epinephrin, yet five days later during which time no quinidin was administered, a paroxysm of tachycardia followed administration of the epinephrin.

(2) A male, age 65, with arteriosclerotic heart disease, subject to attacks of paroxysmal auricular fibrillation during a period of normal sinus rhythm, was similarly treated with epinephrin. Auricular fibrillation appeared with very little change of rate about 15 minutes after the 2nd injection of epinephrin. Quinidin was utilized to re-establish the normal sinus rhythm, which reappeared 12 hours after administering 0.2 grams every two hours. The dosage was then reduced to 0.2 grams four times daily. After four days administration of quinidin in this manner, during which time the normal sinus rhythm prevailed, epinephrin exhibited in the same manner was not followed by alteration of the rhythm controlling the heart beat. It appears as if quinidine offers a protection to the heart against the inception of paroxysmal auricular tachycardia and fibrillation induced by means of epinephrin.

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Nitrogen balance on a low protein diet in a case of diabetes mellitus.

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As low protein diets have been recommended in treatment of diabetes by Joslin,[1] Petren, as quoted by Joslin,[2] Newburgh and Marsh,[3] and others, a study of long continued low protein diet was made in this case. The patient was a man, age 32, with a history of moderately severe uncomplicated diabetes for the past 2½ years.

[1] Joslin, E. P., "Treatment of Diabetes Mellitus," 3d ed., Lea and Febriger, 1923, p. 444-6.

[2] *Ibid.*, p. 525-32.

[3] Newburgh, L. H., and Marsh, P. L., *Arch. Int. Med.*, 1920, xxvi, 647; 1922, xxix, 97; 1923, xxxi, 455.

Observations extended over a period of 6 months. The diets were carefully weighed and the nitrogen in the food calculated from the Atwater tables. No analyses of food were made. Total nitrogen in the urine was determined daily by the Kjeldahl method. Nitrogen partition products were not determined. Nitrogen in stools was determined for two ten day periods by the same method. Daily weights were recorded.

The patient received a diet of 2000 calories with 50 grams of protein for 15 days before reduction of protein was started. The protein was gradually lowered by drops of 10 grams each until a 20 gram level was reached. Three or 4 days were allowed at each level for the patient to adjust himself to his new diet. The patient remained at this level for 106 days. The calories remained the same during the entire period. Carbohydrate and fat were changed from time to time so that the fatty acid-glucose ratio varied between 0.9 and 3.0. In this change the carbohydrate varied from 132 grams to 30 grams in successive steps, the calories being replaced by fat. The nitrogen excretion was not noticeably affected. This suggested that fat served to spare protein as efficiently as carbohydrate. Insulin was required during the entire period. There was no glycosuria. Moderate acetonuria appeared on fatty acid-glucose ratios above 1.5. The patient was in bed during the entire period.

Periods (days)	Av. weight Kg.	Av. nitrogen in food gm.	Av. nitrogen in urine gm.	Av. nitrogen in stools gm.	Av. total nitrogen excreted gm.	Nitrogen balance gm.
I (21)	44.29	3.20	3.24	0.75	3.99	—0.79
II (24)	44.18	3.18	2.84	0.75(?)	3.59(?)	—0.41
III (31)	43.93	3.21	2.91	0.75(?)	3.66(?)	—0.45
IV (30)	43.85	3.22	2.49	0.45	2.94	+0.26
Total (106)	44.06	3.20	2.87	0.60	3.47	—0.27

The general condition of the patient remained good. He took the diets without any complaint. There was no significant change in weight. There was a positive nitrogen balance until the 20

gram level was reached. The variations in nitrogen balance for the period of observation are presented in the following table. A low protein diet was followed for a period of 106 days without any evident ill-effect upon the patient.

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Early cirrhosis of the liver produced in dogs by carbon tetrachloride.*

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In studying the toxicity of carbon tetrachloride it was found that this drug in pure form causes very severe central necrosis of the liver which heals with scar formation.[1, 2] The toxicity of a large dose of carbon tetrachloride (4 cc. per kilo) is greatly increased by the addition of alcohol.[3] Experiments were carried out to determine the effect of repeated doses of carbon tetrachloride alone and carbon tetrachloride given with alcohol in order to study the toxicity of such repeated doses and the effect on the liver. Ten dogs were used; some were given the therapeutic dose of carbon tetrachloride (3 cc.), others 4 cc. per kilo, and others the same doses of carbon tetrachloride but with the addition of approximately 25 cc. of 50 per cent alcohol, and finally a control series was given the same dose of alcohol alone. The dogs were given these doses of the drug over a period of approximately sixteen weeks. No signs of intoxication in any of the dogs were seen. They maintained or gained weight and were killed for autopsy in apparently perfect condition. (One or

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1 Pessoa, S. B., and Meyer, J. R., *Boletin da Sociadade de Medecina e Cirurgia de São Paulo*, Brazil, 1922.

2 Gardner, George H., Grove, R. C., Gustafson, R. K., Maire, E. D., Thompson, M. J., Wells, H. S., and Lamson, Paul D., *Bull. Johns Hopkins Hospital* 1925, xxxvi, No. 2.

3 Lamson, Paul D., Gardner, George H., Gustafson, R. K., Maire, E. D., McLean, A. J., and Wells, H. S., *J. Pharm. and Exp. Therap.*, 1925, xxii, 215.