

vulsions, since of six animals so treated only three suffered from convulsions (and these suffering only one attack), while the other three larvæ never showed convulsions at all.

But notwithstanding the favorable influence of milk upon the convulsions, milk like Mg and Ca salts did not prevent the development of permanent paralysis and permanent spasmodic contractions of the muscles.

Therefore, it must be pointed out again that the development of the paralysis of the muscles, in the presence of the salts and in the absence of convulsions, proves that tetany is due to a specific toxic substance which is not antagonized by calcium, magnesium, or milk. Furthermore, it appears that tetany (or at least some of its symptoms) is due to the toxic action of this substance upon the central nervous system, as indicated by the paralysis of almost the entire muscular system. How far these nervous lesions are responsible for the tetanic convulsions and how far the convulsions are due to the deficiency of calcium, remains to be determined.

32 (1407)

The effect of heat, age and reaction on the antiscorbutic potency of vegetables.

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The present communication is a continuation of experiments on antiscorbutics previously reported.¹ It was found that it required 35 gms. of the carrots used to feed our laboratory animals, to afford protection against scurvy to a guinea-pig. After the carrots had been cooked for three quarters of an hour, their addition to the dietary proved insufficient to protect. This was true even if the water in which they were boiled had been acidulated by the addition of 10 per cent. of vinegar. The only difference noted in the latter test was a less marked loss of weight.

A parallel test was carried out with carrots which had been picked only a few days previous to the experiment. It was found that, even subsequent to cooking, 35 gms. of these fresh carrots,

¹ *PROCEED. SOC. EXPER. BIOL. & MED.*, xv., pp. 82; 141; xvi., p. 1, 1918.

when added to the dietary of hay, oats and water, were fully capable of protecting the animals. It is evident, therefore, that, in a consideration of vegetables as a foodstuff, we must take into account the factor of freshness. In dietetics this difference is intensified by the fact that older vegetables are tougher and therefore require and receive more prolonged cooking, thus further lessening their antiscorbutic value. The water in which the vegetables were cooked possessed little or none of the accessory factor, although 40 c.c. per capita were fed to the guinea-pigs; the animals did not, however, lose weight as rapidly as those receiving tap water.

In a previous communication it was shown that 5 c.c. of canned tomatoes is sufficient to protect a guinea-pig from scurvy. If such tomatoes are boiled for five minutes, their potency is slightly diminished, so that they should not be subjected to cooking when employed as an antiscorbutic for infants. Their efficacy was not diminished by rendering them slightly alkaline to phenolphthalein. Orange juice, which had been made $n/20$ alkaline to NaOH, was found to be just as potent as in the acid state. The tomato as well as the orange juice was given by a pipette one half to three quarters of an hour following alkalization. Neither of these antiscorbutics, however, will retain their power long after they have been rendered alkaline. In judging of the effect of alkalization or of heat, it is highly important to consider the length of time to which the antiscorbutic has been subjected to this influence.

33 (1408)

Studies of saliva in its relation to the teeth.

I. ON THE NORMAL COMPOSITION OF SALIVA.

1. *Does normal saliva contain uric acid (urate)?*

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By the use of a slight modification of the Folin-Benedict method for the determination of uric acid in blood, we definitely established the presence of uric acid (urate) in saliva. The average