

pollen tubes and protrudes them through the tissues of the stigma down the style into the ovary. In corresponding on this matter Professor Forbes says: "Of course you will have no trouble in proving by the highest authority that there is no possibility of the poisons being absorbed by the plants," which statement, with the following letter from Professor A. J. Cook, should, I think, set this contention at rest.

"22nd November, 1887.

"DEAR SIR,—In 1871 I used Paris Green on potatoes just as strong as I could and not kill the plants. I also put the poison on the ground where it would be washed to the roots of the plants. I had both vines and tubers analysed by a very careful chemist, and not a trace of arsenic was found either in foliage or tubers. In this case the opportunity for absorption of the poison was ten to one more favorable than in the common use for the destruction of the potato-bug. (*D. decemlineata*.)

"In 1881, six years ago, when I found the arsenites were a certain specific against the Codling Moth larvæ, I applied a very concentrated mixture of London Purple at two separate times to some apples. The foliage was totally destroyed by the application, so strong was it. It was made thus strong on purpose for a test. The middle of August the calyx of each of 100 (one hundred) apples was cut out; by holding the knife so as to remove a funnel-shaped piece. Two different analyses were made and not a trace of arsenic was found. I have now used the arsenites for eight years in this warfare and know that it is safe and wonderfully efficient. Yes, I think that less than 1 lb. to 100 gallons will do. My last recommendation is $\frac{1}{2}$ lb. to 100 gallons of water. The important thing is to make the application early enough, as soon as the blossoms are well off the tree; and second, to make it so thorough that every apple—the calyx—shall receive its mite of the poison."

Upon this matter being brought under Professor Cook's notice, he wrote a letter to the *Rural New Yorker* (vol. 46, page 784, 26th Nov., 1887) which is well worthy of perusal by any one interested in the subject.

The Apple Aphis (*Aphis mali*, Fab).

Attack.—Green plant-lice clustered around the outside and in between the young leaves of the opening buds in spring; also in large numbers beneath the leaves in autumn.

Remedies.—This insect which frequently appears in vast numbers in spring is produced from small black shining eggs which are laid the previous autumn on the twigs and branches of the apple tree. This is apparently the only mode of hibernation and suggests the direction in which we may look for a remedy.

Before the discovery of the value of Kerosene emulsions, the usual method of treating this insect was to syringe the trees at the time the eggs were hatching with a strong soap or tobacco wash. This was attended with a large measure of success and may be used where it is not convenient to use the emulsion.

The efficacy of weak emulsions of Kerosene for plant lice makes it imperative that all fruit growers should become familiar with the best way to use them.

Prof. A. J. Cook, in Bulletin 26, of the Agricultural College of Michigan, states as follows:—

"I have found nothing so satisfactory in treating plant lice as the Kerosene and soap mixture. To make this I use one-fourth pound of hard soap, preferably whale-oil soap, and one quart of water. This is heated till the soap is dissolved, when one pint of Kerosene oil is added and the whole agitated till a permanent emulsion or mixture is formed. The agitation is easily secured by use of a force pump, pumping the liquid with force back into the vessel holding it. I then add water so that there shall be Kerosene in the proportion of one to 15."

(N.B.—This mixture although differently prepared gives the proportion of Kerosene to the water almost identical with that mentioned on page 19.)