

from the patient. Uric acid determination shows a lessened uric acid output. Therefore, as it is not a nuclein, it may be useful in gout or nephrolithiasis.

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#### BIOLOGY OF THE TUBERCLE BACILLUS.

ARONSON.—Biology of the tubercle bacillus. (*Berl. klin. woch.* 1898, p. 484). Starting from Unna's observation that by means of micro-chemical reactions fat could be proved in tubercle bacilli, the author tried to isolate this hypothetical fat. He used the cultures on glycerine bouillon. These were dried and extracted in a return condense with a mixture of five parts of absolute ether and one of absolute alcohol. From this was obtained a yellowish brown mass which amounted to 20 to 25 per cent of the dried bacilli; it contained 17 per cent free fatty acids, while the remainder was not fat but wax. As other bacilli the diphtheria also contain bodies soluble in ether, and as these extracts from the tubercle and diphtheria bacilli stain with carbol fuchsin, he suspected that the specific relation of bacteria to aniline dyes was due to similar bodies. The stained extract from diphtheria bacilli is readily decolorized by acid alcohol, while that from the tubercle bacillus is very resistant. Most of this wax does not lie in the tubercle bacillus itself, but is a product of its secretion, as one often finds bacilli enclosed in red masses. This extra-bacterial wax may be removed by ether, and now on grinding up the bacteria themselves the extract shows the typical color reaction, so that we are forced to the view of a resistant bacterial capsule. This solubility of the wax may, perhaps, render the bacilli harder to find in sections. If to the ether alcohol extract some HCl is added and the whole is boiled some time, the resistance to acids after staining disappears. On the contrary, most of the toxine is

contained in the body and can easily be extracted by boiling under pressure with dilute caustic soda. It is not injured by a temperature of 105 to 110 degrees and does not contain albumen. On injection into guinea-pigs it kills, the post-mortem showing merely great emaciation. He claims to have immunized a horse with it.

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#### GALL OF HYDROPHOBIC ANIMALS AS AN ANTITOXIN.

FRANTZIUS.—The gall of animals with hydrophobia as an antitoxin to hydrophobia. (*Cent. f. bakteriologie.* v. 23, 1898, p. 782.) From the serum of immunized and non-immunized animals substances have been obtained which would neutralize the effects of inoculation with the virus of hydrophobia, but these bodies were too weak for use in man. Frantzius thought he could find more powerful bodies elsewhere. Based on the idea of Koch that in cattle plague the gall serves as an immunizing agent, he hoped to find antitoxic bodies there. He injected subdurally in rabbits the gall of a rabbit dead from hydrophobia, and found it did not kill. These animals were subsequently inoculated with an emulsion of the cord of hydrophobic animals, when all died. He therefore inferred that subcutaneously it possessed no immunizing properties, and that it was not a curative agent. Later he injected into the anterior chamber of one eye a lethal dose of the virus of hydrophobia, and into the other the gall of an hydrophobic animal, and found the incubation period prolonged. He then mixed in vitro equal parts of an emulsion of medulla of animals with their gall. Now, on inoculating this into healthy animals, they all (nine) survived; but if the gall of healthy animals is used, no neutralizing action results, so that he infers that during hydrophobia antitoxic bodies occur in the gall. This may possibly serve as an explanation of the cases of spontaneous recovery.