are laid in the path of a foreigner, rather by the profession than by the public, can be overcome, then in those places one is assured of a lucrative practice. But the western city — don't be deceived — though it number half a million inhabitants, is an industrial village only and not a metropolis in our sense.

Taking everything into consideration, as far as emigration goes, I recommend to the profession careful thought; but with a clear conscience, I advise every one to spend a shorter or longer time in study in the land of unlimited opportunities. He will return home with a wealth of experiences.

AN EPIDEMIC OF DENGUE IN THE PHILIPPINE ISLANDS.

BY HAROLD W. JONES, M.D.,
First Lieutenant Medical Corps, United States Army.

DURING the latter part of the year 1907 dengue became epidemic in certain parts of the Philippine Islands; at first many cases of the disease were unrecognized and were classed as malaria, typhoid, paratyphoid, etc., but later it became evident that these had been cases of dengue. The epidemic about to be described occurred in the interior of the island of Samar and was confined entirely to native troops, not a single white person having been infected. Although the disease is common enough, there are certain points about the epidemic which seem to be of value in studying its etiology and symptom-complex.

The first case occurred in the town of Basey, Samar, situated on the seacoast seven miles below the military post of Dawa; a small detachment of Philippine scouts was at the time stationed in this town, while the main body of troops, two full companies of over one hundred men each, was garrisoned at Dawa, a wretched barrio of a few hundred native inhabitants. At this time it was learned that in Basey there had been a good many cases of "calentura," which is the appellation given by the natives to all cases of fever, and it is now supposed that dengue was then epidemic there. Two days later the detachment of ten men proceeded to Dawa, the original case of sickness not having been recognized as dengue, although later, in view of what followed, the case should have been plain enough. Two days later at Dawa a second case made its appearance and within a day or two after that three or four others. Coincident with the epidemic among the troops an epidemic broke out in the barrio of Dawa; the town was situated on low ground, by the bank of a large river, the post being located on a high, windswept ridge about three hundred yards from the outskirts of the town.

In spite of sanitary measures instituted; namely, the prevention of mosquito bites, the disease spread rapidly through the 19th Company till a total of thirty-five men had been

attacked. The first eight or ten men affected in this company occupied beds in the center of the barracks, for the most part contiguous. From this center the disease spread toward either end of the barracks, and by the tenth of August, ten days after the appearance of the first case, about fifteen men in the 19th Company had come down with the disease, while up to that date the 14th Company, which occupied barracks about one hundred and fifty yards distant, had not had a single case. On that date the first case appeared in the 14th Company. In all but five men of this company came down with the disease; the fact that it practically escaped may have been due to Providence, but was probably due to some very rigid sanitary measures.

The outbreak occurred during the period in which there was a good deal of rain, and on the approach of a period of dry weather it began to diminish. During the wet period mosquitoes were very troublesome, and although the post was well policed and there was no standing water, the insects were present in large numbers. The barracks of the 19th Company were situated on the highest point of the post, seemingly an unfavorable situation for the presence of mosquitoes, while the barracks of the 14th Company were somewhat lower down and some distance away. Out of the eight white residents of the post, no one contracted dengue, but a soldier who occupied a small room in the house of the commanding officer was taken sick. This man had slept without any mosquito bar, and it is a significant fact that a second soldier who occupied a bed alongside of the first, and who habitually slept with his mosquito bar down, escaped.

In attempting to control the epidemic the sanitary precautions employed were as follows: All men in barracks were required to keep their mosquito bars around them at all times. There being no hospital at the post, all sick had to be treated in their quarters; these were screened with especial care, inspections being made at stated intervals four or five times a day to see that directions were followed. In addition it was recommended to the commanding officer of the garrison that the pass list to visit the barrio at night be suspended; this recommendation was followed also.

Medical aspect of the epidemic. — The onset, symptoms and progress of the disease were very much alike in a great majority of the cases. The onset was very sudden in some instances, a man being taken sick, perhaps, while on guard duty and having to be assisted to his quarters. Practically every case complained of severe headache, generally frontal. The next commonest symptom, which occurred in almost all the cases, was pain in the chest. Very severe pain in the back was also noted in a large number of cases. Pain in the limbs, supposed to be the commonest, indeed, the pathognomonic symptom, was comparatively rare, much to the writer's surprise. Chill was seen in a few cases, suggesting malaria. A few cases had cough as well,

but no bronchitis was present. The initial temperature, in many instances, was 104° and 105° . The blood in the earlier cases was repeatedly examined for malarial plasmodia, but none were found. In cases treated in quarters it was not always easy to find the eruption, since this is often of so evanescent a character as to escape detection. It was seen in a few cases, in one being very marked on the ninth day. It is quite probable that the color of the patient's skin may account for the failure to see a skin eruption in a Filipino in many instances.

The treatment of the cases was entirely symptomatic and does not call for comment.

In thirty-six cases temperature charts are shown; it will be seen that the majority of these have many points of similarity. For convenience in comparison they are divided into groups, the first of which comprises the cases showing an immediate rise to the maximum with a fall to normal or nearly normal, with a secondary rise and finally defervescence; the second, in which the temperature shows no secondary rise, but a gradual and sometimes irregular defervescence; and the third in which the temperature was very irregular, suggesting malaria or perhaps typhoid.

Of the first series there are sixteen cases showing a very definite secondary rise, sometimes almost immediate after the fall to normal, i. e., within twelve hours, sometimes occurring after twenty-four, forty-eight or sixty hours, or even as late as five days. In a majority of these cases the secondary rise was very abrupt; in some the

fall occurred within a day and in others not for several days.

Seventeen cases show no secondary rise in temperature. These, while presenting the same general symptoms, were not as sick as the others. It is possible, also, that some may not have been seen early enough and that the temperature chart represents the secondary rise and final defervescence, the first portion having escaped; indeed, this is not unlikely, since many scout soldiers are averse to going on the sick report, and, even though sick, will continue to perform duty.

In the third group I have placed three cases so irregular that in spite of the symptoms and the circumstances some other disease was suspected. Two of these, after ten days of continued high fever, were sent to Camp Bumpus, Leyte, in order that they might have proper hospital treatment; the Widal reaction and the blood examination at the latter post were negative, while the late appearance of the eruption in one case made the diagnosis certain.

Looking at the sixteen cases in the first group and including the three of the third as being the most complete in the series and representing the disease from its inception to its end, we find the average duration, estimating from the time when the temperature reached normal and remained there, to be a little over six days; the shortest duration was three days and the longest, twelve. While it is useless to attempt to classify these cases accurately, a comparison and study of the fever curves is of some interest.

In connection with this report the endorse-

Numbers 1 to 16 inclusive show a well-marked "secondary rise" in the fever curve; numbers 17 to 33 inclusive show no "secondary rise," it being either missing or having never occurred; the last three numbers show the very irregular character of the fever which occurs in some cases.

ment made by Major Glennan, chief surgeon of the Department of the Visayas, to whom it was originally sent, is quoted in part. It is as follows:

"Respectfully forwarded to the chief surgeon Philippines Division, inviting attention to this special report of Lieutenant Jones. . . The histories and the appearance of the charts would bear out Dr. Jones' theory in his second classification that the first rise of temperature had been overlooked, though I have before observed a similar condition in an epidemic in white troops in Texas, in which we thought that the second rise was missing. Cases similar to those coming in the third group have occurred also in Iloilo and Camp Jossman, in which the surgeons were puzzled in making a diagnosis, as these cases lacked the typhoid symptoms and curve

of dengue and yet did not give the Widal reaction and which, it was thought possible, were a typical typhoid or paratyphoid fevers. In Dr. Jones' cases, though, they were unquestionably cases of dengue. Though without recourse to histories, my impression is that the eruption was more constant and more marked in cases occurring in the United States than in the Philippine Islands. . . ."

In conclusion it may be said that the study of these few cases hardly serves to throw any new light on the subject of dengue; in view of the recent work done by the board for the study of tropical diseases in the Philippine Islands, in showing the transmission of the disease by mosquitoes, certain significant facts in the development of this epidemic may be of slight confirmatory evidence.