sodium salicylate were used and 3 days later skin tests were made. At this time 3 of the series were dead. The 3 survivors showed completely negative tests. Two of these animals were tested at intervals of a week and gave 2 more negative tests before dying; the other gave 3 more negative tests before dying. The animals receiving salicylate died more readily than the controls.

In the second series of 6 rabbits, the animals received the injection of salicylate 24 hours before the intra-articular injection was made. Thereafter 4 daily injections of salicylate were given and 4 animals survived. These were tested 8 days after arthritis was produced, and gave negative tests. Four further daily injections were made and 2 surviving rabbits gave negative tests.

Twelve control rabbits were used which gave strongly positive skin reactions 6 days after arthritis was produced, and the reactions remained positive. The arthritis was highly fatal to all the animals but more so to those animals receiving salicylate.

The conclusion is supported, that the intravenous injection of sodium salicylate prevents the development, in rabbits having a streptococcal arthritis, of a positive skin reaction to filtrate of hemolytic streptococcus culture.

4558

Nutritional Factors Affecting Growth of Rats on Diets Containing Sodium Benzoate.

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In a recent report[1] it was shown that survival and growth of young rats on diets containing sodium benzoate were possible only if the diets furnished the nutrient materials necessary for growth and especially a supply of glycine, or of a precursor, adequate for the detoxication of the benzoate and for the formation of new tissue proteins. In connection with these experiments, it was noted that certain toxic benzoate diets were less toxic if the rats were kept in cages resting on shavings rather than in raised cages.[2] This fact suggested that glycine or some other dietary factor was obtained by the rats from the excreta or from the shavings. In these experi-

[1] Griffith, W. H., *J. Biol. Chem.*, 1929, lxxxii, 415.

[2] Griffith, W. H., *J. Biol. Chem.*, 1928, lxxviii, 24.

ments the basal diet was supplemented daily with 150 mg. of dried brewer's yeast. Subsequent work showed that this quantity of yeast did not supply the optimum concentration of the vitamin B complex and also demonstrated that the ingestion of the excreta or shavings furnished the needed vitamins rather than glycine.

In the experiments reported in this paper, the basal diet was supplemented with 300 mg. of yeast. On this diet rats grew as well in raised cages as in cages on shavings. This was true in experiments in which the diet was fed *ad libitum* and also in experiments in which the food intake was restricted (Chart 1). Apparently on this diet the excreta or shavings furnished no additional *necessary* nutrient substances.

The effect on survival and growth of adding sodium benzoate to the new basal diet is also shown in Chart 1. The toxic concentration of benzoate in these experiments was 3.5%. The toxic concentration of benzoate in the previous experiments was 3%. The 2

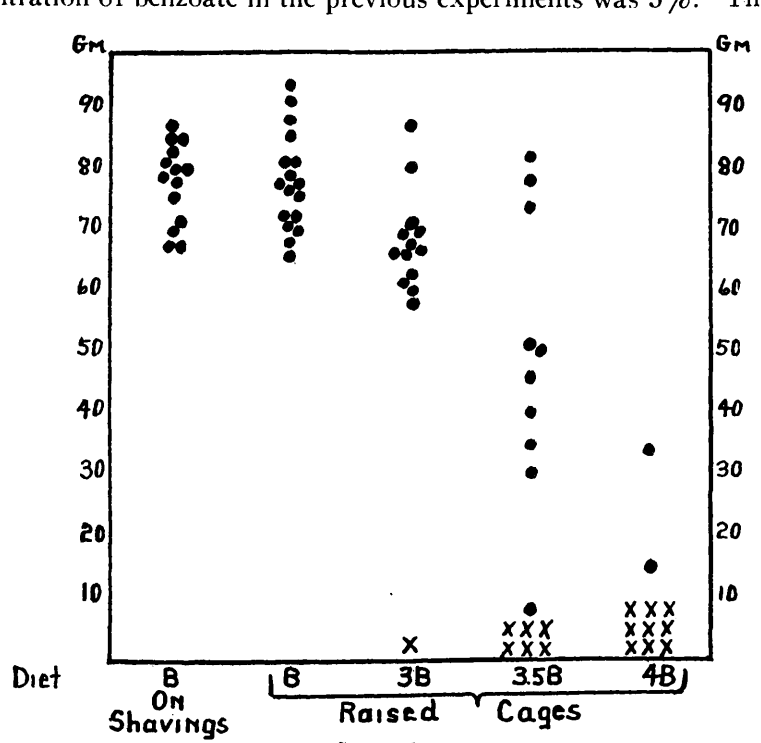

CHART 1.

The increase in weight of young male rats during a 40 day experimental period on the basal and benzoate diets. The number before the letter B shows the per cent of sodium benzoate in the diet. The food intake was restricted, each rat receiving the same quantity of food of equivalent calorific value. All rats except those in the first group were kept in individual raised cages. Deaths during the experimental period are shown by the letter x.

series differed only in the amount of the daily yeast supplement and it was concluded that the increased tolerance for benzoate, observed in the second series, was due partly to more efficient utilization of the food and partly to the presence of glycine in the additional yeast protein.

4559

Effect of Hormones of Anterior Pituitary on Thyroid Gland in the Guinea-Pig.

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In former investigations Loeb[1, 3] and Loeb and Kaplan[2] have shown that feeding of tablets of anterior pituitary substance (Armour & Co.) prevents, in the guinea pig, compensatory hypertrophy which otherwise occurs in many cases after the greater part of the thyroid has been extirpated. H. A. McCordock[4] through feeding of these tablets prevented the marked cell proliferation which occurs in the guinea pig after administration of potassium iodide. There are also prevented the slight changes in colloid and in the size of the acinus cells caused by iodine. These experiments proved that in Armour's Anterior Pituitary preparation there is present a substance which prevents growth processes (hypertrophy and hyperplasia) in the thyroid of the guinea pig.

However, in larvae of amphibia, it has been shown that removal of the anterior pituitary may cause atrophic changes in the thyroid gland (B. M. Allen,[5] P. E. Smith[6]) or, conversely, that injection of acid extracts of anterior pituitary may stimulate the thyroid gland and cause morphological changes indicative of active secretion (E. Uhlenhuth and S. Schwartzbach[7]). These facts suggested to us the possibility that there may be present, also, in the mammalian anterior pituitary, substances which have a stimulating effect on the thyroid gland.

[1] Loeb, Leo, *J. Med. Res.*, 1920, xli, 481.

[2] Loeb, Leo, and Kaplan, E. E., *J. Med. Res.*, 1924, xliv, 557.

[3] Loeb, Leo, *Am. J. Pathol.*, 1929, v, 71.

[4] McCordock, H. A., *Am. J. Pathol.*, 1929, v, 171.

[5] Allen, B. M., *Anat. Rec.*, 1917, xi, 486.

[6] Smith, P. E., *Anat. Rec.*, 1917, xi, 57.

[7] Uhlenhuth, E., and Schwartzbach, S., *Brit. J. Exp. Biol.*, 1927, v, 1.