

## INSECTICIDES AND FUNGICIDES.

Many experiments have been conducted with a view to combine substances which are known to have both insecticide and fungicide qualities. While the results have been variable, it would appear on the whole that the combination of an insecticide does not add to the efficiency of a fungicide, but often detracts from it; but the reverse of this does not hold true, as experiments have proved that while Bordeaux mixture combined with arsenites does not act well as a fungicide, it is decidedly beneficial as an insecticide, as the arsenites can be used so much stronger. Professor Maynard found that one pound of Paris green in 500 gallons of sulphate of copper solution proved very injurious to his trees, but that one pound of Paris green in 200 gallons of Bordeaux mixture secured a very large crop of plums while other trees not treated lost their fruit from curculio. He also decided that black knot was less upon the trees sprayed with this latter mixture.—*Dr. C. V. Riley; Address before the Massachusetts Horticultural Society.*

## ARSENITES IN THE ORCHARD.

Recent experiments made at a few of our experiment stations, which have sufficiently competent Entomologists, have thrown much light on the comparative value of different arsenical mixtures as insecticides, and as to the relative injury they do the foliage of different trees. The testimony of some experimenters would indicate that the peach is more susceptible to the influence of London purple than to Paris green, and that there is less danger of injury when the leaves are young than when they are old. The cause of injury by London purple is doubtless due to excess of soluble arsenic. Professor Bailey found that heavy spraying with one pound of Paris green to three hundred gallons of water did not injure the foliage. But perhaps the most valuable results obtained are those given by Professor Gillette, who states that London purple used with Bordeaux mixture in the proportion of one pound to fifty gallons was entirely harmless to the peach and plum; that the oldest leaves are most liable to injury; that dews and probably direct sunlight increase injuries done by arsenites to foliage; that leaves kept perfectly dry can hardly be injured by them; that leaves suffering from fungous disease are more susceptible than healthy ones; that freshly mixed and applied London purple is most injurious, while freshly mixed and applied white arsenic is least injurious to foliage, but the longer the mixed white arsenic stands the greater the danger of injury; that lime added to London purple or Paris green in water lessens the injury they will effect on foliage, while lime added to white arsenic in solution increases the liability to injure the same unless the poison is wholly dissolved, when the opposite effect is produced; that London purple can be applied without injury, eight or even ten times as strong, if combined with common Bordeaux mixture instead of water; that arsenites cannot, by ordinary methods, be mixed in a kerosene emulsion; that they mix readily in rosin compounds and seem no more injurious than when applied in water; that when put into strong, soapy water they do much more harm than in clear water; that they mix readily in carbonate of copper solution and are as harmless as when in clear water; that London purple in sulphate of copper solution is vastly more harmful than when in water only.—*Dr. C. V. Riley; ibid.*

## THE FLUTED SCALE.

No more striking event has happened during the past two years than the extermination of this insect, most destructive to the orange growing interests in Southern California. It is difficult for one unfamiliar with the facts to realize that this scale, which two and a half years ago hung like a blight and plague over leaf, branch and trunk of all citrus, and many other kinds of fruit trees and shrubs of Southern California, has been so effectually swept away by the little Australian lady bird, *Vedalia cardinalis*, which was imported for this purpose. In the language of Assistant Secretary Willits, "It seems almost like an entomological romance." The history of this scale *Icerya purchasi*, has made everything pertaining to the genus interesting and during the past year four other

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