

The results are of interest in connection with the recent paper of Grafe, Reinwein and Singer,<sup>2</sup> who found that the rates of respiration of surviving tissues of animals varying in size from the mouse to the ox, are of substantially the same magnitude, whereas the oxygen absorption per kilogram of the whole living animal is some 20 times greater for the mouse than for the ox, thus demonstrating that the constant relation between metabolism and surface area is a function of the intact animal, and not a result of inherent characteristics of the protoplasm. These authors seek an explanation in considerations of oxygen supply to the tissues and the relative number of patent capillaries. In the case of our thyroidless rats the metabolism of the living animal is 25 to 30 per cent below the average normal, as is also the respiration of its isolated tissues under conditions of maximum oxygen supply.

My thanks are due to Professor P. E. Smith, who gave me the thyroidectomized animals. Further work is in progress.

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<sup>1</sup> Warburg, O., *Biochem. Z.*, 1923, cxlii, 317.

<sup>2</sup> Grafe, E., Reinwein, H., and Singer, *Biochem. Z.*, 1925, clxv, 102.

### 3358

#### Influence of Age on Degree of Renal Hypertrophy Produced by High Protein Diets.\*

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*From Stanford University Medical School.*

Three adequate diets which contained 18 per cent, 31 per cent and 70 per cent of protein in the form of casein, which differed only in respect to a replacement of cornstarch and lard by casein, were fed to three groups of male albino rats from the time they were 26 days old until they were 70 days of age. The animals were then killed and the kidney weights ascertained. Table I shows that as the amount of protein increased there was a considerable increase in the weight of the kidney.

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TABLE I.  
*Protein Intake and Kidney Weight in Young Rats.*

Protein eaten per rat per day.	Average kidney weight.	Average body weight.	Number of animals.
gm.	mg.	gm.	
2.52	646	159	25
4.39	835	199	18
10.44	963	149	29

The same diets were also given to adult rats from the time they were 346 days of age until they were 400 days old. Table II shows that the increase in the consumption of protein had little effect on the weight of the kidney in these older rats.

TABLE II.  
*Protein Intake and Kidney Weight in Adult Rats.*

Protein eaten per rat per day.	Average kidney weight.	Average body weight.	Number of animals.
gm.	mg.	gm.	
2.14	1034	351	22
4.10	1102	398	13
7.13	1145	299	26

3359

### Do High Protein Diets Increase Weight of Kidney Because They Increase Nitrogen Excretion?\*

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The experiments cited in the preceding note<sup>1</sup> served as controls for experiments in which the same order of magnitude of increase in nitrogen consumption was obtained by the administration of urea instead of protein. The results given in Table I suggest that the simple hypothesis of a work hypertrophy may be inadequate as an explanation for the increased kidney weight in young rats, and demonstrate that in adult rats a marked increase in nitrogen consumption may have no effect on the weight of the kidney.

\* This work was aided by a grant from the Committee on Scientific Research of the American Medical Association.