

6. Following a period of inhibition induced by colonic stimulation the jejunum shows a period of exaggerated activity lasting as long as 10 minutes.

7. A distension stimulus insufficient to cause jejunal inhibition may cause increased motility even during the time of its application in the colon. There is some indication of this in the work of King. The view that the post-stimulation hypermotility is also the positive result of milder stimulation bringing into action an accelerator system rather than a "rebound" or "after-effect" phenomenon, is made more tenable and deserves further consideration.

8. Distension of the rectum results in contractions at this point. We have, however, been unable to verify the claim of Percy and Van Liere that contractions arise wherever the gut is distended. In fact, 15 to 30 cm. from the anus distension was followed by progressive relaxation. Defectory contractions were observed only when the balloon was close to the anus.

9. The jejunal contraction rate is remarkably constant varying very little from an average of 15.5 contractions per minute. This is not influenced in any way by changes in the respiratory rate.

Numbers 1, 2, and 6, corroborate the findings of others whose work is here cited.

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Dietary Requirements for Fertility and Lactation.* XVI. Potency of "Vitavose"† versus Dehydrated Yeast in Vitamin B.

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Yeast and wheat embryo are the 2 most potent sources of vitamin B. I have demonstrated¹ that, while a cold 75% ethyl alcoholic extract of 6.5 gm. whole wheat embryo per animal per day furnishes enough vitamin B for excellent growth, it is necessary to supply the same alcoholic extract of at least 22.4 gm. per lactating rat daily to furnish enough vitamin B for normal lactation.

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† "Vitavose" is a commercial wheat germ extract manufactured by E. R. Squibbs & Sons, New York. It is used extensively by some nutritional laboratories as a source of vitamin B for growth.

¹ Sure, B., *J. Biol. Chem.*, 1927, lxxiv, 55.

Recently I have perfected a quantitative biological method for the study of vitamin B requirements for lactation.² The technique consists of administering to lactating mothers (*Mus norvegicus albinus*) rearing litters of 6 young at the first plateau curve of the nurslings (showing depletion of vitamin B reserves of the mothers) quantitatively graduated amounts of dehydrated yeast, or concentrated extracts therefrom, separately from the ration. By such technique it became apparent that it was necessary to furnish 1500 mg. of Harris yeast[‡] daily to the lactating mothers to enable them successfully to wean their litters. This amount of yeast dosage, we have determined, is approximately 3 times that required for optimum growth of the adult and non-lactating rat.

We have had occasion² to examine by our rather delicate biological method the potency of a dehydrated baker's yeast.§ Twenty-three lactating mothers with litters of 138 young were employed to assay that brand of dehydrated yeast. Sixteen mothers successfully weaned 88 out of 96 young on a daily dosage of 1500 mg., or a lactation efficiency index of 91.6%; and 7 mothers weaned 41 out of 42 young on a daily dosage of only 1200 mg., or a lactation efficiency index of 97.6%. Our method discloses that, in so far as lactation requirement is concerned, the Harris yeast, claimed to be a concentrated extract from brewer's yeast, has no greater biological value than the "Federal" brand of dehydrated baker's yeast.

In this communication our results on the biological value of "Vitavose" (which is used by a number of investigators apparently successfully for vitamin B growth requirements of the dog)³ as a source of vitamin B for lactation are briefly summarized, the findings of which may be of interest to other workers engaged in studies of dietary requirements for milk secretion.

We were very much surprised to find, in view of the manufacturer's claim that the vitamin B content of "Vitavose" is equal to that of dry brewer's yeast, that as much as 2500 mg. of that product administered daily to nursing mothers at the critical point of the depletion of her vitamin B reserves are absolutely ineffectual for the physiological function of lactation. In addition to the curative method we have also employed the preventive method of administering "Vitavose" to the lactating mothers from the date of the birth

² Sure, B., *J. Biol. Chem.*, 1928, lxxvi, 673.

[‡] The "Harris yeast" is a commercial extract from brewer's yeast.

[§] The brand of that dehydrated yeast is "Federal," furnished by the Eli Lilly & Co., Indianapolis, Ind.

³ Williams, Geo. A., *Am. J. Physiol.*, 1927, lxxxiii, 3.

of the litters but without any success. We have employed 18 mothers which were allowed a total of 108 young to be reared, the daily dosage allowed the mothers was 1500 to 2500 mg. and the infant mortality was 100%. When at the critical point in lactation a daily dosage of 2500 mg. of "Vitavose," which proved a failure as a source of vitamin B for milk secretion, was replaced by a daily allowance of 1500 to 1800 mg. of dehydrated brewer's yeast (furnished by the Schlitz Beverage Co., 7 years old and which might have even deteriorated in vitamin potency due to aging) lactation was not only improved but the majority of the young were successfully weaned.

"Vitavose" compared with dehydrated brewer's yeast or dehydrated baker's yeast proved to be a complete failure as the only source of vitamin B for lactation.

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**A New Means of Control of Action of Ciliated Epithelium.
Effect of Moisture.**

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It has been proved by the authors that ciliary movement, though initiated automatically, is regulated, like movement of other types of visceral contractile tissue of higher organisms (vertebrate), by sympathetic and parasympathetic nervous acceleration and inhibition, and by sympatho- and parasympatho-mimetic types of chemicals. We here present another factor of control of the rate of activity of this tissue, not described heretofore, namely, moisture. We have found during the last 2 years that the propulsive power of ciliated epithelium is absolutely dependent upon the presence of a surface film of fluid, since this power is completely paralyzed by drying. The method for determining ciliary speed rate was the same as that formerly reported.¹ The average time in seconds required for a fine, light particle upon the mucus membrane of the palate and pharynx of the frog to cross the field of a binocular microscope was

¹ McDonald, James F., Leisure, C. E., and Lenneman, E. E., *Proc. Soc. Exp. Biol. and Med.*, 1927, xxiv, 968.