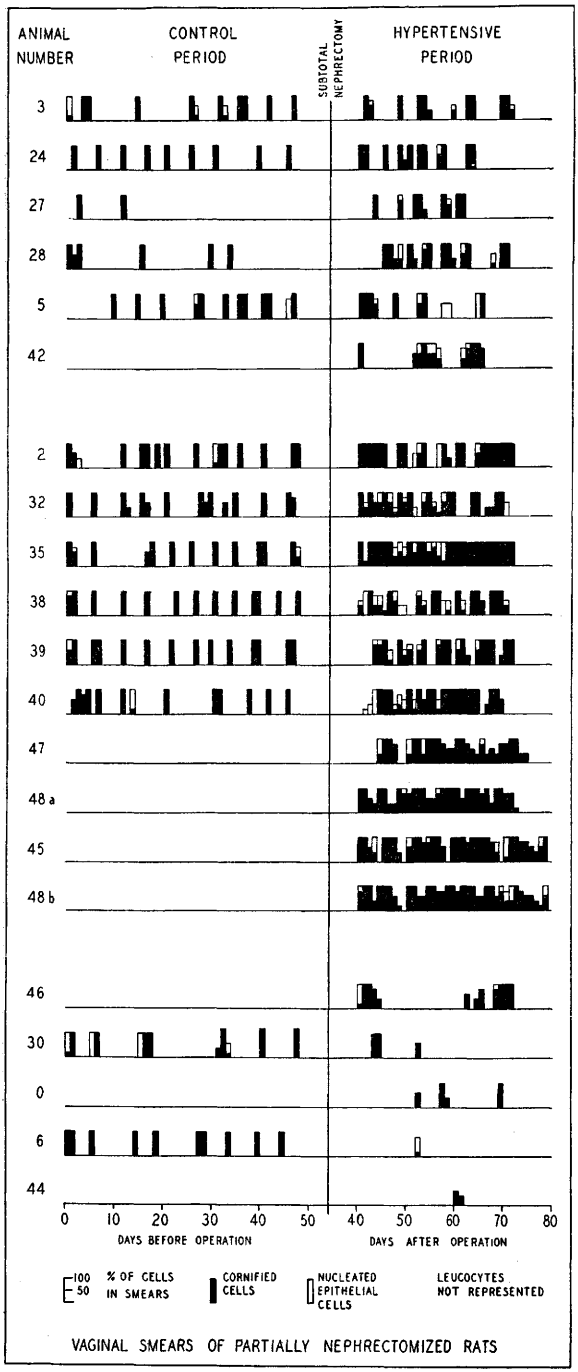

CHART 1.

Vaginal smears of rats subjected to subtotal nephrectomy. Symbols indicate relative proportion of cornified cells and nucleated epithelial cells, respectively. Absence of symbols indicates smear of diestrous type.

estrous cycles. In view of the latter observation, it seemed advisable to obtain additional and more conclusive data on the influence of subtotal nephrectomy upon the estrous cycle. Accordingly, the estrous cycles of 40 adult, healthy female albino rats were followed by means of daily vaginal smears for a control period of 50 days. These animals were then subjected to subtotal nephrectomy by a method described previously.[1] After sufficient time had elapsed for the development of hypertension, vaginal smears were made daily for a period of 35 days. Blood pressures were recorded during the control period and again 3 to 4 months after nephrectomy. Blood pressure was measured by the method of Diaz and Levy.[2] At the end of the experimental period the animals were sacrificed and the weights of the ovaries and pituitaries recorded.

Thirteen of the animals subjected to the above procedures survived

TABLE I.
Blood Pressures and Organ Weights of Rats Subjected to Subtotal Nephrectomy.

Rat No.	Blood pressure* before nephrectomy		Blood pressure* 3-4 mo. after subtotal nephrectomy		Organ wts†	
	Systolic	Diastolic	Systolic	Diastolic	Ovaries	Pituitaries
I 3	110	75	—	—	37.5	6.2
24	120	75	225	125	21.0	4.8
27	105	60	227	125	26.2	7.5
28	120	80	—	85	16.2	4.6
5	120	72	—	—	37.1	6.8
42	110	50	250	140	20.0	3.9
II 2	125	75	220	130	16.6	5.0
32	120	76	220	120	24.5	3.5
35	110	60	—	—	—	—
38	110	78	210	112	15.2	3.1
39	105	58	180	105	14.4	3.7
40	110	75	170	100	11.5	7.0
47	115	60	190	120	21.7	8.6
48a	120	60	260	136	20.0	4.2
45	105	50	210	120	25.0	4.2
48b	120	75	250	160	18.0	4.7
III 46	120	60	270	170	—	—
30	120	85	190	116	26.4	4.1
0	110	74	215	110	28.0	5.3
6	110	65	170	95	12.5	4.6
44	120	55	200	115	—	—
Avgs	114.5	67.5	215.1	121.3		
20 normal rats					26.0	6.8
Group I					26.3	5.63
Groups II and III					19.4	4.8

*In mm of mercury.
†In mg per 100 g body weight.

[2] Diaz, J. T., and Levy, S. E., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 402.

for 3 to 4 months and remained in good physical condition throughout the experimental period. Observations on these 13 animals and similar observations on 8 rats which were subjected to the same experimental procedures but whose cycles were not observed prior to nephrectomy are presented in Table 1 and Chart 1. The changes in blood pressure (Table 1) were similar to those described previously.[1] Prior to nephrectomy, the estrous cycles were, with few exceptions, normal. During the experimental period, practically all of the animals exhibited abnormalities of the cycle. These abnormalities were of 3 general types, characterized, respectively, by: (1) minor deviations from normal, (2) prolonged periods of continuous estrus, and (3) complete or almost complete absence of estrus (Chart 1). There was no correlation between the type of vaginal disturbance and the degree of hypertension.

These results indicate that disturbances of the reproductive cycle may result from subtotal nephrectomy and, further, that this condition is capable of causing cyclic abnormalities of 3 different types. As a result of studies carried out previously in this laboratory,[3] it has been demonstrated that cyclic disturbances of these same 3 types may result from other and quite different lesions; namely, (1) extreme partial castration and (2) partial hypophysectomy. Observations reported recently by Dey, Fisher, Berry and Ranson[4] indicate that hypothalamic lesions also may give rise to cyclic abnormalities of these 3 types.

From these observations it is clear that functional abnormalities of the female genital tract may result from lesions of the ovaries or from extra-ovarian lesions of either an endocrine or non-endocrine nature, that lesions of a single type may give rise to disturbances of quite different types, and that disturbances of a single type may result from quite different lesions.

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[3] Burch, John C., McClellan, G. S., Johnson, C. D., and Ellison, E. T., *J. A. M. A.*, 1937, **108**, 96.

[4] Dey, F. L., Fisher, C., Berry, C. M., and Ranson, S. W., *Am. J. Physiol.*, 1940, **129**, 39.