

the larva during the present year on bulbs imported into Ontario from Holland. It had been previously captured on Mount Royal, Montreal, by Mr. A. Chagnon in 1903. In British Columbia, it is now a serious pest of bulbs, and Mr. A. E. Wallace reported it as attacking narcissus and daffodil bulbs near Victoria, B. C., about 50,000 bulbs having been destroyed in the year. Mr. P. Norman has kindly furnished me with particulars as to many of its habits in that locality which was visited in October.

The perfect insect is seen from March to September, and appears to begin to breed in May. The eggs are probably deposited in the centre of the leaf crown. The larva are found in the centre of the bulb, having made their entrance through the base of the bulb. The bulbs are destroyed by the larva or maggots eating away the flattened stem at the base of the bulb and afterwards destroying the centre of the bulb. Professor Ritzema Bos, State Entomologist of Holland, who has written a complete account of this insect, records the eggs as being laid in the soil near the foliage. He informs me that it attacks chiefly *Narcissus tagetta* in Holland. Mr. Norman has observed that the early varieties of daffodils, 'Princeps,' 'Golden Spur' and 'Henry Irving,' are not attacked and that such varieties of narcissus as *N. poeticus ornatus* and *N. p. poetarum* suffer considerably. The method of eradication which has been found most simple and efficient in Europe is the annual lifting of the bulbs and the destruction of all those which are found to be attacked by the maggots, as can readily be seen. This method has been found effective in England, and also, Professor Ritzema informs me, in Holland. Soaking in water is of no value and the destruction of the pupae in the soil by the removal of the latter in the spring is impracticable in a large scale. Satisfactory results may possibly be obtained by poisoning the adult flies with sweetened arsenical baits, and experiments on this are being carried on in British Columbia."

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#### INSECTS INFECTING IMPORTED NURSERY STOCK, FRUIT AND GRAIN, RECEIVED AT THE PROVINCIAL FUMIGATION AND INSPECTION STATION, VAN- COUVER, B. C.

Commencing with the Family Coccidae, of the order "Hemiptera," taking the Scale insects first:

"*Aspidiotus perniciosus*," or San Jose Scale, the genus and species of first economic importance, for which a large quantity of imported nursery stock has been condemned, those principally affected being de-

ciduous fruit-trees and bushes, ornamental trees and shrubs, imported from the United States, Japan and Ontario.

Others of this genus are the "*A. ostreaeformis*" and "*A. ancylus*," or respectively, European and Putnam Scale, but not such serious pests as the San Jose, on account of their less rapid production. Imported from United States, Ontario, Japan, France, Holland, Belgium and England.

"*A. forbesi*," or White Cherry Scale, another of this genus, imported from the United States and Japan.

"*A. rapax*," known as California Greedy Scale, imported from Pacific Coast States, Fiji Islands and Japan, on apricot, peach, plum, currant, rose, ornamental shrubs and citrus trees. One or two other species of this genus on ornamentals, citrus, palms, etc., from United States, Australia and Japan, including "*A. auranti*" and "*A. citricola*," or Red and Yellow Scale.

Genus "*Diaspis*." Several species of the genus *Diaspis* on peach, pear, prune, ornamental trees, shrubs and palms, orange and pineapple from United States, Australia, China, Japan and Hawaiian Islands, that of most economic importance being the "*Diaspis pyricola*," very troublesome to many of the deciduous fruit-trees on the Pacific Coast, and "*Aulacaspis rosae*," on blackberry and rose bushes, etc.

"*Chionaspis*." The genus *Chionaspis* has been in evidence on fruit and ornamental trees and shrubs, palms and citrus trees, and fruit from England, Holland, Belgium, France, United States, Mexico, Australia, China, Japan, Fiji and Hawaiian Islands, and Ontario. Probably the most injurious species is "*C. furfura*," infecting many of the deciduous fruit and ornamental trees and shrubs.

#### "MYTILASPIS."

The genus *Mytilaspis* often puts in an appearance at the inspection station, being found on both deciduous and citrus fruit and ornamental Oyster Shell Scale, "*Lepidosaphes ulmi*," and Purple Scale, "*M. citricola*," imported from every country already mentioned.

#### "LECANIUM."

Several species of the genus *Lecanium* have also been recorded: "*Saissetia oleae*," or Black Scale on prune, almond and olive stock; "*Eulecanium armeniacum*," or Apricot Brown Scale, on apricot and peach, mostly from California. Other species infecting ornamental trees and shrubs have appeared very frequently on nursery stock from Europe, England, United States and Japan.

"*Icerya purchasi*," Cottony Cushion Scale, on grape stock, and "*Pulvinaria innumerabilis*," on several ornamental trees and shrubs, are also on record.

"Mealy Bugs": "*Dactylopius destructor*" and "*Dactylopius longifilis*," imported on ornamental shrubs and palms, often very numerous on azalea from Japan, and pineapple from Hawaiian Islands.

"Aphis": "*Schizoneura lanigera*," Woolly Aphis, on root and branch of apple and crab trees from England, United States, France, Holland, Belgium and Eastern Canada.

"*Aphis persicae-niger*," Black Peach Aphis, on peach root from the United States.

Green Aphis, "*Aphis mali*," eggs on apple-trees from England, Europe, United States and Eastern Canada.

Plum Aphis, "*Hyalopterus pruni*," eggs on plum-trees from United States and Eastern Canada.

Cherry Aphis, "*Myzus cerasi*," eggs on cherry-trees from the United States.

Buffalo Tree Hopper, "*Ceresa bubalus*," Family "*Membracidae*," eggs inserted in bark of apple-trees from United States.

#### ORDER-LEPIDOPTERA.

The insulated egg masses of the Tent Caterpillar (*Clisiocampa sp.*) have been found on the twigs and small limbs of many varieties of nursery stock, both fruit and ornamental trees and shrubs, imported from England, France, Holland, United States and Eastern Canada. On similar stock the cocoons of the Fall Web Worm have also been found, also the egg masses of the Tussock Moth, "*Orgyia sp.*" and the Fall Canker Worm, "*Alsophila pometaria*."

Of far more economic importance is the "*Sanninoidea exitiosa*," the larva of which has often been found embedded in its own excavation in the roots of peach, plum, apricot, almond and cherry trees, and commonly called the Peach Root Borer. It has been imported on nursery stock from United States and Eastern Canada, and for which a large quantity of stock has been condemned and destroyed.

Another insect causing tremendous loss to the peach, apricot and plum growers in California and Oregon is the Twig Borer, "*Anarsia lineatella*," the larvae of which have been found in stone-fruit trees imported from California and Oregon.

The cases of the Bag Worm, "*Thyridopteryx ephemeraeformis*," on ornamental trees from United States and Japan.

The nests of the Brown Tail Moth, "*Euproctis chrysorrhoea*," which has proven such a scourge in some of the Eastern States, have been im-

ported into British Columbia on apple, pear and quince seedling and rose stock from France, but in every case the nests containing the young larvae were carefully destroyed.

One single egg cluster of the Gipsy Moth, \**Porthetria dispar*," has appeared on ornamental stock from Europe.

The Mediterranean Flour Moth, "*Ephestia kuehniella*," Family "Phycitinae," and the "Angoumis Grain Moth," "*Sitotroga cerealleva*," of the Family "Tineina," imported in grain, corn and rice from United States, Australia and Japan.

#### ORDER—"COLEOPTERA."

The Flatheaded Apple-tree Borer, "*Chrysobothris femorata*," and the Roundheaded Apple-tree Borer, "*Saperda candida*," larvae found in trees from United States.

The Sinuate Pear Bark Borer, "*Agrilus sinuatus*," larva found in trees from United States and Japan.

The Apple Twig Borer, "*Schistoceros hamatus*," pupa found in elder and maple from England and United States.

The Blackberry Cane Borer, "*Agrilus ruficollis*," larvae found in blackberry cane from United States.

The Giant Root Borer, "*Prionus laticollis*," larvae in roots of ornamental and fruit-trees from United States and Japan.

Old crops of rice from Japan are often badly infected with larvae of the beetle "*Tenebrio molitor*," but are easily dispatched by the use of Carbon Bisulphide, along with the Angoumis Moth and Rice Weevil of the genus "Calandra."

The fruit bark beetle, "*Scolytus rugulosus*," which is of considerable economic importance on many of the deciduous fruit-trees and some ornamental, has been found on rare occasions.

The Black Gooseberry Borer, "*Xylocrius Agassizu*," larva in root of gooseberry bushes from United States.

Raspberry Root Borer, "*Membiccia marginata*," from United States.

#### ORDER—"HYMENOPTERA."

Blackberry gall insect, "*Diastrophus nebulosus*," larvae in galls on stem of blackberry from United States.

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\*As this record is the first of its kind to be taken in Canada, it would be well to state the details. Two or three years ago an egg cluster on imported ornamental stock from Holland closely resembled the egg cluster of the much dreaded Gipsy Moth. The eggs failed to hatch, so no definite determination was made.—W. H. L.

## "ACARINA," OR MITES.

The Red Spider, "*Tetranychus sp.*," and the Clover Mite, "*Bryobia pratensis*," often found on apple, plum and many ornamental trees from England, Eastern Canada and the United States, the eggs being deposited around the base of the small twigs and laterals.

Pear Blister Mite, "*Eriophyes pyri*," in the bud scales of pear-trees from England and the United States.

This about completes the list of insects that have arrived in British Columbia as undesirable immigrants, and have been treated accordingly.

W. H. LYNE,

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## BOMBYCIA IMPROVISA, EDW. AND ITS CONGENERS.

In Dyar's list of orth American Lepidoptera (1902) the name "*tearlii*" Edw. is given as a synonym of *Bombycia improvisa* Edw. On our finding two *Bombycias* in the Duncans District of Vancouver Island somewhat alike, it was at first thought that one was merely a variety of the other, namely, "*improvisa*" the species and "*tearlii*" the variety. But for the last two or three years I have felt convinced that the two forms were distinct species. This conviction has recently been confirmed by Messrs. Barnes and McDunnough in the September, 1910, number of the New York Entomological Society (Vol. XVII., No. 3), where, under the heading of "*Bombycia fasciata*, new species," is given a description of the moth which we have been inclined to regard as "*tearlii*" Edw., but which Messrs. Barnes and McDunnough state is not that species. I may remark that the insect figured in Holland's "Moth Book" as *B. tearlii* Edw. is evidently *B. improvisa*, Edw.

For the benefit of anyone who has not the Journal of the New York Entomological Society to refer to, I will quote the description and remarks, as follows:

*Bombycia fasciata*, new species.

"Collar and prothorax ruddy brown: patagia crested, gray, edged with dark brown; posterior portion of thorax gray; abdomen smoky brown; base of legs clothed with rosy hairs; primaries, ground color light purple brown, suffused at base and terminal portion of wing with light whitish green and crossed by a broad median band of the same color; the basal green portion of wing is bordered by an indistinct geminate, outwardly oblique, subbasal line, angled inwardly