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HISTORY. CUT-WORMS.  
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by J. A. Lintner

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**J. A. LINTNER**

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BULLETIN  
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CUT-WORMS,

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STATE ENTOMOLOGIST.

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## CUT-WORMS.

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Ever since insect injuries were first talked of and written about in this country, much has been heard of the *Cut-worm*. Its literature, if collected, would probably be as voluminous as that of the Rocky Mountain Locust, *Caloptenus spretus*, a portion of which fills two thick octavo volumes, and a part of a third, of the U. S. Entomological Commission Reports; while the losses resulting from cut-worms, repeated as they are in each successive year, and occurring alike in every portion of the United States, would doubtless exceed those of the above-named insect. Despite the important role they play in agricultural affairs, they are permitted to prosecute their work steadily and persistently, almost unknown, many of them unnamed, and never attaining to the distinguished honor of being made the subject of discussion in a conclave of governors,† or the objects of investigation of a United States Government Commission.

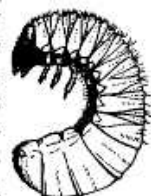


FIG. 1. — The White Grub of *LACHNOSTERNA FUSCA* (Frohl.).

True, more has been charged upon cut-worms than properly belongs to them. The secret manner in which they prosecute their work — under cover of darkness, and often beneath the surface of the ground — rarely permits them to be detected in their opera-

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\* At a conference of the Executives of the States and Territories suffering most from Locust ravages, held at Omaha, Nebraska, on October 25 and 26, 1876, the following were in attendance: Gov. Jno. S Pillsbury, of Minnesota; Gov. Samuel Kirkwood, of Iowa; Gov. Thomas A. Osborne, of Kansas; Gov. Silas Garber, of Nebraska; Ex-Gov. Robt. W. Furnas, of Nebraska; Gov. John L. Pennington, of Dakota; Gov. C. H. Hardin, of Missouri; and Prof. C. V. Riley and Prof. Cyrus Thomas, of the U. S. Entomological Commission.

tions, or the injuries inflicted to be unmistakably referred to them.

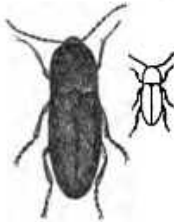


FIG. 2.—The truncated snapping-beetle, natural size and enlarged.

Roots are eaten and young blades and shoots are cut off, and the unknown depredator, as an easy solution of the mystery, is pronounced a cut-worm. Often in these cases, if proper examination were made, it would be found

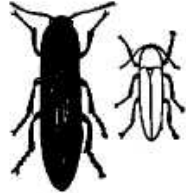


FIG. 3.—The common snapping-beetle, MELANOSTERNA COMMUNIS (Gyll.).

proceed from the white grub, *Lachnosterna fusca*, shown in Fig. 1, or one of its many allied forms, or from some species of wire-worm—the larvae of the "snapping beetles" belonging to the family of *Elateridae* (two of



FIG. 4.—The W-marked cut-worm of *AGROTIS CLANDESTINA* (Harris).

the beetles are represented in Figs. 2 and 3). Such mistakes should



FIG. 5.—Wire-worm of Truncated snapping-beetle.

not occur; they are inexcusable. Careful search would rarely, if ever, fail to bring to the light of day the author of these injuries; and when found, certainly after all that has been written and figured and gratuitously distributed upon entomological matters, every intelligent tiller of the soil in which these creatures lurk, should be able to distinguish between a white grub (Fig. 1), a cut-worm (Fig. 4), a



FIG. 6.—The common wire-worm. (After Fitch.)

wire-worm (Figs. 5 and 6), and a thousand-legged worm (Figs. 7 and 8)—the latter not even a true insect. Until this can be done, inquiry should not be made of

how to destroy "the cut-worm," for the reply would be but a random shot fired in darkness.

#### WHAT ARE CUT-WORMS?

Cut-worms are caterpillars of moths that belong to the great family of *Noctuidæ*, which embraces a large proportion of our night-flying species of *Lepidoptera*. There are many different species—how many we are not able to state even approximately—



FIG. 7.—Thousand-legged worm, *JULUS MULTISTRIATUS* Walsh.

as the larvæ of very few of the mature forms (the moths) contained in the genera of *Agrotis*, *Mamestra*, and *Hadena*, to which they mainly pertain, have as yet been ascertained. About 350 United States species have been described in these three genera—*Agrotis*, embracing the larger number, and pre-eminently the Cut-worm genus. Of some of these, their habits are not such as entitle them to be numbered among the Cut-worms proper. We would prefer limiting this designation to forms having the appearance and habits of those known to English writers and agriculturists as *surface caterpillars*, and not extending it to those which seek their food mainly in trees or tall plants. Under such a limitation the class can be somewhat definitely circumscribed.



FIG. 8.—Thousand-legged worm—position at rest, and young

#### THEIR APPEARANCE.

The following are the principal features of the typical Cut-worms, by the aid of which it will not be difficult to recognize them:

When full grown, they measure from an inch and a quarter to nearly two inches in length. They are sixteen-footed (three pairs of true legs and five pairs of pro-legs or prop-legs), thick, tapering moderately at the extremities, naked and greasy-looking. In color they are dingy brown, gray or greenish, with indistinct, light and dark, longitudinal markings, and occasionally some oblique lines. The head is large, shining and usually red or brown. On the top of the first segment, or ring, is a horny plate, called "the collar" or cervical shield, and on the last, another smaller one, known as the anal plate, both of a shining and darker color than the rest of the body. On each of the segments are six or eight small, blackish humps or dots, each bearing a short hair, as shown in an enlargement of a segment in Fig. 9. When the caterpillar is taken from the ground, or otherwise disturbed, it curls itself into a ring, as represented in Fig. 4, or even more closely than this, with its head resting on its anterior prolegs, and the anal pair upon the crown of the first segment.



FIG. 9.—The Glassy Cut-worm. *HADENA DEVASTATRIX* (Brace).



## THEIR HABITS.

They are nocturnal in their habits, passing the day in concealment, in holes made by them in the ground among or near the roots of their food-plants, or in other shelter beneath stones, sticks, rails, decomposing leaves and grass, etc. A few of the subterranean species rarely if ever come to the surface, but cut off the tender blades beneath the ground, drawing them in as they are consumed or bearing the excised portion to their retreats to feed upon at leisure. Most of them, however, come forth from the ground after dark (sometimes by day in cloudy and damp weather), and with appetites sharpened by a protracted fast, make vigorous attack upon the young annual plants of the garden or the field, feeding upon their tips, or severing their stalks and destroying far more than they consume. If, during the time of their abundance, search be made for them at night with the aid of a lantern, hundreds of them may be discovered busily occupied in their destructive work. At the approach of day they retire to their hiding places; which may frequently be detected by the hole near the plant, made by them in reëntering the ground.

The time of their greatest injuries is when they are nearly full-grown, in the months of May and June.

Guenée, in his *Histoire Naturelle des Insectes—Species Général des Lépidoptères*, vol. v—Noctuelites, i, p. 258, has remarked as follows, upon the appearance and habits of the larvæ of the genus *Agrotis*:

Smooth, thick, with transparent skin and of dirty colors, furnished with elevated, shining trapezoidal spots, with the plates of the collar and the anus equally shining, and of a horny consistency they resemble worms or larvæ of insects far removed from the Lepidoptera. Their manner of living is not less marked. They do not confine themselves to hiding during the day under low plants; but they bury literally in the earth and among their roots, and when night arrives they do not often leave their tomb, except by projecting so much of the anterior portion of their body as is necessary to grasp their food. Several of the species are very destructive, especially by reason of their abundance, as *exclamationis*, *segetum*, *valligera*, *tritici*, *aquilina*, *obelisca*, etc. Their ravages are, however, less serious, by the fact that they usually attack the low plants, as *Plantago*, *lumex*, *Taraxacum*, and the useless Gramineæ. Nevertheless, they are very dangerous guests of the gardens; it seems, even, that under certain circumstances they attack plants of very different families, and are not opposed to mounting during the night upon woody vegetation.

M. Treitschke speaks of the ravages caused in 1833 and 1834, in the vineyards in the environs of Vienna by caterpillars of *aquilina*, which devoured the leaves, the blossoms and the buds, and I have myself seen roses attacked by the caterpillar of *segetum*.

#### HABITS OF THE MOTHS.

Most of them are nocturnal. A few species fly by day and may be found during the autumnal months feeding upon the nectar of flowers, as upon those of the golden-rod (*Solidago*). But by far the larger number come abroad only at night to feed, passing the day, in sleep probably, in various hiding places, as in crevices of walls, piles of wood and stone, under the bark of trees, behind closed blinds of dwellings where they have been attracted during the evening by lights—in short, in any dark, secluded place or crevice into which their closely-folded wings permit them to creep. Their entrance into crevices or apertures apparently too small for their admission, is facilitated by the habit belonging to many of the species of folding their front wings, one over the other by the overlapping of their inner margin, and holding them almost parallel to the plane of position. In this attitude the greatest breadth of the moth across the folded wings exceeds but little the diameter of the body.



FIG. 10.—*AGROTIS SUBGOTHICA*, the Gothic Dart-Moth. (After Fitch.)

Although strongly muscular in their build, and capable of vigorous flight, when driven up from their concealment they fly but a short distance before they alight and seek a hiding place—much after the manner of the *Hesperidae* among the butterflies, commonly known as “skippers.” Fig. 10 shows one of the common species, the Gothic Dart-Moth, *Agrotis subgothica* (Haworth).

#### NATURAL HISTORY.

From the differences observed in the species known to us, it is not possible to give a satisfactory account of the life-history of cut-worms as a class. They require to be separately discussed. It may be stated, however, that the eggs from which the caterpillars proceed are placed usually upon some low plant, whence the young when hatched may easily reach the food that they require. It was formerly supposed, by Kollar and others, that the eggs were laid in the ground, but we are not aware of any

reliable testimony of their having been found in such places, while of some species the eggs have been discovered in locations quite removed from their natural food-plants, as upon the leaves and twigs of trees not known to be frequented by the larvæ, as are, at times, the eggs of *Agrotis saucia* (Hubn.), as shown in Fig. 11. The usual time for egg-deposit is the latter part of summer. Hatching soon after, early in the autumn, the larvæ enter the earth and commence to feed upon the tender roots of various plants—upon almost any kind that they encounter, as at this stage of their life they are very general feeders.

FIG. 11.—a, egg of *AGROTIS SAUCIA*, greatly enlarged; b, eggs of the same deposited upon a twig, natural size.

At the commencement of winter as the frosts penetrate to their abode and chill them, and they have become about half grown, they descend into the ground to the depth of six or eight inches or even not so deep. Here they shape for themselves an oval cavity, within which they curl up in a torpid state for their winter's sleep. Freezing fails to harm them if undisturbed in their retreats. In the spring, when the frost leaves the ground, they awaken to activity, ascend to near the surface, and resume their feeding upon the roots of the starting vegetation. With their rapid growth, they soon attain to the size and strength that permits them to travel through the ground with ease in search of the particular food most agreeable to them.

When full-grown they again descend into the ground to a greater depth than before, and within a compacted cell, made by packing the earth with their head, after the few days required to produce the change, throw off the caterpillar skin and become smooth, dark-brown pupæ. The pupal stage may average three or four weeks, when the moth issues from the rent pupal case and makes its way to the surface. During the brief life of the winged insect, which lasts only for two or three weeks, if not sooner terminated by one of its many enemies, the sexes come together, eggs are deposited for another brood, a moderate amount of food is partaken of in the nectar of flowers or other sweet substance, and the life-cycle is completed. A similar round, only much shortened in duration, and with continued progress, in some cases follows and is completed during the summer, but as a rule only a single brood of cut-worms is produced during the year.