sodium iodides intensified the skin hypersensitiveness to neoarsphenamin in 54% of the animals showing positive skin reactions on the first test, and produced well-marked cutaneous reactions in 66% of the animals which had not reacted to this arsenical before the administration of the iodides. The potassium and sodium iodides were about equally capable of exerting these influences. Potassium bromide was found to have a similar but much less effect. There was no appreciable difference in the response to the tests for sensitization after treatment with the iodides and bromide between the normal and syphilitic rabbits. No flare-up was noted at the site of the test conducted before the injection of the drugs under study. The control animals did not show any significant variation in their skin reactions after the first and second tests, thus ruling out the possibility that the changes observed in the rabbits treated with iodides and bromides were attributable to their skin reactivity being influenced by the preliminary testing injections. The observations reported here seem to support the conclusion that the modification of skin reactivity to neoarsphenamin in the animals of these experiments is to be ascribed to the action of the iodide and bromide ions and not to the potassium and sodium ions of the drugs used.

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An Optimal Diet in Promoting Nitrogen Gain in Nephrosis.

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In the treatment of nephrosis Epstein[1] advocates a high protein diet, 150 to 200 gm., with low caloric intake. Peters and Bulger[2] from an investigation of the nitrogen metabolism in albuminuric, edematous patients conclude that it is possible to promote the storage of food protein and to cover the protein lost in the urine by allowing a moderate amount of protein in a high calory diet. The present study involves the determination of nitrogen balance and plasma proteins on 2 patients with nephrosis on diets which were varied in (1) total calories, (2) protein content and (3) proportion of animal and vegetable protein.

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[1] Epstein, A. A., *Am. J. Med. Sci.*, 1917, **154**, 638, and 1922, **163**, 167.

[2] Peters, J. P., and Bulger, H. A., *Arch. Int. Med.*, 1926, **37**, 153.

The first patient, 13 years old, had the nephrotic syndrome for 3 years before the study. He was in a state of convalescence at the commencement of this work which consisted of 47 periods of 4 days each, or 188 days. Weight at the start was 25.8 kg. With a constant protein intake of 50 gm. and 50% of animal protein, the caloric intake was raised (in steps of 280 calories) from 1750 to 2590 calories. The daily positive nitrogen balance, which averaged 3 gm., was not significantly altered. Progressive lowering of the caloric intake from 2590 to 1500 caused the nitrogen gain to lessen so that on 1500 calories the patient could hardly maintain nitrogen balance. He was then kept on 2310 calories, or approximately 75 calories per kg., while the protein content was raised. Feeding 75 gm. of protein resulted in an average daily nitrogen balance of 3.1 gm. as compared with 2.0 gm. on 50 gm. of protein intake, but further increase of protein intake to 100 gm. and then to 125 gm. did not promote any greater positive nitrogen balance. An optimal level of protein intake was apparently reached when 75 gm. or 2.5 gm. per kg. were fed. While the caloric and protein intake was constant at 2310 calories and 75 gm. respectively, the relative proportion of animal and vegetable protein was changed. No marked differences in nitrogen gain were observed, although it was slightly higher when greater proportion of animal protein was fed. Throughout the whole period of study plasma albumin stayed between 3.5 and 4.0% and total proteins between 5.5 and 6.5%.

The second patient, aged 35 years, presented a typical picture of nephrosis on admission. By the time he was studied his renal condition had so improved that he showed only slight pitting edema over the tibia and a trace of albumin and a few casts in the urine. Observations extended over 53 periods, or 212 days. Weight at the start was 51.1 kg. With his protein intake constant at 75 gm. and animal protein approximately 50%, diets containing 1800, 2260, 2660, 3250, and 3770 calories were successively given. The negative nitrogen balance of 2 gm. daily at 1800 calories became positive at 2260 calories and a maximum positive balance of 3.5 gm. daily was reached when 3250 calories were fed, and further increase in caloric intake to 3770 did not improve the balance. When the caloric intake was progressively decreased, the nitrogen gain decreased in proportion. It seemed that an optimum level of caloric intake in this case was established at 3250 or approximately 60 calories per kg. On this caloric intake the patient was given in succession 75, 50, 100, 125, 150 and 175 gm. of protein, 50% of which were of animal origin. A maximum nitrogen gain of approximately 4 gm. a day was reached at 100 gm. of protein or 1.8 gm. per kg. and higher protein feeding failed to promote further gain. With the caloric intake constant at 3250 calories and protein intake at 100 gm., the percentage of animal protein was varied from zero to 100%. In this instance 75% animal protein seemed to give better nitrogen gain than any other percentages. There was an increase of albumin from 2.3 to 3.0% and total proteins from 4.0 to 5.2% during the course of first 2 months of study, but after that they stayed fairly constant at these levels. The albuminuria, aside from its steady tendency to diminish as the study progressed, showed no significant variations associated with dietary changes.

In conclusion there seems to be an optimum level both for total calories and protein intake in order to secure maximum nitrogen gain. For an adult 1.8 gm. of protein and 60 calories per kg. seem optimal. The requirements are higher with children. The relative proportion of animal and vegetable protein in the diet does not seem important when both calories and protein are fed at optimal levels.

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Effects of Snake Venoms on Plants.

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With the exception of Mitchell[1] and Salisbury,[2] who made sporadic observations on the subject in nature, investigators have given very little attention to the effects of snake venoms on plants. In connection with phytopharmacological studies regarding the effect of various animal poisons on living seedlings, the writer made experiments with suspensions or solutions of snake venoms by dissolving small quantities of the dry scales in physiological saline. The method employed has been fully described.[3, 4, 5] Seeds of *Lupinus albus* are soaked for 24 hours in water and then planted in finely divided sphagnum moss. When seedlings have germinated and

[1] Mitchell, Smithsonian Institute, Contributions to Knowledge, 1860, **12**, 145.

[2] Salisbury, *J. Med.*, 1854, **13**, 837.

[3] Macht and Livingston, *J. Gen. Physiol.*, 1922, **4**, 573.

[4] Macht, *J. Pharmacol. and Exp. Therap.*, 1926, **29**, 461.

[5] Macht and Pels, *Arch. Dermatol. and Syphilol.*, 1931, **23**, 601.