Dr. W. L. Rost has assisted me in most of the experiments of the present investigation.

115 (1047)

The effect of sensitization on pneumococcus lesions of the lobar type in rabbits.

By MARY B. KIRKBRIDE.

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For the purpose of ascertaining to what extent conditions of hypersusceptibility determine the character of pneumococcus lesions of the lung, series of experiments were made with a moderately virulent strain, and with an extremely virulent strain in its virulent state and after artificial attenuation. Rabbits were inoculated intravenously for purposes of sensitization with .1–15 c.c. pneumococcus filtrates or dead cells and then after two weeks injected tracheally with 1. c.c. live cultures. The animals surviving 48 hours were killed. Microscopic sections were made of all lungs.

In these experiments with attempted active sensitization none of the animals developed symptoms resembling anaphylactic shock nor was the lung involvement definitely increased in any series of previously treated rabbits. Tracheal injection of the moderately virulent organisms, however, caused marked lesions in both sensitized and unsensitized control rabbits.

In experiments with attempted passive sensitization, mixtures of 1 c.c. virulent or attenuated live cultures and .1 c.c. or .5 c.c. sera from normal or immunized rabbits when injected tracheally failed to incite uniformly extensive lesions in any series of animals though the proportion developing diffuse involvement was greater than in the previous experiments with active sensitization. Sudden paroxysms, similar to those of fatal anaphylactic shock were observed about twenty-four hours after tracheal injection in practically all the animals of two or three experiments. But these paroxysms were not associated with extensive lesions of the lung because in a number of the rabbits no characteristic exudative pneumonias were found, although the lungs were almost invariably deeply conjested.

While a hypersensitive state probably takes some part in the inception of the infection, these experiments indicate that the subsequent exudative lobar involvement is essentially a progressive and cumulative process.

116 (1048)

The nitrogen distribution of some feedstuffs and cereals.

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The importance of knowing the amino acid content of feedstuffs has led the authors to apply Van Slyke's method[1] for the analysis of proteins direct, without previous isolation of the proteins themselves. The fine-ground and well-mixed material is weighed off in amount equivalent to 2–3 grams protein (estimated from the N-content) and completely hydrolyzed with 20 per cent. hydrochloric acid. Thereafter the method of Van Slyke is followed.

Analyses of corn, corn germ, cottonseed flour, kafir corn, tomato seed (pressed) and peat have been completed, results in duplicate agreeing well. The authors have had difficulty in accounting for the sulphur of the protein, the results for cystin being lower than was expected. This difficulty has been experienced by others and it is generally believed that if the cystin grouping be present, it is decomposed on hydrolysis and the sulphur changed to a form not precipitated by phosphotungstic acid with the cystin fraction. It is also conceded that sulphur exists in protein in other than the cystin grouping.

The results show Kafir corn and tomato seed meal to be lacking in histidin. Qualitative tests for tryptophan are positive for tomato seed, positive but slight for Kafir corn. Osborne and Clapp[2] found tryptophan and lysin, 2.93 per cent. in glutelin extracted from corn by weak alkali. The same investigators found neither lysin or tryptophan in zein of corn. Osborne's feeding experiments with cottonseed globulin show this protein to be satis-

[1] *Jour. Biol. Chem.*, X, 15. 1911.

[2] *Amer. Journal of Physiology*, 20, 477. 1907.