

about the same manner this time (1/288) as before (1/285). Likewise those who had had previous typhoid vaccine produced agglutinins in comparable titers in this series (1/113) as in the previous group (1/162).

It is interesting to note, however, that when the 2 groups are combined, so that we have a total of 135 individuals instead of 45, the averages again return to the relation found in the first experiment, those who had had typhoid fever averaging 1/287, those who had had previous typhoid vaccine 1/143, and those who had had neither 1/115. The reversal of the average in the one group in the second experiment was produced by the high agglutinin titers of 4 students. There were individuals with just as high titers in the previous study, but chance happened to throw 4 such students into a small group of 9 in the latter instance and there were only 4 with titers as high in a group of 34 in the first experiment. No doubt if there were any way of proving it, we would find that these individuals belong in the group of so-called natural immunes occurring in the population in general.

Practically all of the other conclusions drawn in the study made previously are confirmed by this second series of observations, and the figures will not be repeated here.

This reversal of averages in a small series emphasizes the danger of drawing conclusions from too few observations. If the second experiment had been the only one performed the author would no doubt have published a note including a conclusion which has been drawn by others from similar small series of observations, but which appears to be the reverse of the actual facts.

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Some Effects of the Vitamin B Complex on Appetite and on Utilization of Food.

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The relation of the vitamin B complex to the rate of growth, to the consumption of food and water and to the utilization of food in rats has been studied. The Evans and Burr diet (purified casein—25, sucrose—75, salt mixture—4) was used and was sup-

TABLE I.

Group	No. of rats	No. of days	Total gain in wt.		Total calories	Daily Dietary Supplement*
			low-high	average		
Restricted			gm.	gm.		
1	11	40	93-113	102	1365	0.5 gm. yeast
2	12	40	95-111	103	1365	0.5 gm. yeast + 0.5 gm. liver
3	12	40	92-118	104	1365	0.15 gm. yeast + 0.85 gm. liver
4	10	40	90-125	108	1380†	5 drops tikitiki + 0.1 gm. autoclaved liver
<i>Ad Lib.</i>						
5	10	80	161-238	204	—	Stock control diet
6	14	80	141-191	163	3230	0.5 gm. yeast
7	10	80	155-266	207	3440	0.5 gm. yeast + 1.0 gm. autoclaved liver
8	10	80	109-152	131	2660	1.0 gm. liver
9	10	80	138-204	179	3284	0.15 gm. yeast + 0.85 gm. liver
10	10	80	171-240	202	3710	0.5 gm. yeast + 0.5 gm. liver
11	12	80	142-212	186	3330†	5 drops tikitiki + 0.2 gm. autoclaved liver
12‡	12	80	162-275	219	3570†	5 drops tikitiki + 1.0 gm. autoclaved liver

* Each rat received 9 drops cod liver oil daily.

† Tikitiki not included in calculated value.

‡ Six of these rats received 10 drops of tikitiki daily during the first half of the experimental period. Inasmuch as the extra tikitiki was without effect the daily supplement was decreased to 5 drops during the remainder of the experiment.

plemented daily with 9 drops of cod liver oil. The B complex was supplied by daily additions of one or more of the following: whole dried hog liver (high B₂-low B₁), autoclaved liver (high B₂), whole dried yeast (high B₁-moderately high B₂), tikitiki (high B₁). Male rats were placed on the experimental diet when 50 gm. in weight and were kept in individual raised cages. Some of the data are shown in Table I. Groups 1 to 4 were restricted in food consumption to approximately the same number of calories. The remaining groups were fed the basal diet *ad libitum*.

The weight increments for the first 4 groups were surprisingly uniform in spite of the fact that only one of the 4 supplements (Group 2) was adequate for optimum growth when the basal diet was fed *ad libitum* (Group 10). The results with Group 4 were particularly interesting because of the relatively low concentration of vitamin B₂ required for satisfactory utilization. In these ex-

periments the utilization of food was apparently unaffected by considerable variation in the amounts of B₁ and B₂ furnished in the supplements.

On the other hand, the appetite of the rats was markedly affected by the nature of the supplement. If either tikitiki (B₁) or autoclaved liver (B₂) was used as the source of the B complex appetite failed and growth did not occur. However, the combination of tikitiki and autoclaved liver resulted in optimum growth (Group 12); i. e., growth as good or better than that of the stock control rats (Group 5). The difference between Groups 6 and 7 and between Groups 11 and 12 was largely due to the appetite-stimulating effect of the autoclaved liver. A similar effect, due to B₁, was evident in the increased food consumption resulting from the partial substitution of yeast for liver in Groups 8, 9 and 10.

Although the factor in autoclaved liver may not be as necessary as the factor in yeast for efficient utilization of ingested food,¹ nevertheless, its effect on appetite was of importance in bringing about optimum growth on the purified diet. The experiments indicated that the influence of the antineuritic vitamin (B₁) on appetite may not be as specific as was suggested by Sherman and Sandels.² Burack and Cowgill³ concluded from experiments on dogs that either the antineuritic vitamin was the sole appetite factor or another substance, not vitamin G (B₂), was required to supplement the antineuritic factor. Our own experiments emphasize the importance for normal appetite of *both* the antineuritic vitamin *and* another factor which is found in autoclaved liver.

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Effect of Splenectomy and of Other Surgical Procedures upon Circulating Blood Platelets (Rabbits).

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It is a well established fact that splenectomy in the normal ani-

¹ Griffith, W. H., and Graham, C. E., *PROC. SOC. EXP. BIOL. AND MED.*, 1929, **26**, 862.

² Sherman, H. C., and Sandels, M. R., *J. Nutrition*, 1931, **3**, 395.

³ Burack, E., and Cowgill, G. R., *PROC. SOC. EXP. BIOL. AND MED.*, 1931, **28**, 750.