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PAPERS FROM THE HARRIMAN ALASKA
EXPEDITION.

VIII.

ENTOMOLOGICAL RESULTS (2):

THE METAMORPHOSES OF SOME ALASKA
COLEOPTERA.

[PLATES XXII-XXVI.]

BY TREVOR KINCAID.

THE study of the adult forms of the Coleoptera presents such a vast field and is of such a fascinating character that but scant attention has been paid to the early stages of the members of this order. This is especially true in America, where very little has been published on this subject, and as a result we know but little concerning the structure or peculiar habits of the larvæ of our indigenous beetles. In the U. S. National Museum is a large collection of coleopterous larvæ, accumulated mainly through the efforts of Mr. E. A. Schwarz, of that institution, but the majority of the species have never been described.

An opinion is prevalent that it is extremely difficult to rear the larvæ of beetles, but the writer believes this supposition to be exaggerated. It is certainly difficult to rear them from the egg or very young stages, but if specimens be taken when nearly full grown and carefully tended they may be bred without excessive mortality.

Under the circumstances, the writer feels that the following paper will not be unwelcome, although it may be imperfect in some respects, owing to the fact that no comparison has been possible, in the majority of cases, with closely related forms.

The species dealt with in this paper are as follows :

Carabus truncaticollis Fisch.

Dytiscus dauricus Gebler.

Agabus tristis Aubé.

Byrrhus fasciatus Fabr.

Hypnoides musculus Esch.

Cryptohypnus littoralis Esch.

Leptalia macilenta Mann.

Chrysomela subsulcata Mann.

Lepidophorus lineaticollis Kirby.

CARABUS TRUNCATICOLLIS Fisch.

[Plate XXII.]

Larva entirely jet black except the areas between the schlerites on the ventral surface, surface shining, delicately reticulate, five times as long as broad, subcylindrical, tapering slightly at either end, strongly convex above, flattened below. Length 20 mm.

Head broader than long, as wide as the anterior margin of pronotum; frontal sulci strong and broad, surrounding the epistoma; median area of epistoma broad, convex, a little depressed in the center, lateral areas bent obliquely upward; frontal angles well defined, subrectangular, broader by one-third than the clypeus but not exceeding the latter, projecting obliquely upwards, apex rounded, outer margin below apex sinuate, anterior margin arcuate; incisure between angles and clypeus broad and rounded. Clypeus subtriangular in form, transversely ridged on posterior margin, deeply foveate in the center, the fovea bounded on each side by a strong oblique ridge; anterior margin strongly produced, horizontal, quadridentate, the teeth stout, sharp, directed forward, the middle pair the larger and projecting considerably beyond the lateral teeth but not exceeding the frontal angles of the head. Antennæ as long as the mandibles, four-jointed, basal joint subglobular; second more elongate, slightly enlarged towards tip; third as long as second, more slender, with a few hairs at apex; fourth one-half as long as third, slender, oval. Ocelli six, arranged on the perimeter of a well-defined, transversely-oval tubercle, situated just posterior to the antennæ. Mandibles stout,

deeply bidentate, outer margin evenly arcuate; outer tooth long tapering, rather sharp at apex; inner tooth shorter, more robust, anterior margin arcuate, curving inwards at right angles. Maxillæ stout, exceeding the mandibles in length; cardo narrow, wedge-shaped; stipes subquadrangular, the angles rounded, one and one-half times as long as broad, the inner margin ciliate and with a minute conical papilla near the upper angle; galea not quite reaching to apex of second joint of maxillary palpi, composed of two subequal joints, the basal joint a little the larger; maxillary palpi four-jointed, first joint broader than long, second and third subequal, fourth slightly longer than third. Mentum projecting, almost reaching the apices of the maxillary stipes, one and three-fourths times as broad towards apex as at base, apex conical; labial palpi stout, composed of two subequal joints, the second a little the longer and not divided at the apex.

Pronotum trapezoidal, narrower in front by one-sixth than at base, nearly as broad at base as long, sides straight with a longitudinal groove close to the lateral margins; anterior and posterior angles narrowly rounded, mesonotum transverse, about one-half as long as pronotum but a little broader and with a small deep fovea on the disk of the scute towards each side. Metanotum similar to the mesonotum but a little broader. Legs of moderate size, strongly spinose.

Dorsal scutes of first eight abdominal segments transverse, subequal in length, sides distinctly margined, posterior angles acutely rounded; pleural scutes two on each side of a segment, elongate, parallel; ventral scutes four to each segment, anterior one broadly fusiform, transverse, posterior quadrangular, broader than long, lateral scutes subquadrangular, one on each side of the posterior; ninth abdominal segment much narrower than eighth, rounded at the sides, finely tuberculate, emarginate behind; cerci stout, finely tuberculate, three-fourths as long as eighth segment, diverging slightly, curving gently upwards and bearing dorsally near the middle a pair of small conical projections of which the innermost is the larger.

Pupa white, except eyes and jaws, which are black; setæ and hairs entirely absent; form elongately ovate, broadest in the middle. Length 14 mm.

Described from larvæ and pupæ found beneath beds of moss on St. Paul Island, Alaska, during the month of August.

The metamorphoses of none of the American representatives of this genus have been described, so that no comparison is possible with the related American species. The most marked specific characters are in the peculiar structure of the clypeus and the undivided character of

the apical joint of the labial palpi. In most of the European species the labial palpi of the larva are cleft at the apex.

DYTISCUS DAURICUS Gebler.

[Plate XXIII, figs. 1 and 2.]

Larva slender, subcylindrical, strongly convex above, flattened beneath, elongately fusiform; yellowish white, the head and schlerites mottled with pale brown. Length 50 mm.

Head rounded, a fifth longer than broad, flattened in front, convex behind; clypeus broad arcuate, anterior margin with a row of delicate lamellate setæ; frontal sulci shallow, converging behind; hypostoma deeply excavated; temples rounded, unarmed; collar half as wide as head, separated from the latter by a well-marked groove, truncately emarginate above, deeply angularly emarginate beneath; ventral furrow of neck broadening anteriorly, basally with a strong median carina, at the extremity of which there is on each side a small rounded eminence. Antennæ three-fourths as long as the head, slender setaceous, composed of three principal and three small accessory joints; first principal joint twice as long as third; second intermediate in length between first and third; accessory joints successively smaller, the first situated at the base of the antennæ, second between the first and second principals, third between the second and third principals. Ocelli six, arranged on the perimeter of a transversely oval convex eminence situated on the sides of the head close behind the antennæ; above each group of ocelli there is a small, but very prominent, shining papilla. Mandibles three-fourths as long as the head, slender, tapering, slightly curved, apex acute. Maxillæ longer than the antennæ; stipes slender, palpiform cylindrical; lacinia minute, papilliform; maxillary palpi more than twice as long as stipes, composed of three principal and three accessory joints; the principal joints successively shorter, the accessory joints successively smaller, the first situated between the stipes and first principal joint, the second between the first and second principals, and the third between the second and third principals. Mentum broad, bilobed, emarginate in front; ligula absent; labial palpi half as long as maxillary palpi, three-jointed, the first joint elongate, slender, the second and third short, subequal.

Pronotum longer than broad, nearly twice as wide at base as at apex, transversely grooved on each side towards anterior margin; sides sharply margined, bent downwards and inwards touching the coxæ of the anterior legs; mesonotum and metanotum half as long

as pronotum, transverse, not deflexed; prosternum with a large rounded schlerite between the bases of the anterior legs.

Feet slender, elongate, sparsely armed beyond the coxæ with small short spines; coxæ nearly as long as femora; tibia two-thirds as long as the femora; femora and tibiæ densely ciliate above and below; tarsi half the length of the tibiæ; claws short, unarmed.

Abdomen tapering gradually from first segment to apex; ninth segment three times as long as broad, truncate at apex, bearing distally a pair of lamellate cerci which are densely ciliate; eighth and ninth segments laterally with a row of long cilia.

Described from larvæ taken at Yakutat and Kukak Bay. The transformation of this species takes place in the earth beneath stones lying along the shores of the ponds inhabited by the larvæ and adults. The larvæ resemble very closely those of the allied species *Dytiscus marginales* L. and differ only in a few small details; the body is more convex than in the latter species, the posterior margin of neck is emarginate above and the furrow on the ventral surface of the neck is strongly carinate.

AGABUS TRISTIS Aubé.

[Plate XXIII, figs. 3-6.]

Larva elongately ovate, acuminate behind, convex above, flattened beneath, dorsal surface light brown mottled with yellowish, ventral surface white. Length 12 mm.

Head rounded, convex above, flattened beneath, delicately reticulate, posterior angles broadly rounded; neck short, the sinus between the latter and head deep; frontal angles strongly produced, obtusely rounded at apex; clypeus transverse, rounded in front, bordered anteriorly with a row of delicate lamellate setæ; frontal sulci faintly marked, surrounding the epistoma, which is slightly convex, circular and depressed in the middle; sides of temples acutely carinate, the margin serrate and spinulose. Mandibles slender, tapering, evenly curved on both external and internal margins, apex rather sharp, sutorial orifice close to tip on inner surface. Antennæ not half as long as head, slender, setaceous, four-jointed, the joints successively shorter. Ocelli six, arranged on an oval prominence situated on the side of the head just behind the antennæ; the two anterior ocelli are round, the remaining four more or less elongate. Maxillæ elongate, slender; stipes twice as long as broad, external margin sinuate; galea consisting of a small, slender, finger-shaped joint not much longer than the basal joint of the palpus; maxillary palpus reaching

almost to apex of antennæ, four-jointed, basal joint squarish in outline, the remaining joints successively shorter. Mentum exerted, corneous, transverse, trapezoidal, three times as broad as long, anterior border straight and wider than at base; labial palpi as long as the second and third joints of the maxillary palpi combined, slender, two-jointed, the first joint longer than the second; ligula absent.

Pronotum a little longer than wide, broadly ovate, narrowed somewhat in front, angles rounded, convex above, finely reticulate, sides distinctly margined. Mesonotum and metanotum transversely oval, three times as wide as long, sides broadly rounded; sterna not chitinized, folded.

Legs slender, elongate, with numerous short spines; coxæ stout, elongate, unarmed, femoral groove distinct, carinated; femora as long as coxæ, more slender, compressed, sparsely setose: tibiæ two-thirds as long as the femora, sparsely setose; tarsi nearly as long as tibiæ, claws long and slender.

Abdominal segments gradually diminishing in size from the first to the sixth; dorsal scutes transversely oval, angles rounded; segments seven and eight are entirely corneous; eighth segment slender, elongate, conical, bearing at apex two cerci that are about as long as the last two segments of the abdomen; the cerci are more or less ciliated apically and at the nodes; segments six to eight are finely tuberculate above; spiracles in abdominal segments one to six are situated at the lateral margins of the schlerites and are visible from above.

Pupa pure white; front of face flattened, concave between the eyes; occiput transversely ridged, with a row of bristles extending from one eye to the other. Length 8 mm. Described from larvæ and pupæ found under a stone on the margin of a small pond near the Muir Glacier.

No description appears to have been published of the metamorphoses of any of the American species of *Agabus*.

BYRRHUS FASCIATUS Fabricius.

[Plate XXIV.]

Larva pale brown, lighter between the schlerites; form elongate, cylindrical; outline in side view a flattened curve. Length 18 mm.

Head rounded, shining, globose, almost as broad as the pronotum, heavily punctured and with scattered hairs on the front and vertex. Clypeus broadly transverse, trapezoidal, frontal margin truncate

Labrum semicircular in form, with a row of bristles along the anterior margin. Antennæ short, not exceeding the labrum, three-jointed; first joint cylindrical, not quite twice as long as broad; second more slender and a little longer; third one-fourth as long as the second, more slender, conical. Ocelli five, in two series; first series a group of three, arranged in a triangle behind the antennæ; second series a group of two, cephalo-ventrad of the first, the uppermost ocellus hardly one-half as large as its companion; jaws stout, subtriangular, apex bluntly rounded; inner margin with a blunt, faintly indicated tooth near the middle; articular condyle at the extreme outer angle. Maxillæ not exceeding the jaws; cardo triangular, imperfectly chitinized; stipes twice as long as broad, with a few scattered hairs, produced apically into a triangular lacinial process which is nearly straight outwardly and oblique on the internal margin, the latter being densely set with setæ and hairs; galea springing from the base of the lacinial process and not greatly exceeding that structure, finger-shaped, curving inwardly, two-jointed, the basal joint obscurely indicated and quadrangular in form, second joint ovate, bluntly rounded at apex, which is crowned with a group of stout setæ. Mentum truncate in front, broadening behind, anterior margin bearing four long hairs; labial palpi short, slightly exceeding mentum, composed of two joints, the basal joint large and fleshy, the apical joint small, conical; ligula wanting.

Pronotum extremely convex, nearly as long as the mesonotum and metanotum combined, densely and coarsely punctured, except a narrow band on the posterior margin which is shining and longitudinally striate, clothed with scattering, elongated hairs; lateral margins strongly incurved, tapering to a rounded tip which reaches the coxæ of the anterior legs. Mesonotum short, transverse, obliquely truncate at the lateral margins, which barely reach the coxæ of the middle legs; transversely ridged; punctured, but not so strongly as in the pronotum; two transverse rows of hairs, blending in the middle, extending across the scute from side to side. Metanotum resembling the mesonotum but with two transverse ridges instead of one, and with a series of long hairs on each ridge, the series joining towards the sides of the scute; lateral margins broadly rounded, distant from the posterior coxæ; venter with a small oval schlerite between the bases of the posterior legs.

Legs short, densely setate and hairy; coxæ large, cylindrical excavated externally; femora and tibiæ subequal, not as long as coxæ; tarsal claws simple.

Abdominal segments from fifth to seventh cylindrical, subequal; dorsal scutes transversely oval, lateral margins rounded, traversed by two delicate transverse ridges each of which bears a series of long hairs, the two series uniting towards the outer margin; pleural schlerites two on each side, convex, prominent, oval, oblique; ventral schlerites five on each segment, convex, corneous, the anterior large, cordate, the posterior pair triangular, the lateral pair elongately ovate; eighth segment resembles seventh but is longer, the ridges are absent and the rows of hairs are not so clearly defined, the lateral scutes are reduced to one and the ventral scutes are small and indistinct. The ninth abdominal segment is nearly as large as the pronotum but smooth and shining, semicircular in outline, the posterior margin projecting over and hiding from view the anal structures, a row of hairs along the outer border; anal organ circular, convex, triangularly fissured, thus forming three papillæ, the posterior pair of papillæ bearing disc-shaped depressions serving in locomotion.

Described from larvæ found beneath moss on St. Paul Island, Alaska, in the month of August. The larvæ construct small chambers in the soil in which they lie, and from the fact that the imagoes were emerging at the time they came under observation, the adults probably winter over in the burrows. The mandibles of the young larva differ considerably from those of the adult, and a figure of the former is given for comparison.

What purports to be a description of the larva of *Byrrhus fasciatus* Fabr., is given by Xambeau,¹ but as there appear to be some structural differences between the larva described by the above writer from France and those taken in Alaska, it was deemed advisable to describe and figure the latter carefully in order to furnish a basis for comparison between the American and European forms. As no figures are given by Xambeau, it is difficult to make a detailed comparison at present.

HYPNOIDES MUSCULUS Esch.

[Plate XXV, figs. 3-7.]

Larva white except head, pronotum, and terminal abdominal segment, which are yellow; form elongate, slender, cylindrical, tapering but slightly at either end. Length 7 mm.

Head squarish in outline, narrower than the pronotum, flattened above and beneath, smooth with a few scattered hairs. Clypeus

¹Ann. Soc. Linn. Lyon., XLII, p. 60, 1896.

rounded in front, the anterior margin bearing three teeth of equal length and size. Antennæ three-fourths as long as the jaws; three-jointed; first and second joint of nearly equal size, the third shorter and more slender with a small accessory article by its side. Ocelli on the side of head close behind antennæ. Mandibles of moderate size, tapering, curving inward sharply from about the middle, apex acute, inner margin with a moderately sized tooth close to the tip, the posterior margin of this latter tooth with a row of five or six fine dentations. Maxillæ elongate, extending beyond the tips of the mandibles; stipes very large, inner margin straight, outer margin arcuate, two and one-half times as long as broad, anterior portion of inner margin densely hairy; galea finger-shaped, uniarticulate, reaching to apex of second joint of maxillary palpi; maxillary palpi of moderate length, composed of four successively smaller joints. Mentum six times as long as broad, rounded at the anterior margin which bears in the middle a single stout seta; labial palpi rather long, three-jointed, the joints successively smaller. Pronotum squarish in outline, the chitinized schlerite twice as broad as long; mesothorax and metathorax shorter than the prothorax, the dorsal schlerites delicately chitinized. Legs short, with numerous short setæ. Abdominal segments from the first to eighth without distinctly chitinized schlerites, their lateral margins bearing a few elongate hairs; ninth abdominal segment slightly longer than broad, anterior angles rounded, tapering posteriorly, terminal processes simple; sides of the schlerite with a distinctly raised, smooth rim inclosing the somewhat depressed discal area within which is a smooth and shining posterior emargination transversely oval almost inclosed by the incurved apices of the terminal processes; sides with a few long, slender hairs. Pupa white; pronotal area greatly inflated, arcuate at the sides; wing-pads reaching to apex of first abdominal segment; anal segment bearing at its posterior extremity two sharp styliform processes. Length 5 mm.

Described from larvæ and pupæ found beneath stones along the seashore. Popof Island, Alaska, July 10, 1899.

CRYPTOHYPNUS LITTORALIS Esch.

[Plate XXV, figs. 1 and 2.]

Larva reddish above, yellow beneath; entirely corneous, eight times as long as broad, convex above and below, tapering slightly at either end. Length 15 mm.

Head slightly narrower than the anterior margin of pronotum,

broader at base than long. Clypeus tridentate, the teeth sharp and equal. Mandibles bidentate, the inferior tooth considerably shorter than apical, both teeth sharp at apex. Antennæ three-jointed, the joints successively shorter. Maxillæ reaching to tip of mandibles; stipes three times as long as broad; maxillary palpi one-fourth the length of stipes, three-jointed, the joints gradually diminishing in size. Mentum four times as long as broad, half as broad as stipes, not narrowed behind, anterior margin rounded; labial palpi small, two-jointed, conical.

Pronotum smooth, shining, longer than broad, slightly narrowed in front, anterior margin straight, sides curved downward, but not margined. Mesonotum and metanotum transverse, twice as broad as long. Legs short, thickly setate.

Abdominal segments from first to eighth broader than long, subequal; dorsal scutes punctured and with numerous short transverse striæ, sides not margined; impressed median line strongly developed. Ninth abdominal segment longer than broad at base, tapering slightly, anterior angles strongly punctured; posterior emargination broad, transversely oval; lateral margins with a strongly raised ridge bearing externally three equidistant rounded tubercles, the proximal one the smallest, the second and third successively larger; central area flattened, not deeply depressed, impunctate, with light irregular ridges passing from the sides towards the center, a shallow median groove extending from the posterior margin to the middle; cerci strong, bifurcated, the terminal projection sharp, slender, curving strongly inward, the lateral projection shorter, stouter, at right angles to the terminal process.

Described from larvæ found beneath driftwood along the seashore at Kukak Bay, Alaska, July 2, 1899.

No American representative of this genus has hitherto been reared. The larvæ described above resemble closely those of *Cryptohypnus riparius*, described by Schiödte from Europe.

LEPTALIA MACILENTA Mann.

[Plate XXV, figs. 8-12.]

Larva white, except head and pronotum, which are of a yellowish tinge; extreme anterior margin of the front and mandibles brown; form elongate, cylindrical, broadest at the pronotum, gradually narrowing to the third abdominal segment, fourth to sixth segments of about equal diameter, seventh and eighth slightly swollen and longer, ninth short, broadly rounded posteriorly. Length 15 mm.

Head rounded, broader than long, anterior margin broadly truncate, posterior angles rounded, dorsal surface flattened, shining, frontal margin but slightly thickened or coriaceous, frontal angles reduced to small tubercles. Ocelli five, in two series; first series consisting of three ocelli arranged close together in a transverse line on the lateral margin of the head behind the antennæ; second series of two ocelli, situated a short distance behind the first set. Clypeus transverse, trapezoidal, four times as broad as long. Labrum semicircular, twice as broad as long with a dense fringe of fine hairs on the anterior margin. Mandibles triangular in outline, apex acute with a prominent rectangular tooth near tip on inner margin; articular condyle close to the extreme outer angle of the base. Antennæ minute, not exceeding the clypeus, three-jointed; first joint cylindrical, twice as long as broad; second one-third the length of first, slightly narrower, third joint minute, conical, with a stout seta at apex. Maxilla reaching nearly to the apex of mandible; cardo as large as stipes, irregularly triangular in outline; stipes produced apically to form a lobate galear process, which is thickly setate on its inner margin; maxillary palpi three-jointed, basal joint stout, the following joints successively shorter and more slender. Mentum broadly rounded at the tip, which is finely pubescent, outer margin bearing three setæ near the center; palpi widely separated at base, three-jointed, first and second joints equal in length, third small, conical.

Pronotum transverse, two and one-third times as broad as long, angles broadly rounded, dorsal surface flattened. Mesonotum and metanotum transverse, short, diminishing in width. Legs a little longer than the maxillæ; coxæ short, stout; femora and tibiæ cylindrical, subequal in length, the tibiæ more slender; claw simple. Abdominal segments, except eighth and ninth, bearing both dorsally and ventrally a pair of locomotor callosities.

Described from larvæ found in the stumps of decaying alder bushes on Popof Island, Alaska, July 10, 1899. This is the only known American representative of this genus.

CHRYSOMELA SUBSULCATA Mann.

[Plate XXVI, figs. 1-7.]

Larva pink, shading into red on the dorsal surface, pronotum brown, head and legs black; dorsal surface delicately granulate and with numerous minute tubercles each surrounded by a small spot of brown; form stout, almost semicircular in outline when reviewed from the

side, strongly convex above, flattened beneath, abdomen broadest towards the posterior end. Length 7 mm.

Head broader than long, subglobose, delicately granulose; median impressed line well developed, front with a deep fovea on each side. Clypeus transverse, short, slightly emarginate in front, rounded at the sides. Labrum twice as broad as long, the frontal margin bilobate and deeply incised in the center. Mandibles stout, flattened, broad at base, narrowing towards apex, which is crowned by a series of fine sharp subequal teeth, the tips of the teeth in a regular curve. Antennæ extremely small and short, apparently three-jointed, the basal joint button-shaped, the second much smaller and of similar form, the third minute, conical. Ocelli six, arranged in two series; a group of four, arranged in the form of a square, just behind the antennæ; a second group of two ocelli, immediately below that organ. Maxillæ as long as the mandibles; cardo small, fusiform; stipes stout, quadrangular; galea elongately oval, thickly setate on inner margin towards apex; maxillary palpi not greatly exceeding galea, four-jointed, first joint large and stout, button-shaped, second of the same breadth as first but only one-third as long, third a little longer than first, but not so broad, tapering slightly, fourth joint as long as first, conical. Mentum oval, embracing the ligula, which is conical and which bears a pair of short palpi; the latter are two-jointed, the first joint very broad and short, the second longer and conical.

Pronotum longer than the mesothorax but not so broad, delicately granulate; mesothorax and metathorax similar in appearance to the succeeding abdominal segments. Legs short and stout with a few scattered setæ.

Dorsal scutes of the abdomen each divided by a transverse furrow into an anterior and posterior convex area; each area bears across its middle an irregular row of small tubercles which are surrounded by brown dots and bear at their tips very minute setæ.

Pupa short, compact, dorsal surface moderately convex; pronotum set with numerous fine bristles; dorsal abdominal segments with a row of bristles along their posterior margin; terminal segment bearing a stout spine at apex. Length 7 mm.

Described from larvæ and pupæ found beneath moss on St. Paul Island, Alaska, in the month of August. The larvæ feed upon the dwarf willows, but remain hidden during the daytime.

LEPIDOPHORUS LINEATICOLLIS Kirby.

[Plate XXVI, figs. 8-12.]

Larva white except head, which is yellow; apodous; body cylindrical, fusiform, arcuate; dorsal surface traversed by numerous transverse grooves and rounded ridges, giving the dorsulum a wrinkled appearance; pleuræ with a row of rounded elevations; ventral surface somewhat flattened, ridged and grooved similarly to the dorsulum. Length 8 mm.; thickness 2.5 mm.

Head light yellow, shining, about one-half as broad as the pronotum, broadly truncate in front, rounded behind, convex above, flattened beneath. Clypeus separated from the epistoma by a strong suture, twice as broad as long, rounded at the sides. Labrum semi-circular in outline, densely ciliate on the anterior margin. Antennæ rudimentary, reduced to a rounded papilla above the bases of the mandibles. Mandibles stout, tapering gradually to the apex which terminates in two obtuse dentations. Maxillæ elongate; cardo distinctly developed, one-third the length of stipes; stipes four times as long as wide, arcuate externally, with a few setæ along the margin, emarginate within apex produced to form a rather indefinite galear process, which is thickly set with setæ on its inner margin; maxillary palpus slightly exceeding the galear process, two-jointed, basal joint stout, orbicular, second smaller, conical. Mentum not distinctly separated from the hypostome, oval, rounded in front; palpi short, two-jointed, outer joint as long as basal one but not so thick.

Pronotum oval, transverse, convex, with a few scattered hairs; mesothorax and metathorax, short, similar in appearance to the succeeding abdominal segments; abdominal segments nine, the last one conical; spiracles located on the latero-dorsal aspect of the body, minute, yellow.

Pupa white, closely resembling adult beetle. Length 7 mm.

Described from numerous larvæ and pupæ found buried in the soil beneath the roots of grass, St. Paul Island, Alaska.

This is the only known American representative of this genus.

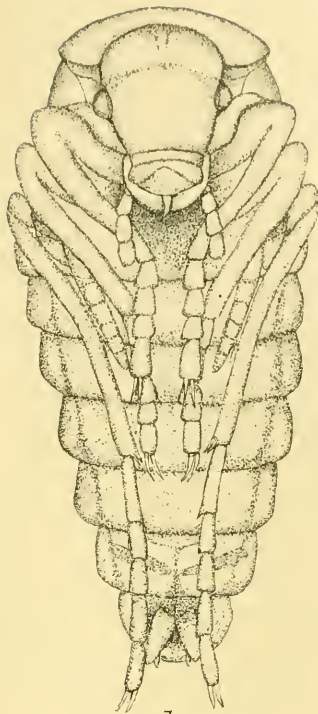
PLATE XXII.

Carabus truncaticollis Fisch.

- FIG. 1. Dorsal view of adult larva ($\times 3$).
2. Anterior margin of the head ($\times 35$).
3. Mandible ($\times 35$).
4. Antennæ ($\times 35$).
5. Maxillæ and labrum ($\times 35$).
6. Side view of the ninth abdominal segment.



1



7



4



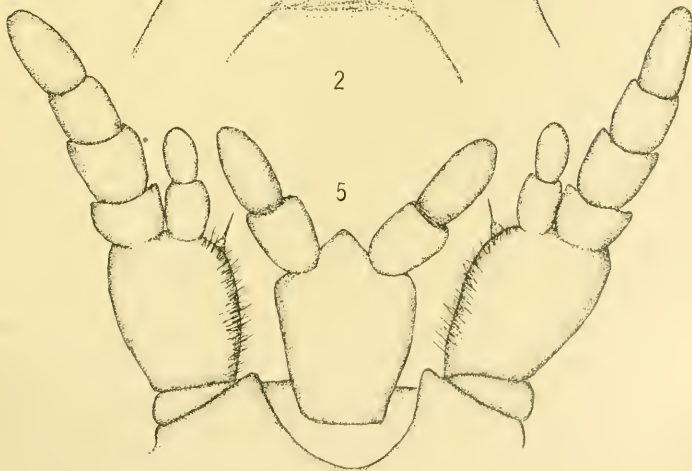
6



3



2



5

PLATE XXIII.

Dytiscus dauricus Gebler.

- FIG. 1. Dorsal view of larva ($\times \frac{3}{2}$).
2. Under surface of the head ($\times 6.5$).

Agabus tristis Aubé

- FIG. 3. Dorsal view of larva ($\times 7.75$).
4. Maxillæ and labrum ($\times 35$).
5. Mandible ($\times 35$).
6. Ventral view of pupa ($\times 7.75$).

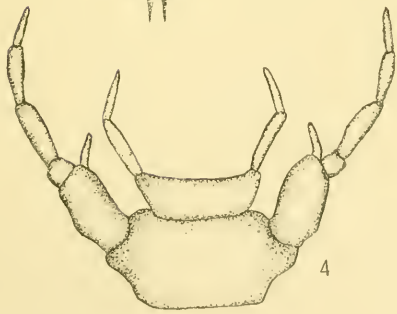
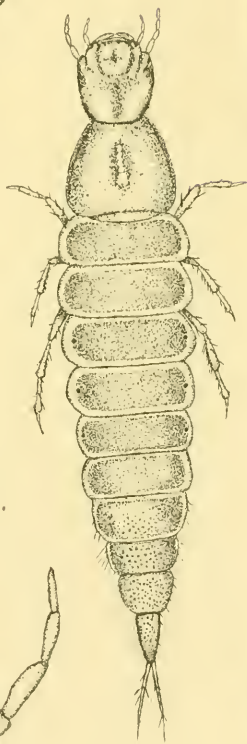
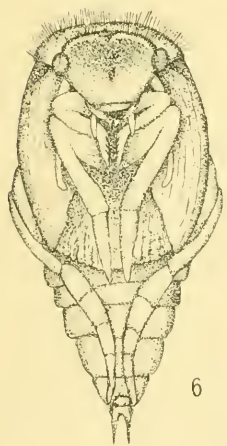
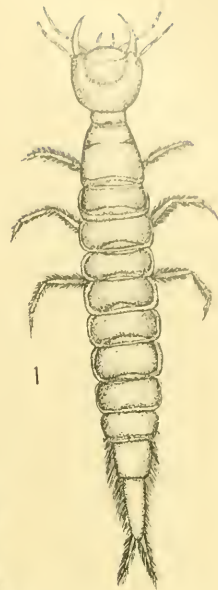
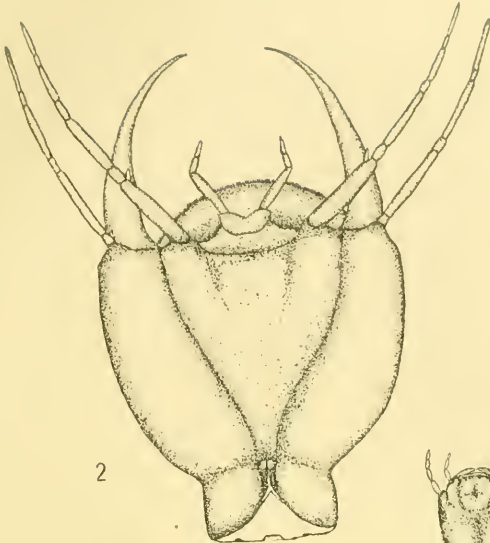
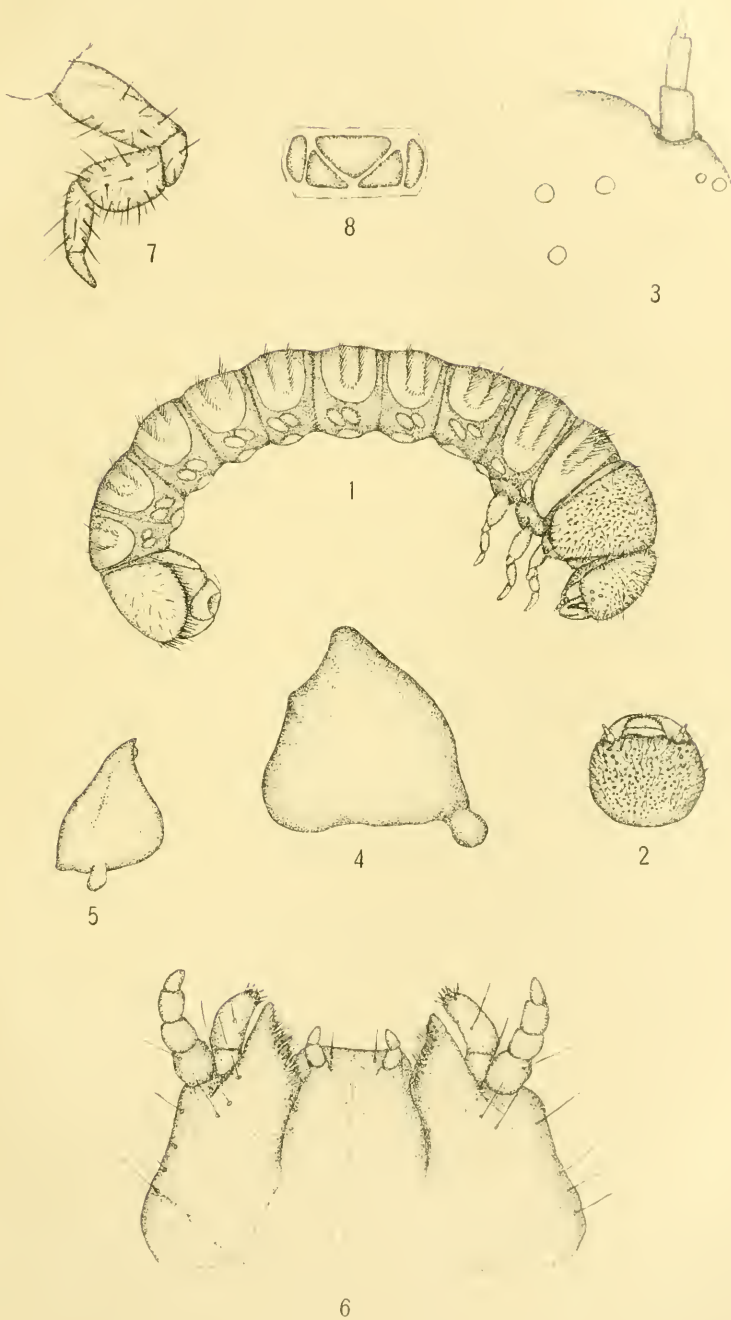


PLATE XXIV.

Byrrhus fasciatus Fabr.

- FIG. 1. Lateral view of larva ($\times 4.3$).
2. Dorsal view of head.
3. Antennæ and ocelli ($\times 35$).
4. Mandible of adult larva ($\times 35$).
5. Mandible of young larva ($\times 35$).
6. Maxillæ and labrum ($\times 35$).
7. Leg ($\times 35$).
8. Ventral sclerites of an abdominal segment.



Metamorphosis of Alaska Coleoptera.

PLATE XXV.

Cryptohypnus littoralis Esch.

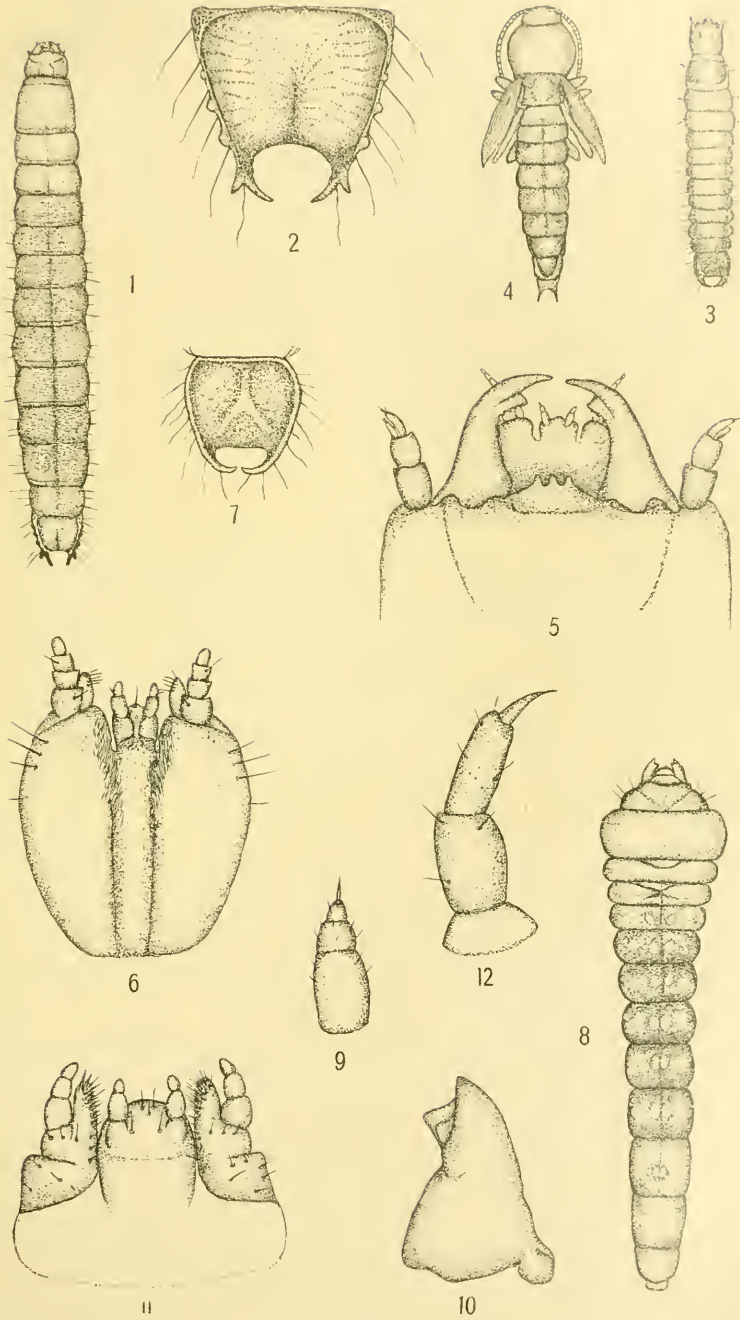
- FIG. 1. Dorsal view of full grown larva.
2. Upper surface of ninth abdominal segment.

Hypnoides musculus Esch.

- FIG. 3. Dorsal view of full grown larva ($\times 5$).
4. Dorsal view of pupa ($\times 8$).
5. Anterior region of the head, from above.
6. Maxillæ and labrum ($\times 75$).
7. Ninth abdominal segment from above.

Leptalia macilenta Mann.

- FIG. 8. Dorsal view of larva.
9. Antennæ ($\times 75$).
10. Mandible ($\times 35$).
11. Maxillæ and labrum ($\times 35$).
12. Leg ($\times 75$).



Metamorphosis of Alaska Coleoptera.

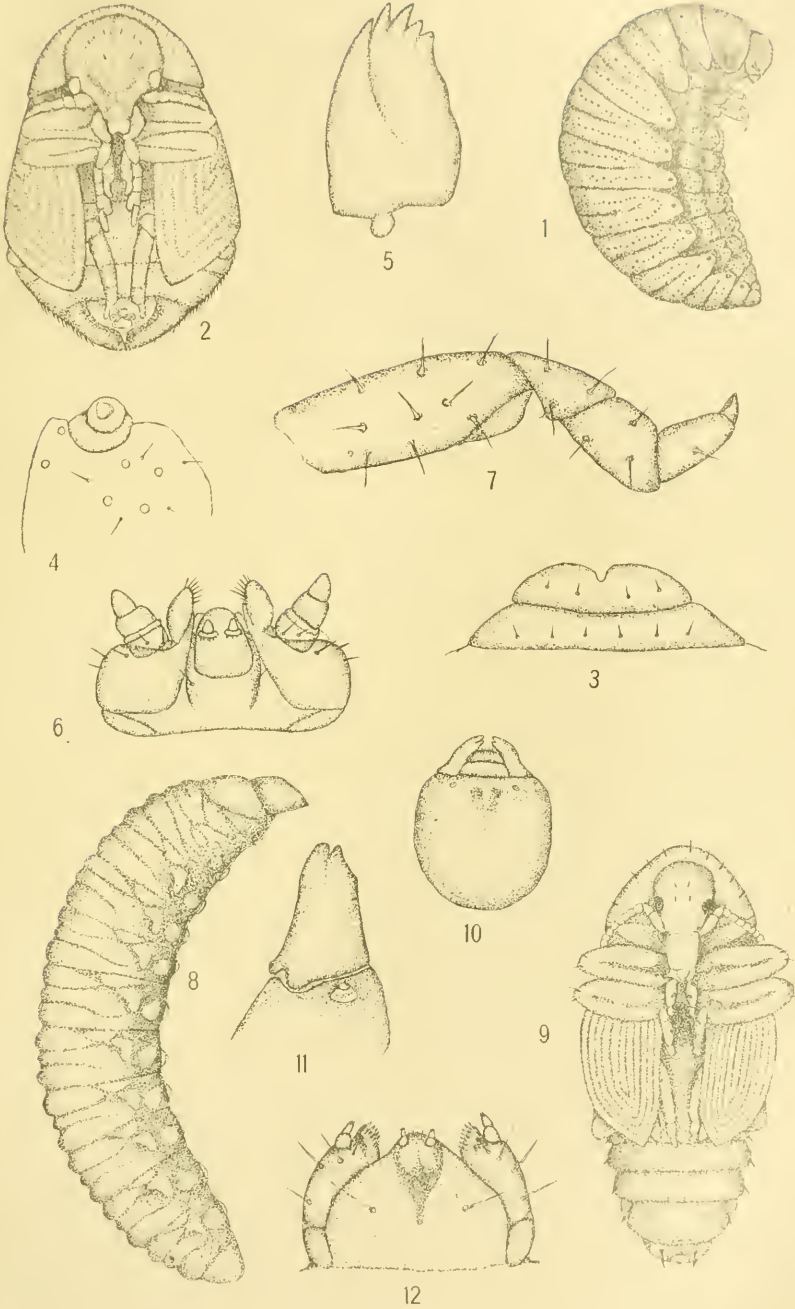
PLATE XXVI.

Chrysomela subsulcata Mann.

- FIG. 1. Lateral view of full-grown larva ($\times 6.5$).
2. Ventral view of pupa ($\times 6.5$).
3. Clypeus and labrum ($\times 35$).
4. Antennæ and ocelli ($\times 35$).
5. Mandible ($\times 35$).
6. Maxillæ and labrum ($\times 35$).
7. Leg ($\times 35$).

Lepidophorus lineaticollis Kirby.

- FIG. 8. Lateral view of larva ($\times 8.5$).
9. Ventral view of pupa ($\times 8$).
10. Dorsal aspect of head.
11. Mandible and antennæ ($\times 35$).
12. Maxillæ and labrum ($\times 35$).



Metamorphosis of Alaska Coleoptera.

