

17. Mention any local customs or conditions affecting leprosy work.

General lack of sanitation, a condition which is being rapidly improved.

18. How is your area off for hospitals, qualified doctors, and public-health activities?

Adequately provided. For activities see Annual Medical Report.

19. Please state how you consider the extinction of leprosy could best be affected.

In so far as the Native races of the South Pacific are concerned, by—(1) Education of the Natives in hygiene and sanitation; (2) combing the population for cases of leprosy; (3) segregation and treatment of all cases discovered.

20. What is the prospect in your area of Government and public support for an anti-leprosy campaign?

Any activities which will help in freeing these islands of leprosy are assured of support.

21. Please give other relevant facts, if any, not covered by the questionnaire.

APPENDIX D.

THE CONTROL OF MOSQUITOES IN APIA, SAMOA.

By P. A. BUXTON, M.R.C.S., L.R.C.P., D.T.M. & H. (Expedition of the London School of Hygiene and Tropical Medicine to Samoa.)

I PROPOSE to record some observations upon the mosquito (*Aedes variegatus*, *Stegomyia pseudoscutellaris*) which carries filariasis in Samoa, and to confine myself rather strictly to what has obvious bearing on the question of reducing the numbers of this very dangerous insect. But before I discuss the specific measures for its control it must be understood that no work directed against this one species will be effective unless general anti-mosquito measures are also prosecuted vigorously. The success of any health campaign depends largely on the interest and help of the mass of the population.

The most irritating mosquito is not the day biting *Stegomyia*, which is our special objective, but the virulent night biting *Culex fatigans* and *Finlaya kochi*. As long as the *Culex* and *Finlaya* make night unpleasant, so long will people in general say that anti-mosquito measures are useless and irksome, even if a great reduction in the numbers of the more dangerous *Stegomyia* is effected. The principal breeding-place of *Culex fatigans* in Apia appears to be septic tanks and pit privies. It would be a very simple matter to screen with gauze the ventilators of the septic tanks; it would not be an enormous task to treat the pit privies with cresol once a month. The extermination of *Finlaya* is a simpler matter, though I doubt if public opinion is ready for it; it can be accomplished by forbidding the growing of taro and tamu (*Colocasia* species) within the municipal area. This measure would be entirely successful, and no other measure would be the least use. Every taro-plant holds a few ounces of water among the bases of the great leaves, and in every plant one can find the larvæ of *Finlaya*, and this is their only regular breeding-place. It would greatly assist in reducing the amount of taro grown if the water-level of the Taufusi Swamp could be lowered a couple of feet. Speaking as an amateur, I feel hopeful that the control of the mouth of the Mulivai by gates which could be shut at high tide would effect a great deal at small cost. The urgent need of dealing with this swamp must be apparent to any one who gives attention to the matter. It occupies land which must be used as a town-site, and which will greatly increase in value as agricultural land when it is drained; it makes the proper disposal of sewage almost impossible; above all else, it is a great potential danger, because if *Anopheles* were introduced from the New Hebrides or Solomon Islands, Samoa would be faced by such an epidemic as decimated Mauritius in 1867-68. The evidence tends to show that two species of *Anopheles* were introduced into Mauritius from Africa, over a much greater stretch of sea than that which separates Samoa from Melanesia; the result was the ruin of Port Louis and the coastal zone, the emigration of the white population to the hills, and the death of over thirty-two thousand people in two years. Once the Taufusi Swamp is drained, the accidental introduction of *Anopheles* will be less likely. The present condition of the swamp is shown in figures 8 and 9—photographs taken from one of the main roads in Apia.

So much for the more general mosquito control, which will render life more pleasant, but which will not effectively reduce the numbers of any disease-carrier. Let us turn to the question of controlling the carrier of filariasis, *Aedes variegatus* (*Stegomyia pseudoscutellaris*), remembering that a large proportion of Natives (O'Connor found a filarial incidence of 58.3 per cent. in 2,509 Samoans over fifteen years), are infected by it and suffer from the diseases associated with its presence in the body. The habits of this particular species of mosquito have already been studied by Doane, and more recently by O'Connor. Since our arrival in Apia in January, 1924, my assistant, Mr. G. H. E. Hopkins, and myself have devoted a good deal of time studying its natural breeding-places, but we have done little more than confirm the findings of the earlier workers. The principal breeding-places are—

- (1.) Coconut-shells, both those which have been opened by man in cutting copra or for drinking, and also fallen green nuts opened by crabs and rats.
- (2.) Rot-holes in trees. The insect is by no means a domestic insect, and great numbers may be found in every uncultivated part of the island. The commonest rot-holes in town are those in kapok, candle-nut, fao (*Hibiscus tiliaceus*) and other trees which are pollarded and used as fence-posts. Fig. 10 shows a row of pollard fao-trees full of small cavities. Breadfruit-trees are dangerous because horses gnaw the bark and let in the rot. Mangoes are dangerous because their great forks often hold several gallons of water. The steps cut in the trunks of coconut-palms often contain water and larvæ (fig. 11). The mangroves (*Rhizophora*) in the mouths of the rivers are full of little holes in which *Stegomyia* breeds in great numbers. This is quite a serious matter in Sogi and the west end of Apia generally.