3 males, each with a solitary kidney associated with eye defects as well.

Four hundred forty-one second generation animals were obtained from 52 *inter se* matings of first generation animals. The average number of young per litter was 8.4. One hundred and one, or approximately 20 per cent of these animals was abnormal, either in the kidney, eye or foot regions; and 340 were apparently normal in all respects. The expected 3 to 1 mendelian ratio in this instance is approximately 110.25 to 330.75.

The examination of the second generation animals was obtained from complete autopsies made at birth. One or both kidneys were missing in 60 of the 101 abnormal animals.

In back-cross matings between 16 first generation females and the abnormal male parent, 292 offspring were obtained from 50 matings. The average number of young per litter was 5.8. One hundred sixteen animals were abnormal in either the kidney, eye or foot regions, and 176 were apparently normal in all respects. Sixty-nine of the abnormal young had one or both kidneys missing. The records were made from autopsies at birth. The expected ratio of abnormal to normal animals in the above matings is 1 to 1. The results show, however, that 40 per cent of the back-cross animals were abnormal, and 60 per cent apparently normal.

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The metabolism of glycerol in phlorhizin diabetes.

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It has been commonly accepted that glycerol can be completely converted into glucose by the diabetic, although no convincing evidence for this has been published. The early experiments of Cremer[1] on a phlorhizinized dog and of Lüthje[2] on depancreatized

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[1] Cremer, M., *München. med. Wchnschr.*, 1902, xlix, 944.

[2] Lüthje, H., *Deutsch. Arch. f. klin. Med.*, 1904, lxxx, 98.

dogs indicated that 40 per cent of glycerol fed was recovered as extra glucose in the urine. This figure has been used by McCann, Hannon and co-workers[3] in the calculation of the antiketogenic value of glycerol in the diets of diabetic patients.

Five experiments have been conducted in this laboratory on three fasting phlorhizinized dogs to determine the amount of glucose formed from ingested glycerol. After giving to two animals (Dogs 51 and 57) 8.53 grams of glycerol (capable of yielding 8.33 grams of glucose), 8.07 grams and 8.20 grams of extra glucose were eliminated in the urine. This is a recovery of 96.9 and 98.4 per cent, respectively. We were unable to obtain as complete a recovery of extra glucose from the third animal (Dog 56), possibly on account of an incomplete absorption. The ingestion of 15.16 and 8.53 grams of glycerol resulted in a recovery of 55.9 and 53.8 per cent, respectively, while the subcutaneous injection of the smaller dose yielded 70 per cent.

A further demonstration that the glycerol is not oxidized in the phlorhizinized dog was obtained by a respiration calorimeter experiment on Dog 56, the animal in which an incomplete recovery of extra glucose had been noted. The respiratory quotient averaged 0.703 for the two hours preceding the ingestion of 8.53 grams of glycerol (which has a R. Q. of 0.857), and 0.678 for the three hours thereafter. Similarly, the heat production was unchanged by the ingestion of this substance.

These data give evidence that glycerol may be quantitatively converted into glucose in the diabetic animal.

[3] McCann, W. S., Hannon, R. R., Perlzweig, W. A., and Tompkins, E. H., *Arch. Int. Med.*, 1923, xxxii, 226.