and workers both young and old. Two wine-soaked jackets along with several hundred specimens were sealed in a rectangular museum jar. The jar was placed in the dark and periodically examined. When brought into the light the specimens began to coat the jar, so that, after a time the four sides were coated with a clay-like substance. It was a lively, interesting sight to see the specimens running through the tunnels made in the material coating the glass. Over a period of four years, there were no swarms, although many young specimens were observed. No mold was formed, as is often the case when cultivating termites in the laboratory. The end came when the food was consumed.

JAMES A. MULLEN

FORDHAM UNIVERSITY

SCIENTIFIC INTUITION OF A ROMAN EPICURE. A QUOTATION

THE appended quotation[1] from Petronius, Rabelais' prototype at Nero's court, is peculiarly timely to-day:

"But tell us," said Trimalchio, "what was the bill of fare?"

"All right," he replied, "I'll tell you if I can: my memory is so brilliant that I often forget my own name. However, to begin with, we had a roast pig crowned with a wine-cup; this was set off by cheesecakes and forcemeat done to a nicety; then of course beetroot *and pure whole-meal bread, which I prefer to white bread as being more feeding and better for my liver.*"

W. A. PERLZWEIG

DUKE UNIVERSITY SCHOOL OF MEDICINE

QUOTATIONS

DISEASE IN WARTIME[1]

MALARIA

BECAUSE it includes one of the recently acquired military bases of the United States, Trinidad takes on new importance to this country. At the request of the Army and Navy and on the invitation of the Government of Trinidad, the Rockefeller Foundation is participating in a study of malaria in the civilian population of that island. Malaria is the outstanding health problem there, and while the identity of the principal vectors responsible for the disease in Trinidad has not been definitely established, evidence points to two species of anopheline mosquitoes. One of these species breeds in the water which collects in the leaves of a plant growing on trees. Malaria is thus often prevalent in regions where the usual marshes and streams, commonly associated with the disease, are absent, and this probably accounts for the fact that malaria is found at nearly all altitudes in Trinidad. The Foundation has assigned a malariologist and an entomologist to determine the factors of the problem, and when these have been obtained it will be possible to make intelligent plans for controlling the disease.

Another project in malaria under Foundation auspices is on the Burma Road. This project was begun in 1940 under the direction of Dr. W. C. Sweet of the Foundation staff. On one section of the Road, troops and truck drivers became heavily infected with malaria a short time after their arrival, and investigations were begun at that point. More than twenty species of anopheline mosquitoes were found in this area, but only one proved to be an effective carrier of the disease. A laboratory has been established directly on the Road, and although under the war circumstances the project has encountered great difficulties, it is hoped that effective control measures will soon reduce the incidence of malaria at this critical section of the highway.

[1] From the Review for 1941 of the Rockefeller Foundation by President Raymond B. Fosdick.

TYPHUS

"In its tragic relationship to mankind," said Hans Zinsser, "the disease of typhus is second to none—not even to plague or to cholera." In most major wars of the past more persons have succumbed to typhus than have fallen on the battlefield—and Zinsser speaks of "the relative unimportance of generals." Whether a similar disaster will accompany this war we do not know, but typhus is now active in many parts of Europe. Epidemics are building up in southern Spain. Other known focuses of the disease are in Poland, Rumania and the neighboring countries, whence it may be expected to spread in disastrous epidemics as the result of conditions imposed by prolonged warfare.

In spite of the fact that it is an age-old problem, our basic knowledge regarding this disease is far from adequate. We know in a general way that it is spread from person to person by means of the body louse and that it develops rapidly with devastating results when people are crowded together under unsanitary conditions and when there is a heavy louse infestation. We also know that in most instances one attack confers lifelong immunity, and we have certain rudimentary knowledge regarding the prevention of its spread by such measures as general delousing and quarantine. But we do not know how

[1] Chapter LXVI, "Petronius: The Satyricon." Translated by J. M. Mitchell. London: J. M. Rutledge and Sons, Ltd.; New York: E. P. Dutton and Company, 1923.

best to control or eradicate louse breeding under war conditions. Nor has there been found any highly effective or reliable method of immunization against typhus. Moreover, no specific treatment for the disease, once it is contracted, has thus far been discovered.

The chief reason that so little progress has been made in the study of this malady is the lack of an experimental animal which would equal man in its susceptibility to typhus, and in which the disease could be reproduced as it occurs in human beings. Until such an animal is found, progress in the study of typhus is bound to be slow. In the past the standard animal employed for this purpose has been the guinea pig, but in comparison with man the susceptibility of the guinea pig to typhus is slight. The infection in this animal is usually characterized by a short transitory period of fever followed by recovery. There has been a tendency to believe that the various preventive measures effective in the comparatively refractory guinea pig are equally effective in the highly susceptible human being. The hazards of such reasoning were recently demonstrated when vaccines which fully protected guinea pigs failed to afford similar protection to laboratory workers exposed to infection due to accident. Two doctors on the staff of the Rockefeller Foundation contracted typhus this last year, although they had been vaccinated with the latest and supposedly the most effective type of vaccine.

The International Health Division of the Rockefeller Foundation began laboratory research in typhus in January, 1941, and soon afterward a field worker was sent to Spain to study on the ground the epidemic active in that country. Some progress was made during the year in finding a better tool for typhus research in the form of a more susceptible animal. This proved to be the Eastern cotton rat, previously used in the United States in the investigation of infantile paralysis. These rats are highly susceptible to European typhus, but only when very young. During the period when they are expected to develop immunity as a result of vaccination, they also acquire a certain degree of natural resistance by simply growing up. On the other hand, they have proved extremely valuable in facilitating comparison of different vaccines as well as in the study of chemotherapy in typhus.

Although the cotton rat is greatly superior to the guinea pig for typhus studies, the search for a still better experimental animal is being continued. Ever since 1938 field workers of the Foundation's International Health Division have been collecting and testing wild animals for their susceptibility to virus diseases, particularly in the jungles of Brazil and Colombia, on the island of Jamaica and in Africa. The previous discovery of the value of the ferret in influenza and the hedgehog in yellow fever suggested that other animals might be discovered if a systematic search were made. It is to be hoped that some animal more susceptible than the cotton rat will soon be found so that advance in knowledge of typhus can be hastened.

INFLUENZA

A year ago in this Review a report was made of the development of a vaccine for influenza A and of the field studies then in progress, both in this country and in England, to determine its efficacy. These studies indicated that while the vaccine effected about a 50 per cent. reduction in the incidence of influenza A, it would have to be greatly improved in quality before it could really control the disease.

During 1941 the research was energetically pushed in relation not only to influenza A but to influenza B; and the laboratories of the Foundation were successful in developing a new technique for measuring antibodies in the blood before and after vaccination. Aided by this technique, eleven different types of vaccines have been prepared and tested in human volunteers in groups varying in size from 150 to 200 persons. Generally speaking, the number of antibodies in the blood of persons vaccinated with some of these types was about the same as that which would follow an actual attack of influenza.

On the basis of these results it was decided to make a field trial of one of the most promising vaccines containing both influenza A and B viruses. Groups of 1,000 persons have therefore been vaccinated in Oklahoma, Georgia, Virginia, Ohio and New York. All vaccinations have been done in large institutions where a similar number of persons living under identical conditions have been left unvaccinated, to serve as controls. At the moment no influenza has been reported anywhere in the United States. If this should be an "off year" for influenza, there may not be an opportunity this winter to test the efficacy of the new type of vaccine.

SCIENTIFIC BOOKS

THE LAPLACE TRANSFORM

The Laplace Transform. By DAVID VERNON WIDDER. x + 406 pp. Princeton: Princeton University Press. 1941. $6.00.

THE Laplace transform has been extensively investigated by two classes of people—mathematicians and applied mathematicians. The latter have been chiefly interested in the formal properties of the