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U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF ENTOMOLOGY—BULLETIN No. 95.

L. O. HOWARD, Entomologist and Chief of Bureau.

PAPERS ON CEREAL AND FORAGE INSECTS

CONTENTS AND INDEX.

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I. THE TIMOTHY STEM-BORER, A NEW TIMOTHY INSECT.

By W. J. PHILLIPS, *Entomological Assistant.*

II. THE MAIZE BILLBUG.

By E. O. G. KELLY, *Entomological Assistant.*

III. CHINCH-BUG INVESTIGATIONS WEST OF THE MISSISSIPPI RIVER.

By E. O. G. KELLY, *Entomological Assistant,*

AND

T. H. PARKS, *Entomological Assistant.*

IV. THE SO-CALLED "CURLEW BUG."

By F. M. WEBSTER, *In Charge of Cereal and Forage Insect Investigations.*

V. THE FALSE WIREWORMS OF THE PACIFIC NORTHWEST.

By JAMES A. HYSLOP, *Agent and Expert.*

VI. THE LEGUME POD MOTH.

THE LEGUME POD MAGGOT.

By JAMES A. HYSLOP, *Agent and Expert.*

VII. THE ALFALFA LOOPER IN THE PACIFIC NORTHWEST.

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BUREAU OF ENTOMOLOGY.

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CEREAL AND FORAGE INSECT INVESTIGATIONS.

F. M. WEBSTER, *in charge.*

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY,
Washington, D. C., December 11, 1912.

SIR: I have the honor to transmit herewith, for publication as Bulletin No. 95, seven papers dealing with cereal and forage insects, and methods for their control. These papers, which were issued separately during the years 1911 and 1912, are as follows: The Timothy Stem-Borer, by W. J. Phillips; The Maize Billbug, by E. O. G. Kelly; Chinch-Bug Investigations West of the Mississippi River, by E. O. G. Kelly and T. H. Parks; The So-Called "Curlew Bug," by F. M. Webster; The False Wireworms of the Pacific Northwest, by James A. Hyslop; The Legume Pod Moth and The Legume Pod Maggot, by James A. Hyslop; The Alfalfa Looper, by James A. Hyslop.

Respectfully,

L. O. HOWARD,
Chief of Bureau.

Hon. JAMES WILSON,
Secretary of Agriculture.

PREFACE.

The articles included in this bulletin relate to insects more or less destructive to cereal and forage crops in the United States. They represent investigations largely completed during the fiscal year 1911-12.

The timothy stem-borer, the subject of Part I, has not during our observations been especially injurious, but is likely to become so should several favorable conditions result in increased abundance. The maize billbug (Part II) and the so-called "curlew bug" (Part IV) are two very closely related insects, the latter being especially destructive in Virginia and the Carolinas, while the former is occasionally quite injurious in the West. The paper relating to chinch-bug investigations west of the Mississippi River (Part III) is exceedingly timely and serves to make more clear the difference in conditions, as regards the chinch bug, between the country west of the Mississippi River and that lying east of it. Parts V, VI, and VII relate to species more or less destructive in the extreme northwestern portion of the United States, a section of the country somewhat peculiar in that it differs greatly in insect fauna from more southern and eastern sections of the country.

All of these papers relate to insects that the farmer must, to a greater or less extent, encounter and control in a successful carrying out of his business.

F. M. WEBSTER,
In Charge of Cereal and Forage Insect Investigations.

CONTENTS.

	Page.
The timothy stem-borer, a new timothy insect (<i>Mordellistena ustulata</i> Lec.) W. J. Phillips..	1
Introduction.....	1
History.....	1
Distribution.....	2
Character of attack.....	2
Host plants.....	2
Description of the different stages.....	3
Life history and habits.....	6
The egg.....	6
The larva.....	6
The pupa.....	7
The adult.....	8
Life cycle.....	8
Hibernation.....	8
Parasitic enemies.....	9
Remedial measures.....	9
The maize billbug (<i>Sphenophorus maidis</i> Chttm.)..... E. O. G. Kelly..	11
Introduction.....	11
History of the species.....	12
Injuries since 1895.....	14
Distribution.....	15
Food plants.....	15
Description and life history.....	16
Number of generations.....	22
Records of depredations.....	22
Remedial measures.....	22
Chinch-bug investigations west of the Mississippi River. E. O. G. Kelly and T. H. Parks..	23
Introduction.....	23
Distribution.....	23
Description and number of generations.....	24
Migrations.....	24
Status of the chinch-bug problem in Kansas, Missouri, and Oklahoma	26
Southern Kansas and northern Oklahoma, 1910.....	29
Kansas, 1911.....	30
Hibernation..... ¹	32
Preventive measures recommended.....	36
Remedial measures.....	38
Unsatisfactory remedial measures.....	39
Plowing under infested crops.....	39
Parasitic fungi.....	40
Early observations.....	40
Observations by the writers.....	41
Summary.....	50

¹ The seven papers constituting this bulletin were issued in separate form on March 31, April 22, and December 19, 1911, and April 10, April 22, May 31, and October 16, 1912, respectively.

	Page.
The so-called "curlew bug" (<i>Sphenophorus callosus</i> Oliv.).... <i>F. M. Webster</i> ..	53
Introduction.....	53
History of the species.....	54
Bureau notes.....	54
Distribution.....	57
Food plants.....	58
Description and life history.....	59
The egg.....	59
The larva.....	60
The pupa.....	63
The adult.....	63
Recent investigations of the Bureau of Entomology.....	68
Remedial and preventive measures.....	69
Natural enemies.....	71
The false wireworms of the Pacific Northwest..... <i>James A. Hyslop</i> ..	73
Introduction.....	73
Historical.....	73
Distribution.....	75
The work in the Big Bend region of Washington.....	76
Descriptions.....	78
<i>Eleodesletcheri vandykei</i> Blaisd.....	78
<i>Eleodespimelioides</i> Mann.....	80
Food substances.....	82
Seasonal history.....	83
Natural enemies and parasites.....	84
Remedial and preventive measures.....	86
The legume pod moth (<i>Etiella zinckenella schisticolor</i> Zell.).... <i>James A. Hyslop</i> ..	89
Historical.....	89
Synonymy and distribution.....	90
Food plants.....	90
Description.....	91
Seasonal history.....	92
Field work.....	94
Artificial dissemination.....	103
Parasites.....	104
Remedial and preventive measures.....	104
The legume pod maggot (<i>Pegomya planipalpis</i> Stein)..... <i>James A. Hyslop</i> ..	105
General account.....	105
Description.....	106
Parasites.....	108
Remedial and preventive measures.....	108
The alfalfa looper in the Pacific Northwest (<i>Autographa gamma californica</i> Speyer)..... <i>James A. Hyslop</i> ..	109
Introduction.....	109
Distribution.....	110
Seasonal history.....	110
Food plants.....	112
Descriptions.....	112
Parasites.....	114
Diseases.....	118
Remedies and preventives.....	118
Index.....	119

ILLUSTRATIONS.

PLATES.

	Page.
PLATE I. The timothy stem-borer (<i>Mordellistena ustulata</i>): Larvæ and pupa in stems.....	8
II. Fig. 1.—Corn plant injured by the adult of the maize billbug (<i>Sphenophorus maidis</i>); afterwards attacked by the larva. Fig. 2.—Corn plant showing on stalk the effects of feeding by adult maize billbugs; effects of feeding by larvæ on roots. Fig. 3.—Corn plant, much distorted, showing suckers; final effects of feeding of adult maize billbug.....	18
III. Corn plants showing effects of feeding of adult maize billbugs in the field; plant at left not attacked; the two at right attacked by larvæ.	18
IV. Ravages of the chinch bug (<i>Blissus leucopterus</i>). Fig. 1.—Corn plant killed by chinch bug. Fig. 2.—Chinch-bug ravages in cornfield in southern Kansas, 1910. Fig. 3.—Cornfield adjoining wheat field from which chinch bugs migrated in immense numbers at harvest time.....	24
V. Hibernation of the chinch bug. Fig. 1.—Pile of sorghum canes in which no hibernating chinch bugs could be found. Fig. 2.—Waste land along stream in foreground, sedge-grass meadow in background; chinch bugs found hibernating in both. Fig. 3.—Clumps of red sedge grass (<i>Andropogon scoparius</i>) in which over 6,000 chinch bugs were found hibernating during winter of 1909-10.	36
VI. The portion of the Shannonhouse cornfield, Hertford, N. C., on which corn was grown in 1910, totally destroyed by the "curlew bug," <i>Sphenophorus callosus</i> , in 1911.....	60
VII. The portion of the Shannonhouse cornfield that was devoted to cotton in 1910; planted to corn in 1911 and uninjured by the "curlew bug".....	60
VIII. The dividing line in the Shannonhouse cornfield in 1911 between the portion (to the left of the man standing in the center) devoted to cotton in 1910 and the portion (to the right) where corn was grown in 1910.....	60
IX. Fig. 1.—View of cornfield near Appleton, Tenn., showing damage by the "curlew bug." Fig. 2.—Corn plants, showing normal plant and those damaged by the "curlew bug".....	68
X. Experimental plats used in investigations of the legume pod moth during the season of 1911.....	100
XI. The alfalfa looper and its parasites. Fig. 1.—Cocoon cluster of <i>Apanteles hyslopi</i> . Fig. 2.—Cocoon of alfalfa looper (<i>Autographa gamma californica</i>). Fig. 3.—Larva of alfalfa looper with cocoon of <i>Microplitis alaskensis</i> . Fig. 4.—Pupa of alfalfa looper. Fig. 5.—Adult alfalfa looper. Fig. 6.—Adult alfalfa looper at rest.....	112

TEXT FIGURES.

	Page.
FIG. 1. The timothy stem-borer (<i>Mordellistena ustulata</i>): Adult.....	2
2. The timothy stem-borer: Egg.....	3
3. The timothy stem-borer: Larva and details.....	3
4. The timothy stem-borer: Pupa and details.....	5
5. The maize billbug (<i>Sphenophorus maidis</i>): Eggs.....	16
6. The maize billbug: Larva.....	16
7. Corn plant showing result of attack by the maize billbug.....	18
8. Swamp grass attacked by the maize billbug.....	18
9. The maize billbug: Pupa.....	19
10. The maize billbug: Adult.....	21
11. Map showing distribution of the chinch bug west of the Mississippi River, 1911.....	24
12. Corn plant about 2 feet tall, infested by chinch bugs.....	25
13. The chinch bug (<i>Blissus leucopterus</i>): Eggs, larvæ, details.....	26
14. The chinch bug: Adult of long-winged form.....	26
15. The chinch bug: Adults covered with "white fungus" (<i>Sporotrichum globuliferum</i>).....	47
16. The "curlew bug" (<i>Sphenophorus callosus</i>).....	53
17. Map showing distribution of the "curlew bug" (<i>Sphenophorus callosus</i>) and the maize billbug (<i>Sphenophorus maidis</i>).....	57
18. The "curlew bug": Egg as placed in stem of young corn plant.....	59
19. The "curlew bug": Larva; heads of larvæ of "curlew bug" and maize billbug.....	60
20. The "curlew bug": Pupa.....	63
21. The "curlew bug": Eggs, pupa, adult, work in corn.....	65
22. False wireworm, <i>Eleodesletcheri vandykei</i> : Adults in characteristic attitudes.....	73
23. False wireworm, <i>Eleodesletcheri vandykei</i> : Egg.....	78
24. False wireworm, <i>Eleodesletcheri vandykei</i> : Larva and details.....	79
25. False wireworm, <i>Eleodesletcheri vandykei</i> : Pupa, dorsal and ventral aspects.....	79
26. False wireworm, <i>Eleodesletcheri vandykei</i> : Adult.....	80
27. False wireworm, <i>Eleodespimelioides</i> : Adult, details of larva.....	81
28. The legume pod moth (<i>Etiellazinckenella schisticolor</i>): Egg.....	91
29. The legume pod moth: Larva and details.....	91
30. The legume pod moth: Pupa.....	92
31. The legume pod moth: Adult.....	92
32. The legume pod moth: Larva feeding in a pod of field pea.....	93
33. The work of the legume pod moth compared with that of the pea weevils (<i>Bruchidæ</i>).....	95
34. Planting plan of plats used in investigations of the legume pod moth during the season of 1910.....	96
35. Diagram showing maximum and minimum damage done by the legume pod moth to varieties of peas commencing to bloom on a given date in 1910.....	98
36. Diagram showing maximum and minimum damage done by the legume pod moth to varieties in full bloom on a given date in 1910.....	99
37. Diagram showing maximum and minimum damage done by the legume pod moth to varieties of peas which ceased to bloom on a given date in 1910.....	100
38. Diagram showing mean percentage of damage done by the legume pod moth to varieties of peas in full bloom on a given date in 1910.....	101

	Page.
FIG. 39. Planting plan of plats used in investigations of the legume pod moth during the season of 1911.....	101
40. Diagram showing mean percentage of damage done by the legume pod moth to varieties of peas in full bloom on a given date in 1911.....	103
41. The legume pod maggot (<i>Pegomya planipalpis</i>): Larva and details...	106
42. The legume pod maggot: Puparium.....	106
43. The legume pod maggot: Pupa.....	107
44. The legume pod maggot: Adult male and head of female.....	107
45. The alfalfa looper (<i>Autographa gamma californica</i>): Larva, dorsal and lateral aspects.....	113
46. <i>Rhogas autographæ</i> , a parasite of the alfalfa looper.....	115
47. Larval skin of alfalfa looper from which <i>Rhogas autographæ</i> has issued.	115
48. Cocoons of alfalfa looper parasites: <i>Microplitis</i> sp., <i>Sargaritis websteri</i> , <i>Microplitis alaskensis</i>	116
49. <i>Apanteles hyslopi</i> , a parasite of the alfalfa looper.....	116
50. <i>Plagia americana</i> , a parasite of the alfalfa looper.....	117
51. <i>Phorocera saundersii</i> , a parasite of the alfalfa looper.....	117

ERRATA.

Page 2, line 18 from bottom, for *this year* read *in 1910*.

Plate I, facing page 8, after line at bottom, insert: *a, Work of larva in bulb of plant; b, larva ascending stem to pupate; c, pupa in cell, the gallery plugged with frass below. Much enlarged. (Original.)*

Page 12, line 19 from bottom, before *corn borer* insert double quotation mark in place of single quotation mark.

Page 15, line 16, for *were* read *was*.

In Plate IV, facing page 24, the cut of figure 1 is upside down.

Page 46, line 16 from bottom, after 4 insert *per cent*.

Page 74, last line, insert superior figure 1 (¹) before *Bureau*.

Page 76, line 16 from bottom, for *littorale* read *aviculare*.

Page 77, line 12 from bottom, for *littorale* read *aviculare*.

Page 81, line 4, after *monograph* insert comma.

Page 81, line 5 from bottom, before *Dr.* insert *of*.

Page 82, line 5 from bottom, for *littorale* read *aviculare*.

Page 83, line 8, for *littorale* read *aviculare*.

INDEX.

	Page.
<i>Agropyron</i> sp., host plant of <i>Mordellistena ustulata</i>	2
<i>Agrostis alba</i> , host plant of <i>Mordellistena ustulata</i>	2
Alfalfa, food plant of <i>Autographa gamma californica</i>	112
loopers. (See <i>Autographa gamma californica</i> .)	
<i>Amelocotonus</i> n. sp., parasite of <i>Autographa gamma californica</i>	116
<i>Anas platyrhynchos</i> , enemy of <i>Eleodes</i> adults.....	84
<i>Andropogon furcatus</i> , hibernating shelter for chinch bug.....	34, 35
<i>scoparius</i> , hibernating shelter for chinch bug.....	27, 29, 32, 34
Ant, <i>Formica rufa obscuripes</i> , enemy of <i>Autographa gamma californica</i>	117
<i>subpolita</i> , enemy of <i>Autographa gamma californica</i>	118
<i>Tetramorium cæspitum</i> , enemy of <i>Eleodes</i>	85
<i>Apanteles hyslopi</i> , parasite of <i>Autographa gamma californica</i>	116, 117
Arsenate of lead ineffective as repellent against false wireworms (<i>Eleodes</i>)....	87
Arsenical sprays not very effective against maize billbug (<i>Sphenophorus maidis</i>). ..	22
<i>Astragalus</i> sp., food plant of <i>Etiella zinckenella schisticolor</i>	89, 91
<i>Asyndesmus lewisi</i> , enemy of <i>Eleodes</i> adults.....	84
<i>Autographa gamma californica</i>	109-118
activity in bright sunlight.....	110
adult, description.....	113-114
control by parasites.....	109-110, 118
description.....	112-114
diseases.....	118
distribution.....	110
early record of injury to alfalfa.....	109
egg, description.....	112
food plants.....	112
larva, description.....	112-113
outbreak in California in 1886.....	110
parasites.....	114-118
pupa, description.....	113
remedies and preventives.....	118
seasonal history.....	110-112
Bacteria in diseased larvæ of <i>Autographa gamma californica</i>	118
Bacterial disease, possible cause of death of larvæ of <i>Sphenophorus callosus</i> ...	71
Badger, adults of <i>Eleodes obscura sulcipennis</i> in burrows.....	76
enemy of false wireworms.....	75
Baldpate. (See <i>Mareca americana</i> .)	
Barley, food plant of <i>Autographa gamma californica</i>	112
Barriers, coal-tar, against chinch bug.....	37-38
dust, against chinch bug.....	37
green-corn, unsatisfactory against chinch bug.....	39
<i>Bartramia longicauda</i> , enemy of <i>Eleodes</i> adult.....	84
Bean, lima, food plant of <i>Etiella zinckenella schisticolor</i>	89, 90
Beard-grass, broom. (See <i>Andropogon scoparius</i> .)	
forked. (See <i>Andropogon furcatus</i> .)	

Beet, sugar, roots food of false wireworms.....	82
Billbug, maize. (See <i>Sphenophorus maidis</i> .)	
Bisulphid of carbon against legume pod moth (<i>Etiella zinckenella schisticolor</i>)..	104
Blackbird, Brewer's. (See <i>Euphagus cyanocephalus</i> .)	
Bluebird, western. (See <i>Sialia mexicana occidentalis</i> .)	
Bluegrass. (See <i>Poa</i> spp.)	
<i>Botrytis rileyi</i> , fungous parasite of <i>Plusia brassicae</i>	118
<i>Bracon</i> sp., parasite of <i>Etiella zinckenella schisticolor</i>	104
Braconid parasite of <i>Etiella zinckenella schisticolor</i>	89, 104
<i>Bromus secalinus</i> , probable food plant of <i>Mordellistena ustulata</i>	2
"Budworm," colloquial name for <i>Diatraea</i> sp. on corn.....	69
<i>Bufo</i> sp., enemy of Eleodes.....	85
Burning against chinch bug (<i>Blissus leucopterus</i>).....	36-37
maize billbug (<i>Sphenophorus maidis</i>).....	22
Butcher bird, enemy of Eleodes.....	85
Cabbage, food plant of <i>Autographa gamma californica</i>	112
<i>Eleodes tricolorata</i>	73-74
<i>Calandra callosa</i> = <i>Sphenophorus callosus</i>	54
Calomagrostis, hibernating shelter of chinch bug.....	35
Cane in piles, hibernating place of chinch bug.....	32
Cannibalism in false wireworms in confinement.....	82
<i>Carex frankii</i> , food plant of <i>Sphenophorus callosus</i>	57, 58, 60
<i>vulpinoidea</i> , food plant of <i>Sphenophorus callosus</i>	58
<i>Cecidomyia</i> spp., hosts of <i>Holaspis parellina</i> and <i>Holaspis papaveris</i>	108
<i>Centrocercus urophasianus</i> , enemy of Eleodes adults.....	84
Chalcidids parasitic on <i>Pegomya planipalpis</i>	108
Cheat. (See <i>Bromus secalinus</i> .)	
Chickens, enemies of Eleodes adults.....	84
Chinch bug, control by parasitic fungi.....	40-50
description.....	24
destruction of those in hibernation.....	36-37
which enter corn fields.....	38-39
distribution west of Mississippi River.....	23-24
generations, number.....	24
hibernation.....	32-36
in Kansas, 1911.....	30-32
southern Kansas and northern Oklahoma, 1910.....	29-30
migrations.....	24-26
parasitic fungi.....	40-50
plowing under infested crops for its destruction.....	39-40
preventive measures recommended.....	36-38
remedial measures.....	38-39
status in Kansas, Missouri, and Oklahoma.....	26-32
unsatisfactory remedial measures.....	39
west of Mississippi River.....	23-52
summary.....	50-52
<i>Chordeiles acutipennis texensis</i> , enemy of <i>Sphenophorus callosus</i>	71
<i>Chrysolophus amherstæ</i> and adult Eleodes.....	84
<i>pictus</i> and adult Eleodes.....	84
Chufa. (See <i>Cyperus esculentus</i> .)	
<i>Citellus columbianus</i> , adults of <i>Eleodesletcheri vandykei</i> in burrows.....	83
<i>townsendi</i> , adults of <i>Eleodes obscura sulcipennis</i> in burrows.....	76
"Clewbug," colloquial name for <i>Sphenophorus callosus</i>	53

	Page.
Clover, red, food plant of <i>Autographa gamma californica</i>	112
"Clue bug," colloquial name for <i>Sphenophorus callosus</i>	55
Coal-tar barriers against chinch bug.....	37-38
ineffective as a repellent against false wireworms (<i>Eleodes</i>).....	87
Corn fodder, hibernating place of chinch bugs.....	33
food plant of <i>Sphenophorus callosus</i>	54-57, 59
<i>maidis</i>	15
husks, hibernating place of chinch bug.....	32
leaves, food of <i>Eleodes</i> adults.....	82
seed, food of <i>Eleodes</i> adults.....	82
false wireworms (<i>Eleodes</i>).....	82
<i>Corvus brachyrhynchos hesperis</i> , enemy of <i>Eleodes</i> adults.....	84
<i>Corymbites inflatus</i> destroying wheat field.....	74
Crop rotation against "curlew bug" (<i>Sphenophorus callosus</i>).....	70-71
timothy stem-borer (<i>Mordellistena ustulata</i>).....	9
<i>Crotolaria incana</i> , food plant of <i>Etiella zinckenella schisticolor</i>	89, 91
<i>sagittalis</i> , food plant of <i>Etiella zinckenella schisticolor</i>	89, 91
Crow, western. (See <i>Corvus brachyrhynchos hesperis</i> .)	
Cultural methods against "curlew bug" (<i>Sphenophorus callosus</i>).....	70-71
false wireworms (<i>Eleodes</i>).....	86-87
legume pod moth (<i>Etiella zinckenella schisticolor</i>).....	104
"Curlew bug." (See <i>Sphenophorus callosus</i> .)	
<i>Cyperus esculentus</i> , food plant of <i>Sphenophorus callosus</i>	55, 57, 58
<i>exaltatus</i> , food plant of <i>Sphenophorus callosus</i>	59
<i>rotundatus</i> , food plant of <i>Sphenophorus callosus</i>	58
<i>strigosus</i> , food plant of <i>Sphenophorus callosus</i>	58
<i>Dactylis glomerata</i> , host plant of <i>Mordellistena ustulata</i>	2
<i>Diatraea saccharalis</i> , remedies similar to those employed against <i>Sphenophorus</i>	
<i>maidis</i>	22
resemblance of injury to that of <i>Sphenophorus maidis</i>	22
sp., on corn, known as "budworm".....	69
Digitaria, hibernating shelter of chinch bug.....	35
Disease affecting larvæ of <i>Eleodes</i>	85-86
bacterial. (See Bacterial disease.)	
fungous. (See <i>Sporotrichum globuliferum</i> .)	
Dock. (See <i>Rumex</i> sp.)	
<i>Dryobates villosus</i> , enemy of <i>Eleodes</i> adults.....	84
Ducks, enemies of <i>Eleodes</i> adults.....	84
Dust barriers against chinch bug.....	37
Early varieties of peas, use in preventing injury by legume pod moth (<i>Etiella</i>	
<i>zinckenella schisticolor</i>).....	104
Elder. (See <i>Sambucus</i> sp.)	
<i>Eleodes</i> adults, defensive habits and secretion.....	76-77
food substances.....	82
natural enemies and parasites.....	84-86
larvæ. (See Wireworms, false.)	
<i>Eleodes dentipes</i> , longevity of adults in confinement.....	84
<i>extricata</i> , occurrence in Pacific Northwest.....	74
<i>hispidabris</i> , occurrence in Pacific Northwest.....	74, 75
<i>humeralis</i> , occurrence in Pacific Northwest.....	74
<i>letcheri randykei</i> , adult, description.....	80
descriptions.....	78-80
distribution.....	75

	Page.
<i>Eleodesletcheri vandykei</i> , egg, description.....	78
investigations in Big Bend region of Washington....	76-78
larva, description.....	78-79
occurrence in Pacific Northwest.....	74, 75
pupa, description.....	79-80
seasonal history.....	83-84
<i>manni</i> , occurrence in Pacific Northwest.....	74
<i>nigrina</i> , number of eggs.....	83
occurrence in Pacific Northwest.....	74, 75
<i>obscura sulcipennis</i> , adults found in burrows of <i>Citellus townsendi</i> and badger.....	76
occurrence in Pacific Northwest.....	74, 75
<i>opaca</i> , damage to seed wheat.....	74
distribution.....	76
<i>pimelioides</i> , adult, description.....	81-82
descriptions.....	80-82
distribution.....	75
egg, description.....	80
eggs, number.....	83
in wheat field in Pacific Northwest.....	74, 75
larva, description.....	80-81
pupa, description.....	81
<i>schwarzii</i> , occurrence in Pacific Northwest.....	74
<i>suturalis</i> , distribution.....	76
early record as injuring wheat.....	74
host of <i>Perilitus</i> n. sp.....	85
seasonal history.....	83-84
<i>texana</i> , distribution.....	76
<i>tricostata</i> , distribution.....	75
early records as injuring cabbage.....	73-74
"Elephant bug," colloquial name for <i>Sphenophorus maidis</i>	14
<i>Entomophthora aphidis</i> , parasite of chinch bug.....	40
<i>Erax lateralis</i> , enemy of <i>Sphenophorus callosus</i>	71
<i>Etiella villosa</i> = <i>Etiella zinckenella</i>	90
<i>zinckenella</i> , synonymy.....	90
<i>schisticolor</i>	89-104
adult, description.....	92
description.....	91-92
dissemination, artificial.....	103
distribution.....	90
egg, description.....	91
field work, 1910-11.....	94-103
food plants.....	90-91
historical.....	89-90
larva, description.....	91-92
parasites.....	104
pupa, description.....	92
remedial and preventive measures.....	104
seasonal history.....	92-94
synonymy.....	90
<i>Euphagus cyanocephalus</i>	84
enemy of <i>Eleodes</i>	85
<i>Eleodesletcheri vandykei</i>	78

	Page.
Fodder shocks, hibernating places of chinch bug.....	32
<i>Formica rufa obscuripes</i> , enemy of <i>Autographa gamma californica</i>	117
<i>subpolita</i> , enemy of <i>Autographa gamma californica</i>	118
Fumigation against legume pod maggot (<i>Pegomya planipalpis</i>).....	108
Fungi parasitic on chinch bug (see also <i>Sporotrichum globuliferum</i> and <i>Entomophthora aphidis</i>)	
observations by Kelly and Parks, field studies	
in Kansas and Oklahoma.....	41-46
early.....	40-41
Fungous disease of chinch bug. (See <i>Sporotrichum globuliferum</i> .)	
Fungus, <i>Botrytis rileyi</i> , parasitic on <i>Autographa gamma californica</i>	118
probable cause of death of larvæ of <i>Sphenophorus callosus</i>	71
white. (See <i>Sporotrichum globuliferum</i> .)	
Gasoline torch against chinch bug.....	38-39
<i>Gennæus nychthemerus</i> , enemy of <i>Eleodes</i> adults.....	84
<i>Geococcyx californicus</i> , enemy of <i>Eleodes</i> adults.....	84
Geometrid larvæ, comparison of movements with those of <i>Autographa gamma californica</i>	111
Grackle, bronzed. (See <i>Quiscalus quiscula æneus</i> .)	
Grass, blue-stem, hibernating shelter of chinch bug.....	33
broom beard. (See <i>Andropogon scoparius</i> .)	
crab. (See <i>Digitaria</i> .)	
forked beard. (See <i>Andropogon furcatus</i> .)	
orchard. (See <i>Dactylis glomerata</i> .)	
quack. (See <i>Agropyron</i> sp.)	
reed. (See <i>Calomagrostis</i> .)	
sedge. (See <i>Andropogon scoparius</i> .)	
swamp. (See <i>Tripsacum dactyloides</i> .)	
wild, hibernating shelter of chinch bug.....	33
witch. (See <i>Panicum capillare</i> .)	
Hay in piles, hibernating place of chinch bug.....	33
<i>Hemerocampa leucostigma</i> , periodical outbreaks and control by parasites.....	109
Hen, sage. (See <i>Centroercus urophasianus</i> .)	
<i>Heterospilus mordellistenæ</i> , parasite of <i>Mordellistena ustulata</i>	9
<i>Holaspis</i> n. sp., parasite of <i>Pegomya planipalpis</i>	108
<i>papaveris</i> , parasite of <i>Cecidomyia</i> spp.....	108
<i>parellina</i> , parasite of <i>Cecidomyia</i> spp.....	108
HYSLOP, J. A., paper, "The Alfalfa Looper in the Pacific Northwest (<i>Autographa gamma californica</i> Speyer)".....	109-118
"The False Wireworms of the Pacific Northwest".....	73-87
"The Legume Pod Maggot (<i>Pegomya planipalpis</i> Stein)".....	105-108
"The Legume Pod Moth (<i>Etiella zinckenella schisticolor</i> Zell.)".....	89-104
Kafir in piles, hibernating place of chinch bug.....	32
"Kaloo bug," colloquial name for <i>Sphenophorus callosus</i>	54
KELLY, E. O. G., paper, "The Maize Billbug (<i>Sphenophorus maidis</i> Chtn.)".....	11-22
and PARKS, T. H., paper, "Chinch-Bug Investigations West of the Mississippi River".....	23-52
Kerosene emulsion against chinch bug.....	39
"Klew," colloquial name for <i>Sphenophorus callosus</i>	53
"Klewbug," colloquial name for <i>Sphenophorus callosus</i>	56
"Kloobug," colloquial name for <i>Sphenophorus callosus</i>	53

	Page.
Lampyrid larvæ, association with <i>Sphenophorus callosus</i> in infested hills of corn.....	71
<i>Lanius ludovicianus gambeli</i> , enemy of Eleodes adults.....	84
Larks, horned. (See <i>Otocoris alpestris</i> var.)	
Legume pod maggot. (See <i>Pegomya planipalpis</i> .)	
moth. (See <i>Etiella zinckenella schisticolor</i> .)	
Legumes, food plants of <i>Etiella zinckenella schisticolor</i>	90
Lima bean. (See Bean, lima.)	
Lupines (see also <i>Lupinus</i> spp.).	
food plants of <i>Pegomya planipalpis</i>	105
<i>Lupinus</i> spp. (see also Lupines).	
food plants of <i>Etiella zinckenella schisticolor</i>	91
Mallard. (See <i>Anas platyrhynchos</i> .)	
<i>Malva rotundifolia</i> , food plant of <i>Autographa gamma californica</i>	112
place of oviposition of <i>Autographa gamma californica</i>	110
<i>Mareca americana</i> , enemy of Eleodes adults.....	84
"Measuring worms." (See Geometrid larvæ.)	
<i>Melanerpes erythrocephalus</i> , enemy of Eleodes adults.....	84
<i>Merisus mordellistenæ</i> , parasite of <i>Mordellistena ustulata</i>	9
<i>Microbracon hyslopi</i> , parasite of <i>Etiella zinckenella schisticolor</i>	104
<i>Microplitis alaskensis</i> , parasite of <i>Autographa gamma californica</i>	115
n. sp., parasite of <i>Autographa gamma californica</i>	115
<i>Mimus polyglottos leucopterus</i> , enemy of Eleodes adults.....	84
Mocking bird, western. (See <i>Mimus polyglottos leucopterus</i> .)	
<i>Mordellistena ustulata</i>	1-9
adult, description of Le Conte.....	6
life history and habits.....	8
attack, character.....	2
description of different stages.....	3-6
distribution.....	2
egg, description.....	3
life history.....	6
enemies, parasitic.....	9
hibernation.....	8
history.....	1-2
host plants.....	2
larva, description.....	3-4
life history and habits.....	6-7
movements in stem.....	6-7
outside stem.....	7
length of several stages.....	8
life cycle.....	8
history and habits.....	6-8
pupa, description.....	5-6
life history and habits.....	7
movements in stem.....	7-8
movements outside stem.....	8
remedial measures.....	9
Mowing against timothy stem-borer (<i>Mordellistena ustulata</i>).....	9
Nectar of clover and alfalfa, food of moths of <i>Autographa gamma californica</i>	110
Nematode worms, occurrence in adult Eleodes.....	85
Nematodes, possible cause of death of larvæ of <i>Sphenophorus callosus</i>	71

	Page.
Nighthawk, <i>Chordeiles acutipennis texensis</i> , enemy of <i>Sphenophorus callosus</i>	71
Nut-grass, yellow. (See <i>Cyperus esculentus</i> .)	
Oats, seed, food of false wireworms (<i>Eleodes</i>)	82
<i>Otocoris alpestris</i> var.....	84
Owl, "billy." (See <i>Speotyto cunicularia hypogæa</i> .)	
ground. (See <i>Speotyto cunicularia hypogæa</i> .)	
<i>Oxyechus vociferus</i>	84
<i>Panicum capillare</i> , food plant of <i>Sphenophorus callosus</i>	55, 58
PARKS, T. H., and KELLY, E. O. G. (See KELLY, E. O. G., and PARKS, T. H.)	
Peanuts, food plant of <i>Sphenophorus callosus</i>	59
Peas, Canada field, food plant of <i>Etiella zinckenella schisticolor</i>	91
field, food plants of <i>Pegomya planipalpis</i>	105
garden, food plants of <i>Autographa gamma californica</i>	112
<i>Pegomya planipalpis</i>	105-108
adult, description.....	107-108
description.....	106-108
general account.....	105
larva, description.....	106
parasites.....	108
pupa, description.....	107
puparium, description.....	106
remedial and preventive measures.....	108
<i>Perilitus</i> n. sp., parasite of <i>Eleodes suturalis</i>	85
<i>Phasianus reevesi</i> , enemy of <i>Eleodes</i> adults.....	84
<i>torquatus</i>	84
Pheasant, Chinese. (See <i>Phasianus torquatus</i> .)	
golden. (See <i>Chrysolophus pictus</i> .)	
Lady Amherst. (See <i>Chrysolophus amherstæ</i> .)	
Reeves. (See <i>Phasianus reevesi</i> .)	
silver. (See <i>Gennæus nychthemerus</i> .)	
PHILLIPS, W. J., paper, "The Timothy Stem-borer, A New Timothy Insect (<i>Mordellistena ustulata</i> Lec.)".....	1-9
<i>Phorocera saundersii</i> , parasite of <i>Autographa gamma californica</i>	117
<i>Phrynosoma cornutum</i> , enemy of insects.....	85
<i>douglasii</i> , enemy of <i>Eleodes</i>	85
<i>Plagia americana</i> , parasite of <i>Autographa gamma californica</i>	116
<i>Planesticus migratorius propinquus</i> , enemy of <i>Eleodes</i> adults.....	84
Plover, field. (See <i>Bartramia longicauda</i> .)	
killdeer. (See <i>Oxyechus vociferus</i> .)	
Plowing, late, against false wireworms.....	86-87
under infested crops for destruction of chinch bug unsatisfactory except in certain cases.....	39-40
<i>Plusia gamma californica</i> = <i>Autographa gamma californica</i>	109
<i>Poa</i> , hibernation shelter of chinch bug.....	35
<i>Poa</i> spp., probably food plants of <i>Mordellistena ustulata</i>	2
<i>Polygonum aviculare</i> , food plant of <i>Eleodesletcheri vandykei</i>	76
leaves, food of <i>Eleodes</i> adults.....	82
<i>Poæcetes gramineus confinis</i>	84
Potatoes, seed, food of false wireworms.....	82
<i>Pseudapanteles etiellæ</i> , parasite of <i>Etiella zinckenella schisticolor</i>	104
<i>Quiscalus quiscula æneus</i> , enemy of <i>Eleodes</i> adults.....	84
Rattlebox, common. (See <i>Crotolaria sagittalis</i> .)	

	Page.
<i>Sphenophorus maidis</i> , injuries since 1895.....	14-15
larva, description and life history.....	16-19
life history and description of stages.....	16-22
pupa, description and life history.....	19-20
related to <i>Sphenophorus callosus</i>	53
remedial measures.....	22
<i>pertinax</i> , name incorrectly used for <i>Sphenophorus maidis</i>	12
<i>robustus</i> , name incorrectly used for <i>Sphenophorus maidis</i>	11-12
<i>sculptilis</i> Horn= <i>Sphenophorus callosus</i>	54
Uhler= <i>Sphenophorus cariosus</i>	54
Sporobolus, hibernating shelter for chinch bug.....	35
<i>Sporotrichum globuliferum</i> (see also Fungi parasitic on chinch bug).	
effect of dry weather thereon.....	32
experiments in inoculation of dead chinch bugs....	47-48
live chinch bugs....	48-50
fungous parasite of chinch bug.....	40-50
artificial introduction,	
field studies.....	44-46
conclusions as to practical efficiency.....	50
Squirrel, ground. (See <i>Citellus townsendi</i> .)	
Stalk-borer, lesser corn. (See <i>Diatraea saccharalis</i> .)	
Stem-borer, timothy. (See <i>Mordellistena ustulata</i> .)	
Straw in piles, hibernating place of chinch bug	33
Strychnia sulphate ineffective as repellent against false wireworms (Eleodes) ..	87
Sugar sirup, food of <i>Autographa gamma californica</i> moths in confinement.....	110
Tar, coal. (See Coal tar.)	
<i>Tetramorium caspium</i> , enemy of Eleodes.....	85
Thrasher, curve-billed. (See <i>Toxostoma curvirostre</i> .)	
Timothy, host plant of <i>Mordellistena ustulata</i>	2
stem borer. (See <i>Mordellistena ustulata</i> .)	
Toad, garden. (See <i>Bufo</i> sp.)	
horned (see also <i>Phrynosoma cornutum</i>).	
(<i>Phrynosoma douglasii</i>), enemy of false wireworms (Eleodes).....	75. 85
little horned, colloquial name for <i>Phrynosoma douglasii</i>	85
sand, colloquial name for <i>Phrynosoma douglasii</i>	85
<i>Toxostoma curvirostre</i> , enemy of Eleodes adults	84
<i>Tripsacum dactyloides</i> , food plant of <i>Sphenophorus callosus</i>	58
<i>maidis</i>	15-16. 21
Tumbleweed. (See <i>Panicum capillare</i> .)	
Turkeys, Eleodes adults distasteful and not eaten.....	84
Tussock moth, white-marked. (See <i>Hemerocampa leucostigma</i> .)	
Vegetable matter, decaying, food of Eleodes adults.....	82
Vetch, milk. (See <i>Astragalus</i> sp.)	
WEBSTER, F. M., paper, "The So-Called Curlew Bug (<i>Sphenophorus callosus</i> Oliv.)".....	53-71
Wheat, seed, food of <i>Corymbites inflatus</i>	74
Eleodes adults.....	82
<i>Eleodes opaca</i>	74
<i>suturalis</i>	74
false wireworms (Eleodes).....	82

	Page.
Wireworms, false (<i>Eleodes</i>), comparison with true wireworms (<i>elaterid</i> larvæ).	73
distribution.....	75-76
food substances.....	82
historical.....	73-75
investigations in Big Bend Region of Washington.	76-78
natural enemies and parasites.....	84-86
of the Pacific Northwest.....	73-87
remedial and preventive measures.....	86-87
Woodpecker, hairy. (See <i>Dryobates villosus</i> .)	
Lewis's. (See <i>Asyndesmus levisi</i> .)	
red-headed. (See <i>Melanerpes erythrocephalus</i> .)	

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