**CIHM
Microfiche
Series
(Monographs)**

**ICMH
Collection de
microfiches
(monographies)**

Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1997

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming are checked below.

- ☐ Coloured covers / Couverture de couleur
- ☐ Covers damaged / Couverture endommagée
- ☐ Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- ☐ Cover title missing / Le titre de couverture manque
- ☐ Coloured maps / Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- ☐ Bound with other material / Relié avec d'autres documents
- ☐ Only edition available / Seule édition disponible
- ☐ Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.
- ☐ Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from filming / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- ☐ Additional comments / Commentaires supplémentaires:

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- ☐ Coloured pages / Pages de couleur
- ☐ Pages damaged / Pages endommagées
- ☐ Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- ☒ Pages discoloured, stained or foxed / Pages décolorées, tachetées ou piquées
- ☐ Pages detached / Pages détachées
- ☒ Showthrough / Transparence
- ☐ Quality of print varies / Qualité inégale de l'impression
- ☐ Includes supplementary material / Comprend du matériel supplémentaire
- ☐ Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image / Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.
- ☐ Opposing pages with varying colouration or discolourations are filmed twice to ensure the best possible image / Les pages s'opposant ayant des colorations variables ou des décolorations sont filmées deux fois afin d'obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10x	12x	14x	16x	18x	20x	22x	24x	26x	28x	30x	32x
						✓					

The copy filmed here has been reproduced thanks to the generosity of:

Library
Agriculture Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol → (meaning "CONTINUED"), or the symbol ▼ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:

L'exemplaire filmé fut reproduit grâce à la générosité de:

Bibliothèque
Agriculture Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole → signifie "A SUIVRE", le symbole ▼ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)

APPLIED IMAGE Inc

1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 - Phone
(716) 288 - 5989 - Fax

CIRCULAR No 26

(Printed by the order of the Legislature.)

PROVINCE OF NOVA SCOTIA.

COLLEGE OF AGRICULTURE

Truro, N. S., December, 1917

TWO IMPORTANT VEGETABLE PESTS

BY

W. H. BRITTAIN

Provincial Entomologist.

PLATE I.
THE POTATO STEM BORER. (*Gortyna micacea* Esp.)

1. Eggs in place on stem; insert, single egg greatly enlarged. 2. Rhubarb stem showing entrance holes of caterpillar near ground. 3. Rhubarb stem showing borings of caterpillar. 4. Fully grown caterpillar enlarged about two times. 5. Pupa enlarged about two times. 6. Adult enlarged about two times.

TWO IMPORTANT VEGETABLE PESTS.

BY W. H. BRITTAIN
PROVINCIAL ENTOMOLOGIST.

The Potato Stem Borer (*Gortyna mlcacea* Esp.)

During the past summer numerous complaints have been heard concerning the damage to potatoes, corn, rhubarb, etc. by a boring caterpillar and articles on this "new potato pest" received wide circulation in the local press. The culprit responsible was described as a naked caterpillar, about an inch and three eighths long when full grown, with a shiny chestnut-brown head, pinkish or greyish-pink back, pale at the joints of the body and with under surface and legs lighter in color. This is not a new pest as many suppose, though it undoubtedly has been unusually common during the past summer, possibly due to the fact that so many new back yard gardens were planted on waste land that had formerly been overgrown with weeds. The insect is an emigrant from Europe and gained a foothold in Canada several years ago. It has been under observation at the Agricultural College for the past three years. It is called the potato stem borer because the potato is one of its favorite food plants.

Food Plants.

We have found the insect attacking not only the potato, but also corn, rhubarb and sugar beets and very likely it will be to infest other garden crops. It has been recorded

elsewhere as feeding on docks, horsetails, sedges and other plants, so evidently it is a very general feeder. We have never known it to attack turnips, cabbages, cauliflowers, carrots or parsnips even when neighboring crops suffered severely.

Injuries.

The principal damage has been done to potatoes, though local outbreaks of more or less severity have been recorded to rhubarb and corn. The insect enters the stalk at the surface of the ground and bores upward through the centre. The first symptom noticed is the wilting of the plant, usually followed by the collapse of the stalk. In the case of rhubarb the insect generally bores through and through the crown as well as in the stalk and this results in the gradual wilting and death of the part above ground.

Life History.

The eggs are laid by the female moth during the latter part of August and September. They are doubtless deposited on various weeds, though we have only found them on couch grass. They are very small pinkish colored eggs, faintly ribbed and are laid loosely, sometimes in rather large numbers, on the stems partially surrounded by the leaf sheath. The larvae hatch in June and make their way to a suitable food plant where they bore a tiny entrance hole in the stem, usually at the surface of the ground. They bore in the stem or in the crown of the plant until some time in August and then enter the ground where they transform to a pupa, emerging in late August or September as an adult moth.

Control.

Control measures may be summarized as follows:

1. Carefully destroy all weeds during the latter part

of August and September, when the moth is depositing her eggs. This is particularly important in the case of a permanent plantation like rhubarb.

2. Gardens should not be planted on waste land that has been allowed to grow to weeds the previous year. Such land should be plowed and cultivated the autumn previous to planting.

3. Rotation of crops is beneficial when the insect has gained a foothold in a plantation, e. g. follow potatoes with turnips, cabbage, etc., that are not subject to attack.

4. As the insect is chiefly a garden pest, picking the injured stalks and destroying the caterpillars is practicable and should always be done to prevent outbreaks in future seasons.

The Zebra Caterpillar (*Ceramica picta* Harr.)

A yellow and black striped naked caterpillar has recently been doing considerable damage in certain parts of the province, stripping whole fields of turnips of their leaves and also feeding on potatoes, beets, mangolds, beans, peas and even apple and other plants. This insect is known as the zebra caterpillar and unlike the potato stem borer is a native insect. It is a periodic pest and only rarely occurs in destructive numbers.

Life History and Habits.

There are two broods of the zebra caterpillar. One feeding in the early part of the summer the other in the late summer and fall, the second brood being the more destructive. The eggs are laid in flat masses on the leaves of various plants, those of the first brood hatching during the latter part of June or early in July and those of the second,

during the latter part of August. The larvae of the first brood feed for about six weeks, then enter the ground, where they remain for two or three weeks, when they emerge as moths to lay the eggs for the next brood. Individuals of the second brood may be found feeding from late August up until freezing weather. The winter is passed in the pupal state.

Control

On a small scale and where cheap labor is available, hand-picking and destroying the leaves bearing eggs or newly hatched caterpillars, is the most practicable method of control. Over large areas, dusting with powdered arsenicals, e.g. arsenate of lime, arsenate of lead, Paris green, etc., diluted with 8 to 10 parts of hydrated lime, applied with a powder gun or blower, will prove more satisfactory. Treatment must be given early, since when half grown or more the insects are too difficult to kill.

PLATE II.
THE ZEBRA CATERPILLAR. (*Cetamea picta* Harr.)

1. Egg-masses on leaf; insert, single egg greatly enlarged. 2. Newly hatched caterpillars—time for treatment. 3. Mature caterpillars—too late for treatment.
4. Pupa dorsal and ventral view. 5. Adult moths at rest on leaf.
6. Moth with wings expanded.