guinea pigs are hypersensitive. The effects produced with the prolamines correspond completely to those observed by the uterus strip method.

Guinea pig anaphylaxis tests:

Experiments were made in which guinea pigs were sensitized with wheat gliadin or with zein, and then after two weeks given intro-peritoneal injections of the different prolamines. Although this method is not so delicate as the uterus strip and broncho-spasm methods, the results were quite the same, showing practical identity of proteins in the two groups. That is, guinea pigs sensitized with gliadin gave strong reactions when reinjected with the other four proteins of the wheat series, but none at all with proteins from the corn series. Animals recovering from these crossed reactions with the proteins of the wheat series, were protected against gliadin just as were the tissues in the uterine strip experiments.

Therefore we have data obtained by four different immunological methods all giving identical results, so that they may be looked upon as conclusive.

The detailed reports of these experiments will appear as separate publications. The chemical and physico-chemical data will appear in the Second Colloid Symposium Monograph to be issued by the Chemical Catalogue Company of New York City. The immunological data will probably appear in the Journal of Biological Chemistry.

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Further studies on the etiology of epidemic hiccough.

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In two previous epidemics I have isolated a streptococcus from infection atria in cases of epidemic hiccough which produced spasms of the diaphragm and other muscles in animals. This property was readily lost on ordinary aerobic cultivation, but by

rapid transfer (four to eight times in twenty-four hours). In partial tension cultures, its specific infecting power was maintained through as many as fifty culture generations. Moreover, when the living streptococcus incited spasms of the diaphragm, the washed dead bacteria and filtrate of the actively growing culture also produced this phenomenon. This streptococcus had the power of producing a poison which caused lesions in the cervical cord or in the roots of the phrenic nerve, and provoked spasms of the diaphragm.

In a recent outbreak of another epidemic, I have again isolated this streptococcus. The symptoms in the present epidemic are less severe, more irregular and of shorter duration than those of the two previous epidemics studied. The duration of hiccough in the six cases studied ranged from two to eight days. In five of the six there was an associated infection of the throat, of varying severity. Moderate nasopharyngitis or tonsilitis was found in all. Cultures on blood agar plates of nasopharyngeal swabbings and of pus expressed from tonsils showed an unusually large number of green-producing streptococci, often in almost pure culture. Precipitin tests with nasopharyngeal washings and my poliomyelitis and encephalitis serums were positive in three and negative in three of the cases.

Of the thirty-two animals injected intracerebrally with material from infection atria or partial tension cultures thereof, fifteen were seen to have spasms of the diaphragm; thirteen, of the abdominal muscles, and twenty-three, of other muscles. A total of twenty-eight had spasms of the diaphragm or of other muscles. The same streptococcus isolated in previous epidemics was isolated from brain and cord of eighteen positive animals, usually in pure culture. One of these strains was rapidly transferred through ten culture generations. Small amounts of the living culture and larger amounts of the dead bacteria, and corresponding filtrates, still produced spasms of the diaphragm or of other muscles.

Effects such as these were rarely encountered during a large number of similar experiments in other diseases since the previous epidemic of hiccough.