phage was placed in contact with untreated organisms of each culture and the exposed bacterial culture was set up with each of the unexposed bacteriophages. For control purposes a similar series of unexposed bacteriophages and bacterial cultures were used.

The following results were obtained. By this method of treatment 3 of the bacteriophages developed reduced effectiveness when brought into contact with organisms shown previously to be susceptible to them in the control series. But this reduction in lytic effectiveness does not of necessity appear when this same portion of X-rayed bacteriophage is brought into contact with other strains of the colon bacillus. The diminution of effect thus may be selective as the result of the X-ray treatment. Likewise in three instances, treatment of the cultures reduced the activity of the bacteriophage upon them. Again the effect may be selective inasmuch as this same treated suspension when brought into contact with other strains of *B. coli* bacteriophage may still show the usual lysis. The effect, therefore, cannot be ascribed to sterilization of the culture in all instances for they were not killed by this treatment.

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Parenteral and Gastro-Intestinal Types of Proteolysis.*

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In a previous note[1] we reported that under the influence of canine leucocytic extract horse proteins undergo an initial pseudo-proliferation, presumably due to immunologically symmetrical proteolysis. A similar apparent multiplication of horse proteins takes place on 14-day incubation with an excess (20:1) of normal canine serum. In both cases the apparent multiplication is followed by a marked flattening and distortion of the precipitin graph[2] which we interpret as an index of horse protein denaturization.[3]

In contrast with this parenteral type of proteolysis, gastro-intestinal proteolysis has thus far given in our hands no suggestion of

[1] Sox, H. C., and Manwaring, W. H., PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, 72.

[2] For typical graphs see PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, 14.

[3] Sox, H. C., and Manwaring, W. H., PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, 110.

pseudo-proliferation and subsequent partial denaturization. If 5% horse serum is added to 0.1% commercial trypsin in Ringer's solution, for example, or to 0.1% commercial pepsin in acidulated (n/100) Ringer's solution and the mixture is incubated at 37.5° C. for several hours, precipitin graphs show from the first a rapid and consistent decrease in horse-protein titer, without flattenings or distortions of the precipitin graph. We interpret this as meaning that in gastro-intestinal proteolysis none of the lytic products retain their original horse protein specificity.

This study represents selected data from 20 titrations of test-tube lytic products. Each titration was accompanied by parallel tests of from 2 to 4 non-lytic controls.

* In discussing the above paper, it was suggested by Prof. C. L. A. Schmidt that the term "depolymarization" be substituted for "immunologically symmetrical proteolysis."

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Precipitin Variants.

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Anti-horse precipitin withdrawn from a rabbit 10 days after injection of the final immunizing dose of horse proteins gives precipitin graphs[1] suggesting a 100% 17th-day retention of intravenously injected horse proteins in the canine circulation, with marked denaturization of these proteins.[2] Parallel tests with precipitin withdrawn 23 days after the final immunizing dose, give graphs suggesting but 1% horse protein retention with no horse protein denaturization.

Our conventional assumption that the specific precipitin is biochemically identical at all stages of sensitization and immunization with the same antigen evidently requires further study.

This report gives the maximum difference observed in 12 parallel titrations of parenteral horse protein derivatives with about 20 different rabbit antisera.

[1] Azevedo, J. L., PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, 14.

[2] Sox, H. C., and Manwaring, W. H., PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, 110.