

NOTES FROM THE U. S. BUREAU OF CHEMISTRY.*

STUDIES IN NUTRITION: I. THE NUTRITIVE VALUE OF COCONUT GLOBULIN AND COCONUT PRESS CAKE.¹

By Carl O. Johns, A. J. Finks, and Mabel S. Paul.

[ABSTRACT.]

NUTRITION experiments with albino rats show that normal growth can be attained by animals fed a ration in which either coconut globulin or coconut press cake forms the sole source of protein in an otherwise complete diet. Enough water-soluble vitamine for normal growth is contained in coconut press cake, and the presence of an appreciable, though insufficient, quantity of fat-soluble vitamine is indicated. Preliminary experiments show that coconut press cake is deficient in inorganic constituents, probably calcium, phosphorus, and chlorine.

LYSINE AS A HYDROLYTIC PRODUCT OF HORDEIN.²

By Carl O. Johns and A. J. Finks.

[ABSTRACT.]

HERETOFORE lysine has never been reported to be present in hordein, the alcohol-soluble protein of barley. Using the Van Slyke method, the Protein Investigations Laboratory found that lysine constitutes 1.01 per cent. of hordein.

PREVENTION OF DUST EXPLOSIONS AND FIRES IN GRAIN THRASHING MACHINES.³

By David J. Price.

[ABSTRACT.]

NUMEROUS explosions and fires in thrashing machines have been reported throughout the large grain-growing sections of this

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² Published in *J. Biol. Chem.*, May, 1919.

³ U. S. Department of Agriculture Bulletin 379.

country during the past few years. Since 1914 more than 700 have occurred in the Pacific Northwest alone, about 300 taking place in 1914 and almost as many in 1915. To determine the cause of these fires and explosions, and to develop methods of prevention, the U. S. Department of Agriculture has conducted an extensive investigation, during the course of which the following facts have been brought out:

Of the total number of machines thus affected in 1915 over 27 per cent. represented a complete loss, and 34 per cent. partial damage, the rest being but slightly affected.

More than 80 per cent. of the explosions and fires may be classified as wheat smut dust explosions, and approximately 76 per cent. originate near the cylinder in the front part of the machine. Over 75 per cent. of these occurrences were due to the ignition of the smut dust by the discharge of static electricity generated by the operation of the machine.

During the past three seasons three principal methods of prevention, developed and tested by the Department of Agriculture, have been generally adopted, and are now being made a permanent part of the machine equipment.

1. Installation of an effective fire extinguisher especially designed for thrashing machines. In the event of a fire, this not only saves the machine, but also prevents the spreading of flames to the nearby grain and straw.

2. The installation of an exhaust fan to collect and remove smut and dust from the separator, thus preventing the formation of an explosive mixture of dusts.

3. Installation of an effective grounding system for the removal of static electricity from the machine.

The field men of the Department have found that machines properly equipped in this way have not experienced explosions and fires, while those not so equipped have suffered extensive damage, with destruction also to the surrounding grain.