

MALARIA IN PORTO RICO

Malaria has been one of the most prevalent diseases in Porto Rico for many years. There were one thousand one hundred and eighty-five deaths in 1922 and nine hundred and fifty-nine deaths in 1923 as a consequence of this disease.

An intensive anti-malaria campaign is constantly being carried on and the Rockefeller Foundation in coöperation with the Department of Health of Porto Rico continues a study of certain zones with a view to controlling the disease, and for this reason the number of deaths caused by malaria is decreasing each year.

Three towns—Barceloneta, Fajardo and Ponce—are the zones which were chosen for a specific study of malaria, and after devoting a year's time to Barceloneta and adjacent regions the office was transferred to Fajardo on May 18th, 1924. The first work undertaken was the taking of a census of the rural and urban population, the examination of school children and also the examination of blood films as well as a survey of the zone chosen for the campaign. In one region within one kilometer of the town of Fajardo there were large numbers of *Anopheles* mosquito-breeding places, which made immediate action most imperative, and it is believed that except for the campaign carried out at Aguirre from 1920 to 1923 by the International Health Board under an agreement with the Insular Government no such definite campaign as is now in action on this part of the Island has ever been made in Porto Rico.

The census prepared gave a total of four thousand people and of the entire rural and urban population which would probably reach eight thousand, 33 per cent or one-third were found suffering from malaria. Some had acute symptoms but the majority were chronic cases. Having an exact knowledge of sanitary conditions it has been possible to plan the work carefully and modern scientific methods for the extermination of the disease are being used with every prospect of success.

The extermination of mosquitoes is of capital importance if the Island is to be freed from this and other diseases carried by their various species. There are two ways of combating the disease. One is by sterilization of all carriers of the parasite, the other by destroying all the mosquito-breeding places. In the first process various species. There are two ways of exterminating the *Anofele-*

nos mosquito. One is by sterilization of all carriers of the parasite, the other by destroying their breeding places. In the first process people who are not confined to their beds and who at the moment have no fever are included. These harbor the parasite in the blood and can therefore infect mosquitoes. These mosquitoes spread the infection rapidly and widely and thus increase greatly the risk to both young and old. Much of the transmission of malaria is due to the fact that persons who have been previously treated have not been cured and serve as ample source for the transmission of the disease. It is therefore very necessary to persuade malaria patients to take the entire treatment so that the work will neither be too laborious or utterly useless. An effort is made to instil patients with a desire to cooperate with the Bureau not only for their personal benefit but for the benefit of others. Great pains have been taken to explain these things giving the necessary information in simple language to those people who are exceedingly indifferent as to their own health.

Those in charge of the campaign are using the Standard treatment. The medicines are carefully administered by the inspectors with no cost to the patients and under the direct supervision of the physicians in charge of the work. One of the great drawbacks in the successful treatment of the disease is the fact that in most cases little care is taken to cure the infection after the clinical symptoms have disappeared. When this happens the treatment is inadequate, the infection remains uncured and the patient is subject to a recurrence of the disease later on and at the same time contains a copious supply of parasites for the infection of other people. Short conferences are held with the patients in order to arouse their interest in carrying out the instructions given. They are urged not to give up the treatment as the medicine will do no good unless taken regularly. Once fully informed as to this, the results depend upon the attention the patient gives to the treatment prescribed. Persons found to be suffering from malaria are requested to visit the office at once for examination so that they may be treated without delay. In short, every means is facilitated to those who really want to be cured.

In carrying out the second process of extermination it must be remembered that not all mosquitoes carry the malarial parasite. It has been proven by scientific experiments that the female, not the male *Anopheles* is the only species that transmits the disease. It sucks human blood in order to completely develop its eggs. If the

person is a carrier of the parasite the infection is naturally transmitted to the mosquito. It is therefore necessary to destroy this dangerous species of mosquito by localizing its breeding places and then establish a drainage system, adequate to the location and conditions of the land so that no water remains stagnant in any region. Persistent efforts must be made along these lines, as many people do not realize that even depressions in the ground caused by the hoofs of animals are potential breeding places, especially if the water stands for more than five days.

Special care must also be taken to avoid obstructions by vegetation, rubbish or dirt in the flow of water in ditches or other water courses. Wide, level ditches are often inadequate, especially when the grade is insufficient, and these usually form breeding areas over a large portion of a territory, making it necessary to examine them constantly. This Bureau has made it a custom to call the attention of property owners repeatedly to the necessity of carrying out these methods of mosquito extermination, and the engineer of this unit is ready at all times to give his aid and technical advice to any person soliciting it. Thus far, the interest of the people as to public health matters has been aroused to quite a large extent. The cooperation of the mayor of Fajardo, the local physicians, and the majority of the public in general has also been most gratifying. No doubt the solution of this problem, which is of such vital importance to the Government of Porto Rico and to the entire population, is in the hands of this newly created Bureau of Malaria Control.

