

MINUTES OF EVIDENCE.

WEDNESDAY, 20TH AUGUST, 1902.

Mr. W. A. BOUCHER examined.

1. *Hon. the Chairman.*] What is your name?—W. A. Boucher.

2. What is your occupation?—Fruit Instructor.

3. You have been in charge of the experimental orchard?—Yes, sir.

4. For how long?—For two years. The size of the orchard (the Otahuhu Experimental Orchard) is about 2 acres. The work of the first season consisted of spraying solely for the codlin-moth, with the result that at the end of the season 38 per cent. of the fruit was absolutely sound. During the winter following the first season the pruning was taken in hand, to be followed later, about this time last year, with spraying for the fungi diseases, and the spraying for the codlin-moth commenced in November. Prior to the Department taking the orchard in hand the trees had been neglected for a number of years. In the first place, they had been well cultivated in order to give them rapid growth; then afterwards came a time of neglect, followed by a time when the orchard was used for dairy purposes, and stock turned in. So that at the time when the Department took the place over many of the lower limbs of the trees had been destroyed and the trees had grown almost beyond reach, considerably increasing the cost of all orchard operations. The trees were sprayed eight times in all during the season, and several different mixtures were used with a view to testing during the same season, and under the same general conditions and upon the same varieties, all the arsenical sprays. This was approved of by the committee as important experimental work. The sprays tested were as follows:—Paris green: 1 lb. to 200 gallons saturated solution of lime-water; cost—Paris green 1s., lime 5d.—total cost, 1s. 5d. per 200 gallons. Arsenic and soda No. 1: 1 lb. white arsenic, 2 lb. washing-soda, to 700 gallons of lime-water; cost—arsenic 6d., washing-soda 2d., lime 1s. 5½d.—total cost per 700 gallons, 2s. 1½d. Arsenic and soda No. 2: 1 lb. white arsenic, 4 lb. washing-soda, to 400 gallons of lime-water; cost—arsenic 6d., washing-soda 4d., lime 10d.—total cost per 400 gallons, 2s. 1d. Arsenite of lead: 1 lb. arsenite of lead, 1½ lb. of treacle, to 12 gallons plain water; cost—arsenite of lead 1s., treacle 1½d.—total cost per 12 gallons, 1s. 1½d. Resin mixture: 1 lb. washing-soda, 1½ lb. resin, to 2 gallons water; cost—washing-soda 1d., resin 4½d.—total cost per 80 gallons, 5½d. In addition to these I used arsenite of lime; but I found the arsenite of lime scorched the foliage, and I ceased to use it after one spray. The sprays that were effective and that I am prepared to recommend are Paris green, and arsenic and soda No. 1. Arsenic and soda No. 2 also scorches the foliage. The net result from the Paris green was a fraction over 90 per cent. of fruit free from the moth, and the result of the arsenic and soda No. 1 a fraction over 95 per cent. free from the moth. The cost of spraying overgrown trees, 20 ft. apart, 108 trees to the acre, would be—labour 8s. 4d.; material, using arsenic and soda, 4d.; or a total of 8s. 8d., or, using Paris green, which is slightly more expensive, 9s. 1d. This is at the rate of 1½ acres per day, and a man and boy could spray from 1½ to 3 acres, according to the number of trees to the acre and the size of the trees. The cost of spraying, including material, of a well-kept orchard would be, per acre—labour, 4s. 2d.; material, 5d.; or a total cost of 4s. 7d. But the cost of spraying will vary according to the size and spread of the trees, the material used, the spraying appliances available, the number of the trees to the acre, the contour of the land, and weather at the time of spraying. On account of the excessive rainfall that sometimes occurs during the spraying season I have found it necessary occasionally to add an adhesive mixture to the ordinary sprays to prevent their being washed off before their action has been effected. For this purpose I added a small quantity of resin mixture to the Paris-green solution, with very satisfactory results. Taking everything into consideration, I consider the results were entirely satisfactory, for the orchard was selected by a committee of Auckland fruit-growers as being the worst that they could find, and on the occasion of the first visit of the committee one member to demonstrate how badly infected the orchard had been took his penknife, and, lifting the loose bark from the macrocarpa shelter-belt, showed the dormant grubs hidden there in numbers. At the same time it was possible to find the codlin grubs in the decayed wood, and under the rough bark of the apple-trees themselves. The property was selected by the committee and offered to the Department on that account. Under ordinary circumstances, in a well-kept orchard four or five sprays would be all that would be necessary, but in an orchard so badly infested I found it necessary to spray eight times the first season to reduce the numbers of the moths. But I propose to gradually each season reduce the number of sprays. Great care was exercised by the committee in making a careful count. The tree was selected by themselves, and all the apples carefully gathered, each apple always being carefully examined for traces of the codlin-moth, and all apples showing traces were set out on one side as "mothed." The question has been brought up regarding the effect of the pigs upon the count of fruit, but the pigs only did the work that would otherwise have been accomplished by hand, for in no well-conducted orchard would a grower leave the apples lying beneath the trees throughout the entire season to increase the trouble in the orchard for the following season. The pigs were merely allowed to gather up for themselves what would otherwise have been gathered up and carried to them, thus saving the labour of gathering up the fruit. The orchard was open to any member of the committee throughout the entire season, and at my invitation they visited the orchard from time to time, but on no occasion could they find any considerable percentage of infested fruit upon the trees themselves. And of necessity the fruit must become infested upon the trees before it can fall to the ground for the pigs to gather it up. So that I do not see that the gathering of the fallen fruit by the pigs affected the percentage of sound fruit when it came to the final count of the fruit on the tree. If there had been any large percentage of codlin-moth I think that members of the committee would have discovered it upon