

SOME OF THE INSECT PESTS THAT BOTHER FRUITGROWERS

Federal Bureau Making Study of Best Way to Combat the Enemies of Fruit Trees

Valuable work in the control of orchard insect pests may be accomplished during the fall, winter and early spring. Certain destructive insects are held in check only by spraying during the dormant period of trees when stronger washes may be used than when the trees are in foliage. Many insects of the orchard spend the winter on the trees in the egg, larval or pupal stage, and their destruction in the course of pruning or other orchard work is practicable and is of much importance in keeping them reduced.

Orchard scale insects as a class are best treated after the foliage has dropt from the trees. This work may be done in late fall, during the winter when the temperature is above freezing, or in the spring before the buds swell to any extent. Spraying of apple, pear, peach and other trees for the San Jose scale with strong lime-sulphur or other suitable wash is now very generally practiced by orchardists, and many persons owning but a small number of fruit trees in the yard also regularly spray the trees for the control of this serious insect pest. Lime-sulphur concentrate is used in spraying for the San Jose scale, and may be purchased of manufacturers or made at home. The commercial article usually has a density of 32 to 34 degrees as registered on a Baume hydrometer, and in preparing the concentrate at home effort should be made to secure a wash of about this density. Such a concentrate is used at about the rate of one part to 8 or 9 parts of water. Only one treatment each winter is necessary to hold this pest in subjection, but the application must be very thoro, coating all parts of the twigs, limbs and branches. This work requires a spray pump, and these may now be obtained for work on almost any scale and range in size from the so called bucket pump suitable for work on a few trees in the yard to the large gasoline power outfits employed in extensive orchards. More specific information on the San Jose scale and the preparation at home of lime-sulphur concentrate will be found in Farmers Bulletin 650.

Certain other scale insect pests which may be present on the trees—the cherry scale, oystershell scale, etc., are also pretty well held in check by this annual treatment with lime-sulphur wash. This treatment is also effective against the pear-leaf blister mite, which is universally present on pears and in some localities is a very serious apple pest. Certain destructive apple tree lice winter in the egg stage on the apple, especially on the newer growth, and thru lime-sulphur spraying for the San Jose scale undoubtedly results in the destruction of many of these eggs, tho the treatment is not always sufficient to obviate spraying after the insects have hatched and the foliage is putting out.

Spring spraying of peach trees when the buds are swelling, in addition to its destructive action on the scale insects mentioned, is also an effective check to the so called peach twig-borer, or peach worm, which is very destructive in California and numerous arid valleys in the west. This spring application of lime-sulphur to peach is practically a specific for the serious fungous disease known as peach-leaf curl. In some sections of the country the pear Psylla is a very serious pest to pears. The adults hibernate in crevices and cracks on the trees, resuming activity with the first warm days in the spring. Spring spraying of pears for the San Jose scale has in addition a very marked value in checking the pear Psylla.

The so-called terrapin scale of peach, as well as Lecanium scales in general, are not satisfactorily controlled by the lime-sulphur spray, but should be dosed with strong kerosene emulsion, or with a mixable oil. This latter is a general term applied to several commercial preparations which are used at the rate of one part to 18 or 20 parts of water.

In addition to routine dormant-tree spraying much good work may be done in the control of orchard insects by operations during the leafless period. The codling moth, the cause of wormy apples, passes the winter in silken cocoons under scales of bark, in crevices and knot holes of the trunk and larger limbs of the apple. Old trees especially

should be thoroly scraped with a dull hoe or similar instrument to destroy the hibernating codling moth larvae.

The apple-tree tent caterpillar winters in the egg stage on various orchard trees, as the apple and peach, and especially on wild cherries growing along fences or on waste land. The eggs are placed in rather conspicuous dark colored belts or bands around the smaller twigs. These are readily observed and may be collected and destroyed without much trouble during the work of pruning or at other times. Very effective work in the collection of egg masses has already been accomplished in regions where this insect has been excessively abundant. In some instances it will be possible to enlist the interest of school children, as was done in Michigan during the winter of 1913-14. Prizes were offered for the greatest number of egg masses obtained, and the total collected in this work was several million.

The fall webworm winters in the pupal stage on apple and various other trees. The flimsy cocoon is easily recognized from the hairs of the caterpillar mixed in with the loose silk. The cocoons occur in all sorts of sheltered places, as in crevices, knot holes, under bark scales, etc. They should also be searched for in trash on the ground, under boards, in rail fences, and in similar situations.

Another insect of general feeding habits is the white marked tussock moth, which winters on fruit trees in the egg stage. The eggs appear as a frothy mass and are usually deposited beside the grayish silken cocoon from which the wingless parent moth escaped. It will be easy to collect and destroy these pupae and egg masses.

Throughout the middle west and to a less extent elsewhere, the winter nests of the leaf crumpler are conspicuous objects on fruit trees, especially quince, pear and apple. The larvae winter in tough, horn-shaped cases to which are usually attached several dead leaves. These nests should be removed and burned to destroy the caterpillars within.

The work of the buffalo tree hopper usually attracts the attention of the observant orchardist, especially during pruning. This insect punctures the young twigs in the course of its egg laying, the scars later producing a much deformed and weakened branch. Care should be taken to cut out these injured twigs, with the view to developing new, sound branches.

There are various species of borers attacking fruit trees which may be very effectively searched for and destroyed during the fall, winter or spring. "Worming" for the peach borer should be begun in early fall and continued until the trees have all been gone over. This is done by cutting away the injured bark sufficiently to trace the burrow and then removing the borer with a knife or hooked wire. Previous to worming the soil should be dug away from the base of the trees so that the castings exuding from the burrows may be seen and assist in the more ready location of the borers. Since many if the peach borers in the fall are yet quite small, very careful work will be necessary to destroy all of them. After the trees have been wormed once it is a good practice to go over them again. The earth should be drawn around the base of the tree before there is danger of freezing weather. The same plan should be followed in worming the trees in the spring, at which time it will be somewhat easier to detect the borers because of their increase in size. Thruout the central and eastern states apple trees should be regularly wormed in the spring and fall for the round headed apple tree borer. This insect attacks the trees near the ground and its injury is indicated by brown patches under the bark and the castings which often accumulate in some quantity on the soil. The use of a sharp knife and moderately stiff wire is usually sufficient in the work of worming the trees, in the case of either the peach borer or the roundheaded apple-tree borer.

The work of the fruit-tree bark-beetle, or shot-hole borer, is often first detected on trees during pruning operations in winter, and steps should be taken as soon as it is discovered to correct the trouble, if possible. The shot-hole borer as a rule attacks trees which are in a state of decline from any cause. It winters in various stages in galleries just beneath the

bark. Peach trees attacked by this insect and which still have vitality to exude gum at the injured points may in some cases be brought into condition by severe pruning and an application as the buds swell in the spring of an effective wash, as fish-oil soap, at the rate of 1 pound to the gallon of water, or heavy whitewash, or a wash made of 1 pint of crude carbolic acid and 1 gallon of soft fish-oil soap dissolved in 8 gallons of water. Washes should be thoroughly applied to the trunk and larger limbs. In the case of apple, pear and other trees which do not exude gum to any extent, it is a question of judgment whether it will be possible to save trees attacked by this insect. If the infestation is rather severe, it usually indicates that the tree is beyond hope of saving. Individual branches on trees may often show attack by this insect and should be promptly removed and burned to

prevent its further increase and spread. In regions where the seventeen-year locust has been abundant, young orchards especially are often severely injured. During pruning operations in winter particular attention should be given to cutting out the injured branches, since these are usually so weakened that they will not support any considerable crop of fruit.

Several grape insects winter among the fallen grape leaves in trash in vineyards and much may be done to destroy them if the trash be raked together and burned. Such work will be of value against the grape-berry moth and the grape leaf-folder, which hibernate in the pupal condition in the fallen grape leaves. The grapevine flea-beetle and the grape leafhopper spend the winter as adults under trash of all kinds in and about vineyards, and the destruction of trash as indicated will expose them to adverse climatic conditions.

News from the Surrounding Country
By Our Correspondents

Wenatchee Park

J. S. Mooney was a visitor at the Park last week.

Willard, the infant son of Mr. and Mrs. Earl Maust, is sick this week.

Born to Mr. and Mrs. Harry Beckwith, on Sunday, a daughter.

Otha Pabst has dug a cellar and will cement it. He is also going to move his house before winter.

Mr. and Mrs. Wm. Smith will soon leave for Canada.

Marvin Peters and family have returned from Wenatchee where they were called by the death of Mrs. Peters' father, R. P. Webb.

Earl Maust, who has been packing apples in Wenatchee, spent Sunday with his family.

Eagle Creek

Everyone busy getting in their crops, Miss Ruth Rees, our teacher, visited over Sunday with her parents at Malaga.

Mr. and Mrs. Martin Christensen called at the H. A. Anderson home Sunday evening.

Mrs. Hardman and children of Leavenworth spent the week-end at the Sharpe ranch.

Curtis Chase of Wenatchee is visiting his sister, Mrs. Anderson.

Fred and Martin Cahill hauled hay for Martin Christensen last week.

Dryden

Mr. H. Remley made a business trip to Seattle last week.

Rev. Davis and his son from the east were looking over their property in Estes canyon last week.

The Fleming home burned down early Monday morning. There was insurance on the house. Most of the personal property was saved.

Mr. Henry Peters returned home Tuesday from central Montana, where he has been selling apples for the past month.

Mrs. Henry Peters returned Tuesday from Cheney, where she has been visiting her mother.

Peshastin

A chicken pie supper, to be given by the Ladies' Aid society of the M. E. church, will take place tonight at the grange hall.

D. J. Manning left for Skykomish, where he will spend the winter. Wm. Warsaw and wife will live on Mr. Manning's place this winter and care for it.

Fred Nelson, while working in the Peshastin Fruit Growers' Ass'n. warehouse, met with a painful accident a few days ago when a part of the elevator broke and struck him near the eye, making a deep cut.

EYE SIGHT IS SAVED

Operation is Successful Where Several Had Failed

The following is a clipping taken from the Walla Walla Evening Bulletin dated Oct. 6, 1915:

Mrs. H. S. Williams, of Peshastin, Wash., is contented today for the first time in four years. An operation per-

formed on the eye of her 12 year old daughter, Jewel, proved successful and the girl is in a fair way to recovery. In the past four years thirty-seven specialists have examined the eye and five operations have been performed, according to the statement of the mother. Four years ago, while camping in the mountains, Jewel fell, running a portion of a thimble berry branch behind the eye. The scar healed over and the parents thought there would be no serious effects until several abscesses began forming behind the eyeball, which made an operation necessary, each time to no avail. This week Mrs. Williams brought the girl to this city and last night a sixth operation was performed by Dr. J. W. Summers of this city. Eighteen fragments of the original thimble berry branch were removed from a point an inch and three-quarters behind the outside of the eyeball and within a quarter of an inch of the point at which the optic nerve enters the brain.

Mr. Roy T. Haines, a one-time newspaper man, remembered by Leavenworth people as the organizer of the Foresters lodge here some five years ago, at which time he put in about six weeks here and made many pleasant acquaintances, called on the Echo yesterday. He is now engaged with an associate in manufacturing a cement in Seattle, and was introducing it to the Leavenworth business people.

Mrs. T. Ford, who has been connected with the Golden Rule store at this place since it opened for business left yesterday for Wenatchee where she will make her home for a time.

Mr. John Koerner returned yesterday afternoon from a three weeks visit to his old home in Wisconsin. He made a side trip on business to Chicago.

Mr. L. O. Taylor left on the afternoon train yesterday for the Sound on a business trip for the L.-D. Mill Co.

Mrs. Butler Sampson is visiting with her sister-in-law, Mrs. Will Little, in Wenatchee.

Chelan county taxes are estimated at \$30,000 more than last year, due to road work.

A Continued Story.
"What did your wife say when you stayed out so late last night?"
"I don't know. She hasn't finished telling it all to me yet."—Detroit Free Press.

The coward only threatens when he is safe.—Goethe.

I WILL GIVE \$1000
If I fail to CURE any CANCER or TUMOR I treat before it POISONS deep glands or attaches to BONE Without Knife or Pain No PAY Until CURED
WRITTEN GUARANTEE No X-Ray or other swindle. An Island plant makes the cure ANY TUMOR, LUMP or SORE on the lip, face or body long is CANCER, it never pains until last stage 120-PAGE BOOK sent FREE. 10,000 testimonials. Write to see
Any LUMP in WOMAN'S BREAST is CANCER and always poisons deep glands and KILLS QUICKLY One woman in every 7 dies of cancer—U.S. report We refuse many who wait too long & must die Poor cured at half price if cancer is yet small
Dr. & Mrs. Dr. CHAMLEY & CO. Chamley Building "Strictly Reliable, Greatest Cancer Specialist Living" 424D & 436E Valencia St., San Francisco, Cal. KINDLY MAIL THIS TO someone with CANCER

School Notes

First Ex-High School Student: My, there are so many new pupils this year I don't know half of them. Who is that new kid over there by the door?

Second Ex-High School Student: Why, that's the new mathematics professor!

There are some big kickers at the high school. The football is in sad need of repair.

A number of Cashmere teachers visited the local schools this week.

The first six weeks examinations are over and each pupil realizes how hard he will have to work to be exempt from

final examinations. A new system of grading is being used which is a decided improvement over the old.

Osborn: Why does the author speak of China as the 'cradle' of an old civilization?

Joe: Because the cradle is Ancient History.

Improved Latin translation—"Hercules immediately seized the serpents and held them by the collar."

Mrs. Anna Stearns returned to her home in Bellingham after visiting for the past ten days with her son, Chas. West.

BUTTER WRAPPERS AT THE ECHO OFFICE.

Plumbing Sheet Metal Work

All my time, skill and attention is devoted to these occupations. It stands to reason that I can do work better, more promptly and give better satisfaction than those who make it a side line.

I can install any kind of plumbing, heating plant, hot air or steam. Recently completed plumbing in two buildings for Day Reynolds and one in the Geo. Briskey home south of town. Also installed a hot air heating apparatus in the forestry building.

I have in my employ Mr. Vesper, of Wenatchee, who has had 20 years' experience in plumbing and the installation of heating plants. Jobbing and repair work will be given prompt and careful attention. **Galvanized Iron and Sheet Metal Work of all kind.**

C. W. Seeley

Commercial St., Opposite Forestry Bld'g. Box 362.

It Makes No Difference

whether it is a

Pocket Knife, Paring Knife or Butcher Knife

you want the best, that's the reason you should see our line. It is very complete and the prices are made to fit your pocketbook. Our scissors and shears talk for themselves.

See those little Embroidery Scissors at 25 cents per pair. They are dandies.

Mutual Mercantile Co.

Groceries? Certainly

Just look at these prices! Where can you beat them for quality goods?

- Best grade Gran. Sugar, 14 lbs. **\$ 1.00**
- Best grade Brown Sugar, 16 lbs. **1.00**
- 100 lbs Fruit Sugar - - **6.30**
- 100 lbs. Beet Sugar - - **6.10**
- 1 case Carnation Milk, 48 cans **3.65**
- 1 case Mt. Vernon Milk, 48 cans **3.50**
- 3½ lbs. Steel Cut Coffee - - **1.00**
- 25 bars Crystal White Soap - **1.00**
- 25 bars White Bear Soap - **1.00**
- 15 cans { Aster
Blue Ribbon
Washington } Milk - **1.05**
Apex

The Valley Trading Co.

The Cash Store

Phone 56