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.).

Letters to the Editor

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.

JOHN F. KENT and CHARLES R. REIN
Division of Serology, Army Medical School
Washington, D. C.

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-

uate rank. The botanist has the same situation to meet. Of course, I believe that our 16 credits of university zoology and botany, given usually to sophomores, four or more years older than high school sophomores, is vastly more than any high school biology course.

WALTER C. KRAATZ
Biology Department, University of Akron, Akron, Ohio

Gift Packages Direct to Scientists in Europe

An active interest has been shown by Americans in sending parcels directly to families of the universities and scientific laboratories in the countries formerly occupied by the Axis. A check of the records kept by the secretary of the Committee listed below shows that 485 families have been referred since November to donors from coast to coast. An estimate of the parcels already sent indicates that they number about 650 (three tons). In Holland alone some 300 families have been assigned to American families, and an estimated 450 to 500 parcels have been sent. A number of interesting and appreciative letters acknowledging receipt of the earlier parcels have been received.

The Committee has in its files 125 families in six countries (Holland, France, Belgium, Czechoslovakia, Norway, and Greece) that have not yet been assigned to anyone and about 150 others to whom many additional articles should be sent. The need for clothes (especially warm ones and shoes), bedding, notions, and food is still very great and will probably remain so through next winter.

If you can send a parcel to a professional colleague, you may obtain a name from the secretary of this Committee. The majority of the families now listed with the Committee are from Holland. Direct correspondence with these Dutch families has resulted in specific information regarding the needs of each family and the sizes of persons in the family. The information on hand for other countries is, in general, not yet so complete. In many cases it may not be possible to send all of the items mentioned by the family assigned to you, but it should be remembered that partial fulfillment of these needs is much better than no package at all. Although the things you have to send may not fit exactly the family assigned to you, our experience shows that these people are not reluctant to help their friends or neighbors by passing on any articles they themselves cannot use.

Committee members: Langhorne H. Brickwedde, Louise McD. Browne, Emilie H. Condon, Lola S. Deming, Alma R. Hamer, Mildred R. Masi, Grace H. Ruark, and Grace H. Smith.

GRACE H. SMITH, *Secretary*
National Bureau of Standards, Washington, D. C.

Histochemical Localization of Adenosinetriphosphatase

In *Science* (1946, **103**, 144), Moog and Steinbach pointed out certain limitations of the method presented in a paper by Glick and Fischer (*Science*, 1945, **102**, 429–430), entitled "The histochemical localization of adenosinetriphosphatase in plant and animal tissues." Since the method depends on the visualization of phosphate liberated enzymatically from adenosinetriphosphate (ATP), it will, of course, demonstrate the presence of any phosphatase that can act on this substrate and, in addition, any phosphatase, if also present, that can act on the products of the scission. The specificity of these enzymes, and hence the best nomenclature, has not been completely clarified as yet. However, the impression should not be given that the method in question does not have its field of application.

As Moog and Steinbach pointed out, the method will detect ATPase separate from any other phosphatase that can act on ATP when they have different cellular distributions, or when only, or predominately, the ATPase is present. The latter is the case in certain instances. For example, Glick and C. C. Lushbaugh (unpublished observations from the University of Chicago Toxicity Laboratory and Department of Pathology) found that the muscle and ganglia of the cockroach (*Periplaneta americana*) gave a positive reaction in the histochemical test with ATP and a negative reaction with glycerophosphate under the same conditions. K. P. DuBois and V. R. Potter (*J. biol. Chem.*, 1943, **150**, 185) observed that rat liver contained appreciable ATPase but had a negligible action on glycerophosphate; this work was carried out at pH 7.4, however. It might be possible to increase the field of usefulness of the method by exploiting differences in properties between ATPase and phosphomonoesterase, such as the difference in activation of the enzymes given by calcium and magnesium (DuBois and Potter).

Moog and Steinbach also emphasized the lability of ATPase in some tissues. Naturally, if the ATPase in a given tissue cannot stand the rigors involved in the preparation of paraffin sections, it would be necessary to use frozen sections and even perhaps frozen sections of unfixed tissue. That ATPase may be present in paraffin sections was indicated by the positive results obtained with cockroach tissues (Glick and Lushbaugh). The length of time required to develop a positive reaction is not critical, however, as it is well known that considerable enzyme losses can occur during histological preparation. This does not impair the validity of the qualitative histochemical test, since loss of enzyme may be compensated by employing longer digestion periods.

DAVID GLICK
Russell-Miller Milling Company, Minneapolis

Sources of Future Scientists

This letter is stimulated by the letter on the above subject by Clarence J. Gamble, M.D. (*Science*, 1946, **103**, 457).

While undoubtedly it would be desirable for future scientists to be recruited as largely as possible from the descendants of other scientists, I do not think that it can be shown at any time in the history of civilization that scientists have been recruited chiefly from such stock. It is even true that in other fields of activity they usually have not left families containing nearly as many children as those from the population to which their fathers belonged. Is it not generally true that, in any population, those who have devoted a major portion of their time