larly variable, but with a tendency to greater abundance, especially in the interstitial tissue. Liposomes of variable size may occur in the epithelium of the papillary ducts and surface of the pyramids. They are also very frequent in the epithelium of the loop of Henle, which also often contains fatty casts. Borland and Jackson[5] thought that the fat in these casts is probably excreted through the convoluted tubules. There is no evidence for a glomerular origin.

In the direct controls (on high carbohydrate diet) as well as the "cured" group the amount of renal fat is likewise usually somewhat increased in comparison with that found in the normal stock diet controls. This is in agreement with Borland and Jackson.[5] Wegelin[6] also found increased fat in the renal epithelium and interstitial tissue of animals on high carbohydrate or fatty diets. He interpreted this as evidence of renal secretion of excess fat. The inanition controls of the present series likewise show a tendency toward increased renal fat, which is a typical effect of inanition.[4]

In summary, the test rats on fatless diet show no apparent change in the amount, character and distribution of the visible (stainable) fats in the trachea, lung and skin. The decrease of fat in the tela subcutanea is probably due to the moderate emaciation of the test rats. The frequent increase of fats and lipoids in the liver and kidney may be ascribed to the effect of 2 factors—the high carbohydrate diet and the state of general undernourishment. It may, therefore, be concluded that the fatless diet apparently produces no *specific* changes in the visible fats and lipoids of the organs examined.

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Factors which Determine Renal Weight. XVII. Influence of Age.

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We have concluded (MacKay and MacKay[1]) that in the albino rat the kidney weight has practically the same relation to body surface at all ages. In a broad sense this is true. However, a close inspection of the data presented at that time, omitting the less reliable figures obtained after 400 days of age, shows a slight but definite

[6] Wegelin, C., *Berl. klin. Wchnschr.*, 1913, **50**, 2125; 2190.

[1] MacKay, L. L., and MacKay, E. M., *Am. J. Physiol.*, 1927, **83**, 191.

fall in the kidney weight: body surface ratio with increasing age. It has seemed desirable to call attention to this fact and to point out the cause.

Attention has been drawn (MacKay and MacKay[2]) to the decrease in the caloric intake with increasing age so that with a given protein concentration in the diet the older the rat the less protein is ingested each day in relation to body surface. The protein taken in the food has been shown (MacKay and MacKay[3]) to be an important factor in determining the weight of the kidneys. This relationship is expressed for casein as protein intake = 0.0183 renal weight — 2.75. With this formula there are 150 mg. of kidney per 100 sq. cm. body surface with a zero protein intake. Calculated from the latter factor any kidney weight above 150 is then due to the dietary protein. Some of our data have been corrected in this manner and reduced to a zero protein intake basis. The original and corrected data are plotted in Fig. 1.

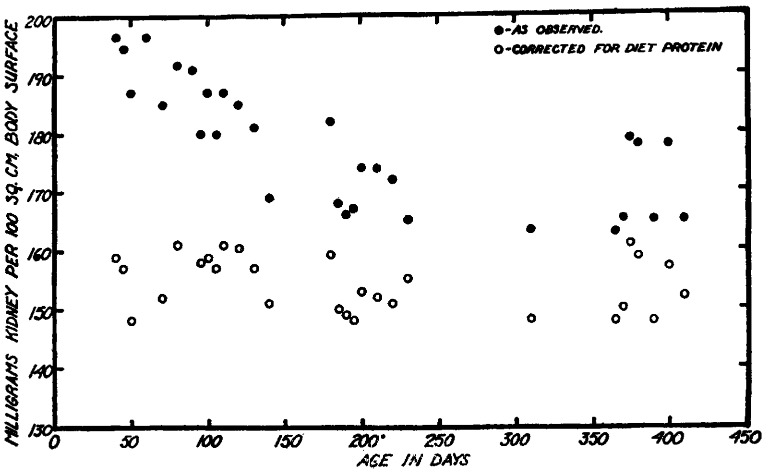

FIG. 1.

When corrected for the effect of the dietary protein the kidney weight (average of both kidneys) in relation to body surface is more nearly the same at all ages. Each point represents an average of from 12-24 male rats.

[2] MacKay, E. M., and MacKay, L. L., *J. Biol. Chem.*, 1930, **86**, 765.
[3] MacKay, E. M., and MacKay, L. L., *J. Nutri.*, 1931, **3**, 375.