a general tuberculosis in this animal. Accordingly experiments were instituted in the following manner: four rabbits were injected for each test, two with a human type of bacillus, the other two with the bovine type, in each case 1/100 mg. and 1 mg. of a culture being injected into the ear vein. These four animals were bled one half hour, one hour, two hours, and three hours after injection, 5 cu. cm. being caught in a solution of sodium citrate. There were thus eight specimens taken from the two rabbits inoculated with the human tubercle bacillus, and eight from the two inoculated with the bovine bacillus. These sixteen specimens were injected into as many guinea-pigs, and after six weeks these animals were examined for tuberculosis.

In all, six experiments of this description were successfully carried out, using twenty-four rabbits and 112 pigs. In the tuberculosis test, 44 of the pigs injected with "bovine blood" survived, 26 of these, that is, 69 per cent., were found tuberculous. Of 45 of those injected with the human virus 7 developed tuberculosis, that is, about 18½ per cent. In almost all of these experiments the bovine bacillus was found more frequently in the circulation than the human type of bacillus. This was not the case to any great extent in two of the experiments, where the bovine strain was not of marked virulence.

The conclusion is, therefore, that a certain parallelism exists between the virulence of the tubercle bacillus and its persistence in the circulation of the rabbit. The more virulent bovine organism remains in the circulation more constantly and for a longer period than the less virulent human type. The cause of this difference is being studied at present. Perhaps we can generalize from this fact in the case of other microörganisms.

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On indican in the blood of uremic patients.

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A demonstration of the constant presence in uremic blood of an abnormal aromatic body such as indican would be highly signifi-

cant since this would be suggestive of the nature of the abnormal metabolism. Hence a recent report[1] to the effect that indican is present in the blood in uremia invited confirmation, and especially as the amounts present are stated to be sufficient to give the ordinary blue color with chloroform when only 10 c.c. of serum are used for the test. Considering the total volume of blood this would mean an enormous concentration.

The method for detecting indican employed by Obermayer, was, in brief, to separate all of the proteins from the serum by means of alcohol, which after filtration is evaporated on the steam bath. The residue from the alcohol filtrate is taken up in water, freed of salts with lead acetate and the latter in turn removed by sodium phosphate. A water clear filtrate is the final result which is tested by the usual method employed for urine with Obermayer's reagent.

In repeating Obermayer's experiments the method above mentioned was used, also the separation of the proteins was conducted by means of phosphotungstic and hydrochloric acids and in a third series a method was used which is based on that of Rona for the precipitation of colloids in blood, by means of kaolin. The clinical material consisted of ten typical cases of uremia, all of the convulsive type. It was noted that indican could not be detected in fresh serum when 10 c.c. was used for tests; with larger amounts, 25 c.c., a questionable coloration of the chloroform resulted in one instance. If instead of using fresh serum or blood, the material be allowed to stand twenty-four to thirty-six hours many of the uremic bloods then gave a fairly definite reaction. When the kaolin method of separation of proteins is employed, however, no indican could be detected even though the equivalents of as much as 50 c.c. of blood be used for the test.

[1] Obermayer and Popper, *Zeitschr. f. Klin. Med.*, 1911, 72, pp. 333–72.