

this drug in sufficient concentration might be the direct cause of the primary irritation which subsequently resulted in a necrosis of the mucosal lining, it is difficult to conceive of a sharp restriction of this excretory function to only those cells of the colon mucosa which occupy the position of the ulcer. No other colon ulcer was found in this series. On the other hand, it is not unreasonable to assume that mercurochrome is excreted through the small intestine mucosa even though the experimental evidence for this feature is difficult to obtain. Certainly the enteritis which has been reported by Young and Hill is explicable upon this basis. Assuming that a certain amount of mercurochrome well diluted is excreted through the small intestine mucosa, the rapid absorption of fluid from this intestinal content upon arrival and stasis in the caecum might well increase the concentration of the chemical to the degree that its corrosive action becomes manifest upon that portion of the colon mucosa where that concentration is greatest. This is the only hypothesis which appears plausible to the mind of the author.

4010

Response of High Protein Diets and Unilateral Nephrectomy During Reproduction in the Rat.*

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This study was undertaken to determine the extent to which the task of excretion of nitrogenous katabolites could be intensified in the organism by simultaneous reduction of kidney tissue, reproduction with lactation and high protein intake and to observe the physiological adjustments made to these conditions. Unilateral nephrectomy was performed on adult female rats which were placed immediately on the experimental rations and, as soon as the regular oestrous cycle was reestablished, were mated. The weight of the litters at birth and at weaning were compared and lactation closely observed during this time. Some of the mother rats were killed

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after the first litter was weaned and others were bred one or more times further, and then killed.

Reproduction on the protein diets was fairly successful but lactation was definitely deficient until certain changes were made in the experimental food. In Table I is given a summary of the high protein rations and control low protein rations fed.

TABLE I.
Summary of Basal Diets.

HIGH PROTEIN		
Ingredients	Range of percentages of ingredients in the group of high protein rations	
	%	%
Casein*	72-86	
Egg albumen (cooked and dried).....		72-86
Salt mixture (Osborne and Mendel).....	4	4
Added CaCO ₃	0-4	0-4
Butter fat	0-10	0-10
Wheat embryo	0-20	0-20

LOW PROTEIN		
Ingredients	Range of percentages of ingredients in the group of low protein rations	
	%	%
Casein*	20	
Egg albumen (cooked and dried).....		20
Cooked starch	54-66	54-66
Salt mixture (Osborne and Mendel).....	4	4
Added CaCO ₃	0-1.67	0-1.67
Butter fat	0-10	0-10
Wheat embryo	0-20	0-20

DAILY ADDITIONS TO BASAL RATION	
Yeast*	1-3 gm. (depending on the period in reference to reproduction)
Cod liver oil	0-1½ cc.
Lettuce	0-15 gm.

* Portions of either yeast or casein were irradiated for each ration.

Renal enlargement calculated on the basis of increase in weight of the remaining (left) kidney over the "normal" kidney weight corresponding to the actual heart weight ranged from 219 to 29% in the animals on the protein-rich rations and from 58 to 7% in those on the low-protein control food. The degree of renal enlargement appeared to be due largely to 2 factors, namely, to the concentration of dietary protein and to the extent to which the maternal organism was called upon to satisfy the nutritional demands of the suckling young. The length of time on the ration after nephrectomy, the

age of the animal, and gestation unaccompanied by lactation, were comparatively negligible factors in the renal enlargement under the conditions of these experiments.

Blood urea determinations showed that in the nephrectomized control mother rats the values rose from a normal of 23-44 mg. per 100 cc. to 60-70 mg. during lactation, while the urea concentration for the rats on the high protein ration rose from the "normal" to 66-130 mg. after nephrectomy during pregnancy and to a content as high as 188 mg. during lactation. These high values were not due to changes in blood concentration in general.

A few of the rats which were subjected to the greatest reproductive strain and which were given the high protein ration for periods varying from 106 to 187 days, showed renal lesions comparable to those described by Moise and Smith.¹

4011

Further Studies on the Life History of *Blepharisma Undulans*.

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Studies on the life history of *Blepharisma undulans* were carried on for just 6 years, all the animals employed being the progeny of a single individual isolated November, 1921. The work was planned to determine, in particular, the viability of this infusorian in the absence of fertilization, and the effects of fertilization on the rate of reproduction, in an attempt to broaden the results from our earlier studies on *Paramecium aurelia*¹ and *Spathidium spathula*.² A preliminary statement of the characteristics of this race of *Blepharisma undulans* was published in 1922,³ and a summary of the chief experimental results was presented in 1927.⁴

The present communication is to reiterate the results previously presented in the light of the final year of study of the culture.

In brief, the conclusions derived from *Paramecium* and *Spath-*

¹ Moise, T. S., and Smith, A. H., *J. Exp. Med.*, 1927, xlvii, 27.

¹ Woodruff, L. L., *Quar. Rev. of Biol.*, 1926, i, 436.

² Woodruff, L. L., and Spencer, *PROC. SOC. EXP. BIOL. AND MED.*, 1921, xviii, 240, 303; *J. Exp. Zool.*, 1924, xxxix, 133.

³ Woodruff, L. L., and Spencer, *PROC. SOC. EXP. BIOL. AND MED.*, 1922, xix, 339.

⁴ Woodruff, L. L., *PROC. SOC. EXP. BIOL. AND MED.*, 1927, xxiv, 769.