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The production of glycosuria as a result of the intravenous injection of Witte's peptone.

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Renewed investigation concerning the phenomena provoked by intravenous administration of Witte's peptone has demonstrated the production of a marked glycosuria, following such injections. The appearance of sugar in the urine is accompanied by hyperglycæmia. The experiments were carried out for the most part upon dogs. When Witte's peptone is injected into the rabbit glycosuria is not in evidence, an observation which is in entire accord with the failure of this substance to induce certain other phenomena in this animal which are brought about in the dog.

The tentative hypothesis is advanced that the presence of sugar in the urine is induced as a result of the respiratory disturbances set up by the "peptone" injection.

The phenomena connected with the injection of "peptone" mixtures are being subjected to further investigation.

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Tubercle bacilli in the feces of cattle.

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Between June, 1908, and August, 1910, a number of tests upon the feces of cattle were made at the Illinois Agricultural Experiment Station to determine the presence or absence of tubercle bacilli. These tests were of two kinds, (1) by direct microscopic examination and (2) by inoculation of animals.

The microscopic method included the examination of stained slide preparations of (a) mucus on the exterior of the fecal mass,

(b) the mixed feces, and (c) watery mucus scraped from the rectum, each stained slide being searched fifteen minutes with the aid of a mechanical stage. If organisms indistinguishable in appearance from bovine tubercle bacilli were found upon any of these slides the examination was recorded as positive. One hundred and nineteen samples from 53 cows which had reacted to tuberculin were examined in this way, with a positive result 53 times in samples from 34 of the cows. Thirty-five other samples from these same cows were negative. Nineteen cows gave negative results at all examinations, 31 in number. Thus, of the 53 cows tested, 34, or 64.2 per cent., gave a positive result at one or more tests, and 19, or 35.8 per cent., gave only negative results. Forty samples from 18 non-reacting cows were tested in the same way, with 23 positive and 17 negative results. Fifteen of the 18 cows, or 83 per cent., gave a positive result at one or more tests, while only 3, or 17 per cent., were negative at all tests. From this it appears that no significance in respect to the presence of tubercle bacilli can be attached to the finding of a few acid-fast bacteria in the feces of cattle.

In order to test the delicacy of guinea pig inoculation as a test for tubercle bacilli in the feces of cattle, a number of experiments were performed in which accurately measured minute quantities of a pure culture of bovine tubercle bacilli were added to definite amounts of cow feces, previously shown to be free from tubercle bacilli. In this way it has been ascertained that as small a quantity as 1×10^{-11} gram of tubercle bacilli, suspended in one cubic centimeter of emulsion of feces, produces generalized tuberculosis upon subcutaneous injections into guinea pigs. The actual number of bacterial cells in this amount of culture would probably be between 5 and 500.

One hundred and four samples of feces from 62 reacting cattle have been tested by inoculation of guinea pigs. Virulent tubercle bacilli were thus detected in feces from three of these animals, or practically 5 per cent. No relation was found between the presence of visible acid-fast bacteria in the microscopic test and the presence of virulent tubercle bacilli as shown by guinea pig inoculation.

Whether the percentage of reacting cattle passing tubercle

bacilli in the feces is relatively large or small would appear to depend upon the stage of the disease in the individual animals. It is important to point out, that even in well-nourished and apparently healthy herds of reacting animals (such as those used in this work) there are likely to be, at all times, a few animals actually passing virulent tubercle bacilli in the feces.

A detailed account of this work is published in Bulletin No. 149 of the Illinois Agricultural Experimental Station.

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An alteration of the sex-ratio induced by hybridization.

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Males and females of the fly *Drosophila amphelophila* occur in nature in about equal numbers. A long series of experiments failed to induce any change in the sex-ratio by adding different sugars, salts, acids or alkalies to the food on which the larvæ live. A remarkable alteration of the sex-ratio took place, however, in the second generation of certain crosses between two races that arose as mutations. When a male of a race with rudimentary ("short truncated") wings was crossed to a female of a race with short proportionate wings all of the females had normal wings and all of the males short proportionate wings, like the mother. When these (F₁) were inbred, there were produced in the second generation three classes of individuals according to the character of the wings; namely, long (normal), short proportionate, and short rudimentary distributed according to sex as shown below:

Long ♀	Long ♂	Propt ♀	Propt ♂	Rudim ♀	Rudim ♂
989	137	336	389	8	12

The normal males are to the females as one to seven, while in the other two classes the sex ratio is approximately normal. *The point of prime importance is that it is the normal males that are affected.* Even if we assumed that the deficiency might be due to the absence (in part) of males with rudimentary wings, and double the number of males with normal wings, the number of normal males would still fall far below that of the females.