

Dr. H. Hattori, the director of the Imperial Biological Laboratory, on the Imperial Palace Grounds, and also director of the Tokugawa Biological Institute, both in Tokyo, is well and is still carrying on his scientific researches.

Prof. M. Matsuyama and Dr. N. Kumagai, of the University of Kyoto, are well and are continuing

their gravimetric studies. Marquis Yoschichika Tokugawa, the founder of the Tokugawa Biological Institute which is devoted to botanical research, is well and active. His name has been in the papers with reference to a proposal made by him for curbing the political activities of the Emperor—a matter taken care of in the announced new constitution for Japan.—*T. Wayland Vaughan* (Washington, D. C.).

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## Letters to the Editor

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### The Serodiagnosis of Amebiasis

Early studies on the serodiagnosis of amebiasis yielded inconclusive results. It was not until the work of C. F. Craig, demonstrating the occurrence of complement-fixing antibodies in the serum of subjects infected with *E. histolytica*, that the development of a satisfactory serologic procedure appeared possible (*Amer. J. trop. Med.*, 1927, 7, 225; 1928, 8, 29; 1929, 9, 277). However, the test possessed certain limitations, the major difficulty being experienced in the preparation of a uniformly reactive antigen. Recognizing this problem, C. W. Rees and his associates developed a technic for cultivating the specific organism in the presence of single bacterial symbionts; saline extracts of the cultures appeared more constant in antigenic activity, and a complement-fixation technic employing the new antigen was reported as yielding encouraging results in a preliminary study (*Amer. J. trop. Med.*, 1942, 22, 581).

Studies undertaken at this laboratory have been designed to determine the principles governing the optimal adjustment of reagents and conditions in complement-fixation tests. As a result, a quantitatively standardized technic based upon the use of the 50-per cent unit of complement has been developed for use in studies on the serodiagnosis of amebiasis. An experimental antigen prepared according to a modification of Rees's method has been supplied by the Hynson, Westcott, and Dunning Company of Baltimore, Maryland. The employment of a constant source of preserved sheep's blood (S. C. Bukantz and the writers, *J. lab. clin. Med.*, in press), and the adaptation of the spectrophotometer, with simple graphic methods, to the standardization of the hemolytic reaction (*J. Immunol.*, in press), have contributed accuracy and facility to the technic. A total volume of 1.0 ml. is used in tests, 0.2 ml. being allotted to each of the reagents. A 1:2 dilution of serum in salt solution is tested, alone and with antigen, in the presence of three 50-per cent units of complement. Four hours at 3–6° C. are allowed for fixation, and 30 minutes in the water bath at 37° C. for hemolysis. The foregoing conditions are advocated at present in order to avoid such nonspecific

reactions as appear with the use of more dilute serum and extended periods of fixation.

Present indications are that the test provides a valuable laboratory adjunct in the diagnosis of amebiasis, particularly in cases in which failure to isolate the specific pathogen prevents the establishment of a definitive diagnosis. The details of the technic and the evaluation of its sensitivity and specificity will be the subject of a later communication.

In this work, the writers have had the technical assistance of Rebecca Goodman and Helen Conway.

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### Biology in College and High School

The letter by Charles A. Gramet (*Science*, 1946, 103, 149) includes many provocative points, several of which I wanted to discuss. Space limits me to essentially one aspect.

In high school, as contrasted with chemistry and physics, biology holds an unfavorable position in local schools, being a nonrequired course, lacking laboratory periods, and being given to sophomores, about 15 years old. Also, as the course has become more "civic biology," a good trend for the high schoolers, it has become less a college preparatory course and still less an equivalent of a college biology course.

College offers a contrast. I do not refer merely to the plan of a year of college laboratory general biology. Large universities generally have separate botany and zoology departments. Each has an extensive year introductory course. Also, many medium-sized universities and colleges have to equal this setup. We give a year course in general zoology (8 credits) and a general botany course of similar length. Our majors must take both. Few other students take them.

My zoology has to be a thorough course with adequate systematic zoology included, as it must prepare for any or all of the advanced, junior and senior zoological courses, each usually a one-semester course, each crowded, without time for review of "general zoology," and each of which must essentially advance a student up to grad-