## Fruit Spraying.

Bulletin From the Ontario Agricultural College.

J. H. Panton, Professor of Biology, O.A.C. Gives Instructions in Spraying-The Mixtures to Use and When and How

SOLUTIONS RECOMMENDED. 1. Bordeaux Mixture.

Suspend the copper sulphate in five

by putting it in a bag of coarse ma-terial, and hanging it so as to be covered by water. Slake the lime in about the same quantity of water Slake the lime! Then raix the two and add the remainder of the 40 gallons of water. Warm water will dissolve the copper sulphate more readily than

water. If the lime is at all dirty strain the lime solution. If the lime is good the above amount likely to be sufficient. It is an easy



TENT MOTH AND CATERPILLAR. Moth; b, caterpillar; c, egg cluster; d, co

quired by using what is termed the ferrocyanide of potassium test. This substance can be got at any druggist's and very little is required. Take a small bottle (2 oz.) and get it filled with a saturated solution of this compound. If there is not plenty of lime in your mixture, a drop of the test added to it, turns brown. Add more lime and stir. As soon as the test fails your mixture, it indicates there is suffi cient lime present to neutralize the effects of the copper sulphate. Use vooden vessels in preparing the Bordeaux mixture.

2. Ammoniacal Copper Carbonate Solution ("Cupram").

Copper carbonate ...... 1 ounce Ammonia sufficient to dissolve the coppe

This solution is not much used, and he recommended only in cases where the fruit is so far advanced that it would be disfigured by using the Bor deaux mixture.

3. Paris Green Mixture. 

Panis green is added to Bordeaux mixture, so as to form a combined insectievery 40 gallons of the Bordeaux mix-

4. Hellebore. White hellebore (fresh) ...... 1 ounce 5. Pyrethrum

Pyrethrum powder (fresh) ..... 1 ounce ..... 4 gallons new beds after they begin to make 6. Kerosene Emulsion. Hard soap. ½ pound, or soft soap. 1 quart Boiling water (soft) . 1 gallon Coal oil . 2 gallons

After dissolving the soap in the water, add the coal oil and stir well for 5 to 10 minutes. When properly mixed, it will adhere to glass without oiliness. A syringe or pump will aid use an insecticide, but if treating for much in this work. In using, dilute with from 9 to 15 parts of water.



THE CODLING MOTH. burrow; b, entrance hole; d, pupa; e, larva; f, moth.

oil (2 gallons), no soap being required.

This will not keep long. NOTES. 1. When there is danger of disfigur

ing fruit with the Bordeaux mixture use the ammoniacal copper carbonate 2. Experience in spraying during the

past two years indicates that it is best to use the combined insecticide and fungicide, commencing as soon as the buds begin to swell, again when the tervals of 10 to 15 days, until the trees have been sprayed 3 to 5 times, which will depend upon the weather. In the cary to spray at least five times.

In no case spray while the trees are in bloom, but immediately after. fungicide, containing Paris green and Bordeaux mixture, is to be used for insects that chew, and injurious fungi but kerosene emulsion alone for those insects that suck the juices of plants such as aphis, thrip, red spider, etc. 4. A stock solution for the preparation of Bordeaux mixture may prepared as follows: Dissolve 25 nounds copper sulphate in 25 gallons of One gallon of this contains one pound of the copper sulphate. In another barrel slake 25 pounds of good lime, and add 12 1-2 gallons of water. One gallon of this contains two pounds To make the mixture, take four gallons of the copper sulphate colution and two of the lime. If there is any doubt about there not being aufficient hime try the test already re-

Now fill up the amount to 40 gallons with water TREATMENT. podding moth, bud moth, tent cater-piller, canker, worm, apple spot and females, that lay their eggs under the females, that lay their eggs under the 1. Apple -Treatment for destroying

ferred to under Bordeaux mixture

leaf blight. First spraying: Bordeaux scale. The scale of the male is more mixture and Paris green (4 ez. to the oblong and is rarely seen. Remedy mixture and Paris green (4 ez. to the barrel of the mixture) when the buds are swelling. Second spraying: Bordeaux mixture and Paris green before the blossoms open. Third spraying: Bordeaux mixture and Paris green before the blossoms open. Third spraying: Bordeaux mixture and Paris green when the blossoms have fallen. Fourth that cambolic acid; then, when the bard carbolic acid; then, when the bard carbolic acid; then, when the

blight and plum curculio. First and second sprayings: Same as for the treatment of plum. Third spraying: Bordeaux mixture in two to three

weeks. Fourth spraying: Ammonia-cal copper carbonate if any danger of

disfiguring the fruit with Bordeaux

Cherry.—Aphis, slug, brown rot and leaf blight. First spraying: Bor-

deaux mixture as the buds are break-

ing; if the aphis appears use kerosene emulsion alone. Second spraying: Bor-

deaux mixture and Paris green, as

spraying: Bordeaux mixture and Paris

6. Grapes.-Mildew, black rot and

flea beetle. First spraying: Bordeaux

mixture and Paris green when leaves one inch in diameter. Second spraying:

Bordeaux mixture and Paris green when flowers have fallen. Tihrd and

fourth sprayings: Bordeaux mixture

at intervals of ten to fifteen days. Paris

green alone when the beetle is attack-

ing the buds in the spring.

7. Raspberry.—Anthracnose and leaf the buds in the spring.

blight. First spraying: Bordeaux mix-

mixture and Paris green as soon as

the leaves expand. Second spraying: The same ten to fifteen days later. For

worms alone, hellebore or Paris gren

will be effective.
9. Tomato.—Rot and blight. Spray

with Bordeaux mixture, as soon as rot or blight appears, for three times, if

beetles appear (one pound to 100 gal-

11. Cabbage.-Pyrethrum applied in

INJURIOUS INSECTS.

combined fungicide and insecticide.

of the trees. It also attacks the plum

and cherry. The eggs-200 to 300-are laid in rings upon the twigs of the trees and can be readily seen, so that

many of them might easily be destroy-ed during the winter. The caterpillars

grow rapidly. Americana has a white strip down the back, and Sylvatica a

series of white spots, and thus they

are readily distinguished from each

other. Both develop into brown moths. The accompanying cut represents the

different stages of the insects. C. Americana remedy: I. Collect the egg

clusters in winter. 2. Crush the "tents" when full of caterpillars. 3.

Apply Paris green alone or with Bor-

2. Codling Moth,-Carpocapsa pomon-

the calyx of the young apple

Affected apples fall to the

The cocoons are frequentl

The moth appears about th me the trees are in bloom, and is on

ella: The eggs of this tiny moth are

while it is turned up. As soon a batched the larva burrows into th

apple, where it feeds until fully de

round, and often contain the worm

of the worst pests that attacks the apple. Remedy: 1. Feed to hogs the

. Spray with Paris green, as directed

3. Canker Worms .- Anisoptervx ver

canker worm was very common in 1896. Both worms are much alike

about an inch long, of a darkish brown

color, slender, and move with a loop

like motion; hence, sometimes called "measuring worms." They can drop

from a tree by a silken thread A. ver-

mata, the imago, appears in spring,

the female is wingless, the male is ash-

colored and has wings. A. pometaria is much the same, but the image appears in the fall. The wingless females

in both species crawl up the trunks to lay their eggs upon the twigs. These

irsects attack the plum, cherry and

apple. Remedy: The females may be

trapped by putting a band of some adhesive material around the tree, 2

Paris green is an effective remedy, as

much the same color is difficult to dis-

tinguish. The eggs are beneath the

scales. They hatch about the end of May or the beginning of June. The

young lice are almost invisible; they suck the ends of the young twigs, where they become fixed, and continue

to suck the juice from the twigs. Soon

form of minute brown scale upon

directed in the treatment of th 4. Oyster-shell Bark-louse.-Mytilas pis pomorum: This insect appears in

len apples which may contain larva.

er the bark and in other sheltered

deaux mixture

cabbage worm.

runners.

uit is gathered.

soon as the blossoms fall.

green ten to fifteen days after.

and fifth spraying: Bordeaux mixture and fifth spraying: Bordeaux mixture and Paris green at intervals ten to fifteen days, if necessary.

2. Pear.—Leaf blight, soab and opting moth, the same treatment as for the apple.

3. Plum — Curcuito brown art and cherry. The layer are hid shout twen the parts are hid shout twen The layer. 3. Plum.—Curculio, brown rot and leaf blight. First spraying: Bordeaux mixture before the flower buds open. Second spraying: Bordeaux mixture what greenish-black color and slimy. and Paris green as soon as the petals lt has many legs. The pupa stage is have fallen. Third spraying: Bordeaux spent in the ground and lasts two and Paris green in seven to ten days after. Fourth spraying: Bordeaux mixture in ten to fifteen days after.

4. Peach.—Brown fruit rot, leaf



winged black fly. The slug feeds on the upper surface of the leaf. It was quite common during 1896. Remedy: Spraying with Paris green, hellebore or pyrethrum, in the common propor-

Plum Curculio.—Conotrachelus neruphar: There is no insect better known than this Attle beetle. The egg is deposited in the plum, where it batches. The affected fruit soon falls to the ground, and the larvae leave the plums, pass into the ground where they remain for about six weeks. The imago is a small grayish beetle oneture just before growth begins Second spraying: Bordeaux mixture about when first blossoms open. Third lump on the middle of each wing case. It has a curved snout and a stout spraying: Bordeaux mixture when the body. The beetles hide themselves during the winter in sheltered spots. 8. Currant and Gooseberry.—Worms and mildew. First spraying: Bordeaux and appear in spring about the time the trees are in bloom. This insect is also found upon the cherry, peach and even apple. Remedy: 1. Jarring the trees morning and evening. At this time many beetles will drop and may be collected upon a sheet placed below.

2. Gather and destroy the affected plums, as they fall.

3. Spray Paris green as directed for the treatment of the plum, or Paris green may be applied alone (1 pound to 25 gallons of water, if the foliage is tender add 2 pounds of lime). Spray once before the trees bloom, as soon as the foliage is well started, again as soon as the petals fall, and repeat about a week

7. Currant Worm.-Nematus ribesia: This insect is very troublesome upon currant and gooseberry bushes. It lays its eggs early in the spring, on the under side of the leaves, in rows along the vines. These hatch in about ten days, and the young worms appear.
The larva, when full-grown, is about attendant to send for a doctor, while three-quarters of an inch in length, of a greenish color, with dark spots, and has many legs. It soms a brown co-coon, of paper-like texture, which is the dried leaves or on the bush attached to the stems or leaves. This represents the purpa condition. The image again grappled with the snake, and appears in about two weeks after the pupa stage has been entered. The succeeded in shaking it off. the body black with some yellow ture for apple trees, 250 for plum at intervals of ten to fifteen days it medies: 1. Hellebore, one ounce in three trees, and 300 for peach trees. When necessary. gallons of water. It may also be applied as a dry powder, mixing it with out for spakes!"

yound the confines of the menagerie and soon the cry in German of "Lool out for spakes!" three or four parts flour. 2. Paris green for the firts brood, but care must oslution (one ounce to four gallons of be taken not to continue this if the

thrum to seven parts flour) for the fruit is likely to be affected. 12. Strawberry.—The rust or feaf blight. Bordeaux maxture when it can 8. Grapevine Beetle.-Halvica chalvbea: The eggs are deposited on the be applied without disfiguring the fruit will control this disease. Apply about one-third of an inch long. about one-third of an Inch long, at intervals of two or three weeks on brownish, with several black dots on the body. The pupa condition is passed in the ground, and continues for about three weeks. The imago is a small notished bestle about one-fifth of an inch long. It passes the winter The following are some of the most in sheltered spots under leaves, or common insects that are troublesome around the roots, and is very destrucin the garden and orchard. To destroy these spraying as directed will be effective. To destroy insects only tive in the spring to the young buds, and afterwards, in the larval condition, to the leaves. Remedies: 1. Paris green, three ounces to fifty gallons of a fungoid pest at the same time use a water, or combined with mixture as directed under treatment of the grape. 2. Dust pyrethrum powder upon the vines attacked. 3. 1. Tent Caterpillars. — Clistocampa Americana, and C. Cylvatica: These in sects weave large webs in the Jarring the vines in the morning and branches of the apple tree and do much damage feeding upon the foliage

collecting the beetles. 9. Round-headed Borer (Saperda candida): The eggs are deposited about June, near the base of the trunk of the apple tree. The larva eats its way through the outer bark to the inner, and takes about three yars to develop. It works in th esapwood, where it forms flat, shallow cavities, filled with rawdust-like castings. These are often seen on the bark, and indicate where the "borer" is at work. As it reaches maturity, it cuts a passage upwards into the solid wood, and then curves towards the bark. In this channel it enters the pupa stage, about spring When fully developed, it is an inch long, with a round head that dis-tinguishes it from the flat-headed



CURRANT WORM.

10. Flat-Headed Borer (Chrysobothris femorata): This insect also attacks the trunk of the apple tree, but lays its ceding one. The larva is a pale yellow, an inch long, and has a well-marked flat head much wider than the body. Remedies: 1. Examine the trees in autumn, and where the sawdust-like castings indicate the presence of the "borer," a stiff wire may be pushed in and the larva killed, or sometimes the larva can be cut out with a knife.

2. About the beginning of June, apply the following mixture to the trunk of the tree: One pound of hard soap, or

one inch long, with two broad, whitish

strips on the wing covers, and long

jointed antennae. It appears about

Evil communications corrupt good Be charitable before wealth makes

one quart soft. in two gallons of water

heat to boiling, and add one pint crude

tion in three weeks.

cambolic acid; make a second applica-

A Startling Contest, in Which a Woman Had a Part.

She Is in Great Danger From Her Fighting Pets-The Anaconda Finally Killed the Boa.

A battle royal between two huge snakes and an attempt on the part of the surviving reptile to count a woman among its victims were the cause of a great deal of excitement vesterday afternoon, says the New fork Times, among the visitors to the 'Grand Spring Show," otherwise the German County Fair, now eing held at Sulzer's Harlem River

The two snakes were a 10-foot anaconda and an 81/2-foot cross between a python and a boa constrictor. They were brought down yesterday morning to do duty in the menagerie which forms part of the Midway Plaisance arrangement at the fair, and were placed in charge of Mile. Madeleine, a professional snake-charmer. In pri vate life she is known as Mrs. W. Robinson. She weighs 296 pounds, and is the wife of a midget 28 inches in height and 99 pounds weight.

She ordered the box containing her two pets placed in a recess of the menagerie prior to their introduction to the audience. The close quarters, however, did not suit the anaconda, and it must have concluded that by swallowing its room-mate there would be more room for itself. Suddenly there was a commotion on the inside of the box that brought over Mile. Madeleine in a hurry. She found the two snakes intertwined so that it was hard to tell which was which. anaconda was making frantic efforts to get the boa's head into its wideopen jaws, and the boa, on the other hand, was contracting its muscles around the body of the enemy with strength born of despair.

TWINED ABOUT THE WOMAN. Mlle. Madeleine made a quick dive into the box through the glass lid, which had been broken in the melee, and seized the boa at the back of the head with one hand, while with her other hand she clutched the anaconda in the same spot. With all her might she began tugging away, but to no purpose. The snakes then wound themselves ground have body. During the state of the country of the state of the country of the snakes are not shaded by the state of the state purpose. The snakes then wound themselves around her body. During the struggle one of the woman's hands the struggle one of the woman's hands a flash the boat ward the door, stopped long enough slipped, and quick as a flash the boat turned and bit her hand, making a to say, "Well, good-bye, Tom!" The attack made Mlle. Madeleine re-

lax her hold on the snakes. She dropped them in a hurry. The anaconda twisted itself with renewed vigor around the boa's body, and with renewed friend: a spasmodic, sudden jerk finally succeeded in breaking its enemy's back.

Mlle. Madeleine calmly ordered an she prepared to replace the victor in the box. But the victor was not quite ready to return. It again jumped found sometimes on the ground among the stout woman before it. With her hand bleeding profusely, but with All this time the onlookers had been standing around watching the triple battle, but with the 10-foot snake free

they began to fall over each other in their desire to put as much space between themselves and the snake as possible. The small panic spread beyound the confines of the menagerie out for snakes!" reverberated throughout the park. BACK IN THE BOX AGAIN.

It took some time to quiet the crowd, out with the assistance of several of the barkers in front of the sideshows and other criers of stentorian voice, the people were finally reassured that all danger was past. Those who first ventured into the park saw the dead boa, its 8 feet 6 inches stretched out to full length, and Mlle Madeleine, with her hand in a bandage and her arm swollen and inflamed, gazing rue fully down up on her dead pet. The | Self-adjusting. No Pain. Whispersheard. Send to Fill E. Hiscor Co., 853 B way, N.Y., for Book and Proofs Fill E.

naconda was calmly reposing in it Contrary to all usual proceedings in the case of a snake bite, Mlle. Made-leine had refused to drink a drop of the whisky which was brought to her im-mediately after she was bitten, al-though she did pour some of it on the wounds. She explained her refusal by stating that she had promised her sister, who died some time ago, never to use liquor internally, no matter what happened. She has a drawing of her sister's grave tatooed on her

Mlle Madeleine was the heroine of the hour after her little adventure, as she called it. She has been bitten so often before, she said, that it did not visitors that thronged her side of the tent later in the afternoon regarded her with a good deal of awe, and a small boy, who had heard the at second, and, perhaps, third of fourth hand, whispered to his sister Look, Carrie, dere's de woman wot swallowed a whole snake!"

A HELPLESS WOMAN.

For Years a Kneumatic Cripple-Under the Healing Balm of South American Rheumatic Cure Suffering Vanishes-Through Faith in the Testimony o Others She Is Today a Well Weman. "My daughter, Mrs. Gregory, had

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A MASTER OF SILENCE. a garrulous one. Among the few who have a perfect genius for silence is a certain well-known artist, whose reticence is the amusement and wonder of all who know him.

A friend who had dropped into his studio one day was vainly endeavor-ing to draw Mr. H. into conversation when the artist's brother appeared in

"Good-bye, John!" was the hearty Tom painted on for some minutes and then, in an unwonted burst of confidence, he said warmly to his amused "I tell you, I was glad to see John! Haven't seen him before for a month."

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