

HOLOLEPTINÆ OF THE UNITED STATES.*

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SECTION I.

The Hololeptinæ in the United States comprise the genera *Hololepta*, subdivided into *Hololepta* and *Leionota* and *Iliotona* (n. gen.). The name *Leionota*, amended to *Lionota* by Marseul, requires comment. *Leionota* was proposed by Dejean as a genus of Histeridæ in the so-called first edition of his catalogue in 1821 (really the second); this division was retained in his catalogues of 1833 (the date usually assigned to the name), and 1837. Under this name he cited several species of which only two *Hololepta quadridentata* Fab. and *H. lamina* Payk. were described species; this citation would ordinarily fix the genus with one of the included described species as type, but Marseul in 1853 pointed out, after a study of the Dejean collection, that the species assigned by Dejean to *quadridentata* Fab. was not that species, but another which he described as *devia*, and that the species *lamina* was not Paykull's species but *minuta* of Erichson. The mere fact that the specimens which Marseul saw were misidentified does not invalidate the name. We have only published records to go by, and misidentification cannot be absolutely proved. Marseul in 1853 used the name *Leionota* for the same division, and in 1857 changed it to *Lioderma*. The name of the subgenus should therefore be *Leionota* and is ascribed to Dejean with a date of 1821 with *Leionota quadridentata* Fab. as type, as one of the forms included in the original citation, the name *Lioderma* becomes a synonym.

The life history and habits of the members of this subfamily are very little known. The egg is unknown, but probably closely resembles the eggs of the members of the other subfamilies; I have figured the egg of *Hister obtusatus* Harris (Pl. XXX, Fig. 3). This egg is similar in shape and appearance to the eggs of *Saprinus* and *Heterius*, white, opaque and minutely roughened, about two millimeters long. Examination of the ovaries of various Histerids, and observations show that the eggs are ripened one at a time and are laid at appreciable

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intervals of time; in the genus *Hister* the interval varies from three to eight days, in *Saprinus* it is less, usually about one day. I append figures of the ovaries of *Hister obtusatus* Harris, *Saprinus pennsylvanicus* Payk. (Pl. XXX, Figs. 4-5), which show the periodic ripening of the eggs. The early stages of the larva are not known, but the last stage of *Hololepta æqualis* Say may be briefly described as follows:

***Hololepta æqualis* Say. Plate XXVIII, XXIX.**

Larva. Wickham. American Naturalist, XXVIII, p. 816, 1894.

Length 14-16 mm. Flattened, white.

Head strongly chitinized, quadrate, chestnut brown. Dorsally, with a shallow transverse impression about one-third from the anterior margin to the posterior border, two punctures on this impression, behind them and out side of them two more, and behind these two and inside of them two more, a line connecting all these punctures would form an almost regular octagon; behind each antenna and forming the arc of a circle with the center towards the antennæ, three punctures. Clypeus quadrate, broader than long. Antennæ inserted posterior to the mandibles at the anterior corners of the head,* first external segment long, cylindrical, second a little more than half the length of the first, dilated at apex; third short, half the length of the second, narrowly cylindrical, the whole antenna almost as long as the head. Mandibles stout, curved, with a stout tooth a little more than halfway from the apex, on the inner margin; when closed the left mandible overlaps the right. Ventrally, the head has behind the labium a cordate shaped impression, at the anterior margin of which there is a boss, another boss occurs near the base, and connected to this impression at the base there is a deep spear-shaped puncture; near the lateral borders on a line with this puncture there is on each side a shallow puncture. Maxillæ inserted at the base of the mandible near the interior border, the dorsal surface of the first visible segment concave longitudinally; inner margin of the same segment fringed densely, outer margin lightly fringed and with a single long bristle on the apical fourth, second segment the

*Dissection shows the antenna to be inserted on a process next to the superior external basal corner of the mandibles, the true first joint. The antenna has four true joints.

length of first, one quarter the length of first, with a short segment on the inner margin which bears a single bristle. Third and fourth segments together a little longer than the second, and equal in length to the fifth, third segment slightly shorter than fourth. Labium with two jointed palpi, the first joint of which is half the length of the second. Pronotum as large as head, corneous with a deep median longitudinal furrow, the center portion, triangular, the base of the triangle towards head, deep chestnut brown, remainder light brown, a single bristle on each side before the middle. Prosternum corneous with seven differentiated areas, the center one triangular, with the apex of the triangle towards the head, yellow brown; on each side of this center area, a triangular area whose base is towards the head, of the same color, outside of this a rhomboidal area of lighter color, and posterior to the rhomboidal area, a white area which carries the coxæ.

Meso- and metathorax short, one-third the length of the prothorax. Mesonotum colored for its entire width, metanotum with a broad band for almost the entire width, and a smaller area at each edge, sternites with three markings; a broad band across the center to the lateral halves, and at each end of this band a smaller area, all colored light brown. Each segment with a single marginal bristle.

Nine abdominal segments are present, the first with two complete transverse rows of ambulacral hooks dorsally, and between each row the same arrangement of colored patches in threes as on the metathorax. All the remaining segments, except the ninth which bears none, have three rows of hooks, and between each row the same arrangement of plates. On the fold between the segments, on each side between the center and the lateral colored areas, there is a small group of hooks arranged in the arc of a circle whose center lies posterior; behind the last rows of hooks on the segments themselves and directly anterior to the small group mentioned above there is a single seta with a few hooks around it. Ninth segment with a pair of cerci, each composed of a basal tubercle which bears a single bristle, a first segment which is stout and clavate with a pair of stout bristles below the insertion of the second segment which is one and one-half times as long as the first segment, and half as wide, and bears at its apex a pair of strongly diverging bristles. On the lateral margins of the abdominal

segments are paired bristles, rising from tubercles, and on all the segments except the first there is, under the first of these bristles, another stout bristle on all the segments except the ninth where it is reduced in size and comes under the posterior bristle of the two, on the ventral surface. On the ventral surface each segment bears three rows of ambulacral hooks except the ninth which has none, and the eighth which has two complete rows, the first row broad and entire, the second short, interrupted at middle, the third entire and forked at each end. The ninth segment has the anal region developed into a pseudopod. Spiracles biforian, on the mesothoracic, and all abdominal segments except the ninth. Legs composed of a cylindrical coxa, which bears two bristles on its inner margin, a trochanter, cylindrical, short, a femur three times as long as the trochanter, a tibia two-thirds the length of the former and a claw; the claw bears a short accessory spine (visible only at high magnifications).

I am unable to see under the highest magnification the rudimentary tarsus which Schiodte (1864) figures. The spine on the claw resembles the figure given by Schiodte for *Platysoma depressum*. These larvæ have great difficulty in crawling unless they can bring the dorsum into contact with something. The hooks, which in the description I called "ambulacral," are used by the larva to push itself along. The larva, in moving, draws up the anal pseudopod and places it; then the segments move forward in rhythmical order, the hooks serving to attach each segment while the next one in front of it is moving forward. The larvæ are very voracious carnivores, living on the larvæ of an anthomyid fly, and an ortalid fly, eating from six to fifteen a day.

When the larva is full grown it sets itself to work to make the pupal cell, travelling as much as an inch for material, shredded wood, cotton, filter paper, anything available which it can chew up; the natural material is finely chewed wood. The wood is cemented together with an anal secretion, and it is not uncommon to see the larva reach to its anus with its head and apply the secretion gathered to the wall of its cell. I believe that the clypeus and frons are used for carrying the secretion and the clypeus and mandibles used as trowels to spread it. The larva begins by forming a ridge of transported material, then adds to the cell by adding pieces to each side

of the ridge. These are laid near the position desired and pushed into place with head and mandibles. Every little while the animal stops transporting material, wets the whole mass, pushing it into place with head and body. The last portion of the pupa case to be finished is the anterior end in which a small hole, through which the larva reaches its materials, is left till the last and is then plugged, and cemented rather loosely. In one case the hole was not plugged at all, but remained open after the larva had assumed the prepupal position. When the cell is complete, the larva closes the open end and gives the entire inside of the cell a coating of the anal secretion, which is colorless when first applied, but rapidly becomes very dark brown; it then orients itself so that the head end of the pupa shall be opposite the loosely plugged opening; and takes a peculiar prepupal position. The body shortens slightly and the head is bent over and applied to the venter; this fold occurs at the suture between the metathorax and the abdomen. The time taken to become an immobile prepupa is about eighteen hours. The prepupal stage lasts seventeen-eighteen days; but the day before pupation takes place the prepupa raises the head and thorax slightly. The thorax then splits down the back and the pupa emerges.

Pupa: Length 8-10 mm. Color varying with age, but general appearance white. Imago visible through the transparent pupal skin. Spiracles on the second, third, fourth and fifth epipleurites. Genitalia extruded. On the pronotum, an irregular band of fifteen bristles extending distant from the margin along the lateral margin of the thorax to the hind margin half way from center to margin, and an inner row of three bristles. Elytra with scattered bristles, which are definite in number and location. (Pl. XXX, Figs. 1-2). Second, third, fourth, epipleurite each with a stout spine. First and second abdominal tergite with a pair of bristles, third with seven bristles (arranged in a triad and two pairs) each side of middle, fourth with two pairs and fifth with one pair each side of the median line. Propygidium and pygidium fringed with bristles. This chaetotaxy is definite in the four specimens before me.

At the end of the second day after pupation the eyes are colored, by the eighth day the median line of the mesosternum and the median line and segment lines of the abdominal tergites

are colored. Pigmentation then commences on the pronotum and after twenty days the pronotum is fully colored. Emergence takes place at the end of from twenty-four to twenty-nine days. In one case emergence started at eight fifty-five in the morning, was completed except for the withdrawing of the genitalia at eleven fifteen, and was fully completed at twelve twenty-five. The adult does not become completely colored for three days after emergence.

NOTES ON THE MORPHOLOGY OF LARVA, *H. æqualis*, LAST STAGE.
(Plates XXVIII, XXIX, XXX).

Head: Cranium (Figs. 5, 6, 7) symmetrical, rectangular, a little broader than long; occipital foramen narrower than the cranium and almost directly posterior, the head reaches slightly further back below than above; ventral surface with genal sutures (Fig. 6) apparent in the posterior portion. Labrum (Fig. 3) very rudimentary and slightly differentiated from the clypeus, not movable. Clypeus firmly united to frons, epistoma not distinct. Epicranial and frontal sutures not visible in living larvæ, though slightly visible in moult skins. Antennæ (Figs. 5, 6, 7) deeply inserted in the head. Above the dorsal articulation of the mandible, composed of four segments, the first very short, hardly visible externally, the second long cylindrical, the third capitate, a little more than half as long as the second, the fourth very small, cylindrical, the third joint with a sensory pit at the tip near the external margin, and one to three papillæ near the apex on the internal margin.

Mandible (Figs. 5, 6, 7) falciform, acute, with a single rounded tooth on the inner margin. At the base of the internal margin a cluster of setæ.

Maxillæ (Fig. 7) connected with hypostoma by a thin membrane. Cardo very small, almost completely concealed; a flat plate on the external border of the maxilla and fused to the stipes. Stipes, a long tubular segment, densely fringed with hairs on the inner margin, sparsely fringed on the outer margin, with a long tactile seta near the distal end, inserted just above the margin. The stipes are flattened on the dorsal side. Next to the stipes come a stout short segment, less than one-quarter the length of the stipes. It is swollen on the inner side and bears on the swelling a short finger-like segment,

which has a sensory bristle at the tip. The swollen segment probably represents subgalea and palpifer fused; the finger-like segment is probably galea. At the apex of this swollen segment is a three-jointed palpus. The second and distal segments of the palpus have numerous sensory pits on the surface.

The mentum is coriaceous, colored only on the margins; it is closely united to the submentum, which is slightly chitinized and light brown in color. The palpifers are fused and form a hollow tube, bearing two jointed palpi at the distal end. No ligula or paraglossæ are present. Above the labium lies the hypopharynx. This has two blades, visible in Fig. 7, which bear numerous bristles on the margin. Limiting the hypopharynx on each side is the hypostoma, which extends as a heavily chitinized rod upwards from the base of the mouth cavity, a flattened bridge, the epipharyngeal bracon (Fig. 7), extends between the two rods below the epipharynx (Fig. 3).

The thoracic segments are sharply differentiated from the abdominal. Pronotum consists of a heavily chitinized scutum, a less heavily chitinized parascutum. The meso- and metathorax show the scutum above. The first abdominal segment has a prescutum, a scutum and postscutum, the remaining abdominal segments have the scutum divided into two parts by a line of ambulacral hooks (reptoriæ Schiodte). On all the segments except the prothorax the pleuræ are readily distinguishable. On the dorsal side they are limited by muscle marks and on the ventral side there is a distinct sterno-pleural groove. The pleuræ are divided into epi- and hypopleuræ by the pleural suture. The epipleura of all the segments except the pro- and metathorax bears a biforian spiracle, and a bristle, the hypopleura bears also a single bristle. Prosternum consists of a triangular sternum and two plates on each side of it. The inner one is the parasternum, the outer is pleural in origin. The abdominal sternites show a presternum, a sternum which is cut off from the presternum by a muscle groove and a sternellum which is separated from the other two plates by a row of ambulacral hooks. The ninth abdominal segment bears an anal pseudopod, which I believe to be a tenth segment.

EXPLANATION OF PLATES—SECTION I.

PLATE XXVIII.

- Fig. 1. Dorsal view of the larva of *Hololepta æqualis* Say.
 Fig. 2. Ventral view of the larva of *Hololepta æqualis* Say.
 Fig. 3. Underside of the clypeus showing the epipharynx (larva of *H. æqualis*).

PLATE XXIX.

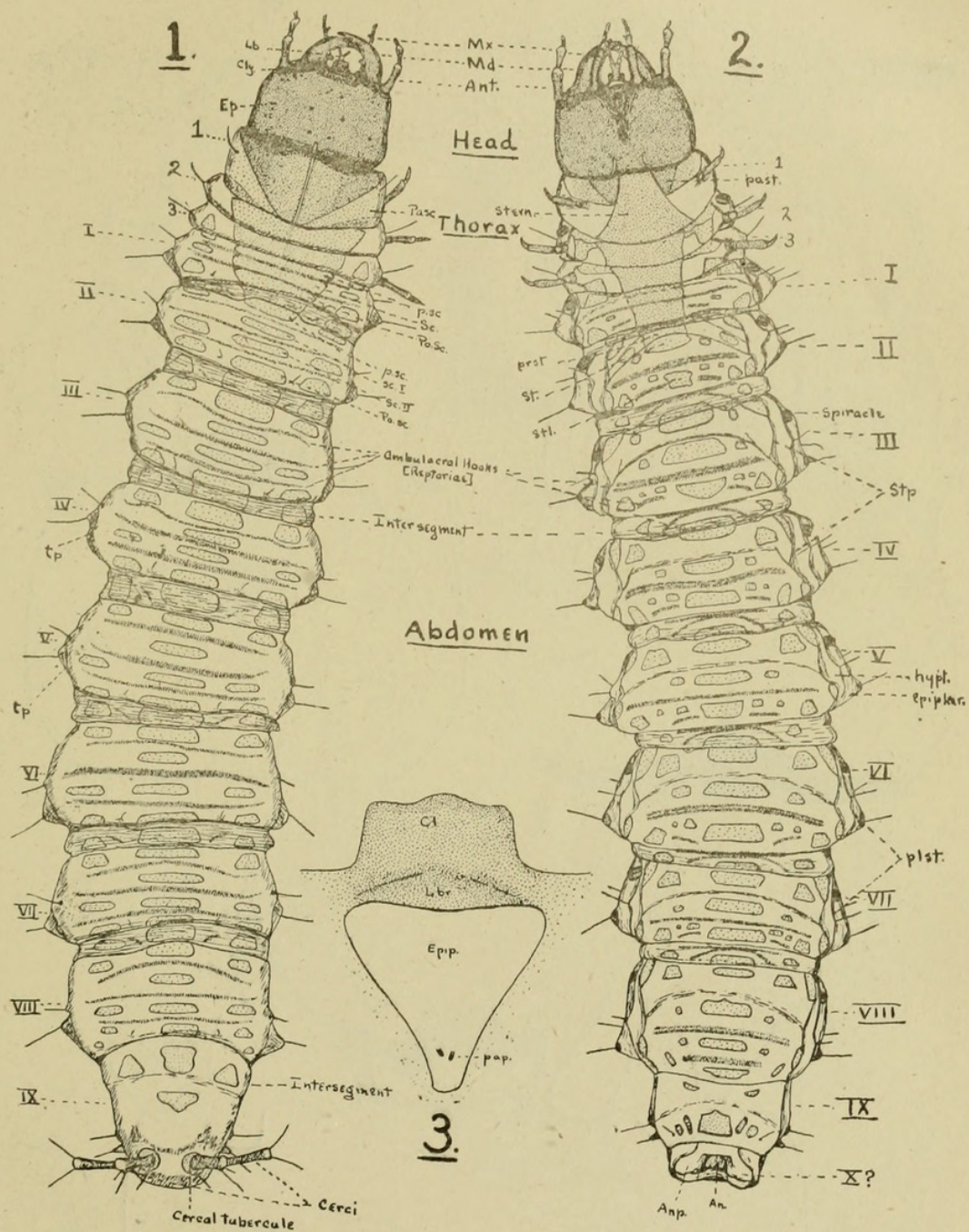
- Fig. 4. Lateral view of the larva of *H. æqualis*.
 Fig. 5. Dorsal view of cranium.
 Fig. 6. Ventral view of cranium.
 Fig. 7. Half front, half ventral view of mouth. Hypostoma and epipharyngeal bracon shown in stipple.

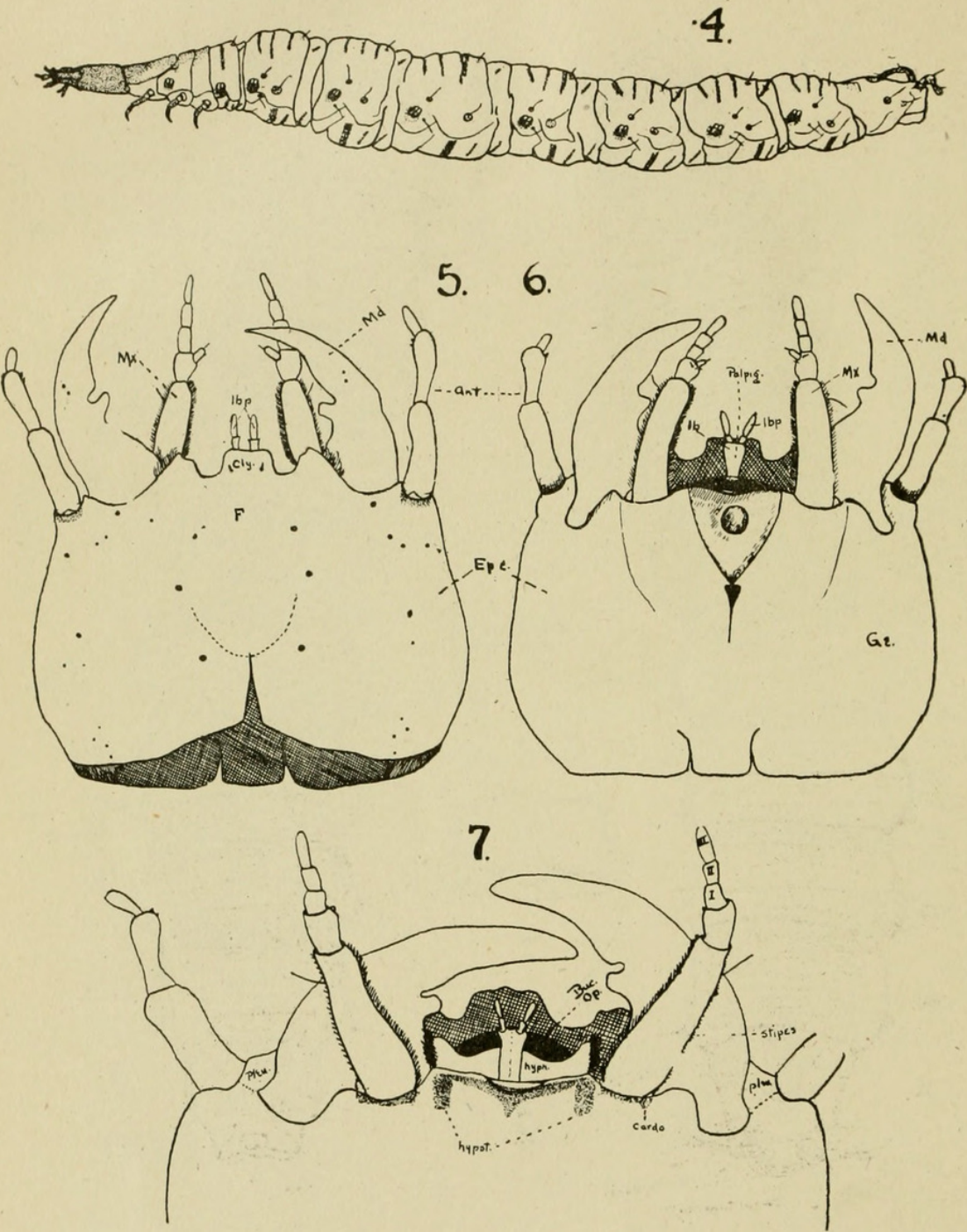
PLATE XXX.

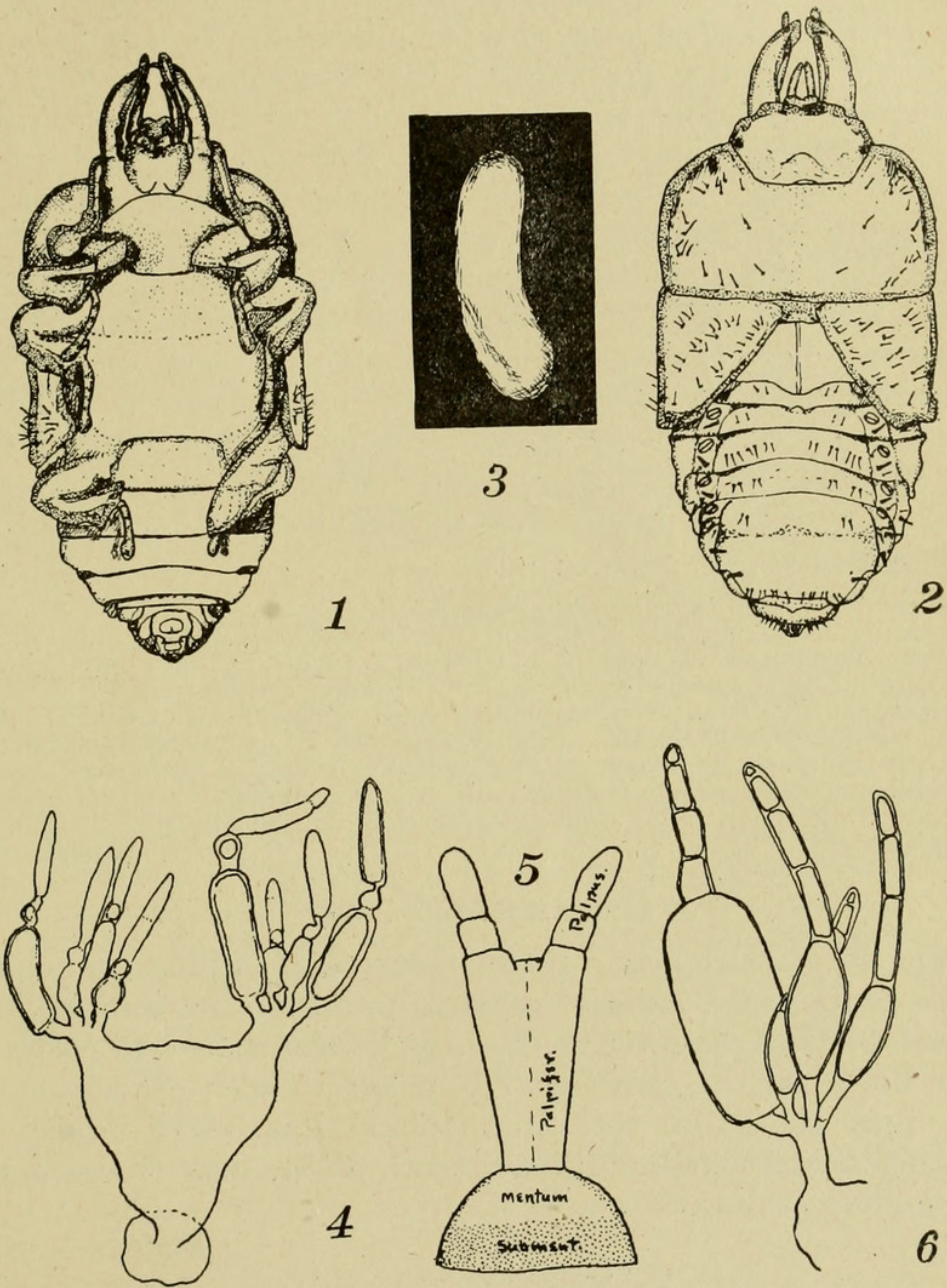
- Fig. 1. Ventral view of the pupa of *H. æqualis*.
 Fig. 2. Dorsal view of same.
 Fig. 3. Egg of *Hister obtusatus* Harris. $\times 12$.
 Fig. 4. Ovaries of *Saprinus pensylvanicus* Payk.
 Fig. 5. Labium of *H. æqualis*.
 Fig. 6. Ovary of *Hister obtusatus* Harris.

EXPLANATION OF TERMS USED ON PLATES XXVIII—XXIX.

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|----------------------------|-------------------------|
| Mx—Maxillae. | plst—Pleural suture. |
| Md—Mandibles. | hypl—Hypopleurite. |
| Ant—Antennae. | epipleur—Epipleurite. |
| Lb—Labium. | Lbr—Labrum. |
| Cly—Clypeus. | Epip—Epipharynx. |
| 1, 2, 3—Thoracic segments. | pap—Papillae. |
| I–IX—Abdominal segments. | F—Frons. |
| Pasc—Parascutum. | Epic—Epicranium. |
| p. sc—Prescutum. | Ge—Genae. |
| sc—Scutum. | lbp—Labial palpus. |
| po. sc.—Postscutum. | Palpig—Palpiger. |
| past—Parasternum. | Buc. Op—Buccal opening. |
| prst—Presternum. | hyph—Hypopharynx. |
| st—Sternum. | hypst—Hypostoma. |
| stl—Sternellum. | pleur—Pleurostoma. |
| stp—Sterno-pleural fold. | |







SECTION II.

The species of *Hololeptinæ* are all black, elongate and more or less flattened, with a large projecting head which is more or less retractile, but not depressible; the mandibles are long and projecting, subequal and not crossing, except in *Oxysternus*, in which the left mandible is longer than the right and crosses it when closed. Labrum short, arcuate on each side of the median notch, viewed from above; excavated in front from below; closes the mouth by being applied to the anterior edge of the mentum, into the emargination of which it exactly fits; the maxillæ are inserted behind the mentum, their palpi lying in grooves on the mandibles. The prosternum is unlobed, although in certain of the genus *Hololepta* there is an impressed line dividing the prosternum into two parts, the anterior of which simulates a lobe. The propygidium is horizontal, or slightly depressed.

KEY TO THE NORTH AMERICAN HOLOLEPTINÆ.

- Prosternum not carinate, rounded or truncate anteriorly. Teeth on middle and hind tibiae unequally spaced, the two lower arising from the same process, more distant from the upper than from each other. Genus **Hololepta**
 Prosternum flattened, broadly rounded anteriorly. Subgenus **Hololepta**
 Prosternum elevated, narrower at apex and often truncate. Subgenus **Leionota**
 Prosternum carinate, terminating apically in a sharp point. Teeth of hind and middle tibiae, rising from different processes, equally spaced, long, spiniform **Iliotona** n. g.

Genus **Hololepta** Payk.

Elongate, flattened. Head porrect, mandibles subequal. Tibiæ dentate, the anterior quadri-, posterior and intermediate tridentate, the two lower teeth of the intermediate and posterior tibiæ borne on the same process, closer to each other than to the upper tooth; on the intermediate tibiæ there is also, in some species, a small additional tooth at the base of the upper and middle crests.

SUBGENUS HOLOLEPTA.

Strongly depressed, elongate. Prosternum very broad and flat; anterior margin broadly rounded. A fovea-like impression behind the eyes; supraorbital stria entirely lacking. In our forms there is always a transverse line on the prosternum about one-third of the distance from apex to base.

KEY TO HOLOLEPTA.

1. Elytra without entire striae; prosternal apex slightly emarginate; lateral pronotal punctures sparse, indistinct or absent.....2.
Elytra with an entire stria; prosternal apex broadly and evenly rounded; lateral pronotal punctures coarse, in a distinct band.....*lucida* Lec.
2. Elytra without an apical appendix to second stria, tristriate; pygidial punctures large; inflexed portion of elytra not rugose; prosternum not punctate *aequalis* Say.
Elytra with an apical appendix to the second stria, bi- or tristriate; pygidial punctures fine and sparse; inflexed portion of elytra slightly rugose; prosternum finely punctate.....3.
3. Narrowly oblong, almost parallel; upper surface impunctate, (except under extreme magnifications); propygidium not bifoveolate.....*populnea* Lec.
More narrowly oblong than preceding; upper surface distinctly punctate with minute punctures; propygidium bifoveolate at apex...var. *punctata* nov.

Hololepta aequalis Say. Trans. Amer. Phil. Soc. V, p. 47. 1825.

fossularis Say. Trans. Amer. Phil. Soc. V., p. 47. 1825.

fossularis ♂ Mars. Mon. p. 147, t. 4, fig. 5. 1853.

Elongate, oblong, almost parallel. Front flat, smooth, without striae; preocular tooth not prominent. Mandibles as long as the head (♂), slightly shorter (♀), stout. Pronotum very slightly bisinuate at base, with a median longitudinal stria half extending from base half way to apex; marginal stria strong, entire, slightly sinuate behind the middle; sides of pronotum distantly and sparsely punctate, distant from margin. Elytra the width of pronotum, narrowing slightly posteriorly; tristriate, the first stria about one-third the length of the elytra, the second about one-third the length of the first, the third a trace, sometimes barely visible; sub-humeral deep, almost reaching the base, abbreviated at apex on the apical sixth. Inflexed border of the elytra impunctate. Propygidium smooth on disk, laterally bordered with sparse, coarse punctures. Pygidium usually evenly, rather sparsely punctate, but occasionally varying to smooth at middle and apex. Mentum transversely concave (♂), slightly concave with the center raised (♀), sparsely punctate. Gula with a broad V-shaped excavation (♂), with a small impressed V (♀). Prosternum broad, apex truncate, margin slightly emarginate. Length (apex of thorax to apex of suture*) 5-6 mm.

Variant forms. Three specimens in my series vary from the typical form by the presence of a very short apical appendix to the first stria.

New York to Michigan and Eastern Kansas, south to Florida, Texas and Louisiana.

*This system of measuring, which gives a constant measure, and is not affected by the retractility of the head and propygidium, will be used throughout this paper.

The amount of punctation on the margins of the thorax varies from a very few distant punctures to an appreciable number, always, however, distant from the lateral margin.

The males may be readily distinguished from the females by the large fossa at the anterior angles of the thorax.

This species occurs under the bark of dead *Liriodendron* and is reported by Marseul to occur under the bark of *Robinia pseudo-acacia*.

It is rather unfortunate that the name *æqualis* must be substituted for the well-known name *fossularis*, but our present laws of nomenclature take cognizance of page priority and the name *æqualis* stands first on the page. Marseul, who first detected the fact that *æqualis* and *fossularis* were opposite sexes of the same species used the male name as was the custom at that time, but in this case also the International code is definite and the earlier name must be used.

Hololepta lucida. Leconte, J. Mon. p. 7, pl. 1, fig. 2. 1845.

Marseul, Mon. p. 177, pl. 4, fig. 18. 1853.

Elongate oblong, almost parallel. Front flat, without striae; preocular tooth not prominent. Mandibles as long as head (♂) or slightly shorter (♀), stout. Pronotum very slightly bisinuate at base, with a median longitudinal stria extending half way from base to apex; marginal stria strong, entire, slightly sinuate behind the middle; distinctly punctate laterally in a broad band, in which the punctures often coalesce to form vermiform punctures. Elytra the width of the pronotum at base, slightly arcuate; tristriate usually, the first stria entire, the second short, with or without a short apical appendix, the third punctiform or absent; subhumeral abbreviated at base and apex. Inflexed border of elytra impunctate. Propygidium smooth on disk, laterally bordered with extremely coarse, sometimes vermiform punctures, bifoveolate at apex. Pygidium coarsely, densely punctate. Mentum transversely concave (♂), slightly concave with center elevated (♀), very finely, sparsely punctulate. Prosternum broadly evenly rounded at apex. Length 4.5–6 mm.

New York to Southern Illinois, south to Virginia.

The form with the short apical appendix to the second stria is the form described by Leconte. The males may be recognized by the fossa in the anterior angles of the thorax.

Reported by Blatchley (1910) under cotton wood bark.

Hololepta populnea Leconte. Ann. Lyc. N. York, V., p. 163. 1851.

bractea Er. Marseul. Mon. p. 157, t. 4, fig. 15. 1853 (in error).

populnea Marseul. Mon. p. 562, pl. II, fig. 5. 1850.

Narrowly oblong, nearly parallel. Front without striæ, preocular tooth short. Mandibles as long as the head (♂) or slightly shorter (♀). Pronotum bisinuate at base, with a more or less lightly impressed median stria, extending half way from base to apex; marginal stria entire, strong slightly sinuate behind middle, or interrupted or with the entire posterior half lacking. Elytra the width of pronotum at base, parallel; bi- or tri-striate, the first stria short, about one-third the length of elytra, second shorter, one-half the length of the first with a short apical appendix, third punctiform or absent; subhumeral stria deep, abbreviated slightly at base and apex. Inflexed border of elytra slightly rugose. Propygidium smooth on disk, extremely sparsely punctate laterally with deep punctures. Pygidium very finely and sparsely punctulate. Mentum concave (♂), less concave (♀), sparsely punctulate; gula with a broad V-shaped excavation, which has a short longitudinal carina at the base (♂) or with a small V-shaped impression (♀). Prosternum broadly emarginate at apex, finely punctulate. Length 3.5–5 mm.

Utah, Arizona, southern California and New Mexico.

Variants. The typical form as described by Leconte has the marginal stria of the thorax entire, and all the Leconte types have such a marginal stria; many of the specimens which I have examined have the stria more or less interrupted; in the extreme form the posterior half of the stria is absent; every possible intergrade is present in my series, even one in which the stria is broadly interrupted on one side and strong and entire on the other.

The length of the apical appendix also varies, in some it is extremely short and in one it is connected to the second by two punctures. The propygidial sculpture also varies, usually in proportion to the length of the apical appendix, but the correlation is not perfect.

One specimen agrees fairly well with Marseul's description of *H. bractea* Erichson in having the appendical stria directed towards the first stria and in pygidial sculpture. Marseul, in his first description (1853) of *bractea* reported it from the United States, and placed *populnea* in synonymy with it. He had at that time not seen the type of *bractea*. In a later description (1860) made after he had seen the type *bractea*, and had received specimens of *populnea* from Leconte, he states that the two species are distinct. I hesitate to assign the

specimens above mentioned to *bractea*, because of the recorded variation in the punctation of the propygidium, and the fact that in size and facies the specimen is *populnea*.

The males may be distinguished by the notch in the anterior angle of the thorax, and the greater excavation of mentum and submentum.

Reported by Leconte (1851) under poplar bark; by Horn (1873) between the layers of cotton-wood bark.

Hololepta populnea var. **punctata** nov.

More narrowly elongate than *populnea*, almost parallel. Front without striae, punctate with fine punctures, preocular tooth short depressed. Mandibles shorter than head (♀) (♂). Pronotum bisinuate at base, with a slightly impressed median stria extending half way from base to apex; marginal stria entire not strongly impressed, slightly sinuate behind middle, or interrupted; distinctly punctate with punctures of same magnitude as those on front and mandibles. Elytra the width of pronotum at base, narrowing slightly towards apex, bistriate, the first stria short, about one-third the length of the elytra, second half the length of the first, with an appendix in the apical third; subhumeral stria abbreviated at base and apex. Inflexed border of elytra slightly rugulose. Propygidium minutely, distantly punctulate on disk, laterally bordered with sparse larger punctures, which are larger than those of *populnea*, slightly bifoveolate apically. Mentum, gula and prosternum as in *populnea*. Length 4 mm.

Arizona, one male and one female. W. M. Mann. Sexes are differentiated as in *populnea*.

Hololepta (*Hololepta*) **excisa** Mars.

This species is recorded from the United States by Marseul. I have seen no specimens taken in the United States, and do not believe that this species occurs north of Mexico. It is reported from Mexico (Marseul, Biologia), Costa Rica (Biologia), Venezuela, New Granada, and Brazil (Marseul), I append an abstract of Marseul's description.

Oblong, subdepressed, shining black. Front flat, without striae or tubercles. Pronotum punctate laterally, marginal stria scarcely angulate, well marked. The inflexed border of the elytra strongly rugose; subhumeral stria strong, rugose, a little abbreviated at base; dorsal striae two, rudimentary. Propygidium bordered with distant punctures. Pygidium densely and strongly punctate. Anterior tibiae armed with four blunt teeth; posterior with three long spines.

The males are characterised by the excavation of the mentum and the notch in the anterior angle of the pronotum.

Hololepta bractea Erichson, Klug's Jahrb. Ins., p. 91. 1834.

Marseul, p. 157, t. 4, fig. 15. 1853.

Marseul, p. 591 (t. 11, fig. 4). 1860.

In connection with the earlier description Marseul lists this species from the United States, because he had confused the species with *populnea* Lec. Lewis, in his Catalog of the Histeridæ (1905) cites this species from California, evidently on the strength of Marseul's first description, and makes no mention of Marseul's second description which refers the species to New Granada. Bickhardt in Junk's Catalogus Coleopterorum, *Histeridæ*, (1910) copying from Lewis, makes no change in the record or addition to the reference. I doubt the occurrence of this species in the United States.

Hololepta complanata P. deBeauv. Ins. Af. et Am., p. 176, t. 6, fig. 5, 1807.

Lew. Ann. Nat. Hist. XVI, p. 206. 1885.

Lewis and Bickhardt record this species as from North America, a form of citation which usually means north of Mexico. The species was recorded originally from Santo Domingo, and is unidentifiable in North American material.

SUBGENUS LEIONOTA.

Subdepressed, elongate. Prosternum elevated, more or less compressed laterally, narrowed, and anteriorly truncate or rounded at apex. Impression behind the eyes not distinctly limited; supraorbital stria usually visible at base.

The two subgenera of *Hololepta* are not very well limited, and in many cases a species might be placed with equal propriety in either.

KEY TO LEIONOTA.

1. Pronotum with a short impressed line on each side of the emargination at the apical margin, behind the eyes. Larger species.....2.
- Pronotum without a short impressed line on each side of the emargination. Smaller species.....4.
2. Broadly oblong. First and second elytral striae not continued towards scutellum along basal margin. Sternites of abdomen punctate at sides only. Lower crest of fore tibiae not dentate.....3.
- Narrowly oblong. First and second elytral striae continued along basal margin almost to the scutellum, this stria occasionally interrupted. Sternites of abdomen punctate throughout. Lower crest of fore tibiae dentate **pervalida** Blais

3. Pygidium densely and coarsely punctate. Usually with an appendix to the second elytral stria.....*yucateca* Mars.
Pygidium finely punctate. Never an appendix to the second stria.....*princeps* J. Lec.
4. Sides of thorax moderately coarsely punctate. Mentum without an M-shaped excavation.....5.
Sides of thorax impunctate. Mentum with an M-shaped excavation.....7.
5. Front without striae, or the striae short, feeble and widely separated.
Species broadly oblong.....6.
Front with at least two closely approximated, long arcuate striae. Narrowly oblong.....14.
6. Front without striae. Larger 6.5-7 mm.....*verniciis* Casey.
Front with widely separated, short, feeble striae. Smaller 5.5-6 mm.....*sirpus* sp. nov.
7. Second dorsal stria of elytra interrupted in the basal third. *interrupta* Mars.
8. Elytra with a stria on the basal margin more or less deeply impressed, besides the two dorsal striae.....9.
Elytra with but the two dorsal striae.....*quadridentata*. 10.
9. Elytron with a deeply impressed, transverse stria along the basal margin equidistant from the second longitudinal stria and the scutellum.....*decimstriata* sp. n.
Elytra with an area, roughened by three longitudinal lines, between the second dorsal stria and the suture. From this area, a very faint finely impressed line extends along the base almost to the scutellum. On each side of the scutellum is a narrow, deep fovea.....*bifoveolata* sp. n.
10. Front with two shallow foveae. Supraorbital stria long, reaching almost halfway to the tip of the preocular spine. Head extremely minutely punctulate*.....subsp. **platysma* Er.
Front without foveae, supraorbital stria short.....11.
11. Propygidium not at all, or extremely sparsely punctate on disk. Males with the thoracic fossa deep, and well marked.....12.
Propygidium distinctly punctate on disk. Males with the thoracic fossa poorly developed and very shallow.....subsp. *minor* nov.
12. Pygidium evenly punctate, the space enclosed by four punctures equal in size to a puncture. First elytral stria closer to the second than to the margin.....13.
Pygidium unevenly punctate, the space enclosed by the four punctures being less than half the size of a puncture. First stria midway between second and margin.....*subsp. *quadridentata*
13. Marginal stria of thorax without sinuation.....subsp. *floridae* nov.
Marginal stria of thorax with a shallow semi-circular sinuation just before the middle, and below this on the margin itself a short impressed line...*floridae* var. *striatifera* nov.
14. Gula with a carina on each side extending backwards from the mandible, elevated in the anterior half, low and interrupted in the posterior half, the two carinae forming a V. Prosternum narrowly truncate at apex. *vicina*. 15
Gula without carinae, but with a Y-shaped groove. Prosternum broadly truncate, its anterior margin elevated and rugulose.....*caseyi* sp. n.
15. Larger 6 mm. Second, third and fourth abdominal sternites punctate for their entire width.....subsp. *neglecta* Blaisd.
Smaller 4.5-5 mm. Second abdominal sternites punctate at sides only, third and fourth punctate in a narrow band across the middle of disk.....16.
16. Third elytral stria a puncture.....*vicina* Lec.
Third elytra stria as long as the first.....*vicina* var. *californica* nov.

*Denotes a form not occurring in the United States.

Hololepta (Leionota) princeps. Lec. J. Proceedings Acad. Nat. Sci. Phil., p. 310. 1859.

Marseul, Mon., p. 605. 1860.

Horn. Pro. Amer. Phil. Soc., p. 274. 1873 (in error).

Oblong, rather broad. Front without striae or depressions; preocular tooth slightly prominent, depressed, supraorbital stria long, distinct. Mandibles slightly longer than head, not striate at base; stout. Pronotum strongly bisinuate at base, with a fine median longitudinal stria extending from the base slightly past the middle; marginal stria entire, rounding the anterior and posterior angles, rather sharply broadened in the anterior half; two short striae near the anterior margin behind the eyes. Elytra the width of pronotum at base, arcuate on the sides, slightly longer on the suture than the median length of the pronotum; apical angle broad and rounded; bistriate, the first stria short, about one-fourth the length of the elytra, the second very short, without a trace of an apical appendix; subhumeral abbreviated at base and apex. Inflexed portion of elytra rugose. Propygidium impunctate on disk and apex, laterally bordered with a narrow band of punctures which are of two sizes, larger and very sparse on the basal half, finer and slightly more numerous on the apical half. Pygidium finely punctate in an irregular band across the disk, smooth at base and apex, punctures usually separated by twice their own diameter but irregular in distribution. Mentum flat, punctate. Prosternum elevated, truncate at apex. Lower crest of hind tibia not dentate. Length 10 mm.

Distribution. Cahon Pass, California. (Tejon Pass, Cal., Lec.).

This species is distinct from *yucateca*, with which it had been synonymized by Horn (1873), being very much broader, and with the punctation of the propygidium and pygidium sparser and finer. Although *yucateca* occasionally has no apical appendix to the second stria, it is readily separable from *princeps* by the characters given above.

In the Leconte collection in the Museum of Comparative Zoology, there are three specimens, the first of which bears the label *H. princeps* Lec., with the locality Cajan Pass, California. All three specimens are identical. Whether these are the veritable types or not is impossible to say, as the species was described by the elder Leconte, who, so Dr. Schwarz tells me, was accustomed to send his specimens to Count Dejean. Some of his species, however, but which ones we do not know, probably found their way into the collection of his son. I shall consider these specimens as types as they agree with the original description fairly well. The greatest point of

divergence between the specimens and the description is in the punctuation of the pygidium; the description states that the pygidium is "sat dense" punctured; it is not as densely punctured as the pygidium of *yucateca*, which Marseul says is "densement et assez fortement ponctué." If one had seen *yucateca*, the term dense, even modified, would not be applied to the punctuation of the pygidium of *princeps*, as the punctures are in many places separated by from two to four times their own width.

Hololepta (Leionota) yucateca Marseul, Mon., p. 203, t. 5, fig. 1. 1853.

grandis Marseul, Mon., p. 204, t. 5, fig. 2. 1853.

synonymy Marseul, Mon., p. 606. 1860.

Horn, Pro. Am. Phil. Soc., p. 274. 1873.

Broadly oblong. Front with two extremely slight depressions, which may or may not have very lightly impressed striae at their bottoms; preocular tooth slightly prominent, depressed, supraorbital stria long, distinct. Mandibles longer than the head (♂) or equal in length to the head (♀), stout, usually with a short stria on the upper surface, near the external margin and base. Pronotum bisinuate at base, with a median, longitudinal stria, more or less lightly impressed, extending from the base past the middle; marginal stria entire, rounding the posterior angle, and terminating in a more or less deep fossa close to and behind the anterior angle, rather sharply broadened anterior to the middle (♂) or gradually slightly broadened (♀); two short striae near the anterior margin behind the eyes. Elytra bistriate, the outer strong, deeply impressed, usually about one-third the length of the elytra, second shorter, usually with an apical appendix of varying length; subhumeral stria abbreviated at base, slightly abbreviated at apex. Inflexed portion of elytra rugose. Propygidium with disk smooth, laterally punctate with a band of moderately coarse punctures which are coarsest near the base; apex very finely punctate. Pygidium densely and coarsely punctate, punctures separated usually by less than their own diameter. Mentum slightly concave, punctate. Prosternum truncate at apex, elevated, punctulate. Ventral segments of abdomen punctate at sides only. Lower crest of fore and hind tibiae not dentate. Length 8-10 mm.

Distribution. Southern California, New Mexico, Arizona and Texas.

Variants. This species may have the second stria entire, more or less widely interrupted, or with the apical appendix reduced to a very faint line, a series of shallow punctures, or entirely lacking.

The supraorbital stria may be narrowly interrupted at about its middle. The punctation at the sides of the pygidium may coalesce to form a well defined stria of varying length, depending on how many punctures are involved. This stria is always near the base of the pygidium.

The males are usually but not always narrower, and more elongate than the females; their mandibles are longer in proportion to the length of the head, and the thoracic marginal stria is more strongly dilated in the apical half. The length of the stria appendicular is not correlated with sex, and *yucateca* and *grandis* while opposite sexes, are not so because of the length of the appendicular stria, but because of their shape. *Yucateca* is probably the female and *grandis* the male, contrary to what Horn says.

This species is reported from decaying *Cereus*; in the fruits of *Cucurbita*, *Echinocactu viridescens*, and in the leaves and stalks of *Opuntia occidentalis* (Fall, 1901).

Hololepta yucateca is very variable and the species as now accepted may be made up of several different elements. Facies, length of mandibles, supraorbital stria, sculpture of front, length of subhumeral stria, length of second stria and its appendix are all variable, but I have been unable as yet to find correlations in any of these characters. The form which has no apical appendix to the second stria closely resembles *princeps* of Leconte in size and facies, but is easily separated from the latter by the punctation of the pygidium.

Hololepta (Leionota) pervalida Blaisdell Zoe III, p. 327. 1892.

Hololepta pervalida Lewis, Ann. Nat. Hist., XIV, p. 139. 1904.
(to consider *pervalida* a Mss. name).

pervalida Lewis Catalog., p. 3-5, 1905.

pervalida Schaeffer, Ent. News, XVIII, p. 301, 1907.

pervalida Lewis, Ann. Mag. Nat. Hist., XX, p. 96. 1907.

Narrowly oblong. Front with two mammiform elevations which are delimited by a fine impressed line, deepest at apex, behind the mandibles. In the basal portion of the delimiting line on each side lies a stria which is composed of a series of punctures, and posterior to the stria is a sparsely punctured area which extends across the front, weakest in the center. At the apex of the front in the groove between the elevations there is a small tubercle in the male. Preocular tooth strong, slightly depressed. Supraorbital stria distinct, of varying length, often interrupted. Mandibles stout, carinate, upper margin

carinate, broadly curving, as long as the head. Pronotum slightly bisinuate at base, with a strongly impressed median dimidiate longitudinal stria; marginal stria strong, extending around posterior angles, sharply broader anterior to the middle and terminating in a large fossa (♂), gradually widening and terminating in a small fossa (♀), at some distance behind the anterior angles; anterior to the fossa, the surface of the pronotum is rugose and from this rugose area, a fine stria extends along the anterior margin to a point behind the eye; posterior to this stria there is a short broadly impressed stria, which extends beyond the marginal about one-half its own length; margin of pronotum with the marginal stria irregularly punctate, most densely just posterior to the fossa, the punctures more sparse posteriorly and extending along the posterior margin half way to center. Elytra bistriate, the first short, about one-third the length of the elytra, continued along basal margin to the second, with which it sometimes connects, continued to the apex by a series of distant punctures; the second stria entire, and continued along basal margin of elytra almost to the scutellum; subhumeral deep, abbreviated at base under humerus, but sometimes continued almost to the base by a few punctures. Elytra distinctly punctured towards apex. Inflexed portion of elytra rugose. Propygidium coarsely and fairly evenly punctate, most coarsely at lateral margins. Pygidium coarsely but not very densely punctate. Mentum slightly concave, densely, strigosely punctate laterally and at corners, sparsely punctulate at center. Prosternum elevated, constricted in apical fourth, slightly depressed anterior to the constriction, and again elevated at apex, truncate. Ventral segments of abdomen punctate throughout. Lower crest of fore tibiae dentate. Length 8-9 mm.

Distribution, San Diego, Co., Pasadena, California.

Variants. The second stria of the elytra is not connected with the marginal at base, is punctiform and broadly interrupted.

The males may be told from the females by the shape of the anterior fossae and the width of the marginal striae. In the males the fossa has the internal margin sinuate, and the marginal stria broadens suddenly towards the fossae at about its middle. This broadening of the marginal stria causes the male thorax to look less punctate than the female thorax as part of the band of punctures lies in the broadened portion of the stria. Just before the stria enters the fossa it cuts under the edge of the fossa so that a small tooth projects over the stria, thus causing the inside margin of the fossa to appear sinuate.

Reported to occur in *Yucca whipplei* (Fall.) and *Echinocactus* (Blaisdell).

Hololepta (Leionota) vernicis Casey. Ann. N. Y. Acad., VIII, p. 534. 1893.

Lewis, G. Cat., p. 5, 1905 (synon. in error).

Schaeffer, Ent. News, p. 302. 1907.

Bickhardt, Cat., p. 8. 1910 (synon. in error).

Elongate, oblong. Front without striae; preocular tooth slightly prominent; supraorbital stria very short basal. Mandibles slightly longer than head (♂), or equal in length to head (♀). Pronotum bisinuate at base, with a median, dimidiate, longitudinal stria, lightly impressed; marginal stria entire, deeply impressed, rounding the posterior angles, and ending anteriorly in deep, triangular fossa (♂) or a short hook (♀); punctate sparsely in a narrow band within the marginal stria, the punctures closer and more numerous basally. Elytra bistriate, the first about one-third the length of the elytra, the second about one-half the length of the first, with an appendix extending from the basal fourth almost to the apex; subhumeral stria deeply impressed for most of its length, the basal part fine and reaching almost to the base (♂) or a little shorter (♀). Inflexed portion of elytra rugulose. Propygidium smooth on disk, coarsely punctate laterally, finely punctulate at apex. Pygidium coarsely and densely punctate. Mentum concave (♂), almost flat (♀) evenly punctate. Prosternum elevated, truncate at apex. Ventral segments punctate at sides only. Lower crest of fore and hind tibiae not dentate. Length 6.5–7 mm.

Distribution, Arizona (type). Huachuca Mts., Arizona (Schaeffer).

Santa Rita Mts., (Schwarz and Barber) Oracle, Arizona.

Variants. One male has a small stria which is attached basally to the appendix of the second stria at an obtuse angle, and so prolongs the appendix that it almost reaches the second stria.

Two specimens have an entire second stria on one side, the other side normal.

The male is slightly broader than the female, has a large deep fossa at the anterior angle of the pronotum, a differently shaped mentum and a longer subhumeral stria.

Reported to occur in dying *Dasyllirion* (Schwarz) and *Agave americana*? (Schaeffer).

Hololepta (Leionota) sirpus sp. nov.

Broadly oblong. Front feebly bistriate, the stria widely separated; preocular tooth moderately prominent; supraorbital stria, basal, short. Pronotum with a lightly impressed median stria extending from base half way to apex; punctate laterally in a narrow band of large, distant punctures; marginal stria entire strong, rounding the posterior angle

and extending to a point opposite the second dorsal stria, ending anteriorly in a triangular fossa (♂), or just turning the anterior angle (♀). Elytra bistriate, the first basal slightly more than one-third the length of elytra, second shorter with an apical appendix which reaches past the tip of the first stria and is curved inward at the base; in addition there is short stria outside the first on the humerus; subhumeral stria abbreviated under the humerus at base, and abbreviated at apex. Propygidium bifoveolate at apex, coarsely, moderately densely punctured on the lateral thirds, finely punctate at apex, disk smooth. Pygidium densely and coarsely punctured. Mentum excavated (♂), almost flat (♀). Prosternum elevated, broadly rounded at apex, with an impressed line at the apical fourth. Length: Male, 6 mm.; female, 5.5 mm.

Type ♀. Ramsey Canon, Huachuca Mts., Arizona (W. M. Mann).

Paratype ♂. Mexico.

Hololepta (Leionota) quadridentata. Fal. Ent. Syst. I, p. 74. 1792.

quadridentata (platysma Erisch.) Paykull. Mon., p. 109, t. 9, fig. 4. Larva t. 1, fig. 3 (in error). 1811.

Marseul. Mon., p. 212, t. 5, fig. 10. 1853. p. 608. 1860.

Perris. Insectes du Pin. Maritime. Col. I. (Larva) 1863, p. 123-124.

H. flagellata. Kirby, Trans. Linn. Soc. Lond. XII, p. 395. 1818.

Lewis, Ann. Mag. Nat. Hist., XV, p. 458. 1885.

H. surinamense. Habst. Kaf. IV, p. 51. 1791.

Oval. Front without striae; preocular tooth moderately prominent, mandibles as long as head. Pronotum markedly bisinuate at base; marginal stria entire extending around the posterior angles to a point opposite the second elytral stria, deeply impressed, except for the portion on the posterior margin of the pronotum which is fine. Elytra bistriate, the first stria short about one-third the length of the elytra, the second entire, slightly arcuate. Subhumeral moderately deep, rugose, extending from apex four-fifths to base. Inflexed portion of elytra not rugose. Mentum slightly concave with an M-shaped excavation which makes the mentum appear carinate. Prosternum elevated, truncate at apex.^{1, 2}

¹**Hololepta quadridentata** Payk. Mon. p. 109, t. 9, fig. 4, 1811.

Erichson, Klugs. Jahrb. Ins., p. 95. 1834.

Marseul. Mon., p. 212. 1853.

Front with two shallow elongate foveæ, these foveæ divide the head into thirds, and extend longitudinally from the posterior third to the anterior third of the front. (fig. -). Supraorbital stria long, reaching a point almost half-way to the tip of the preocular spine. Front minutely punctate under high magnifications. Pronotum with an extremely

faint median dimidiate stria; surface minutely punctulate under high magnifications. Elytra with the first dorsal stria midway between the second and the margin, second stria evenly arcuate. Propygidium appearing smooth on the disk (under high magnifications extremely finely and minutely punctulate), punctate laterally, the punctures coarse, becoming finer towards base, center, and finest but distinct along the apical fourth. Pygidium evenly, moderately coarsely and not very densely punctate, the space enclosed by four punctures being equal in size to one puncture. Visible portion of dorsal segment anterior to the propygidium coarsely and densely punctate. Length 5.75 mm.

Distribution, Peru and Brazil.

²Subspecies **quadridentata** Fab.

Front without strioles or foveæ, noticeably punctate, more densely than in the preceding; supraorbital stria extremely short, extending at most less than one-third to tip of preocular spine. Pronotum punctate, more noticeably so than in the preceding. Elytra with the dorsal striæ almost as in the preceding, but the second dorsal has a slight uneven sinuation opposite the apex of the first dorsal. Propygidium less punctate than the preceding, the punctures more widely spaced, and the apex appears smooth. Pygidium unevenly punctate, the lateral punctures twice as large as in the preceding, and more dense, the space enclosed by four punctures being less than half the size of a puncture; punctation finer and more distant at the center. Visible portion of the segment anterior to the propygidium as in the preceding.

Male with the anterior fossa of the thorax well marked.

Length 5.5-5 mm.

Distribution, Mexico.

Subspecies **floridæ** nov.

Head and pronotum as in *quadridentata* but not more punctate than typical form. Elytra with the first dorsal stria closer to the second dorsal than to the margin; second dorsal as in the preceding subspecies. Propygidium with the punctures distributed as in subspecies *quadridentata*, but more densely punctate laterally, and sometimes with a very few occasional punctures on the disk. Pygidium with the punctures spaced as distantly as in the typical subspecies, but diminishing in size towards the center as in *quadridentata*. Visible portion of the segment anterior to the propygidium with slightly larger but fewer punctures than the preceding.

Male with the anterior fossa of the thorax well developed, and deep.

Length 5-4.25 mm. 13 males, 14 females.

Type, allotype and paratypes in my collection.

Distribution, Enterprise, Indian River, Biscayne, Jupiter, Haulover, Florida.

The three preceding have the propygidium more convex and longer in proportion to its width than the following subspecies:

Subspecies **minor** nov.

Front, and pronotum punctulate as in typical subspecies. Supra-orbital stria extremely short, basal, usually a single puncture or punctiform. Elytra with the dorsal stria as in the preceding subspecies. Propygidium punctate as in the preceding laterally, but with some of the discal punctures more enlarged than in the preceding forms. Pygidium as in the preceding subspecies.

Male with the anterior fossa of the thorax very shallow and poorly developed. Both sexes with anterior angles of the pronotum depressed.

Length 4.25–3.25 mm. 6 ♂♂, 16 ♀♀.

Type, allotype and paratypes in my collection.

Distribution, Enterprise, Indian River, Florida and North Carolina.

This sub-species has the propygidium more flattened and shorter in proportion to its width than any of the preceding subspecies. There is a gradual decrease in the size of these subspecies; *platysma*, *quadridentata* and *floridæ* are close together in size, and progressively smaller; *minor* is very much smaller. The measurements given above for *floridæ* and *minor* do not seem to show this, but when the average size of a series is taken it is very distinct. The average size of my series of *floridæ* is 4.75 mm., while the average size of *minor* is 4.2 mm.

Subspecies **floridæ** var. **striatifera** nov.

More narrowly oval than typical *floridæ*. Supraorbital stria moderately well defined but short. Marginal stria of thorax entire, with a very shallow semi-circular sinuation just before the middle; under this sinuation and between the marginal stria and the margin lies a short stria. Propygidium and pygidium as in *floridæ*.

Length 4.75 mm. Type in my collection.

Distribution, Florida.

This species is very variable in the number and spacing of the teeth on the lower crests of the hind and intermediate tibiæ; the commoner forms have this crest with two closely approximated teeth on the middle tibiæ, and one tooth on the hind tibiæ, or two moderately widely spaced teeth on the middle tibiæ and two closely approximated teeth on the hind tibiæ; less often we find the spaced teeth of the middle tibiæ

combined with a single tooth on the hind tibiæ. One specimen has four small teeth on the lower crest of the middle tibiæ and three on the hind; one specimen has the 4-3 condition on one side and the 2-2 condition on the other. Two specimens from Mexico have one tooth only on the lower crest of both hind and middle tibiæ.

It is reported to occur in decaying palmetto (*Sabal*) by Schwarz.

Hololepta (Leionota) decimstriata sp. nov.

Oval. Front minutely punctate; supraorbital stria entirely lacking. Mandibles as long as head, punctulate. Pronotum bisinuate at base with a very faint median striæ, which does not reach the base and extends forward past the middle; marginal stria as in *quadridentata*. Elytra longitudinally tristriate, the first stria short, basal, one-third the length of elytra, second entire, slightly arcuate, third short on the apical sixth; at the base of the elytra there is a short, deeply impressed transverse stria, equidistant from the second longitudinal stria and the scutellum. Subhumeral stria deep, rugose, abbreviated at base, reaching the basal fourth and almost reaching the apex; a series of confused punctures between the apical end of the subhumeral and the apical end of the second stria. Inflexed flanks not rugose.

Propygidium moderately convex, with large punctures laterally which grow finer towards the disk and apex; disk smooth. Pygidium with coarse, moderately dense punctures laterally, which become finer and more distant towards the center and apex.

Mentum as in *quadridentata*. Prosternum with the apex more broadly rounded than in *quadridentata*.

Length 5 mm. Type in my collection.

Distribution, Enterprise, Florida (Beutenmüller).

Hololepta (Leionota) bifoveolata sp. nov.

Oval. Front without striae; supraorbital stria lacking or very short, punctiform; mandibles as long as the head. Prothorax with the marginal stria deeply impressed, extending around the posterior angles and interrupted slightly anterior to the middle. Just behind the interruption the margin is slightly flattened on the outer surface, producing a very slight emargination when seen from above. Elytra with two dorsal stria, the first strongly impressed, about one-third the length of the elytra, the second less strongly impressed, entire, broadening to a shallow fovea at apex. Subhumeral stria almost as in the preceding but more deeply and narrowly impressed. At a point not quite half-way between the second dorsal and the suture, there is at the base of the elytra a small area, roughened by two or three short

longitudinal lines, from which a very finely impressed line extends along the base almost to the scutellum; on each side of the scutellum on the elytra is a deeply impressed, narrow fovea, into which the light line mentioned above sometimes runs. Propygidium and pygidium as in the preceding. Mentum as in *quadridentata*. Prosternum broad, elevated, truncate, slightly depressed at the tip, the edges of the depression elevated. Hind tibiae with the lower crest unidentate, middle tibiae with the lower crest bidentate, the teeth widely separate.

Length 4 mm. Type and paratype in my collection.

Distribution, Enterprise, Florida.

Hololepta (Leionota) interrupta Marseul. Mon. p. 214, pl. 5, fig. 11. 1853.

Similar in all respects to *Hololepta quadridentata*, sp. *minor*, except that the second dorsal stria is interrupted behind the middle, and the secondary sexual thoracic fossa of the male is rather better developed. Length 4 mm.

Type locality, Cuba. Florida (2).

Two specimens from Florida (♂, ♀), I assign to this species. The male agrees with Marseul's description; the female has the second dorsal twice interrupted, in the basal third and just behind the middle. Marseul states that this species may be told from *quadridentata* by the more lightly punctate pygidium and propygidium, and the "usually" interrupted second stria. He includes this species in his key under the forms which have the second stria entire. The punctuation of the pygidium and propygidium of *quadridentata* I have shown to be variable, and I should consider this form to be a variety of *quadridentata* were it not for the fact that when an entire stria is interrupted, the interruption nearly always takes place in the basal third, and the apical portion of the stria becomes shorter progressively. Neither of my specimens shows this condition; the female specimen has an interruption in the basal third, but there is a short stria between this and the more apical interruption. This condition leads me to believe that the apical interruption was the first, and the latter interruption came as it does in a variable stria.

Hololepta (Leionota) vicina Lec. Ann. Lyc. Nat. Hist., N. Y., V. p. 163. 1851.

Narrowly oblong. Front with two semi-circular striae which may connect to form a single sinuate stria; preocular tooth moderately prominent; supraorbital stria short. Pronotum with a lateral narrow

band of distant punctures, median stria extending past the middle, marginal stria entire, broadening from the anterior third into a shallow fossa behind the anterior angle, posteriorly extending around the posterior angle to a point opposite the second stria of the elytra. Elytra with three stria, the first short, about one-third the length of the elytra, usually continued to the apex of the elytron by a series of punctures, the second entire, third a basal puncture. Propygidium evenly, moderately punctate, the punctures largest laterally, finest on disk and apex. Pygidium densely punctate. On the ventral surface of the head there is extending backward from the base of the mandibles, on the gula a carina much elevated in the anterior half, low and interrupted in the posterior half; the carinæ of both sides form a V, the center of which is evenly excavated (σ^7), or the posterior half of the carina is obsolete or lacking and the center of the gular plate has a raised boss just behind the mentum (φ). Prosternum narrowly truncate at apex, with a V-shaped slight depression at apex (σ^7), or not depressed (φ), and very slightly emarginate. Second ventral abdominal segment punctate at sides only; third and fourth distinctly punctate at sides and across middle of disk. Second segment one-third the length of third.

Length 4.25–5 mm.

Distribution, San Diego, Pasadena, Washington, California, Southern California.

Hololepta (Leionota) vicina var. **californica** nov.

Similar in all respects to *vicina* but the third elytral stria is at least half as long as the first stria, though not as deeply impressed. The propygidium is less densely punctate and the punctures are larger and more uniform in size. Length 4.5 mm.

Two specimens labelled S. California (Joutel).

Hololepta (Leionota) vicina subspecies **neglecta**. Blaisdell. III, p. 338, 1892.

Lewis Ann. Mag. Nat. Hist. XIV, p. 139, 1904.

Lewis Cat., p. 3, 1905 (in error).

Narrowly elongate. Front quadristriate; the two usual arcuate striæ are present (as in *vicina*), anterior to these are two short more or less broken striæ, which form with the arcuate stria narrow V's, the apices of which are directed outward (Pl. VI, fig. 2); preocular tooth moderately projecting, depressed; supraorbital stria short, basal. Pronotum with a lightly impressed median stria which extends from the base to the middle; marginal stria entire, extending around the posterior angle to a point opposite the third stria of the elytra, ending apically in a shallow fossa close to and within the anterior angle of the pronotum; a narrow lateral band of punctures inside the marginal stria, most dense at base, very sparse and faint at apex. Elytra tristriate, the

first stria short, basal about one-third the length of the elytra, continued to apex by a series of more or less elongate punctures, second stria entire, third punctiform; subhumeral abbreviated at base and apex. Inflexed portion of elytra slightly punctate in a short band immediately inside the marginal ridge, otherwise smooth. Propygidium punctate rather evenly, the punctures large on sides, smaller on disk and at apex. Pygidium densely punctate. Mentum concave, faintly punctate. Gula as in *vicina*. Prosternum as in *vicina*. Mesosternum sparsely punctulate. Second, third and fourth ventral abdominal segments punctate for their entire width. Second segment one-half the length of the third. Length 6 mm. Type.

Distribution, San Diego Co., Cal. (F. E. Blaisdell).

This description is drawn from the type specimen kindly sent me by Mr. Blaisdell. The species is very close to *vicina*, but is much more elongate and has a very different facies. It differs from *vicina* in the sculpture of the ventral segments, in the more convex pygidium and in the shortness of the elytra, which causes the margin of the third dorsal abdominal segment to be visible for its entire width. The type is, I believe, a male.

Hololepta (Leionota) caseyi n. sp.

Narrower and more elongate than *vicina*. Front bistriate; preocular tooth moderately prominent; supraorbital stria short. Pronotum with a narrow lateral band of punctures; median stria absent or very lightly impressed; marginal stria as in *vicina*. Elytra as in *vicina*. Propygidium coarsely and sparsely punctate, the punctures finer on disk and apex; in a few specimens the disk is almost impunctate. Pygidium densely punctate. Submentum without carinae and the cup shaped excavation of *vicina* replaced by a Y-shaped groove. Prosternum broadly truncate, its anterior margin narrowly elevate and rugulose (Pl. VI, fig. 1). Second, third and fourth ventral segments punctate at sides, impunctate on disk. Length 4.5 mm.

Holotype and six paratypes. Holotype labelled Arizona, paratypes, Nogales, Arizona.

Genus **Iliotona** gen. nov.

More or less elongate, subdepressed. Head porrect, mandibles subequal. Tibiae dentate, the anterior quadri posterior and intermediate tridentate. The two lower teeth of the intermediate and posterior tibiae borne on separate processes, and all three teeth subequally spaced. Prosternum carinate, terminating apically in a sharp point.

KEY TO ILIOTONA.

- Pygidium margined. Mandibles without teeth and not dilated at basal fourth. Thorax not grooved near side margin below apical third... **cacti** Lec.
 Pygidium unmargined. Mandibles suddenly dilated at basal fourth, with a tooth above the dilation. Thorax near side margin slightly below apical third, with a deep transverse groove..... **beyeri** Schaef.

Iliotona cacti Lec. Ann. Lyc. Nat. Hist. N. Y., V. p. 162. 1851.

Mars. Mon., p. 400, t. 10, f. 5, 1857.

Horn. Pro. Phil. Soc., p. 275. 1873.

Oblong, parallel. Front with two shallow impressions which may contain striæ, or be punctured; supraorbital stria long. Pronotum bisinuate at base with a median longitudinal stria extending two-thirds from base towards apex. Lateral margin of pronotum punctate. Marginal stria interrupted at middle by the lateral punctures on the margin itself in a small flattened area, at the interruption of the marginal stria, a single puncture. Elytra bistriate, the first dorsal short, not reaching the middle, second entire, subhumeral moderately deep, abbreviated at base. Inflexed portion of elytra rugose. Pygidium shining on disk, opaque in a band along apex. Coarsely punctate at sides, finely or not at all on disk. Pygidium opaque, finely, rather densely punctate, the apical portion higher, shining and impunctate, thus giving a margined appearance to the pygidium.

Mentum coarsely punctured, triangularly emarginate, with an elevated line extending from the hind angles to the middle or the emargination on each side. Prosternum elevated, narrow, broadened at base, terminating acutely at apex. Length 4.5–7.5 mm.

Variants. This species is very variable in the secondary sexual characters. Mexican specimens have the fossa of the male as a single deep pit, and the disk of the propygidium in both sexes impunctate and are without frontal striæ, the place of which is taken by punctures. These specimens are also much larger than the types.

Texas specimens in my collection have the fossa of the male divided into two parts, the disk of the propygidium is punctate, and the frontal striæ are replaced by punctures.

The Leconte types from San Diego have the fossa single as in the Mexican form, the propygidium is punctate on the disk, and the frontal striæ are well marked, though short and widely separated.

Distribution, Mexico, Texas, and Southern California.

Iliotona beyeri Schæffer. Ent. News, p. 302. 1917.

Elongate. Head sparsely rather coarsely punctate, a few finer punctures intermixed, preocular spine short, indistinct, supraorbital stria distinct. Mandibles elongate, feebly curved at apex, suddenly dilated on the inner side at the basal third, above the dilation, a single obtuse tooth. Pronotum with an impressed median line extending two-thirds from base to apex; marginal stria entire; at the sides slightly below apical third, a deep sinuate transverse groove, above this

a shorter straight transverse groove, and below it a very short groove which is connected to the large one by the marginal stria; region near apical and basal angles coarsely punctate; disk smooth. Elytra bistriate, first dorsal short deeply impressed, continued to base by a series of fine punctures, second subentire, ending in confused punctures, subhumeral deep, abbreviated at base and apex. Propygidium shining on disk, subopaque at sides and apex, rather sparsely so on disk. Pygidium subopaque, finely, densely, and evenly punctate. Mentum carinate as in *cacti*. Prosternum elevated carinate, broadened at base, terminating apically in a point. Length 8.5 mm.

Santa Rosa, Lower California.

EXPLANATION OF PLATES, SECTION II.

PLATE XXXI.

- Fig. 1. *Hololepta lucida* (♂).
Fig. 2. *Hololepta aequalis* (♂).
Fig. 3. *Hololepta populnea*.
Fig. 4. *Hololepta* (Leionota) *decimstriata*.
Fig. 5. *Hololepta* (Leionota) *interrupta*.
Fig. 6. *Hololepta* (Leionota) *bifoveolata*.
Fig. 7. *Hololepta* (Leionota) *quadridentata*, ssp. *floridæ* (♂).
Fig. 8. *Hololepta* (Leionota) *quadridentata*, ssp. *minor* (♀).
Fig. 9. *Hololepta* (Leionota) *quadridentata*, ssp. *floridæ* (♀).

PLATE XXXII.

- Fig. 10. *Hololepta* (Leionota) *quadridentata*, ssp. *minor* (♂).
Fig. 11. *Hololepta* (Leionota) *sirpus*.
Fig. 12. *Hololepta* (Leionota) *vicina*.
Fig. 13. *Hololepta* (Leionota) *pervalida* (♀).
Fig. 14. *Hololepta* (Leionota) *neglecta*.
Fig. 15. *Hololepta* (Leionota) *caseyi*.

PLATE XXXIII.

- Fig. 16. *Hololepta* (Leionota) *quadridentata*, ssp. *quadridentata*.
Fig. 17. *Hololepta* (Leionota) *yucateca*, extreme variant closely resembling *princeps*.
Fig. 18. *Hololepta* (Leionota) *yucateca*.
Fig. 19. *Hololepta* (Leionota) *quadridentata*, ssp. *platysma*.

PLATE XXXIV.

- Fig. 20. *Hololepta* (Leionota) *pervalida* (♂).
Fig. 21. *Hololepta* (Leionota) *verniciis* (♂).
Fig. 22. *Hololepta* (Leionota) *verniciis* (♀).
Fig. 23. *Iliotona beyeri*.

PLATE XXXV.

- Fig. 24. *Iliotona cacti*, Texas form (♀).
Fig. 25. *Iliotona cacti*, Texas form (♂).
Fig. 26. *Iliotona cacti*, Mexican form (♂).

All figures are of the same magnification, about X 8.

PLATE XXXVI.

- Fig. 1. Ventral view of head and prosternum of *H. (L.) caseyi*.
Fig. 2. Ventral view of head and prosternum of *H. (L.) vicina*.



Carnochan, F. G. 1917. "Hololeptinae of the United States." *Annals of the Entomological Society of America* 10, 367–399.

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