21 (1199)

Studies in experimental nephritis.

By N. UMEDA and A. I. RINGER.

[*From the Chemical Laboratories of the Montefiore Hospital, New York City.*]

It was shown by Underhill and his collaborators and was corroborated by Pearce and Ringer, that the administration of tartaric acid to animals produces a very marked nephritis.

The object of our present research was to find out how the tartaric acid, which is so closely related to chemical substances that undoubtedly play a rôle in intermediary metabolism, can give rise to nephritis.

Tartaric acid does not pass through animal membranes or animal cells very readily. This is known from the fact that the salts of tartaric when given by mouth, are but slightly absorbed, and act as cathartics. We, therefore, reasoned that, since the kidney cells are more permeable to salts than are the ordinary cells of the body, and since tartaric acid forms a salt with calcium which has a very low degree of solubility, that, in all probability, the tartaric acid, while passing through the kidney cells, combined with the calcium salts of the kidney cells, forming an insoluble calcium tartrate, which becomes precipitated in the body of the cell, and thus caused the complete destruction of the cell.

If the line of our reasoning is correct, then, the administration of oxalic acid should be followed by a similar destruction of the kidney tissues, and this is exactly what we found.

In a series of animals one gram of potassium oxalate was administered subcutaneously. The animals lived for from 24 to 48 hours, during which time the blood changes were studied. After death, autopsy was performed and microscopical examination of the organs was made by Dr. B. S. Klein, of the pathological laboratory of the Montefiore Hospital.

From his reports we may draw the conclusion that oxalic acid in small quantities produces a nephritis similar to that of tartaric acid.

The conclusion, therefore, seems reasonable that tartaric acid and oxalic acid exert their influence on the kidney tubules by precipitating the calcium salts in the cells, during the process of their excretion.

22 (1200)

Do lecithin and glucose combine to form a true chemical compound?

By ERNEST L. SCOTT.

[*From the Department of Physiology, Columbia University, New York.*]

About a year ago I[1] reported a substance found after the evaporation of an emulsion of lecithin and glucose. This material seemed to be identical with the one previously reported by Bing[2] and others, the only point of difference being that previously it had been prepared by the evaporation of an alcoholic solution of lecithin and glucose upon the water bath while I evaporated a watery emulsion either on the water bath or in a vacuum desiccator at room temperature.

In attempting to study by the freezing-point method any changes in molecular weight which might occur, I found that some reaction took place between the benzene, which was used as a solvent, and the solute, lecithin, so that the results were entirely irregular and of no value for my purpose.

A further search for a solvent which could be used for the determination of either the freezing or the boiling point has revealed the same difficulty for a number of other solvents. In their turn ether, chloroform, carbon tetrachloride, bromoform, ethylene dibromide, acetic acid, formic acid and phenol were tried and discarded.

However, when the boiling point of a solution of "lecithin" in alcohol was determined the molecular weight of the sample of "lecithin" which I was using was consistently found to be 1,300. The high figure found would indicate an association of two mole-

[1] Scott, E. L., *Am. Journ. of Physiol.*, XL, p. 145, 1916.

[2] Bing, H. J., *Skand. Arch. f. Physiol.*, XI, pp. 166–175, 1901.