SCIENTIFIC PROCEEDINGS.

ABSTRACTS OF COMMUNICATIONS.

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The feeding of non-ketogenic odd-carbon fats to diabetic patients.

By **MAX KAHN.**

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In certain states of the disturbances of the metabolism of fats and carbohydrates a condition of acidosis is established characterized by the fact that the blood is rich in ketonic acids of a certain type. To this condition the special name of "ketosis" has been applied. It is induced by starvation, by the toxic effect of lipin solvent anesthetics, and especially by that disturbance of carbohydrate metabolism known as diabetes.

Under normal conditions, that is, in the presence of proper carbohydrate oxidation, there is a rapid breakdown of the fatty acid fraction of the fats to the four carbon acid, *i.e.*, butyric acid, which is then rapidly catabolized to carbon dioxide and water.

This process is, however, markedly disturbed in states of deficient carbohydrate oxidation. In the latter circumstance the fats are primarily broken down to butyric acid, as in the normal condition, but in the absence of the heat of carbohydrate consumption, the further decomposition of the butyric acid proceeds very gradually. The butyric acid under these conditions is oxidized first to beta-oxybutyric acid, and then to acetoacetic acid, which is decarboxylated to acetone.

It is prohibitive to feed diabetic patients, who have a very low carbohydrate tolerance, even a moderate amount of natural fat, because of the danger of inducing a severe ketosis which may prove fatal. It was thought advisable, therefore, to prepare a synthetic fat to contain fatty acids of odd-carbon number, which, if they are absorbed and if the theory of intermediate fat metabolism described above, holds, should catabolize in the body without the production of the acetoacetic acid, etc.

In collaboration with Dr. H. O. Nolan such synthetic fat was made and fed to typical diabetic and ketotic patients. It was found that the fat was absorbed, that large quantities of it could be fed to these patients without inducing any acidosis, and that the nutrition of such individuals was improved. We are now studying the intermediate metabolism of this fat, and its feeding effect on all types of diabetic and normal individuals.

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Hydrogen-ion concentration studies of solutions used for intravenous medication and clinical investigation.

By **JOHN R. WILLIAMS** and **MADELEINE SWETT** (by invitation).

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We advance the hypothesis that there is a relationship between the hydrogen-ion concentration of fluids injected intravenously and some of the reactions which follow their use. We base this belief on clinical observations and on extended chemical analyses of fluids commonly used for therapeusis and clinical investigation. We wish to briefly report here some of our more important studies. It should be understood that the hydrogen-ion concentration of normal acid is P_H 2; normal alkali P_H 14; pure water P_H 7; and human blood P_H 7.4, and that this latter figure is fixed and cannot be varied without causing serious disaster or death. If a fluid with a much higher or lower P_H than that of the blood is introduced into the circulation at a rate or in an amount greater than the blood can neutralize or buffer, reactions, as chills, fever and