

Although these mice did not contain any other protozoan parasites in the intestine, I hesitate to connect positively the small ameboid and schizogony forms with the newly introduced Sarcosporidian "spore" until further study actually demonstrates the transition.

A complete account of the work will appear in the *Arch. d. Zool. expér. et gén.*, T. 52, 1914.

95 (912)

The purine enzymes of the anthropoids and marsupials.

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Previous studies have shown that the human organism contains no enzymes which will destroy uric acid *in vitro*, in which respect man differs from all other mammals hitherto investigated. This corresponds with the repeated observations, especially of Wiechowski, that man alone of all domestic mammals excretes uric acid rather than allantoin as the chief end product of purine metabolism. These facts have been especially emphasized of late by Andrew Hunter. One of us found that even the monkey has no demonstrable uricolytic enzymes in its tissues. Wiechowski made the interesting observation that the chimpanzee, like man, excretes only uric acid and little or no allantoin, while Hunter and Givens reported that monkeys resembled the other mammals in excreting chiefly allantoin, corresponding with our observations on the purine enzymes of the monkey. We have recently, through the kindness of Dr. W. T. Hornaday of the New York Zoölogical Society, come into possession of two fresh bodies of anthropoids—a male chimpanzee and a female orang-utan. Examination of their tissues shows that, like man, they do not possess the uricolytic enzyme, uricase, demonstrable *in vitro*. They also resemble adult man in having guanase but no demonstrable adenase. Hence it seems that the anthropoids stand with men in constituting, in respect to uricolytic power, an exception to all other known mammals; the monkeys resemble the other lower mammals in

possessing uricase, and hence in this property the anthropoids stand closer to man than to the monkeys, as they are also said to do in serological reactions. We have found a marsupial, the opossum, to have uricase, xanthine oxidase, guanase but no adenase. In respect to uric acid destruction our results agree perfectly with the urinary analyses of Hunter and others.

96 (913)

A quantitative application of the Abderhalden serum test.

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The Abderhalden serum test can be greatly simplified, made quantitative, and the sensitiveness increased about thirty-fold compared with the dialysis test, by utilizing the nitrous acid method to detect proteolysis. The technique is the following: 2 c.c. of serum are digested with 0.1 gram of dried substrate (tissue prepared according to Abderhalden's directions and dried quickly at 0.5 mm.), or, as nearly as can be estimated 0.4 gram of undried substrate. After the digestion is complete, 3 c.c. of water are added. The solution is then centrifugated, and 2 c.c. used for amino nitrogen determination in the micro-apparatus, 0.5 c.c. of caprylic alcohol being used to avoid foaming, and the reaction being run four minutes. Control analyses are run under the same conditions with serum that has been digested with normal tissue, and with no tissue. The amino method will detect one fourth the concentration of $\alpha\text{-NH}_2$ that is apparent by the ninhydrin reaction, and the serum is diluted only one eighth as much in the above procedure as in the dialysis test, so that the sensitiveness is increased about thirty-fold. In spite of this, our results have been absolutely negative with the Rous chicken sarcomas Nos. 1 and 2, even when serum tested was from the chicken furnishing the tissue substrate. The results do not, of course, bear on the validity of the test in human cases. We are about to test the method in human cancer and in pregnancy. The work on chicken tumors has been possible as a result of the cordial coöperation of Dr. Rous and Dr. Lange.