

giving 49 per cent. of fresh cases and 51 per cent. of relapses; in the second campaign 64.2 were fresh cases and 35.8 relapses. If we apply these percentages to the figures for the whole of Western Samoa we find that—

	Fresh Cases treated.	Relapses.	Total Cases.
Second campaign	3,695	2,066	5,761
Third campaign	1,878	1,955	3,833

The large percentage of relapses in the second and third campaigns is accounted for by the fact that a good number of cases in the first campaign did not receive their full course of three injections, and others had to receive small doses of Novarsenobillon because of some intercurrent disease, these cases having all been recorded under the heading of "Relapses."

The Samoans, recognizing that to have a reasonable chance of cure one must submit to a course of at least three injections of Novarsenobillon given by the method that has already been described,* have passed a law through the Native Parliament, or Fono, in compelling all Samoans suffering from yaws to attend for treatment and to undergo a full course of three injections, if this is considered necessary by the Medical Officer. The passing of this law on the 30th March, 1924, has enabled us to give every case a thorough course of treatment, and this should markedly decrease the number of relapse cases seen in future campaigns.

During this year's campaign in the control district an individual examination of every child from six months to five-years of age was made to determine what the effect of the two previous campaigns had been on the population. Five years was selected as the limit in age because every year over this age increases the liability to error in the accuracy of the history of onset of the disease, and to the statement of the child's age when it was seen at the first campaign. It was necessary to include children up to five years of age, as during the first campaign hardly any children were infected who were suffering from the early stages of the disease, but they came freely at the ages of two and three years, when they had been suffering from yaws for a year or two. During the first campaign hardly any children were brought up for injection who were suffering from the primary sore; this led to an inspection of the babies under two years of age, when it was found that none of them showed yaw-lesions under six months old, but that the percentage of the infected to the uninfected steadily increased until at the age of two years not a single baby was seen that was not suffering from active yaws, or did not show the temporary staining of a recently subsided yaw rash.

In the following table, only children of six months up to five years have been included:—

Total number of children seen in 1925	416	
	Number.	Percentage.
Clean children	332	79.8
Never having been injected	117	27.9
Treated by injection two years ago	136	32.7
Treated by injection one year ago	79	18.9
Children showing evidence of yaws	84	20.2
Treated for the first time on this campaign	38	9.1
Having been treated on previous campaigns as well as this campaign	46	11.4

Approximate numbers of children in the control district that have been treated in the various campaigns:—

1923—Under the age of three years	145
1924—Under the age of four years	105
1925—Under the age of five years	84

These figures show a steady decrease in the number of fresh cases in early childhood, when the history is most likely to be reliable, and when the question of immunity due to a previous attack does not affect the results.

IMMUNITY.

So far we can see no evidence that the immunity that an attack of yaws produces against subsequent attacks of yaws or syphilis is in any way being destroyed by our method of treatment. Only two cases have given a history suggestive of a second primary infection following the treatment by a course of injections of a previous attack of yaws. In both these cases the injections were given to babies very early in the disease, when the secondary rash had only just developed, and it is probable that the drug acted and killed out the infection before the body had produced its natural immunity.

If this immunity is only slowly produced, as is suggested by the work of Nichols†, then we will expect to see more cases of reinfection in the near future, as the Samoans now frequently bring their children for injection while the primary manifestation of the disease is still present.

So far no amount of treatment of the disease in the late secondary period has been able to remove the immunity that the body has developed against reinfection with yaws; for we have never seen a primary sore or a generalized rash in a Samoan over ten years of age. The only condition that is suggestive of a primary sore is the ulceration on a nursing mother's breast, which sometimes occurs when the baby has an extensive yaw rash round the mouth. This condition we regard as a purely local infection of the tissues, due to frequent massive infection of a wound with organisms from the lesions of the baby; for, although the ulcer has been present for months in some of the cases seen,

*Annual Report of the Department of Health of the Mandated Territory of Western Samoa, 1925, page 17.

† H. J. Nichols, *American Journal of Tropical Medicine*, November, 1925, vol. 5, No. 6, pp. 429-437.