

SCIENTIFIC PROCEEDINGS.

ABSTRACTS OF THE COMMUNICATIONS.

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The balance of acid-forming and base-forming elements in foods, and its relation to ammonia metabolism.

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In continuation of previous work¹ ash analyses have been made of a number of foods and from the percentages of total sulphur, phosphorus and chlorine on the one hand, and of sodium, potassium, calcium and magnesium on the other, the excess of acid over base or of base over acid which will result from the oxidation of the food has been calculated. Previous ash analyses have also been studied and supplemented by such determinations as were necessary to permit the calculation of this balance for a wide range of food materials. Meats and eggs show a predominance of acid-forming elements; in fruits and vegetables the base-forming elements predominate. From this standpoint the fruits and vegetables tend to balance the meats of the diet. Milk and the cereals contain acid-forming and base-forming elements in more nearly equivalent proportions.

Through the kindness of Mr. L. H. Smith, samples of corn which had been bred through ten generations for high and low protein content respectively were obtained from the Illinois Agricultural Experiment Station. The ash-analyses of these were very similar except for the higher sulphur content of the high protein corn, which resulted in this sample showing a slight predominance of acid-forming elements, while in the low protein corn the base-forming elements predominated.

In order to determine to what extent the excess of acid brought

¹Sherman and Sinclair, *Jour. Biol. Chem.*, Vol. III., 307.

into metabolism by the oxidation of the food is neutralized by ammonia in man, an experiment was made in which the influence upon ammonia excretion of a known change in the diet was studied quantitatively. The change of food consisted in substituting rice for potatoes in a simple mixed diet and (neglecting the feces but allowing for the unoxidized sulphur excreted during each period) was calculated as equivalent to the introduction of 28.3 c.c. normal acid per day. The increased ammonia excretion was equivalent to 10.7 c.c. normal acid per day. Thus, only about one third of the extra acid introduced by the change of food was eliminated as ammonia salt.

The authors take pleasure in acknowledging their indebtedness to Professor Mandel for the privilege of carrying on a part of the work in his laboratory at the University and Bellevue Hospital Medical College.

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The determination of small amounts of iodine in organic combination — A modification of Hunter's method.

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Hunter's method for the determination of iodine in organic combination consists of fusion of the organic matter, and the formation of sodium or potassium iodide. The iodide is oxidized to iodate with sodium hypochlorite, phosphoric acid is added, and the excess of chlorine is removed from solution by boiling. Potassium iodide is now added and each molecule of iodate liberates six atoms of iodine. The liberated iodine is titrated with sodium thiosulphate, the final reading being six times the amount of iodine originally present.

The removal of chlorine by boiling is a time-consuming and uncertain operation. The writer has modified the above method by removing the excess of chlorine from solution with phenol. The free chlorine adds directly to the benzol ring forming an unionized compound which does not interfere with subsequent operations. This modification makes the above method accurate and rapid.