

THREE HUNDRED AND FOURTH MEETING, MAY 3, 1917.

The 304th regular meeting of the Society was entertained by the Society members from the Federal Horticultural Board at the Saengerbund Hall, May 3, 1917. There were present Messrs. Abbott, Baker, Barber, Böving, Busck, Cushman, Dietz, Ely, Fisher, Gahan, Carman, Greene, Kotinsky, Middleton, Morrison, Paine, Rohwer, Sanford, Sasscer, Schwarz and Wood, members, and R. M. Fouts and Edwin P. Selkregg, visitors.

Mr. Shirley L. Mason, of the U. S. Entomological Laboratory, West Lafayette, Indiana, Dr. Henry T. Fernald of Amherst, Massachusetts and Mr. Max Kisiuk of Ohio State University, Columbus, Ohio were elected corresponding members. Under the head of program the following were presented:

THE USES OF INSECT GALLS.

BY MARGARET M. FAGAN.¹

A CONTRIBUTION TO THE BIOLOGY OF N. A. DIPTERA.

BY CHARLES T. GREENE,

Forest Insect Investigations, Bureau of Entomology.

The Diptera discussed in this paper was reared by the writer at the Eastern Field Station, Falls Church, Va. All the species discussed below remain in the larval stage during the winter. The larva of *Mydas clavatus* and *Dasyllis thoracica* are predaceous on Coleopterous larvae, therefore they are of importance. The larva of *Dasyllis* is a secondary wood-borer in addition to being predatory. All of the above species are known in the adult stage but their seasonal history and habits are entirely new.

Neopachygaster maculicornis Hine.

Ohio Naturalist, II, p. 228.

The larvae were collected at Falls Church, Va., November 29, 1912, by the author. They were found under the bark of Tulip (*Liriodendron*) in the sap, on the moist surface between the outer wood and bark. The exact time of pupation is not known but is sometime in early spring. The adults emerged between May 23 and June 3, 1913.

Larva (plate XVII, fig. 4).

Larva.—Grayish-brown, flattened and somewhat chitinous. The entire surface of the larva, except the head, is marked in a very minute way,

¹ Withdrawn for publication elsewhere.

resembling the scales of a snake skin. The dorsal and ventral bristles are yellowish-brown and the ventral bristles are located about like those on the dorsum.

Head: The head resembles a beak, much darker at the apex; along the entire vertical length of the dorsum of the head, is a broadly rounded ridge terminating into a sharp point.

On each side of the anal opening are three bristles, in a vertical row, and a single bristle, near the base of the segment which is located between this row and the lateral edge.

For general details see the drawing.

Pupa (fig. 4).

Pupation takes place in the larval skin and the pupa looks identical with the larva; the only difference is, the flexible skin along the segmental lines becomes rigid. The adult emerges by pushing off the head and splitting the first two segments down the middle of the dorsum.

***Mydas clavatus* Drury.**

Illustrations of Nat. Hist., I, p. 103.

The larvae of this species were collected at Falls Church, Va. by Mr. T. E. Snyder and the author, in the rotten roots of a dead tulip stump. All the larvae were well below the ground, where the wood was quite moist; they resembled the wood fibres so closely that they might often be overlooked. The larvae are predaceous on Coleopterous larvae and one larva devoured an earth worm, placed in the breeding jar. In the same roots were several larvae of the following Coleopterous genera, *Alaus*, *Parandra* and *Pelagnota*.

Only one larva pupated, June 1, 1914 and the adult emerged June 27, 1914.

Larva (plate XVII, fig. 1).

The larva is 40 mm. long and little over 6 mm. wide, nearly cylindrical. Smooth, opaque, ivory white.

The beak is 1.5 to 2 mm. long, when extended, heavily chitinized and of a dark brown color. It is retractile into the first segment. The beak is split in the center of the apical half. On the dorsal side are three pairs of yellowish-brown, proclinate, bristles; the middle pair are the smaller and are sometimes divaricate and the posterior pair are the larger. Sides of the larva are parallel, tapering to a point from the third to the first segment.

The first segment has two faint longitudinal grooves near the middle and one near each lateral edge, on the dorsum and the venter. All the other segments have the lateral grooves which form the following ridge: on the sides of all the segments, and the entire length of each, is a broad

ridge, broadly rounded. This ridge is only on the basal half of the last segment, the sides of the apical half are broad at the base and terminate into a sharp edge or carina at the apex. At the base of the first segment, near the outer corners, are two small, yellowish brown spiracles, which are elliptical, chitinous plates with three, parallel, oblique slits which are darker on the edges and point towards the apical corners of the first segment.

Near the apex of the lateral ridge, is a microscopic spiracle on all segments except the first, second and last.

The last segment is nearly twice as long as the preceding ones and terminates into a blunt point. In the middle of the dorsum of the last segment are two transverse grooves or folds which are interconnected by two smaller folds, which are oblique and slightly curved. From these transverse grooves are two longitudinal, faint grooves which are irregular and terminate at the apex of the last segment.

The last segment has two much larger spiracles, located near each basal corner. Each spiracle is nearly circular and are much darker yellowish-brown than the anterior pair. Around the edge of each is a band or border composed of 40 compressed ringlets, resembling a cross-section of grains of corn. The area inside of this band is pale grayish brown. Below the upper edge, which is towards the cephalic end of the larva, is a crenulate opening reaching half way around this area. See plate xvii, fig. 3.

The under side of the head has two pairs of proclinate bristles, one pair at the base and the other at the middle.

Segments one, two and three each have one pair of yellowish-brown bristles on the ventral side. Each bristle is located in the middle of the segment and about one-fourth the transverse width from the lateral edge.

The ventral side of the last segment has a pair of yellowish-brown bristles near the apex and a pair on the lateral edge located at about the apical fourth. At the base of this segment is a groove which forms a rectangular surface with a slight depression near each end. From this rectangular surface are two grooves running parallel, half way to the apex, then converging to a point at the apex.

The anal opening is located at the base of this last mentioned surface.

Pupa (plate XVII, fig. 2).

The pupa is 25 mm. long and 6 mm. diameter at the base of the abdomen; thorax nearly 7 mm. diameter.

Head and thorax are dark reddish-brown. Abdomen much lighter and of a brick-red color. The whole pupa is rugose, the abdomen is more sharply marked, especially along the apical edge of the segments, where it is reticulate.

Head.—Near the apex are two large horn-like projections. Below are two more projections, each having one large and one small tooth or prong. In back of and slightly below each apical projection, is a bifid humeral spiracle, opening on the caudal side. The ends are bifurcate, shiny and

finely serrated on the edges. In general this spiracle resembles a "ram's horn." The wing-pads reach to about the middle of the second abdominal segment and the leg-sheaths slightly beyond the pads. Near the base of each wing-pad is a rugose tubercle, terminating into a chitinous, pointed tooth.

Abdomen.—Along the basal edge of the first segment is a row of large tooth-like, dark brown spines with the points turning backward. Each of the end spines are much smaller than the others. On the sides of the first segment, close to the apical edge, is a row of spines, reaching from the lateral edge of the dorsum to the wing-pads. All the other segments, except the last, have a transverse row of prominent spines near the apex encircling the segment, the spines on the dorsum are the larger. The last segment has two pairs of very small spines on the dorsum, near the base. On each side are three larger spines near the middle and transversely across the middle of the venter are four spines. This segment terminates into two very large horn-like spines. All the spines on the pupa are shiny, heavily chitinized and quite dark on the apical half, the basal portion is rugose and of the same color as the pupal skin.

On the side of all the segments, except the last, is a ridge which is broad and slightly rounded, extending the longitudinal length of each segment. Above and slightly in front of the center of each ridge, is a spiracle like the humeral one but lighter in color and opening on the cephalic side.

The adult emerges from the pupa through a longitudinal, dorsal slit in the thorax and the bursting of the sutures around the head.

***Dasyllis thoracica* Fabr.**

Syst. Antl., p. 158.

This species is predaceous in the larval stage and a secondary wood-borer, in moist dead, Tulip stumps. It closely resembles a Coleopterous larva and is easily overlooked because it closely resembles the wood fibre, in which it lives. The larvae were collected at Falls Church, Va., April 10, 1914, by Mr. S. A. Rohwer and the writer.

They pupated April 21, 1914 and emerged May 11, 1914. Under natural conditions, the larva pupates in the gallery, and the pupa is fairly active.

Larva (plate XVIII, fig. 1).

Larva.—Opaque, white, elongate and cylindrical. The entire larva longitudinally striate. The greatest width of the larva is across the second segment; other segments nearly parallel. The larva is 27 mm. long and 5.5 mm. wide across the second segment, while the other segments are nearly 5 mm. wide.

The head is very heavily chitinized and black with the basal corners reddish. From a dorsal view the head is divided into three parts. The

basal part reaches the full width of the head; it is deeply concave on the apical edge, in the middle of which is a long, slender, tooth-like projection extending up between the two upper sections. Each of these sections are somewhat triangular in shape; the inner side terminates into a tooth-like projection at the apex and below this, on the outer edge, is a similar projection. The antennae are located near the basal outer edge of this last mentioned projection. The antennae have two cylindrical joints of nearly equal length, the first joint is reddish-brown at the base and yellowish at the apex, while the coloring of the second joint is the reverse. All the bristles of the head are pale yellow.

For details of head see drawing, figure 5 dorsal view and figure 4, ventral view.

First segment rather broad and rounded. At the apex is an elliptical area finely granulated, being much finer at the base. Just below this is a perfectly smooth, narrow, transverse band, not quite reaching the lateral edges. The second segment is about half the width of the first, along the apical edge is a narrow transverse space which is very finely rugose. The third segment is very narrow, being about half the width of the second segment. Near the apical edge are two rather sharp transverse wrinkles slightly depressed or flattened in the middle. Segments four to ten are about the same width. Segments four to nine, each have one pair of ampullae on the dorsum and two pairs on the ventral side. The last segment is deeply depressed on the basal half, faintly rugose and with two well defined longitudinal ridges on the lateral edge. Towards each outer edge is a large spiracle, dark yellowish-brown and rather heavily chitinized. For further details see figure 1. The apical half of this segment is raised much higher than the basal half, slightly rugose and terminates into a broad and narrow, reddish, chitinous plate, black on the outer edge, in the center of which is a prominent, black, tooth-like projection. This chitinous plate has a large, yellowish bristle extending from the under side near both of the outer corners. Near the middle of the last segment, on the elevated portion, are four large yellowish bristles, in a transverse row.

The details of the under side of the head can best be seen in the drawing, figure 4. All the dark portion is heavily chitinized and black, the dark area in the central, basal part is reddish on the apical edge. The bristles are yellowish.

On the apical edge of the ventral side of the first segment is a narrow crescent-shaped area finely granular. Segments one to nine each have a yellow bristle, near the middle and out near the lateral edge.

At the apex of the last segment, on the ventral side, near each outer basal corner is a yellow bristle. At the base of this segment are several, short, well marked ridges.

On the side of the first segment, near the base is a spiracle, nearly circular having three faint ridges on the cephalic side, just below these is an opening which is pit-like in appearance. It is dark brown, chitinous and faintly granular, located in a small depression in the larva. For details see drawing, figure a.

On the side of segments three to nine, and located at about the apical third, is a small, round, flattened spiracle, with one faint slit across the middle.

The PREPUPAL larva is white and of about the same size and appearance as the larva. There is a great shrinkage of the first segment and from a side view the dorsum of this segment is concave.

The humeral spiracle is formed slightly in front of and above the large anterior spiracle of the larva, and all the lateral, abdominal spiracles are formed in front of and below those of the larva. All the abdominal spines and bristles are pale yellow and perfectly formed under and show through the semi-transparent larval skin. The large pointed horn-like projections at the apex of the abdomen project slightly through the skin and are of the darkened, nearly normal coloring.

Pupa (plate XVIII, fig. 2).

The pupa is elongate, cylindrical, moderately shiny and faintly rugose. The general color is pale yellow ochre. It measures 20 mm. in length and 5 mm. in width at the thorax while the abdomen is slightly narrower.

Head.—On each side of the apex is a large, pointed, horn-like projection, below each of these, on the side, is a larger one with three large prongs, the last one having two small points at the apex.

These large projections are deep reddish-brown, very rugose at the base and smooth and shiny on the apical half. In back of the above projection is a small, sharp pointed, tooth-like projection, yellow at the base and reddish-brown at apex; near the middle of the upper side is a small ridge reaching to the apex.

Thorax.—Near the base of the first abdominal segment, across the middle of the next four segments and at the apex of the last segment, yellowish brown.

The humeral spiracle is small, reniform, pale yellow, smooth and slightly raised, with a row of uniform dark dots around the curved edge. (See drawing, plate XVIII, fig. b.) On the upper edge of the wing-pad is a rounded, raised surface, with a small, narrow, darkened, sharp edge just back of the center. At the lower edge of the pleura and touching the wing-pad is a foot-like projection, which is reddish-brown towards the apex where there are two small, tooth-like points and one large point near the base.

The wing-pads reach to the middle of the second abdominal segment and the leg-sheaths to the middle of the third segment.

Abdomen.—There are eight well defined segments. All but the last have a transverse row of sharp, claw-like dark-brown spines across the dorsum of the segments, becoming quite long and yellow on the sides of the segments and diminishing in length on the venter. These ventral bristles increase in length, on each segment, as they near the last segment. For the location of these spines and bristles see drawing (fig. 2).

At the apex of the abdomen are four large, very rugose, reddish-brown, chitinous tooth-like spurs; between the lower pair on the dorsum, are two

small, rounded, brown tubercles. Below these tubercles, on the dorsum is a small, rounded, frosted area.

About half way between this area and the base of the segment, is a large, sharp, claw-like, dark spine; at the base of this is a smaller, dark spine with two points at the apex. Between these spines and the segmental line is another sharp spine, near the base of which is a small, rounded, roughened, dark spot, which is the remains of the large posterior spiracle.

On the ventral side of the last segment are two very large tubercles, semi-transparent and darkened on the inner edge to the apex.

The under side of the thorax has two short, robust, claw-like spines, bifurcated at the apex and each having a short yellow spine, near the middle of the inner side. These spines are yellow with a reddish-brown edge.

On the side of all the segments, except the last, and close to the cephalic edge, is a reniform spiracle, it is like the humeral one except the curved side is on the opposite side.

The adult emerges through a longitudinal, dorsal slit, in the thorax and bursting of the sutures of the head.

***Criorhina (Somula) decora* Macq.**

Dipt. Exot., Suppl. II, p. 57.

The larvae¹ of this species were taken from a pocket in a living Tulip tree, by the writer, at Falls Church, Va., November 29, 1912. This pocket was filled with black frass, composed of dead vegetation and moistened with rain water and sap from the tree. Pupation took place in the larval skin, from April 8, to 18, 1913. The adults emerged from April 17 to May 1, 1913. All emerged during the night.

Egg.

On May 13, 1915, a female of this species was observed during oviposition. There was a large living tree with a small pocket near the ground, which was filled with frass composed of decayed leaves, etc., and rather moist with the sap. The fly flew around this tree several times, making a loud humming sound, and then alighted on the moist frass. After walking around on this frass for a few seconds, with the abdomen moving up and down, the fly stood still for a few seconds, with the tip of the abdomen touching the frass. Suddenly a tiny white egg appeared. This performance was repeated before the disposition of each egg and

¹ Twice during the winter these larvae were frozen. Ordinarily they are opaque but when frozen they were transparent and colorless. Shortly after thawing, and returning to the opaque, all 14 larvae pupated. From these 13 adults emerged.

after laying two or three eggs the fly would leave the pocket and encircle the tree a few more times, then return and repeat the above habit. The eggs were left exposed. The fly was nearly two hours depositing twelve eggs.

The egg is opaque, white, cylindrical and tapering slightly towards each end. The surface is very faintly reticulate. It is 0.75 mm. in length and the diameter is equal to half the length.

Larva (plate XVIII, fig. 1).

This larva is a typical rat-tail type. Body elongate, elliptical, and very rugose transversely. It is opaque, grayish-yellow with a little white showing through. The tail is grayish-brown and darker than the body. The body is completely covered with a fine, pale yellow pubescence which is longer on the lateral edges. Cephalic end rounded. Caudal end tapers down to the rat-tail which is cylindrical. A narrow area across the front of the head, is beset with minute spines which are pale yellow at the base and dark yellowish-brown at the apex. The dorsum of the first segment has seven longitudinal, faintly impressed grooves, the end grooves are the smaller. At the base of the second groove is a small, tubercular, chitinous, dark brown spiracle, opening on the outside.

The tail is very slightly larger at the base than at the apex; the sides being almost parallel. On the lateral edge at the base of the tail, is a tubercle with a tuft of long yellow pubescence at the apex. Just below this tubercle is a similar, but smaller one. On each side of the apical end of the tail is a very small, transparent, colorless, cylindrical projection, terminating into a hair-like projection. The tail is composed of three sections; the apical and middle sections are retractile into the basal one. The apical section is somewhat chitinous, especially at the apex.

The mouth parts (fig. a) are entirely suctorial. The buccal cavity is darkened on its edges and is located just beneath the apex and between two large, rounded, fleshy folds. Just above the edge of the buccal cavity are the antennæ; they are white and form one solid trunk at the base which is bifurcate on the apical half. Each half is divided at the apex, appearing like two small, yellow, chitinous thimbles. The inner one has a small tubercle at the apex (fig. b).

When disturbed, the antennae are drawn into the buccal cavity.

Just below the buccal cavity is a pair of ampullae, the next segment does not have any, the following six segments each have a pair. Each ampulla has a number of yellowish-brown bristles, hooked outwardly on the end; and are located near the apex.

The larvae when full grown, average, in the body, 12 to 15 mm. in length and 5 mm. in width, and nearly cylindrical. The tail is 5 to 6 mm. long, 1 mm. diameter at the base and tapering slightly towards the apex. When the tail is fully extended it reaches about 19 mm. in length.

Pupa (fig. 2).

Same general shape as the larva, but more cylindrical and smooth. It is dark yellowish-brown and sparsely covered with a short, yellow pubescence. They average 11 mm. in length and 4.3 mm. in diameter.

On the dorsum near the apex are two very small tubercular, dark-brown, chitinous spiracles. Behind this pair is another much larger pair with the apical portion bent back. They are more yellowish than the pupa skin, and slightly shiny.

From the dorsal aspect, this spiracle has seven small, raised, pad-like areas which are evanescent on the ventral portion. These areas and the ventral side are covered with minute tubercles. (See fig. c.)

The tail is bent along the side of the body or up over the dorsum. The chitinous tip of the third section protrudes from the tip of the first.

***Brachyopa vacua* O. S.**

Bull. Buff. Soc. Nat. Hist., III, p. 68.

The larvae were collected at Falls Church, Va., November 30 to December 2, 1912, by the writer. They were found under dead bark (*Liriodendron*) in the juice of decaying fungi. Some of the larvae were brown and some black. The juice of the fungi was brown in some places and black in others and the larva was of the same color as the juice in which it was found. A larva of each color was isolated and the result was a ♂ in each case.

Exact time of pupation not known. All the adults emerged during the night, from April 5 to 14, 1913.

*Larva*¹

Larva.—Opaque, dull, light yellow-ochre with the entire body finely rugose. First segment somewhat pointed. Larva reaches its greatest width at the fourth segment and gradually decreases in width towards the caudal end. The dorsum is very rugose transversely; in the middle of each segment is a transverse depression or groove. On the lateral edge, near the apex of the first segment, is a small spiracle. It is conical in shape, of a dark reddish-brown color and of a chitinous texture. On the dorsum of the first segment are six faint, longitudinal ridges reaching almost to the apex, also a transverse row of six fleshy tubercles near its base and all the other segments have a row of 8 or 10 similar tubercles, just above the center. Two or three tubercles on each end of each transverse row, terminate into three or four fleshy, bristle-like projections; while the other tubercles terminate into two such projections.

At the base of the first, and the base and apex of all the other segments, is a row of short, fleshy, bristle-like projections.

¹ The larva and pupa look so much alike, that only the pupa was drawn.

At the base of the first segment is a row of small, fleshy, bristle-like projections; all the other segments have three rows each of similar projections.

Between the large tubercles on the lateral edge (which are the ends of the transverse rows) are numerous fleshy, bristle-like projections, which are longer than those on the dorsum.

The caudal or posterior spiracle is nearly cylindrical, mostly dull black and shiny at the apex. On the apex are two small, circular, pit-like openings.

The mouth is a fleshy opening, of the suctorial type and retractile between two large, rounded, fleshy folds.

The palpi are located just above the buccal opening and are retractile. The base is whitish and nearly cylindrical and bifurcated at the apex; these bifurcations are yellowish-brown and have a depression or groove on both sides, giving this upper portion the appearance of two cylinders fused together; the inner cylinder slightly shorter than the outer one.

For details see drawing (fig. d).

The entire ventral surface of the larva is covered with minute, brownish-black spines.

Larva is 7 mm. long in the body, posterior spiracle 1 mm. making a total of 8 mm. in length and 3 mm. wide, being nearly cylindrical.

Pupa (plate XIX, fig. 3).

Pupation takes place in the larval skin. The puparium looks like the larva except the characters noted. It is much smoother and the segmentation is hardly noticeable. All the fleshy, bristle-like projections are very much compressed and shriveled. In profile, the puparium slopes from about the middle of the second segment to the apex of the first, having a wedge-shape appearance. On the dorsum of the first segment are four short ridges, all meeting at the apex. Near the center of the transverse ridge, in the middle of the second segment, are two conical spiracles, curved outward; they are reddish-brown, slightly shiny at the apex, and have numerous small tubercles, around the sides with one located at the apex.

It is 7 mm. in length, 4.75 mm. in width and nearly cylindrical. The adult emerges by pushing off the dorso, apical portion of the puparium which breaks transversely across the segmental line.

***Pseudotephritis corticalis* Loew.**

Mon. N. A. Dipt. III, p. 136.

These larvae were collected at Falls Church, Va., February 18, 1913 by Messrs. S. A. Rohwer and Wm. Middleton, in frass, under the bark of chestnut (*Castanea dentata*).

Pupation took place in the larval skin, March 16, 1913 and the adults emerged April 16 to 18, 1913.

Larva (plate XX, fig. 2).

Larva.—It has eleven segments, is opaque white, very faintly yellowish at the base of the segments, cylindrical and tapering to a point at the head. They vary from 3 to 6 mm. in length and 1 to 1.5 mm. in diameter.

The head is retractile into the first segment, is bilobed and each lobe has a very minute tubercle at the apex and on the under side of each lobe is a series of brownish, roughened, transverse lines. Between these lobes are two dark reddish hooklets.

The anterior spiracles are white, quite small, semi-circular and beaded along the edge; in some specimens the beads are round, while in other specimens they are rounded at the top and pointed at the base; there are ten of these beads to each spiracle. This spiracle is located on the side and at the base of the first segment. Along the lower front edge of the first segment is a narrow roughened area (fig. a).

Segments four to ten each have a small, ventral fusiform area, on the front edge, which is formed by a series of raised, roughened brown lines.

On the under side of the last segment, near the middle or anal area, is a large, rugose area which is somewhat semi-circular in form. There is a very small depression on each side of the anal opening.

The last segment has a shiny, faintly yellowish rectangular depression on the end. Near the middle of this depression are two yellowish-brown, button-shaped, raised, spiracles which vary from nearly round to elliptical. On each of these chitinized plates are three oblique slits. Just above these slits is a small impression like an asterisk, which is concolorous with the larva. The two stigmal plates are separated by a small Y-shaped depression (fig. b).

Pupa (fig. 3).

The pupa is brownish-yellow, cylindrical, tapering slightly towards the head where the color is a deeper brown. It is 4.5 mm. in length and 1.25 mm. in diameter. The entire pupa skin is sharply marked with very narrow, transverse ridges. All the transverse, segmental lines of the larva are visible on the pupa skin, where they appear as very fine rugose surfaces. The end of the last segment has a sharp edge or carina around it forming somewhat of a hexagon; in this hexagonal area are the posterior spiracles which are like those of the larva with the addition of a small stem on the inner side, which points upward and outward.

The adult emerges by splitting the puparium and forcing its way through this slit.

PLATE XVII.

- Fig. 1. *Mydas clavatus* Drury, larva.
Fig. 2. *Mydas clavatus* Drury, pupa.
Fig. 3. *Mydas clavatus* Drury, posterior spiracle, enlarged.
Fig. 4. *Neopachygaster maculicornis* Hine, larva.

PLATE XVIII.

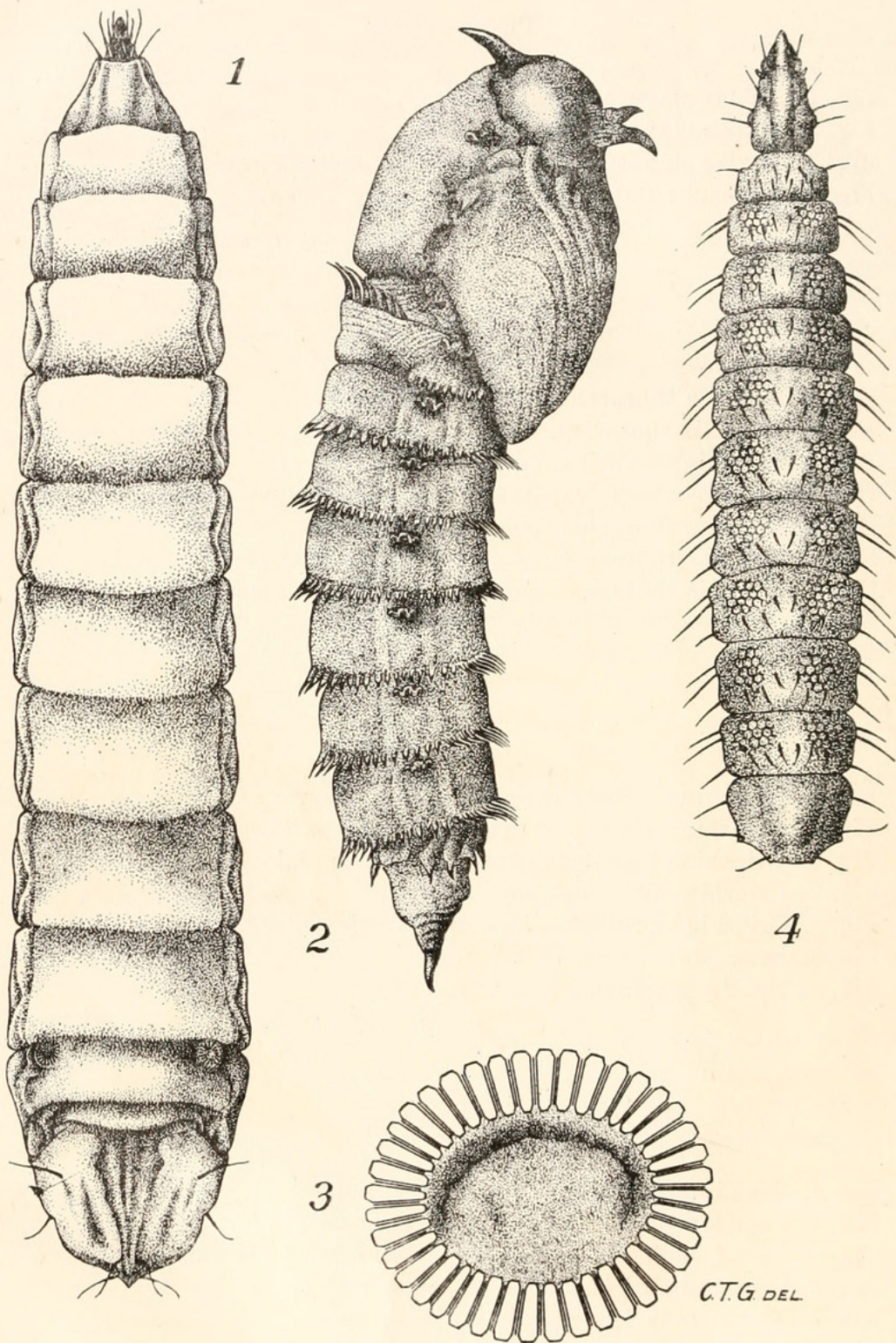
- Figl 1. *Dasyllis thoracica* Fabr., larva.
Fig. *a*. *Dasyllis thoracica*, anterior spiracle.
Fig. 2. *Dasyllis thoracica*, pupa.
Fig. *b*. *Dasyllis thoracica*, lateral spiracle of pupa.
Fig. 3. *Dasyllis thoracica*, pupa, lateral view.
Fig. 4. *Dasyllis thoracica*, mouth parts, ventral view.
Fig. 5. *Dasyllis thoracica*, mouth parts, dorsal view.

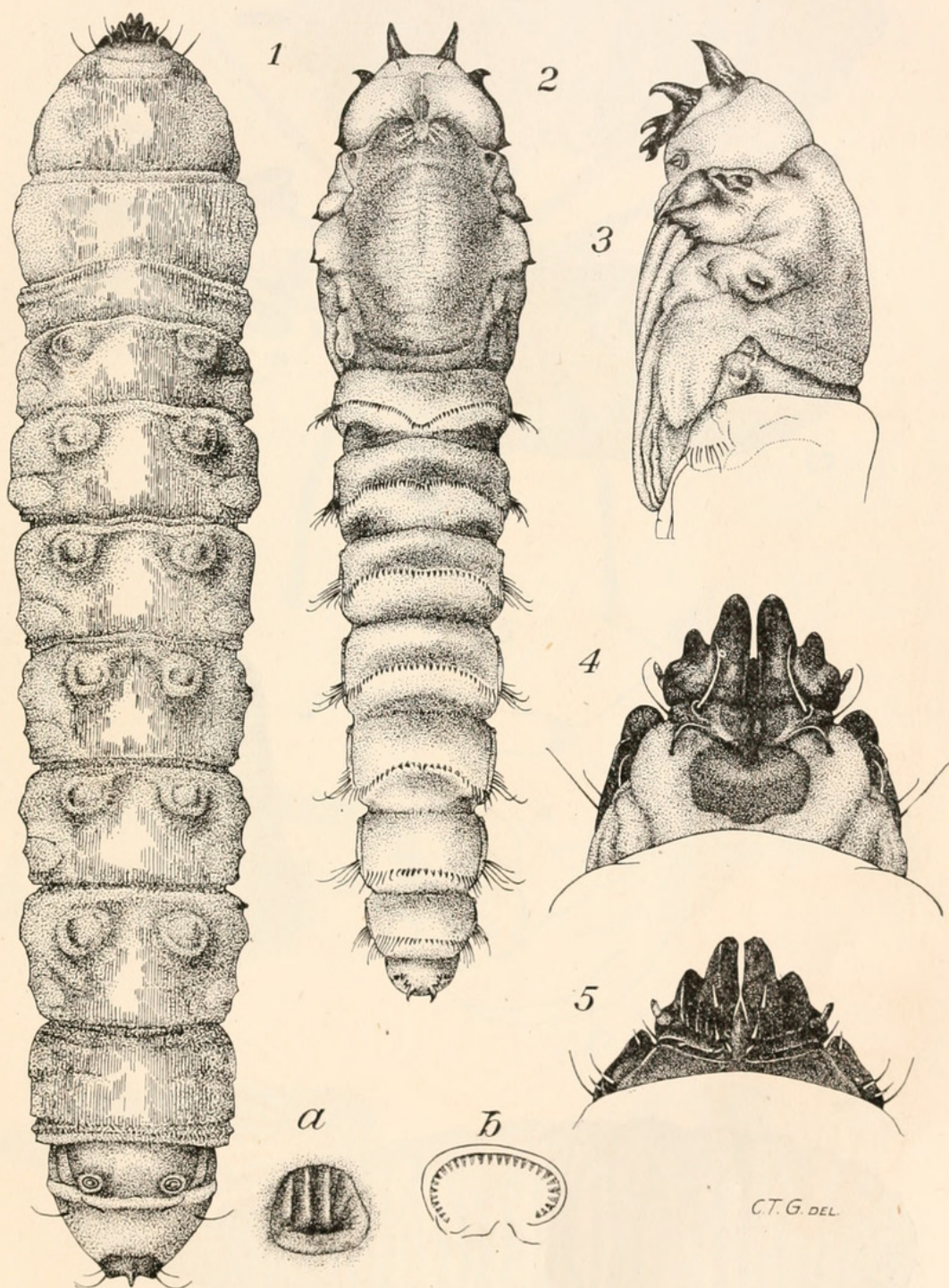
PLATE XIX.

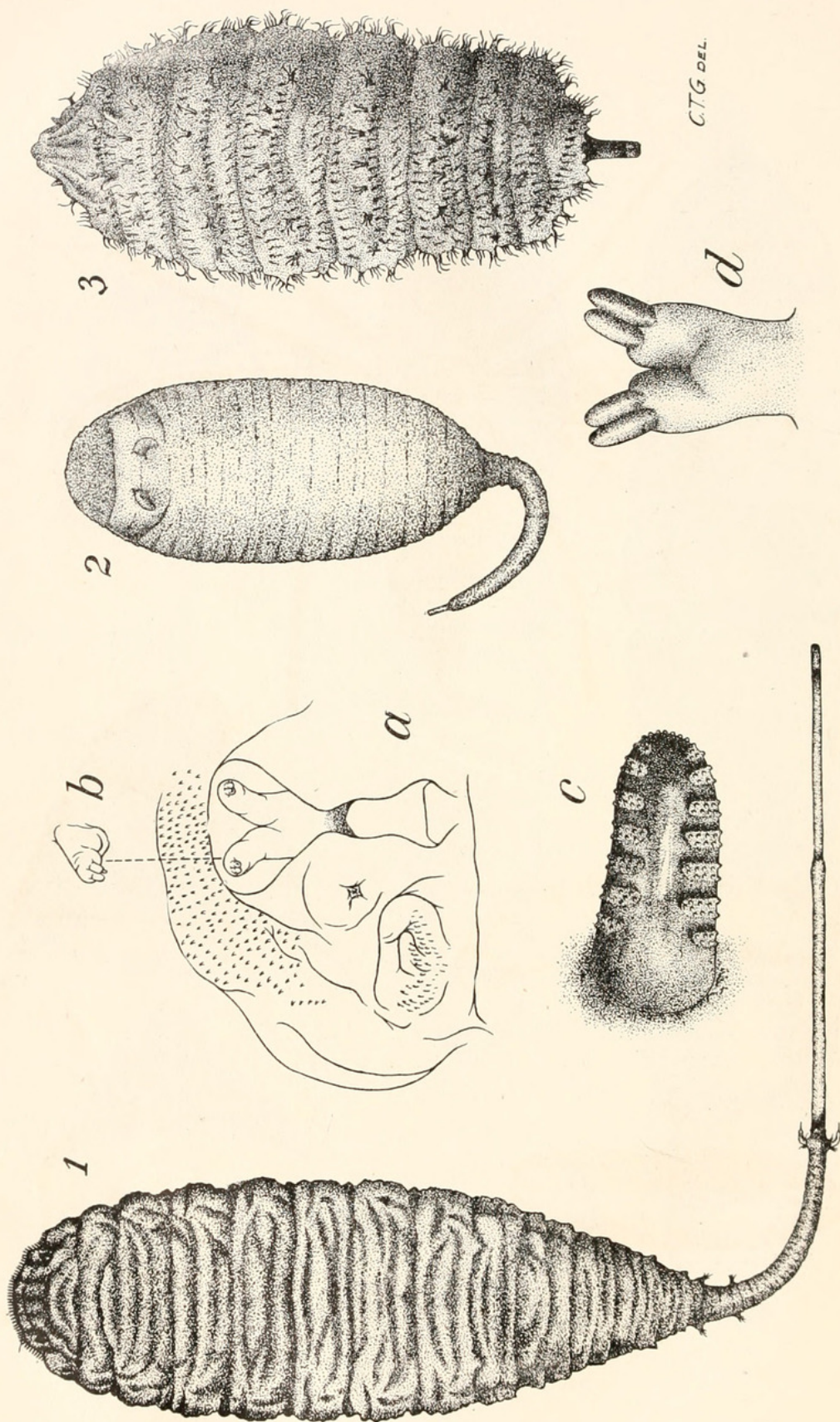
- Fig. 1. *Criorhina* (*Somula*) *decora* Macq., larva.
Fig. *a*. *Criorhina* (*Somula*) *decora*, mouth parts.
Fig. *b*. *Criorhina* (*Somula*) *decora*, antennæ, enlarged.
Fig. 2. *Criorhina* (*Somula*), *decora* pupa.
Fig. *c*. *Criorhina* (*Somula*), *decora* spiracle enlarged.
Fig. 3. *Brachyopa vacua* O. S., pupa.
Fig. *d*. *Brachyopa vacua*, antennæ.

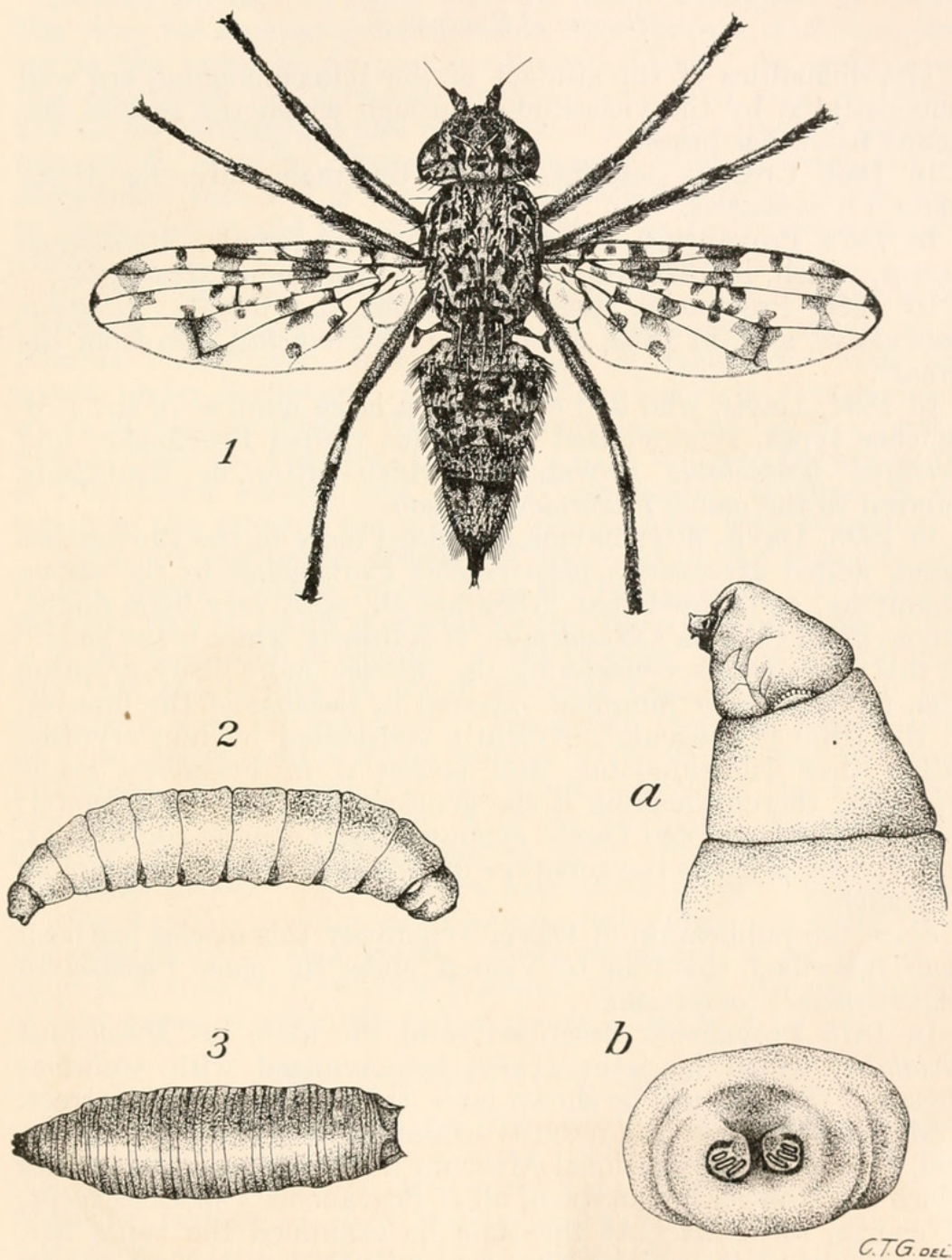
PLATE XX.

- Fig. 1. *Pseudotephritis corticalis* Loew, adult.
Fig. 2. *Pseudotephritis corticalis*, larva, lateral view.
Fig. *a*. *Pseudotephritis corticalis*, larva, lateral view of head.
Fig. *b*. *Pseudotephritis corticalis*, larva, end view.
Fig. 3. *Pseudotephritis corticalis*, pupa.











Greene, Charles T. 1917. "A contribution to the biology of North American Diptera." *Proceedings of the Entomological Society of Washington* 19, 146–161.

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