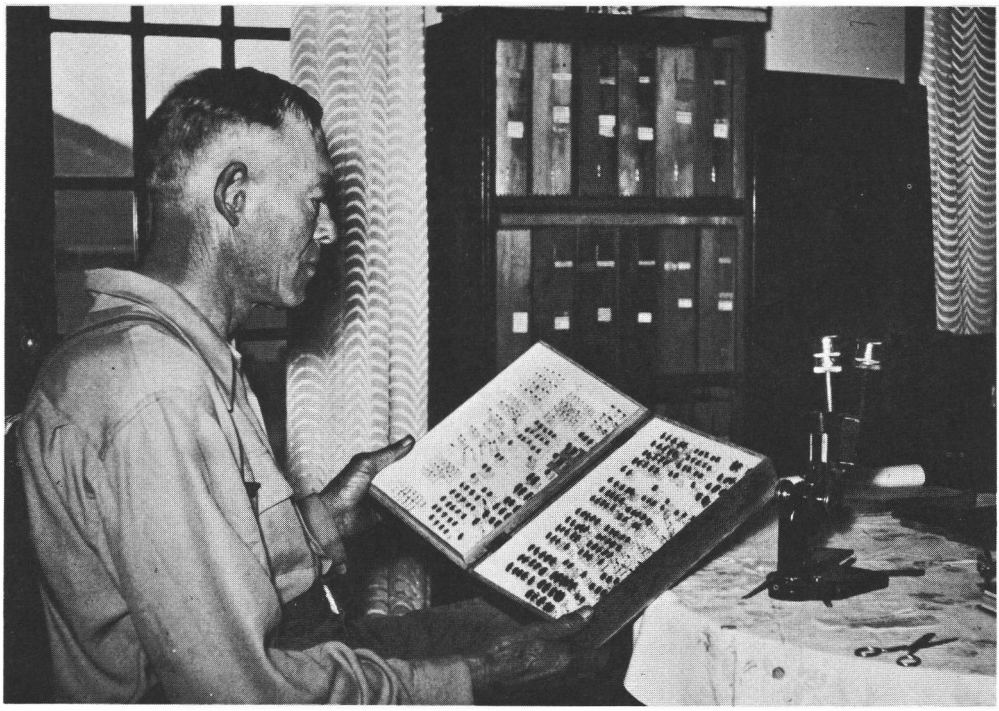

GORDON STACE SMITH
(1886-1962)

University of Washington Publications in Biology Volume 16

THE BEETLES OF THE PACIFIC NORTHWEST

BY
MELVILLE H. HATCH

Part IV: Macrodactyles, Palpicornes, and Heteromera

with the collaboration of
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1965
UNIVERSITY OF WASHINGTON PRESS
SEATTLE

Library of Congress Catalog Card Number A53-9444
Printed in the United States of America

Dedicated to

Gordon Stace Smith

(1885-1962)

in recognition

of his

contribution

to the knowledge

of the

beetles of

British Columbia

Contents

THE BEETLES OF THE PACIFIC NORTHWEST

Part IV: Macrodactyles, Palpicornes, and Heteromera

Introduction

The present Park IV of *The Beetles of the Pacific Northwest* contains the sections on the Diversicornia Macrodactyles, the Palpicornes, and the Heteromera. The exact constitution of these groups as here considered is indicated by the table of contents on a previous page. About 520 species are described in this Part.

The largest families included in Part IV are the Tenebrionidae with about 126 species and the Hydrophilidae with about 106 species. In general, the beetles treated here are plant feeders. A number of the Tenebrionidae are important widely distributed species infesting stored products.

Nearly half the species in Part IV are covered by collaborators. Dr. Floyd Werner of the University of Arizona has written the section on Anthicidae (37 species) and 3 of my graduate students have contributed other important sections. Mr. David McCorkle of the Oregon College of Education has done the section on Elophorinae (20 species). Dr. David Miller of the New York City College has covered the Hydrophilidae exclusive of the Elophorinae and Sphaeridiinae (62 species); and Dr. Dennis Boddy of the Portland State College has contributed the part of Zopheridae and Tenebrionidae (129 species). To each of these men I extend my appreciation and thanks. It may be pointed out, however, that, in consequence of this multiple authorship, the text by the several authors shows some variation. The general format has been kept constant, but the treatment of the species varies somewhat as regards the detail with which they are described.

The author continues under the same heavy obligation as before to the Research Committee of the University of Washington, which disburses the State of Washington Research Fund for Biology and Medicine derived from Initiative 171. Moreover, from June 1961 to September 1962, while the author was on leave from the University of Washington, he and his research were supported by Grant G16257 from the National Science Foundation. This grant, in part, made it possible during the summer of 1961 for him and David McCorkle and David Miller to visit museums in San Francisco, Washington, Philadelphia, Cambridge, and Ottawa to study types and other specimens. Finally, beginning September 1963, Grant 11-2715 from the National Science Foundation has paid the salary of my artist, Mrs. Helen Houk.

The author's general indebtedness to his colleagues has been indicated in the Introductions to Parts I and III. To the persons therein mentioned should be added the names of Antonio Rodrigues and Dr. David C. Miller, who have assisted with the curating of the beetle collection, and Dr. Paul O. Ritcher and Prof. John D. Lattin of Oregon State University, who have made available for study the collection in their care. As before, I am especially indebted to Mrs. Helen Houk in preparing a large percentage of the figures.

Type material of new species except as otherwise indicated is in the collection of the Thomas Burke Memorial Washington State Museum at the University of Washington. The following abbreviations are employed in designating repositories of type and paratype specimens.

CAS	California Academy of Sciences, San Francisco, Cal.
CNHM	Chicago Natural History Museum, Chicago, Ill.
CN or CNC	Canadian National Collection, Ottawa, Ont.
DM or Miller	David C. Miller, New York, N. Y.
KMF or Fender	Kenneth M. Fender, McMinnville, Ore.
McCorkle	David V. McCorkle, Monmouth, Ore.
ODA	Oregon Department of Agriculture, Salem, Ore.
OSU	Oregon State University, Corvallis, Ore.
Schuh	Joe Schuh, Klamath Falls, Ore.
SGJ	Stanley G. Jewett, Portland, Ore.
UBC	University of British Columbia, Vancouver, B. C.
UI	University of Idaho, Moscow, Id.
UW	University of Washington, Seattle, Wash.
WSU	Washington State University, Pullman, Wash.

The year 1962 saw the death of three persons who have played an important role in the study of Pacific Northwest Coleoptera.

On September 26, 1962, near Mission, B. C., died Mrs. Marianne E. Clark (née Parker), formerly Mrs. W. W. Hippisley. Mrs. Clark was born April 2, 1880 in England. In 1911 she lost her right arm completely in a gun accident, despite which she assembled the material that served as the basis of "An annotated list of Coleoptera taken at or near Terrace, British Columbia" published in the *Proceedings of the Entomological Society of British Columbia* in 1948, 1949, and 1956. Omitting incompletely named species, her three lists contain 659 species, by over 150 species the longest list of Coleoptera so far recorded from a single locality in the Pacific Northwest. Her determinations were largely by C. A. Frost and, to a lesser extent, by H. C. Fall, and most of her surviving specimens are apparently in those two collections, both of which are now in the Museum of Comparative Zoology in Cambridge. A few of her specimens, utterly unrepresentative of her extensive list, are in the University of British Columbia collection. For an obituary notice together with a portrait see Spencer 1963.

Despite the fact that he never visited the Pacific Northwest, Charles Albert Frost (1872-1962), of Framingham, Mass., holds a significant place in the study of Pacific Northwest beetles because of the identifications he made for Mrs. M. E. Clark and Gordon Stace Smith. Mr. Frost kept his own collection small—it numbered 116 Schmitt boxes at the time of his death—so that, to the delight of correspondents, he returned most of the specimens sent to him for identification; but sometimes, as in the case of Mrs. Clark, this resulted in the loss of specimens that would have been preserved if he had kept a larger percentage of the specimens he named. His proximity to Cambridge made frequent references to the LeConte and Fall collections possible. Mr. Frost was a conscientious and tireless correspondent and a whole generation of beetle enthusiasts benefited from his cooperation. I met him briefly in 1921 and called on him in his home in 1952, 1955, and 1961. For an obituary notice accompanied by a portrait and a list of his publications see Darlington 1963.

On February 10, 1962 occurred the death of Gordon Stace Smith, of Creston, B. C., in his 76th year. Beginning in the middle 1920's, Stace Smith built up a collection of British Columbia Coleoptera in about 145 insect boxes that may have numbered as many as 2800 species. In 1929 and 1930 he published a list of 323 species of beetles from Copper Mountain, B. C. that by nearly a hundred species was the longest list of beetles from a single locality that had been published from

the Pacific Northwest up to this time; and he was the author of 17 notes on Coleoptera in the *Proceedings of the Entomological Society of British Columbia* between 1945 and 1957. Mr. Stace Smith was a tireless correspondent and he sought identifications from all who were willing to make them. His relations with C. A. Frost, even though they never met, were especially long and intimate. He was very helpful to me in my preparation of Parts I to III and the present Part IV of this work. It was with real shock that I received back Part III with the notation "deceased." Gordon Stace Smith's collection has been deposited with the University of British Columbia. For a more extensive obituary notice accompanied by a portrait see Hatch 1964.

It is appropriate to call attention here to my memoir (Hatch 1957) of the Rev. John Henry Keen (1851-1950). Keen spent eight years (1890-98) as missionary to the Haida Indians at Massett, B. C., and 14 years (1899-1913) at Metlakatla on the adjacent mainland, during which he published five papers on beetles, as recorded in the bibliography to Part II of this work. About 300 species were enumerated in these papers.

The word "length" is omitted before the citation of length at the end of the species descriptions. Following the length is given the Northwestern distribution and sometimes the habitat and synonymy.

British Columbia (B. C.) has been divided into unequal quarters, but on a slightly different basis than in Parts I and II: nw B. C. refers to the area north of 50° and west of the watershed running irregularly north and south, west of Hazelton on the Skeena River; sw B. C. refers to the area south of 50° and west of the watershed defining the Fraser River drainage to between Lytton and Hope and thence to the crest of the Cascade Mountains and south to the Washington line; ne B. C. refers to the northeastern portion east of the Continental Divide; se B. C. refers to the large southeastern portion west of the Continental Divide and east of the crest of the Cascade Mountains and the eastern limit of the Fraser River drainage north of a line crossing the Fraser River between Lytton and Hope. The chief effect of this change is to restrict "sw B. C." and "nw B. C." to true coastal areas and to place the Fraser River valley from south of Lytton north in "se B. C." An occurrence in any two contiguous quarters is indicated by n B. C., e B. C., s B. C., or w B. C. B. C. refers to an occurrence in two or more quarters two of which are diagonally opposite.

Washington (Wn.) and Oregon (Or.) are divided into unequal western (w) and eastern (e) portions by the Cascade Mountains; Wn. or Or. refers to an occurrence on both sides of the mountains.

Idaho (Id.) is divided into three portions: northern (n), the area north of and including Idaho County; southwestern (sw), the area south of Idaho County and west of the eastern borders of Valley, Boise, Camas, Gooding, Jerome, and Twin Falls Counties; and southeastern (se), the area east of this line. An occurrence in both sw Id. and se Id. is referred to as s Id., and Id. refers to an occurrence in n Id. and either se Id. or sw Id. or both.

Quotation marks around a distributional reference indicate a record from a state or province without mention of precise locality.

Following each species are citations to the literature of its occurrence in the Pacific Northwest. The portion of the Northwest from which each reference cites the species is indicated by numbers in parentheses following the page number: British Columbia (1), Washington (2), Idaho (3), Oregon (4). Complete references to the abbreviated citations employed in Part IV are given in the terminal bibliography at the end of Part IV, except that where only one or two

references to a particular paper or book are made, an abbreviated form of the reference indicating place of publication is usually employed in the text without further mention in the terminal bibliography.

For additional explanatory notes see the Introduction to Part I of this study.

Subseries Macrodactyles

As pointed out in Part III, p. 32, the Macrodactyles are distinguished from other Diversicornia by their elongate tarsi and tarsal claws, the last segment more than half as long as the other segments together. In habits they are aquatic or inhabit the margins of aquatic situations. Chandler 1956:354-367. Leech and Sanderson in Edmondson, Fresh-Water Biol. 1959:981-1023.

Key to Families

1 Tarsi nearly always 5-segmented

2 Tarsi with last segment shorter than the rest together; legs retractile; antennae short, the last segment enlarged LIMNICHIDAE

2' Tarsi with last segment usually as long as rest together; legs not retractile

3 Abdomen with 6 or 7 visible sternites; antennae as long as head and pronotum PSEPHENIDAE

3' Abdomen with 5 visible sternites

4 Procoxae transverse, with an exposed trochantin; antennae very short and subpectinate DRYOPIDAE

4' Procoxae globular or subglobular, the trochantin (except in Lara) not exposed or absent; antennae slender, not subpectinate, frequently as long as head and pronotum ELMIDAE

1' Tarsi apparently 4-segmented, the last segment shorter than the rest together

5 Body oblong, more than twice as long as wide, pubescent; head visible from above, porrect; prosternum well developed; pro- and mesotibiae broad, spinose along outer edge; antennae 11-segmented, short, with a compact club of 7 transverse segments HETEROCERIDAE

5' Body broadly oval, less than twice as long as wide, glabrous; head concealed under pronotum, in contact with procoxae; prosternum very short; pro- and mesotibiae slender, not spinose; antennae 9-segmented with a 3-segmented club and received in a fossa of the prothorax that emarginates the lateral margin of the pronotum GEORYSSIDAE

Family Psephenidae

The Psephenidae or water pennies receive their common name from their oval shaped larvae which live attached to stones in the water of streams or lakes. The adults are terrestrial, but apparently crawl down the surface of stones to lay their eggs under water. Chandler 1956:365-366.

Psephenus Hald.

Subcunate oval, depressed; black, dull, feebly shining; above with intermixed short semi-recumbent and longer erect hairs, the venter with short silvery hairs; head transverse, closely finely punctate, without a longitudinal impression, the eyes prominent, the front concave; antennae extending to

about the base of the pronotum, segments 4 to 10 scarcely longer than wide; pronotum transverse, with larger and smaller intermixed punctures, the apex about 2/3 as wide as base, the sides broadly arcuate, somewhat broadly feebly sinuate at middle, the hind angles rectangular, the base lobed at middle and sinuate within the hind angles, the disc impressed within the hind angles; elytra widest posteriorly, with intermixed larger and smaller punctures, without impressed lines, not elevated along suture in male; male with sixth abdominal sternite deeply emarginate; 3.5-4.2 mm.; n Id.; not seen LANEI Blais.

Blaisdell, Ent. News 34, 1923:234-235, 238 (3). Chandler 1956:366 (3).

Acneus Horn

This genus is treated under the family Dascillidae in Part III of this work.

Family Limnichidae

The adults in this group occur on wet sand and loam along the margins of streams. The larvae have filamentous gills and are probably aquatic. Chandler 1956:363-364.

Tribe Limnichini

Limnichus Latr.

Antennae 11-segmented, segments 3 to 8 or 9 small, segments 9 or 10 and 11 constituting a gradually formed loosely jointed club, the antennae in repose held between the head and the enormously prolonged acute anterior angles of the pronotum; pronotum without antennal cavities on dorsal surface

1 Eyes convex, prominent, conspicuously visible from above, sides of front above the eyes not acute or cariniform; prosternum sulcate (subg. LIMNICHITES Csy.). Shining black, coarsely densely punctate, the thorax below more sparsely punctate, the elytral punctures so densely crowded as to be somewhat regularly polygonal with fine separating walls; upper surface with conspicuous decumbent intermixed gray and golden pubescence; pronotum transverse, widest at the obtuse hind angles, the sides nearly straight and strongly convergent in dorsal view, the base strongly oblique just within the hind angles, the disc with the prescutellar lobe depressed, the midline finely impressed except toward the base; 1.5-1.8 mm.; se B.C., sw Id., extreme e Or. PUNCTATUS LeC.

1' Eyes more vertical in plane, less prominent, scarcely visible from above, sides of the front above the eyes acute and projecting

2 Prosternum sulcate; base of antennae inserted under margin of front, not visible from above (subg. EULIMNICHUS Csy.). Shining black, punctate; head above longitudinally striate; pronotum transverse, widest at the acute hind angles, the sides strongly convergent and feebly broadly emarginate, the prescutellar lobe feebly depressed, the midline not or evanescently impressed; venter finely punctate and alutaceous except the mesosternum and metasternum, which are coarsely punctate and shining

3 Elytra shining between the very dense coarse punctures; pronotum finely punctate, the surface between the punctures coarsely opaquely alutaceous toward sides, more finely evanescently so at middle; above with variegated

decumbent golden and gray pubescence; 2.1-2.7 mm.; se Wn., Id., Or. (Pl. I, fig. 1) ANALIS LeC.

3' Elytra distinctly alutaceous between the finer more widely separated punctures; pronotum finely punctate and alutaceous, somewhat more strongly so toward the sides; above with very short variegated decumbent golden and gray pubescence

4 Elytral punctures distinct; 1.8-2.0 mm.; w Or. CALIFORNICUS LeC.

4' Elytral punctures very indistinct; 1.8-1.9 mm.; sw Or. MONTANUS LeC.

2' Prosternum not sulcate; base of antennae visible from above (subg. LICHMINUS Csy.). Black, shining; above finely obscurely punctate, the head more and the elytra less so; above alutaceous, the head more and the pronotum less strongly so; above with evident decumbent fuscous pubescence; pronotum convex, transverse, widest at the acute hind angles, the sides convergent and very feebly broadly emarginate; thorax below shining, sparsely finely punctate with sparse decumbent pubescence; abdomen below more coarsely densely opaquely punctate and pubescent; 1.7-2 mm.; e Or. TENUICORNIS Csy.

Family Dryopidae

Helichus Er.

Oblong; shining except on densely pubescent areas; black, the tarsi and sometimes other portions of the legs and margins of pronotum and elytra tinged with rufescent; densely punctate, with recumbent pubescence; pronotum transverse, convex, tomentose toward sides, the sides subparallel behind middle, thence broadly arcuate to the spiniform anterior angles, the hind angles acute, the disc foveately impressed behind middle on each side, the sides narrowly deplanate before and behind middle, the base emarginate before the scutellum; elytra with 8 coarsely punctate impressed striae, the alternate intervals more or less evidently elevated or (var. FOVEATUS LeC.) equally elevated, the surface tomentose lateral to the third stria; body below with recumbent pubescence and, except for the last abdominal sternite, tomentose; 5.2-6.3 mm.; se B. C., se Id., Or.; in rapid streams with rocky or gravel bottoms (Pl. I, fig. 2) STRIATUS LeC.

Musgrave, Proc. Ent. Soc. Wash. 37, 1935:142-143 (1).

var. *foveatus* LeC. Chandler 1956:356 (1). *columbianus* Brown 1931:118-119 (1); 1934:149 (1).

Family Elmidae
(Helmidae, Parnidae, Dryopidae pars)

Even though they cannot swim, the Elmidae or riffle beetles are aquatic as both larvae and adults. They occur typically clinging to stones along the margins of rapidly running streams, but a few are found in other aquatic situations. The adults are covered in part by a hydrofuge tomentum or pile which surrounds them with a blanket of air into which dissolved oxygen diffuses from the water. The larvae respire by means of retractile caudal gills. Sanderson, Jr. Kans. Ent. Soc. 26, 1953:148-163; 27, 1954:1-13. Chandler 1954:356-363. Leech and Sanderson 1959.

Key to Genera

1 Body densely pubescent above, without tomentum; procoxae transverse, the trochantin exposed; adults terrestrial (tribe LARINI). Antennae not clavate; pronotum without a sublateral sulcus; elytra with a scutellar stria; 6-7 mm. LARA LeC.

1' Body above sparsely pubescent; venter in part with tomentum; procoxae rounded, the trochantin concealed; adults aquatic (tribe ELMINI). Length not over 4 mm.

2 Lateral margins of neither the fourth or fifth visible abdominal sternites with dorsally extending tooth; elytral epipleura usually gradually narrowed behind

3 Protibia without a band of tomentum toward apex; epipleura extending to apex of elytra; elytra with a scutellar stria ORDOBREVIA Sand.

3' Protibia with a band of tomentum toward apex; epipleura ending near base or middle of fifth abdominal sternite

4 Pronotum without sublateral carinae

5 Maxillary palpi 3-segmented; length 3-4.4 mm.; elytral markings, if present, transverse NARPUS Csy.

5' Maxillary palpi 4-segmented; length 1.9-2.4 mm.; elytral markings, if present, longitudinal DUBIRAPHIA Sand.

4' Pronotum with sublateral carina extending from base toward or to anterior margin, the surface between the lateral margin and the carina densely rugosely punctate and anteriorly depressed; elytra without a scutellar stria

6 Pronotum with a narrow median carina or sulcus, the short lateral basal branch of the sublateral carina nearly obliterated; elytra somewhat broader AMPUMIXIS Sand.

6' Pronotum without a median carina or sulcus, the short lateral basal branch of the sublateral carina distinct; elytra somewhat more parallel CLEPTELMIS Sand.

2' Lateral margins of fourth or fifth visible abdominal sternite with a dorsally extending tooth so that the elytra are locked in place as an air reservoir; protibia with a band of tomentum toward apex

7 Lateral posterior margin of fourth visible abdominal sternite with a dorsally extending tooth, the epipleura ending bluntly shortly posterior to the tooth; pronotum with the sublateral carinae confined to the basal half

8 Antennae 10- or 11-segmented in Pacific Northwest species; elytra without sublateral carinae

The 2 following genera are rather vaguely distinguished.

9 Elytra more elongate, the sides subparallel, the striae scarcely impressed, the basal elytral spot when present not attaining the suture; body less convex; antennae 11-segmented, the 3 apical segments feebly wider; pronotum without a median sulcus; last abdominal sternite strongly rounded at apex; claws more strongly curved (about 90°) OPTIOSERVUS Sand.

9' Elytra more oval, the sides more evidently curved, the striae more or less evidently impressed, the basal elytral spot when present extending to the suture or virtually so; body more convex; antennae 11- or 10-segmented, the 3 apical segments more evidently wider; pronotum with or without a median sulcus; last abdominal sternite broadly arcuate to subtruncate or even emarginate at apex; claws more feebly curved (about 70°) HETERLIMNIUS Hint.

8' Antennae 8-segmented, very short, only the last segment enlarged; pronotum

with a median longitudinal sulcus; elytra with 3 or 4 sublateral carinae ZAITZEVIA Champ.

7' Lateral margin of fifth abdominal sternite with a dorsally extending tooth adapted to a subapical enlargement of the epipleuron; pronotum with the sublateral carinae entire, the midline obtusely carinate basally and foveate at middle MICROCYLLOEPUS Hint.

Tribe Larini

Lara LeC.

Black, densely covered above with intermixed short and very short pubescence; head densely closely somewhat variably punctate; pronotum somewhat more coarsely punctate than head, narrowed at apex, transversely impressed behind the apical margin with a median impression extending slightly backward, the hind angles explanate, the basal margin with a broad sinuate lobe at middle before which the surface is variably deplanate or bifoveate; elytra feebly transversely impressed at about basal third, with 10 discal striae and a scutellar stria between the first and second discal striae, the striae coarsely punctate at base, more finely so behind; adults occur on lower surface of logs and other objects at water level along rapid clear streams

1 Pronotum with the acute hind angles scarcely more prominent and only slightly wider than the middle lobes; head between the eyes with a pair of anteriorly divergent impressions; elytra with pubescence uniform, the striae feebly impressed; 5.7-6.7 mm.; w Wn., w Or. (Pl. III, fig. 1) GEHRINGI Darl.

Darlington, Psyche 36, 1929:329 (2). Chandler 1956:366 (2).

1' Pronotum with the acute hind angles evidently wider and more prominent than the middle lobes; head between the eyes less strongly impressed; elytra with the pubescence of the odd numbered intervals more erect so that it appears paler under proper illumination AVARA LeC.

a Pronotum across the basal angles evidently narrower than the elytra across the humeri; elytra with some of the discal striae frequently nearly unimpressed; 7.8-8.6 mm.; Or. (Dayton, Metolius R.) (Pl. III, fig. 2) subsp. AVARA LeC.

a' Pronotum across the basal angles evidently wider than in the previous subspecies although still narrower than the elytra across the humeri; elytral striae feebly impressed; s B.C., w Wn., se Id., e and sw Or. (Burns, Gold Beach) (Pl. III, fig. 3) subsp. AMPLIPENNIS Darl.

Darlington, Psyche 36, 1929:330 (2). Brown 1931a:90 (1). *avara* auct. Fletcher 1905:74 (1). Criddle 1922:63 (1). Chandler 1956:362 (1).

Tribe Elmini

Ordobrevia Sand.

Elongate, subparallel, feebly wider behind; deep reddish brown, antennae and palpi testaceous, elytra with broad testaceous areas at base and before apex; pronotum slightly wider than long, widest just behind middle, the base wider than the apex, the disc closely granulate, the mid-line sulcate, the sulcus narrowed to the 2 carinae before the scutellum, 2 elongate

tubercles on each side of sulcus, the posterior tubercle extending to the base; elytral striae coarsely punctate basally, more finely punctate behind becoming nearly obsolete on the subapical spot, the first or scutellar stria obsolete behind basal fifth, fourth interval elevated at base, the seventh interval elevated; 2.15-2.7 mm.; nw Or., sw Wn.; not seen from the Pacific Northwest NUBIFERA Fall

Sanderson, Univ. Kans. Sci. Bull. 25, 1938:661-663 (24) (Stenelmis). Chandler 1956:361 (2).

Narpus Csy.

Elongate, subparallel; black; elytra without (typical form) or (ab. SOLUTUS Brown) (Pl. I, fig. 3) with variable basal and apical or subapical pale spots; antennae and legs, especially the tarsi, variably pale; body above with sparse decumbent pubescence; head and pronotum shining, closely punctate, the pronotum somewhat more coarsely and sparsely so; pronotum convex, the sides nearly straight and convergent from base, the angles acute, the front angles more strongly so, the surface before the base evidently impressed on each side of middle; elytra with 10 finely impressed coarsely punctate striae, the intervals finely sparsely punctulate; 3.1-4.5 mm.; B.C., w Wn., e Or. CONCOLOR LeC.

Keen 1905:298 (1) (Elmis).

ab. *solutus* Brown 1933:45-47 (12) (Helmis). Fall, Pan-P. Ent. 1934:172 (Helmis).

Dubiraphia Sand.
(Simsonia Hint.)

Elongate, subparallel, shining, sparsely pubescent above; head and pronotum aeneous, the pronotum sometimes somewhat rufous; elytra with a discal vitta which is widened at the base, frequently constricted at basal third, and does not attain the apex; antennae and legs testaceous; head and pronotum punctate, the pronotum somewhat more coarsely so; pronotum narrowly feebly transversely impressed before base, the sides subparallel at base, feebly convergent apically; elytra with 10 coarsely punctate unimpressed striae, the first 2 striae becoming impressed and finely punctate behind the middle; l. 9-2.4 mm.; sw Id., e Or. (Pl. I, fig. 4) GUILIANII VanD.

VanDyke, Pan-P. Ent. 25, 1949:54-55.

Ampumixis Sand.

Oval; shining, sparsely inconspicuously pubescent; black, the elytra rufous at basal third and apical fourth, the rufous areas sometimes reduced or more or less broadly confluent along the suture, the legs and antennae more or less brownish; antennae with apical segments scarcely enlarged; pronotum wider than long, the mid-line with a narrow carina or sulcus, the sublateral carina nearly entire, its short lateral basal branch nearly obliterated, the disc toward base more or less distinctly obliquely impressed on each side of middle, the hind angles acute, the sides varying from obliquely convergent in male to a condition (female) in which they flare before the hind angles and then are more or less subparallel to shortly before the

apex where they are convergently arcuate, the surface lateral to the lateral carinae and in the oblique basal impressions rugose, the surface between the lateral carinae finely punctate; elytra ovate with 9 nearly complete strongly impressed finely punctate striae, the intervals flat or nearly so and scarcely perceptibly punctulate; 2-2.2 mm.; sw Wn., se Or.; in rapid clear streams (Pl. I, fig. 5) DISPAR Fall

Fall, Jr. N.Y. Ent. Soc. 33, 1925:180-181 (Helmis). Chandler 1956:361 (4).

Cleptelmis Sand.

Subovate; finely very sparsely obscurely pubescent; black, the antennae except the last segment and the legs and venter somewhat variably paler; head finely punctulate, the antennae slender, the last 2 or 3 segments evanescently wider; pronotum transverse, the sublateral carinae distinct with a moderately distinct short basal branch, the disc between the sublateral carinae finely punctate, finely strigose, with a more or less distinct basal transverse impression more or less subfoveate at each end, the area lateral to the sublateral carinae and their basal branches rugose, the area between the sublateral carinae and their basal branches smooth, the sides slightly anteriorly convergent in front, more feebly so behind middle, slightly flaring before the hind angles; elytra with 9 coarsely punctate well-impressed striae, the punctures obsolete toward apex, the intervals feebly convex and finely strigulose

1 Elytra black, with subquadrate humeral spots extending to the third stria and a transverse or suboblique spot at the apical five sixths; pronotum and elytra somewhat more strongly shining; l. 8-2.2 mm.; se B.C., Wn., ne Or.; in rapid streams (Pl. I, fig. 6) ORNATA Schaef.

Brown 1934:149 (1) (Helmis). Chandler 1956:363 (1).

1' Elytra black with the humeri faintly reddish; pronotum and elytra somewhat less strongly shining, more opaque; l. 7-2.1 mm.; se Or.; in rapid streams ADDENDA Fall

Chandler 1956:363.

Optioservus Sand.

1 Elytra black with well developed humeral and subapical spots

2 Male with median lobe of aedeagus attenuate, the sides in dorsal view subparallel for some distance before the apex; elytra broader, less parallel-sided, noticeably broader than the pronotum, the striae evanescently impressed, the humeral spot larger, usually reaching to the second stria or into the interval between the first and second striae; 2-2.3 mm.; se B.C., e Wn., n Id., Or. QUADRIMACULATUS Horn

Brown 1934:149 (1) (Helmis). Malkin, Pan-P. Ent. 27, 1951:127 (4) (Heterlimnius). Chandler 1956:363.

2' Male with median lobe of aedeagus gradually evenly convergent to the apex; elytra more subparallel, scarcely wider than the pronotum, the striae not impressed, the humeral spot usually less extensive, frequently reaching only to the fourth or third stria, but sometimes extending nearly to the second stria; 2-2.3 mm.; w Wn., Id., Or. (Pl. I, fig. 7) SERIATUS LeC.

Chandler 1956:363 (4).

1' Elytra entirely black (typical form), rarely with a small humeral spot; aedeagus and general form nearly as in *seriatus* LeC.; 2-2.4 mm.; se B.C., e Wn., se Id., e Or. DIVERGENS LeC.
This may be a color form of *seriatus* LeC. Brown 1934:149 (1) (Helmis). Chandler 1956:363 (1).

Fall, Jour. N.Y. Ent. Soc. 33, 1925:177-178, described from Wyom., "B.C.", and "W.T." CASTANIPENNIS Fall; head and thorax black, elytra and body beneath brown, elytra with or without a faint nebulous clouding mediolaterally and narrowly along the suture; 2.34 mm.

Heterlimnius Hint.

1 Antennae 11-segmented; pronotum without a median sulcus; black; elytra typically with broad basal and apical rufous areas which usually in part attain the suture, rarely with the apical spot absent and the basal spot reduced to a narrow basal band or absent; 2-2.5 mm.; sw B.C., Wn., s Or. (Pl. I, fig. 8) KOEBELI Mart.
Martin, Pan-P. Ent. 4, 1927:68 (2) (Helmis). Malkin, Pan-P. Ent. 27, 1951:127 (24). Chandler 1956:363 (1). *quadrimaculatus*, Hatch and Kincaid 1958:14 (2) (Optioservus).

1' Antennae 10-segmented; pronotum more or less feebly sulcate at middle at basal two thirds; black; elytra with broad basal and apical rufous areas which attain the suture at extreme base and apex, the apical area subject to reduction in some specimens, sometimes immaculate; 2.4-2.7 mm.; s B.C., n Id., e Or. CORPULENTUS LeC.
LeConte 1874:52 (1). Fall, Jour. N.Y. Ent. Soc. 33, 1925:181 (1) (Helmis). Chandler 1956:363 (1).

Zaitzevia Champ.
(Macronychus Horn pars)

Elongate; subparallel; black, shining, the elytra, legs and ventral surface of the metathorax and abdomen varying to rufotestaceous; head coarsely punctate, antennae 8-segmented, the last segment enlarged; pronotum nearly as long as wide, widest at basal two fifths before and behind which the sides converge, the apex narrower than the base, the front angles produced, the disc evidently punctate with an opaque median sulcus not extending to apical margin and an opaque sublateral sulcus at basal half on each side limited without by a sublateral carina; elytra with 7 longitudinal series of punctures which become subobsolete laterally and apically, the four outer intervals carinate and sericeous; 2-2.6 mm.; sw B.C., w Wn., Or.; not rare (Pl. I, fig. 9) PARVULA Horn
This species has been taken in December near Bozeman, Mont. in a spring with a temperature of about 22° C throughout the year (Hatch); the species usually occurs in cold streams. Horn, Tr. Am. Ent. Soc. 3, 1870: 41. Hinton, Trans. Roy. Ent. Soc. London 85, 1936:432-433. Chandler 1956:361. *columbiensis* Ang., Ent. News 3, 1892:84 (1). Sanderson, Jr. Kans. Ent. Soc. 11, 1938:146. *thermae* Hatch, Ent. News 49, 1938:18. Hinton, Ent. Mo. Mag. 75, 1939:181.

Microcylloepus Hint.

Pronotum with a submedian fovea behind which is a pair of oblique anteriorly divergent impressions, the mid-line behind tumid, a pair of small foveae before the scutellum, the anterior angles produced, the sides crenulate; elytra with 9 series of punctures, coarser toward the base, the third, sixth, and eighth intervals more prominent, the lateral margin carinate

1 Pronotum usually wider than long, the apex narrower than the base which is only slightly narrower than at the widest portion just behind the middle, the sides sinuate just before the middle and broadly sinuate before the acute hind angles, the sculpture of the disc somewhat more pronounced; elytra with intervals 6 and 8 distinctly carinate; form somewhat broader; black, the antennae and tarsi and sometimes the elytra testaceous; l. 9-2. 0 mm.; se Id., se Or. PUSILLUS LeC.

1' Pronotum longer than wide, the apex as wide as the base which is evidently narrower than at the widest portion just behind the middle, the sides strongly sinuate just before middle and oblique before the feebly acute hind angles, the sculpture of the disc somewhat less pronounced; elytra with only the basal portion of interval 6 carinate; form somewhat narrower; fuscous, the legs and antennae somewhat paler, the head and pronotum frequently somewhat darker; l. 7-2. 1 mm; sw Id., se Or. (Pl. II, fig. 1) THERMARUM Darl.

The type locality is northwestern Nevada, 25 miles south of Denio, which is just across the border in southeastern Oregon. Darlington, Psyche 35, 1928:1-6. LaRivers, Ent. News 60, 1949:207.

Family Heteroceridae

Heterocerus F.

The Heteroceridae or variegated mud-loving beetles constitute in the Pacific Northwest a single genus of small oblong insects which live both as adults and as larvae in galleries which they excavate in soft mud near pools or small lakes or by the margins of streams. Not more than one or two (probably male and female) beetles are said to occur in one burrow. The beetles apparently feed on organic debris in the mud and are themselves eaten by predatory beetles such as Dyschirius (Carabidae) and Atheta (Staphylinidae). They may be flushed from their burrows by splashing water over the bank, whereupon they take flight quickly or burrow in again. The adult beetles are highly adapted for their mode of life, being covered by a water repelling pubescence and having the pro- and mesotibiae flattened with long marginal spines for burrowing.

Heterocerus is characterized by very short antennae, the first 2 segments larger, the third and fourth small, the last 7 transverse and forming a compact oblong club. The pronotum is transverse, slightly wider to slightly narrower than the elytra (wider in the male than in the female) with the sides arcuately narrowed from the hind angles (female) or from about the middle (male). The elytra in Pacific Northwest species are marked by ante- and postmedian transverse series of pale spots which may form transverse sinuate fasciae, and a subapical spot (sometimes divided), all of which tend to be coalescent with the pale lateral margin. Males are characterized by their somewhat longer and more prominent mandibles and their wider and somewhat less rapidly anteriorly narrowed pronotum. Some of the species are rather variable, as the following analysis will show. Horn 1890. Fall, Can. Ent. 1920:211-213.

1 First visible abdominal sternite with the stridulating ridge incomplete, i. e., extending in a curved line from the front angle to the posterior margin (subg. HETEROCERUS s. str.)

2 Metasternum without a postmesocoxal line, i. e., an incised line extending from the posteriorlateral margin of the mesocoxal cavity to the sternal episternal suture; elytral epipleura without an oblique line toward base

3 Male labrum arcuately narrowed to the emarginate apex; elytra without a juxtascutellar spot; 4-4. 5 mm. ; se B. C. ; not seen from the Pacific Northwest UNDATUS Melsh.

Gibson 1913:126 (1). Criddle 1922:63 (1).

3' Male labrum produced along its apical margin in a lobe that is emarginate at its apex; female labrum broader than long, sinuate each side of apex, the middle slightly produced with a slight emargination; elytra with a juxtascutellar spot usually present, sometimes much reduced or absent

4 Male labrum produced in a subquadrate lobe that is as broad or broader than long; male mandible less elongate, the portion beyond the outer incision less than 3 times its width beyond the incision; elytral markings usually well developed and coalescent with the well developed pale lateral margin

5 Male labrum produced in a subquadrate lobe that is much broader than long; piceous, the ventral surface at sides and legs variably paler, the pronotum with the anterior angles and usually the narrow lateral margins pale; 3. 8-5. 2 mm. ; se B. C. , e Wn. , Id. , Or. ; sometimes by alkaline or semialkaline lakes COMPLETUS sp. n.

Type male, allotype female, and 26 paratypes: Moses L. , Wash. June 23, 1929, M. H. Hatch; paratypes: B. C. (Beatton R. , Vernon, 150 mi. house), Wn. (Ewan, Grand Coulee, L. McElroy near Paha, Medical L. , Moses L. , Nepel, Smyrna, Soap L. , Upper Grand Coulee), Id. (Harvard, Jefferson Co. , Montpelier, Moscow), Or. (Crane, Frenchglen, Klamath Falls, Lake Co. , Roseburg, Salem, Sumner L.); paratypes in UW, CAC, ODA, and UBC collections. Distinguished from *ventralis* Mels. by the more extensively developed elytral color pattern, especially the pale lateral margin and the frequent presence of a juxtascutellar spot.

5' Male labrum produced in a lobe that is as long as broad; piceous, the ventral surface at sides and legs variably paler, the pronotum with only the extreme anterior angles pale; 5. 3-5. 7 mm. ; se Or. MALHEURENSIS sp. n.

Type and paratype male: Ore. : Malheur Lake, June 10-21, 1951, Borys Malkin; 8 females, same data, are probably to be associated.

4' Male labrum produced in a trapezoidal lobe that is much longer than wide toward its base; male mandible more elongate, the portion beyond the outer incision about 4 times its width beyond the incision; piceous, the mouthparts, legs, and narrow side margins of the abdomen variably pale; pronotum with anterior angles and sometimes the narrow side margin pale; elytral markings sometimes confluent with the narrow pale lateral margin, sometimes with the spots exhibiting a tendency to be discrete; 5. 4-5. 7 mm. ; se Or. GNATHO LeC.

2' Metasternum with a distinctly incised mesocoxal line extending from the posteriolateral margin of the mesocoxal cavity to the sternal episternal suture; labrum broader than long, unmodified in male

6 Elytra without a juxtascutellar spot

7 Elytral epipleura toward base with a straight well defined sharply incised line extending obliquely 2/3 or more from the inner margin; elytral

pubescence usually somewhat shorter with somewhat shorter less conspicuous flying hairs and with the size usually somewhat greater than in the next species; piceous, the pronotum with the anterior angles rarely paler, the elytra with the standard markings and with or without a narrow pale lateral margin, the venter with the lateral margins variably paler; 4.3-6.1 mm.; s B.C., Wn., Id., Or.; very common; on intertidal mud flats at Nahcotta, Wn. (Pl. II, fig. 2) GEMMATUS Horn

Horn 1890:9-10 (2). Hatch and Kincaid 1958:14 (2). Kincaid, Proc. Wash. St. Ent. Soc. 13, 1961:80 (2).

7' Elytral epipleura toward base without or with a more or less feebly marked irregular incomplete oblique line; elytral pubescence somewhat longer with somewhat longer more conspicuous flying hairs and with the size usually somewhat less than in the previous species; color pattern about as in the previous species but sometimes strongly reduced and sometimes evinced by little more than a variation in the silvery sheen of the pubescence in certain lights; 3.5-4.8 mm.; s B.C., Wn., Id., Or.; common BRUNNEUS Mels.

Horn 1890:10-11 (4). Criddle 1922:63 (1). Stace Smith 1930:24 (1); 1930a:F15 (1). Clark 1949:23 (1). Hatch and Kincaid 1958:14 (2).

6' Elytra with a juxtascutellar spot, the epipleura without or with a rather rudimentary oblique fold at its base

8 General color brownish; pronotum usually slightly darker at middle, the midline sometimes in part paler, rarely entirely brown; elytra with maculation not strongly vittate, with or without pale lateral margins; ventral surface variably paler; 3.3-3.8 mm.; s B.C., Wn., Id., Or. COLLARIS Kies.

8' General color blackish piceous, the pronotum often sharply bordered with pale, the elytral markings strongly vittate; 3.2-4.4 mm.; B.C., Wn., Id., Or. TRISTIS Mann.

Keen 1895:218 (1); 1898:72 (1).

1' First visible abdominal sternite with the stridulating ridge complete, forming nearly a semicircle from the front angle to the posterior margin and thence recurving to the inner coxal margin (subg. LITTORIMUS Gozis). Piceous, sides and mid-line of pronotum obscure testaceous; elytra with the usual maculation, with a juxtasutural pale spot, the pubescence recumbent; legs in great part pale; margins of body not fringed with notably longer hairs; elytral punctation nearly uniform; epipleura with distinct oblique line toward base; metasternum with postcoxal line; 2.2-3.0 mm.; w Wn.; rare MOLECULUS Fall

Family Georyssidae

The Georyssidae or minute mud-loving beetles constitute a single genus living on the margins of streams and frequently covered with mud when collected. Their food habits are unrecorded. In recent years they have been included by several authors among the Palpicornes and van Emden, Proc. Roy. Ent. Soc. London (A) 31 (1-3), Mar. 1956:20-24, on the basis of larval characters, suggests that they are a subfamily of Hydrophilidae. In contradistinction to the Hydrophilidae, however, they have the antennae longer than the palpi, so that I have compromised by placing them in the present position immediately before the Palpicornes.

Georyssus Latr.

Broadly oval, about 5/8 as broad as long; black, shining, glabrous; head completely covered by pronotum, its dorsal surface tuberculate; antennae 9-segmented, the 2 basal segments large, segments 3 to 6 slender, the last 3 segments forming a club, the antennae received in a fossa on the prothorax that emarginates the lateral margin of the pronotum; pronotum somewhat wider than long, widest at base whence the sides arcuate to the arcuate apex, distinctly margined throughout, the marginal beading at the base tuberculate with 2 subparallel rows of similar tubercles extending forward briefly toward each hind angle, the disc with an impressed median line, the anterior third coarsely rugose, the posterior two thirds smooth; elytra with disc with 9 series of very coarse punctures which vary from distinctly narrower to scarcely narrower than the intervals; elytra laterally embracing the abdomen, with several series of tubercles, the apex strongly produced; prosternum very short, transverse, the procoxae very large and flattened; meso- and metasternum and abdominal sternites tuberculate; abdomen with 5 visible sternites, the first enlarged, with a deep sulcus between the first and second visible sternites, the opposing margins of these sternites each with an opposing tooth on each side; 1.4-2.0 mm.; se B.C., Wn., Id., Or.; not rare (Pl. II, fig. 3)

PUSILLUS LeC.

This species is rather variable and I suspect that *californicus* LeC. 1874:51 is a synonym. It was described as "quite distinct from *G. pusillus* by the smaller and more distinct rows of punctures on the elytra," the pronotum with "a more distinct transverse impression."

Series Palpicornes

The Palpicornes are in general characterized by their aquatic habitat and the maxillary palpi as long or longer than the antennae, which are either 8- or 9-segmented with a 4- or 5-segmented club (Hydraenidae) or 7- to 9-segmented with a 3-segmented club (Hydrophilidae). One exception is Ochthebius, in which the maxillary palpi are short, but they may be recognized by their aquatic habitat and, in all but one of the species, the intertidal *vandykei* Knisch, by the more or less extensive translucent lateral pronotal margins. Other exceptions are the Sphaeridiinae and the Chaetarthriinae, in which the maxillary palpi are from 3/4 to 9/10 as long as the antennae. Both these subfamilies have the stream line contours of typical palpicorns, but neither is aquatic. The Chaetarthriinae and a few of the Sphaeridiinae live in mud and other debris along the extreme margins of aquatic situations and the rest of the Sphaeridiinae occur in compost and dung. The Chaetarthriinae are distinguished by the excavation of the first and second visible abdominal sternites, the excavation covered by a backwardly extending fringe of yellow hairs and normally filled with a whitish substance. The Sphaeridiinae, except Sphaeridium, may frequently be recognized by the somewhat flattened mesosternum and the punctate-striate or striate elytra with punctate intervals. The 3 introduced species of Sphaeridium are 3.7-7.5 mm. long, black, the elytra punctate but not striate and with yellowish and/or dull reddish markings. As a rule, the Palpicornes have the tarsal formula 5-5-5, but this may be reduced to 5-4-4 in Cymbiodyta or to 4-5-5 in the males of Berosus and Laccobius.

The Palpicornes are, in general, predators as larvae and feeders on decomposing or living plant tissue as adults, but some adults seem likewise to use animal

food. The common name, "water scavenger beetles," is somewhat a misnomer. See Miller 1963 for a review of the biology of the Hydrophilidae.

Key to Families

1 Antennae 11-segmented, the club consisting of 5 pubescent segments; abdomen with 6 or 7 visible sternites HYDRAENIDAE

1' Antennae 7- to 9-segmented, the club consisting of 3 pubescent segments; abdomen with 5 visible sternites or, if with 6, the sixth is membranous or more or less retracted dorsal to the fifth HYDROPHILIDAE

Family Hydraenidae

(Limnebiidae)

The Hydraenidae or minute moss beetles inhabit the margins or shallow bottoms of aquatic situations. They are, however, unable to swim, simply crawling over the bottom. The ventral surface of the adult "is covered with short dense hydrofuge pubescence. This unwettable pile holds a pillowlike bubble of air over the ventral surface of the beetle while it is under water. To replenish this and the subelytral supply, a beetle crawls to the surface and assumes a nearly horizontal position. It then inclines its body to one side, to bring the angle between the head and prothorax to the surface, and breaks through the surface film with its hydrofuge antennal club. This opens a funnel-shaped passage to the ventral air bubble, and by pulsating its abdominal segments the beetle is able to change the old air for fresh in a short time. Except at this time the antennae are tucked away beside the eyes, and the tactile role they play in terrestrial beetles is taken over by the elongate maxillary palpi." (Leech) Leech 1956:330-334. Arnett 1961:227-229.

Key to Subfamilies and Genera

1 Metatarsi with second segment short, about as long as the third; pronotum at base more or less evidently narrower than the base of the elytra, the surface uneven, coarsely punctate or with a transparent border, the sides sinuate or irregular (subfam. HYDRAENINAE)

2 Maxillary palpi shorter than the antennae, the second segment not surpassing the hind margin of the eye; metacoxae transverse; pronotum variously sculptured, with a translucent border in at least basal half (absent in the intertidal *vandykei* Knisch); abdomen with fifth visible sternite straight OCHTHEBIUS Leach

2' Maxillary palpi much longer than antennae, the second segment surpassing the hind margin of the eye; metacoxae triangular; pronotum distinctly punctate, without translucent lateral border; abdomen with fifth visible sternite curved, the sternites much shorter at the middle than at the sides HYDRAENA Kug.

1' Metatarsi with second segment elongate, longer than the third; pronotum about as broad at base as base of elytra, small, not coarsely punctate or sculptured, the sides evenly rounded; maxillary palpi longer than the antennae (subfam. LIMNEBIINAE) LIMNEBIUS Leach

Ochthebius Leach

Minute beetles 2 mm. or less in length; head typically with a pair of frontal foveae and a single median vertical fovea; pronotum usually with a more or less translucent lateral border that may extend narrowly along the anterior and posterior margins, the disc narrowed behind and marked typically by a median sulcus, anterior and posterior submedian discal foveae, and anterior lateral foveae, any of which may become variously fused or obsolete; elytra usually with 10 punctate striae, the side margins not explanate in Pacific Northwest subgenera. Knisch, Col. Cat. 79, 1924:7-32. Leech 1956:333.

Key to Subgenera

1 Pronotum with more or less evidence of a translucent membranous border
2 Pronotum more or less gradually sinuately narrowed at sides behind subg. OCHTHEBIUS s. str.
2' Pronotum more or less abruptly sinuately narrowed at sides behind, the lateral translucent border before the sinuation narrow to virtually obsolete
3 Pronotum abruptly sinuately narrowed from about middle, the front angles not lobed
4 Pronotum with well marked discal foveae subg. ASIOBATES Thoms.
4' Pronotum without discal foveae subg. HOMALOCHTHEBIUS Kuw.
3' Pronotum abruptly sinuately narrowed from slightly behind apex, with a pronounced angulation at the middle of the sinuation, the anterior margin strongly emarginate within the front angles so that the front angles are in the form of a lobe that is longer than wide subg. BOTHOCHIUS Rey
1' Pronotum without a translucent membranous margin; intertidal subg. COBALIUS Rey

Subgenus Ochthebius s. str.

1 Pronotum with a median sulcus extending 2/3 or more the length of the pronotum, the pronotum without anterior and posterior transverse impressions connecting the discal foveae
2 Elytra with intervals wider than the strial punctures which are shallow, rather poorly defined, and separated longitudinally by half or more their own length
3 Pronotum with the discal foveae more or less discrete and forming definite impressed areas; head and pronotum usually more or less alutaceous; aeneopiceous to nearly black, the legs and sometimes the elytra somewhat paler; l. 5-l. 9 mm.; s B. C., Wn., Id., Or.; common (Pl. III, fig. 4) INTERRUPTUS LeC.

This species as here defined may be composite. Certain populations from east of the Cascades (e. g., a series from Ewan, Wn.) have extensive areas on the pronotum smooth and the discal foveae sublinear and subconfluent, variations in the direction of the next species. I have likewise seen a large (length l. 9 mm.) nearly black variant from a brackish water pond at Anacortes, Wn. Horn 1890a:23 (1). Hatch and Kincaid 1958:11 (2).

3' Pronotum with the discal foveae confluent and present as impressed somewhat sinuate lines, the median sulcus feeble
4 Uniform aeneopiceous, the elytra sometimes somewhat paler, the legs paler; head and pronotum finely alutaceous; l. 6-l. 9 mm.; se B. C., e Wn., Id.,

e Or.; common (Pl. III, fig. 5) LINEATUS LeC.
Horn 1890a:23 (4).

4' Aeneous, the pronotum and elytra piceotestaceous, with the pronotal disc and a common feeble postmedian transverse nebulosity on the elytra somewhat darker and frequently with a similar nebulosity on the humeri; the elytral punctures likewise frequently somewhat darker; head and pronotum finely alutaceous with more or less extensive smooth shining areas on each side of the mid-line; l. 7-l. 9 mm.; se Or. MILLERI sp. n.

Type male, allotype female, and 5 female paratypes: Ore., Sucker Creek Canyon, Malheur Co., June 15-18, 1951, Borys Malkin, in UW and CNHM collections. Named for Mr. David Miller, who suggested that these specimens might represent an undescribed species.

2' Elytra with the punctures as wide or wider than the intervals, the punctures large and coarse, sharply incised, and separated longitudinally by less than half their own length

3 Elytra with the punctures about as wide as the intervals; head and pronotum relatively smooth, alutaceous, the 3 cephalic foveae and the median sulcus and discal and lateral foveae of the pronotum distinct, the median sulcus extending nearly the full length of the pronotum, the translucent margins of the pronotum entire, wider at the sides, narrow along anterior margin, very narrow along posterior margin, the sides somewhat oblique before the subobtuse hind angles and thence sinuate and arcuate to the rectangular front angles, the anterior margin entire within the front angles; piceous black, the legs a little paler; l. 5-l. 8 mm.; se Or.
ABERTI sp. n.

Type and 6 paratypes: Abert Lake, Ore., Lake County, April 18, 1957, Joe Schuh, Coll. Paratypes in UW and Schuh collections.

3' Elytra with the punctures wider than the intervals; head and pronotum coarsely rugosely sculptured, the pair of frontal foveae and median vertical fovea on the head large; pronotum with a narrow median sulcus and coarse discal foveae, the lateral translucent membrane very narrow in front, wider behind, the sides subparallel before the sharply subrectangular hind angles and thence sinuate and arcuate to the narrowly rounded front angles, the anterior margin emarginate within the front angles; black, the legs dark piceous; l. 4-l. 6 mm.; n Id., Or.; rare
CRENATUS sp. n.

Type and 2 paratypes: Boville, Id., June 18, 1932, M. H. Hatch; paratypes: Or. (Crooked Creek in Lake Co., Lakeview, Union Creek in Jackson Co., Wilson R.) in UW, Schuh, and CNHM collections.

1' Pronotum with the median sulcus obsolete or very short, interrupted by the anterior and posterior transverse impressions connecting the discal impressions, the lateral limits of these transverse impressions connected by a more or less evident longitudinal line; head and pronotum variably alutaceous in the impressed areas, the elevated areas variably smooth and shining; pronotum with the translucent lateral membrane narrow behind, very narrow in front; elytral punctures small, much narrower than the intervals; dark piceoaeneous, the legs paler; l. 8-l. 9 mm.; B. C., Wn., Id., Or.; common east of the Cascade Mts. (Pl. III, fig. 6)
HOLMBERGI Mann.

Keen 1905:297 (1). Hatch and Kincaid 1958:11 (2).

Subgenus Asiobates Thoms.
(Trymochthebius Kuw.)

1 Pronotum with the margins before the sinuation more or less arcuate, rectangularly to acutely angulate at the point of constriction, the translucent border before the sinuation narrow, the punctation distinct and close but not quite as close as in *rectus* LeC.; elytral punctures not quite as sharply incised as in *rectus* LeC.; head and pronotum shining between the punctures
2 Pronotum with anterior margin within the front angles entire, the side margins between the front angles and the median constriction not angulate; elytra more narrowly ovate; blackish to brownish bronze, shining, the legs paler; l. 7-2 mm.; Wn., se Id., Or. (Pl. III, fig. 7)
DISCRETUS LeC.

Horn 1890a:21-22 (4).
INSULANUS Brown, Can. Ent. 63, 1931:116-118, from Victoria, B. C. is described as distinguished by the narrower and shorter impressed median line of the pronotum, the discal foveae smaller; l. 8 mm.

2' Pronotum with anterior margins within the front angles emarginate, the lateral margins between the front angles and the median constriction typically somewhat angulate; elytra more broadly ovate; brownish bronze, shining, the legs paler; l. 5-1. 8 mm.; se B. C., ne Wn.
MIMICUS Brown

Brown, Can. Ent. 65, 1933:45 (1).

1' Pronotum with the margins before the sinuation nearly straight, rectangularly or slightly obtusely angulate at the point of constriction, the translucent border before the sinuation broader; punctation of the pronotum and elytral striae sharply incised and somewhat closer than in the previous species; head, pronotum, and elytra shining between the punctures; brownish to blackish bronzed, the head a little darker, the legs very slightly paler; l. 5-1. 9 mm.; w Wn., se Id., se Or. (Pl III, fig. 8)
RECTUS LeC.

Hatch and Kincaid 1958:11 (2).

Subgenus Homalochthebius Kuw.

Blackish to brownish bronze, the sides of the elytra and/or the pronotum sometimes somewhat paler, the apex of the elytra usually paler; head with clypeus alutaceous and finely punctate, front shining, coarsely punctate; pronotum shining, coarsely punctate, the median line finely impressed, discal foveae absent or represented by evanescently impressed areas, the translucent lateral border virtually absent before the sinuation; elytra shining, the intervals wider than the impressed punctate striae; l. 8-2. 1 mm.; se B. C., Wn., Or. (Pl. III, fig. 9) CRIBRICOLLIS LeC.

Subgenus Bothochius Rey
(Odontochthebius Horn)

Head with the fovea on the vertex transverse, traversed by a longitudinal carina along its midline, and connected at each end by a deeply impressed sulcus with one of the frontal foveae; pronotum with lateral translucent borders broad
1 Head and pronotum minutely punctate; pronotum with deeply impressed median sulcus, discal foveae, and lateral anterior foveae; elytra with coarsely

punctate impressed striae, the lateral margins feebly explanate; brownish aeneous, the legs paler; l. 5 mm. ; sw Id. FOSSATUS LeC.

Horn's reference (1890a:22) to *nitidus* LeC. from "Or. " perhaps refers to this species. Fall, Can. Ent. 1919:213. *foveicollis* LeC. Horn 1890a:20.

1' Head and pronotum impunctate; pronotum with the posterior discal foveae absent, the anterior discal foveae very small; elytra with unimpressed series of very minute almost invisible punctures, the lateral margins narrowly explanate; dark castaneous, the head blackish, the legs testaceous; l. 4 mm.; sw Or. (Glendale) (Pl. III, fig. 10) LAEVIPENNIS LeC.

Subgenus Cobalius Rey

Dull black, faintly bronzed, the legs piceous; head with a pair of longitudinal impressions on front between eyes; pronotum without translucent margins, transverse, widest before middle, the apex wider than the base, the sides arcuate, suboblique behind, the angles rounded; pronotal disc with a faint median impressed line that may be interrupted behind, faint sublateral and submedian longitudinal impressions accompanied by sinuate lines and very faint post- and antemedian transverse impressions; elytra rugose with longitudinal series of feebly impressed punctures and feebly prominent intervals; l. 4-l. 5 mm. ; nw B. C. (Queen Charlotte Is. —CNC) VANDYKEI Knisch

Taken by Van Dyke from the crevices of inter-tidal rocks at Moss Beach, San Mateo Co., Calif. Knisch, Col. Cat. 79, 1924:31. Leech 1956:333 (1). *lapidicolus* Van D. (nec Woll.), Ent. News 29, 1918:306.

Hydraena Kug.

Above strongly punctate; pronotum about 2/3 as long as broad, broadly deplanate at sides with evidence of anterior and posterior sublateral foveae, the base and apex subequal, the sides broadly feebly sinuate before the slightly obtuse hind angles; elytra oval, wider than the pronotum at base, with about 14 coarsely punctate striae; l. 7-2. 2 mm. (Pl. II, fig. 4) VANDYKEI d'Orch.

a Usually piceotestaceous, at times varying to nearly black, the appendages testaceous; pronotum more or less coarsely subcontiguously punctate, the hind angles more nearly rectangular; elytral striae somewhat more strongly impressed, the punctures coarser, subquadrate, and closer together, the intervals more prominent; s B. C., w Wn., n Id., Or. subsp. VANDYKEI s. str.

d'Orchymont, Ann. Soc. Ent. Belg. 63, 1923:42.

a' Black, the appendages testaceous; pronotum usually somewhat less coarsely closely punctate, the hind angles somewhat more obtuse; elytral striae usually somewhat less strongly impressed, the punctures smaller and more separated, the intervals somewhat less prominent; se B. C., s Id., se Or. subsp. NIGER nov.

Type and 4 paratypes: Ida.: Galena, Blaine Co., July 12, 1952. B. Malkin; paratypes: B. C. (Trinity Valley, Wyndel), Id. (Alturas Lake, Challis Nat. For., Stanley L.), Or. (Fish L. in Steens Mts., Lakeview) in UW, CNC, and UBC collections. The specimens assigned to this subspecies are variable, some being distinctly more finely distantly punctate on the

pronotum and elytra than others and some intergrading with the typical form. It is possible that more than one taxon is represented.

Subfamily Limnebiinae

Limnebius Leach

Oval, somewhat narrowed behind, the outline of pronotum and elytra nearly continuous, the elytra somewhat more broadly rounded and exposing the pygidium in the male, somewhat more narrowly obliquely rounded and covering the pygidium in the female; black varying to rufopiceous, the legs scarcely paler; dorsum finely alutaceous with sparse fine long decumbent pubescence, head and pronotum finely sparsely punctate; male with the sixth visible sternite of abdomen as long as fourth and fifth combined, with a large shallow median depression, the posterior margin feebly tuberculate at middle; 1.5-1.7 mm.; se B. C., Wn., Id., Or. (Pl. II, fig. 5)
COLUMBIANUS Brown

Brown, Can. Ent. 42, 1930:5-6 (l).

Family Hydrophilidae

By David C. Miller, David V. McCorkle,

and Melville H. Hatch*

Key to Subfamilies

1 Pronotum not smooth but with 5 deep longitudinal grooves or strongly granulate with 5 more or less distinct pits; body more elongate and less streamlined; eyes protuberant

2 Pronotum strongly granulate, with 5 more or less distinct pits, considerably narrower than the base of the elytra; antennae with not more than 3 segments basal to the cupule; scutellum very small
HYDROCHINAE

2' Pronotum with 5 deep longitudinal grooves, as wide as the base of the elytra; antennae with 4 or 5 segments basal to the cupule
ELOPHORINAE

1' Pronotum smooth or at most coarsely punctate, as wide as the base of the elytra, the side margins smoothly continuous with the sides of the elytra except in Berosus; eyes not protuberant except in Berosus

3 First segment of meso- and metatarsi elongate, longer than the second; antennae usually longer than the maxillary palpi; maxillary palpi with the antepenultimate or second segment (the first is very small) much thicker than the others; antennal club symmetrical, the cupule small and fitting tightly against the first segment of the club; inhabitants of dung and compost or other damp terrestrial situations SPHAERIDIINAE

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*The subfamily Elophorinae is by McCorkle, the subfamily Sphaeridiinae is by Hatch, and the other subfamilies and the key to the subfamilies are by Miller.

3' First segment of meso- and metatarsi very short or these tarsi only 4-segmented

4 First 2 abdominal sternites with a common excavation normally filled with a bilobed hyaline mass supported by a fringe of long golden hairs attached to the anterior margin of the first sternite; antennae longer than the maxillary palpi; inhabitants of mud CHAETARTHRIINAE

4' First 2 abdominal sternites not excavated; antennae usually about equal in length to or considerably shorter than the maxillary palpi; aquatic

5 Pronotum narrower than the base of the elytra; head markedly deflexed; eyes protuberant; meso- and metatibiae fringed with long swimming hairs BEROSINAE

5' Pronotum as wide as the base of the elytra, the side margins smoothly continuous with the sides of the elytra; head not markedly deflexed; eyes not protuberant; tibiae not fringed with swimming hairs although the tarsi may be so fringed

6 Meso- and metasternum with a continuous longitudinal median keel prolonged posteriorly into a spine which projects between the metacoxae HYDROPHILINAE

6' Meso- and metasternum without a continuous common median keel HYDROBIINAE

Subfamily Hydrochinae

Hydrochus Leach

Body usually covered dorsally, at least in part, with metallic scales; length under 4.5 mm.

1 Elytra markedly inflated behind the middle, the scales not coalesced into interstrial metallic lines, the interstriae without raised areas; scales green, the background color dark brown; aedeagus with basal piece more than twice as long as the parameres, which latter flare from the base and then narrow to a long point; 2.2-3.6 mm.; se B.C., e Wn. CURRANI Brown

1' Elytra not or only very slightly inflated behind the middle, the scales when present tending to coalesce in some areas into raised metallic interstrial lines as follows: anterior portions of interstriae 3 to 5 and 7 to 9, the portion before the middle of interstriae 5 to 9, the portion behind the middle of interstriae 3 to 5; scales golden to golden green, the background color dark brown to black; aedeagus with basal piece only a little longer than the parameres

2 Aedeagus with tips of parameres pointed, not sagittate (Pl. VII, figs. 13, 14); pronotal foveae deeper than in *squamifer* LeC., less densely squamose than the surrounding areas; pronotum with sides frequently somewhat more sinuate than in *squamifer*; elytra usually with few or no scales; 3-3.5 mm.; se B.C., e Wn. PSEUDOSQUAMIFER Mil. sp. n.
Holotype, male: Creston, B.C., 19-IV-1931, G. Stace Smith in CNC; paratypes, male: Mich. (Ann Arbor and Washtinaw Co.), Wn. (Dry Falls in Grand Coulee).

2' Aedeagus with tips of parameres together sagittate (Pl. VII, figs. 15, 16); pronotal foveae shallow and nearly as densely squamose as the surrounding areas; pronotum with sides usually not sinuate; elytra with few to many scales; 3.5-4.5 mm.; s B.C., Wn., n Id., Or. (Pl. II, fig. 6; Pl. VII,

figs. 15, 16) SQUAMIFER LeC.

The identity of this species is uncertain because LeConte's type is a female; topotypical males would be required to settle the matter. Stace Smith 1930:23 (1). Leech 1956:342. *excavatus,* Hatch (nec LeC.) 1933:29 (2). Hatch and Kincaid 1958:11 (2).

Subfamily Elophorinae
(Helophorinae)

Elophorus F. 1775*
(Helophorus Ill. 1801)

Members of this genus frequently occur in grassy ephemeral ponds or along margins where as adults they feed on the softer parts of the leaves of dead grass and possibly on algae. The larvae of some of the species inhabit the layers of wet decaying grass exposed at the margin of the pond as the water level recedes in the spring or summer, preying on dipterous larvae and pupae and probably on other organisms. Adults sometimes fly and have been taken in light traps.

Pacific Northwest species have the antennae 8- or 9-segmented, with 4 or 5 segments basal to the cupule, the terminal 3 segments forming a pubescent club; pronotum with 5 longitudinal grooves (excluding the marginal grooves), the submarginal grooves usually with a small pit posteriorly, the lateral margins minutely serrate, usually with a tuft of hair at the front angles, often with minute

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*The present is the first time since Blatchley's *Coleoptera of Indiana* (1910) that an attempt has been made to treat all the species of this extraordinarily difficult genus for any single portion of North America. Beginning in the 1930's a study of the Nearctic components of the genus was undertaken by F. W. Winters (1885-1946) of San Francisco and F. K. Chamberlain (1893-1948) of the New York State Museum at Albany at the same time that A. d'Orchymont (d. 1947) of the Brussels Museum was publishing notes and isolated descriptions of such Nearctic material as came his way. The studies of these men showed the considerable number of species present in our fauna as well as the necessity of referring to the male genitalia for their adequate recognition. None of these men, however, was able to complete a revision of the Nearctic species.

In view of the desirability of including this genus in my *Beetles of the Pacific Northwest,* I suggested to Mr. David McCorkle in 1959 that he undertake a continent-wide study of the genus. The first results of this study are embodied in the present analysis of the Pacific Northwest species (about half the Nearctic fauna), which McCorkle plans to follow by a monograph covering the entire Nearctic area. Because of the uncertainties that still accompany our understanding of the species in this genus, Mr. McCorkle has made the descriptions of the species somewhat longer than those usually employed elsewhere in this work.

The authorities in charge of the insect collection at Cornell University have been extremely cooperative in lending us the Winters-Chamberlain collection of Elophorus and manuscript notes relating to the same. Wherever possible the manuscript names preserved in the Winters-Chamberlain collection have been used in naming undescribed species and the types and allotypes of such species deposited in the Cornell collection. — *Melville H. Hatch*

hairs between the serrations; elytra punctate-striate, often with dark markings near the middle in intervals 1 to 3 or 4 in the form of an anteriorly pointing "V," the point of the "V" being on the suture, an elongate spot on interval 7 slightly anterior to the point of the "V," sometimes with a light patch at the middle of the apical third of each elytron; eleventh elytral interval carinate but forming a pseudoepipleuron only in the subgenus Cyphelophorus; most species with rather long hairs arising from intercalary elytral punctures (these hairs usually damaged in mounted specimens); venter pubescent; portions of the head and pronotum may have circular flat-topped granules, each granule with a central puncture, these punctures persisting even in areas where the granules are obsolete. The terminology of the intervals and grooves of the pronotum (Pl. II, fig. 7) is after Balfour-Browne (1958:91).

The aedeagus consists of a pair of variously shaped, often somewhat triangular, parameres joined at their bases to the basal piece, the sclerotized portion of which is in the form of a broad inverted trough. Inserted between the parameres into the median portion of the basal piece is the triangular median lobe or penis, its lateral margins fitted into grooves in the bases of the median margins of the parameres. From the base of the median lobe 2 struts or apophyses extend into the basal piece, where they curve dorsally toward the floor of the trough. Seen best in ventral view is a darkened bandlike area, the basal margin of which apparently corresponds to the ventral basal margin of the parameres. The parameres are often minutely punctate, but this is not always shown in the figures. The "middle of the median lobe" is the region halfway between the apex of the median lobe and the level of the most posterior portion of the inner margin of the struts. The width of the parameres is measured at a point half the median lobe length from their apices. The terminology is, in general, after Lindroth and Palmen in Tuxen (1958) but see also Sharp 1915:27-30. Unfortunately, the sex of a specimen cannot usually be determined without beginning a dissection.

Key to Subgenera

1 Elytra with a juxtascutellar striole, the odd numbered intervals each with a series of elongate tubercles subg. CYPHELOPHORUS Kuw.

1' Elytra without a juxtascutellar striole, the odd numbered intervals flat or raised but not tuberculate subg. ELOPHORUS s. str.

Subgenus Cyphelophorus Kuw.

Black; clypeus and epicranium granulose throughout, the granules uniform in size but denser on the epicranium; antennae 9-segmented; pronotum with anterior margin strongly arched at middle and curved forward at front angles; pronotum with submedian grooves irregular, the posterior half of the marginal grooves indistinct, the intervals uniformly coarsely granulose; hairs on elytral intervals uniformly short and curved; lower surface of the carina of the eleventh elytral interval forming a broad pseudoepipleuron; tarsi lacking long hairs; parameres with outer margins straight or feebly sinuate, nearly parallel in normal position, the inner margins repand and diverging to their apices; median lobe bluntly rounded at apex; sides of basal piece trough broad; aedeagus 0.62 mm. long (Pl. V, fig. 1); 2.8-3.5 mm.; s B.C., wWn.; rare

1. TUBERCULATUS Gyll.

Hamilton 1894:360 (2). Hatch 1933:29 (2).

Subgenus Elophorus s. str.
(Atracthelophorus Kuw.)*

1 Antennae 9-segmented, rarely 8- or 8/9-segmented in some populations of *auricollis* Esch.

2 Middle pronotal intervals granulose, sparsely so in *brevipalpis* Bedel; terminal segment of maxillary palps symmetrical or nearly so; aedeagus with median lobe at middle subequal in width to parameres at an equal distance from their apices

3 Odd numbered elytral intervals raised, particularly interval 5 and interval 3 at base; margins of coronal suture nearly parallel for most of length; pronotal intervals rather densely distinctly granulose; head black to piceous, often with weak metallic reflections, evenly coarsely granulose; pronotum piceous to ferrugineous, the marginal grooves and/or the anterior margin sometimes somewhat paler, sometimes with faint metallic reflections, portions of marginal and submarginal grooves wide, the intervals strongly granulose, the granules somewhat feebler in raised areas of the internal intervals, granules on external intervals smaller than the others; lateral pronotal margins straight to feebly sinuate behind; pronotum rather strongly convex; elytra dark piceous to ferrugineous or ferruginotestaceous or light slaty, the dark spot pattern nearly always present and occasionally also the light posterior patches, the strial punctures large and coarse; venter black to ferruginotestaceous, often paler laterally on prothorax and toward apex of abdomen; aedeagus 0.5-0.6 mm. long, the lateral and median lobes nearly similar, bluntly pointed (Pl. V, fig. 2); 2.5-4 mm.; B.C., Wn., Or.; not uncommon (Pl. II, fig. 7; Pl. V, fig. 2)
2. AURICOLLIS Esch.
Clark 1948:26 (1). *inquinatus* Mann. Keen 1895:167 (1). Hatch 1933:29 (2).
One male from sw Id. (Sawtooth Mts.) probably belongs here: 2.5 mm. long, the odd elytral intervals less prominent but otherwise similar.

3' Elytral intervals uniform, more or less flat; margins of coronal suture diverging anteriorly; pronotal intervals often only sparsely granulose, sometimes smooth, the surface irregular, not flat as in the next species; male unknown from Pacific Northwest except in se Id.; head above black to piceous, usually shining with weak metallic reflections, granulose, rugose in the most prominent areas; pronotum piceous to ferrugineous, shining, usually with at least weak metallic reflections, the anterior margin sometimes ferruginotestaceous, the marginal and submarginal grooves wider than the others, the external intervals most prominently granulose, the internal intervals obscurely granulose with the raised central area rugose or smooth and punctate, the granules subequal, the lateral pronotal margins straight to weakly sinuate behind; elytra ferruginotestaceous or testaceous or grayish, nearly always paler than head and pronotum, seldom uniformly colored, almost always with the dark spot pattern; black to

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*Atracthelophorus is distinguished from Elophorus s. str. by the shape of the terminal segment of the maxillary palps, but this character is variable and, moreover, separates certain otherwise very closely related specific or even cospecific populations.

piceous beneath, sometimes paler laterally on prothorax and toward tip of abdomen; legs usually concolorous with the predominant elytral color, the tarsi dark; aedeagus 0.4-0.46 mm. long, the median lobe more sharply pointed and somewhat narrower than the parameres, the struts scarcely extending anterior to the base of the parameres when the apices of the parameres are even with the apex of the median lobe (Pl. V, fig. 3); 2.3-3.8 mm.; s B.C., e Wn., Id., Or.; very common

3. BREVIPALPIS Bed.

This Holarctic species is very similar to *granularis* L., from which it is apparently distinguished as follows: (1) The size averages greater in *brevipalpis* Bed. —2-2.8 mm. in length in contrast to 2-2.5 mm. (Balfour-Browne 1958:113) (2) The last segment of the maxillary palps in *brevipalpis* Bed. varies from perfectly symmetrical to a condition in which its inner margin is considerably less convex than its outer margin, the greatest width of the segment at its middle. In *granularis* L. this segment is more obviously asymmetrical, its greatest width sometimes beyond the middle. (3) The apices of the parameres and of the median lobe of the aedeagus are less bluntly rounded in *brevipalpis* Bed., somewhat broadly arcuate in *granularis* L. Males, however, are absent from most Pacific Northwest populations. Sharp, Ent. Mo. Mag. (3) 2, 1916:193, fig. 63 (Atracthelophorus). Chiesa, Hydrophil. Europae 1959:87, fig. 119. *granularis* auct. (nec L.) Leng 1920:83. Leng and Mutchler 1927:18. Blackwelder 1939:18. d'Orchymont 1934:200; 1945:7.

2' Middle pronotal intervals flat, smooth, punctate, rarely granulose at anterior third; terminal segment of maxillary palps markedly asymmetrical; aedeagus with median lobe at middle much narrower than parameres, parameres with outer margins slightly sinuate at middle; head above black or picinus, epicranium rugose or weakly granulose at margins, particularly near the eyes, otherwise smooth and punctate; pronotum black or dark piceous to very reddish ferrugineous, shining, usually without metallic reflections, the grooves moderately shallow, the marginal grooves rather narrow with their margins distinctly defined and usually quite regular; pronotal intervals usually with almost no granules, punctate, smooth, glossy, the external intervals and anterior portion of the internal intervals sometimes weakly granulose, the lateral margins evenly rounded to almost straight behind; elytra piceous, ferrugineous, ferruginotestaceous or slaty, usually with the dark spot pattern present and sometimes strong, the intervals moderately rounded to flattened, equally prominent, the strial punctures small, often only slightly wider than the weakly impressed striae; venter black, sometimes with the prothorax piceous laterally, the epipleura dark at inner margin gradually becoming paler laterally, the appendages dark ferrugineous to testaceous or luteous; aedeagus 0.7-0.8 mm. long, the parameres somewhat triangular, their outer margins often weakly repand, their apices sharply pointed and usually feebly produced, the median lobe narrow and bluntly pointed (Pl. V, fig. 4); 2.8-3.8 mm.; ne B.C., se B.C. (a female, Copper Mt.); not uncommon in ne B.C.

4. JACUTUS Pop.

1' Antennae 8-segmented

4 Terminal segment of maxillary palps symmetrical, spindle shaped; head above dark piceous with purplish metallic reflections, coarsely granulose throughout, the epicranial suture rather deeply impressed; pronotum piceous to dark ferrugineous, some or, as in the type, all the intervals with

metallic reflections, intervals coarsely granulose, the marginal and submarginal grooves wider than the others and somewhat paler (flavescent in type), lateral margins straight at posterior third, posterior angles strongly obtuse; elytra piceous (type) to ferrugineous with several pale ferrugineous patches, intervals feebly convex, equal except at base where the odd intervals are subprominent, the hairs moderately short, feebly erect in dried specimens; venter black or piceous, the apical abdominal sternites ferrugineous; legs ferrugineous; aedeagus 0.47 mm. long, widest at posterior fourth, parameres broad throughout, slightly lobed at apex, the outer margins of the parameres in a normal position diverge as almost straight lines from their base to the widest portion of the aedeagus whence they curve inward rather abruptly to the apices, median lobe bluntly rounded and much narrower than the parameres at its middle (Pl. V, fig. 5); 2.5-2.6 mm.; e Or. 5. HATCHI McC. sp. n.

Type male, allotype female and 2 male paratypes: Ore.; Steens Mts., Fish Lake, 7500', June 22-26, 1951, Borys Malkin; paratypes: Or. (Lunch Cr., Dixie Pass, Blue Mts., 2 females, in UW and CNHM collections). It is a pleasure to name this species for Dr. Melville H. Hatch, my patient advisor and the editor of this book.

4' Terminal segment of maxillary palps asymmetrical, the inner margin rather distinctly less convex than the outer

5 Length 2.1-2.9 mm., usually under 2.5 mm.; usually black with piceous to ferrugineous legs; elytral intervals somewhat convex, equally prominent throughout; head above black, shining, never metallic, the granules obsolete, often with only the punctures remaining, terminal segment of maxillary palps short; pronotum black, shining, rarely dark piceous or with weak metallic reflections, evenly moderately convex, grooves very shallow, internal and middle intervals mostly smooth and punctate, external intervals with granules reduced but usually coarser than those of the other intervals in Wn. and Or. specimens, usually obsolete in B.C. specimens; lateral pronotal margins usually evenly convex, sometimes weakly straightened at posterior third; elytra black, sometimes piceous to slaty toward apices, never spotted or with pale patches, the strial punctures not much deeper or wider than the striae; venter black, sometimes piceous laterally on prothorax and with piceous to ferrugineous epipleura; aedeagus 0.40-0.47 mm. long, parameres broad at base but rather narrow at posterior third, median lobe blunt and at its middle equal to or broader than parameres (Pl. V, fig. 6); 2.1-2.9 mm.; se B.C., e Wn., e Or.; very common 6. NITIDULUS LeC.

A single female, in a series of 25 from Enderby, B.C., ferruginotestaceous elytra with a piceous rectangular spot at basal half of intervals 1 to 3, interval 4 at about basal fourth interrupted by a broad connection between intervals 3 and 5. Leech 1943:26 (1). *gregalis* d'Orch. 1945:17.

5' Length 3 mm. or greater or, if less, not predominantly black

6 Pronotum with granules of external interval not invading marginal groove to the extent that the median border of the marginal groove is indistinct; aedeagus with parameres and median lobe not evenly strongly attenuate as in fig. 20 of Plate V.

7 Pronotum with marginal and submarginal grooves not almost meeting at a constriction of the external interval or, if so, the median lobe of the aedeagus at its middle is not twice as broad as the parameres at the same distance from their apices (Pl. V, fig. 7)

8 Pronotum with more than 1/3 of the surface of the intervals granulose (sometimes sparsely so) or alternate elytral intervals distinctly more prominent or aedeagus with median lobe at middle less than twice as broad as the parameres at the same distance from their apices; usually less than 5 mm. long

9 Aedeagus with lateral margins of parameres broadly evenly arcuate, the inner margins distinctly sinuate subapically (Pl. V, fig. 7); pronotum strongly transverse; elytral intervals strongly convex, equal in prominence, the striae deep; head above dark piceous, shining, with or (type) without weak metallic reflections, with crowded irregular flattened granules; terminal segment of maxillary palps short, widest near middle, distinctly asymmetrical; pronotum dark piceous, with or (type) without weak metallic reflections, with flattened irregular granules, portions of posterior parts of the middle and internal intervals smooth and shining and punctate, the lateral margins rather evenly convex, somewhat oblique in posterior third, the anterior region rather strongly convex; elytra dark piceous to brownish, paler toward apex, the dark spot pattern scarcely evident or (type) absent, without pale spots, the hairs very weak and short, mostly procumbent in dried specimens, the strial punctures usually small but deep, scarcely wider than the striae; venter black or with piceous areas on prothorax and on the terminal abdominal sternites; legs rufopiceous, paler than elytra; palps and antennae flavescent; aedeagus 0. 54 mm. long, widest at about the middle of the parameres with parameres in normal position, the parameres with apices pointed, the median lobe bluntly arcuate (Pl. V, fig. 7); 3. 2-3. 5 mm. ; w Or. 7. OREGONUS McC. sp. n.

Type male: Lake of Woods, Ashland Rd., Or. VI-11-[19]45, K. M. Fender; allotype female: Or.: Upland Meadows, Ashland-Lk. of Woods Rd., June 11, 1945, K. M. Fender; female paratypes: Or. (Corvallis, Eugene, McMinnville, Sand Lake) in UW and CAS collections.

9' Aedeagus with lateral margins of parameres not evenly arcuate or, if so, the inner margins are at most only feebly sinuate subapically

10 Aedeagus with apices of parameres turned inward, subapically arcuate along lateral margins, the inner margins somewhat sinuate subapically

11 Aedeagus with margins of median lobe continuously convergent to the broadly rounded apex, the parameres heavily clouded, distinctly rather densely minutely punctate (visible at about 100 x magnification), usually proportionately broader than in *ledatus* d'Orch. ; terminal segment of maxillary palps comparatively short (0. 19-0. 21 mm. long), scarcely produced at base; head above black to piceous, with metallic reflections, granulose, granules of epicranium most prominent, granules confluent in central raised area of clypeus and at anterior margin as well as on each side of the coronal suture, coronal suture broader than the clypeal suture; pronotum black to piceous, usually with purplish metallic reflections strongest on groove floors except marginal grooves which are usually paler than the others, grooves moderately shallow, mostly rather broad, the middle portion of median groove especially broad, submedian grooves widely open behind, intervals coarsely granulose but smooth or with granules confluent on raised areas of internal intervals; pronotum with lateral margins oblique to somewhat sinuate in posterior third, the posterior angles nearly right, scarcely obtuse; elytra usually paler than pronotum (scarcely so in type), palest posteriolaterally, piceous to ferrugineous (slaty in some specimens from Charleston, Or.), usually with the dark spot pattern evident and a

distinct posterior pale spot on each elytron, the intervals very flat, broad and of equal prominence; each elytron feebly protuberant at base near suture, the striae scarcely evident at base becoming increasingly evident toward apices, dried specimens with long weak and usually procumbent hairs; venter black, piceous to ferrugineous laterally on prothorax and on epipleura, frequently with some paler area at apex of abdomen as follows: 19 of 20 specimens from Charleston, Or. and 3 out of 9 from Stiltcoos Outlet, Or.; all 6 specimens from Tokeland, Wn. and the only specimen from Boyer, Or. have an entirely black abdomen; legs nearly concolorous with elytra, the apex of the terminal tarsal segments darker; aedeagus 0.57-0.60 mm. long, the parameres with their apices sometimes truncate, the median lobe blunt at apex, the aedeagi of the Charleston, Or. specimens usually paler than those of specimens from elsewhere (Pl. V, figs. 8, 8a); 3.5-4.1 mm.; w Wn., w Or. 8. FENDERI McC. sp. n.

Type male, allotype female and 50 paratypes: Ore., Charleston, VI-16-1957 (attracted to the shiny hood of an automobile), K. M. Fender, leg.; paratypes: Wn. (Tokeland), Or. (Boyer, Stiltcoos Outlet in Lane Co.); in UW, Fender, and McCorkle collections. It is a pleasure to name this species for my friend, Kenneth M. Fender, whose efforts at collecting have helped much in making this study possible.

A series of 16 females from Pistol River, Or. are somewhat darker with purplish metallic reflections on the pronotal intervals but not in the grooves and with the outer margin of the terminal segment of the maxillary palps evenly arcuate whereas it is straightened at the base in typical *fenderi*. They are doubtfully assigned to this species.

All specimens of *fenderi* except possibly that from Boyer, Or. have come from the coast, suggesting that *fenderi* may possibly be associated with salt marshes.

11' Aedeagus with margins of median lobe parallel for a variable distance before apex, the parameres usually indistinctly sparsely minutely punctate (visible at 100 to 150 x magnification); terminal segment of maxillary palps usually distinctly produced at base, 0.26-0.30 mm. long; head above black or dark piceous, shining, without metallic reflections, evenly granulose, the clypeal tumescence rather smooth, coronal suture scarcely broader than clypeal suture; pronotum black to piceous, very rarely with submetallic reflections, the grooves usually rather narrow, shallow and evenly impressed, the intervals wide, flat, and evenly granulose, the internal intervals at most only feebly raised at middle and sometimes with subobsolete granules; pronotum with lateral margins evenly arcuate to somewhat oblique behind; elytra piceous to dark ferrugineous, only rarely with a weak pale patch at center of apical third of each elytron, dark spot pattern usually obsolete or absent, intervals only moderately convex, sometimes flattened (especially in larger specimens), nearly equal in prominence, the striae evident throughout, fresh specimens (from Bothell, Wn.) with each interval with 6 to 10 hairs about 0.26 mm. long which are erect when the beetle is submerged; venter black, sometimes piceous laterally on prothorax and around abdominal spiracles; legs nearly concolorous with elytra, often darker proximally and paler distally except for the dark enlarged terminus of the last tarsal segment, the tarsi with numerous long swimming hairs which are especially evident in fresh specimens; aedeagus 0.53-0.67 mm. long, the parameres usually obliquely truncate, the median lobe blunt with

its apical margin variable in outline (Pl. V, figs. 9, 9a, 9b); 3-5 mm.; se B. C., Wn., w Or.; common west of Cascade Mts., rare elsewhere
9. LEDATUS d'Orch.

This species was described from Corvallis and Gaston, Or. and d'Orchymont was certainly in error in stating that the aedeagus is not useful in recognizing it. See the discussion under *lecontei* Knisch for further comments. D'Orchymont 1945:20 (4).

A damaged male and a female from Mt. Hood, Or. in the UW collection represent an undescribed species close to *fenderi* McC. sp. n. and *ledatus* d'Orch., but the material is insufficient to characterize it properly.

10' Aedeagus with the apices of the parameres not turned in or, if so, the appearance is due to their obliquely truncate apices rather than to a subapical concavity of the inner margins and a subapical convexity of the outer margins

12 Aedeagus with the apices of the parameres at least feebly produced and usually rather distinctly obliquely truncate (they may appear pointed under low magnification) and/or the median lobe at its middle somewhat broader than the parameres at the same distance from their apices, the apex usually broadly rounded, rarely pointed (Pl. V, fig. 10, etc.)

13 Middle pronotal intervals at both ends approximately equal in width, the submedian pronotal groove usually repand; alternate elytral intervals usually evidently prominent, especially interval 5; head above black or (type) dark piceous, unevenly feebly granulose, the granules mostly flattened, most prominent on epicranium, obsolete on the clypeal tumescence; coronal suture narrow, deep, its margins parallel; terminal segment of maxillary palps only weakly elongated at base; pronotum black to piceous, rarely dark ferrugineous, the type dark piceous; pronotum shining, never metallic, the grooves shallow to moderately deep, usually comparatively narrow, the median groove especially so, the granules of the internal and middle intervals usually obsolete in posterior one third to two thirds, smooth and punctate or occasionally feebly rugose, the external intervals unevenly sparsely granulose, the granules somewhat smaller than in the other intervals; lateral pronotal margins evenly convex to feebly oblique behind; elytra rarely nearly black, usually dark piceous (type) to dark ferrugineous, dark spot pattern usually indistinct, the intervals usually convex, some of them with a few long hairs, strial punctures rather small but deep; venter black, piceous laterally on prothorax and sometimes posteriorly on abdomen; legs concolorous with elytra or paler, the tarsi with long swimming hairs; aedeagus 0.64-0.68 mm. long, the parameres with apices feebly produced, usually obliquely minutely truncate, the outer margins very feebly to prominently inflated subapically (feebly so in type and other specimens from B. C.), width of parameres variable, narrower in B. C. specimens, the median lobe variable in width and degree of pointedness (Pl. V, figs. 10, 10a, 10b); 3.1-4.5 mm.; se B. C., e Wn., se Id., e Or.
10. COLUMBIANUS McC. sp. n.

Type and paratype male: Vernon, B. C., 20. V. 1939, Hugh Leech, in Winters-Chamberlin collection at Cornell Univ.; allotype female and 24 paratypes: Enderby, B. C., 1. VI. 1945, H. B. Leech, in CAS coll.; paratypes: B. C. (Boitano L., Enderby, Hanceville, Kamloops, Moyie, Nicola, Riske Cr.), Wn. (Dry Falls in Grand Coulee, Steptoe Butte State Park), Id. (Bloomington L. in Wasatch Mts., Montpelier), Or. (Algoma near Klamath Falls, 16 or 20 mi. s of Bend, Buena Vista in Harney Co., Burns,

Barkley Springs near Klamath Falls, Chewaucan R. near Valley Falls in Lake Co., Crooked Cr. 12 mi. n of Lakeview, Fish L. in Steens Mts., Frenchglen, Klamath Falls, 10 mi. e of Lake of the Woods, Prairie City along John Day R., 23 mi. e of Prineville, Quartz Mt. in Lake Co., Silvies Valley in Grant Co., Unity Reservoir, Upper Klamath L.), Cal. (6 mi. s of Macdoel), Colo. (Rocky Mt. Nat. Park), in UW, McCorkle, Schuh, Cornell Univ., CAS, OSDA, and UBC collections. The name *columbianus* was assigned to this species in Winters' and Chamberlain's unpublished notes. The Rocky Mountain National Park material was considered a separate species by Chamberlain, but probably represents only a geographical variation of *columbianus*.

13' Anterior end of middle pronotal intervals almost twice as wide as the evidently narrower posterior end; head black to picinus, very weakly granulose to smooth and punctate in prominent areas; coronal suture narrow, deep, usually with parallel margins; terminal segment of maxillary palps distinctly elongated at base; pronotum varying from nearly piceous to ferrugineous or (type) dark ferrugineous, shining, without metallic reflections, the grooves shallow, narrow, even, their margins nearly smooth, the intervals broad, nearly flat, smooth, the external intervals weakly granulose; lateral pronotal margins very feebly convex to oblique posteriorly; elytra concolorous with pronotum or somewhat paler, the dark spot pattern evident but not pronounced, the intervals usually somewhat convex, the odd intervals scarcely prominent, all intervals nearly equally prominent in some specimens from Winnipeg, Manitoba, the strial punctures uniform and small or medium, the elytral hairs weak and inconspicuous in dried specimens; venter black to piceous, black becoming piceous on most of prothorax and posteriorly on abdomen in type, ferrugineous laterally on prothorax of Cranbrook, B. C. specimens and ferrugineous to ferruginotestaceous in some Winnipeg, Manitoba specimens which may be teneral; appendages and epipleura nearly concolorous with elytra, the former not markedly dark at joints or apices, tarsi with long swimming hairs; aedeagus 0.74-0.80 mm. long, the parameres bluntly pointed, parallel in normal position, considerably narrower in posterior half than median lobe, the lateral margins nearly straight except at apices, the median lobe rather broadly rounded or subangulate at apex (Pl. V, fig. 11); 4.5-5 mm.; se B. C.

11. INFLECTUS McC. sp. n.

Type and paratype male, allotype female: Enderby, B. C., 1. VI. 1945, H. B. Leech, type and allotype in CAS collection, paratype in UW collection; paratypes: B. C. (Cranbrook), Man. (Winnipeg) in Cornell Univ. and UBC collections. The name employed here is that used by Winters and Chamberlain in their unpublished notes.

12' Aedeagus with the apices of the parameres produced or not, never obliquely truncate, the median lobe at its middle equal in width to or narrower than the parameres at the same distance from their apices (except *E. leechi* sp. n., Pl. V, fig. 16), the apex usually pointed.

14 Aedeagus with parameres not produced or, if so, not abruptly narrowed subapically, not everted, as bluntly rounded as the apex of the median lobe

15 Aedeagus with lateral margins of parameres not sinuate subapically, usually with a feeble prominence or subangulation in posterior half, the median lobe comparatively narrow from its base, the margins usually converging evenly to the sharply pointed apex (parallel subapically in 2 specimens from Hanford, Wn.), the apex often minutely produced; head black or picinus to

piceous, shining, occasionally with metallic reflections, granulose, the granules often obsolete in more prominent areas, coronal suture narrow and deep; terminal segment of maxillary palps narrow, widest somewhat beyond middle but the base not markedly attenuate; pronotum piceous to ferrugineous or rufescent or coppery, often with metallic reflections, the anterior margin and marginal groove often paler, w Or. specimens entirely dark, but elsewhere the light and dark areas of the pronotum and elytra are intermixed; pronotal grooves moderately deep, the marginal and submarginal grooves rather broad, the intervals granulose, the granules obsolete in posterior two thirds of internal intervals, small and sparse in middle and external intervals; lateral pronotal margins straight to feebly concave posteriorly; elytra piceous to ferrugineous or gray-black to gray, dark markings usually evident but without the posterior light patches, rarely with pale mottlings anterior to the dark spots, intervals usually somewhat rounded, the odd intervals usually scarcely prominent especially in dark specimens, the strial punctures moderately large; venter black, often ferrugineous to ferruginotestaceous laterally on prothorax, the epipleura and appendages usually for the most part concolorous with elytra or pronotum; aedeagus as described above, 0.55-0.64 mm. long, the parameres sparsely to moderately densely punctate, their lateral margins usually more distinctly angulate in darker specimens from interior Oregon (Pl. V, figs. 12, 12a); 2.7-3.8 mm.; e Wn., se Id., Or., common in e Or., rare elsewhere 12. LINEAROIDES d'Orch.

This species is so variable that the extremes would scarcely be recognized as cospecific if it were not for the aedeagus and the intergradation in certain populations.

15' Aedeagus with lateral margins of parameres straight to feebly sinuate subapically, otherwise more or less evenly arcuate; head black or picinus to piceous, granulose, the granules obsolete on clypeal tumescence; coronal suture moderately narrow, deep; terminal segment of maxillary palps proportionately small, rather narrow; pronotum ferrugineous, very shining, without metallic reflections, the grooves moderately deep, the marginal and submarginal grooves only moderately broad, the intervals sparsely granulose, the granules moderately dense in anterior third and often obsolete in posterior two thirds of the internal intervals, the granules small, the lateral margins oblique to feebly sinuate posteriorly, very feebly convex anteriorly; elytra ferrugineous, dark spots evident, sometimes with testaceous streaks on the intervals particularly near the dark spots, the intervals convex, the odd intervals feebly prominent, the strial punctures medium, some long hairs present; venter black, ferrugineous laterally on prothorax and occasionally posteriorly on abdomen, epipleura and appendages nearly concolorous with elytra; aedeagus as described above, 0.7-0.8 mm. long (Pl. V, fig. 13); 3.8-3.9 mm.; se B.C., e Wn., Id., e Or.; rare 13. LACUSTRIS LeC.

14' Apices of parameres produced

16 Aedeagus with median lobe slender, its lateral margins somewhat sinuate near base, otherwise gradually attenuate to the moderately sharply pointed apex, the parameres narrowing abruptly subapically, narrowing more gradually in w Wn. specimens, the apices rather sharply pointed; males usually 3 mm. or less in length; head black or picinus or dark piceous, sometimes with metallic reflections, evenly granulose; coronal suture narrow; terminal segment of maxillary palps rather short to moderately long, widest at

middle; pronotum piceous to ferrugineous, shining, sometimes with weak metallic reflections, the grooves moderate in depth, usually rather narrow, moderately wide in females, the intervals granulose, the granules sometimes obsolete in the median moderately elevated area of the internal intervals; lateral pronotal margins oblique to sinuate behind; elytra brown or slaty to testaceous, occasionally with ferrugineous or gray areas, often paler toward margins in posterior half, dark spots usually evident, the posterior pale patch wanting or very obscure, the intervals feebly to moderately rounded, the odd intervals only feebly more prominent, strial punctures moderate in size; venter usually black, sometimes piceous to ferrugineous or ferruginotestaceous laterally on prothorax, the epipleura and legs usually concolorous with the elytra, the legs with darker bases and apices, the palps sometimes paler than the legs; aedeagus as described above, 0.53-0.54 mm. (Pl. V, figs. 14, 14a); 2.7-4.0 mm.; se B.C., Wn.; common locally 14. NITIDULOIDES d'Orch.

16' Aedeagus with median lobe rather broad at base, its lateral margins nowhere sinuate or only very feebly so; males usually more than 3 mm. long

17 Aedeagus with apices of parameres not strongly everted unless twisted, the inner margins straight to sinuate, the median lobe very sharply pointed; head above shining, black or picinus to dark piceous, often with metallic reflections; clypeus and epicranium granulose, the granules usually somewhat obsolete on the clypeal tumescence; coronal suture broader than clypeal suture and shallow or only moderately deep; terminal segment of maxillary palps moderately short, not or scarcely attenuate at base, the outer margin considerably more convex than inner margin; pronotum rather evidently transverse, dark piceous or rarely picinus varying to dark ferrugineous, shining, sometimes with metallic reflections, the marginal groove often paler than the rest of the pronotum, marginal and submarginal grooves markedly broader than submedian groove, median groove rather wide for most of length, intervals moderately sparsely granulose, external intervals rather narrow with granules more distinct than on the other intervals, internal interval usually with the granules obsolete on the raised areas, lateral margins oblique to feebly sinuate in posterior third; elytra ferruginotestaceous or brown to dark ferrugineous, usually somewhat paler than pronotum, dark spots and light posterior patches usually evident; elytra with strial punctures large and moderately deep, the intervals flat to moderately convex, the alternate intervals not or scarcely more prominent toward base; elytral hairs weak, usually not evident in dried specimens; venter of head and thorax black, sometimes with piceous to ferrugineous areas; abdomen black throughout or black grading to ferrugineous at apex, rather densely pubescent; appendages concolorous with palest portions of elytra, the apex of the last tarsal segment darker; aedeagus as described above, 0.53-0.56 mm. long (Pl. V, fig. 15); 3.0-4.0 mm.; w Wn., Or.; common locally 15. LECONTEI Knisch

The Pacific Northwest populations here described may well represent a distinct subspecies or species, differing from typical specimens* of *lecontei*

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*The type series of *E. lecontei* Knisch (= *obscurus* LeC. nec Muls.) in the Museum of Comparative Zoology consists of 4 cotypes, cotypes 1, 3, and 4 being females. Cotype 2, a male, is hereby designated as the lectotype of the species. The cotypes all bear gold discs, indicating California as the type locality.

Knisch in being somewhat smaller, the median lobe of the aedeagus broader toward the middle, the parameres somewhat more slender toward their apices, the external pronotal interval somewhat narrower. Males are apparently somewhat scarce in some populations. None have been seen from western Washington. d'Orchymont 1945:19 (24).

17' Aedeagus with apices of parameres distinctly everted, the inner margins strongly convex, the outer margins strongly sinuate, the median lobe rather blunt, broad at base; head above black or (type) picinus to piceous, shining or with feebly metallic reflections, granulose, the granules of the epicranium coarse, suppressed on the clypeus particularly on the tumescence; coronal suture rather short and moderately deep; terminal segment of maxillary palps long, its greatest width beyond the middle, the inner margin straight; pronotum piceous to (type) dark ferrugineous, shining (type) or with metallic reflections, anterior margin usually pale, the grooves deep, the marginal and submarginal grooves somewhat broader than the submedian groove, the median groove rather narrow and usually with its sides nearly parallel for most of length, the internal interval usually smooth and punctate in posterior two thirds, the granules obsolete to distinct in anterior third, the middle interval with somewhat obsolete or confluent granules throughout, the external interval moderately densely granulose, the granules mostly distinct and somewhat smaller than on the rest of the pronotum; pronotal margins feebly sinuate in posterior half, with hairs between the serrations usually evident; elytra picinus to ferrugineous (mostly ferrugineous in type), usually darkest toward margins, dark spot pattern usually evident, the pale posterior patches usually pronounced (dark spots and pale patches evident in type), the alternate intervals usually at least feebly prominent at base, elytral hairs present but scarcely evident in dried specimens, strial punctures rather coarse and deep; venter black, sometimes piceous or ferrugineous laterally on prothorax and on abdominal sternites or toward abdominal apex (type black, blending to dark ferrugineous laterally on prothorax); coxae black or piceous; trochanter dark ferrugineous to (type) ferruginotestaceous; femora piceous or dark ferrugineous basally or throughout (basal two thirds dark in type), sometimes abruptly ferruginotestaceous distally; tibiae and tarsi ferrugineous to ferruginotestaceous, the last tarsal segment dark at apex; legs less commonly brown, dark ferrugineous or piceous throughout except for the black coxae and darker terminus of last tarsal segment, the condition most prevalent in B. C. and ne Wn. examples; long tarsal hairs present; palpi and antennae usually ferruginotestaceous; aedeagus as described above, 0.65-0.7 mm. long (Pl. V, fig. 16); 3.3-4.5 mm.; se B. C., e Wn., e Or. 16. LEECHI McC. sp. n.

Type male, allotype female, and 10 male and 2 female paratypes: Kamloops, B. C., Lac du Bois, Old Store pond, 18. VII. 1943, Geo. J. Spencer; paratypes: B. C. (Enderby, Kamloops, Osoyoos, Riske Cr., Salmon Arm, Vernon), Wn. (Beverly in Grant Co., Cle Elum, Grand Coulee at Dry Falls, L. Lenore in Grand Coulee, Upper Grand Coulee, Satus, Spokane, Toppenish), Or. (Hot L. in Union Co., Malheur L.); type and allotype in Cornell Univ. coll.; paratypes in UW, McCorkle, CAS, Cornell Univ., OSDA, and UBC collections. The name *leechi* was suggested for this species in Winters' and Chamberlain's notes. It is a pleasure to have it named for Mr. Hugh B. Leech whose collecting efforts, encouragement and unrestricted cooperation have done much to make this study possible.

8' Pronotum with at least 2/3 of the area of the pronotal intervals without granules, smooth and punctate except in w Or. specimens, the marginal groove crowded posteriorly by the external interval; elytral intervals subequally prominent, the hairs mostly short; aedeagus with median lobe at its middle about twice as broad as the parameres at the same distance from their apices; pronotal intervals and head above with short hairs; size usually larger, 4-6.5 mm. long

18 Pronotum with external intervals usually wider than middle interval, the surface shining, without metallic reflections, the disc often somewhat convex, the anterior margin not evidently reflexed behind eyes and rather strongly arched; elytra with strial punctures rather fine, the striae usually widely separated by rather flat intervals; coronal suture usually nearly as narrow as clypeal suture; head with surface above usually nearly flat to the clypeal suture; head above black, dark piceous or picinus, shining, sometimes with greenish reflections, usually smooth and punctate or with some nearly obsolete granules, w Or. specimens often granulose but usually with the granules obsolete on the clypeal tumescence; terminal segment of maxillary palps usually markedly attenuate at base, inflated distally; pronotum dark piceous to ferrugineous, rarely greenish picinus, the grooves narrow and shallow, the intervals broad and usually smooth and punctate, in many specimens from w Or. partially granulose especially on the anterior portion of the internal interval; lateral pronotal margins usually rather strongly arcuate in anterior two thirds, oblique in posterior third; elytra black or dark piceous to ferruginotestaceous, dark spot pattern evident in paler specimens, second elytral interval often pale and dividing the juxtasutural spot; elytral intervals usually flat or only feebly convex, nearly equal in prominence, the striae shallow or, in central e Wn. specimens, basally rather deeply impressed; venter black, usually with piceous or ferrugineous or rarely testaceous areas on prothorax and occasionally on genae and toward apex of abdomen; legs usually concolorous with elytra or paler, antennae and palps paler, often ferruginotestaceous or testaceous; tarsi with long swimming hairs; aedeagus 0.8-1.0 mm. long, the parameres slender for at least apical third, rather blunt, the lateral margins usually broadly shallowly sinuate subapically but straight in the only male seen from e Wn. (Pl. V, fig. 17), the median lobe broad with the apex broadly rounded or sometimes subangulate, broadly truncate in the only male seen from e Wn. (Pl. V, figs. 17, 17a); 4.0-6.5 mm.; se B.C., e Wn., Or.; common locally

17. OBLONGUS LeC.

This species occurs across Canada into Alaska and south into Wyoming, Utah, and Oregon (Grant Co., Willamette Valley).

18' Pronotum with external intervals usually for the most part as wide as or narrower than the middle interval, usually with strong metallic reflections and always flat longitudinally, the anterior margin somewhat reflexed behind eyes and only moderately convex, the lateral margin with the interserrational hairs prominent; elytra with the strial punctures fine, the striae usually crowded, especially in smaller specimens; coronal suture evidently broader than clypeal suture, rather shallow, the clypeal surface gradually depressed to the level of the clypeal suture; body markedly narrow; head above dark piceous to (type) dark ferrugineous or brown, shining, with metallic reflections, somewhat granulose especially on epicranium; terminal segment of maxillary palps somewhat attenuate at base; pronotum often somewhat paler than epicranium and clypeus; pronotum usually mostly

concolorous, sometimes paler toward anterior and/or lateral margins, only the anterior margin paler in type; pronotum shining, with metallic reflections which are weak in the type, the grooves usually moderately narrow and shallow, the intervals usually wide and smooth and punctate, sometimes in part very feebly granulose, the intervals with short hairs arising from the punctures especially on the external intervals, the hairs sometimes erect even on dried specimens; lateral pronotal margins moderately arcuate in anterior half, oblique to shallowly sinuate in posterior half; elytra dark ferrugineous to ferrugineous (type), ferruginotestaceous or brown or rarely testaceous, the dark spot pattern usually expanded so that spots fuse forming a "W" which is divided by the suture with its lateral extremities on interval 7 of each elytron, the surface sometimes paler before the "W" than behind it but occasionally (type) suffused throughout, interval 2 always dark at region of "W"; elytral intervals flat, the short hairs usually evident, longer hairs sometimes evident; venter black, the prothorax piceous or ferrugineous laterally; epipleura concolorous with adjacent upper surface of elytra, usually (type) with a broad black median border; appendages, especially the palps and antennae, usually paler than elytra, tarsi and maxillary palps usually darker at apices; tarsi with long swimming hairs; aedeagus very similar to *oblongus* LeC., 0.8-0.9 mm. long, the median lobe broad, its apex broadly not evenly arcuate, the parameres slender for at least apical third and blunt, their lateral margins shallowly sinuate subapically (Pl. V, fig. 18); 4-6 mm. (type 5 mm.); se Or.

18. SCHUHI McC. sp. n.

Type male, allotype female, and 12 paratypes: Ore., Steens Mts., Fish Lake, 7500', June 22-26, 1951 Borys Malkin; paratypes: Or. (Burns, Crooked Cr. 19 mi. n of Lakeview, near Gerber Dam in Klamath Co., Lower Klamath L., Poe Valley and above Geary Ranch near Klamath Falls); type and allotype in UW collection; paratypes in UW, McCorkle, Schuh and CNHM collections. It is a pleasure to name this species for Mr. Joe Schuh, whose collecting in southeastern Oregon has greatly aided this study. A female of *schuhi* McC. sp. n. has been seen from Unita Co., Wyom. and the species apparently replaces *oblongus* LeC. in se Or., being known from as far north as Burns, whereas *oblongus* has not been seen from south of Grant Co.

7' Pronotum with marginal and submarginal grooves almost meeting at a constriction of the external interval; aedeagus with median lobe at middle at least twice as broad as the parameres at the same distance from their apices; head above black or piceous, very shining, usually with strong metallic reflections, granulose throughout, the median area of the posterior margin of the clypeus smooth, the granules mostly confluent; epicranial suture shallow, especially its clypeal portion; terminal segment of maxillary palps slender, the inner margin nearly straight; pronotum black to dark ferrugineous except for paler anterior and lateral margins, the central area very shining or with metallic reflections which are frequently strong, the intervals narrow, especially the external and middle intervals, with large granules throughout, the granules sometimes sparse especially on the external interval, sometimes obsolete on the middle and internal intervals, the grooves usually broad, especially the marginal and submarginal and most of the median; pronotum considerably narrowed posteriorly, not markedly transverse, the lateral margins oblique for at least posterior half, often feebly sinuate in posterior third making the posterior angles

only weakly obtuse; pronotum nearly flat to moderately convex at posterior margin, strongly convex at middle subapically, the anterior margin reflexed behind the eyes, the hairs at the anterior corners often prominent; elytra black to ferruginotestaceous, usually paler toward base and apex, rarely black throughout, dark spots when evident enlarged, rather indistinct and often fused to form a broad chevron on each elytron, posterior pale patches usually evident and often conspicuous, odd elytral intervals evidently prominent, the eighth interval also prominent except at base, the eleventh interval only very feebly carinate and crowded against the elytral margin, the strial punctures moderately small, the elytral hairs mostly short and curved in dry specimens; venter black with the margins of the prothorax occasionally piceous; legs piceous to ferrugineous, usually dark basally and lighter apically; antennae and palps ferruginotestaceous to testaceous or yellow, the maxillary palps sometimes darkened at apex of terminal segment; tarsi with long swimming hairs; aedeagus 0.47-0.53 mm. long, the parameres slender for at least distal third and rather sharply pointed, weakly angulate subapically on inner margin with the outer margin nearly straight to feebly repand, the median lobe broad with the apex broadly rounded, if a third or more of the struts protrude basal to proximal margin of parameres, then the apex of the median lobe does not attain the level of the apices of the parameres (Pl. V, fig. 17); 2.5-3.5 mm.; e Or.; rare
19. ALTERNATUS LeC.

This species was described from California; it is known at present from as far north as Burns, Or.

6' Pronotum with granules of external interval invading marginal groove so that the median border of the groove is indistinct; aedeagus with parameres and median lobe evenly strongly attenuate as in fig. 20 of Plate V; elytral intervals very flat, the striae unimpressed between the punctures toward base; head above black, clypeus and epicranium granulose but with the granules somewhat obsolete on the clypeal tumescence and on each side of the coronal suture; head unusually narrower than anterior margin of pronotum; apical segment of maxillary palps rather small; pronotum black to dark slaty or piceous, shining, the marginal grooves sometimes piceous, the surface rather flat, the grooves moderately narrow and shallow, the external interval coarsely granulose, the intergranular spaces level with the marginal groove laterally, middle and internal intervals with crowded mostly subobsolete granules or partly smooth and punctate; anterior pronotal margin rather evidently emarginate and somewhat reflexed behind eyes, the anterior angles broadly rounded, the lateral margins strongly arcuate anteriorly, feebly to rather strongly sinuate in posterior third; elytra brownish black to dark luteous, usually with pale mottlings near bases and somewhat paler laterally and toward apices, dark spot pattern usually evident in paler specimens, punctures rather small, eleventh interval rather weakly carinate, the intervals with extremely short erect hairs, long hairs not apparent; venter black, anterior margin of prosternum especially with rather long hairs; epipleura mostly black or brownish, the lateral margin paler; appendages usually black or brownish black to piceous or brown, the long tarsal swimming hairs very weak, often not apparent in dried specimens; aedeagus as described above, 0.70-0.73 mm. long, the parameres moderately sharply pointed, the median lobe somewhat blunter and wider at its middle than the parameres, the struts with their inner margins only weakly sinuate to nearly straight in basal third (Pl. V, fig. 20); 3.2-5 mm.; e Wn.,

e Or.; common locally in Or., rare in Wn. 20. ECLECTUS d'Orch.

Subfamily Sphaeridiinae

The members of this subfamily, unlike the other Hydrophilidae, are terrestrial. They live for the most part on the decomposing plant materials of dung, compost, and seaweed. Horn 1890c. Knisch 1922:97-102. Fall 1924a. Blackwelder 1931.

Key to Tribes and Genera

1 Prosternum at middle convex or carinate, the hind margin entire; metasternal side pieces moderate in width, not partially covered by the elytra which do not clasp the sides of the body; mesosternum narrow, longitudinal; metasternum with the median area differentiated

2 Scutellum elongate, twice as long as wide or more; elytral epipleura vertical; first abdominal sternite not carinate; prosternum convex; mesosternum convex; pygidium exposed (tribe SPHAERIDIINI) SPHAERIDIUM F.

2' Scutellum much less than twice as long as wide; elytral epipleura horizontal; first abdominal sternite acutely carinate along middle; prosternum acutely carinate along middle at least posteriorly; mesosternum flattened at middle; pygidium covered by elytra (tribe CERCYONINI)

3 Flattened mesosternal area oval or spindle shaped, acutely pointed at each end, the contact with the metasternum narrow CERCYON Leach

3' Flattened mesosternal area pentagonal, acutely pointed in front, broadly truncate behind and separated from the metasternum by a suture PELOSOMA Muls.

1' Prosternum at middle elevated in a flattened area, the hind margin emarginate; metasternal side pieces narrow, partially covered by the inflexed elytra; mesosternum broad, hastate, broadly contacting the metasternum; scutellum subequilateral; elytral epipleura indistinct, very narrow; first abdominal sternite acutely carinate at basal half; pygidium covered by elytra (tribe MEGASTERNINI)

4 Lateral margin of pronotum very broadly arcuate; metasternum with the median area not demarked by an oblique acutely elevated line except toward extreme anterior angle; protibiae broadly strongly emarginate at apex along outer margin; dorsal surface glabrous; elytral striae consisting of unimpressed series of punctures MEGASTERNUM Muls.

4' Lateral margin of pronotum strongly obtusely angulate; metasternum with the median area demarked by an oblique acutely elevated line extending from the anterior margin of the postcoxal cavity nearly directly anterior to the base of the femur to the anterior angle of the metasternum; protibiae evenly arcuate along the outer margin; dorsal surface finely pubescent; elytral striae distinctly impressed CRYPTOPLEURUM Muls.

Tribe Sphaerifiini

Sphaeridium F.

Evenly oval finely closely evenly punctate shining glabrous beetles inhabiting dung, especially cattle dung; scutellum elongate, acute at apex; males with the last protarsal segment and anterior protarsal claws greatly enlarged; females with this segment no wider than the other protarsal segments, the 2 claws nearly

of the same size. The 3 North American species are introduced from Europe. Brown 1940:70-72. Hatch 1946:77-79.

1 Pronotum with basal margin broadly sinuate on each side within the nearly rectangular hind angles; male with claw segment broadly arcuate along its apical margin (subg. SPHAERIDIOLINUS Menoz.). Black; pronotum with or without very narrow pale side margins; elytra with a narrow pale side margin, a variably extensive subapical spot which is most persistent adjacent to the suture, and a variably distinct subbasal rufous spot which is very evident in ab. QUADRIMACULATUM Marsh.; legs pale, the femora with a median dark spot; male with median lobe of aedeagus bluntly rounded at apex, the extreme apex with a minute subtruncate lobe; 3.7-5.5 mm.; s B.C., Wn., n Or.; introduced; not rare (Pl. II, fig. 8)
BIPUSTULATUM F.

This species was first taken in North America on Long Island, N.Y. in 1911. It was first collected in the Pacific Northwest at Seattle in 1928, at Vancouver and Salmon Arm, B.C. in 1931, and in Wasco Co., Or. in 1941. Hatch 1931:78 (2); 1946:78 (2); 1949:19 (2); 1953:27 (2). Leech 1935a:123 (1); 1947a:107 (1). Brown 1940:71 (1).

ab. *quadrimaculatum* Marsh. Hatch 1946:78 (2).

1' Pronotum with basal margin nearly straight on each side within the slightly obtuse hind angles; male with claw segment strongly angulate along its apical margin and prolonged over the basal portion of the large claw (subg. SPHAERIDIUM s. str.)

The 2 following species frequently occur together.

2 Male with median lobe of aedeagus parallel, its apex strongly rounded, the extreme apex with a very minute knob; black, the elytra with an obscure rufous subbasal spot and an apical testaceous area which is not or only very slightly prolonged along the lateral margin, the legs sometimes with paler markings; 5.1-7.5 mm.; s B.C., Wn., Id., Or.; introduced; common
LUNATUM F.

The first North American specimen known to me is one taken near Syracuse, N.Y. by the present author in 1923. The species was first collected in the Pacific Northwest at Agassiz, B.C. and on Lopez Is., Wn. in 1926 and at Martin, Id. and Forest Grove, Or. in 1938. Brown 1940:71 (1). Hatch 1946:78 (123); 1949:19 (12); 1953:27 (12). Leech 1947a:107 (1). Bixby, Pan-P. Ent. 24, 1949:33 (234). Hatch and Kincaid 1958:11 (2).

2' Male with median lobe of aedeagus gradually narrowed to an acute apex; black, the pronotal side margins usually in part or entirely pale, the elytra with an obscure rufous subbasal spot and an apical testaceous area that usually is more or less extensively prolonged along the side margin frequently to the base, the legs pale with the femora with a median dark spot; 4.8-7 mm.; B.C., Wn., Id., Or.; introduced; very common
SCARABAEOIDES L.

In Illinois these beetles fly to the dung within an hour or so after it has been dropped. The larvae feed on fly maggots and complete their growth in as little as 5 days. They pupate in the soil and emerge as adults about 7 days later (Mohr).

This species was first reported from North America, apparently on the basis of a single specimen, from "Canada" in 1861 but was first recorded in numbers by Chagnon from Montreal in 1893. It was first collected in the Pacific Northwest in 1913 at Chehalis, Wn. and West Woodburn, Or.; at Vernon, B.C. in 1924, and at Post Falls, Id. in 1929. LeConte, Class. Col.

N. A. 1861:47. Chagnon, Ent. News 4, 1893:76. Barber, Proc. Ent. Soc. Wash. 7, 1905:127-128. Van Dyke, Pan-P. Ent. 1, 1924:78. Stace Smith 1929:70 (1). Blackwelder 1931:22. Hatch 1931:78 (2); 1946:78 (1234); 1949:19 (2). Leech 1935a:123 (1); 1947a:107 (1). Brown 1940:70-72. Mohr, Ecol. Mon. 13, 1943:290-291. Clark 1948:27 (1). Hatch and Kincaid 1958:11 (2).

Cercyon Leach

The name derives from a famous Attic robber in the Theseus legend, so that it is masculine, certain older authors such as Erichson, Mulsant, Melsheimer, Mannerheim, and LeConte to the contrary notwithstanding. The beetles occur in dung and other decomposing plant materials, one or two species being intertidal, probably feeding on washed-up algae. Many of the species occur in Europe and are probably introduced in North America. *C. humeralis* Keen 1895:167 (1); 1898:74 (1) is a *nomen nudum*.

1 Metasternum anteriorly at middle entire, the posterior extension of the mesosternum overlying and ventral to the metasternum at this point (subg. CERCYON s. str.)

2 Elytral striae broadly deeply incised, entire, impunctate, the intervals convex; dorsal surface finely punctate, shining; head black; pronotum piceous, the lateral margins broadly paler; elytra piceous, the apices except the suture, the lateral margins and a variably narrow basal margin paler (var. a), or (var. c) with the piceous areas of the pronotum and elytra much faded, or (var. b) with the elytra testaceous with a subapical spot and the suture at the apex piceous; pronotum with distinctly incised prescutellar and sublateral basal impressions; mesosternum 3 to 4 times as long as broad; metasternal area shining, punctate, strongly differentiated, limited to mid-metasternum; 2-3.4 mm.; w B. C., w Wn., w Or.; under seaweed in the upper intertidal zone; common FIMBRIATUS Mann.

Wickham 1890:169 (1); 1903a:51 (4). Hamilton 1894:15 (1). Keen 1895:167 (1); 1898:71 (1). Prov. Mus. 1898:74 (1). Hatch and Kincaid 1958:11 (2).

2' Elytral striae finely incised or reduced to rows of punctures, the intervals slightly convex or flat

3 Elytra shining, not alutaceous

4 Elytra with the apical pale area more or less vaguely defined; mesosternum linear, less than 1/3 as wide as long

5 Metasternum with the diamond shaped median area with its posteriolateral margins not prolonged toward the anterior angles of the metasternum

6 Pronotum with the incised line defining the marginal beading not extending at all along the basal margin

Very careful observation is necessary to establish this point. In contradistinction to Horn, I find that, on careful examination, most of the species have the marginal beading extending around the hind angles and at least briefly along the basal margin.

7 Pronotum and head finely alutaceous between the punctures; piceous black, the appendages, vague lateral margins of pronotum, and lateral, apical and sutural margins of the elytra obscure rufous; upper surface finely punctate; elytra finely strigose; pronotum with faintly indicated prescutellar and sublateral basal impressions; elytral striae entire, finely incised, more or less evidently punctate especially toward the sides and base; mesosternum

more than 1/3 as wide as long, sparsely punctate; metasternal area strongly differentiated, shining, sparsely punctate; 2.4 mm.; sw B. C., nw Wn.; probably on sea beach TOLFINO sp. n.

Type: Tolfino, B. C. 11-vi-[19]50. A. Guppy; paratypes: B. C. (Bowser, Vancouver), Wn. (Pt. Roberts) in UW and UBC collections.

7' Pronotum, head and elytra shining, distinctly punctate; head black; pronotum black, the sides broadly indefinitely rufous; elytra rufous, medianly frequently clouded with piceous, the striae finely incised, more distinct toward apex, finely punctate, the punctures somewhat more distinct toward base, the intervals finely punctate; mesosternum about 1/5 as wide as long; mid-metasternal area vaguely defined along anteriolateral margins; 2.4-3 mm.; B. C., w Wn., Or.; in cattle dung FULVIPENNIS Mann.

This species is unsatisfactorily distinguished from *lateralis* Mann. Horn 1890c:296 (2). Wickham 1893:224 (1). Hamilton 1894:15 (2). Keen 1895:167 (1). Clark 1948:27 (1).

6' Pronotum with the incised line defining the marginal beading extending at least briefly along the basal margin; pronotum and head shining, finely punctate; elytral striae finely incised, entire, the intervals finely punctate

8 Elytra without a common sutural black spot about midway between base and apex

9 Elytra with the intervals nearly flat, the striae finely impressed, the surface without decumbent hairs

10 Usually larger, length 2.4-3.1 mm.; elytra rufopiceous or paler, usually with the apex and frequently the basal margin vaguely paler, the striae very finely incised, sometimes nearly obsolete toward base; head and pronotum black, the lateral margins of the latter broadly paler; venter black, the appendages pale; crest of mesosternum about 1/4 as wide as long, the anterior end in ventral view acute but not attenuate before the declivity; B. C., w Wn., Or.; in cattle dung and compost; common; probably introduced LATERALIS Marsh.

Keen 1895:167 (1). Hatch 1931:78 (2). Hatch and Kincaid 1958:11 (2). *limbatum* Mann. Keen 1891:282 (1).

10' Usually smaller, length 2-2.8 mm.

11 Elytra rufous with the black area confined to a basal triangle or, more frequently, expanded to include humeral spots and a dark band on the disc of each elytron extending back of the middle; body except elytra black, the appendages testaceous; above distinctly punctate, the elytral striae well impressed except at base and extreme apex, the striae finely punctate, more coarsely so toward base; mesosternum about 1/3 as wide as long; 1.9-2.1 mm.; Wn., Or.; in compost; probably introduced (*melanocephalus*, Horn nec L.) TERMINATUS Marsh.

11' Elytra uniform flavous (typical form) or with a black spot on each side of the scutellum (ab. MULSANTI Gangl.); elytral striae rather strongly incised and entire; head and pronotum black, the anterior angles or the entire lateral margins of the pronotum sometimes paler; venter black, the appendages paler; crest of mesosternum about 1/4 as wide as long, the anterior end attenuate before the declivity in ventral view; 2-2.8 mm.; B. C., Wn., n Id., Or.; in cattle and horse dung; common; probably introduced QUISQUILIUS L.

Horn 1890c:294 (2). Hamilton 1894a:361 (2). Blackwelder 1931:24-25 (2). Hatch 1931:78 (1). Leech 1935a:123 (1); 1947a:107 (1). Clark 1948:27 (1). Hatch and Kincaid 1958:11 (2).

9' Elytra with the intervals somewhat convex, sparsely punctate, the striae somewhat broadly impressed, very finely punctate and entire, the pronotum and elytra shining, not closely punctate, the surface with sparse decumbent hairs that are seen only in oblique light; head black or piceous black; pronotum rufopiceous to rufous becoming broadly indefinitely but evidently paler along the lateral margins; elytra rufous, the apical and lateral margins indefinitely paler; thorax below rufous; abdomen and appendages testaceous; mesosternum about 1/4 as wide as long; l. 9-2. 5 mm. ; w B. C., w Wn., w Or. ADUMBRATUS Mann.

Horn 1890c:298 (12). Keen 1891:282 (1); 1895:167 (1). Hamilton 1894:15 (12). Blackwelder 1931:26 (12). Leech 1935a:123 (1).

8' Elytra with a common sutural black spot about midway between base and apex; elytra otherwise flavous, the striae rather strongly incised and entire; head black; pronotum black with narrow flavous lateral margins; venter black; appendages flavous; crest of mesosternum about 1/3 as wide as long; 2. 3-3 mm. ; s B. C., Wn., n Id., Or. ; in cattle dung; probably introduced UNIPUNCTATUS L.

Leech 1935a:123 (1); 1947a:107 (1).

5' Metasternum with the diamond shaped median area with its posteriolateral margins more or less distinctly prolonged obliquely toward the anterior angles of the metasternum forming a "metasternal line, " the anteriolateral margins of the median area indefinite; above punctate, shining; venter black, the appendages paler

12 Larger, length 2. 1-3. 3 mm. ; elytra distinctly punctate throughout; crest of mesosternum about 1/3 as wide as long

13 Elytra variably black or rufous, the apex nearly always evidently paler, but without a triangular black area extending posteriorly from the pronotum; frequently with elytra black or dark rufous with the apex and a transverse subbasal fascia pale; or the elytra may be pale with a narrow basal border and the suture basally black (ab. ERYTHROPTERUS Muls.); or the elytra entirely pale; body very slightly more narrowly oval than in the next species; head and pronotum black; elytral margins just before the apices frequently evanescently sinuate; metasternal line straight, vague, not attaining the anterior margin of the metasternum; 2. 4-3. 3 mm. ; s B. C., Wn., n Id., Or. ; in cattle dung and compost; very common; introduced (Pl. II, fig. 9) HAEMORRHOIDALIS F.

First taken in the Pacific Northwest in Seattle and Corvallis in 1930. Hatch 1931:78 (2). Hatch and Kincaid 1958:11 (2). Meeuse and Hatch 1960:74 (2).

13' Elytra rufous with the humeral angles and a triangular spot extending half way or more to the apex black, the apex scarcely paler; body very slightly more broadly oval; head and pronotum black; elytral margins not at all sinuate toward apex; metasternal line sinuate, more distinct except at its anterior end where it can, with difficulty, be seen to attain the anterior margin of the metasternum in a broad arc; 2. 1-3. 3 mm. ; w Wn., nw Or. ; in cattle dung; common locally; introduced MELANOCEPHALUS L.

First taken in the Pacific Northwest by Evans Creek (King Co.), Wn. in 1929; a single specimen somewhat dubiously identified from McMinnville, Or. (1941).

12' Smaller, length 1. 3-2 mm. ; elytra, especially behind the basal third, minutely indistinctly punctate; crest of mesosternum about 1/5 as wide as long; elytra testaceous with the humerus and a variable basal triangle extending

to the basal two fifths or beyond black (typical form) or (ab. MERDARIUS Sturm) with only the apical two fifths or so testaceous; head and pronotum black, finely punctate; metasternal line straight, finely elevated, distinctly extending to the anterior angle of the metasternum; se B. C., Wn., n Id., Or.; in cattle dung; common; introduced PYGMAEUS Ill.

My earliest specimen was taken in Seattle in 1929, but Blackwelder mentions specimens taken in Oregon by Blaisdell and Slevin, probably somewhat earlier. Blackwelder 1931:26-27 (4). Hatch 1931:78 (2). Hatch and Kincaid 1958:11 (4). Meeuse and Hatch 1960:72 (2).

4' Elytra with the apical pale area more or less sharply definitely defined; metasternum with the diamond shaped median area with its posteriolateral margins not prolonged toward the anterior angles of the metasternum; above finely punctate, shining; head black; venter black, the appendages paler; mesosternum elongate, 1/3 or less as wide as long

14 Elytra black with the apical pale area more or less extended forward along the sides, the eighth interval wider and more or less evidently biseriately punctate, the striae and intervals subequally punctate

15 Elytra with striae well impressed to apex, the apical pale area extending along the sides to the base; pronotum with anterior angles pale; body otherwise black, shining, the appendages paler; 2.5-3.3 mm.; "B. C.," Or. PRAETEXTATUS Say

Leech 1935a:123 (1). Winters, Bull. Brook. Ent. Soc. 39, 1944:95 (1).

15' Elytral striae faintly impressed at both apex and base; elytra black with the apical fourth or fifth and a narrow side margin that may extend to the humerus paler; pronotum black with the lateral margin narrowly paler; 2.5-3 mm.; s B. C., Wn., Or.; under debris near water; rare; probably introduced MARINUS Thoms.

Horn 1890c:296 (1). Hamilton 1894a:361 (1). Stace Smith 1930:23 (1). Hatch 1931:78 (2).

14' Elytra black with the apical pale area confined to the apical third, not extending forward along the sides, the eighth interval narrower and with only a single series of punctures, the striae except the sutural stria are little more than unimpressed series of punctures which are coarser than the punctures of the intervals; pronotum black with a faint pale spot in each angle; mesosternum oval, about 1/2 as wide as long; 2-2.2 mm.; se B. C.; rare OCELLATUS Say

3' Elytra distinctly alutaceous at least laterally; metasternum with the diamond shaped median area with its posteriolateral margins not prolonged toward the anterior angles of the metasternum

16 Length 3.2-4 mm.; elytra strongly alutaceous and opaque toward sides and apex, the alutaceous sculpture becoming obsolete broadly toward the suture where the surface is closely punctate, the punctures becoming less distinct and eventually obsolete as the alutaceous sculpture becomes more distinct, the striae finely impressed and finely punctate, the intervals flat; black, the pronotum with a pale spot toward the front angles, the elytra reddish yellow, at times with a narrow crescentic transverse dark space divided by the suture, or the pronotum black with wide lateral testaceous margins, the elytra black with wide apical and somewhat narrower lateral testaceous margins; crest of mesosternum narrow, about 1/8 as wide as long; w B. C.; probably on sea beach LUNIGER Mann.

The crescentic mark on the elytra is not present in the few specimens seen.

16' Length 1.5-2.2 mm.; elytra distinctly alutaceous throughout; black, the apical fifth and narrow lateral margin of the elytra pale, the epipleura pale, the legs piceous; mesosternum elongate oval, more than 1/3 as wide as long; dorsal surface finely punctate

17 Head and pronotum shining, sometimes finely strigose; elytral striae consisting of little more than unimpressed series of punctures, the sutural stria finely impressed; 1.5-2.2 mm.; B.C., Wn., Id., Or.; under debris along ponds and lakes; not rare; probably introduced TRISTIS Ill.

Horn 1890c:303 (2). Hamilton 1894a:362 (2). Knisch 1922:101. Stace Smith 1930:23 (1). Blackwelder 1931:27 (2). Clark 1948:27 (1). LaRivers 1954:174 (2). Clark 1948:27 records CONVEXIUSCULUS Steph.; elytra with the striae entire, fine, the intervals very finely to scarcely visible punctulate, the apex paler; 1.7-2 mm.; nw B.C.

17' Head and pronotum alutaceous, distinctly punctate; elytral striae entire, the intervals finely sparsely punctulate

18 Prosternum, as in all the other Pacific Northwest species of Cercyon, with the carina entire, extending to the anterior margin, with the sides flattened; elytra with the alutaceous sculpture somewhat deeper and rougher than on the pronotum, the striae entire, finely deeply incised and set with punctures that are wider than the distance between the punctures; 1.6-2.2 mm.; sw B.C., Wn., Or.; in dung and under debris near water; common in w Wn. KULZERI Knisch

Knisch 1922:97-98, 100. Leech 1956:346 (2). Hatch and Kincaid 1958:11 (2). *opacellus*, Hatch (nec Fall) 1931:78 (2).

18' Prosternum carinate only posteriorly, the surface medianly along and behind the anterior margin transversely swollen in a bulbous area that is produced behind as the prosternal carina; pronotum and elytra subequally alutaceous, the pronotum somewhat more coarsely punctate, the elytral striae more finely incised than in the previous species; mesosternum coarsely punctate, broadly oval, nearly 3/4 as wide as long; 2.1 mm.; se B.C. (Oliver – CNC) ROSENI Knisch

The unique specimen before me compares closely with a series from Massachusetts and Michigan, except that they have the mesosternum only about 4/7 as wide as long. As Knisch remarks, the structure of the prosternum in this species may well indicate a distinct subgenus or genus. Knisch 1922:98-100. *lugubris*, Horn (nec Payk.) 1890c:291, 302. *opacellus* Fall 1924a:249, 252.

1' Metasternum anteriorly at middle acutely emarginate, receiving the posterior end of the mesosternum which is on the same level as the metasternum (subg. PARACERCYON Seidl.). Mesosternum about 3/8 as wide as long; metasternum with the diamond shaped median area with its posteriolateral margins not prolonged toward the anterior angles of the metasternum

19 Elytra with striae well incised to base, the strial punctures subequal to the punctures on the head and pronotum and generally more distinct than the punctures of the intervals; meso- and metasternum coarsely punctate; more broadly oval; dark castaneous, shining, the elytral apex and appendages somewhat paler; 1.8-2.1 mm.; B.C. (Boswell, Terrace) MINUSCULUS Melsh.

19' Elytra with striae finely impressed, frequently becoming toward the base little more than unimpressed series of punctures, the punctures of the striae and intervals subequal to each other and to the closely placed

punctures of the head and pronotum; meso- and metasternum more closely finely punctate; more narrowly oval; black or dark rufous, shining, the apical fifth of the elytra and the appendages testaceous, the sides of the pronotum and the sutural and lateral margins of the elytra obscurely rufous; l. 8-2. 4 mm. ; B. C., w Wn., se Id., nw Or. ; in compost; common; probably introduced ANALIS Payk.

Hamilton 1894:37 (1); 1894a:361 (1). Keen 1895:167 (1); 1898:71 (1). Leech 1935a:123 (1). Clark 1948:27 (1). *falli* Winters, Bull. Brook. Ent. Soc. 39, 1944:95 (1) (nom. nud.)

Pelosoma Muls.

Oval; black, shining, glabrous, the mouthparts testaceous, the legs piceous; head, pronotum and elytra densely punctate; pronotum transverse, broadest at base, the sides arcuate, vaguely impressed along basal margin before the fourth elytral stria; elytra with 10 impressed distantly punctate striae, the tenth stria absent at apical two fifths, the intervals convex; prosternum subtriangular, carinate, deeply impressed toward each anterior angle; mesosternum shining, pentagonal, coarsely punctate, strongly margined except posteriorly, widest before middle, at posterior margin separated from metasternum by a distinct suture; metasternum with median area shining, more sparsely and somewhat more finely punctate than mesosternum; 2. 5 mm. ; se B. C. (Oliver); in malt trap COLUMBIENSIS sp. n.

Type: 5 mi. n.w. Oliver, B. C. VI-12-1958. H. and A. Howden, malt trap, in CNC. Apparently distinguished from *capillatum* LeC. by its glabrous and more evidently coarsely nearly uniformly punctate dorsal surface. *Capillatum* is recorded from decomposing cactus stems in Arizona and Texas.

Tribe Megasternini

Megasternum Muls.

Broadly oval, shining; black or dark rufous, the elytral apex obscurely paler, the appendages testaceous; above finely but somewhat variably punctate and more or less evidently but finely alutaceous throughout; elytra with striae very feebly impressed, evidently punctate; l. 7-2. 1 mm. ; w B. C., w Wn., nw Or. ; common (Pl. IV, fig. 1) POSTICATUM Mann.

Distinguished from the European *boletophagum* Marsh. by the more or less evidently alutaceous pronotum. Hatch 1931:78 (2). Leech 1935a:124 (1). Clark 1948:27 (1). *boletophagum*, Hatch (nec Marsh.) 1946:79 (2); 1949:19 (2); 1953:27 (2). *pugetense* Hatch 1949:79 (2).

Cryptopleurum Muls.

Broadly oval, shining; black, the appendages and elytral apex rufotestaceous, the pronotum, elytra, and abdomen varying to rufous; above finely punctate, the elytral intervals somewhat more coarsely so, the punctures with fine appressed somewhat easily lost pubescence; elytral striae entire, strongly impressed, set with punctures that become nearly obsolete toward

the base; l. 7-2.1 mm.; B. C., Wn., Id., Or.; in cattle dung, compost, and grass cuttings; common; introduced (Pl. IV, fig. 2)
MINUTUM F.

First taken in the Pacific Northwest in Victoria in 1924 (Fall collection). Hatch 1931:78 (2). Leech 1935a:124 (1). Clark 1948:27 (1). Hatch and Kincaid 1958:11 (2).

Subfamily Chaetarthriinae

Chaetarthria Steph.

Male protibiae gradually broadening from the base to or slightly beyond the middle, where there is a distinct angulation on the inner margin and beyond which the sides are parallel.

1 Dorsal surface entirely black to dark reddish brown, the pronotum slightly paler laterally; ventral surface black with legs, palpi and antennae paler; aedeagus with median lobe filiform, the parameres acute at the tip; l. 6-2.1 mm.; se B. C., Wn., sw Id., Or. (Pl. IV, fig. 3; Pl. VII, figs. 27, 28, 29)
NIGRELLA LeC.

The 3 cotypes in the Museum of Comparative Zoology form a composite series. They all bear gold discs indicating California. Cotype #1 is a male; it differs from Pacific Northwest material both in the male genitalia and in having the protibiae more strongly angulate on the inner margin. It is smaller (l. 5 mm. long) and probably represents an unnamed species. Cotype #2 is without a head or prothorax; it has not been dissected so that the sex is unknown; its identity is unknown. Cotype #3 is a male, agrees with Pacific Northwest material in all respects including genitalia, and is here designated as the lectotype of *nigrella* LeC. Hatch and Kincaid 1958:11 (2).

1' Head black, the pronotum pale brown with a slightly darker central area, the elytra pale brown; ventral surface black with the legs, palpi and antennae paler; aedeagus with median lobe broader, the parameres more rounded at the tip and often tending to curve away from the median lobe; l. 5-1. 7 mm.; e Or.
PALLIDA LeC.

d'Orchymont 1939:5. There is some difference between the male genitalia of northwestern material and LeConte's type, but examination of material from various localities in North America convinces me that all probably belong to the same species. In addition to slight differences in the shape of the parameres, the median lobe can slide in and out between the parameres and thus appear longer or shorter. d'Orchymont (1939:5) has illustrated the male genitalia.

Teneral specimens of *nigrella* LeC. are pale dorsally, resembling *pallida*, but will also be pale ventrally whereas *pallida* is dark ventrally.

Subfamily Berosinae

Berosus Leach

1 Tips of elytra emarginate, the angles of the emargination, especially the outer angle, prolonged into spines (subg. ENOPLURUS Hope). Femora with the basal section black and pubescent, the apical portion and the remainder of the legs yellow and glabrous; pronotum and elytral interspaces coarsely and densely punctate; 6.5-8 mm.; e Wn., Or.
PUNCTATISSIMUS LeC.

Leech 1948:430-431 (2); 1956:342 (2). Van Tassell, Col. Bull. 17, 1963:34 (2).

1' Tips of the elytra entire or, if emarginate, the emargination is very small and its outer angle is not prolonged into a spine (Pl. VI, figs. 1, 2) (subg. BEROSUS s. str.)

2 Protarsi 4-segmented, the basal segment enlarged; elytra never alutaceous between the striae and always entire at the apices; males

3 Metafemora elbowed at hind margin; basal segment of protarsi enlarged only slightly, the ventral surface hairy only in the apical half, the hairs not expanded at their tips into small discs; head never alutaceous between the punctures, but the pronotum occasionally so; pronotum with punctation variable, usually coarser and deeper than in the other species; elytral striation deep and extending nearly to the base; fifth abdominal sternite with the 2 teeth in its apical emargination set close together; anterior tooth of the mesosternal lamella short; aedeagus with the parameres in lateral view curving downward in a broad sweep from base to apex (Pl. VI, fig. 10), in dorsal view the tips short, broad and blunt (Pl. VI, fig. 9); 4.8-6 mm.; s B.C., Wn., Or., Id. (Pl. IV, fig. 4; Pl. VI, fig. 1)
STRIATUS Say

Hatch 1933:29 (2). d'Orchymont 1946:11-13 (124). Leech 1956:342 (1). Hatch and Kincaid 1958:11 (2). Miller 1965:32 (1234).

3' Metafemora not elbowed at hind margin; protarsi with basal segment greatly enlarged and roughly triangular, the ventral surface hairy in its apical 4/5 or so; elytral striation variable but usually medium to very shallow

4 Pronotum at least weakly alutaceous between the punctures, which are small and shallow; head not alutaceous between the punctures; protarsi with the hairs of the hairy patch on the ventral surface of the basal segment (except the marginal hairs) expanded at their tips into small discs; elytra with the punctation and striation very shallow, especially the striation of the disc; fifth abdominal sternite with the teeth in the apical emargination variable in size and placement; anterior tooth of mesosternal lamella very long; aedeagus with parameres in lateral view bent downward in a gradual rounded sweep (Pl. VI, fig. 4), the tips in dorsal view broad and forming a very wide trough in which the slender median lobe lies (Pl. VI, fig. 3); 5.2-6.5 mm.; e Wn. (Toppenish)
STYLIFER Horn

d'Orchymont 1946:11. Miller 1965:29.

4' Head and pronotum smooth between the punctures, which are variable in size and depth; elytral striation variable but never extremely shallow; fifth abdominal sternite with a hairy protuberance projecting backward and tending to obscure the teeth in the apical emargination

5 Protarsi with the hairs on the ventral surface not expanded into small discs at their tips; punctation of the pronotum and striation of the elytra variable, the striation never as weak as in *stylifer* Horn; fifth abdominal sternite with the teeth in the apical emargination generally short; anterior tooth of mesosternal lamella variable but never as long as in *stylifer*

6 Aedeagus with parameres in lateral view bent downward and then posteriorly (Pl. VI, fig. 16), in dorsal view the tips long and pointed (Pl. VI, fig. 15); 4.4-5.8 mm.; s B.C., Wn., n Id., Or. (Pl. VI, fig. 2)
FRATERNUS LeC.

d'Orchymont 1946:16-18 (14). Leech 1956:342 (1). Miller 1965:32 (1234).

6' Aedeagus with parameres in lateral view bent downward in a gradual curve (Pl. VI, fig. 6), in dorsal view the tips rounded, their outer edges bent in toward each other much as in *striatus* Say (Pl. VI, fig. 5); 4.3-5.3 mm.; e Or. (Klamath Falls)
OREGONENSIS Mil.

The only known specimens from the Pacific Northwest were taken 10 miles northwest of Klamath Falls, in a swamp, and at Klamath Falls. Miller 1965: 30-32 (4).

5' Protarsi with the hairs, except the marginal hairs, on the ventral surface of the first segment expanded at their tips into small discs; punctation of the pronotum and striation of the elytra medium; fifth abdominal sternite with the teeth in the apical emargination fairly short and close together; anterior tooth of the mesosternal lamella short; aedeagus with parameres in lateral view bent downward in a gradual sweep (Pl. VI, fig. 8), in dorsal view with the tips elongate but wide and blunt (Pl. VI, fig. 7); 4.3-5.6 mm.; se B.C., e Wn., e Or. HATCHI Mil.
Miller 1965:30-32 (124).

2' Protarsi 5-segmented, the first segment very small and not swollen; females

7 Elytra with apex slightly emarginate (Pl. VI, fig. 1) or with a spine at its inner margin; head smooth between the punctures

8 Elytra with apex slightly emarginate (Pl. VI, fig. 1)

9 Pronotum alutaceous between the punctures, the elytra smooth; pronotum and elytra with the punctures variable but usually large and deep; anterior tooth of the mesosternal lamella short; fifth abdominal sternite with the teeth in the apical emargination variable in size and placement (Pl. VI, fig. 1) STRIATUS Say

9' Elytra smooth or alutaceous between the punctures, if smooth the pronotum is smooth, if alutaceous the pronotum is either smooth or alutaceous; punctation of pronotum and striation of elytra moderate; anterior tooth of mesosternal lamella variable but never as long as in *stylifer* Horn OREGONENSIS Mil.

8' Each elytron with apex with a spine at its inner margin; elytra alutaceous between the punctures; punctures of pronotum and striae of elytra of medium size and depth; anterior tooth of mesosternal lamella short; fifth abdominal sternite with the teeth in the apical emargination fairly short and close together HATCHI Mil.

7' Apex of each elytron entire (Pl. VI, fig. 2)

10 Anterior tooth of mesosternal lamella very long; head at least slightly alutaceous between the punctures; pronotum with punctures fine and lightly impressed; pronotum and elytra alutaceous between the punctures; striation of elytra extremely shallow; fifth abdominal sternite with the teeth in the apical emargination variable in size but usually placed wide apart STYLIFER Horn

10' Anterior tooth of the mesosternal lamella variable but never as long as in *stylifer* Horn; head smooth between the punctures; elytra smooth or alutaceous, if smooth the pronotum is smooth, if alutaceous the pronotum is either smooth or alutaceous; punctation of pronotum and striation of elytra variable but never as light as in *stylifer;* fifth abdominal sternite with the teeth in the apical emargination variable in size and placement (Pl. VI, fig. 2) FRATERNUS LeC.

The UW collection contains one male and one female of *infuscatus* LeC. (Pl. VI, figs. 13, 14) and 2 males and 3 females of *ingeminatus* d'Orch. (Pl. VI, figs. 11, 12), all labeled Seattle, Wash., but probably in error. The males of these species have the parameres with a definite lateral swelling before the tip in dorsal view, more pronounced in *ingeminatus* than in *infuscatus;* the females are

indistinguishable from each other and have the apex of the elytra entire; head, pronotum and elytra alutaceous; punctation of pronotum fine and lightly impressed; the anterior tooth of the mesosternal lamella short.

Subfamily Hydrophilinae

Key to Genera

1 Prosternum carinate; mesosternal spine at most barely reaching past the bases of the hind trochanters HYDROCHARA Berth.

1' Prosternum sulcate to fit the front of the mesosternal keel; metasternal spine extending beyond the hind trochanters

2 Length over 25 mm.; maxillary palp with last segment shorter than the penultimate segment HYDROPHILUS Geoffr.

2' Length under 12 mm.; maxillary palpi with last segment as long or longer than the penultimate segment TROPISTERNUS Sol.

Hydrochara Berth.

Sternal keel all on nearly the same plane in lateral view and only as broad as a metatibia; elytra rounded behind; microsculpture of dorsal surface fine, the surface shining; dorsum entirely black to dark brown, venter and legs black, the palpi and antennae proximad to the club paler; 15-19 mm.; se B.C., e Wn. (Pl. IV, fig. 5) OBTUSATUS Say

Hydrophilus Geoffr.

Elytra with apices not toothed; male protarsus with fifth segment moderately but not triangularly dilated, the anterior margin convex, not angulate, and with the suction discs distributed over most of its flat ventral surface; second visible abdominal sternite pubescent narrowly along the anterior edge and on a small triangular patch at each side, the glabrous area roughly transverse; abdominal sternites each with a triangular yellow spot at each side; 28-37 mm.; se B.C., Wn., Or., Id. (Pl. XIII, fig. 1) TRIANGULARIS Say

Horn 1885a:138 (4). Regimbart, Ann. Soc. Ent. Fr. 70, (1901) 1902:218 (4) (Stethoxus). Brittain 1914:19 (1). Leech 1956:343.

Tropisternus Sol.

1 Dorsum blackish with a decided greenish sheen, the head, pronotum and elytra margined with brownish yellow, the yellow of the pronotum continuing narrowly along the anterior margin; venter black with the sternal keel, mouthparts and legs largely pale brown, the femora pale except for the black basal pubescent area; pronotum with lateral series of punctures fine, tending to form a straight line; metafemora sparsely and coarsely punctate at basal one half to two thirds, the basal pubescent area extending to the level of the apex of the trochanters and with a straight apical margin; mesosternal portion of the keel straight, the metasternal portion at most curved slightly away from the abdomen; metasternal keel in the male coarsely punctate, in the female nearly smooth except at the anterior tip; mentum in both sexes coarsely but sparsely punctate; elytral humeri visible from

above; maxillary palpi with antepenultimate segment slightly longer than the apical segment, easily reaching the eye when folded back; aedeagus with median lobe extending well beyond the aedeagopore as in *californicus* LeC. but with the parameres with their lateral edges more sharply produced; body elongate, not strongly convex; 8.5-11 mm. LATERALIS F.

The 2 subspecies found in the Pacific Northwest intergrade throughout much of the area east of the Cascade Mountains, but only occasional individuals from west of these mountains show any tendency toward *humeralis* Mots., which extends further south in California than does *limbalis* LeC. Leech 1948:439, 440-442.

a Yellow margin extending across the base of the elytra and along the scutellum; s B. C., Wn., Id., Or. (Pl. IV, fig. 6) subsp. LIMBALIS LeC.

binotatus Walker 1866:318 (1). Woolridge, Col. Bull. 16, 1962:119 (12). *dorsalis*, Hatch (nec Brul.) 1933:30 (2).

a' Yellow margin not extending across the base of the elytra or along the scutellum; se B. C., e Wn., Id., e Or. subsp. HUMERALIS Mots. *limbalis*, Horn (nec LeC.) 1894:315 (4).

1' Dorsal surface entirely black or brown, usually with a greenish sheen

2 Metafemora entirely black or with a small oblique apical pale area; pronotum with lateral punctures reduced to 1 to 4, or rarely more, and somewhat coarse and uneven

3 Maxillary palpi with antepenultimate segment longer than the terminal segment, easily reaching the eye when folded back; mesosternal portion of the keel straight, metasternal portion curved fairly strongly away from the abdomen; venter including the sternal keel black to dark brown; mouthparts pale; legs dark except for the front legs beyond the middle of the femur and usually a pale oblique area on the apex of the metafemora; metafemora with basal pubescent area extending easily to the level of the apex of the trochanters and having a fairly straight apical margin; metafemora coarsely punctate at the outer two thirds to three fourths; sternal keel in both sexes nearly smooth except for the coarse punctation of the anterior tip; mentum fairly coarsely and sparsely punctate; elytral humeri visible from above; aedeagus much as in *columbianus* Brown; body oval, strongly convex; 9-11 mm.; se B. C., Wn., n Id., Or. ELLIPTICUS LeC.

Leech 1948:439, 443 (24); 1956:343. Hatch and Kincaid 1958:11 (2).

3' Maxillary palpi with antepenultimate segment subequal in length to the terminal segment, barely or not reaching the eye when folded back; mesosternal portion of keel humped when seen in profile, metasternal portion straight; venter almost entirely black, the mouthparts paler, the legs entirely black or with a few pale areas at the apex of the femora; metafemora with basal pubescent area extending to about the apex of the trochanters but with the anterior margin extending farther apically thus making the apical margin of the pubescent area curved, much as in *columbianus* Brown; metafemora coarsely and sparsely punctate in the outer one half; sternal keel nearly smooth except for the coarse punctation of the anterior tip; mentum fairly coarsely and sparsely punctate; elytral humeri turned under and not visible from above; aedeagus much as in *columbianus* Brown; body oval, not very strongly convex; 9-10 mm.; Wn. (Dayton—1615', Ohanapocosh Hot Springs on Mt. Rainier—1928'), Or. ORVUS Leech

A specimen in the ODA collection from Rome, Or. has the elytral humeri and metafemoral pubescence and punctation as in *ellipticus* LeC., but the

sternal keel and maxillary palpi similar to *orvus* Leech; and occasional other specimens identified as *ellipticus* show some characters tending toward *orvus,* especially in the sternal keel. It is possible that *orvus* is a variation of *ellipticus*. Leech 1946a:183-184 (4); 1956:343 (4).

2' Metafemora usually with at least the apical half pale; pronotum with lateral punctures fine, numerous, and tending to form a straight line; elytral humeri visible from above; maxillary palpi with antepenultimate segment longer than the terminal segment and easily reaching the eye when folded back

4 Metafemora with basal pubescent area extending about to the tip of the trochanter and with a nearly straight apical margin; metasternal keel in profile curving away from the abdomen; aedeagus with median lobe projecting beyond the gonopore a distance equal to 1/2 to 3/4 the length of the gonopore; venter largely black, the sternal keel and mouthparts paler, the legs apical to the bases of the femora largely pale; sternal keel coarsely punctate in the male, more sparsely so in the female; mentum coarsely and densely punctate in the male, less densely punctate in the female; elytra roughened in apical one fourth and along the sides to hear the middle by coarse dense punctation which nearly obliterates the finer primary punctation; body oval, not strongly convex; 8.5-10 mm.; w Or. CALIFORNICUS LeC.

This species is apparently restricted in the Pacific Northwest to coastal Oregon. Records of it from elsewhere are probably to be assigned to the next species. Horn 1894:316 (4). Leech 1946a:179, 180, 182 (4); 1948:439, 444 (4).

4' Metafemora with basal pubescent area very small, confined to the extreme base and not or barely reaching the level of the tip of the trochanter except along the anterior edge where it extends farther thus having a curved apical margin; metasternal keel as seen in profile not or only slightly curved away from the abdomen; aedeagus with median lobe projecting only a short distance beyond the gonopore; venter largely black, the sternal keel, mouthparts and legs apical to the base of the femora pale; sternal keel coarsely punctate in the male, nearly smooth except at anterior tip in the female; mentum coarsely and densely punctate in the male, less densely punctate in the female; elytra sometimes with some coarser punctation in the apical one fourth, but never as strongly punctate in that area as in *californicus* LeC.; body oval, not strongly convex; 8.5-10 mm.; sw B.C., Wn., sw Id., Or. COLUMBIANUS Brown

Brues' records of *californicus* LeC. in Idaho hot springs probably refer to this species and, if so, extend its range to include se Id. Brown 1931:117 (1). Hatch 1933:20 (2). Leech 1946a:180-181 (124); 1956:343. *californicus* auct. Brues 1932:263 (3). Leech 1948b:444 (2). Hatch and Kincaid 1958:11 (2).

The UW collection contains one specimen of T. *salsamentus* Fall labeled "Seattle, Wash.," probably in error. This species can be recognized by the pubescent area of the metafemora which extends over the entire basal third of the femur, while the leg is black in the pubescent area and pale apical to it.

Brues 1932:264 records *sublaevis* LeC. from various hot springs in Idaho, but specimens have not been seen. This species runs to *columbianus* Brown in the above key but is separated from it by having the hind margin of the metafemur straight in the basal two thirds so that the femur is parallel sided in this area and not curved as in *columbianus;* the femur flat, not inflated as in *columbianus;* the posterior claws of the male mesotarsus with the tooth smaller and placed at about the middle of the claw instead of larger and more apically placed as in *columbianus*.

Subfamily Hydrobiinae

Key to Genera

Leech 1956:338.

1 Maxillary palpi subequal to the antennae in length and stouter; at least the meso- and metatarsi 5-segmented, the basal segment often very small
2 Elytra without sutural stria but with the punctures sometimes subserially arranged; metatibiae arcuate; metatrochanters large, about 1/3 as long as the metafemora; protarsi of males 4-segmented, the first segment enlarged LACCOBIUS Er.
2' Elytra with sutural striae at least in apical half; metatibiae not arcuate; metatrochanters smaller; all tarsi in both sexes 5-segmented
3 Length over 4 mm.; elytra striate
4 Segments 2 to 5 of the meso- and metatarsi with a fringe of long swimming hairs, these often adhering to the tarsus and difficult to see unless the tarsus is moistened; head slightly less elongate HYDROBIUS Leach
4' Meso- and metatarsi without a fringe of swimming hairs; head slightly more elongate AMETOR Sem.
3' Length under 3.7 mm.; elytra not strongly striate except for the sutural stria
5 Mesosternum with at least a very low longitudinal carina behind an anterior median tooth; body with a metallic greenish sheen PARACYMUS Thoms.
5' Mesosternum not longitudinally carinate; body without metallic sheen
6 Mesosternum with a large dentiform protuberance ANACAENA Thoms.
6' Mesosternum unmodified or with a low transverse ridge in front of a small transverse impression CRENITIS Bed.
1' Maxillary palpi evidently longer than the antennae
7 All tarsi 5-segmented; mesosternum with a bladelike longitudinal lamella ENOCHRUS Thoms.
7' Meso- and metatarsi 4-segmented; mesosternum with a conical tooth or transverse ridge but never with a longitudinal lamella CYMBIODYTA Bed.

Laccobius Er.

The species in this genus are extremely similar in external appearance and should not be identified without examining the male genitalia.

1 Elytral punctation strong and showing at least a slight tendency to be arranged in longitudinal series, the punctation of 2 kinds, series of larger and more evenly arranged punctures alternating with series of smaller irregularly arranged punctures; aedeagus with median lobe slender, filiform
2 Pronotum with pale margin narrow, nearly all its width occupied by the dark central area which is frequently indented at each side posteriorly and medially but not anteriorly
3 Pale spot in front of the eye usually distinct and moderately large, but not reaching the labrum, occasionally obscured; aedeagus with parameres elongate, in lateral view curved at the tip (Pl. VII, fig. 8), in ventral view with each paramere extended medially as a shelf which curves dorsally to enclose the median lobe as an inner sheath (Pl. VII, fig. 7); elytra only

lightly if at all irrorate so that the general color is lighter than that of the central area of the pronotum; 2.2-3 mm.; s B.C., Wn., s Id., Or.
CARRI d'Orch.

d'Orchymont 1942a:6-7, 12-13. *ellipticus*, Hatch and Kincaid (nec LeC.) 1958:11 (2).

3' Pale spot in front of the eye usually very obscure or absent; elytra darker, nearly as dark as the central area of the pronotum; aedeagus elongate, the tips of the parameres not curving up around the median lobe as in *carri* d'Orch.; 2.6-3.5 mm.

4 Aedeagus with parameres with tips pointed, grooved at the sides, bent down slightly at the extreme tip (Pl. VII, figs. 1, 2); se Id.
ACUTIPENIS Mil.

The only known specimens are from Alturas Lake and Stanley Lake, both in the Sawtooth Mts. Miller in press.

4' Aedeagus with parameres with tips rounded and flanged at the outer edge, not pointed (Pl. III, figs. 11, 12); s B.C., Wn., Id., Or. (Pl. IV, fig. 7)
AGILIS Rand.

Prior to the study of North American species of Laccobius by d'Orchymont (1942a) this name was applied to several species; accordingly no prior literature citations are given. d'Orchymont 1942a:1-2, 7, 12-14 (14). Leech 1956: 343. Miller in press.

2' Pronotum with pale margin broader and generally clearly divided from the discal dark spot, this spot frequently indented at each side anteriorly and posteriorly but usually not medially, and reduced to about 2/3 to 3/4 the width of the pronotum

5 Pronotum with central dark spot cut away in a smooth curve posteriorly so that the spot is nearly semicircular, the straight margin of the semicircle being formed by the apical margin of the pronotum; head and pronotum distinctly alutaceous between the punctures; elytra with punctures in very even rows quite close together; elytra irrorate with dark brown discally, paler marginally and posteriorly, the pale margin near the tips of the elytra extending anteriorly to invade the darker area in a rounded pale spot on each elytron near the suture; aedeagus with the tips of the parameres elongate, flat and spatulate, rounded at the tip on the outer edge, more sharply angulate on the inner edge (Pl. VIII, figs. 3, 4); 2.4-2.8 mm.; se B.C.
COLUMBIANUS Mil.

The only known specimens from the Pacific Northwest are from Copper Mt. and 143-mile House, Cariboo Road. Miller in press.

5' Pronotum with central dark spot extending as a pair of broad anteriolaterally directed wings, not semicircular; head and pronotum at most lightly alutaceous between the punctures in some areas; elytral punctures only irregularly arranged in rows; elytra only lightly if at all irrorate, although the pale margin may extend anteriorly near the elytral tips as a pale spot on each elytron near the suture; aedeagus with the tips of the parameres not flat or spatulate

6 Aedeagus with the parameres elongate, the tips curving down in lateral view very much as in *carri* d'Orch.

7 Aedeagus with the ventral membranous shelf on each paramere smaller than in *carri* d'Orch. and not curving dorsad to form an inner sheath for the median lobe, the parameres much stouter than in *carri* and dark brown with white tips (Pl. VII, figs. 5, 6); 2.5-2.8 mm.; e Or.
NEVADENSIS Mil.

The only known specimens were taken at Lower Klamath Lake, Or., at least some of them in an alkaline lake, and at Walker Lake, Nev. Miller in press.

7' Aedeagus with a small tooth-bearing knob on the ventral surface of each paramere instead of a ventral membranous shelf (Pl. VII, figs. 9, 10) but otherwise similar to *carri* d'Orch.; 2.1-3.1 mm.; Wn., sw Id., Or. PACIFICUS Mil.

Miller in press.

6' Aedeagus considerably shorter, stout, in lateral view with the parameres bluntly rounded at the tips, their dorsal margin nearly flat, their ventral margin curving strongly upward (Pl. VII, figs. 11, 12); 2.2-3.1 mm.; w Wn., w Or. TRUNCATIPENIS Mil.

This is apparently a species of running water; most of the Washington records are from rivers near the coast. Miller in press.

1' Elytral punctation light, the punctures often thickly set; pronotum with the pale margins generally narrow but clearly distinct from the dark central area; pale spot in front of each eye large and distinct

8 Elytral punctures in somewhat regular rows; aedeagus with median lobe slender and filiform, the parameres slender with their inner margins broadly curving in dorsal view and slightly swollen at the tips; 2.6-3.5 mm.; e Wn., Or. ELLIPTICUS LeC.

Prior to d'Orchymont's (1942a) study of the North American species of this genus this name was applied to several species, so that earlier literature records need verification. Horn 1894:316 (4). d'Orchymont 1942a:2, 7, 15-17. Leech 1956:343 (4). Miller in press.

8' Elytral punctures confused, not at all in longitudinal rows; aedeagus with median lobe broad and flat, pointed at the tip, the parameres similar to those of *ellipticus* LeC. but more truncate at the tips; 2.7-3.3 mm.; sw Id., Or. CALIFORNICUS d'Orch.

A specimen labeled Pullman, Wash. in the WSU collection is possibly mislabeled, although Leech also records the species from Wn. Leech 1956: 344 (2).

Hydrobius Leach

Elongate, oval, not extremely convex; dark olive green to black, the appendages rufous or rufotestaceous with the tip of the terminal segment of the maxillary palpi and the basal portions of the femora more or less extensively black; dorsal surface finely densely punctate, each elytron with 10 finely punctate impressed striae which are obsolete toward the extreme base and well impressed apically, the third, fifth, seventh, ninth and eleventh intervals each with a series of large setiferous punctures usually along the lateral margin of the interval and frequently, at least in part, adhering to or in the stria; 6.5-8 mm.; B.C., Wn., Id., Or.; very common (Pl. IV, fig. 8) FUSCIPES L.

Specimens with the large punctures of the intervals contiguous with the striae apparently represent the var. ROTTENBERGI Gerh. of European authors. Keen 1895:167 (1); 1898:71 (1). Winters 1926:51 (2). Stace Smith 1930:23 (1). Hatch 1933:29 (2). Clark 1948:26 (1). Leech 1956:344. Hatch and Kincaid 1958:11 (2).

Ametor Sem.

1 Metafemora pubescent on only about the basal one fifth and for a short distance along the anterior margin; elytra striate and evidently elevated prior to the apex at the suture and from intervals 4 to 5, but depressed on each side of these areas (intervals 2 to 3 and 7 to 9); elytra also elevated in the anterior three fourths at the sixth interval and along the margin; elytral surface strongly scabrous; 4-6 mm.; B. C., Wn., Id., Or. (Pl. IV, fig. 9) SCABROSUS Horn

Horn 1890b:265-266 (14) (Hydrobius). Keen 1895:167 and 1898:71 (1) (Hydrobius). Hippisley 1922:64 (1) (Hydrobius). d'Orchymont 1942:17, 19 (1). Clark 1948:26 (1) (Hydrobius). Leech 1956:344. Hatch and Kincaid 1958:11 (2) (Sperchopsis).

1' Metafemora pubescent on somewhat more than the basal one third; elytra without raised areas, each with 10 rows of punctures which become impressed striae apically, the lateral 4 rows heavier and closer together, even numbered intervals with a few coarse punctures; 6-7.5 mm.; se B. C., e Wn., Id., Or. LATUS Horn

Leech 1956:344.

Paracymus Thoms.

Elytra shining between the punctures, not alutaceous; antennae 8-segmented; pronotum and elytra without a sharply defined pale margin

1 Punctation somewhat finer and sparser, especially on the pronotum, the punctation of the pronotum somewhat finer and sparser than that of the elytra; protarsus of male with the terminal segment enlarged and bearing a tooth on its inner side midway to the apex, the claws slender and weakly curved (Pl. III, fig. 16); aedeagus with parameres slender, nearly twice as long as the basal piece (Pl. III, fig. 17); 1.9-2.5 mm.; B. C., Wn., Id., Or. (Pl. VIII, fig. 1) SUBCUPREUS Say

The protarsus of the males of this species is variable, as pointed out by Fall (1901a:218) and Winters (1926:57), but I have been unable to recognize more than a single species. Sharp, Biol. Centr. Am. 1 (2), 1882:64 (4) (Hydrobius). Horn 1890b:273 (124) (Creniphilus). Keen 1905:297 (1) (Creniphilus). Clark 1948:27 (1). Leech 1956:344. Malkin 1958:34 (3). Miller 1963a: 92-93.

1' Punctation coarser and thicker, especially on the pronotum, that of the pronotum about equal to that of the elytra; male protarsus with all the segments enlarged, especially the apical one which bears a blunt tooth on the inner side midway to the apex and often likewise a short peg arising from the socket of the claws, the claws very broad and blade like, the anterior claw much larger (Pl. III, figs. 13, 14); aedeagus with parameres broad, narrowing from about 1/3 of the way from the base to the apex (Pl. III, fig. 15), the basal piece about twice as long as the parameres; 2.3-2.7 mm.; s Id., Or. TARSALIS Mil.

Miller 1963a:91-93 (34).

Anacaena Thoms.

1 Head entirely black or vaguely paler before the eyes; pronotum varying from black with indefinitely paler brownish margins to brownish with indistinct

black markings on the disc; form slightly more narrowly oval; maxillary palpi with apical segment usually entirely dark; 2-2.8 mm.; s B.C., Wn., Id., Or. (Pl. VIII, fig. 2) LIMBATA F.

Hatch 1933:29 (2). Leech 1956:344. Hatch and Kincaid 1958:11 (2).

1' Head black with a clear brown to yellowish marginal spot in front of each eye; pronotum brownish to yellow with black markings on the disc in the form of a broad H with a large blotch on the horizontal bar; form more broadly oval; maxillary palpi with apical segment usually darker in the apical half only; 2.5-2.7 mm.; w Or. SIGNATICOLLIS Fall

The only specimens seen from the Pacific Northwest of this primarily Californian species are from Port Orford, Curry Co., Or. *infuscatus,* Horn (nec Mots.) 1894:317 (4) (pars).

Crenitis Bed.

1 Dorsal surface unicolorous black to reddish brown, at most becoming very slightly paler at the sides of the pronotum and elytra; metafemora strigate and nearly glabrous; antennae 9-segmented; mentum margined in front, not depressed at middle; maxillary palpi with antepenultimate segment swollen

2 Pronotum generally alutaceous between the punctures especially at the sides, the sides weakly arcuate, the hind angles definite; mesosternum with a low transverse protuberance before the mesocoxae; legs more slender, less spiny; metatarsi long, about 7/9 as long as the tibiae; 2.8-3.6 mm.; B.C., Wn., Id., Or. (Pl. VIII, fig. 3) MORATA Horn

This species is extremely close to the eastern *digestus* LeC., and may, as suggested by d'Orchymont, be only subspecifically distinct. d'Orchymont 1942:28, 29 (1). Clark 1948:27 (1). Leech 1956:344. *digestus,* Hatch and Kincaid 1958:11 (2).

2' Pronotum smooth between the punctures, the sides strongly arcuate, without definite hind angles; mesosternum with a transverse groove before the mesocoxae, without a protuberance; legs shorter, stouter and more spiny; metatarsi shorter, about 3/4 as long as the tibiae

3 Size smaller, generally under 2.2 mm. long; form less elongate but slightly attenuate toward the posterior end, more convex; B.C., Wn., Or. PARADIGMA d'Orch.

D'Orchymont named this species and *paracymoides* both from Metlakatla, B.C. in the same paper. I have been unable to distinguish the two on the basis of his descriptions, but am using the name *paradigma* because material so labeled by d'Orchymont agrees with the material I have studied. d'Orchymont 1942:31-32 (1) (Crenophilus). Clark 1948:27 (1) (Crenophilus). *paracymoides* d'Orch. 1942b:30-31 (1) (Crenophilus). *rufiventris,* Fall (nec Horn) 1924:89 (124) (Paracymus). Leech 1956:344 (1).

3' Size slightly greater, usually over 2.2 mm. long; form more elongate and evenly rounded posteriorly, less convex; s B.C., w Wn., w Or. RUFIVENTRIS Horn

This and the previous species are difficult to distinguish. Fall, in naming his *seriellus* as new, apparently separated the two correctly but misidentified Horn's species and thus merely renamed it. Horn 1890b:274-275 (24) (Creniphilus). *seriellus* Fall 1924:89 (Paracymus). Leech 1956:344 (1).

1' Pronotum with definite yellow or pale brown margins, the hind angles distinct; mesosternum simple

4 Head with a large triangular pale area in front of the eye on each side; pronotum with the pale margin very broad uniting in a broad band anteriorly and a narrower one behind; elytra as pale as the sides of the pronotum; antennae 8-segmented; pronotum alutaceous between the punctures; metafemora pubescent in the basal three fourths; maxillary palpi slender, the antepenultimate segment not enlarged; metatarsi nearly as long as the tibiae; 2.5 mm.; se B.C., se Id. MACULIFRONS Brown

Brown 1940b:183-184 (1).

4' Head with sides unicolorous black; pronotum with pale margin much narrower; elytra generally darker than the pale pronotal margin

5 Metafemora nearly glabrous; antennae 9-segmented; pronotum at most very faintly alutaceous between the punctures; metatarsi about 3/4 as long as the tibiae; mentum nearly square, about 1.2 times as wide as long; maxillary palpi with the antepenultimate segment much enlarged; elytra only slightly paler at the tip; aedeagus as in Pl. VII, fig. 20; 2.9-3.5 mm.; w Or. DISSIMILIS Horn

Oregon material differs from Horn's type in having the antepenultimate segment of the maxillary palpi more globose and less elongate, the elytra and pronotum darker with a narrower pale margin on the pronotum, and may eventually prove to be a distinct species. Horn 1890b:270 (4) (Creniphilus). d'Orchymont 1942:27 (4). Leech 1956:344 (4).

5' Metafemora pubescent in the basal two thirds or more; metatarsi nearly as long as the tibiae; mentum wider, about 1.5 times as wide as long; maxillary palpi with the antepenultimate segment at most slightly enlarged

6 Pronotum alutaceous between the punctures especially at the sides; antennae 8-segmented; maxillary palpi with antepenultimate segment not enlarged; 2.2-3.3 mm.; se B.C., e Wn., s Id., e Or. ALTICOLA Fall

A species of higher altitudes, recorded from 2000 to 10,000 feet elevation. *Alticola* differs from the eastern *monticola* Horn only in coloration; they may be only subspecifically distinct.

6' Pronotum smooth between the punctures; antennae 9-segmented; body smaller, length under 2.6 mm.

7 Elytra with the pale lateral margin blending into a diffusely pale area at the apex; metatibiae at broadest point at least 1/6 as broad as long; maxillary palpi with apical segment glabrous, about twice the length of the penultimate segment; aedeagus with parameres bluntly rounded at the tips (Pl. VII, fig. 18); 1.9-2.5 mm.; w Wn., w Or. SNOQUALMIE Mil.

A specimen from Copper Mt., B.C. in the CNC may be mislabeled; if not, it extends the range of the species to the eastern slopes of the Cascade Mts. in s B.C. Hatch and Kincaid 1958:11 (2) (*nomen nudum*). Miller in press (24).

7' Elytra with pale lateral margin sharply defined, occasionally absent; elytral apex not diffusedly paler

8 Apical segment of maxillary palpi glabrous, about twice the length of the penultimate segment; metatibiae at broadest point about 1/6 as broad as long; aedeagus with the parameres bulging laterally and drawn out at the tips along their inner margins (Pl. VII, fig. 19); 2.0-2.5 mm.; se B.C., se Id., w Or. MALKINI Mil.

The aedeagus of males from B.C. is slightly broader and more rounded than that of males from Or. and Id., but all probably belong to the same species. The figure is of a B.C. specimen. Miller in press (134).

8' Apical segment of maxillary palpi of males strongly pubescent except along anterior margin, that of females bearing only a few scattered hairs, in both sexes about 3 times as long as the penultimate segment; metatibiae at broadest point about 1/8 as broad as long; aedeagus with the parameres bluntly rounded at the tips as in *snoqualmie* Mil.; 1.9-2.3 mm.; w Or. (Pl. VII, fig. 17) PALPALIS Mil.
Miller in press (4).

Enochrus Thoms.

Key to Subgenera

Leech 1948b:450

1 Maxillary palpi with last 2 segments nearly equal in length; fifth abdominal sternite with an apical emargination fringed with golden hairs subg. ENOCHRUS s. str.

1' Maxillary palpi with last segment shorter than the penultimate segment

2 Fifth abdominal sternite without an apical emargination fringed with golden hairs subg. LUMETUS Zaitz.

2' Fifth abdominal sternite with an apical emargination fringed with golden hairs subg. METHYDRUS Rey

Subgenus Enochrus s. str.

1 Prosternum not carinate; head pale before the eyes, black elsewhere; pronotum black, pale laterally and for a short distance inward along anterior and posterior margins; 3.5-4 mm.; e Or. (Klamath Falls) CUSPIDATUS LeC.
Miller 1964:72 (4)

1' Prosternum with a low median longitudinal carina; head entirely black; 5-5.7 mm.

2 Dorsal surface black to dark reddish brown, the front angles of the pronotum usually paler; Wn., se Id., Or. PICEUS Mil.
Miller 1964:70-72 (234). *carinatus*, Horn (nec LeC.) 1890:243 (4). Leech 1956:345.

2' Head black dorsally, the pronotum and elytra reddish brown to yellow; sw Id., w Or. (*fucatus* Horn) CARINATUS LeC.
The types of *carinatus* LeC. and *fucatus* Horn appear to be cospecific. Since the only difference between *piceus* Mil. and *carinatus* LeC. is color, all 3 names may represent a single species. Miller 1964:70, 72 (34)

Subgenus Lumetus Zaitz.

1 Dorsal surface dark reddish brown to black, the elytra and pronotal disc usually equally dark, the sides of the head in front of the eyes and the margins of the pronotum often paler; clypeus arcuately emarginate in front exposing a preclypeus

2 Dorsal surface usually black, the pronotum at most narrowly and indistinctly paler at the sides, the head not pale before the eyes; hind angles of pronotum sharp, nearly rectangular; males with the tooth of the outer protarsal claw large but not so strongly everted and extending only about half way to the tip of the claw; aedeagus with the external supporting strut of the median

lobe in ventral view extending beyond the apex of the median lobe a distance at least equal to the width of the median lobe; 4.9-5.3 mm.; se B.C., se Id. COLLINUS Brown

Miller 1964:71, 73 (13).

2' Dorsal surface dark reddish brown, the head often pale before the eyes, the pronotum narrowly to broadly pale at the sides; hind angles of pronotum more broadly rounded; males with tooth of the outer protarsal claw larger and fairly strongly everted and extending about 2/3 of the way to the tip of the claw; aedeagus with the external supporting strut of the median lobe extending only slightly or not at all beyond the apex of the median lobe; 4.5-5.3 mm.; w B.C., Wn., s Id., Or. CONJUNCTUS Fall

Keen 1905:297 (1) (Philhydrus). Leech 1956:345 (4). Hatch and Kincaid 1958:11 (2). Malkin 1958:34 (4). Miller 1964:71, 73 (1).

1' Dorsal surface yellow to dark brown except for black areas on the head and sometimes on the pronotal disc

3 Clypeus arcuately emarginate in front exposing a preclypeus; metafemora with hind margin simple; dorsal surface pale to dark brown, the base of the head black, the pronotal disc varying from completely pale to strongly black; aedeagus with the external supporting strut of the median lobe extending little or not at all beyond the tip of the median lobe; 4.4-5.5 mm.; s B.C., Wn., Id., Or. (Pl. VIII, fig. 4) HORNI Leech

Horni may represent only a portion of the color variation of *conjunctus* Fall, since intermediate specimens occur. A detailed study of the complex throughout its entire range is needed. "*Philydrus lividus* Forster" from B.C. probably refers to the form with the pronotum entirely pale. Leech 1950:250-252 (124). Miller 1964:73 (134). *hamiltoni*, Hatch and Kincaid (nec Horn) 1958:11 (2). *lividus*, Walk. (nec Forster) 1866:310, 319 (1) (Philydrus).

3' Clypeus truncately emarginate in front exposing a preclypeus; metafemora of male with a slightly raised and produced area at the middle of the hind margin; dorsal surface yellow to pale brown, at most slightly darkened but never black on the pronotal disc and at the base of the head; aedeagus with supporting strut of the median lobe extending beyond the apex of the median lobe a distance equal to nearly twice the width of the median lobe in ventral view; 5.5-6.5 mm.; se B.C., e Wn., Id., e Or. DIFFUSUS LeC.

A specimen from Maloney's Grove, North Bend, w Wn. in the UW collection may be mislabeled. Leech 1956:345 (14). Miller 1964: 71-73 (1).

The UW collection contains 2 specimens of HAMILTONI Horn, one labeled "U.W. Campus" and one labeled "Juanita Point, Lake Washington," both in the Seattle area. Since this species is apparently an inhabitant of salt marshes and is not otherwise known north of California (Leech 1949:253-255), these specimens may be mislabeled. They run to rubric 3 in the above key but fit neither alternative, the clypeus being smoothly curved, not emarginate to expose a preclypeus.

Subgenus Methydrus Rey

Entire dorsal surface moderately strongly punctate.

1 Prosternum carinate; pronotum with a central black area with a small spot, sometimes obscured, at each corner of a discal quadrangle; 3.5-4.3 mm.; Wn., s Id., Or. OBTUSIUSCULUS Mots.

This identification is based on Leech's and Malkin's usage. The species

is a member of the *pygmaeus*-complex, a group in need of study over its entire range. Leech 1948:453; 1956:345 (4). Malkin 1958:34 (4). Miller 1964: 73 (4). *pygmaeus*, Hatch and Kincaid (nec F.) 1958:11 (2).

1' Prosternum not carinate; pronotum with 4 black spots as in the previous species but without the discal black area or, at most, with this area vaguely darker

2 Mesosternal carina low, lamelliform, glabrous, not toothed; fifth abdominal sternite with the apical emargination small and acute; 3-3.7 mm.; w Wn. LACUSTRIS LeC.

Bog areas near Seattle. The identification is uncertain. Miller 1964:72 (2).

2' Mesosternal carina higher, pubescent, and bearing low rounded teeth obscured by the hairs; fifth abdominal sternite with the apical emargination moderately large and rounded; 4.5-5.8 mm.; sw B.C., Wn., Id., Or. CALIFORNICUS Horn

Leech 1948:451 (2); 1956:345 (1). Hatch and Kincaid 1958:11 (2). Miller 1964: 72 (1).

Cymbiodyta Bed.

Head entirely black

1 Elytra without well defined striae, except the sutural stria, or rows of coarse punctures; pronotum and elytra black to dark reddish brown with pale margins

2 Mesosternal protuberance bearing a large median tooth; length over 4.2 mm.; aedeagus with the outer margin of the parameres straight at least to near the tip

3 Hind angles of pronotum nearly rectangular, the sides nearly straight in the posterior three quarters but curving in gradually in the anterior quarter; maxillary palpi more slender, yellowish brown (Pl. VII, fig. 21); mesosternal tooth longer; aedeagus with parameres nearly triangular in shape, with a very small enlargement at the tip of each, not curving toward each other at tip, the inner margin straight (Pl. VII, fig. 23); form slightly less robust; 4.2-4.7 mm.; se B.C., Wn. ACUMINATA Fall

Fall 1924:87 (2). Miller 1964:73, 74, 77 (12).

3' Hind angles of pronotum more obtuse, the sides more broadly arcuate; maxillary palpi more robust, yellow (Pl. VII, fig. 22); mesosternal tooth slightly shorter; aedeagus with parameres bent slightly toward each other at the tips, the inner margin of each sinuate (Pl. VII, fig. 24); form slightly more robust; 4.5-5.1 mm.; w Wn., Or. LEECHI Mil.

Miller 1964:74, 75, 77 (14).

2' Mesosternal protuberance without a large tooth at middle

4 Length 3.4-4 mm.; more parallel-sided; mesosternal protuberance with an extremely small tooth; maxillary palpi yellow, slender; aedeagus with the outer margin of each paramere curving inward to about 2/7 the distance from the tip and then bent outward to parallel the inner margin so that the parameres diverge from each other at this point; se B.C., Wn., n Id. MINIMA Notm.

Leech 1948a:42-43 (12). Miller 1964:77 (123). *acuminata*, Hatch (nec Fall) 1933:29 (2).

4' Length over 4.4 mm.; mesosternal protuberance a low transverse ridge, not toothed at middle

5 Maxillary palpi yellow; aedeagus with parameres with the inner margin

of each sinuate but not bent toward each other at the tips, the outer margin straight to the tip; mesosternal ridge lower; 4.4-5 mm.; B.C., w Wn. (Pl. VII, fig. 25) VINDICATA Fall

Fall 1924:86-87 (1). Miller 1964:74, 75, 77 (12).

5' Maxillary palpi brown; aedeagus with parameres with the inner margin straight, the outer margin slightly bent outward near the tip so that the tip is slightly elongate (Pl. VII, fig. 26); mesosternal ridge slightly higher; 5.1 mm.; e Or. HATCHI Mil. sp. n.

The unique type was collected 13 miles northeast of Bly, at the edge of Deming Creek, Klamath Co. by Joe Schuh, and is in his collection. Miller 1964:74, 76-77 (4).

1' Elytra with striae or series of large punctures evident in at least the apical quarter; mesosternal protuberance entirely transverse, never with a tooth

6 Metafemora pubescent in slightly less than the basal two thirds; maxillary palpi short and stout, yellow; dorsal surface black to dark reddish brown, the margins paler; elytra with the serial punctures forming at least 3 nearly complete rows laterally, the discal rows complete in about the apical quarter only DORSALIS Mots.

Leech 1948:449 (2); 1948a:45-46 (12); 1956:344 (1). Miller 1964:76 (1).

a Pronotum with pale margins broader; maxillary palpi slightly longer and more slender; form slightly more robust; average size larger; 5.2-5.5 mm.; Id., Or. subsp. DORSALIS s. str.

a' Pronotum with pale margins narrower; maxillary palpi slightly shorter and more robust; form slightly less robust, more parallel-sided; average size smaller; 4.1-5.4 mm.; s B.C., Wn., sw Id., Or. subsp. COLUMBIANA Leech

Leech 1948a:46 (12). Hatch and Kincaid 1958:11 (2).

6' Metafemora pubescent in the basal three quarters; maxillary palpi longer and more slender; elytra with lateral series of punctures usually traceable to near the base, but the discal series traceable only near the apex

7 Pronotum and elytra usually yellowish brown to dark brown, the disc of the pronotum black; elytra with the serial punctures somewhat more evident and less confused with the larger punctures of the intervals; maxillary palpi usually yellowish; 4.7-5.7 mm.; w Or. IMBELLIS LeC.

Leech 1948a:45 (4); 1956:345 (4). Miller 1964:77 (4).

7' Pronotum and elytra usually reddish brown to black, the margins paler; elytra with serial punctures more confused, not traceable as striae as far anteriorly as in the previous species, the discal striae especially usually visible only at the apex; maxillary palpi usually brownish; 4-4.8 mm.; s B.C., w Wn., Or. (Pl. VIII, fig. 5) PACIFICA Leech

This form may be only subspecifically distinct from *imbellis* LeC. Leech 1948a:43-44 (14); 1956:345 (1). Hatch and Kincaid 1958:11 (2). Miller 1964:76 (1).

Suborder Heteromera

Key to Families

1 Procoxal cavities open behind

2 Head not suddenly narrowed behind

3 Pronotum with a distinct lateral margin except occasionally at apical third;

the distinct sublateral suture in Lecontia (Pythidae) is not regarded as a lateral margin

4 Body sculpture fine and smooth MELANDRYIDAE
4' Body sculpture rough and coarse ZOPHERIDAE
3' Pronotum without a distinct lateral margin (except occasionally at extreme basal angles)
5 Head not strongly narrowed behind; tarsal claws simple or cleft
6 Antennae usually filiform, the segments usually much longer than wide; pronotum never with a distinct lateral margin OEDEMERIDAE
6' Antennal segments 4 to 10 usually no more than twice as long as wide, frequently moniliform, if serrate (Mycterus), then the pronotum with a distinct lateral margin at extreme base
7 Habitat not intertidal; abdomen with 5 visible sternites, the first 2 not connate, the sixth sternite usually retracted, when visible it is not fused with the fifth PYTHIDAE
7' Habitat intertidal; abdomen with 6 visible sternites, the first 2 connate, the last 2 closely fused, the posterior margin of the fifth marked by a faintly impressed line and a row of setae AEGIALATIDAE
5' Head gradually but strongly narrowed behind; tarsal claws pectinate with large appendages at their bases; antennae predominantly filiform CEPHALOIDAE
2' Head suddenly narrowed behind; procoxae prominent
8 Prothorax with the lateral margins sharply defined in basal half or throughout
9 Last abdominal tergite not produced into a long style; tarsi with claws simple, the third or fourth segments more or less lobed SCRAPTIIDAE
9' Last abdominal tergite produced into a long style; tarsi with claws serrate and with a bristlelike appendage beneath, the penultimate tarsal segment not or only slightly lobed MORDELLIDAE
8' Prothorax without a sharp lateral margin
10 Base of pronotum as wide as elytra RIPIPHORIDAE
10' Base of pronotum narrower than elytra
11 Tarsal claws cleft in Pacific Northwest genera, the upper lobe reduced to a tooth in Megetra and Hornia; head deflexed MELOIDAE
11' Tarsal claws simple or toothed
12 Abdomen with the first 2 visible sternites not fused, free and distinct
13 Metacoxae prominent PYROCHROIDAE
13' Metacoxae narrow, not prominent
14 Metacoxae contiguous or approximate
15 Prothorax not constricted at apex; tarsal claws with a pointed lamelliform tooth internally at base, the apical portion abruptly bent PEDILIDAE
15' Prothorax constricted at apex; tarsal claws simple or with a feeble dentiform dilatation at base EURYGENIIDAE
14' Metacoxae usually well separated; eyes small, entire, usually coarsely faceted ANTHICIDAE
12' Abdomen with first 2 segments immovably fused; penultimate tarsal segments very minute causing the tarsi to appear to be 4-4-3; tibial spurs usually obsolete EUGLENIDAE
1' Procoxal cavities closed behind
16 Tarsal claws simple

17 Procoxae conical, prominent, contiguous; abdomen with 5 free visible sternites OTHNIIDAE
17' Procoxae globular, transverse or oval, not contiguous; abdomen with 5 visible sternites, the first 2 to 4 more closely united, more or less fused or immovable TENEBRIONIDAE
16' Tarsal claws pectinate ALLECULIDAE

Family Melandryidae
(Serropalpidae)

The Melandryidae, for the most part, breed in dead and rotting timber or in their associated fungi. The limits of the family are not very definitely fixed, the Scraptiini of authors being here raised to family rank because of the suddenly constricted head and the Mycterini transferred to Pythidae because of the absence of a definite lateral margin to the pronotum. Horn, Trans. Am. Ent. Soc. 15, 1888:32-44. Bradley, Man. Gen. Beetles Am. n. of Mex. 1930:196-200. Arnett 1963:215-225.

Key to Subfamilies

1 Tarsal claws simple
2 Metatibiae as long as the femur or nearly so, longer than the first tarsal segment, with simple spurs only a fraction as long as the metatibia
3 Penultimate tarsal segment simple at apex TETRATOMINAE
3' Penultimate segment of pro- and mesotarsi and usually of the metatarsi emarginate and more or less lobed at apex MELANDRYINAE
2' Metatibiae evidently shorter than both the femur and first tarsal segment, their pectinate apical spurs as long as the tibiae ORCHESIINAE
1' Tarsal claws cleft or appendiculate, cleft to base in Pacific Northwest genera OSPHYINAE

Subfamily Tetratominae

Key to Tribes

1 Procoxal cavities with an evident deep fissure along the outer margin TETRATOMINI
1' Procoxal cavities without an external fissure HALLOMENINI

Tribe Tetratomini

Key to Genera

1 Antennae not pectinate
2 Antennae with last 6 segments subequally thickened; maxillary palpi with last segment enlarged, 4 sided, the apex subtruncate; eyes round, entire; procoxae contiguous; head without a median impression on vertex; pronotum somewhat flattened, feebly deplanate toward hind angles, the sides broadly sinuate before the distinct somewhat obtuse hind angles, the basal foveae very vague; glabrous SPHALMA Horn

2' Antennae with last 3 or 4 segments thickened; maxillary palpi with last segment small; pronotum with sides reflexed; procoxae separated

3 Antennae with last 4 segments thickened; pronotum with a pair of distinct basal foveae; head without a median impression on vertex TETRATOMA F.

3' Antennae with last 3 segments thickened; pronotum without basal foveae; head with a median impression on vertex EUPISENUS Csy.

1' Antennae with segments 3 to 10 pectinate; maxillary palpi with last segment enlarged, cultriform; eyes emarginate; procoxae contiguous; head without a median fovea on vertex PECTOTOMA gen. n.

Genotype: *Pectotoma hoppingi* sp. n.

Sphalma Horn

Black, shining, the upper surface and legs piceorufous; above moderately distinctly punctate, glabrous; head flattened; pronotum flattened, subquadrate, about 2/3 as long as broad, the sides sinuate before the distinct somewhat obtuse hind angles and thence feebly broadly arcuate; elytra with 2 or 3 very faint longitudinal sulci toward the suture; 6-8.6 mm.; sw B. C., w Wn., n Id., w Or. (Pl. VIII, fig. 6) QUADRICOLLIS Horn

Tetratoma F.

Elongate oval, convex, finely and sparsely pubescent; rufotestaceous to piceous, the appendages and venter somewhat paler; above distinctly punctate, the head more closely and the elytra more coarsely so; antennae with segments 8 to 11 forming a club, segments 6 to 10 transverse; pronotum transverse, the sides and base with a narrow evidently reflexed margin, the side margins arcuate and feebly crenulate, the basal margin broadly sinuate behind the distinctly impressed basal impressions; elytral punctures without trace of strial arrangement; 3.2-4.2 mm.; B. C., Wn., ne Or.; rare (Pl. VIII, fig. 7) CONCOLOR LeC.

Wickham 1893:230 (1). Clark 1956:40 (1).

Eupisenus Csy.

Elongate, parallel; finely sparsely subdecumbently pubescent; rufopiceous, the head and pronotum usually somewhat darker, the elytra luteous, indefinitely shaded with piceous at sides and apex; body distinctly closely punctate, the head somewhat more finely and the elytra somewhat more coarsely so; antennae with 3-segmented club, the ninth and tenth segments transverse; pronotum transverse, scarcely as wide as elytra at base, the sides broadly arcuate, finely crenulate, and rather strongly reflexed, the base finely margined, the disc convex, somewhat impressed on each side at about basal third, and narrowly transversely impressed along basal margin, the hind angles subrectangular; 3.7-4.7 mm.; s B. C., w Wn., w Or.; in fungus (Pl. VIII, fig. 8) ELONGATUS LeC.

Pectotoma gen. n.

Elongate; testaceous, the eyes black, the body covered with semidecumbent pubescence; head transverse, narrower than the pronotum, shallowly

closely punctate, broadly shallowly concave and somewhat shining between the bases of the antennae and between the eyes, eyes prominent and separated by a distance that is equal to their width in dorsal view, sides of head behind the eyes broadly arcuate; antennae with segments 1 and 2 short and subequal, segments 3 to 10 pectinate, the pectinations longer than their respective segments, arising toward base of segment on segments 3 to 7, at middle on segments 8 and 9, and at apical fourth on segment 10; maxillary palpi with apical segment only enlarged, cultriform; pronotum convex, narrower than elytra, about 7/10 as long as wide, nearly twice as wide at base as apex, the side margins subparallel and sharp at basal two fifths and thence arcuate to apex, the hind angles nearly rectangular, the base finely margined and broadly trisinuate, the disc granulately punctate, deplanate toward hind angles external to the feeble basal impression; elytra about 6 times as long as pronotum and with coarser irregular punctures among which are 4 or 5 nearly evanescent longitudinal impunctate intervals; venter shallowly punctate; procoxae elongate, prominent; mesocoxae contiguous; tibiae as long or longer than femora, longer than the tarsi, the penultimate tarsal segments not lobed; fifth visible abdominal sternite of male very feebly sinuate along apical margin, the sixth segment narrow and strongly emarginate, the aedeagus with the median lobe slender, subparallel, longer than the slender parameres, the sides of the median lobe in ventral view toward apex gradually convergent to an acute apex; female unknown; 4.4-4.5 mm.; se B.C. HOPPINGI sp. n.

Type: Lorna, B.C. VI-24-1925, *Pinus contorta,* H. Richmond in CAS collection: 4 paratypes: B.C. (Lorna from *Pinus contorta* and *Abies lasiocarpa,* Stanley) in UW and CAS collections. This extraordinary new species may well eventually require a separate tribe or subfamily for its proper recognition. I name it for Ralph Hopping, in whose collection the specimens were received by the CAS.

Tribe Hallomenini

Key to Genera

1 Prosternum narrowing to a point between the coxae, not extending behind them, the prosternum before the coxae somewhat shorter than the coxae are long; metepisternum with its anterior end cut off by a distinct suture to form a triangular area; elytra with about 11 feebly impressed striae of larger punctures, the intervals with longitudinal series of sparse semierect setae; elytral epipleura wide nearly to the apex; elongate oval, convex, shining with short moderately dense decumbent pubescence, finely punctate; antennal segments 5 to 11 widened; eyes strongly transverse, emarginate in front; pronotum transverse, convex, more than twice as wide at base than at apex, finely margined throughout, the sides broadly arcuate and curving into the apex

2 Meso- and metatibiae with scarcely any trace of transverse ridges on their outer edge; eyes narrowly separated above; prothorax at sides below finely rugosely punctate; pronotum widest at base, the hind angles rectangularly rounded, the base bisinuate on each side and broadly lobed before the scutellum, the basal impressions consisting of a short incised stria SYNSTROPHUS Seidl.

2' Meso- and metatibiae on their outer edge with numerous transverse ridges which bear short spinules; eyes in Pacific Northwest species separated by a distance that is nearly or more than equal to their width; pronotum with hind angles narrowly rounded, the basal impression with an obliquely elongate group of coarse punctures

3 Prothorax at sides below simply punctate, the surface between the punctures shining; pronotum widest at base, the base bisinuate on each side and broadly lobed before the scutellum EUSTROPHINUS Seidl.

3' Prothorax at sides below densely rugosely punctate; pronotum widest very slightly before the base, the base with the bisinuation on each side and the median lobe scarcely evident EUSTROPHUS Ill.

1' Prosternum prolonged behind the coxae completely separating them; elytra without striae, the elytral striae in Holostrophus represented by subsurface longitudinal series of pigmented spots, the elytral intervals in Hallomenus represented by longitudinal series of sparse semierect setae

4 Metepisternum with its anterior end cut off by a distinct suture to form a triangular area; prosternum before the coxae about as long as the coxae are long; elytral epipleura wide nearly to the apex HOLOSTROPHUS Horn

4' Metepisternum with its anterior end not cut off by a suture to form a triangular area; elytral epipleura much narrowed behind middle; prosternum before the coxae much shorter than the coxae are long HALLOMENUS Panz.

Synstrophus Seidl.
(Eustrophus pars)

Black, the ventral surface and appendages piceous; 6-7 mm.; s B.C., Wn., "Id.," nw Or. (Pl. VIII, fig. 9) REPANDUS Horn
Leng 1920:238 (3). Van Dyke, Bull. Brook. Ent. Soc. 23, 1928:252 (1). Stace Smith 1929:72 (1).

Eustrophinus Seidl.

Shining black, the anterior margin of the labrum paler; 6 mm.; se B.C., "Id." CONFINIS LeC.
Leng 1920:238 (3).

Eustrophus Ill.

Brownish, rather thickly clothed with short brownish pubescence; 4.5-5 mm.; se B.C., nw Or. TOMENTOSUS Say

Holostrophus Horn
(Eustrophus pars)

Elongate oval, convex, distinctly narrowed posteriorly; rufotestaceous, feebly shining, above uniformly finely densely punctate, the pronotum somewhat more distinctly so; sparsely clothed with short decumbent pubescence; antennae with last 4 segments feebly wider, 8 to 10 transverse; eyes lateral, not extending above insertion of antennae; pronotum transverse, widest a little before base, the sides broadly arcuate, broadly curving into the apex,

the basal angles obtuse, the basal impressions in the form of incised lines extending about 1/3 the distance to the apex; prosternum and median portions of mesosternum coarsely punctate; 5-5.5 mm.; sw B.C., "Wn.," nw Or.; rare (Pl. IX, fig. 1) IMPRESSICOLLIS LeC.

LeConte 1874:69 (1). Horn 1888:36 (12).

Hallomenus Panz.

Elongate; finely punctate, the pronotum somewhat more distinctly so; with fine decumbent pubescence; eyes strongly emarginate in front, the inner margin on a line with the outer margin of the insertion of the antennae; pronotum widest before base, the sides broadly arcuate, broadly curving into the apex, the hind angles narrowly rounded, the basal impressions foveiform

1 Antennae not serrate, the segments subquadrate; pronotum more transverse, about 5/9 as long as wide; punctation above somewhat finer; head piceous, pronotum, elytra, and venter rufopiceous to nearly testaceous, the elytra darker with the anterior portions suffused with testaceous, appendages testaceous; 3-5.7 mm.; B.C., w Wn., Or.; in fungi; from *Abies lasiocarpa, Picea engelmanni, and Pinus contorta* (Pl. IX, fig. 2) SCAPULARIS Mels.

Wickham's 1893:230 record of *punctulatus* LeC. from nw B.C. may refer to this species.

1' Antennae serrate, segments 4 to 10 triangular; pronotum less transverse, about 2/3 as long as wide; punctation above somewhat coarser and more evident; elytra with vague suggestions of longitudinal costae; piceous, nearly black, the tarsi and abdomen below slightly paler; 6.3-7 mm.; se B.C. SERRICORNIS LeC.

Subfamily Melandryinae

Key to Tribes

1 Pronotum with base margined

2 Pronotum with base as broad as elytra, its posterior angles closing against the humeri SERROPALPINI

2' Pronotum in Pacific Northwest genera with base somewhat narrower than the elytra, the humeri prominent HYPULINI

1' Pronotum with base unmargined, lying loosely over the base of the elytra MELANDRYINI

Tribe Serropalpini

Key to Genera

1 Procoxal cavities without a lateral fissure; maxillary palpi with last segment cultriform; antennal segments 6 to 11 elongate, less than twice as long as wide

2 Pronotum with marginal line entire, reaching the apex

3 Meso- and metatibiae obliquely truncate at apex; mesocoxae completely separated by the backward extension of the mesosternum; maxillary palpi with only the last segment enlarged DIRCAEA F.

3' Meso- and metatibiae squarely truncate at apex; mesocoxae contiguous

behind, incompletely separated by the backward extension of the mesosternum; maxillary palpi with the last 3 segments subequally widened PHLOEOTRYA Steph.

2' Pronotum with marginal line not extending anterior to the apical eighth ABDERA Steph.

1' Procoxal cavities with a lateral fissure

4 Maxillary palpi with only the apical segment enlarged; antennal segments 4 to 11 not or only slightly more than twice as long as wide

5 Antennal segments 5 to 10 more or less evidently transverse; mesocoxae separated; maxillary palpi with the last segment securiform, the inner margin arcuate RUSHIA Forel

5' Antennal segments longer than wide

6 Median posterior process of mesosternum coming to an acute point between the mesocoxae, either not attaining the median anterior lobe of the metasternum or attaining it very narrowly; maxillary palpi with last segment somewhat longer and more evidently securiform; pronotum with sharp lateral margin extending to in front of middle XYLITA Payk.

6' Median posterior process of mesosternum extending broadly between the mesocoxae, its apex narrowly rounded and in contact with the median anterior lobe of the metasternum or nearly so; maxillary palpi with last segment somewhat shorter and more triangular; pronotum with sharp lateral margin somewhat less evident in front of middle SCOTOCHROA LeC.

4' Maxillary palpi with the last 3 segments enlarged; antennal segments beyond the second more than twice as long as wide; mesocoxae separated in Pacific Northwest species

7 Maxillary palpi with the last 3 segments not or scarcely serrate, not strongly triangular, their inner angles not strongly produced, the last segment not longer than the 2 previous segments; pronotum with basal margin at middle broadly arcuately lobed, the surface well before the lobe broadly transversely impressed, the basal impressions broad ENCHODES LeC.

7' Maxillary palpi with the last 3 segments strongly serrate, strongly triangular, their inner angles strongly produced, the penultimate segment emarginate along its apical margin, the last segment along its straight inner margin as long as the 2 preceeding segments together; pronotum with the basal margin at middle scarcely lobed, the basal impressions feeble SERROPALPUS Hellen.

Dircaea F.

Elongate, attenuate behind; nearly black, shining, the antennae and legs feebly tinged with piceous, with sparse decumbent pubescence, with very sparse short erect hairs on pronotum and elytra; above finely punctate; head perpendicular, the antennae not extending back of pronotum; pronotum convex, wider than long, widest before the subrectangular hind angles, the base fully twice as wide as apex, the apex strongly arcuate, the sides broadly arcuate toward base, suboblique before middle, the lateral margin obsolete at apical third, the base feebly broadly bilobed at middle, the lobes separated by a distinct emargination, the basal impression virtually obsolete; scutellum transverse; elytra with an irregular 4-lobed pale spot before basal third and an external larger and internal smaller quadrate spot at the apical third; elytral apex narrowly arcuate; prothoracic hypomera and

mesothorax below coarsely densely roughly punctate; metasternum and metepipleura a little less coarsely punctate; abdominal sternites finely punctate; 9. 3 mm. ; ne B. C. HORIEI sp. n.

Type: Ft. Nelson, B. C. 18-VII-1949. J. K. Horie in UBC collection. Distinguished from the eastern *quadrimaculata* Say by the fact that the lateral pronotal margin is obsolete at the apical third, the basal pronotal margin feebly bilobed with an emargination between. *Quadrimaculata* has the lateral pronotal margin entire, the basal margin broadly feebly lobed at the middle without a median emargination.

Phloeotrya Steph.

Elongate; fuscous brown, the ventral surface, mouth parts, and legs somewhat paler; densely rugosely punctate with short sericeous brown pubescence; head perpendicular, less roughly punctate; antennae with segments longer than wide, the length of the segments beginning with the second in the ratio of 5, 15, 10, 10, 9, 9, 8, 8, 8, 11; pronotum nearly as long as wide, convex, the sides feebly arcuate, the hind angles rounded, the sides and base margined, the basal impression scarcely evident; elytra with feeble trace of 3 costae; 6-12 mm. ; nw Wn. (Mt. Baker) (Pl. IX, fig. 5) VAUDOUERI Muls.

A widely distributed species in Europe and North America; under bark. Its absence from Asia suggests it may be introduced in either North America or Europe; its capture in California before 1867 suggests it is indigenous in North America

Abdera Steph.

Elongate; brownish, the appendages testaceous, the elytra with an entire testaceous subbasal fascia whose width is nearly equal to half the length of the elytra and with a common nearly circular subapical testaceous spot; with fine inconspicuous decumbent pubescence; head and pronotum finely closely punctate; maxillary palpi with the last 3 segments equally wider, the penultimate and antepenultimate segments serrate, the last segment cultriform; pronotum about 4/5 as long as wide, as broad as elytra, convex, widest at about basal third, the base wider than the apex, the lateral marginal line extending nearly 7/8 the distance to the apex, the sides arcuate, the basal angles narrowly and the apical angles more broadly rounded, the mid-line feebly impressed toward base; elytra very finely punctate with subsurface evidence of about 10 entire and a scutellar series of "punctures"; procoxae contiguous; mesocoxae separated by the mesosternal process; male with fifth abdominal sternite truncatosinuate at apex, the aedeagus in the type with the parameres short, slender, feebly arcuate, the median lobe slender and extending beyond the parameres in a long arc; 4. 5 mm. ; se B. C. FIRMA sp. n.

Distinguished from *bicinctus* Horn by its greater length (3. 5 mm. in *bicinctus*), the greater extension of the lateral marginal line of the pronotum, concolored pronotum, and differently shaped elytral markings. Type male; Midday Val., Merritt, B. C., VII-14-1925, R. Hopping; from *Pseudotsuga taxifolia*; in CAS collection.

Rushia Forel

Elongate, subparallel, broadly arcuate before and behind; rufotestaceous, the venter and appendages a little paler, the head and pronotum sometimes a little darker, above densely punctate, the head a little more finely and the elytra a little less distinctly and more rugosely so, the punctures with inconspicuous decumbent hairs; pronotum nearly 3/4 as long as wide, widest before base before which the sides are feebly convergent, broadly curving into the apex, more narrowly curving into the base, the sides and base finely margined, the basal impressions vague; elytra about 3 1/6 times as long as pronotum; 4. 8-5. 8 mm. ; s B. C. , sw Wn. , n Id. , Or. (Pl. IX, fig. 8) CALIFORNICA Fall

Xylita Payk.

Elongate beetles with decumbent pubescence; head and pronotum closely punctate, the elytra somewhat more sparsely minutely so; pronotum transverse, widest at about middle, convex, the basal impressions feeble, the base margined

1 Prosternum before the coxae coarsely punctate and about equal in width or shorter than the width of a procoxa; antennal segments as long or longer than wide

2 Pronotum with the lateral marginal line becoming obsolete before the anterior margin; above somewhat more coarsely densely punctate, the head and pronotum subcontiguously and the elytra somewhat granulately punctate; elytra usually without a dark sutural streak and usually without evidence of subsurface longitudinal series of "punctures"; median mesosternal process acutely pointed but not attenuate, not extending back of middle of coxae, leaving the mesocoxae contiguous behind, the anterior median metasternal lobe broadly arcuate, not produced; color variable, usually with the head and pronotum black, the appendages and elytra rufopiceous to rufotestaceous, the latter frequently with an elongate piceous cloud at apical two thirds, but sometimes entirely rufotestaceous; 6. 3-8. 4 mm. ; B. C. , w Wn. , sw Id. , e Or. ; recorded from *Abies lasiocarpa, Picea engelmanni,* and *Pinus contorta* in se B. C. (Pl. IX, fig. 6) LAEVIGATA Hellen.

A single specimen (Kane Valley, B. C.) exhibits the subsurface series of "punctures" of *livida* Sahlb.

Two specimens (Trinity Valley, B. C.) exhibit a prolongation of the mesosternal process and the metasternal lobe between the mesocoxae until they virtually meet; 3 specimens (Wn. : Mt. Rainier, type, and Stevens Pass; Or. : Mt. Hood) exhibit a similar prolongation of the metasternal lobe with a dorsally directed extension of the mesosternal process, so that meso- and metasternum again virtually meet between the mesocoxae. These 2 sets of somewhat diverse specimens are designated as representing the var. PRODUCTA nov. Only future study can elucidate the significance of this variation. Paratypes in UW and CAS collections.

LeConte 1878:472 (3). Stace Smith 1929:72 (1). Mank, Can. Ent. 69, 1937: 19. Clark 1956:40 (1).

2' Pronotum with the lateral marginal line continuous to and around the anterior angle and continuing briefly along the apical margin; elytra frequently with a dark sutural streak and usually with evidence of a scutellar and about 10 entire subsurface longitudinal series of "punctures"; posterior median mesosternal process attenuately produced between the mesocoxae virtually

meeting the acutely produced anterior metasternal lobe dividing the mesocoxae; black, the elytra testaceous usually with the lateral margin and a sutural stripe piceous the appendages piceous, the venter black or piceous; ♀. 7-7. 2 mm.; se B. C., Wn., e Or.; recorded from *Abies lasiocarpa* and *Pseudotsuga taxifolia* in se B. C. LIVIDA Sahlb.
Mank, Can. Ent. 69, 1937:19.

1' Prosternum before the coxae nearly impunctate and wider than the width of a procoxa; antennal segments 5 to 10 wider than long; pronotum with lateral marginal line continuous to and around the anterior angle and continuing briefly along the apical margin; above somewhat more finely sparsely punctate, the elytra more finely so with transverse strioles between the punctures; elongate; rufotestaceous, the appendages and venter somewhat paler; covered with fine decumbent golden pubescence; pronotum 3/4 as long as wide, the base wider than the apex and feebly sinuate, the sides broadly arcuate, the disc evanescently flattened at middle, median line not or very feebly impressed, basal impressions feeble; elytra without trace of striae or costae; posterior median mesosternal process attenuately produced between the mesocoxae, virtually meeting the angulate anterior metasternal lobe narrowly dividing the mesocoxae; 5.1-5. 7 mm.; w Wn., nw Or. (Pl. IX, fig. 7) TESTACEA sp. n.
Type: Seattle, Wash. July 26, 1928; paratypes: Wn. (San Juan Is.), Or. (Forest Grove, McMinnville).

Scotochroa LeC.

Elongate; piceous, sometimes with the elytra, legs, and venter somewhat paler; mouthparts paler; above densely finely punctate, the punctures of the elytra somewhat finer and with a tendency to rugosity toward the base, the punctures with decumbent hairs; maxillary palp with the last segment triangular or subtriangular, the inner margin arcuate, the length much less than the second and third antennal segments together; pronotum about 3/4 as long as wide, the sides nearly straight behind, broadly curving into the apical margin, the hind angles sharply rectangular, the sides and base finely margined, the base bisinuate, the lateral marginal line not attaining the anterior margin, the basal impressions vague; 5-6 mm.; s B. C., Wn., e Or. (Pl. IX, fig. 9) BASALIS LeC.
Mank, Can. Ent. 71, 1939:181-182 (14). Clark 1956:40 (1).

Enchodes LeC.

Elongate, brownish, shining; upper surface with decumbent pubescence, finely densely punctate; pronotum about 9/10 as long as wide, convex, broadly depressed before the basal margin, widest behind middle before which the sides are arcuate and behind which the sides are feebly oblique to the narrowly rectangularly rounded hind angles; elytra with sutural and lateral margins more or less completely margined, the disc with very evanescent traces of several costae, their apices separately narrowly arcuate; 12-14. 5 mm.; se B. C.; under bark of *Populus trichocarpa* at Creston; rare SERICEA Hald.

Serropalpus Hellen.

Elongate; upper surface with decembent pubescence; head and pronotum shining, densely punctate, the head more finely so; pronotum convex, the basal margins margined

1 Elytra with about 9 feebly impressed striae which are not at all marked by large well-incised punctures; pronotum feebly impressed at middle just before hind margin, the side margin oblique before the slightly obtuse hind angles; posterior median mesocoxal process short, only partially separating the mesocoxae; elongate; rufotestaceous; pronotum about 5/6 as long as wide, convex, feebly deplanate toward the hind angles, widest at middle before which the sides are arcuate and behind which the sides are slightly oblique to the slightly obtuse hind angles, the lateral marginal lines usually extending more than 3/4 the way to the apex; elytra densely punctate, shining, the punctation somewhat more rugose toward base, the apices separately bluntly narrowly arcuate; 9-18 mm.; s B. C., w Wn., n Id., w Or.; in dead and dying conifers (Pl. X, fig. 1)
(blazed tree borer) SUBSTRIATUS Hald.

Mank distinguished *obsoletus* Hald. by its less strongly arcuate lateral pronotal margins; elytra with the scabrous punctate surface extending to the apex, the punctures closer together making the surface dull; color darker; 10-12 mm.; but I am unable to recognize it. *obsoletus* Hald. LeConte 1857: 20 (4). Mank, Can. Ent. 71, 1939:239 (14). *barbatus*, Hamilton (nec Schall.) 1889:152 (4); 1894:33 (4); 1894a:401 (4). Fauvel 1889:155 (4). Hardy 1927:C24 (1). Stace Smith 1930:24 (1). Keen 1952:198. Hatch and Kincaid 1958:17 (2).

1' Elytra with about 9 feebly impressed striae which are set with large well-incised punctures; pronotum with a deep longitudinal impression at middle just before hind margin, the side margin arcuate before the rounded hind angles; posterior median mesocoxal process long, extending virtually to the hind margin of the mesocoxae, completely dividing them; elongate, dark reddish brown; pronotum about 3/4 as long as wide, convex, the mid-line somewhat impressed at middle, the lateral marginal line extending about 2/3 the way to the apex, elytra densely granulate, the apices separately bluntly narrowly arcuate; 7.8-9.5 mm.; se B. C. (Trinity Valley ex *Pinus contorta*); rare
COXALIS Mank

Mank, Can. Ent. 71, 1939:238, 239.

Tribe Hypulini

Key to Genera

The 2 following genera have the procoxal cavities with an outer fissure, the antennae with the third segment less than twice the length of the second

1 Last segment of the maxillary palpi securiform, very much wider than the second and third segments; elytra uniformly rufous in Pacific Northwest species
ZILORA Muls.

1' Last segment of maxillary palpi cultriform, only a little wider than the 2 preceeding segments which are serrate; elytra testaceous variegated with dark markings
PROTHALPIA LeC.

Likewise recorded from the Pacific Northwest are:

MICROTONUS SERICANS LeC., distinguished by a very distinct curved frontal suture just before the eyes; slender, brownish; pronotum transverse,

quadrate, slightly narrowed in front, the sides feebly arcuate before and behind, slightly sinuate at middle, the hind angles acute; 3.75-5 mm.; nw B. C.; Keen 1898:73. This record requires confirmation.

SYMPHORA RUGOSA Hald., distinguished by the third antennal segment being more than twice the length of the second; pale chestnut brown to dark fuscous, the antennae and legs paler; pronotum 3/4 as long as wide, the sides broadly arcuate, the hind angles obtuse; 2.8-3.2 mm.; sw Id.; LeConte 1878:472.

Zilora Muls.

Dark rufous, the appendages somewhat paler; densely punctate, shining, the punctation of the head somewhat finer and that of the elytra somewhat coarser than on the pronotum; upper surface with conspicuous intermixed semirecumbent and erect hairs, the erect hairs on the elytra forming about 6 longitudinal series attaining the base of the elytra; head with a small impunctate area behind each eye; pronotum about 3/4 as long as wide, widest a little behind middle, the sides arcuate in front, briefly parallel before the rectangular or subacute hind angles, the base broadly lobed at middle, the disc broadly transversely impressed between the deeply impressed basal impressions, the basal and lateral margins finely margined except toward apex of the latter; scutellum punctate, shining; abdominal sternites finely margined; 4.4-6.3 mm.; B. C., Wn., n Id., w Or. (Pl. X, fig. 2)
HISPIDA LeC.

Van Dyke 1924a:23 (4). Clark 1956:40 (1). *occidentalis* Mank, Psyche 45, 1938:104 (12).

Prothalpia LeC.
(Hypulus auct. nec Payk.; Marolia auct nec Muls.)

Elongate; testaceous to dark piceous, the elytra with 3 or 4 strongly sinuate transverse fasciae some of which are sometimes partially confluent; head nearly black; pronotum sometimes with the disc dark; body above shining, punctate, the head finely punctate, pronotum and elytra coarsely closely punctate, the punctures with semirecumbent hairs; pronotum about 2/3 as long as wide, widest just before middle behind which the sides are oblique to the nearly rectangular hind angles, the base and sides to before the middle finely distinctly margined, the disc feebly transversely impressed between the deeply impressed basal impressions, the base bisinuate, narrower than elytra; 3.6-6.1 mm.; w B. C., w Wn., w Or.; common (Pl. X, fig. 3)
HOLMBERGII Mann.

Hamilton 1894:33 (14). *holmburgii* auct. Keen 1895:219 (1). *holmburgi* auct. Keen 1898:74 (1). *holmbergi* auct. Champion, Ent. Mo. Mag. 52, 1916:79 (1). Leng 1920:239 (24). Clark 1956:40 (1). Hatch and Kincaid 1958:17 (2). *fulminans* LeC. 1859a:284 (4).

Tribe Melandryini

Key to Genera

1 Elytra in the Pacific Northwest species with 8 deeply impressed sulci; pronotum widest just before base; antennae with second and third segments

together longer than the fourth MELANDRYA F.

1' Elytra in the Pacific Northwest species without sulci or striae; pronotum widest at about middle

2 Antennae with third segment nearly as long as the fourth PHRYGANOPHILUS Sahl.

2' Antennae with third segment evidently shorter than the fourth EMMESA Newm.

Melandrya F.

Black, shining, the mouthparts and legs in part, especially the tibiae and tarsi, frequently somewhat paler; above finely densely punctate, each puncture with a very short hair; antennae slender; maxillary palpi with last segment cultriform; pronotum nearly 2/3 as long as wide, widest just before base before which the sides are oblique in dorsal view to the obtusely rounded front angles, the hind angles rounded, the basal impressions deep, the median line broadly impressed especially behind middle, the lateral margin not distinct anterior to the basal two thirds, the base broadly feebly lobed at middle, the lobe truncate or feebly broadly emarginate; 7-15 mm.; w B. C.; under bark; rare (Pl. X, fig. 4) STRIATA Say

Gregson, Proc. Ent. Soc. B. C. 41, 1944:36 (1). Clark 1956:40 (1).

Phryganophilus Sahl.

Black, the pronotum except for 2 prominent discal spots, the hypomera, and the gula rufotestaceous; head and pronotum strongly closely punctate, the elytra similarly closely microtuberculate, the punctures and tubercles bearing inconspicuous decumbent hairs; maxillary palpus with last segment somewhat enlarged; pronotum about 3/5 as long as wide, widest just behind middle, the sides arcuate in front and suboblique behind before the obtusely rounded hind angles, the side margins indistinct before middle, the disc very broadly impressed on each side of middle and more feebly impressed before middle of base, the basal impressions linear and distinct, the basal margin broadly feebly lobed at middle; 10-15 mm.; B. C., Wn., "Id.," nw Or.; not rare (Pl. X, fig. 5) COLLARIS LeC.

LeConte 1859:88 (2). Horn 1872:389 (3). Brodie 1888:215 (1). Bush 1914:60 (1). Leng 1920:239 (24). Clark 1956:40 (1).

Emmesa Newm.

1 Head not foveate on vertex; pronotum widest before middle; elytra vaguely quadricostate; elongate, subparallel, flavobrunneous, the head and pronotum somewhat darker; head finely densely punctate; maxillary palpi with the last 3 segments enlarged, the last segment longer and slightly wider than the 2 preceeding segments; pronotum widest before middle, the sides arcuate before, suboblique behind, the hind angles slightly obtuse, the side margins indistinct before the middle, the base trisinuate, the median sinuation feeble, the disc somewhat more coarsely punctate than the head and explanate toward the hind angles, transversely impressed before base at middle and with a well marked basal impression on each side; 8 mm.; se B. C. STACESMITHI sp. n.

Type: Copper Mt., B. C. 27-V-1928, G. Stace Smith, host: *Populus tremuloides*, alt. 4200 ft., in UBC collection; paratype: B. C. (Trinity Val.) in CAS collection.

1' Head foveate at middle of vertex; pronotum widest at or behind middle; elytra without trace of costae; elongate, subparallel; black, the lateral fourth of the pronotum rufous, the elytra varying to rufotestaceous, the ventral surface black to piceous, the anterior parts of head and the gula rufous, the legs piceous to rufous; above closely deeply punctate, the elytra more rugosely so, the pubescence decumbent; antennae slender; maxillary palpi with the last 3 segments widened, the last segment longer than the other 2 segments and cultriform; pronotum about 2/3 as long as wide, widest just behind middle, the sides before and behind suboblique, the hind angles subrectangular, the side margins indistinct before middle, the basal margin trisinuate, the median sinuation somewhat variable, the rufous side margins very broadly deplanate behind, the basal impressions indistinct, the disc feebly transversely impressed at middle before the base; 8.6-9.6 mm.; sw B. C., w Wn., w Or. (Pl. X, fig. 6)
TESTACEA Van D. subsp. LEEPERI Malk.
Malkin, Pan-P. Ent. 30, 1954:35 (124).

Subfamily Orchesiinae

Antennae feebly clubbed; procoxal cavities without an external fissure.

Key to Genera

1 Scutellum visible; pro- and mesotarsi with the penultimate segment bilobed; antennae with second segment more or less intermediate in width between the first and the third; eye strongly emarginated by the insertion of the antenna; maxillary palpi with last 3 segments enlarged, the last segment elongate and rounded at apex; pronotum with basal impressions
ORCHESIA Latr.

1' Scutellum invisible; penultimate tarsal segments simple; antennae with second segment nearly as wide as first, about twice as wide as the third; eye very feebly emarginated by the insertion of the antenna; maxillary palpi with only the last segment enlarged, truncate at apex; pronotum without basal impressions
LEDERIA Reitt.

Orchesia Latr.

Elongate oval, narrower toward caudal apex which is narrowly rounded; antennae with segments 7 to 11 forming a feeble elongate club, segments 8 to 10 transverse; pronotum transverse, the side margins distinct only at basal two-fifths and broadly arcuate and curving into the apex, the basal angles obtuse, the basal impressions broad; prosternum between the coxae subtriangularly subacutely produced

1 Rufotestaceous with flavous decumbent pubescence, the elytra each with 3 piceous markings: an elongate subbasal discal spot and postmedian and subapical transverse discal spots, the meso- and metasterna at sides piceous; above finely punctate; elytra with the subsutural stria impressed throughout, more strongly impressed posteriorly; 4.2-5.3 mm.; sw B. C., w Wn., nw Or. (Pl. IX, fig. 3)
ORNATA Horn

Horn 1888:38 (24). Hatch and Kincaid 1958:17 (2).

1' Castaneous or brown with silken brown decumbent pubescence, the appendages a little paler; above somewhat more coarsely rugosely punctate, the punctation finer toward the apex of the pronotum and on the head; elytra with the subsutural stria scarcely impressed at base becoming feebly impressed posteriorly; 3.5-5 mm.; B.C. CASTANEA Melsh.
Clark 1956:40 (1).

Lederia Reitt.

Oval, convex, more acute posteriorly, less than twice as long as wide; piceous to rufotestaceous, somewhat paler beneath, the appendages testaceous; shining with sparse recumbent pubescence; above finely punctate, the elytral punctures a little coarser; antennae with segments 9 to 11 forming a distinct club; pronotum transverse, the side margins distinct except at extreme apex, broadly arcuate and curving into the apex, the basal angles acute, the basal impressions obsolete, the basal margin arcuate; mesosternum cordiform between the coxae; 2.15-2.45 mm.; nw B.C., w Wn., nw Or.; common at Massett, B.C. on underside of logs in damp places (Keen); in moss at Seattle (Pl. IX, fig. 4) ARCTICA Horn
Champion, Ent. Mo. Mag. 52, 1916:34 (1). *saltator*, Keen nec Csy., 1895: 262 (1) (Euscaphurus).

Subfamily Osphyinae

Tribe Stenotrachelini

Key to Genera

1 Head horizontal, largely exposed by the pronotum, distinctly narrowed to a neck at a distance behind the eyes; first segment of mesotarsi longer than the fifth STENOTRACHELUS Latr.

1' Head deflexed, in important measure not visible from above, not narrowed behind; first segment of mesotarsi equal to fifth ANELPISTUS Horn

Stenotrachelus Latr.

Elongate, subparallel; black, the elytra and appendages rufopiceous; above closely distinctly punctate, the punctures with decumbent silvery hairs, the elytral punctures somewhat coarser and occasionally confluent; head largely exposed by the pronotum, the tempora very broadly arcuate to the well defined neck, the vertex irregularly transversely impressed behind the eyes; antennae with third segment elongate, the distal segments filiform, the last 3 shorter; maxillary palpi with the last segment enlarged, subtriangular; pronotum subquadrate, much narrower than elytra, about 6/7 as long as wide, widest at about apical third before which it curves into the apical margin and behind which it is feebly oblique to the narrowly obtusely rounded hind angles, the lateral and basal margins entire and finely margined, the disc broadly transversely impressed before middle and before base, the hind angles narrowly deplanate, basal impressions absent; elytra irregularly undulate with faint traces of several longitudinal sulci; protibiae longer than

the protarsi, meso- and metatibiae scarcely as long as their respective tarsi, the mesotibiae very feebly arcuate; male with fifth visible abdominal sternite arcuately emarginate at apex; 11 mm.; nw and se B. C., w Wn.; rare ARCTATUS Say

Seidlitz, Naturg. Ins. Deutschl. 5(2), 1920:679.

Anelpistus Horn

Nearly black, the elytra unevenly rufotestaceous and testaceous with scattered sparse cinereous hairs somewhat concentrated in a wide fascia at middle and another on the apical fourth; head inserted in thorax almost to eyes, slightly narrowed behind eyes; antennae with segment 3 less than 2/3 as long as 4 and 5 together, the 3 terminal segments distinguished by their finer denser pubescence; maxillary palpi with the last segment securiform; pronotum wider than long, slightly narrower than elytra, widest before middle, the front angles rounded, the hind angles slightly obtuse, the lateral margin entire, the disc impressed before the middle on each side of mid-line, coarsely contiguously granulate punctate, with slightly depressed oblique areas anteriorly on each side; elytra densely punctate, somewhat more finely so toward apex; male with the tibiae arcuate with sharp black teeth along more than the apical half arranged in a line curving in toward the inner tibial spur; 7-7.6 mm.; se B. C. CANADENSIS Mank

Mank, Can. Ent. 74, 1942:186-193 (1).

Family Zopheridae

By Dennis W. Boddy

Procoxal cavities open behind; head deeply concealed by the pronotum; antennae clavate, the last 3 segments suddenly wider; pronotum subequal in width to the elytra, evidently wider than the head; procoxal process wide, feebly constricted at the middle. The beetles included in this family have usually been classified as Tenebrionidae, but are separated here because of their open procoxal cavities. Horn 1870e:271-273. Gebien 1910; 1937. Casey 1907:460-484.

Key to Tribes and Genera

1 Antennal segments 2 to 8 more or less similar, the second slightly smaller than the third; antennae not received in deep pronotal fossae; body large, at least 9 mm. long (tribe NOSODERMINI) PHELLOPSIS LeC.

1' Second antennal segment larger than third; body small, not over 5 mm. long; antennae received in dorsolateral pronotal fossae (tribe USECHINI)

2 Head with the front not impressed; pronotum with the lateral margin strongly reflexed behind the antennal fossa; antennae with the second segment distinctly larger than the first or third, the third slightly longer than the fourth; procoxal cavities partially closed behind USECHUS Mots.

2' Head with the front strongly impressed; pronotum with the sides explanate behind the antennal fossae; antennae with the first segment much larger than the second and third, the third segment pedunculate, slightly longer than the fourth; eyes with a ventral appendage nearly completely separated from the dorsal portion and apparently lacking facets, giving the appearance of a

solid plate, the upper portion very coarsely faceted; procoxal cavities widely open behind USECHIMORPHA Blais.

Tribe Nosodermini

A specimen of *Noserus plicatus* LeC. in the O. B. Johnson collection at the University of Washington bearing the locality label "Seattle, Wash." is probably erroneously labeled.

Phellopsis LeC.
(Nosoderma auct.)

Dark brown, opaque, roughly sculptured; body elongate, depressed, with irregularly placed round black tubercles, rather densely clothed with short curved brown squamules; head with epistoma broadly produced, truncate to feebly emarginate; pronotum with sides arcuate, the apical angles strongly produced and rounded, the basal angles obtuse, the disc irregular, becoming explanate to reflexed laterally, with a raised area at the middle of the reflexed portion, a lyre shaped series of costae from near the middle to the base, a rather deep fovea at the base; elytra each with 3 broadly interrupted costae, the outer and inner ending in large tubercles at about the apical fifth, with tubercles near the apex of each elytron; last abdominal sternite deeply excavate basally; 10-15.5 mm.; B.C., Wn., Id., Or.; common; under bark or in fungi on fallen trees (Pl. X, fig. 7) PORCATA LeC.

LeConte 1857:19 (4); 1869:371 (1); 1877:109. Horn 1870e:273 (4). Holland 1888: 92 (1). Wickham 1893:227 (1). Hamilton 1894:32 (1). Keen 1895:219 (1). Casey 1907:45 (4). Bush 1914:60 (1). Gibson 1919:112 (1). Gibson and Criddle 1921:81 (1). Leech 1947a:108 (1). Guppy, Col. Bull. 5, 1951:28 (1). Clark 1956:40 (1). Hatch and Kincaid 1958:17 (2). *obcordata,* Brodie (nec Kby.) 1888:215 (1).

P. robustula Csy. 1907:45, Coeur d'Alene, Id., was described as differing from *porcata* LeC. by having the "elytra together twice as long as wide.... Body nearly similar to *porcata* but very much stouter, the elytral punctures more shallow and obscure, the pronotum with very coarse tubercles anteriorly, the basal pubescent fovea of *porcata* replaced by a short nude sulcus, the central part of the disc not sulcate, but more coarsely tuberculose than in *porcata*; elytra nearly similar, except that the outer of the three subapical tumors is very much smaller and less prominent. Length 14.5 mm.; width 5.5 mm."

Tribe Usechini

Casey 1907:275-522. Blaisdell 1929:1-14.

Usechus Mots.

Brown, opaque; body roughly sculptured, moderately densely clothed with curved fulvous hairs; head uniformly punctate; pronotum with basal angles acute, slightly produced, the base lobed, the apex emarginate, the disc with numerous round flattened dark tuberosities, with 2 medial broadly convex costae which end at the base in rather distinct tubercles with an impressed smooth area between, and with an extensive smooth area adjoining the basal angle; elytra costate, the intercostal areas with 2 striae of deeply impressed punctures, the sutural costae thickened at the apical declivity and then

terminating at the apex in 2 large tubercles, the second and third costae terminating in a common tubercle at the declivity, the outer costa thickening at the declivity and then terminating in an apical tubercle, the humeri deeply impressed and appearing strongly reflexed, the base of each elytron with a prominent produced tubercle at the coalescence of the bases of the first and second costae; 3.75-4.75 mm.; w Wn., w Or.; not common; from fungi (Pl. X, fig. 8) NUCLEATUS Csy.

Blaisdell 1929:7 (24). Fender 1951a:19-20 (4).

Usechimorpha Blais.

Brown, opaque; body roughly sculptured, clothed with curved fulvous hairs; head with the impressed front pubescent, the remainder of the disc nude; pronotum with 2 wide ridges extending from before the middle to just before the base, the area medial to the ridges more strongly elevated than that lateral to them; elytra without distinct costae, with numerous tubercles, the base of the elytra obliquely truncate to the prominent rounded humeri; 3.74 mm; w Or.; rare; collected from leaf litter (Pl. X, fig. 9) BARBERI Blais.

Fender 1951:20 (4).

Family Oedemeridae

Oedemerid larvae, as far as known, breed mostly in dead wood. The adults are found on the ground under cover or on herbage or flowers. Horn 1896. Arnett 1951. Rozen 1960.

Key to Subfamilies

1 Protibiae with 2 apical spurs; antennae 11-segmented in both sexes
2 Antennae inserted before the eyes which may be emarginate or not OEDEMERINAE
2' Antennae inserted in a deep emargination of the eyes CALPODINAE
1' Protibiae usually with 1 apical spur; antennae inserted before the shallowly emarginate eyes NACERDINAE

Single specimens of *Xanthochroa testacea* Horn in Nacerdinae may have one or both protibiae with 2 spurs. Such specimens may, at least in part, be distinguished from other Pacific Northwest species of Oedemerinae by their nearly uniform testaceous color and their fine vestiture, the head and pronotum shining.

Subfamily Oedemerinae

Key to Tribes and Genera

1 Body stout, black, sometimes feebly metallic, occasionally with golden vestiture; tarsi with at least the 2 penultimate segments spongy pubescent beneath (tribe DITYLINI) DITYLUS Fisch.
1' Body slender; usually, in Pacific Northwest species, not entirely black; if so, then with only the penultimate tarsal segment spongy pubescent beneath (tribe ASCLERINI)

2 Eyes at most only feebly emarginate
3 Claws not acutely toothed at base in Pacific Northwest species
4 Mandibles not bifid at apex in Pacific Northwest subgenera; antennae with last (eleventh) segment feebly dorsoventrally narrowed beyond middle; length 6-9 mm. in Pacific Northwest species; ligula not or feebly prolonged in front OXACIS LeC.
4' Mandibles bifid at apex; antennae with last (eleventh) segment strongly dorsoventrally constricted beyond middle; length 8-20 mm., usually over 9 mm.; ligula prolonged in front COPIDITA LeC.
3' Claws acutely toothed at base; mandibles bifid at apex; length 5-10 mm. ASCLERA Steph.
2' Eyes deeply emarginate, with a canthus; claws simple; mandibles bifid at apex; length 7-11 mm. in the Pacific Northwest species EUMECOMERA Arn.

Tribe Ditylini

Ditylus Fisch.

Black, shining, the upper surface with or without metallic luster, densely punctate with dense decumbent pubescence; pronotum a little wider than long, broadest just behind the front angles, somewhat narrowed behind, variably impressed along and on each side of the mid-line

1 Upper surface without metallic luster, the pubescence black (typical form) or golden (ab. VESTITUS LeC., sw B. C., w Wn., nw Or.); pronotum less evidently narrowed behind, the mid-line usually not impressed throughout but with a feeble impression before the middle and a broader more evident impression before the basal margin which is slightly emarginate at the middle; antennal segments less elongate; 12-23 mm.; B. C., Wn., n Id., Or.; under cover around logs in forested areas, also on flowers; very common (Pl. XI, fig. 1) QUADRICOLLIS LeC.

Reported breeding in logs of *Thuja plicata, Pseudotsuga taxifolia,* and *Picea engelmanni* (Guppy, Leech, Arnett). LeConte and Arnett are in error in considering *vestitus* LeC. a variety of *gracilis* LeC. rather than of this species. LeConte 1852a:157-158 (4); 1854a:20 (4); 1857:21, 52 (2). Keen 1895: 219 (1); 1898:73 (1). Horn 1896:390 (124). Stace Smith 1929:70 (1). Leech 1947a: 107 (1); Col. Bull. 2, 1948:66-67 (1). Guppy, Col. Bull. 2, 1948:33 (1). Arnett 1951:290-292 (1234). Clark 1956:39 (1). Hatch and Kincaid 1958:13 (2). Rozen 1960:46 (1). *caeruleus* auct. (nec Rand.) Brodie 1888:215 (1). Keen 1905:298 (1).

ab. *vestitus* LeC. 1857:21, 52 (2). Hatch and Kincaid 1958:13 (2).

1' Upper surface, especially the pronotum, with purplish or greenish metallic luster, the pubescence black; pronotum somewhat more evidently narrowed behind, the mid-line strongly impressed throughout, the impression broadening out behind, the basal margin scarcely emarginate at middle; antennal segments more elongate; 12-21 mm.; sw B. C., w Wn., w Or.; not rare GRACILIS LeC.

Reported breeding in the dead wood of *Tsuga heterophylla* by Leech. LeConte 1854:18 (2); 1854a:20 (4); 1857:21 (4); 1869:371 (1). Horn 1896:389 (24). Bush 1914:60 (1). Leech, Col. Bull. 2, 1948:66 (1). Arnett 1951:288-290 (24).

Tribe Asclerini

Oxacis LeC.

1 Pronotum usually longer than broad (subg. OXACIS s. str.). Testaceous,

head and pronotum with fuscous spots, the elytra except the narrow lateral and sutural margins, the metasternum and the abdomen except the terminal segment fuscous; surface densely punctate and set with dense coarse decumbent whitish pubescence that obscures the underlying sculpture; eyes scarcely emarginate along front margin; pronotum longer than broad, widest behind apex which is wider than base, the basal margin finely reflexed; elytra not costate; 5-8 mm.; se Id., e Or. (Pl. XI, fig. 2)
SERICEA Horn

Arnett 1951:316-317 (4).

1' Pronotum broader than long (subg. XANTHOCHROINA Gangl.). Testaceous, the elytra and metasternum fuscous; surface shining, finely inconspicuously pubescent; head and pronotum evidently discretely punctate; elytra more finely rugosely punctate, each with 2 feeble longitudinal costae; pronotum with apex and base subequal, widest at about apical fourth behind which the sides are suboblique, the basal margin strongly narrowly reflexed; 6-9 mm.; s B. C., Wn., Id., Or. BICOLOR LeC.

The larvae live in dead wood. LeConte 1852a:158 (4) (Asclera); 1854a:21 (4) (Asclera); 1857:21 (4) (Asclera). Horn 1896:417 (124). Arnett 1951:332-334 (1234).

Copidita LeC.

Elongate; piceous; the head except for a basal dorsal band, the pronotum except for ante- and basomedian spots (that may be confluent) and lateral spots before the middle and a spot on the hypomera adjacent to the coxa, the legs except the knees and the last abdominal sternite testaceous; head, pronotum, and elytra discretely punctate, with fine decumbent whitish hairs; pronotum about 5/6 as wide as long, widest at basal two fifths behind which the sides are sinuate subparallel, the apex narrower than the base; elytra each with 4 costae; abdomen with last sternite arcuate in female, with a truncate median lobe in male; 8-20 mm.; sw B. C., sw Wn., w Or. (Pl. XI, fig. 3)
QUADRIMACULATA Mots.

These beetles are confined to the sea beach, where they are found under water-soaked wood, in which they probably breed. Wickham 1903a:51 (4). Arnett 1951:364-366 (4). Hatch and Kincaid 1958:13 (2).

Asclera Steph.

Elongate beetles, above densely finely punctate, opaque with short decumbent pubescence, the pronotum in *excavata* LeC. sometimes somewhat sparsely punctate and shining; pronotum about as long as wide, widest at apical two fifths, behind which the sides are sinuate to the prominent hind angles, the base narrower than the apex, the surface with 3 prominent depressions, 2 antemedian, one on each side of the mid-line and one mediobasal; elytra each with 4 costae

1 Elytra yellow merging into black toward apex, the pubescence golden; prothorax testaceous, usually with 1 to 3 variably fused median dorsal spots; head black, the portion before the eyes testaceous; antennae black, the 3 basal segments below testaceous; meso- and metasternum and abdomen black; legs testaceous, the basal portions of the femora black; pronotum finely reflexed at base; 6-8.5 mm.; s B. C., w Wn., n Id., Or.; adults on *Ceanothus cursaus* DISCOLOR LeC.

Horn 1896:405 (2). Arnett 1951:361-362 (4).

1' Elytra dark, the pubescence black; pronotum broadly strongly reflexed at base

2 Body entirely black; 6-10 mm.; sw B. C., Wn., n Id., Or.; adults on willow (Pl. XI, fig. 4) NIGRA LeC.

LeConte 1869:371, 379 (1). Horn 1896:406 (24). Arnett 1951:359-361 (1234).

2' Black, elytra sometimes somewhat bluish; pronotum in type somewhat sparsely punctate and shining, but more commonly varying to finely densely opaquely punctate, usually rufous, sometimes with 1 or 2 variable discal spots and/or a median basal spot, these markings rarely more or less extensively confluent, the anterior and posterior marginal beading frequently black; 5-9 mm.; se B. C., e Wn., Id., Or.; on Sambucus and Ceanothus; reared from *Pinus tuberculata* EXCAVATA LeC.

Arnett 1951:356-357 (13).

Eumecomera Arn.

Metallic blue, the mentum yellow, the antennae piceous, the thorax orange with 2 lateral spots at base of coxae; head with large shallow close set punctures; pronotum coarsely punctate; elytra rugose; body with coarse long moderately dense pubescence, the pronotum with long black hairs intermixed with white hairs; pronotum slightly broader than long; 7-11 mm.; se Or.; not seen BICOLOR Horn

Horn 1870a:88 (4) (Ditylus); 1896:403-404 (4) (Copidita). Arnett 1951:298-299 (4).

Subfamily Calopodinae

Calopus F.

Elongate, subparallel, fuscotestaceous, closely punctate with sparse white decumbent pubescence; head with eyes narrowly separated above in male, more widely separated in female, antennae extending beyond the apex of the elytra with the apical segments more elongate in the male, extending about half way along the elytra with the 5 apical segments somewhat shorter in the female; pronotum subquadrate in male, a little transverse in female, widest about apical third, behind which the sides are sinuate, the base wider than the apex; 16-20 mm.; B. C., Wn., Id., n Or.; not rare (Pl. XI, fig. 5) ANGUSTUS LeC.

Taken from sound heartwood of living red cedar (*Thuja plicata*) and from dead and living alpine fir (*Abies lasiocarpa*) by Burke and from the rotted dead roots of cherry (*Prunus emarginata*) and willow (Salix) by Leech. LeConte 1878:472 (3). Horn 1896:385-386 (24). Burke, Proc. Ent. Soc. Wash. 8, 1907:64-66 (23). Bush 1914:60 (1). Hippisley 1922:65 (1). Hardy 1927:C23 (1). Stace Smith 1929:70 (1). Leech, Col. Bull. 2, 1948:75 (12). Chamberlin 1949:95 (2) (Calophus). Arnett 1951:268-270 (1234). Clark 1956:39 (1). Hatch and Kincaid 1958:13 (1). Rozen 1960:42 (24).

Subfamily Nacerdinae

Key to Genera

1 Front between the eyes half or less than half the width of the head across

the eyes XANTHOCHROA Schm.

1' Front between the eyes more than half the width of the head across the eyes NACERDES Dej.

Xanthochroa Schm.

Head and pronotum finely sparsely punctate, finely pubescent, shining; antennae 11-segmented in female, with the last segment divided in the male resulting in an apparently 12-segmented antenna; pronotum with base wider than apex; elytra finely densely rugosely punctate with 4 faint costae, finely pubescent; abdomen with apical sternite deeply cleft in male, entire in female

1 Testaceous, lateral spots on the pronotum, the elytral humeri, the metasternum, and in the male the first 4 abdominal sternites brownish or black; pronotum about as long as wide, widest at apical fourth behind which the sides are sinuate, base wider than apex and strongly widely reflexed, the hind angles prominent; abdomen with fifth visible sternite deeply acutely bifurcated in male, the lobes narrowly rounded, the fifth visible sternite in the female transverse and entire; 8.5-12 mm.; sw B. C., w Wn., n Or. (Pl. XI, fig. 6) TESTACEA Horn

Horn 1896:393-394 (12). Larnder 1930:F15 (1). Arnett 1951:278-280 (124).

1' Head and legs black, the region before the eyes and the gula testaceous; head and pronotum finely punctate, shining, finely pubescent; antennae apparently 12-segmented in male, 11-segmented in female; pronotum widest at about apical two fifths, behind which the sides are sinuate to the rounded hind angles, the base finely reflexed, a little wider than the apex; elytra finely densely rugosely punctate with 4 faint costae, finely pubescent

2 Pronotum as long as wide, testaceous, the disc with a central black spot; elytra and body black, the apical sternite testaceous; 7.5-10 mm.; sw Or.; rare CENTRALIS Horn

2' Pronotum wider than long, testaceous, without a central black spot; elytra and body black, usually with a more or less evident bluish tinge; abdomen with last sternite deeply cleft in male, in female subtriangular with the apex narrowly truncate; 7-10 mm.; w Or.; rare MARINA Horn

Arnett 1951:281-282 (4).

Nacerdes Dej.
(Nacerda Steph.)

Testaceous, the elytral apex, meso- and metathorax, abdomen except the last segment, and femora black; above with fine golden pubescence; head very closely rugosely punctate; antennae distinctly 12-segmented in male, the last 2 segments feebly to evanescently separated in female; pronotum strongly punctate, shining, broader than long, broadest at apical fourth behind which the sides are oblique to the prominent rounded hind angles, the base subequal to the apex and strongly reflexed; elytra finely rugosely punctate with 4 faint costae; abdomen with fifth sternite deeply acutely cleft in male, in the female transverse with the apex broadly emarginate at middle; 9.2-13 mm.; sw B. C., w Wn., sw Or. (Pl. XI, fig. 7)

(wharf borer) MELANURA L.

These beetles breed in damp decaying wood, frequently of wharves and other marine structures, but likewise frequently far removed from salt water. Spencer presents evidence for suspecting that the larvae may survive

for years in properly situated wood. The species is widely distributed, probably by shipping, along sea coasts throughout the world. It is the only species of the genus that is Nearctic, with many allies in the Old World, whence it has probably been introduced by shipping. Larnder 1930:F15 (1). Balch, Can. Ent. 69, 1937:2 (12). Spencer, Proc. Ent. Soc. B. C. 43, 1947: 7-8 (1); 45, 1949:30 (1). Arnett 1951:284-286 (24).

Family Pythidae

The limits of this family as used here are those adopted by Seidlitz (1920:969-1183) and Bradley (1930:114-115), including the tribe Mycterini of the Melandryidae of Leng (1920:240). The beetles live beneath bark, especially of pines

Key to Subfamilies

1 Penultimate tarsal segment and claws simple
2 Pro- and mesocoxae with trochantin; metapleura nearly attaining the mesocoxae; length 7. 7-20 mm. in Pacific Northwest species; head not prolonged in a beak PYTHINAE
2' Pro- and mesocoxae without trochantin; metapleura not attaining the mesocoxae by a considerable distance; length 2. 2-4. 25 mm. in Pacific Northwest species; head frequently prolonged in a beak
3 Metasternum long; wings usually present; metacoxae almost always touching each other SALPINGINAE
3' Metasternum short; wings wanting; metacoxae separated by a broad process of the first abdominal sternite CONONOTINAE
1' Penultimate tarsal segment broad, with lobes, or very broad; claws with a basal tooth; pro- and mesocoxae without trochantin
4 Pronotum subquadrate, obliquely impressed on each side of middle; epipleura not attaining apex of elytra; head not prolonged into a rostrum LACCONOTINAE
4' Pronotum widest at base, convex; epipleura attaining apex of elytra; head prolonged into a rostrum MYCTERINAE

Subfamily Pythinae

Key to Genera

1 Procoxae separated; sides of pronotum with a distinct suture LECONTIA Champ.
1' Procoxae contiguous; sides of pronotum without a suture
2 Dorsal surface semicylindrically convex; elytra punctate PRIOGNATHUS LeC.
2' Dorsal surface flat; elytra with furrows PYTHO Latr.

Lecontia Champ.
(Crymodes LeC.)

Elongate, moderately convex; nigropiceous, the head and pronotum nearly black, coarsely punctate; antennae moniliform, the last 3 segments transverse and forming a club; mandibles not covered by labrum; pronotum about 5/7 as long as wide, widest before basal third, the sides rounded, suboblique

behind, the apex slightly emarginate at middle, the base feebly broadly arcuate, the disc with the median area feebly impressed; elytra more finely punctate than pronotum, rugose, with 8 or 9 very feebly impressed striae, the intervals feebly convex; 12-21 mm.; B. C., Wn., Id., Or.; in dead conifers (Pl. XI, fig. 8) DISCICOLLIS LeC.

LeConte 1877:108; 1878:472 (3). Keen 1891:282 (1). Stace Smith 1930:24 (1). Leech 1947a:108 (1). Clark 1956:39 (1).

BOROS UNICOLOR Say has been reported from nw B. C. by Keen 1905:298 and Clark 1956:40. It is distinguished from Lecontia by its confusedly punctate elytra without evidence of impressed striae, the labrum covering more than the basal half of the mandibles, the pronotum convex without a median flattened or impressed area.

Priognathus LeC.

Elongate, subcylindrically convex; rufotestaceous, the legs and abdomen testaceous; dorsal surface evidently punctate, the elytra somewhat more coarsely so; antennae moniliform, the last 4 segments forming a very feebly differentiated club, segments 8 to 10 transverse; pronotum about 6/7 as long as wide, widest behind basal third, the sides arcuate, the apex truncate, the base feebly emarginate at middle, the disc evenly convex with a slight depression on each side of mid-line behind middle; elytra evenly punctate, some of the punctures in scarcely or feebly evident longitudinal series; 7.7-11 mm.; B. C., Wn., n Id., Or.; in decaying logs (Pl. XI, fig. 9) MONILICORNIS Rand.

LeConte 1869:371 (1). Hamilton 1894:33 (1). Stace Smith 1930:24 (1). Hardy 1944a:D32 (1); 1955:B50 (1). Clark 1956:39 (1).

Pytho Latr.

American species of this genus are imperfectly understood. The current accounts are by Seidlitz (1920:1027-1049) and by Blair (Ent. Mo. Mag. 61, 1925:211). The beetles are subcortical in habit.

1 Piceous, the elytra with a distinct purplish or greenish metallic tinge, the legs and under surface more or less testaceous; pronotum with the sides more or less regularly arcuate, the sides and median portions strongly swollen, each side of the median swelling with a deep longitudinal furrow that does not interrupt either the anterior or the posterior swollen margins; elytra with 7 or 8 impressed feebly punctate striae, the intervals convex, the surface finely punctate, somewhat tumid toward apex and base, behind the basal two fifths the side margins flare and lateral to the seventh stria are punctate pubescent; 11-15 mm.; B. C., e Wn., sw Or.; under bark of *Pinus ponderosa*; rare (Pl. XII, fig. 1) AMERICANUS Kby.

planus auct. (nec Hbst.) Stace Smith 1930:24 (1). Malkin, Col. Bull. 8, 1954:10 (4).

1' Piceous or nearly black, the elytra without metallic lustre, the legs and under surface not paler; pronotum with the sides and median portions swollen, each side of the median swelling with a deep longitudinal furrow that interrupts the anterior swollen margin; elytra with 8 or 9 impressed strongly punctate striae, the apical tumid area scarcely evident, the basal tumid area strongly punctate

2 Pronotum with the sides at the middle more or less evidently subparallel,

behind the middle strongly arcuate; elytra shining, the intervals strongly convex, nearly impunctate, the lateral margin nearly equally reflexed throughout, scarcely pubescent; 11-15 mm.; B. C., se Wn., Or.; rare
SEIDLITZI Blair

Clark 1956:39 (1).

2' Pronotum with the sides at the middle subangulately rounded, oblique behind; elytra opaque, the intervals more feebly convex, nearly impunctate, the lateral margin behind the basal two fifths flared and punctate pubescent; 11 mm.; se B. C.; under bark of dead spruce; rare
NIGER Kby.

A single specimen from near Beaton River, B. C. in the CAS collection. Brodie 1888:215 (1).

Subfamily Salpinginae

Tribe Salpingini

These beetles are said by Doane et al. (1936:230) to be twig feeders.

Key to Genera

1	Head without a rostrum	SPHAERIESTES Steph.
1'	Head with a distinct rostrum	RHINOSIMUS Latr.

Sphaeriestes Steph.
(Salpingus auct. nec Gyll.)

Black, smooth, shining; mouthparts, antennae, tibiae and tarsi piceous, the basal antennal segments somewhat paler; head and pronotum moderately densely, moderately coarsely punctate; head as wide as pronotum; pronotum and elytra with sparse short erect setae; pronotum transverse, much narrower than elytra, widest behind apex, the sides behind oblique to just before the rectangular hind angles; elytra with a scutellar and 9 or 10 strongly punctate scarcely impressed striae, the intervals except the second and fourth with occasional strong punctures; 2.9-3.7 mm.; s B. C., w Wn.
ALTERNATUS LeC.

Leng 1920:161.

Rhinosimus Latr.

The elongate rostrum of the more specialized members of this genus inclines the beginner to attempt to place them in the Rhynchophora, a placement that is immediately belied by their heteromerous tarsi and other characters. Blair, Ent. Mo. Mag. 68, 1932:253-255.

1 Rostrum exclusive of labrum not as long as its basal width (at anterior margin of eyes); pronotum with a deep fovea on each side before the middle; antennal club of 6 segments all longer than wide (subg. CARIDEUS Muls.)

2 Rostrum exclusive of labrum scarcely 4/7 as long as wide; black, shining, the appendages and venter nigroaeneous; head and pronotum strongly coarsely punctate, a little more finely so on the head; pronotum about 9/10 as long as wide, widest just before basal third, the sides arcuate, subparallel before the hind angles, apical and basal margins subtruncate; elytra wider than pronotum, with 9 longitudinal unimpressed series of coarse punctures, most

of the intervals with occasional large interstrial punctures; 2.3 mm.; sw Or. BRACHYRHYNCHUS sp. n.

Type: Lake of Woods, Ashland Rd., Or. VI-11-[19]45, K. M. Fender.

2' Rostrum exclusive of labrum nearly as long as wide; piceous to rufotestaceous; head moderately coarsely somewhat obscurely punctate, the surface strigose between the punctures and extensively impressed between the eyes; pronotum nearly as long as wide, more coarsely strongly punctate than head, strigose between the punctures, feebly impressed on each side behind the middle, widest about basal third, the sides arcuate, subparallel before the hind angles, apical and basal margins subtruncate; elytra wider than pronotum, with 9 feebly impressed longitudinal series of coarse punctures, most of the intervals with occasional large interstrial punctures; 3.6 mm.; se B.C., w Wn., w Or.; rare (*aeneirostris*, LeC. nec Mann.) LECONTEI Blair

1' Rostrum exclusive of labrum longer than its width at base (at anterior margin of eyes); pronotum with no more than a shallow impression on each side before middle; antennal club of 4 or 5 segments, the 3 or 4 penultimate segments moniliform (subg. RHINOSIMUS s. str.). Head and pronotum nearly black, the elytra and ventral surface piceous, the appendages and anterior portion of the rostrum testaceous

3 Rostrum not much narrower at its narrowest than its length (exclusive of labrum); antennae with eighth segment somewhat smaller and less moliliform; above strongly punctate, the punctures of the elytra in about 10 longitudinal series, the interstrial punctures inconspicuous; 2.2-2.7 mm.; se B.C., sw Or. PALLIPES Boh.

Stace Smith 1929:70 (1).

3' Rostrum about 3/5 as wide at its narrowest as its length (exclusive of labrum); antennae with eighth segment somewhat larger and more moniliform, the 4 penultimate segments moniliform; above strongly punctate, the punctures of the elytra arranged in 12 or 13 series some of which partake of the nature of interstriae; 2.7-4.1 mm.; B.C., Wn., nw Or.; on alder at Wellington, B.C.; not rare (Pl. XIV, fig. 1) VIRIDIAENEUS Rand.

Keen 1895:219 (1); 1898:73 (1). Blair, Ent. Mo. Mag. 68, 1932:255 (1). Hatch and Kincaid 1958:13 (2).

Subfamily Cononotinae

Cononotus LeC.

Elongate, rufotestaceous, sparsely clothed with short fine closely appressed pile that does not perceptibly conceal the sculpture; head across eyes as wide as apex of pronotum, rather coarsely closely somewhat cribrately punctate; eyes prominent; antennae reaching base of pronotum, the segments as long as or longer than broad; pronotum nearly 4/5 as broad as long, broadest toward apex which is more than 1 1/2 times as broad as base, the sides feebly sinuate behind, the disc densely punctate; elytra feebly shining, elongate elliptical, over twice as long as broad, the disc densely moderately coarsely punctate; 3.6-3.9 mm.; sw Id. LANCHESTERI VanD.

Van Dyke, Pan-P. Ent. 15, 1939:19-20 (3).

Subfamily Lacconotinae

Lacconotus LeC.

Elongate, moderately shining; piceous, the appendages somewhat paler; with sparse decumbent pubescence; head nearly as wide as pronotum, densely punctate, the eyes prominent; pronotum subquadrate, a little wider than long, much narrower than elytra, a little less densely punctate than head, the disc obliquely impressed on each side of middle before base, the surface before the base narrowly transversely impressed, this impression foveiform at each end; elytra elongate, more finely punctate than pronotum; second abdominal sternite in male with an oval densely pubescent area, unmodified in female; 5.8-6.0 mm.; se B. C. PINICOLA Horn

The material assigned to this species has the pronotum more strongly impressed than in the type, the male with the oval area on the second abdominal sternite a little more densely pubescent and somewhat more elongate oval.

Subfamily Mycterinae

Mycterus Clairv.

Subgenus Mycterinus Seidl.

Opaque, densely punctate beetles; head produced into a subquadrate rostrum that is, exclusive of the labrum, nearly as long as wide, the antennae serrate with the third segment in Pacific Northwest species much longer than the fourth; pronotum about 3/4 as long as wide, the base nearly twice as wide as the apex, which is as wide as the elytra, the hind angles acute, the sides without side margins except briefly before the hind angles; males with abdomen with first visible sternite with a large oval anteriorly pointed testaceous tumidity; adults on flowers. Hopping 1935a:75-78.

1 Vestiture silvery white, conspicuous; color, including the hind legs, piceous black, the antennae and fore and middle legs testaceous; head before eyes pale in male, black in female; head with rostrum flat; pronotum with sides arcuate in front, feebly broadly sinuate behind; male with tumidity of first sternite smaller, the last sternite in the female feebly tumid or carinate at middle; 3-6 mm.; s Or. CANESCENS Horn

Hopping 1935a:76-77 (4).

1' Vestiture inconspicuous; color piceous black, the elytra scarcely paler or sometimes (typical form), usually in the females, with the elytra testaceous, the legs piceous black with the tibiae somewhat paler; head with rostrum feebly shallowly concave; pronotum with sides arcuate in front, oblique to evidently sinuate behind; male with tumidity of first sternite larger, the last sternite in the female unmodified; 3.5-7.6 mm.; se B. C., e Wn., Id., e and sw Or.; not rare (Pl. XIV, fig. 2) CONCOLOR LeC.

Stace Smith 1929:72 (1). Rice 1933:1082 (3). Hopping 1935a:77-78 (14). *flavipennis* Horn 1868:136 (4).

Family Aegialatidae
(Eurystethidae)

Aegialatis Gistel
(Aegialites Mann., Eurystethus Seidl.)

The members of this family apparently have the procoxal cavities at least narrowly open behind, and this is true of such specimens of *californicus* Mots. as I have examined, but some specimens of the Californian *fuchsii* Horn have the tips of the sternum and episternum touching or overlapping, but not fused. Kono, Kontyu of Ent. Soc. of Nippon 10 (3), 1936:143.

Elongate, the elytra gradually widened behind, widest at about apical third; nigropiceous, the legs rufopiceous, the femora obscurely so; head and pronotum alutaceous, sparsely inconspicuously punctate, subequal in width to base of elytra; antennae more or less moniliform, not attaining base of pronotum; eyes small, protruding from side of head; pronotum about as long as wide, the sides broadly arcuate, the mid-line vaguely impressed; elytra shining, uneven, with 8 or 9 impressed striae, without distinct punctures, the apices separately broadly arcuate; below nearly smooth; 3-4 mm.; w B. C., sw Or.; intertidal, in crevices of shaly rocks along the sea coast (Pl. XIV, fig. 3) CALIFORNICUS Mots.

Keen 1895:219 (l)1 1898:73 (l); Can. Ent. 35, 1903:125 (l). Wickham, Can. Ent. 36, 1904:57-60, 356-357 (l). Van Dyke, Ent. News 29, 1918:307 (l). Clark 1956:39 (l). Leech 1956:349 (l).

Family Cephaloidae

Cephaloon Newm.

Elongate beetles; head strongly evenly obliquely narrowed in Pacific Northwest species to the arcuate cervical impression, the antennae filiform in Pacific Northwest species with the last 3 segments not or only very feebly widened; pronotum trapezoid, the base twice or more as wide as the apex, the sides more or less sinuate, the hind angles acute; elytra tapering from base to apex. Peterson (1951: 31) reports the larvae from logs in forested areas. R. & G. Hopping 1934:64-70. Arnett 1953.

1 Tarsal claws with pulvilli robust, the apex subarcuate, not curved at apex in lateral view; antennae with the 3 apical segments shorter, the seventh longer than the eighth; male with a pair of variable median teeth projecting from the posterior margin of the third visible abdominal sternite (subg. SPONIDIUM Csy.). Color testaceous varying to black, the 3 basal antennal segments usually testaceous; 8-13 mm. TENUICORNIS LeC.

a Last 3 antennal segments shorter, 1.0 to 1.3 mm. in length; males usually black, the legs variably bicolored; female usually testaceous with portions of the metasternum and portions of the legs black, the head and pronotum varying to black; extreme nw B. C., se B. C., e Wn., Id., ne Or. (Pl. XIV, fig. 4) subsp. TENUICORNIS s. str.

The type of *tenuicornis* is labeled "Vanc." but the Hoppings suggest it actually came from the interior of the province. LeConte, Proc. Bost. Soc. Nat. Hist. 16, 1874:275 (l); 1877:109. Casey 1898a:194 (2). Stace Smith 1928: 70 (l). R. & G. Hopping 1934:59 (123). Arnett 1953:157 (1234). *lepturides*, LeC. (nec Newm.) 1878:472 (3). *piceum* Horn, Proc. Cal. Acad. Sci. (2) 6,

1896:380-381 (1). Casey 1898a:194 (1). Stace Smith 1929:70 (1). *ornatum* Csy. 1897:652 (3); 1898a:194 (3). *versicolor* Csy. Casey 1898a:194 (1).

a' Last 3 antennal segments longer, l. 2 to l. 8 mm. in length; males varying from entirely black, including the 3 basal antennal segments and the legs, to a condition in which the disc of each elytron is more or less extensively pale, the head and pronotum variably marked with testaceous, the legs variably bicolored; females usually testaceous varying to nearly entirely black, individual specimens having the head, pronotum, and abdomen only testaceous; w B. C., w Wn., nw and se Or.

subsp. BICOLOR Horn

A larva of what is probably this form is recorded from a fir log at Boyer, Or. (Peterson). R. & G. Hopping 1934:68-69 (1). Arnett 1953:157 (12). Hatch and Kincaid 1958:13 (2). *lepturides* auct. (nec Newm.) Keen 1891:282 (1). Harvey 1906a:2 (1). Peterson 1951:184 (4). *tenuicorne* auct. (nec LeC.) Wickham 1893:227 (1). Keen 1905:298 (1). Clark 1956:39 (1).

1' Tarsal claws with the pulvilli slender, the apex acute and curved in lateral view; antennae with the 3 apical segments elongate, the seventh shorter than the eighth; male without median teeth projecting from the posterior margin of the third visible abdominal sternite (subg. TYPITIUM Csy.). Pronotum sinuate behind the median bulge; male with the last 3 antennal segments about 3 mm. long, testaceous, the head nearly black, the pronotum black with a testaceous vitta on each side of middle, elytra testaceous with the lateral margin broadly and the sutural margin very narrowly black, legs pale, venter variably black; female with the last 3 antennal segments about l. 8 mm. long, testaceous with the sides of the pronotum and elytra and very narrow sutural lobe sometimes vaguely darker; ll. 2-15 mm.; sw B. C., w Wn., nw Or. PACIFICUM Van D.

Van Dyke, Bull. Brook. Ent. Soc. 23, 1928:260-261 (2). R. & G. Hopping 1934:68 (12). Arnett 1953:157 (12).

Family Scraptiidae

Following Crowson, this family is here composed of the Melandryidae Scraptiini and the Mordellidae Anaspidini of Leng's *Catalogue*. However, Ermisch (Faunistik der Mitteleuropaïschen Käfer 5, 1956:271), the leading authority on central European Mordellidae, is not convinced of the desirability of the innovation. The adult stages of the Scraptiidae occur on flowers, often very abundantly. The larvae of Scraptia have been found in decaying wood, those of Anaspis under loose bark and in the crevices of decaying wood, but they are not true wood borers. Crowson 1955:119, 133.

Key to Tribes

1 Elytra and pronotum not transversely strigate; posterior margin of head not sharply defined, narrowly rounded SCRAPTIINI

1' Elytra, at least at extreme base, and pronotum finely transversely strigate; posterior margin of head sharply acutely defined ANASPIDINI

Tribe Scraptiini

Key to Genera

Fender, Pan-P. Ent. 22, 1946:67, 117.

1 Maxillary palpi with last segment more than twice as long as wide, cultriform; metatarsi with penultimate segment lobed at apex below; antennae with second and third segments together equal to or shorter than the fourth
CANIFA LeC.

1' Maxillary palpi with last segment triangular, less than twice as long as wide

2 Metatarsi with penultimate segment lobed at apex below; antennae with second and third segments combined longer than the fourth
NEOSCRAPTIA Fend.

2' Metatarsi with penultimate segment not lobed; antennae with second segment half as long as the third, the third segment as long as the fourth
ALLOPODA LeC.

Canifa LeC.

Elongate, slender; fuscous, the head black, the mouth parts and legs testaceous; with decumbent pubescence; head densely punctate; pronotum nearly twice as wide as long, widest at base, finely densely tuberculate, the sides arcuate, the hind angles narrowly rounded, convex, with a prescutellar and a basal impression on each side; elytra shining, subrugosely densely punctate; 2.7-3.0 mm.; e B. C.; from *Pinus ponderosa* (Pl. XIV, fig. 6)
PALLIPES Melsh.

Blatchley 1910:1300-1301.

Neoscraptia Fend.

Testaceous, the head and antennae beyond the third segment a little darker; elongate, shining, with fine decumbent golden pubescence; head finely closely punctate, alutaceous; antennae slender, the fourth segment longer than the third; labial palpi with last segment oblong oval; pronotum about 72% as long as wide, strongly narrowed in front, widest behind middle where the sides are subparallel before the rectangularly rounded hind angles, the disc convex, finely granulosely punctate alutaceous, the granules more distinct laterally, the mid-line feebly impressed, the basal impressions feeble; elytra finely punctulate alutaceous with numerous scattered coarse punctures; tarsi with penultimate segment lobed; 3.9-4.2 mm.; n Id., ne Or. (Pl. XIV, fig. 5)
TESTACEA Fend.

Fender, Pan-P. Ent. 22, 1946:67-68 (3).

Allopoda LeC.

Narrowly elongate; inconspicuously pubescent; fuscotestaceous, first 2 antennal segments, palpi, legs, and ventral surface somewhat paler; head finely punctate, the antennae longer than head and pronotum; pronotum transverse, finely punctate, the sides slightly convergent behind, arcuately narrowing to apex, the hind angles narrowly obtusely rounded, the basal margin trisinuate, the basal foveae distinct; elytra a little more coarsely punctate than the

pronotum, the apices separately narrowly rounded; 4 mm.; se B. C., se Or. (Klamath Falls) CALIFORNICA Schaef.

The type from Tulare Co., Cal. is described as 4. 5 mm. long, the pronotum nearly parallel in about basal third. Schaeffer, Can. Ent. 1917:359.

Brodie 1888:215 records LUTEA Hald. from Kicking Horse Pass between British Columbia and Alberta. It is described as pale yellow to reddish brown, the elytra usually with a common brown spot on apical third; 3-3. 5 mm.

Tribe Anaspidini*
(Anaspini)

Liljiblad 1945:187-223.

Key to Genera

1 Males (with the fifth abdominal sternite straight or emarginate along apical margin) without a pair of movable appendages attached to the posterior margin of the third visible abdominal sternite
2 Pro- and mesotarsi with the fourth segment distinct, half or more as long as the third; epipleura distinct to the third abdominal sternite
3 Elytra transversely strigose throughout; antennae longer, extending much beyond the base of the pronotum; metatibia as long as the first 3 tarsal segments together PENTARIA Muls.
3' Elytra transversely strigose only at extreme base; antennae shorter, scarcely extending beyond the base of the pronotum; metatibia longer than the first tarsal segment NAUCLES Champ.
2' Pro- and mesotarsi with the fourth segment very small
4 Epipleura short and broad, visible only to the level of the first visible abdominal sternite
5 Metatibia longer than the first tarsal segment SILARIA Muls.
5' Metatibia no longer than the first tarsal segment; abdominal sternites at middle with long setae LARISIA Emery
4' Epipleura long, distinctly visible to the level of the third visible abdominal sternite; metatibia 9/10 as long as first and second tarsal segments together NASSIPA Emery
1' Males with a pair of movable appendages attached to the posterior margin of the third visible abdominal sternite; pro- and mesotarsi with the fourth segment very small; metatibia longer than first tarsal segment ANASPIS Geoffr.

Pentaria Muls.

1 Elytra in part testaceous
2 Fifth abdominal sternite with the sides broadly arcuate into the apical margin which is itself broadly arcuate in the female or nearly straight at the middle in the male; color varying from black with testaceous basal antennal

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*I am under great obligation to Mr. Eugene Ray of Chicago for help in preparing the parts on Anaspidini and Mordellidae. Mr. Ray had, in fact, hoped to write these portions himself, but was prevented by ill health from doing so.

segments, legs, and subbasal and subapical elytral spots (neither of which attain the suture, the subapical spots not attaining the side margins) to (typical form) testaceous with basal, median, and apical fuscous elytral fasciae; or with only the median and apical or (ab. NUBILA LeC.) only the median fascia present, the latter frequently not attaining the suture; or virtually entirely testaceous; 2.1-4 mm.; se B.C., e Wn., Id., Or. (Pl. XIV, fig. 7) TRIFASCIATA Mels.

Liljeblad 1945:197-198 (4).

ab. *nubila* LeC. Liljeblad 1945:198-199 (2).

2' Fifth abdominal sternite broadly lobed along the apical margin, the apical margin on each side of the lobe broadly sinuate, the apex of the lobe arcuate in the female, broadly sinuate in the male; testaceous, the apical 2/3 of the elytra somewhat nebulously piceous, the suture frequently narrowly testaceous, metathorax below and abdomen piceous; 2.4-3.4 mm.; n Id. SINUATA sp. n.

Type male, allotype female, and 14 paratypes: Peck, Idaho, Nez Perce Co., 6-7-1949, W. F. Barr, collector, in UI collection; 5 paratypes, same data, in UW collection.

1' Fuscous or piceous, the basal antennal segments, mouth parts, and legs testaceous; pubescence fine; last abdominal sternite arcuate at apex; 2.5-3.5 mm.; se B.C. (Wycliffe) FUSCULA LeC.

Naucles Champ.

Color pale yellowish brown throughout, covered with silky yellowish pubescence; pronotum and elytra at extreme base finely transversely strigate, the elytra otherwise finely punctate; abdomen with sixth sternite strongly narrowly emarginate at apex in male, entire in female; 1.4-1.8 mm.; e Wn. (Pl. XIV, fig. 8) TIBIALIS Champ.

Silaria Muls.

Elongate; black, the 3 or 4 basal antennal segments, palpi, and bases of femora more or less fuscotestaceous; pubescence sparse, gray; pronotum 4/9 as long as broad; abdomen with third sternite without appendages in male, the fifth sternite deeply narrowly notched at middle in male with the sides rounded and concave from middle of notch to near base of segment, entire in female; 2.5-3.1 mm.; se B.C. (Revelstoke Mt.) REVELSTOKEI Lilj.

Liljeblad 1945:219-220 (1).

Larisia Emery

Black; mouth parts, palpi, 4 basal antennal segments, and anterior and middle legs rufotestaceous; posterior legs a little darker; pronotum twice as broad as long; male with abdominal sternites with long setae at middle, the third sternite somewhat broadly emarginate along posterior margin, at middle without appendages, the fourth sternite broadly emarginate, the fifth sternite ovally cleft to near base, appearing excavated at middle; female abdominal sternites unmodified; 2.5-2.7 mm.; B.C., se Id. (Pl. XIV, fig. 9) NIGRICOLOR Lilj.

Liljeblad 1945:221-222 (1). Clark 1956:39 (1) (Laricia).

Nassipa Emery

Head black or piceous, the anterior margin, mouth parts, and basal antennal segments testaceous; pronotum testaceous, the disc frequently with a piceous cloud; elytra usually testaceous with a variable piceous cloud extending from the base variably along the suture, rarely entirely piceous; venter piceous, the tibiae and tarsi testaceous; pronotum about 2/3 as long as wide; abdomen in male with third sternite without appendages, the fifth slightly concave at middle with the tip subtriangularly emarginate; 2.4-2.9 mm.; s B. C., n Id., Or. (Pl. XV, fig. 1) HOPPINGI Lilj.

The pronotum is described as twice as broad as long in the original description. Liljeblad 1945:222 (1).

Anaspis Geoffr.

1 Head black, the clypeus, mouth parts, and 4 basal antennal segments usually pale; male with third sternite of abdomen with a pair of movable appendages, the fourth sternite without appendages

2 Abdominal appendages of male long, attaining the apex of the fifth sternite or nearly so; pronotum black

3 Elytra black

4 Pronotum about as long as broad in male, half as long as broad in female; black, the clypeus, basal antennal segments, palpi and anterior legs more or less fuscotestaceous; surface with fine silky grayish white pubescence; male abdominal appendages slender, very slightly separated at base and pointed and slightly diverging at apex; 2.5-3 mm.; se B. C. (Robson—Liljeblad); not seen NIGRINA Csiki

Liljeblad 1945:208-209 (1).

4' Pronotum 2/3 to 4/5 as long as broad in male, about half as long as broad in female; black, the pronotum and elytra rarely very obscurely piceous black, the clypeus, 3 basal segments of antennae and palpi more or less fuscotestaceous; male abdominal appendages slender, slightly separated, feebly curved, broadest at base, diverging somewhat, and somewhat narrower in apical half; male fourth abdominal sternite along apical margin at middle with 2 adjacent angulate teeth, the surface not impressed at middle, the fifth sternite with a rather deep arcuate emargination at apex and depressed from emargination to base; aedeagus expanded before apex, the parameres acutely pointed at apex, scarcely curved; 2.1-3.5 mm.; B. C., Wn., Id., Or.; very common (Pl. XV, figs. 2, 7) ATRATA Champ.

Liljeblad 1945:209-211 (124). Clark 1956:39 (1). *atra* LeC. (nec F.) Holland 1888:92 (1). Brodie 1888:215.

3' Elytra in great part brownish yellow or piceous brown

5 Elytra brownish yellow, with a darker scutellar cloud which extends variably along the suture; otherwise black with the clypeus, mouth parts, 4 basal antennal segments, and the legs brownish yellow, the femora sometimes variably darker; pronotum about 4/5 as long as wide; male abdominal appendages approximate at base, slightly divergent and curved, the fifth sternite deeply emarginate, the apex of the emargination strongly arcuate, the surface before the emargination impressed, the fourth sternite somewhat impressed at middle, the posterior margin with 2 adjacent angulate teeth; aedeagus not expanded before apex; 2.5-3.2 mm.; s B. C., Wn., n Id., w

Or.; rare SERICEA Mann.
Liljeblad 1945:212 (1234).

5' Elytra piceous brown; otherwise black with the clypeus, mouth parts, 4 basal antennal segments, and the legs except the femora paler; pronotum nearly twice as broad as long; male abdominal appendages united at base and very slightly divergent to apex, the fifth sternite cleft to near middle and very feebly excavated to base, the fourth very narrowly excavated at middle from base to apex; 2.5-3 mm.; B. C. ("Boisdale"); not seen from the Pacific Northwest FLAVIPENNIS Hald.
Liljeblad 1945:213 (1).

2' Abdominal appendages of male not extending beyond about the middle of the fifth sternite

6 Elytra black or dark brown

7 Body including pronotum black or dark brown, the clypeus, mouth parts, and basal antennal segments paler

8 Fifth abdominal sternite in male more broadly cleft; male appendages without a short slender process extending backward from between their bases

9 Fifth abdominal sternite in male with the margin of the impression including and extending forward from the apical cleft convergent, the fourth sternite in the male somewhat impressed at middle along apical margin, not dentate; male appendages approximate at bases, not divergent, straight, slender, only very slightly narrower in apical half; parameres curved down at apex, acutely pointed, the aedeagus slender; 2-2.6 mm.; sw B. C., Wn., n Id., Or.; common (Pl. XV, fig. 8) SEPOSITA Lilj.
Liljeblad 1945:211 (1).

9' Fifth abdominal sternite in male with margins of the impression including and extending forward from the apical cleft feebly arcuate, not convergent, enclosing a subquadrate area; the fourth sternite in the male somewhat impressed at middle along apical margin, feebly dentate; male appendages approximate at bases, usually divergent, laterally compressed, wider toward base and tapering to an acute apex; parameres feebly arcuate toward apex, bluntly narrowly rounded at apices; 2-2.4 mm.; sw B. C., Wn., Or.; common (Pl. XV, fig. 9) RAYI sp. n.
Type and 40 paratypes male: Wash.: Blewett Pass, Chelan Co., Aug. 6, 1955, M. H. Hatch; paratypes: B. C. (Fish L. nr. Summerland, Galiano Is., Peachland, Saanich Dist., Summerland, Tolfino, Victoria), Wn. (Aberdeen, Blewett Pass, Cle Elum, Friday Harbor, Lewis Peak in Blue Mts., Nahcotta, Ocean Park, Peshastin Creek in Chelan Co., Pomeroy, Swauk Pass, Wenatchee Mts.), Or. (Bear Creek in Wasco Co., Bend, Bly Mt. in Klamath Co., Cape Lookout in Tillamook Co., Green Springs Pass in Jackson Co., Lava Caves south of Bend, Maupin, Netarts, Salem, Sisters, Suttle L. in Jefferson Co., Wapinita); paratypes in UW, Schuh, CN, ODA, OSU, UBC and WSU collections. Named for Eugene Ray of Chicago.

8' Fifth abdominal sternite in male narrowly cleft and thence narrowly impressed to the base of the segment; male appendages with a short slender process extending backward from between their bases, the appendages slightly curved, somewhat divergent, and a little flattened; head and venter black, the clypeus, mouth parts, and basal antennal segments obscurely paler; pronotum piceous black, the elytra a little paler, the legs a little paler than the elytra; 2.7-2.8 mm.; nw Wn., nw Or. (Pl. XV, fig. 10) OLYMPIAE sp. n.
Type male: Olympic Hot Spr., Wash. July 7, 1945, M. H. Hatch; paratype

male: same locality, July 22, 1958; paratypes: Wn. (Olympic Hot Springs), Or. (Clatskanie, Vernonia) in UW and Schuh collections.

7' Pronotum testaceous; elytra, head, and venter fuscous; male abdominal appendages contiguous at base, feebly arcuate, slender, not narrowed toward tip, extending to the middle of the fifth sternite; fifth sternite in male broadly impressed at middle, the posterior portion of the impression with a U-shaped emargination; aedeagus with parameres nearly straight and acutely pointed at apex; 2.1-2.5 mm.; nw Wn., s Or.; rare
COLLARIS LeC.

My specimens are somewhat smaller with paler middle and hind legs than those described by Liljeblad 1945:215-216.

6' Elytra testaceous, sometimes more or less evidently blackish at extreme base; head black, the clypeus, mouth parts, and basal antennal segments paler; pronotum usually testaceous (typical form), rarely (ab. FUSCATA nov.) blackish; male abdominal appendages barely straight, strongly laterally compressed, widest at middle, tapering to an acute point, the lower margin arcuate, extending variably to the basal fourth or three fifths of the fifth sternite; fifth sternite broadly impressed at middle at apical two thirds, the surface before the impression flattened, the posterior portion of the impression with a large arcuate emargination; aedeagus with parameres curved at apex and acutely pointed; 2-2.9 mm.; s B.C., Wn., Or.; very common (Pl. XV, fig. 11) DURYI Lilj.

ab. *fuscata* nov. Type male, allotype female, and 4 female paratypes: Friday Harb., Wash., July 9, 1938, M. H. Hatch; paratypes: Wn. (Aberdeen, Friday Harbor, San Juan Is.), Or. (Charleston) in UW and WSU collections. This species is not at present known from much beyond the eastern foothills of the Cascade Mts., Salmon Arm, B.C., Blewett Pass and Cle Elum, Wn., and Wapinita and Metolius River, Or. being the easternmost localities noted, except that I have seen a single female of what is apparently this species from n. Id. (Farrigut). Liljeblad 1945:216 (1). Hatch and Kincaid 1958:13 (2).

1' Head and entire body pale, the abdomen in the male black; male with third abdominal sternite with the appendages widely separated, the margin of the segment between the appendages broadly arcuate, the appendages slender, nearly straight, scarcely flattened, not narrower toward apex, the extreme apex rounded, extending beyond the middle of the fifth sternite; fourth sternite in male broadly flattened and glabrous at middle, posterior margin with a pair of very short slender appendages directly dorsad to the appendages of the third sternite and extending about halfway to the apex of the fifth sternite; fifth sternite in male with a broad impressed glabrous concavity at middle, the impressed area sharply delimited, much wider at base of segment than at apex, where it is deeply cleft, the apex of the cleft narrowly arcuate; aedeagus with parameres scarcely curved and tapering to an acute point; 2.8-3.9 mm.; B.C., Wn., Id., Or.; very common (Pl. XV, fig. 12)
RUFA Say

Holland 1888:92 (1). Hamilton 1894:33 (12). Keen 1895:219 (1); 1898:73 (1). Liljeblad 1945:218-219 (123). Clark 1956:39 (1). *pallescens* Mann. LeConte 1857:20 (4). *nigriceps* LeC. 1859:88 (4); 1862:45 (2).

Family Mordellidae*

The Mordellidae or tumbling flower beetles usually occur on flowers as adults. The larvae of Tomoxia bore in decaying wood, those of Mordellistena bore in the stems of various plants. The family is here restricted to the Mordellini of Leng's *Catalogue*, the Anaspinini being placed in the Scraptiidae. Liljeblad 1945:14-187.

Key to Genera

1 Metatibiae and metatarsal segments without oblique ridges on the outer face in addition to the single subapical ridge of the metatibia; eye attaining the hind margin of the head

2 Metatibiae and first segment of metatarsus without a longitudinal carina along their upper margins MORDELLA L.

2' Metatibiae with a fine longitudinal carina along their outer upper margin, the first segment of the metatarsus with a similar but somewhat less distinct carina TOMOXIA Cost.

1' Metatibiae and first and second metatarsal segments with from 1 to 5 or 6 oblique ridges on their outer surface in addition to the subapical ridge of the metatibia; metatibiae and first segment of the metatarsus without a longitudinal carina along their upper margins

3 Eye not attaining the hind margin of the head GLIPOSTENODA Erm.

3' Eye attaining the hind margin of the head MORDELLISTENA Cost.

Mordella L.

1 Eyes glabrous

2 Black, with decumbent dark cinereous pubescence, marked with variable small spots of white pubescence as follows: the scutellum, 2 well separated very small spots at basal fourth, 2 nearly contiguous larger spots at apical third, the base of the anal style; scutellum subtriangular; 4-7 mm.; se B. C., e Wn., sw Id.; rare QUADRIPUNCTATA Say
The scutellar and basal elytral spots of white pubescence may be absent and the apical spots reduced to 3 or 4 white hairs. Ray 1947:121 (2).

2' Black, covered with dark reddish brown pubescence, the pubescence cinerous at the basal third of the style; antennae with third and fourth segments equal, segments 5 to 10 wider and serrate; scutellum subtriangular; anal style short; 7.2 mm.; se B. C. (Vernon) BREVISTYLIS Lilj.
This identification is somewhat doubtful. *Brevistylis* was described from New Mexico as 5.25 mm. long, the sides of the meso- and metasterna and first 2 abdominal sternites with cinereous pubescence. Liljeblad 1945:31, 41.

1' Eyes set with extremely short setae (invisible except under oblique illumination)

3 Black with grayish pubescence variably marked with bands and spots of silvery pubescence as follows: pronotum with an entire longitudinal narrow band each side of middle, an abbreviated band toward hind angles, and a spot or oblique abbreviated band on each side reaching margin at middle; scutellum silvery pubescent; elytra with variable spots and/or abbreviated

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*See footnote to Anaspidini on p. 92 above.

lines; 4-4.5 mm.; nw B. C.; not seen MARGINATA Melsh.
Liljeblad 1945:44. Clark 1956:39 (1).

3' Black, without spots of pale pubescence

4 Pro- and mesofemora entirely black

5 Scutellum broadly rounded behind; black, the pubescence dark brown, cinereous, or iridescent, depending on the incidence of the illumination; basal margins of pronotum and elytra, the scutellum, and the interval between the sutural stria and the suture with the pubescence either concolorous with that of the rest of the elytra (typical form) or (ab. ALBOSUTURALIS Lilj.) white; 3.5-6 mm.; s B. C., Wn., Id., Or.; very common (Pl. XV, fig. 3) ATRATA Melsh.
scutellaris auct. nec F. LeConte 1862:46 (4). Brodie 1888:215 (1).
ab. *albosuturalis* Lilj. Stace Smith 1929:70 (1). Liljeblad 1945:50-51 (1234). Hatch and Kincaid 1958:13 (2).

5' Scutellum more or less subtriangular; otherwise nearly as in typical *atrata* Melsh.; 5.2-7 mm.; se B. C., sw Id., Or. GRANDIS Lilj.
This species is very close to the preceding. The scutellum and elytral suture are described with argenteous pubescence, but such is not the case in my scanty material. Liljeblad, Can. Ent. 54, 1922:56 (4); 1945:52-54 (4).

4' Pro- and mesofemora extensively brightly rufotestaceous except at apices; otherwise nearly as in typical *atrata* Melsh.; 5-6.5 mm.; se B. C., Wn. (Stevens Pass), s Id., s Or.; rare HUBBSI Lilj.
The scutellum is described as "triangular," but I find it rounded behind in one of my specimens. Liljeblad 1945:51-52 (3).

Tomoxia Cost.

Subcuneate; black, antennae and palpi reddish brown, densely covered with reddish brown pubescence, darker in some specimens; pronotum, elytra, and anal style sprinkled with small round spots of silvery white pubescence, the elytra behind the middle with an irregular transverse band of confluent spots, the maculation less well developed in the female; eyes glabrous; maxillary palpi with last segment securiform; protarsi not dilated; 3.7-4.8 mm.; B. C., sw Wn., Or.; rare (Pl. XV, fig. 4) BOREALIS LeC.
Liljeblad 1945:57-58 (1). Clark 1956:39 (1) (Mordella).

Glipostenoda Erm.

Ermisch, Ent. Bl. 45-46, 1950:45, 81.

Rufotestaceous with the eyes and apical and other ridges on the hind legs black, the head and pronotum occasionally somewhat darker; finely punctate with fine decumbent testaceous pubescence; antennae extending to about the base of the pronotum, segments 5 to 11 widened, less distinctly widened in males; last segment of maxillary palp in form of an elongate scalene triangle; pronotum about 5/6 as long as wide, the apical and basal margin broadly lobed at middle; scutellum arcuate behind; protibia longer than protarsus; mesotibiae subequal in length to mesotarsi, the penultimate pro- and mesotarsal segments lobed beneath; metatibia a little shorter than the first and second metatarsal segments; metatibia with 3 or 4 ridges in addition to the subapical ridge, first metatarsal segment with 3 or 4 ridges, second metatarsal segment with 2 or 3 ridges; 4-6.5 mm.; sw B. C., w Wn.,

n Or.; rare (Pl. XV, fig. 5) AMBUSTA LeC.
Ray 1947:130 (2). *diversa* Ray, Pan-P. Ent. 22, 1946:46 (24).

Mordellistena Cast.

In the monographs of LeConte (1862), Smith (1882), and Liljeblad (1945) the classification of the species in this genus is based on variation in the number of ridges present on the outer faces of the metatibiae and the first, second, and sometimes the third segment of the metatarsi. Smith, in fact, expressed definite satisfaction with this basis of classification. Liljeblad, whose key tabulates 116 species and 3 varieties in North America north of Mexico, was a bit more critical, warning that "the ridges may vary a little in some species, but if one or more small, upper, rudimentary ridges are found on specimens under examination the observer must be sure that they are present on both legs and are not simply one or two spinules or setae which cannot be considered a full ridge." The ridges are sometimes difficult to see because frequently only exactly the right illumination makes them visible. Moreover, within the author's experience, ridges "rudimentary" in varying degree are so common as to make their precise counting very subjective. The result, then, is the introduction of most unsatisfactory elements of judgment, uncertainty, and variation into the classification.

Another unsatisfactory circumstance is the relative scarcity of specimens in Northwestern collections. For the most part and in striking contrast to the situation in Anaspis and Mordella, the specimens come in series of ones, twos, or threes. Smith, in fact, comments that "I can not recollect that I ever found two species of Mordellistena together on the same cluster of flowers," but the data accompanying Northwestern material is not of the sort that makes possible the application of such a criterion. Specimens bearing identical labels may or may not come from the "same cluster of flowers."

The ridges above referred to have been described by a ridge formula, the first figure of which refers to the number of ridges (exclusive of the subapical ridge) on the outer face of the metatibia and the second and third figures and fourth figure, when present, refer to the number of ridges on the outer faces of the first, second, and third segments of the metatarsus. Two figures separated by a diagonal line or virgule (e.g., 3/4) indicate a variable or an uncertain count due either to the count being different on the 2 sides or to the presence of "rudimentary" or barely visible ridges whose inclusion in the count is uncertain.

As suggested, the present results are tentative. Basic to more adequate analysis would be a determination as to exactly what is meant by a ridge. Typical ridges are marked by a series of black spinules that are coarser and shorter than the other pubescence. Is a line that does not bear spinules a "ridge"? Probably not. And how few must the spinules be or how short must the series of spinules be to make the ridge "rudimentary"? Are different standards to be adopted for the somewhat longer tibial ridges than for those on the tarsal segments? Sufficient specimens would probably show the variation between a "ridge" and a "rudimentary ridge" to be continuous, but such a possibility would not eliminate the desirability of precise criteria.

The following key and descriptions, with a single exception, account for only previously described species. In addition to these a considerable series of specimens exhibiting a large variety of ridge formulae remain unaccounted for. Most of these fall under categories "3," "6" and "8." Their study can possibly be undertaken profitably only by one with an extensive knowledge of the entire Nearctic Mordellistena fauna.

1 Elytra and pronotum black
2 Elytral pubescence uniform black or dark brown, fine, sericeous; body and legs black with the frequent exception of the labium and basal antennal segments
3 Pronotum with median basal lobe entire, not emarginate or notched at middle
4 Ridge formula 2-3-2, varying to 2-2-2 or 2-4-2; 2.5-4 mm.; se B.C., e Wn., Id., Or. ASPERSA Melsh.
4' Ridge formula 3-3-2, varying to 3-3-1 or 3-2-1; 2.4-3.2 mm.; se B.C., e Wn., n Id., e Or. MORULA LeC.
4" Ridge formula 3-4-2 or 4-4-2; 2.8-3 mm.; e Wn., Id. UNICOLOR LeC.
3' Pronotum with the median basal lobe more or less feebly notched at middle
5 Ridge formula 2-2-1 or 2-2/3-1; 3.8 mm.; sw B.C. DOWNESI sp. n.

Type and paratype: Shawnigan, B.C., 26-vi-1923, W. Downes in CN collection; paratype, same data, 1-vi-1921, in UW collection.

5' Ridge formula typically 3-3-2 varying to 3-3-1, 3-4-2, 4-3-2 or 3/4-2-1; 3.8-4 mm.; se B.C., e Wn., e Or. NUNENMACHERI Lilj.

Liljeblad, Can. Ent. 1918:157-158 (4); 1945:143-144 (4). Ray 1947:129 (24).

2' Elytral pubescence more or less extensively gray
6 Elytral pubescence more or less uniform gray
7 Ridge formula 2-2-1, the tibial ridges parallel and subequal in length; 3.4 mm.; "B.C." ("Mount Vitis"—Liljeblad), "Or." VILIS LeC.

LeConte 1877:109 (*vitis*). Horn 1894:354 (4). Liljeblad 1945:92-93 (1).

7' Ridge formula 3-4-2; 3.75 mm.; e Wn., Id., e Or. (Pl. XV, fig. 6) SERICANS Fall
7" Ridge formula 3-4-3; 3.6 mm.; sw Id., nw Or. AEQUALIS Sm.
7"' Ridge formula 4-4-2; 3.8 mm.; Id., nw Or. AETHIOPS Sm.
6' Elytral pubescence not uniform gray
8 Elytral pubescence of gray mottled with brown hairs, the gray hairs not forming spots; ridge formula 5-5-2; 3.7-4.1 mm.; se Wn., Id. AEMULA LeC.
8' Elytra and pronotum set with numerous spots of gray interspersed with dark brown pubescence; ridge formula 3-3-2; 2.5-5 mm.; e Wn., Id., ne Or. PUSTULA Melsh.
1' Elytra and pronotum not uniform black
9 Black; elytra with a clearly delimited subbasal testaceous spot at the basal third; abdomen varying to testaceous; tarsi extensively testaceous; ridge formula 2-2-1; 4-5.75 mm.; se B.C.; rare SCAPULARIS Say
9' Brownish; legs and palpi testaceous; lateral margins of pronotum and sometimes a subbasal transverse fascia variably diffusely testaceous; basal third or more of elytra variably diffusely testaceous; ridge formula typically 2-3-2, varying to 2-3-1, 3-2-1, or 2-2-1; 3.4-4.9 mm.; se B.C., w Wn. EGREGIA Lilj.

Ray 1947:127 (2). Hatch and Kincaid 1958:13 (2) (Mordella).

Examples of the 3 following species have not been seen.

M. IDAHOENSIS Ray; ridge formula 2-2-1; black, head casteneous with large fuscous cloud at vertex, the spot reaching the occiput but not the eyes; pronotum with anterior angles broadly rufotestaceous, the pale area reaching the apex but not the base; antennae fuscous, the basal segments somewhat paler; elytra black;

pro- and mesofemora castaneous, their tips fuscocastaneous; maxillary palpi fuscocastaneous; hind legs fuscous; pubescence cinereous except on the pale areas where it partakes of the ground color; 3.3 mm.; Id. (Carey); Ray, Pan-P. Ent. 22, 1946:124-125.

M. FENDERI Ray; ridge formula 2-2-1; elytra black with a broad castaneous humeral vitta that narrows abruptly and ends before the middle; otherwise black with the front, maxillary palpi 4 basal antennal segments, basal angles of pronotum, legs (except metafemora), and apical margins of abdominal segments castaneous; anal style and hypopygium fuscous; pubescence flavocinereous; nw Or.; Ray 1947:121-122.

M. BIHIRSUTA Ray; ridge formula 2-3-2; black; 4 basal antennal segments fuscobrunneous; front, mouth parts, anterior legs and metafemora castaneous to fuscous; elytral pubescence flavocinereous with the suture and apex broadly and apical half of the lateral margin narrowly covered with dark pubescence; 4.66 mm.; e Wn., e Or.; Ray 1947:125-126.

Family Ripiphoridae
(Rhipiphoridae)

The larval stages of this family parasitize immature insects, usually solitary bees and wasps, but species are known that infest cockroaches and social wasps. The adults occur in the nests of the hosts, more rarely on flowers. The eggs are laid on the flower or in a crevice on the ground. They hatch into active 6-legged triungulins which attach themselves to adult insects and are so carried into the nests of the hosts where they become at first endo- and later ectoparasites of the host larvae, the Ripiphorids being the only known beetles to be endoparasites. Subsequent instars have a vermiform appearance, exhibiting a reduction or even a complete loss of legs, a type of hypermetamorphosis suggestive of that found in the Meloidae. In California species of Ripiphorus are parasitic on solitary gregarious bees of the genera Nomia and Diadasia. Macrosiagon is reported from solitary wasps of the families Bembicidae, Tiphiidae, and Scoliidae. Most of the following account of Northwest species is taken from Rivnay 1929 and Linsley and MacSwain 1951. The biological literature is abstracted by Balduf 1935:112-115 and Clausen 1940:548-557.

Key to Genera

1 Elytra elongate, attenuate, dehiscent; claws bifid
MACROSIAGON Hentz

1' Elytra short, scalelike, not extending beyond second abdominal segment; claws pectinate or multidentate RIPIPHORUS Bosc

Macrosiagon Hentz

Head without a concavity on anterior surface of vertex; pronotum without distinct excavations on disc, the well developed median posterior lobe without a process; procoxae contiguous; mesepisternum convex, bulging beyond the lateral margin of the pronotum; antennae biflabellate in male, pectinate in female

1 Metatarsus with second segment longer than the third; black, elytra rufous with the narrow basal margin and the apex black, the pronotum sometimes maculate with red at middle of sides; abdomen red or black; pronotum feebly transversely impressed toward base on each side of middle; elytra separately

narrowly rounded or obtuse at apices; 5-8 mm.; e Wn., Id., e Or. (Pl. XVI, fig. 1) CRUENTUM Germ.

Linsley and MacSwain 1951:81 (34).

1' Metatarsus with second segment subequal to third, slightly thicker and flat above; black, elytra yellow with a narrow stripe along the base and the tips black or brown; pronotum with the posterior lobe with a cup shaped depression near apex of truncate; elytra separately acutely spinosely produced at apices; 5-11 mm.; e Wn., se Id., "Or." DIMIDIATUM F.

Linsley and Macswain 1951:81 (234).

Ripiphorus Bosc.
(Rhipiphorus auct.)

Males have the antennae biflabellate, the segments each bearing 2 rami; females have the antennae simply pectinate.

1 Metatarsus with first segment obliquely truncate at apex, usually elevated and shorter than the following segments combined; head, thorax, and abdomen concolorous black or piceous, the front legs in part and the elytra flavous

2 Pronotum rugosely punctate along base; female with antennae 10-segmented; posterior metatarsal claw with about 9 teeth (female); pygidium about as long as broad, impunctate along its broadly concave median line, coarsely punctate toward sides; 6-8 mm.; sw Id. (Fruitland) LUTEIPENNIS LeC.

2' Pronotum nearly impunctate throughout; female with antennae 11-segmented, the posterior metatarsal claw with 6 teeth (female), 7 or 8 teeth (male); pygidium about 1 1/2 times as long as broad, the surface smooth finely sparsely punctate and pubescent; 6-7 mm.; se Wn. SEXDENS Lins. et MacS.

Linsley and MacSwain 1951:80-81, 85 (2).

1' Metatarsus with first segment not obliquely truncate at apex, not or scarcely elevated, about as long as the following segments combined

3 Abdomen predominantly brown with yellowish tinge or (type) rather extensively yellow; elytra in female yellow, blackish toward base; wings hyaline or lightly infuscate at middle; male with metatarsal claw with 11 to 13 inner teeth; female with metatarsus with first segment between 3 and 4 times as long as broad, the second segment less than 3 times as long as third; 3.4-5.5 mm.; se B.C., e Wn., n Id., e Or. (Pl. XVI, fig. 2) CALIFORNICUS LeC.

Rivnay 1929:56-57 (2). Linsley and MacSwain 1951:80-81, 84 (234).

From Lillooet, B.C. Brown, Can. Ent. 62, 1930:89-90 described *columbianus* Brown, very similar to *californicus* LeC., with the first segment of the metatarsus 5 times as long as wide, the pronotum with impunctate areas, the wings hyaline (male) or infuscate at middle (female); color shining black, the elytra yellow, blackish at base; 5 mm. Brown reports the female holotype of *californicus* LeC. as black and without impunctate areas on the pronotum in contradistinction to Linsley and MacSwain 1951:80-81, 85 (2).

3' Abdomen predominantly yellow, the first tergites with brown markings, the last tergites and the predominant color of the pygidium yellow; wings distinctly infuscate at middle; male with metatarsal claw with 19 to 20 inner teeth; female with metatarsus with first segment 5 or 6 times as long as broad, the second and third segments as in *californicus* LeC.; 5-7.5 mm.;

se B. C., ne Wn., ne Or. MUTCHLERI Rivn.
Linsley and MacSwain 1951:81 (124).

Family Meloidae
(Lyttidae)

The Meloidae or blister beetles, sometimes referred to as oil beetles, are so named because of a vesicating substance in the exoskeleton of some of the species. They feed on plants as adults, sometimes at flowers, and some of the species of Epicauta may occur in sufficient numbers to indicate control measures. The adults of several genera of Nemognathinae are characterized by an extraordinary prolongation of the galea or outer lobe of the maxilla, which in some species is longer than the body and is used in obtaining nectar from flowers. The larvae of Epicauta feed on the eggs in the egg capsules of short-horned grasshoppers of the family Acrididae. The larvae of the other Pacific Northwest genera of Meloidae feed on the larvae and stored pollen and nectar in the nests of solitary bees, principally of the families Megachilidae and Andrenidae. Meloid larvae undergo a remarkable hypermetamorphosis. The eggs are laid on the ground or, in the case of many if not most of the Nemognathinae, on plants. The first instar larvae are active triungulins which make their way into the grasshopper egg capsules or the bee nests, both of which are in the ground, or gain access to the bee nests by attaching themselves to passing bees. The second instar or carabid larva is somewhat plumper and less motile than the triungulin and the third and fourth instar larvae, called the first and second scarabaeoid larvae, are plumper and less motile still and with a curved ventral surface as in the larvae of the Scarabaeidae. Feeding ceases at the end of the fourth instar. The fifth instar or coarctate larva is an immobile resting stage. The sixth instar or scolytoid larva is likewise nonfeeding, but is somewhat more motile than the coarctate larva and is the stage that transforms into a pupa. For more detailed accounts of Meloid biology see Balduf 1935:116-134, 179-181; Clausen 1940:557-568; Selander 1960:8-20; Enns 1956: 691-695. For North American genera of Meloidae see Van Dyke 1928a:398-405.

Key to Subfamilies and Tribes

The characters employed in this key refer only to the Pacific Northwest genera.

1 Tarsal claws not serrate, the upper lobe of each claw well developed and cleft to base or present as a large acute tooth
2 Elytra not overlapping at base (subfam. LYTTINAE)
3 Elytra long; hind wings present; tarsal claws cleft to base; antennae of moderate length
4 Protibiae with a lining of dense pubescence on the inner surface
tribe EPICAUTINI
4' Protibiae without a lining of dense pubescence on the inner surface
tribe LYTTINI
3' Elytra short; hind wings absent; tarsal claws with the lower lobe represented by a long well developed acute tooth; antennae short
tribe EUPOMPHINI
2' Elytra overlapping at base, short; hind wings absent; tarsal claws cleft to base; antennae long (subfam. MELOINAE)
1' Tarsal claws serrate on the upper lobe or (Hornia Riley) with the upper lobe reduced to a small tooth; if the latter, then with scale-like elytra covering

at most only a part of the first abdominal tergite (subfam. NEMOGNATHINAE). tribe NEMOGNATHINI

Subfamily Lyttinae

Tribe Epicautini

Key to Genera

1 Profemora without an excavated sericeous patch ventrally LINSLEYA MacS.

1' Profemora with an excavated sericeous patch ventrally EPICAUTA Redt.

Linsleya MacS.
(Cantharis auct. pars, Lytta auct. pars)

Subgenus Linsleyina Sel.

Brassy green (typical form) varying (ab. CHALYBEA LeC.) through metallic blue to black, appendages black or with femora and tibiae with metallic lustre; nearly glabrous above; head and pronotum coarsely to finely sparsely punctate; head without orange spot between eyes; pronotum subglobose, nearly as long as wide, the mid-line not or feebly impressed, the base at the middle somewhat prominently tumid just behind a distinct transverse impression; elytra rugose with faint traces of 3 costae; protibiae with 2 spurs in both sexes; male with last abdominal sternite with a triangular emargination, the pro- and mesotarsi with undivided pads of ventral pubescence, the intermediate antennal segments more strongly transverse; female with last abdominal sternite entire, all tarsal segments with divided pads of white ventral pubescence, the intermediate antennal segments less transverse; 7.5-12 mm.; se B. C., e Wn., Id., e and extreme sw Or.; common; on flowers of Lupinus, Melilotus, lilac, honeysuckle, potato, and Symphoricarpos (Pl. XVI, fig. 3) SPHAERICOLLIS Say

Fall 1901:299 (24). Gibson 1912a:87 (1). Bush 1914:60 (1). Buckell CIPR 1943: 205 (1); 1944:102 (1). Selander, Am. Mus. Nov. 1730, 1955:1-3, 9, 14-20 (1234).

ab. *chalybea* LeC. 1852a:160 (4); 1853:335 (4); 1857:21 (4). *infidelis* Fall 1901:300 (2). Venables CIPR 1930:66 (1). Selander notes a feeble tendency for ab. *chalybea* LeC. to predominate in the more western portions of the Pacific Northwest.

Epicauta Redt.
(Macrobasis LeC.)

The members of this genus prey on the eggs of grasshoppers, with the result that, when the adults become sufficiently numerous to be injurious, it can be looked upon as a by-product of grasshopper abundance. Werner 1945.

1 Antennae with second segment shorter than third, usually less than half as long

2 Body with evident cinereous or fulvous pubescence, the black body surface frequently visible between the hairs; antennae with second segment not

more than half as long as third

3 Pubescence cinereous; metatibial spurs both slender

4 Upper surface and abdomen maculate, i. e., with numerous small denuded spots, each spot bearing a minute erect seta; antennae more or less evidently tapering toward apex, the apical segments somewhat narrower than the intermediate ones

5 Antennae with the intermediate segments strongly flattened and more than twice as wide as the apical segment, especially in the male; male protibiae with 2 apical spurs, the ventral pads on the pro- and mesotarsi not divided; the denuded spots somewhat smaller; antennal callus denuded, strongly impressed near its inner edge; 7-11 mm.; se B. C., e Wn., Id., Or.
OREGONA Horn

This species is frequently recorded as damaging potatoes, tomatoes, and other garden crops in se B. C. and e Wn. It is possible, however, that some of these reports refer to the next species. Horn 1875:153-154 (1). Yothers, Wash. Ag. Exp. Sta. Pop. Bull. 106, 1917:97-99 (2). Twinn, 66th Ann. Rep. Ent. Soc. Ont. 1936:81 (1); 74, 1944:54 (1). Millay, Bugs Aug. 14, 1942:19 (2). CIPR 1943-1944, 1949-1953. Werner 1945:461 (1234). MacNay 1950:58 (1); 1951: 107 (1); 1952:94 (1); 1952a:70 (1).

5' Antennae with the intermediate segments not flattened, only slightly wider than the apical segment; male protibiae with one apical spur, the ventral pads on the pro- and mesotarsi divided along the middle; the denuded spots somewhat larger; antennal callus denuded, not impressed; 6-14 mm.; se B. C., e Wn., Id., e Or. (Pl. XII, fig. 2) NORMALIS Wer.

This species is occasionally injurious to garden crops. Werner, Psyche 50, 1943:65-66 (234); 1945:442 (234). *maculata,* Horn (nec Say) 1873:100 (4). Ulke 1875:825 (4). Bush, Bull. B. C. Ent. Soc. 3, Sept. 1906:2 (1); 1914:60 (1). Gibson 1912a:86 (1). Brittain 1913:16 (1); 1914:18 (1). Yothers, Wash. Ag. Exp. Sta. Pop. Bull. 106, 1917:97-99 (2). Wakeland IPSB 1922:160 (3). Essig 1926:389 (1234). Smith, Bugs Sept. 8, 1943:11 (2). Johansen and Brannon 1955:9, 12 (2).

4' Upper surface uniformly pubescent; antennae not narrower toward apex; male protibiae with 2 apical spurs

6 Pronotum and head with the mid-line not or scarcely glabrous, feebly impressed

7 Pubescence coarse and rather closely placed, giving a distinct cinereous appearance; 7-11 mm.; se B. C., se Wn., ne Or.
IMMERITA Walk.

There is no good reason to assign Vancouver Island as the type locality: (1) Lord traveled extensively in Oregon, Washington, and British Columbia; (2) no localities are cited in Walker's list of Lord's beetles. Walker 1866: 311, 330 (Lytta). Werner 1945:472 (124).

7' Pubescence fine but evident, the underlying black color of the body surface rather evident, the surface evidently cinereous in oblique view; 8-8.2 mm.; ne Or.; on lupine WERNERI sp. n.

Type and 3 paratypes: Tygh Valley, Or. 5-6-1937. K. M. and D. M. Fender; 1 paratype: Or. (Maupin).

6' Pronotum with the mid-line behind the apical fourth narrowly glabrous and shining, the mid-line of the head very narrowly glabrous

8 Pubescence coarse and twice as dense as in the next species, the body surface strongly cinereous; 6-9 mm.; e Wn., s Id., e Or.
SERICANS LeC.

Horn 1873:98 (4). LeConte 1878:472 (3).

8' Pubescence fine and half as dense as in the previous species, the body surface more feebly cinereous; 6-11 mm.; se B. C., e Wn., s Id., e Or.
PRUINOSA LeC.

Buckell CIPR 1943:205 (1); 1944:102 (1). Werner 1945:471-472 (23). *cinerea*, Hearle (nec Forst.) CIPR 1929:53 (1).

3' Pubescence uniformly flavofulvous or fulvous, very dense; metatibiae with the outer spur short, obliquely produced at apex, the apical surface concave; antennae not tapering toward apex; male protibiae with 2 apical spurs; 6-9 mm.; se Id. FERRUGINEA Say

Werner 1945:465-466 (3). Dillon, Am. Midl. Nat. 48, 1952:386-387 (3).

2' Body black with black pubescence or nearly glabrous; metatibial spurs slender

straba Horn, 5-8 mm., with short black pubescence, the eyes oblique and strongly pointed at their inner margin, is cited by Werner 1945:483-484 from "Wn.," but he suspects the locality may be in error.

9 Body with abundant long black silky erect or semierect pubescence that does not obscure the surface; eyes rounded at inner margin, not angulate; 6-13 mm.; s B. C., Wn., Id., Or.; common (Pl. XII, fig. 3)
(punctured blister beetle) PUNCTICOLLIS Mann.

This species occasionally damages garden and field crops. LeConte 1857: 21 (4) (Lytta). Horn 1873:97 (4). Wickham 1890:171 (1). Piper and Doane, St. Coll. Wash. Ag. Exp. Sta. Bull. 35, 1898:23-24 (2). Gibson 1912a:87 (1). Brittain 1914:19 (1). Essig 1926:390 (1234). Buckell CIPR 1943:205 (1); 1944: 102 (1). Werner 1945:474 (2). Barr CEIR 1955:816 (3). Johansen and Brannon 1955:9, 12 (2). *oblita* LeC. 1852a:162 (4) (part); 1853:339 (4) (part). *fissilabris* auct. (nec LeC.) IPSB 1926:187 (1). Stace Smith 1930:23 (1). *pennsylvanica* auct. nec DeG. Gibson 1912a:83 (1). Smith Bugs, Sept. 8, 1943:11 (2).

9' Body above nearly glabrous, the elytra with very short inconspicuous hairs which scarcely exceed the punctures; head, pronotum, and elytra punctate, alutaceous, shining, the elytral punctures somewhat less distinct; 8-12 mm.; ne B. C., s Id. PICEIVENTRIS May.

Werner 1945:472-473 (3). *wheeleri*, LeC. (nec Horn) 1878:472 (3). *elongatocalcarata* May., Tr. Am. Ent. Soc. 60, 1934:328-329 (3).

1' Antennae with second segment longer than third or equal to it

10 Pubescence cinereous, quite dense, concealing most of the surface; body and legs black or dark brown; antennae in male with the first 2 segments enlarged, the first segment extending to the occiput, the second segment about as long as the third and fourth together, in the female with the first 2 segments not enlarged, the second somewhat longer than the third but shorter than the third and fourth together; 9-15 mm.; se Id.; rare
(ash-gray blister beetle) FABRICII LeC.

10' Pubescence very dark brown, short, sparse; body and legs black; antennae in male with the first segment extending to the occiput or a little beyond, the second as long as the next 3 1/2 segments together, in female with the first segment extending to the hind margin of the eye, the second segment longer than the third; 6-11 mm.; ne B. C. (Rolla), extreme se Id. (Paris)
(caragana blister beetle) SUBGLABRA Fall

Werner 1945:499-500 (3).

Tribe Lyttini

Lytta F.
(Cantharis auct.)

Subgenus Poreospasta Horn
(Paralytta Sel.)

Males may sometimes be distinguished by their more or less evidently emarginate sixth abdominal sternite. Selander 1960.

1 Pronotum and head behind the eyes rufous, body otherwise black; glabrous above; head broadly emarginate at base; pronotum bluntly angulate at sides; elytra coarsely strongly reticulate; male with antennal segments more strongly moniliform, the intermediate segments slightly enlarged, the sixth abdominal sternite with a deep U-shaped emargination; female with antennal segments more elongate, the intermediate segments not enlarged, the sixth abdominal sternite truncate or feebly emarginate; 10-28 mm.; se B. C., e Wn., Id., ne Or.; on flowers of various Compositae (Pl. XIII, fig. 2)
VULNERATA LeC. subsp. COOPERI LeC.
LeConte 1854:18 (2); 1857:21, 51 (2). Horn 1873:106 (4). Fall 1901:296 (4). *vulnerata* LeC. Selander 1960:130-136 (interior race) (1234).
MOLESTA Horn; black, prothorax red with a large black basal spot and narrow black apical margin; outer metatibial spur short, stout, broader and concave at tip; antennae not sexually dimorphic; 11-21 mm. Fall records this species from "Washington," probably in error. Fall 1901:398 (2). Selander 1960:216-217.

1' Head and pronotum black or metallic; head with a median rufous spot, truncate at base; pronotum not angulate at sides, wider than long, widest before middle; elytra scabrous

2 Elytra with more or less evident erect hairs which may be rather sparse; male metatochanters angulate or spinose along inner margin

3 Head and pronotum metallic green; antennae moliliform, the intermediate segments in the male somewhat wider; male sixth abdominal sternite deeply acutely emarginate

4 Elytra generally violet, at least on margins, rarely entirely green; body otherwise green, the antennae black; male fifth abdominal sternite broadly emarginate, the lateral angles angulate in ventral view; elytra sparsely clothed with short pubescence with some long setae usually present at immediate base; 7-21 mm.; sw Id.
(Nuttall blister beetle) NUTTALLI Say
Essig 1926:390 (3). Selander 1960:205-209 (3). *fulgifer* LeC. LeConte 1878: 472 (3) (*fulgifera*).

4' Elytra and body metallic green, the elytra varying to blue, legs and venter viridescent, antennae and mouth parts black

5 Hairs on ventral surface of thorax piceous throughout; metatrochanters angulate along ventral margin in male, varying to smooth in female; antennae in male with segments 4 to 8 globose, without conspicuous long erect setae; elytra with erect hairs which are normally somewhat longer at sides; 9-20 mm.; se B. C., e Wn., Id., e Or.; common (Pl. XIII, fig. 5)
(green blister beetle) CYANIPENNIS LeC.
LeConte 1852a:160 (4); 1853:333 (4); 1857:21 (4); 1877:109; 1878:472 (3). Horn 1873:107 (4). Fall 1901:297 (24). Gibson 1912a:86 (1). Essig 1926:390 (124).

Buckell CIPR 1943:205 (1); 1944:102 (1). Downes CIPR 1945:114 (1). Johansen and Brannon 1955:9, 12 (2). *vesicatoria,* Walk. (nec L.) 1866:311. *viridana* auct. (nec LeC.) Piper, 6th Ann. Rep. Wash. St. Agric. Exp. Sta. 1897:38 (2). Piper and Doane, St. Coll. Wash. Agric. Exp. Sta. Bull. 35, 1898:24 (2).

5' Hairs on ventral surface of thorax piceous at base, white at apex; metatrochanters not angulate along ventral margin; antennae in male with segments 4 to 8 flat, conspicuously clothed with long erect setae on outer surface, elytra only rarely with long erect hairs; 11-18 mm.; ne B. C.
VIRIDANA LeC.

Selander 1960:213-215 (1).

3' Black, rarely very faintly bluish; elytra with short sparse erect hairs; males with the antennae with the intermediate segments not wider than the terminal segments, the sixth sternite broadly emarginate; 11-21 mm.; Or.
MOERENS LeC.

The metallic color is reported to become more frequent and evident in central and southern Californian population. Selander 1960:196-200 (4).

2' Elytra glabrous or nearly so; metatrochanters in male without a spine on their inner surface

6 Color varying from black through blue to more or less brilliant green; antennal segments more elongate and less strongly moniliform in the male than in the female, the intermediate segments not enlarged; 6.9-15 mm.; se B. C., e Wn., Id., Or.; common
(infernal blister beetle) STYGICA LeC.

LeConte 1852a:161 (4); 1853:335 (4); 1857:21 (4). Horn 1873:113 (4). Fall 1901: 299 (24). Essig 1926:391 (24). Durdle IPSB 1939:428 (2); Bugs Aug. 16, 1939: 1 (2).

6' Color black without trace of metallic tinge; male antennae with segments 5 to 7 wider than those that follow

7 Male with one or both spurs on each metatibia flattened, sticklike; male genitalia characteristic; female sixth abdominal sternite with hind margin turned gradually dorsad; 10-16 mm.; sw Id., se Or.; rare
BLAISDELLI Fall

Selander 1960:119-120 (34).

7' Male with both spurs on each metatibia obliquely truncate, the surface of the truncature concave; male genitalia characteristic; female sixth abdominal sternite with hind margin turned abruptly dorsad; 15-18 mm.; "Wn.," "Or."; rare
LUGUBRIS Horn

Selander 1960:120-121 (24).

Tribe Eupomphini
(Colaspastini)

Key to Genera

1 Elytra contiguous for a short distance behind the scutellum, thence more or less divergent; antennae 10-segmented
BRACHYSPASTA Van D.

1' Elytra divergent from the scutellum; antennae 11-segmented
MEGETRA LeC.

Brachyspasta Van D.

Black, rugose, strongly alutaceous, opaque; head much (female) or slightly (male) wider than pronotum, subquadrate (male) to (female) somewhat triangular, obscurely punctate, more evidently punctate behind; antennae filiform, barely reaching hind margin of pronotum, 10-segmented, the third segment longer than second or fourth, the sutures between the last 2 or 3 segments obscure; pronotum transverse, subquadrate, the surface uneven and obscurely punctate, the base distinctly narrowly margined; elytra strongly rugose, with 2 or 3 obscurely indicated longitudinal costae, in female very briefly and in male more extensively contiguous behind the scutellum; male with abdomen with sixth visible sternite strongly arcuately emarginate along hind margin, the seventh sternite strongly emarginate along hind margin which is strongly setose on each side of the emargination; female with abdomen with sixth visible sternite straight along hind margin, the hind margin of the seventh sternite broadly feebly arcuate; 6 (male)-9 (female) mm.; se Id. (a single pair from Grand View, UI collection)

WICKHAMI Van D.

Van Dyke 1928:451-453, pl. 17, fig. 10.

Megetra LeC.

Megetra vittata LeC., previously known from Durango, Chihuahua, Texas, New Mexico, and Arizona, is represented in my collection by a single specimen of very doubtful authenticity labeled "Cle Elum, Wash. date?"; black, the basal margin of the head rufous, a median elytral vitta and the narrow posterior margin of the abdominal segments yellow; head and pronotum sparsely punctate, opaque; pronotum narrower than head; elytra and abdomen swollen, much wider than head, opaque; elytra rugose, shorter than abdomen, the epipleura as wide as the rest of the elytra; 14-21 mm.

Subfamily Meloinae

Meloe L.

Van Dyke's account of this genus is not entirely satisfactory, due, in part but not entirely, to the great variability of some of the species. For instance, after placing *californicus* Van D. in that portion of the key calling for the pronotum to be "fully as long as broad or longer" he described it as having the pronotum 3.5 mm. broad by 3.25 mm. long, and after placing *afer* Bland in a section characterized by the "eighth and ninth antennal segments distinctly longer than broad," he describes the "eighth barely longer than broad."

Males of all but one of the Pacific Northwest species may be recognized by the enlarged and distorted fifth, sixth, and seventh antennal segments. Females of *barbarus* LeC. and *strigulosus* Mann. lack pale pubescence from the ventral surface of the first protarsal segments, but this does not apply to the females of *opacus* Bland, *californicus* Van D., and *montanus* LeC. Males of all the Pacific Northwest species I have seen have the last (sixth) visible abdominal sternite more or less deeply broadly emarginate, the hind angles of the segment more or less prominent and densely set with longer bristles. This sternite is not or feebly emarginate in the females, the longer bristles not markedly clustered on the hind angles.

The adults in this genus live on the ground where the eggs are laid. The larvae upon hatching crawl up on plants and attach themselves to passing solitary bees who carry them to their nests.

Van Dyke 1928a.

1 Antennae nearly the same in both sexes, not distorted in the male (subg. MELOE s. str.). Antennae with fifth to seventh segments somewhat enlarged in both sexes, the eighth and ninth segments not twice as long as broad; black; head sparsely punctate, the eyes somewhat prominent; pronotum wider than long, the sides oblique, the disc strongly coarsely sparsely punctate and somewhat explanate at middle of base; elytra finely strigose; 10-18 mm.; sw B. C., e Wn., nw Or. (Pl. XII, fig. 4)
BARBARUS LeC.

Larvae somewhat doubtfully assigned to this species have been found associated with Andrena, Anthophaga, and Osmia bees in California (MacSwain). Van Dyke 1928a:444-445 (14). MacSwain 1956:103-104 (1).

1' Antennae with fifth to seventh segments in male dilated and distorted forming a clasping organ, these segments somewhat stouter than the following segments in the female (subg. PROSCARABAEUS Schr.)

2 Body black, not showing a violet or bluish color even when wet, although the legs may show such a color

3 Pronotum usually broader than long, sometimes only as broad as long, the surface more or less densely coarsely punctate; head with eyes scarcely projecting beyond its side margins

4 Somewhat opaque; antennae with eighth segment scarcely longer than broad

5 Antennae with ninth segment scarcely longer than broad; head and pronotum moderately variably coarsely closely punctate, strongly alutaceous, opaque; pronotum somewhat variably transverse, the sides behind oblique; elytra very finely strigose; abdomen finely rugose, usually with evident punctation; 13-30 mm.; s B. C., Wn., n Id., Or. (Pl. XII, figs. 5 and 6)
OPACUS LeC.

Larvae have been observed associated with Andrena and Colletus bees in British Columbia and California (MacSwain). Van Dyke 1928a:439-440 (1234). MacSwain 1956:100-101 (1).

5' Antennae with ninth segment about 3/4 as broad as long, the entire antenna hardly longer than head and pronotum; punctation coarse and deep; pronotum barely broader than long (2. 25 x 2 mm.), not elongate, canaliculate posteriorly, the sides behind convergent and vaguely sinuate; elytra finely distinctly rugulose; abdomen rugose without evident punctation; length to end of elytra 8-10 mm.; se B. C., e Wn., Id. (Pl. XII, fig. 7)
AFER Bland

Van Dyke 1928a:442-444 (2).

4' Somewhat shining; head and pronotum very coarsely moderately closely punctate, strongly alutaceous, somewhat shining; antennae with the eighth and ninth segments about 3/4 as broad as long; pronotum nearly as long as broad, the sides behind oblique to very feebly sinuate; elytra rather strongly rugulose; abdomen rugose without evident punctation; first protarsal segment with pale pubescence beneath in female; 17-22 mm.; n Id., "Or." (Pl. XII, fig. 8) CALIFORNICUS Van D.

3' Pronotum usually longer than broad, varying to as long as broad or, very rarely, a little broader than long, the surface with a few relatively small sparsely placed punctures, alutaceous, shining, the sides behind feebly broadly sinuate; head with the eyes prominent, more or less evidently

projecting beyond its side margins; antennae with eighth and ninth segments about 3/4 as wide as long; elytra finely distinctly rugulose; abdomen rugose without evident punctation; first protarsal segment with pale pubescence beneath in male, not so in female; 14-25 mm. ; se B. C., nw Wn., w Or. ; common (Pl. XIII, fig. 4) STRIGULOSUS Mann.

Larvae have been taken associated with Anthophora bees in California (MacSwain). Van Dyke 1928a:424-426 (124). Pratt and Hatch 1938:192 (2). MacSwain 1956:102-103 (1). Hatch and Kincaid 1958:13 (2).

2' Body with a violet, bluish, or greenish tinge, especially visible when wet; abdomen rugose without evident punctation

6 Pronotum broader than long, the sides posteriorly feebly arcuate; head and pronotum coarsely closely punctate, alutaceous, the antennae with the eighth and ninth segments only slightly longer than wide; head with the eyes not evidently projecting beyond its side margin; elytra strongly rugulose; first protarsal segment with pale pubescence beneath in both sexes; 7-24 mm. ; B. C., w Wn., n Id., w Or. (Pl. XII, fig. 9; Pl. XIII, fig. 3) MONTANUS LeC.

LeConte 1866b:155 (4); 1869:371 (1). Anderson 1914:58 (1). Van Dyke 1928a: 432-434 (12). Leech, Bull. Brook. Ent. Soc. 19, 1934:41 (1).

6' Pronotum as long or longer than broad, the sides posteriorly broadly sinuate; head and pronotum moderately not closely punctate, alutaceous, the antennae with the eighth segment about 3/4, the ninth segment about 3/5 as wide as long; head with eyes evidently projecting beyond its side margin; elytra moderately rugulose; 9. 5-18 mm. ; B. C., ne Wn., n Id., ne Or. (Pl. XVII, fig. 1) AMERICANUS Leach subsp. OCCIDENTALIS Van D.

Van Dyke 1928a:422-423 (4).

Subfamily Nemognathinae
(Zonitinae)

Tribe Nemognathini

The adults of members of this tribe occur on flowers. The eggs are laid on the plants, frequently on the flowers, whence the first instar larvae attach themselves to solitary bees.

Key to Subtribes and Genera

1 Antennae of moderate length, more or less filiform, the third segment more than twice as long as broad (subtribe NEMOGNATHINA)

2 Antennae with the outer segments not broadened

3 Outer lobes of maxillae (galeae) not prolonged ZONITIS F.

3' Outer lobes of maxillae (galeae) prolonged in a sucking tube

4 Elytra pale lemon yellow and very coarsely punctate in the single Pacific Northwest species; the prolonged galeae scarcely attaining the metacoxae PARAZONITIS Enns

4' Elytra testaceous or black, more finely punctate to rugose; the prolonged galeae varying to longer than the body NEMOGNATHA Ill.

2' Antennae with outer segments broader than the more basal ones; outer lobes of maxillae (galeae) prolonged in a sucking tube GNATHIUM Kby.

1' Antennae short, robust, somewhat moniliform, the third segment not more than twice as long as broad; outer lobe of maxilla not prolonged
4 Claws serrate on the upper lobe (subtribe TRICRANIINA)
TRICRANIA LeC.
4' Claws not serrate, the upper lobe reduced to a small tooth (subtribe SITARINA). Elytra short, scale-like, covering at most only a part of the first abdominal tergite; abdomen saclike and semimembranous
HORNIA Riley

MacSwain, Pan-P. Ent. 27, 1951:72, classifies the above genera on aedeagal characters as follows:

a Median tube of male terminalia a heavily sclerotized and bilobed structure
tribe ZONITINI
For Zonitis F., including the subgenus Parazonitis Enns, and Gnathium Kby.
a' Median tube of male terminalia membranous tribe NEMOGNATHINI
For Nemognatha Ill., Tricrania LeC., and Hornia Riley

Subtribe Nemognathina

The outer lobe or galea of the maxilla is greatly prolonged in several of the genera of this subtribe in a fashion nearly unique among the Coleoptera with the result that in certain species it is longer than the body. This is an adaptation for sucking nectar from flowers and the species involved are undoubtedly a factor in cross pollination. Graenicher (Ent. News 21, 1910:72-75) reporting on Nemognatha observed that "immediately after alighting on a flower . . . the insect proceeds to insert its tongue into a tubal floret for the purpose of sucking. After a short while the head is lifted upward, the tongue withdrawn, and with a downward movement thrust into a neighboring floret. These upward and downward movements are carried out with much precision, with little or no loss of time." The feeding is not a true suction, but is accomplished by capillarity along the 2 closely appressed galeae, which are held in close juxtaposition by thickly set hairs along their inner margins.

Graenicher (l. c.) suggests that varying lengths of the galeae may be adaptations to different flowers. Thus Enns (1956:694) reports that "*Nemognatha lurida* with moderately long galeae prefers Helianthus while *N. piazata bicolor* with galeae as long as the body prefers Cirsium. . . . In this connection, a series of *Nemognatha lutea dichroa* from Idaho, . . . usually taken on Cirsium . . . was taken on Helianthus and each specimen has only moderately long galeae (as in *dubia*) instead of the extremely long one characteristic of the subspecies."

Zonitis F.

Subgenus Neozonitis Enns

Enns 1956:800-843.

1 Eyes not produced below head, rarely exceeding the lower margin of the mandibular condyle; pronotum feebly or not sulcate
2 Elytra rugose or feebly rugose-punctate; vertex of head usually pale, impunctate; usually reddish brown, the elytra pale gray or white, the females

with broad dark elytral vittae; 6.5-13 mm.; s Id.
BILINEATA Say

Usually on common subflower, *Helianthus annus* L. Enns 1956:801-805 (3).

2' Elytra moderately densely punctate, the intervals between the punctures smooth; elytra black (typical form; n Id.) or pale testaceous (subsp. FLAVIDA LeC.; se Id.); otherwise pale testaceous or flavous with the tips of the mandibles and palpi, apices of the femora and tibiae, and tarsi varying to black or very dark reddish brown; elytra punctate; 6-12 mm.; Id.
ATRIPENNIS Say

Usually on Cleome flowers. Enns 1956:807-810, 813 (3).

subsp. *flavida* LeC. Enns 1956:810-811, 813 (3).

1' Eyes produced below head beyond outer margin of maxillae; yellow or orange yellow, the elytra feebly metallic blue or purplish or brownish blue; eyes, antennae, tips of mandibles, palpi, apices of femora, entire tibiae and tarsi piceous; elytra vermiculate, impunctate; eyes finely faceted; metatarsal claws with more than 10 teeth in inner row; 8-12 mm.; se Wn., Id., e Or. (Pl. XVI, fig. 4) VERMICULATA Schaef.

Enns 1956:813-815 (234).

Parazonitis Enns

Greenish to pale testaceous; eyes, antennae, palpi, tips of mandibles, galeae, apices of femora and tibiae, and entire tarsi fuscous or black, the metasternum sometimes fuscous; pronotum impunctate except for a few sparse punctures at the sides; elytra coarsely sparsely punctate; galeae slender, longer than mandibles, usually attaining the metacoxae; 8-12 mm.; Id.
SAYI Wick.

Associated with Nomia bees in Utah. Enns 1956:829-832 (3).

Nemognatha Ill.

Most of my material in this genus has been named by Dr. Wilbur R. Enns. The species are apparently very variable and, while Enns's monograph has been followed closely, the following account is only moderately satisfactory. The color is so variable that it is of very limited value in recognizing the species. The sexes may be distinguished by the various modifications of the fourth and fifth or, in *nigripennis* LeC., the third and fourth visible abdominal sternites. These sternites are undifferentiated in the female. In the male they are medially impressed with somewhat denser pubescence in the subg. Nemognatha s. str., marked with large transverse very densely punctulate areas in the subg. Meganemognatha Enns, or marked with transversely oval somewhat punctulate areas set with distinct pencilled tufts of setae in the subg. Pauronemognatha Enns. Enns 1956.

1 Males with fourth and fifth visible abdominal sternites not medially excavated; elytra without a piceous vitta

2 Males with large transverse very densely punctulate areas on fourth and fifth visible abdominal sternites (subg. MEGANEMOGNATHA Enns)

3 Outer metatibial spurs at most twice as wide as inner, often only scarcely wider; elytra shallowly rugosely punctate, in the female shining and moderately densely punctate

4 Galeae scarcely longer than the pronotum; color black (25%) or brown (25%) or black with the head, pronotum, and apex of abdomen rufotestaceous; 7.5-15 mm.; s B. C., w Wn. SOROR MacS.

The 20 w Wn. specimens seen are all black. MacSwain, Pan-P. Ent. 28, 1951:78-79 (1). Enns 1956:741-742, 756 (1).

4' Galeae considerably longer than pronotum, rarely extending beyond the fourth abdominal sternite, inner metatibial spur flat, feebly concave, as long as the outer spur, the apices subacute (subsp. DUBIA LeC., sw Wn.); or the galeae as long as the body with the outer metatibial spurs flared, the inner metatibial spurs flattened, the apices subtruncate (subsp. LUTEA s. str., se Id.); or with the outer metatibial spurs parallel-sided with rounded apices, the inner metatibial spurs slender and often spiniform (subg. DICHROA LeC., s B. C., Wn., Id., Or.; common; Pl. XVI, fig. 6); usually pale with the scutellum, appendages, and ventral surface except the abdominal apex black, but the color may vary to piceous with the prothorax and upper third of head reddish (extreme form of subsp. LUTEA s. str.) or (subsp. DUBIA LeC.) black (25%) or brown (25%) or black with the head, pronotum, and apex of abdomen pale (45%); 7.5-15 mm.; s B. C., Wn., Id., Or. LUTEA LeC.

The subsp. *dichroa* LeC. is further characterized by having the pronotum somewhat sulcate medially at the base. Enns records the subsp. *lutea* s. str. and *dichroa* LeC. as primarily occurring on Cirsium (thistle) whereas the subsp. *dichroa* LeC. prefers Helianthus (sunflower), but other flowers are likewise visited. *Dichroa* has been reported associated with Anthophora, Melissodes and Megachile bees and the subsp. *dubia* LeC. with Anthidium and Megachile bees.

subsp. *dubia* LeC. LeConte 1880:213 (4). Enns 1956:738-741

subsp. *lutea* LeC. Enns 1956:734-735, 741 (3).

subsp. *dichroa* LeC. 1853:346 (4); 1880:213 (4). Brittain 1914:19 (1). Mac Swain 1956:134 (1). Enns 1956:736-738, 741 (1234).

3' Outer metatibial spurs greatly enlarged, more than twice and usually 3 times as wide as the inner spurs, the apices flared; galeae extending well beyond the metacoxae; usually testaceous above, the elytra with black apical crescents, the ventral surface varying from testaceous to piceous, the apical abdominal segments usually testaceous, antennae and mouth parts and tibiae and tarsi black, the pubescence usually black; but the color varies from entirely pale except the appendages to black with only the head and pronotum testaceous; pronotum scarcely wider than long, the sides divergent from the anterior angles or feebly sinuate, anterior angles broadly rounded, the disc moderately densely punctate, the punctures usually separated by at least their diameters; 7-15 mm.; se B. C., e Wn., s Id., Or.; usually on Helianthus or Grindelia; rarely on Cirsium or other flowers LURIDA LeC. subsp. APICALIS LeC.

Possibly associated with Melissodes bees. LeConte 1857:21 (4); 1879:506 (3). Bush, Bull. B. C. Ent. Soc. 3, Sept. 1906:2 (1). Enns 1956:726-727 (234). *bicolor* Walk. (nec LeC.) 1866:311, 331. LeConte 1870:402. *lurida* LeC. 1880: 212 (4).

2' Males with transversely oval finely punctulate areas set with from 1 to 3 distinct pencilled tufts of setae on both the fourth and fifth (in *scutellaris* LeC. the third and fourth) abdominal sternites (subg. PAURONEMOGNATHA Enns). Metatibial spurs nearly similar, more or less flattened and concave; galeae scarcely attaining or slightly exceeding the metacoxae; pubescence dark

5 Metatibial spurs extremely slender, feebly flattened and concave, the apices acute; pronotum about 4/5 as long as wide, the sides broadly arcuate; head

somewhat less elongate in frontal view than in the next 2 species; testaceous; the mouth parts, antennae, tibiae, tarsi and knees black; elytra testaceous with the apex darker or (typical form) the entire elytra black; 5-10 mm.; s Id., n Or.; on various flowers NIGRIPENNIS LeC.

Adults have been reared from the cells of Dianthidium, Megachile, and Hoplitis bees. Enns 1956:777-779 (34).

5' Metatibial spurs more or less distinctly flattened and concave, the apices acute or subacute; pronotum about 3/4 as long as wide, the sides frequently sinuate before the hind angles; head somewhat more elongate

6 Testaceous with anterior portions of head, appendages, scutellum, elytral apex and sometimes a short discal vitta black; antennae with second segment about 1/3 as long as the third, the third longer than the fourth; above rather sparsely punctate; 7-10 mm.; se Id., e Or.; on Chrysothamnus; rare CRIBRARIA LeC. subsp. CRIBRARIA s. str.

Enns 1956:766-769 (4).

6' Testaceous with anterior portions of head, appendages, entire ventral surface, scutellum, and posterior, posterior lateral, and posterior sutural margins of elytra black; antennae with second segment slightly more than 1/3 as long as the third, the third shorter than the fourth; above rather coarsely closely punctate, the elytra alutaceous; 5-10 mm.; e Wn., n Id., Or.; on flowers SCUTELLARIS LeC.

Associated with Anthophora, Ashmeadiella, Callanthidium, Osmium, Hoplitis, Alcidamea, and possibly with Xylocopa bees. Enns 1956:783-785 (234).

1' Males with fourth and fifth visible abdominal sternites with elongate oval medially excavated densely punctate pubescent impressions (subg. NEMOGNATHA s. str.). Metatibial spurs elongate, parallel sided, concave, subequal, the apices subacute or rounded; galeae usually extending to apex of abdomen; color variable; the melanistic forms piceous above and below, the head and pronotum testaceous; sometimes testaceous, the appendages, ventral surface, apex of scutellum and a discal elytral vitta black; 7-15 mm.; se B. C., n Id.; on Cirsium (thistle) and other flowers; not seen from the Pacific Northwest PIAZATA F. subsp. BICOLOR LeC.

Associated with Anthophora and possibly Centris and Diadasia bees. Stace Smith 1929:70 (1). Enns 1956:794-795 (3).

Gnathium Kby.

MacSwain 1952.

1 Pronotum longer than broad, closely moderately coarsely punctate, the punctures separated by about their own diameter; rufotestaceous, the eyes, antennae, maxillae, tibiae, and tarsi somewhat darker; dorsal surface with semidecumbent pubescence; head closely moderately coarsely punctate, the vertex bituberculate; elytral punctures shallow; maxillae about 3 times as long as the prothorax; 6-6.5 mm.; sw Id., ne Or. (Pl. XVI, fig. 5) MINIMUM Say

MacSwain 1952:212 (4).

1' Pronotum about as broad as long, finely very sparsely punctate, the punctures usually separated by at least 5 times their diameter; flavous to flavotestaceous, the antennae except the 2 basal segments black; elytra shining; maxillae nearly twice as long as prothorax; 5 mm.; se Id., e Or. NITIDUM Horn

MacSwain 1952:212 (4).

Subtribe Tricraniina

Tricrania LeC.
(Tricraniodes Wellm.)

1 Elytra red, the body otherwise black; body coarsely closely punctate with erect black pubescence, the elytra moderately rugose, shining; alate; head and pronotum of subequal width, evidently narrower than elytra; head broadest across the prominently rounded temporal angles; pronotum transversely quadrate, 2/3 to 3/4 as long as wide, widest across the prominent acutely rounded front angles, the hind angles obtusely rounded; 7.5-12 mm.; s B.C., e Wn., Id., Or. (Pl. XVI, fig. 7) STANSBURII Hald.

Associated with Osmia, Hoplitis, Anthidium, and Anthophora bees. LeConte 1869:371 (1); 1878:472 (3). *stansburyi* auct. Stace Smith 1930:23 (1). Hatch 1950:23 (4).

1' Elytra with a round rufous spot at each side at the base and a narrow submarginal line behind the basal fourth, the body otherwise black; alate; opaque; head and pronotum densely granulate punctate, the elytra oblong elongate, scarcely wider than the pronotum, less finely punctate rugose; pronotum transverse, the sides convergent behind; 12.2 mm.

MURRAYI LeC.

Described from "Rocky Mountains or Oregon." LeConte 1860:321.

Subtribe Sitariina

Hornia Riley

Head, thorax, and legs rufous or pale ferruginous, elytra testaceous, abdomen creamy white with paired rectangular dark brown tergal and sternal plates, the plates pale in the female; integument shining with short dark brownish or blackish hairs; head wider than pronotum, closely shallowly coarsely punctate on frons, more sparsely somewhat more finely so on vertex, the upper frons slightly concave, the antennae but little longer than head (female) or approximately attaining the base of the pronotum (male); pronotum nearly as long as broad, subquadrate, irregularly shallowly punctate; legs with pubescence about 1/2 as long as greatest width of tibiae, basal spine of tarsal claw absent or short, at most attaining middle of claw; abdominal pubescence more or less confined to transverse tergal and sternal bands; 14-17 mm.; Id.; bred from nests of Anthophora bees

MINUTIPENNIS Riley subsp. MINUTIPENNIS s. str.

Linsley, Univ. Cal. Publ. Ent. 7, 1942:174-176. Linsley and MacSwain, Univ. Cal. Publ. Ent. 7, 1942:189-206. Bohart and Selander, Proc. Ent. Soc. Wash. 57, 1955:121-130 (3).

Family Pyrochroidae

Fire-Colored Beetles

Blair, Ann. Mag. Nat. Hist. (8) 13, 1914:310-326; Ent. Mo. Mag. (3) 6, 1920: 134.

Key to Subfamilies

1 Pronotum with hind angles not produced, either subrectangular or rounded PYROCHROINAE

1' Pronotum with the hind angles and the median costa behind produced; antennae simple; eyes separated by more than their width ISCHALIINAE

Subfamily Pyrochroinae

Key to Genera

1 Eyes separated by much more than their width; pronotum flattened, uneven, opaque, finely punctate; head in male with the surface behind and between the eyes posteriorly with 2 very deep circular foveae that closely approximate each other along the mid-line; antennae flabellate in male, serrate in female SCHIZOTUS Newm.

1' Eyes separated by less than their width; pronotum convex, smooth, variably punctate; head not foveate above in either sex; antennae flabellate in male, pectinate in female DENDROIDES Latr.

Schizotus Newm.

Elongate; finely pubescent; piceous; head and pronotum finely alutaceous; head before the eyes and gula more or less extensively rufous, the pronotum rufous; narrow lateral and sutural margins of elytra testaceous; head behind and between the eyes posteriorly in the male with 2 very deep circular fossae, the lamella separating the fossae elevated into a low carina that extends anteriorly briefly, the homologous areas in the female each with a rufous spot; neck region of head depressed but not strongly demarked from the rest of the head; antennae in male with segments 3 to 10 flabellate, segment 11 as long as segments 8 to 10 combined; antennae in female serrate; pronotum transverse, narrower than elytra, widest behind middle, the surface subopaque, finely densely punctate, somewhat flattened and marked by irregular depressions, the sides subarcuate, the basal beading very strongly marked; elytra finely rugose, slightly expanded behind; 6.5-8.4 mm.; B.C.; rare CERVICALIS Newm.

Dendroides Latr.

Males have the eyes nearly contiguous above, the antennae with segments 3 to 10 with slender branches arising near their distal ends and several times as long as their respective segments, the last segment as long as the 3 or 4 previous segments together; females have the eyes separated by less than their width, the antennae with segments 3 to 10 with the outer (ventral) apical angles produced, the branches of the outer segments subequal in length to the length of their respective segments; pronotum in Pacific Northwest species wider than long, feebly narrowed at base, the base with a deep subbasal groove; elytra feebly inflated behind, the surface pubescent and moderately densely coarsely punctate.

1 Pronotum rather coarsely punctate; elytra, head behind the clypeus, and antennae piceous, the body otherwise rufotestaceous; male with last antennal segment scarcely as long as the 3 preceding; female antenna with segments

3 to 10 each with a distinct branch; 8-14 mm.; nw B. C.
CANADENSIS Latr.

Barber, Psyche 1932:36-37. *bicolor* Newm. Clark 1956: 39 (1).

1' Pronotum smooth, sparsely minutely punctulate; female antenna with the apical angles of segments 3 and 4 prominent and thence to segment 10 progressively longer

2 Piceous or blackish, the scutellum, pro- and mesothorax, femora at base and procoxae rufotestaceous; male with last antennal segment as long as the 3 or 4 preceding segments; 11-13 mm.; "Wn." (Horn), sw Or.
PICIPES Horn

A single specimen from "W. T." in the Horn collection. Horn 1888:47 (2).

2' Testaceous, the eyes black; male with last antennal segment a little shorter than the 4 preceding segments together; 9-17 mm.; B. C., Wn., w Or.; under the slightly loose bark of decaying trees and logs, especially of alder, maple, and cottonwood (Pl. XVI, fig. 8) EPHEMEROIDES Mann.

Horn 1888:48 (12). Keen 1895:219 (1). Clark 1956:39 (1).

Subfamily Ischaliinae

Ischalia Pasc.

Flavotestaceous, the eyes and elytra except the oblong humeral area and lateral and apical margins black, the abdomen black or piceous with the first visible sternite a little paler; elongate, shining, a little wider behind; head and pronotum shining, smooth, finely punctulate with inconspicuous pubescence; antennae reaching to apex of humeral pale spot, the segments longer than wide; maxillary palpi with the last segment enlarged, triangular; pronotum about 3/4 as long as wide, widest at hind angles before which the sides are feebly sinuate, at middle nearly as wide as at hind angles, sides before middle broadly arcuate to the apex which is about 3/5 as wide as the base, the mid-line impressed in front and costate behind, the disc tumid on each side of mid-line in front and deeply widely impressed behind, the hind angles and median costa projecting prominently beyond the basal margin; scutellum prominent; elytra shining, inconspicuously pubescent, very coarsely contiguously punctate, with a very prominent costa extending from the humerus to the apex; 6.1-7.5 mm.; s B. C., w Wn., "Id.," nw Or.; rare (Pl. XVIII, fig. 1)
VANCOUVERENSIS W. Harr.

Harrington, Can. Ent. 24, 1892:132 (1). Leng 1920:161 (3).

Family Pedilidae

Pedilus Fisch.
(Corphyra Say)

Elongate shining beetles with recumbent pubescence; head evidently to densely punctate above and below in Pacific Northwest species, especially at the sides, the antennae about half as long as the body; pronotum wider than long, usually widest at about middle, convex, smooth, shining, finely punctate, finely pubescent, the sides strongly rounded, the base a little wider than the apex and strongly margined; elytra somewhat coarsely rugosely punctate; males with the fifth and sixth visible abdominal sternites somewhat emarginate along apical margin, the

female with the fifth sternite arcuate, the sixth retracted; males with the aedeagus virtually always extended; occur on flowers and herbage. I am unable at present to identify females except when taken with males, so that the following key is to males only. Fall 1915.

1 Antennae serrate

2 Elytral apex not or feebly modified, without a tubercle or a foveiform or other clear cut impression

3 Elytral apex rounded or with the sutural angle subrectangular

4 Elytral apex rounded, the margin not at all or scarcely flattened

5 Metatibiae straight, not flattened on inner surface; tarsal claws with small basal tooth; abdomen with the fourth visible sternite not lobed along apical margin, the fifth sternite not tumid at middle

6 Aedeagus with parameres within unarmed or minutely spined, not abruptly enlarged with the basal inner angle of the enlargement acute; elytra frequently more or less evidently vittate

7 Aedeagus with the plate from which the parameres arise subtruncate along its apical margin, the parameres with a distinct short appendage on the inner margin toward the apex, without spine or angulation along the outer margin, the median lobe at apex acutely spiniform; black, in type with the prothorax rufous, the disc of the pronotum clouded; the disc of the elytra frequently testaceous; 5-7 mm.; w Wn., Or. PRATTI sp. n.

Type: Coupeville, Wash., Sunnyside, May 25, 1945, M. H. Hatch; paratypes: Wn. (Olympia), Or. (Corvallis, Cow Canyon in Wasco Co., The Dalles, Grants Pass, Humbug Mt. St. Park in Curry Co., Lake of the Woods—Ashland Road, Metolius R., Peavine Ridge near McMinnville; paratypes in UW and Schuh collections. I take pleasure in naming this species for Mr. Robert Y. Pratt, at whose home near Coupeville I have been a guest on numerous occasions.

7' Aedeagus with the plate from which the parameres arise with a U-shaped sinus, the parameres without an appendage or other angulation on the inner margin, rather strongly arched and briefly curved out at tip, the latter blunt with the outer angle acute and a little prominent from a certain viewpoint; black, typically with the elytra, antennae, tibiae and tarsi paler, varying from piceous to pale brown; more rarely almost uniformly black throughout; 5-6.8 mm.; Wn., se Id., Or. (Pl. XVII, fig. 3) PICIPENNIS Fall

Abdullah, Ent. Tidskr. 85, 1964:97-98 (234).

6' Aedeagus (nearly as in *oregonus* Fall and *punctulatus* LeC.) with the parameres strongly abruptly widened at apex, the basal inner angle of the enlargement acute, the sinus between the parameres arcuate at apex, the median lobe obliquely narrowed to an acute apex; piceous; prothorax beneath and sometimes the margin as seen from above narrowly pale; elytra each with a testaceous vitta, the side margin posteriorly pale or entirely testaceous; legs rufotestaceous with the knees piceous varying to entirely piceous except the bases of the femora; pronotum closely punctate, frequently narrowly impunctate along mid-line; 5.5-8.8 mm.; se B. C., se Id. VITTATUS Horn

5' Metatibiae feebly arcuate in apical half, the inner surface flattened or somewhat grooved; tarsal claws with a large basal tooth; abdomen with the fourth visible sternite broadly lobed along apical margin, the apex of the lobe more or less evidently bisinuate, the fifth sternite transversely tumid at middle; aedeagus with the parameres below with a minute spine on the inner margin toward the apex, the median lobe at apex arcuately narrowed to a narrowly

rounded apex; black, the pronotum usually rufous, the disc frequently clouded; 5.6-6.3 mm.; se Id., Or. ABNORMIS Horn

4' Elytral apex with the sutural angle subrectangular, the apical margin distinctly flattened and somewhat broadly impressed, the apical area not smoother than the rest of the elytron; metatibiae and fourth abdominal sternite unmodified; tarsal claws with small basal tooth; aedeagus with the parameres strongly abruptly widened at apex, the basal inner angle of the enlargement acute, the median lobe obliquely narrowed to an acute apex; black, prothorax rufous or nearly black, sometimes with the elytral apex testaceous and/or the prothorax rufous or with the disc of the elytra testaceous or with the elytra and legs nearly entirely testaceous; 5.9-8 mm.; se B.C., sw Wn., w Or. OREGONUS Fall

Aedeagus similar to *Pedilus bardii* Horn, Pl. XVII, fig. 4. Fall 1915:24-25 (24).

3' Elytral apex with the sutural angle evidently but not strongly produced in a bluntly rounded but acute angle, the surface lateral to the sutural angle somewhat flattened, the apical area nearly impunctate and shining and feebly tumid; metatibiae, abdomen, tarsal claws, and aedeagus nearly as in the preceding species; black, prothorax rufous, elytra except the narrow sutural margin testaceous, the pronotal disc sometimes clouded; or with the elytra with a variable testaceous vitta, the prothorax sometimes black; 5-8 mm.; Wn., Or.; common PUNCTULATUS LeC.

In the females the elytral apex is unmodified and not different in color from the rest of the elytra. Aedeagus similar to *Pedilus bardii* Horn, Pl. XVII, fig. 4. Fall 1915:23-24 (2).

2' Elytral apex distinctly impressed

8 Elytral apex with a foveiform impression before which the surface is tuberculate, the apex somewhat smoother than the rest of the elytra; fifth visible abdominal sternite not deflected ventrad at apex; aedeagus with the parameres slender, their inner margin with an obtuse angulation some distance before the apex, the median lobe at its apex with a dorsally directed hook

9 Tarsal claws with a stout truncate inner lobe or tooth parallel to and nearly as long as the claw itself; black in Pacific Northwest specimens, the mouth parts, second antennal segment and apical portions of the first segment pale; typically with the prothorax rufous with a posterior discal darker cloud; or the tibiae may be yellowish basally, the elytral disc yellow; 6-7.8 mm.; w Wn. LONGILOBUS Fall

Aedeagus similar to *Pedilus serratus* Fall, Pl. XVII, fig. 5. Fall 1915:18 (2).

9' Tarsal claws with a large sharply and somewhat acutely angulate basal tooth; entirely black with the second antennal segment and apical portions of the first segment pale; or, more commonly, with a yellow spot before and/or involving the apical elytral impression, the body otherwise black; or with the pronotum rufous and/or the elytral disc or the entire elytra testaceous, the paler yellow subapical spot distinct even in specimens with testaceous elytra; 6.2-7.7 mm.; se B.C., e Wn., n Id., Or.; on Crategus flowers (Leech); not rare (Pl. XVII, fig. 6) MONTICOLA Horn

Leech, Bull. Brook. Ent. Soc. 29, 1934:41 (1); 1947a:107 (1).

8' Elytral apex entirely occupied by a deep strongly oblique anteriorly recessed black impunctate impression; abdomen with fifth visible sternite almost perpendicularly arcuately deflexed, its apex truncate and just perceptibly arcuatoemarginate; aedeagus with the parameres a little divergent apically

and acutely barbed along inner margin near the apex, the median lobe acuminate with a small dilated or bulbiform tip which is hooked below when viewed laterally; antennae strongly serrate; elytra somewhat less coarsely punctate than in the other Pacific Northwest species; tarsal claws with a small basal tooth; black, the prothorax rufous, the elytra except the apex and very narrow sutural beading flavotestaceous, the legs varying from entirely pale except the knees to black or piceous with the tarsi and apical parts of the tibiae paler; 5.6-7.5 mm.; sw Or. (Pl. XVI, fig. 9; Pl. XVII, fig. 7) CAVATUS Fall

1' Antennae flabellate, segments 4 to 10 with branches that range in length from as long as the segment to which they are attached to 5 times as long, the eleventh segment 5 times as long as the tenth; head black; antennae, elytra, meso- and metasternum, and abdomen brownish; prothorax, mouth parts, and legs testaceous; pronotum widest before middle; aedeagus small, with the parameres as wide or wider than the median lobe, minutely notched toward their apices, the sinus between them subtruncate at apex, the median lobe obliquely narrowed to an acute narrowly rounded apex; 4.5-8.5 mm.; se B.C., sw Or. (Pl. XVII, fig. 8) FLABELLATUS Horn

Family Eurygeniidae

Casey 1895:627-636. Abdullah, Ann. Mag. Nat. Hist. (13) 5, 1963:595-600.

Key to Genera

1 Eyes truncate or broadly feebly sinuate; antennae filiform; tempora well developed and prominent

2 Head nearly as wide as pronotum in Pacific Northwest species; pronotum with mid-line finely incised, moderately impressed; maxillary palpi with the segments not strongly widened, the last segment elongate and wider than the 2 previous ones STEREOPALPUS Laf.

2' Head narrower than pronotum; pronotum with mid-line deeply incised and broadly deeply impressed; maxillary palpi with the last 3 segments strongly equally widened, the last segment securiform PERGETUS Csy.

1' Eyes narrowly and distinctly emarginate; tempora not prominent; antennae serrate and very long; maxillary palpi small, filiform, the last segment cylindrical and not much longer than the preceding MASTOREMUS Csy.

Stereopalpus Laf.

Black, shining; roughly coarsely punctate, the elytra a little more coarsely so, with conspicuous recumbent pubescence; head as wide as pronotum, the tempora prominent, antennae filiform; pronotum narrower than elytra, about 5/6 as long as wide, widest just behind apex, the sides broadly sinuate behind, the base strongly margined and wider than the apex

1 Pubescence above a uniform mixture of gray and black hairs; 6.5-7 mm.; se B.C., se Wn., "Or." COLUMBIENSIS Hopp.
Hopping 1925:207 (1).

1' Pubescence of elytra with the white hairs forming a broad lateral margin with numerous white spots on the disc

2 Decumbent pubescence of head, pronotum and elytra interspersed with numerour long black erect hairs; pronotum rugosely contiguously punctate, the pubescence dark with the mid-line and 6 or 7 obscurely marked spots of white pubescence on each side, the sides arcuate in front and oblique behind, the disc flattened with a finely impressed mid-line; elytra with the spots of white pubescence less distinct; 7.6-7.9 mm.; se B.C., Or.
HIRTUS sp. n.

Type: Klamath Falls, Ore. May 20, 1958, J. D. Vertrees, coll.

2' Decumbent pubescence of head, pronotum and elytra without long black erect hairs; pronotum more distinctly punctate, the punctures frequently separated by their own diameters, the pubescence black with white hairs more or less concentrated along the lateral and basal margins, not forming white spots, the sides arcuate in front and sinuate behind, the surface laterally at about the middle vaguely obliquely impressed; elytra with the spots of white pubescence more distinct; 6.7-7.4 mm.; se B.C., sw Id., e Or. (Pl. XVIII, fig. 3) GUTTATUS LeC.

Casey 1895:632 (4).

Pergetus Csy.
(Eurygenius Laf. pars)

Black, the antennae and tibiae and tarsi and sometimes the elytra and femora rufotestaceous; above coarsely densely punctate, the surface between the punctures with minute tubercles, the shorter recumbent pubescence interspersed with semierect bristling hairs, the white recumbent pubescence of the elytra concentrated to form numerous white spots; head with the tempora broadly rounded, the antennae filiform; pronotum narrower than elytra, about 4/5 as long as wide, widest before apical third where the sides are prominently subangulate, the sides before the angulation arcuate, behind the angulation sinuately narrowed and then subparallel to the subrectangular basal angles, the base strongly margined and broader than the apex; 7-11.7 mm.; B.C., Wn., Id., Or.; common CAMPANULATUS LeC.

LeConte 1874:69 (1). Holland 1888:92 (1). Casey 1895:636 (1). Clemens et al. 1938:T95 (1). Clark 1956:39 (1). Hatch and Kincaid 1958:13 (2).

Mastoremus Csy.

Black, uniformly sparsely pubescent, elytra dark brown, antennae brown with the 2 basal segments black; head with median line on vertex indistinct, the eyes separated by about their own width; antennae 12-segmented, shorter than body, feebly or not serrate beyond the eighth segment; abdomen with fifth and sixth visible sternites and the eighth tergite entire; 4.5-6 mm.; s Id.; on red sage, *Kochia americana* var. *vestita*
IDAHOENSIS Abd.

Abdullah, Ent. News 75, 1964:221-222 (3).

Family Anthicidae

Ant-Like Flower Beetles

By Floyd G. Werner

Small beetles, with the head constricted at the base to fit into a "collar" on the

prothorax; antennae 11-segmented, filiform to submoniliform; abdominal sterna all free; tarsal segments 5-5-4. Most species are probably microscavengers, but some frequent blossoms and one in the eastern United States feeds on the eggs of Corydalus. Many species are attracted to light and some are confined to special habitats, such as sand dunes and the margins of salt and alkali lakes. Casey 1895: 639-772

Key to Genera

1 Pronotum with a long, dorsal, anteriorly directed horn, which extends over the head
2 Metatarsi as long as metatibiae, slender, with all segments slender MECYNOTARSUS Laf.
2' Metatarsi much shorter than metatibiae, with the penultimate segment feebly bilobed NOTOXUS Geoffr.
1' Pronotum not horned
3 Prothorax deeply constricted both laterally and dorsally, "bilobed"; antennae stout, submoniliform; aedeagus without a distinct phallobase; rare in the Pacific Northwest TOMODERUS Laf.
3' Prothorax not bilobed; antennae not submoniliform; aedeagus with a distinct phallobase
4 Last segment of maxillary palpi broadly triangular, with the 3 sides subequal; aedeagus with separate parameres LAPPUS Csy.
4' Last segment of maxillary palpi securiform or oval; aedeagus without separate parameres
5 Side margins of mesosternum straight or only feebly curved, not fringed with setae
6 Last antennal segment grooved to form a false segment, the antennae therefore appearing to be 12-segmented; body flat, the head large and the elytra somewhat shortened and truncate; e Or. TANARTHRUS LeC.
6' Last antennal segment not constricted; elytra not truncate
7 Elytral pubescence double, consisting of an "overcoat" of backwards-directed subdecumbent setae and an "undercoat" of short decumbent postero-laterally directed setae; prothorax unusually small; rare; w Or. SAPINTUS Csy.
7' Elytral pubescence simple, not counting scattered erect to suberect "tactile setae."
8 Base of head medially subangulate, rather strongly retrosalient THICANUS Csy.
8' Base of head truncate or rounded ANTHICUS Payk.
5' Side margins of mesosternum expanded, curved, and fringed with appressed setae
9 Pronotum with 2 small bumps at middle of apex *Anthicus floralis* L.
9' Pronotum without antero-median bumps
10 Head cordate, deeply impressed at middle of base, and deeply microreticulate; mesepisternum, next to the edge of the mesosternum, with a ridge that bears setae; rare; se B. C. EUVACUSUS Csy.
10' Head normal, subquadrate, shiny, at most finely wrinkled VACUSUS Csy.

Mecynotarsus Laf.

Pale stramineous, the elytra usually with a median cloud and suture darker; elytra slightly inflated; 2.0-2.5 mm.; e Or. (7 mi. e The Dalles—Schuh); sand dunes (Pl. XIX, fig. 1) DELICATULUS Horn

Notoxus Geoffr.

1 Elytral pubescence all decumbent, the tactile setae inconspicuous; slender; dark, with cinereous pubescence, the elytra with an interrupted brown band just behind the middle and sometimes paler just before and behind this band; mandibles laterally explanate; male with elytral apices rounded; 2.3-3.2 mm.; e Or. (Crump L.—Schuh, Fields and Burns—Foster) (Pl. XIX, fig. 2) SCHWARZI Horn

1' Part of elytral pubescence long and suberect to erect, somewhat shaggy, with shorter pubescence under it

2 Mandibles laterally explanate, without an anterior cicatrix or with this structure ventral and poorly defined laterally; male elytral apices obliquely truncate, the truncation bounded by a blunt point on each well away from the suture

3 Crest of pronotal horn obsolete anteriorly; shining; almost always brown, sometimes with an obscure paler band behind middle of elytra, this band rarely extending forward along middle of each elytron to base; apex of elytra paler in most specimens; elytral pubescence sparse enough to reveal the smooth surface; eyes small; pronotal horn slender, especially in the male, finely crenulate laterally, crest almost smoothly margined; 3.1-3.9 mm.; e Wn., Or.; frequent (Pl. XIX, fig. 3) NEVADENSIS Csy.

3' Crest of pronotal horn distinct, margined to apex

4 Margins of pronotal horn distinctly crenulate

5 Margins of crest of pronotal horn entire or very feebly crenulate; ferrugineous to almost piceous; dark elytral markings, which are usually present, consisting of a postmedian band, a narrow sutural marking before it, basal marks near scutellum and obscure linear markings behind humeri; 3.4-4.5 mm.; se B. C., e Wn., s Id., Or.; frequent (Pl. XVIII, fig. 4; Pl. XIX, fig. 4) SERRATUS LeC.
Horn, Tr. Am. Ent. Soc. 11, 1884:172 (4).

5' Margins of crest of pronotal horn strongly, or at least distinctly, crenulate; stout; pale, with dark elytral markings consisting of a postmedian band abruptly offset anteriorly near suture, basal spots near scutellum and one or 2 small spots behind humeri; male with a strong, blunt, subbasal spine on mesofemur; 3.8-5.3 mm.; se B. C., e Wn. (Blue L., Walla Walla); scarce (Pl. XIX, fig. 5) ROBUSTUS Csy.

4' Margins of pronotal horn entire or very feebly crenulate; sides of elytra nearly parallel; ferrugineous, the elytra paler and with 2 dark bands; B. C., Wn., sw Id. (Magic Mtn.—Malkin) PICTUS Csy.
Casey 1895:770 (2). Hagen *in litt.*

2' Mandibles not laterally explanate, with an apical cicatrix that is well defined all around its margins

6 Pronotal horn narrow and entire, at most with indistinct small crenulations near its base; crest without sign of a ridge down its middle; male elytra obliquely truncate

7 Ferrugineous to piceous; if elytral markings are perceptible, they consist of

nebulae near middle; metathoracic wings reduced in both sexes; B. C. and Wn. (Hagen *in litt.*); not seen OBESULUS Blais.

Blaisdell, Can. Ent. 68, 1936:146-148 (1).

7' Lighter colored, with a postmedian dark band on elytra curving anteriorly near suture and often a dark spot near scutellum; male fully winged, female with reduced wings; 2.5 mm.; e Or. (Klamath L.—Schuh) (Pl. XIX, fig. 6) BREVIUSCULUS Fall

6' Pronotal horn broad, distinctly crenulate on margins; crest with an indication of a ridge down the middle; apices of male elytra rounded; pale, with brown to black markings

8 Elytra with a postmedian band, offset anteriorly near suture, but without a subapical mark, base with a small spot near scutellum and often obscurely darker near humeri; 2.9-3.6 mm.; w Or. (frequent), e Or. (The Dalles) (Pl. XIX, fig. 7) CONSTRICTUS Csy.

8' Elytra with adscutellar spots, a postmedian band and a subapical dark mark; stout; pronotal horn usually very broad; male protibiae with a blunt spine on outer edge just beyond middle; 3.5 mm.; sw Id., e Or.; rare, but common in the Southwest (Pl. XIX, fig. 8) CALCARATUS Horn

Tomoderus Laf.

Ferrugineous to piceous, shining; prothorax deeply constricted laterally and dorsally; elytra somewhat inflated; aedeagus asymmetrical, not notched near apex; antennae submoniliform; 2.5-3.0 mm.; e Wn. (a single specimen, Deep L., Douglas Co.—Nelson); common in Appalachian Mts. IMPRESSULUS Csy.

Werner, Psyche 64, 1958:58-59 (2).

Lappus Csy.

The members of this genus are most frequently taken on blossoms and very rarely at light.

1 At least the anterior punctures on head crateriform, with the intervals not finely wrinkled; elytra distinctly impressed across the basal fourth, often with the pubescence in the impression directed posteriolaterally; piceous, varying to rufous anteriorly including elytral impression, if rufous anteriorly usually with base of legs and antennae also rufous; piceous behind impression; pubescence sparse, decumbent, dark, sometimes cinereous on base of elytra; parameres of aedeagus with small lateral lobes, symmetrical; 2.4-3.7 mm.; se B. C., Wn., Id., Or.; common (Pl. XVIII, fig. 5; Pl. XIX, fig. 9) NITIDULUS LeC.

Larson and Hinman 1932:43 (4) (Anthicus). *asperulus* Csy. 1895:664 (4).

1' Head finely and simply punctured, with the intervals finely wrinkled, at least anteriorly; elytra only feebly impressed across basal fourth, the pubescence in the impression dark and directed backward; head and pronotum usually rufous, the elytra piceous; sometimes the whole insect pale; parameres of aedeagus without lateral lobes, the left paramere expanded apically; 1.7-2.8 mm.; e Wn., s Id., e Or.; frequent (Pl. XIX, fig. 10) TURGIDICOLLIS Csy.

Tanarthrus LeC.

The members of this genus are mostly associated with salt and alkali lakes and are known only from western North America.

Rufescent, elytra with a narrow band across middle and apices piceous; flattened, with a rather large head and slightly truncate elytra; surface rather dull; 2.5-3.0 mm.; e Or. (Harney L. and Burns—Malkin) (Pl. XIX, fig. 11) SALICOLA LeC.

Sapintus Csy.

Ferrugineous to piceous, quite densely pubescent; head truncate and not at all retrosalient, finely punctured; legs of male without spines on trochanters; aedeagus slender and tapering to apex; 2.0-2.5 mm.; Or. (Crater L. and Carlton—Fender); widespread in the eastern United States FULVIPES Laf.

Werner, Ann. Ent. Soc. Am. 55, 1962:496 (4).

Thicanus Csy.

Members of this genus are generally associated with shores, both of the ocean and of lakes and streams. The species in this region seems to be most abundant around alkali lakes. Most species fly during the evening and are not attracted to light at night.

Moderately slender; shining; ferrugineous with an interrupted dark median band on elytra to piceous with only a slight indication of the band; head often darker than rest of body; 2.4-3.5 mm.; Wn., sw Id., s Or.; common (Pl. XVIII, fig. 6; Pl. XIX, fig. 12) MIMUS Csy.

Anthicus Payk.

This is the largest genus in the family and is world-wide in its distribution. The species have varied habits, but most of them are attracted to light at night.

1 Head broad, cordate, strigulose or microreticulate between the punctures, with very short and inconspicuous pubescence

2 Head strigulose between punctures; forebody and base of elytra rufous, rest of body piceous

3 Mesosternum expanded laterally, with the margins curved and fringed with appressed setae; pronotum with a pair of small bumps near the anterior margin; 2.8-3.4 mm.; s B. C., Wn., Id., Or.; frequent; cosmopolitan (Pl. XIX, fig. 13) FLORALIS L.

Larson and Hinman 1932:43 (4). Clark 1956:39 (1). CEIR 1956:126 (4). Swenson and Tunnock 1957:117 (4).

3' Mesosternum not expanded and not fringed; pronotum simple, without a pair of small bumps on the anterior margin; 2.6-3.2 mm.; se B. C., Wn., n Id., Or.; frequent; cosmopolitan (Pl. XIX, fig. 14) (*quisquilius* Thoms., *enodis* Csy., *scenicus* Csy., *rixator* Csy.) FORMICARIUS Goeze

2' Head deeply microreticulate between punctures, very large; entire insect black, very sparsely pubescent; 3.4-4.6 mm.; se B. C.; scarce (Pl. XIX, fig. 15) CORACINUS LeC.

1' Head not cordate, smooth between punctures which may be obscured by the pubescence in some species

4 Pronotum longitudinally rugose, the head simply and deeply punctured; usually pale with a broad dark band on elytra, sometimes with elytra all dark; 2.7-3.3 mm.; se B.C.; rare (Pl. XX, fig. 1)
FLAVICANS LeC.

4' Pronotum with simple punctures, not rugose

5 First antennal segment stout, strongly eccentrically pedunculate; ferrugineous to piceous, sometimes with an obscure paler spot near apex of each elytron; mid-line of head punctured; eyes small; pubescence sparse, short, curved, decumbent; 2.4-2.6 mm.; s Id., e Or.; scarce (Pl. XX, fig. 2)
ANCILLA Csy.

5' First antennal segment not stout or strongly eccentrically pedunculate

6 Males with slender spines on the metatrochanters; large, 3 mm. or more in length; prothorax usually stout and somewhat oval; pubescence not curved or flattened

7 Male protrochanters angulate; black or dark, usually with a rufous spot near apex of each elytron and sometimes with the base also paler; head and pronotum black to rufous varying to entirely black; aedeagus tapered to apex; 3.0-3.7 mm.; s B.C., Wn., n Id., Or.; frequent (Pl. XX, fig. 3)
BIGUTTULUS LeC.

7' Male protrochanters simple; entirely black in most samples from this region, occasionally with a pale mark near apex of each elytron, rarely with forebody and base of elytra rufous; aedeagus ending in a slender anchor-like structure; 3.0-3.4 mm.; s B.C. s Id., e Or.; frequent (Pl. XX, fig. 4)
HASTATUS Csy.

6' Male metatrochanters simple; prothorax not enlarged and oval

8 Elytral pubescence short, strongly curved and slightly flattened, very trim

9 Black, often with subapical and sometimes with subbasal rufous spots on elytra; 3.0-3.5 mm.; se B.C., Wn., Id., Or.; frequent; sometimes found on blossoms (Pl. XX, fig. 5) LECONTEI Champ.
stellatus Csy. 1895:714.

9' Usually pale, with a conspicuous dark band across middle of elytra; sometimes elytra almost all dark; 1.7-2.0 mm.; e Wn., sw Id., Or.; scarce; abundant in the Southwest and southern California (Pl. XX, fig. 6)
BELLULUS LeC.

8' Elytral pubescence not flattened and curved only slightly, or with curved pubescence limited to the humeral area; pubescence longer and slightly shaggy

10 Head very broad and flat, with deep punctures; mid-line broadly impunctate; eyes large and oval; testaceous, often with elytra ferrugineous except at base and apex, varying to piceous; 1.9-2.4 mm.; s B.C., e Wn., Id., Or.; scarce; much more abundant in the Southwest and southern California (Pl. XX, fig. 7) NANUS LeC.
Guppy 1948:22 (1). *vagans* Csy. 1895:718 (3).

10' Head not extremely broad and flat; mid-line only narrowly impunctate

11 Head oval, without trace of temporal angles; piceous, the elytra paler, with base and an obscure oval spot at apical fourth luteous; 3.2 mm.; se B.C., w Wn., w Or.; rare (Pl. XX, fig. 8) CRIBRATUS LeC.

11' Tempora at least moderately prominent

12 Almost always black, with antennae and sometimes the legs brown; some specimens with obscure pale spots on base and near apex of elytra, where metathoracic wings show through translucent spots on elytra; aedeagus with a distinctive constriction near its apex; 2.4-3.4 mm.; se B.C., Wn., sw

Id., Or.; common (Pl. XX, fig. 9) PUNCTULATUS LeC.
cephalotes Csy. 1895:705 (1). *decrepitus* Csy. 1895:707 (4).

12' General color brownish or paler, with paler markings in most dark specimens

13 Ferrugineous to almost piceous, each elytron with a pale spot near apex, sometimes joined across the suture, and base broadly paler, this pale area extending back along the suture in some specimens

14 Elytra semiflattened; prothorax distinctly constricted laterally toward base; pubescence subdecumbent, fine; anterior pale area and posterior pale spot on each elytron sharply defined; aedeagus with a peculiar knob-like structure on its apex; 2.5 mm.; w Or. (Ashland, a single specimen—Black and Davis); nearly cosmopolitan and apparently extending its range; introduced in Pacific Northwest (Pl. XX, fig. 10) TOBIAS Mars.
Werner, Psyche 68, 1961:70-72 (4).

14' Elytra not semiflattened

15 Middle of pale spot near apex of elytra at apical third, the spot often somewhat obscure; some of the pubescence in the humeral area of the elytra usually curved; aedeagus slightly asymmetrical; 2.6-3.1 mm.; s B.C., Wn., Id., Or.; very common at light and in beach drift (Pl. XVIII, fig. 7; Pl. XX, fig. 11) CERVINUS Laf.
Hatch and Kincaid 1958:13 (2).

15' Middle of pale spot near apex of elytra at apical fourth, the spot very well defined; in general a more slender species than the previous one; the temporal angles of the head poorly defined; aedeagus symmetrical; 2.7-3.0 mm.; Wn., n Or.; scarce (Pl. XX, fig. 12) PRAECEPS Csy.

13' General color pale to ferrugineous; if pale, often with a median band on elytra darker; elytra without a pale spot near apex surrounded by a darker area

16 Head flat, the temporal angles very distinct, sparsely and deeply punctured, the intervals shining; eyes large, oval; elytra usually with a distinct median dark band; aedeagus constricted near apex; 2.8-3.5 mm.; B.C., Wn., n Id., Or.; frequent (Pl. XX, fig. 13) EPHIPPIUM Laf.
Hatch and Kincaid 1958:13 (2). *simiolus* Csy. 1895:694 (1). Clark 1956:39 (1).

16' Head not flat, the punctures moderately dense and small

17 General color pale in most specimens, the elytra sometimes with an obscure median dark area varying to entirely dark; eyes moderate in size; aedeagus simple at apex; 2.1-2.4 mm.; e Wn., s Id., Or.; scarce; common in the Southwest and frequent to the east coast (Pl. XX, fig. 14) LUTULENTUS Csy.

17' General color dark brown in most specimens; eyes small; aedeagus deeply notched on sides near apex; e Wn. (Union Flat near Pullman—I. W. Bales), ne Or.; (The Dalles—Casey) rare; common near San Francisco, Cal. (Pl. XX, fig. 15) OBSCURELLUS LeC.
Casey 1895:723 (4).

Euvacusus Csy.

Dull ferrugineous, the front of head and base of elytra near suture darker; almost black below; opaque; head cordate, with a weak ridge between the eyes; prothorax somewhat angulate on the sides; 2.8 mm.; se B.C. (Rose Prairie and Kamloops—UBC) COLORADANUS Csy.

Vacusus Csy.

1 Upper surface with rather conspicuous scattered erect tactile setae and sparse subdecumbent pubescence; shining; head finely wrinkled between the scattered moderately deep punctures; piceous, the appendages and elytra sometimes slightly paler, varying to entirely testaceous; labrum pale; l. 9-2.4 mm.; se B. C., Wn., n Id., Or.; frequent (Pl. XVIII, fig. 8; Pl. XX, fig. 16) NIGRITULUS LeC.

Werner, Ann. Ent. Soc. Am. 54, 1961:799, 802-803 (124). *arcanus* Csy. 1895:679 (2).

1' Upper surface with scattered erect tactile setae and inconspicuous sparse appressed pubescence; shining; head smooth between the deep punctures; black except in teneral specimens; 2. 6 mm.; n Id. (Slate Cr. R. S. — Barr); common in the Southwest and southern California (Pl. XX, fig. 17) CONFINIS LeC.

Werner, Ann. Ent. Soc. Am. 54, 1961:801 (3).

Family Euglenidae
(Hylophilidae, Xylophilidae, Aderidae)

Phomalus Csy.

Head not prolonged before attachment of antennae, the eyes moderately emarginate, coarsely faceted, the antennae with segments 2 and 3 small; pronotum widest just behind apex, where the sides are strongly arcuate and behind which the sides are sinuato-oblique; metatarsus with basal segment long, about twice as long as the other segments combined

Testaceous, the eyes black; closely evidently punctate, the elytra more coarsely so, the surface with very fine decumbent pubescence; head with eyes prominent, not reaching the posterior margin, the tempora very short; antennae varying from 3/5 to 2/3 as long as body, the second and third segments together as long as the fourth, segments 7 to 10 subquadrate; pronotum broader than long, slightly narrower than head, narrower than and from 25% to 28% as long as elytra, the apex about 2/3 as wide as the base; l. 7-2. 2 mm.; s B. C. (Creston, Royal Oak), nw Or. (McMinnville); rare (Pl. XVIII, fig. 2) BRUNNIPENNIS LeC.

Casey 1895:786. *saginatus* Csy. 1895:786.

Family Othniidae*
(Elacatidae)

Othnius LeC.

Dark black bronze, uniform in color, legs black, knees and tarsi paler; head as wide as pronotum, very coarsely densely punctate, the eyes prominent, the antennae with a 3-segmented club; pronotum densely coarsely punctate, subquadrate, slightly narrowed behind, with 2 indistinct teeth at sides behind middle, the hind angles quadrate; elytra twice as long as wide, coarsely

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*Othniidae falls as a family name only if Othnius LeC. is considered a synonym of Elacatis Pasc. Chapin, Phillipine Jr. Sci. 22, 1923:83 considered it distinct.

densely punctate, sparsely clothed with whitish hairs on the disc, the lateral areas with short recurved black bristles, the sides subparallel; prosternum before coxae twice as long as the procoxae; 4.7-5 mm.; se B.C., n Id., e Or.; rare (Pl. XVIII, fig. 9) LUGUBRIS Horn

Horn 1868:132 (4); Trans. Am. Ent. Soc. 3, 1871:333 (4). Brown 1934:147 (1).

Family Tenebrionidae

By Dennis W. Boddy

The Tenebrionidae or darkling beetles are a large family the members of which are quite variable in habitus. They feed on plants or plant material both as larvae and adults. Most of the species in the local fauna occur under bark or on the ground. Many of the latter are likely to be mistaken for Carabidae by the beginner, but can be distinguished at once by their 4-segmented hind tarsi and, usually, by their moniliform antennae. Of originally subcortical habit are a considerable series of cosmopolitan and subcosmopolitan stored product pests, most of which are introduced species in the Pacific Northwest. An interesting exception to this last generalization is the native *Cnemeplatia sericea* Horn, which has been taken in houses on several occasions and once at Nyssa, Or. in a feed store. Perhaps we have here a species in the process of becoming an economic pest. Horn 1870e:253-404. Gebien 1910:1-585; 1937:505-886.

Key to Subfamilies

1 Last 2 abdominal sternites completely corneous, not partially coriaceous at the base

2 Mentum not on a gular peduncle, hexagonal, with the apex emarginate; antennae with the third segment longer than either the second or fourth; trochantin of the mesocoxa not visible TENTYRIINAE

2' Mentum on a distinct but sometimes short gular peduncle

3 Trochantin of mesocoxa not visible; eyes completely divided by the anterior and posterior canthi; pronotum much narrower than the elytra, not noticeably wider than the head; body myrmiceform ARAEOSCHIZINAE

3' Trochantin of mesocosa visible

4 Intercoxal process of first abdominal sternite wide, the sides subparallel, the apex broadly arcuate to truncate; apical segments of labial palpi broadly triangular; mentum discoidal, the apex sometimes rather broadly but weakly emarginate, the gular peduncle sometimes short and wide ASIDINAE

4' Intercoxal process of first abdominal sternite acutely pointed; apical segment of labial palpi narrowly triangular to elongate oval; mentum with the apex rather deeply and broadly emarginate giving a bilobed or lunate appearance CONIONTINAE

1' Last 2 abdominal sternites partially coriaceous at the base; mentum on a distinct gular peduncle TENEBRIONINAE

Subfamily Tentyriinae*

Casey 1907:275-522 (Tentyriinae pars).

Key to Tribes and Genera

1 Head with epistoma not strongly produced, at most with small notches at the ends of the frontal sutures; body elongate oval, not strongly pilose; pronotum with apical angles subrectangular to obtuse, the sides finely margined; elytra with inflexed portion consisting entirely of epipleura (tribe EURYMETOPINI)

2 Protibia with external apical angle acutely and rather strongly produced; head distinctly but not strongly notched at ends of frontal suture; eyes moderately convex; antennae slender, extending beyond base of pronotum; mandibles not toothed dorsally; head with a supra-ocular carina
TELABIS Csy.

2' Protibia with external apical angles not produced; head with epistoma rather evenly arcuate to arcuatotruncate, not notched at ends of frontal suture; right mandible toothed dorsally, the left obsoletely toothed; head with a supra-ocular carina

3 Eyes convex, prominent, the anterior canthus penetrating to the anterior third; antennae long and slender, extending beyond base of pronotum, the third segment distinctly longer than the second and fourth; female with last abdominal sternite broadly and shallowly notched apically, the last abdominal tergite deeply notched apically, the base of the notch bearing a setose knob; male with only the sternite notched as in the female
HYLOCRINUS Csy.

3' Eyes flattened, not prominent, the anterior canthus penetrating almost to the middle; antennae shorter, not extending to base of pronotum, the third segment just noticeably longer than the second and fourth; male and female without the last abdominal sternite or tergite notched apically
MELANASTUS Csy.

1' Head strongly trilobed, the middle lobe produced; pronotum transverse, with the apical angles produced, usually acutely and strongly so; elytra strongly inflated, the inflexed portion consisting of more than the epipleura, the apex explanate

4 Head with middle lobe parabolically arcuate to more or less angulate; eyes oval, slightly emarginate anteriorly; epipleura entire; mandibles acutely toothed dorsally; prosternal process strongly reflexed apically; elytra oval; head with a supra-ocular carina (tribe TRIORPHINI)

5 Body clothed with long flying hairs; sides of prothorax dorsoventrally angulate; apical angles of pronotum acute OXYGONODERA Horn

5' Body not clothed with long flying hairs; prothorax globose, the sides of the pronotum not forming an angle with the hypopleura; apical angles of pronotum slightly produced, subrectangular TRIORPHUS LeC.

4' Head with the middle lobe truncate, without a supra-ocular carina; eyes oval, not emarginate in front; epipleura obsolete basally; mandible obtusely toothed dorsally; prosternal process horizontal, weakly convex; elytra

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*_Auchmobius subovalis_ Blais. is erroneously recorded from British Columbia by Blackwelder 1939:48.

globose (tribe EDROTINI) EDROTES LeC.

Tribe Eurymetopini

Telabis Csy.
(Eurymetopon pars)

Flavotestaceous, feebly shining; sides of body ciliate; head densely punctate toward the margin becoming less so basally; pronotum broader than long, the apex weakly emarginate, the base feebly lobed, the sides rather strongly arcuate, becoming straight toward the apical and basal angles, the apical angles slightly obtuse and not rounded, the basal angles rather strongly obtuse and not rounded, the sides minutely serrulate, less closely so basally, each notch bearing a bristling seta, the disc rather strongly convex and rather coarsely densely aciculately punctate, the punctures somewhat less dense medially; elytra with disc rather strongly convex, striatopunctate, the striae close together, the punctures muricate, not as coarse as the pronotal punctures, setose, the setae shorter than those of the epipleura; protibiae irregularly but usually distinctly serrate; alate; 4.8-5.8 mm.; se Id., e Or.; rare (Pl. XXI, fig. 1) SERRATA LeC.
LeConte 1878:472 (3). Casey 1890a:345 (3).

Hylocrinus Csy.

Subgenus Locrodes Csy.

Castaneous, the dorsal surface glabrous and somewhat shining; head with front emarginate, the disc finely and moderately closely punctate, more closely so on the front and rugosely so toward the eyes; pronotum with the apex more or less truncate in the middle, arcuate toward the angles, the apical angles more or less right, narrowly rounded, the base distinctly lobed, the basal angles subrectangular, narrowly rounded, the sides more or less straight and parallel at basal third and thence rather strongly converging toward the apex, the disc moderately shallowly punctate, the punctures rugosely coalescent laterally, distinct and well separated medially; elytra with base emarginate, the sides straight and parallel basally, slightly inflated apically, the disc with distinctly punctate but unimpressed striae, the punctures irregularly arranged and close, the intervals flat with an irregular row of punctures which are finer than the strial punctures; 7-8 mm.; s Id.; rare FRATERNUS Csy.

Melanastus Csy.
(Emmenastus pars)

Black, shining, ventral surface piceous black, legs and antennae rufopiceous; head with epistoma evenly arcuate to subangulate in front; pronotum with apex emarginate, the base feebly lobed, the sides unevenly arcuate, slightly more convergent and straight to evenly arcuate before the middle, subsinuate before the basal angles, the apical angles subrectangular to obtuse and rounded, the basal angles rectangular to obtuse, the disc moderately convex, the punctures moderately dense medially becoming denser and more or less coalescent laterally, the integument shining, weakly alutaceous

to subalutaceous; elytra with the base subequal in width to the base of the pronotum, more or less obliquely truncate to the humeral angles, the sides evenly arcuate, rather inflated, widest at about the middle, the disc striato-punctate, the striae not impressed to faintly impressed toward the suture, the interstrial punctures irregularly spaced, subequal to distinctly smaller than the strial punctures, the integument shining, feebly alutaceous to subalutaceous; mentum coarsely and rather densely punctate; prosternal process strongly reflexed apically; 5.3-6.5 mm.; s Id., Or.; not common (Pl. XXI, fig. 5) ATER LeC.

Horn 1872:389 (3) (Emmenastus).

M. obesus LeC. has been recorded from Idaho by Horn 1872:389. It is separated from *ater* LeC. by having the elytral series of punctures "distinctly and rather broadly impressed; prothorax subevenly and moderately narrowed from base to apex" (Casey 1907:354).

Tribe Triorphini

Oxygonodera Csy.
(Stibia, Horn)

Piceous, moderately shining, coarsely punctate, rather evenly clothed with long erect fulvous hairs; head with the punctures becoming elongate basally and laterally forming irregular rugae; pronotum about 1 3/4 wider than long, the apex deeply emarginate, not margined, the base broadly lobed medially and not margined, the sides broadly feebly arcuate becoming straight at about the basal tenth, the apical angles very acute and strongly produced, the basal angles subrectangular to obtuse, the disc strongly rugose laterally, the punctures simple toward the middle, the median lobe transversely impressed at basal margin; scutellum small, rounded; elytra with the sides evenly arcuate, a moderate impression directly above the epipleura just before the middle, the disc with 3 feebly impressed striae, the punctures distinct, irregular; 4.5-5.5 mm.; e Wn., s Id.; not common (Pl. XXI, fig. 3) HISPIDULA Horn

Triorphus LeC.

Color piceous; integument shining, glabrous; head with longitudinal rugae, the punctures moderately coarse and sparse; pronotum globose, the apex truncate between the slightly produced apical angles, the apical angles subrectangular, the base subtruncate, the basal angles obtuse and angular, the sides arcuate medially, slightly sinuate before the angles, the disc coarsely and closely punctate laterally becoming less so medially; elytra with the striae unimpressed, the strial punctures decreasing in size from the base to the apical third where they become obsolescent; thorax coarsely punctate ventrally; abdomen impunctate except the apical half of the first segments; 7 mm.; s Id.; rare RUGICEPS LeC.

A specimen of *Triorphus laevis* LeC. in the OSU collection, bearing the locality label "Westport, Wash.," is undoubtedly mislabeled.

Tribe Edrotini

Edrotes LeC.

Black, more or less shining, moderately densely clothed with long flying cinereous hairs; head finely punctate, the lateral lobes strongly developed, more or less acute, and rather widely separated from the medial lobe; pronotum strongly transverse, the apex strongly emarginate, the base concealed by the base of the elytra, the sides sinuate behind the strongly produced and acute apical angles and then more or less straight and diverging to the base, the disc moderately convex, rather finely and sparsely punctate, becoming much more coarsely and densely so laterally; elytra finely and moderately densely granulatopunctate; ventral surface very coarsely and rather densely punctate, less so on the abdominal sternites; 6.5-7.2 mm.; sw Id., e Or.; rare (Pl. XXI, fig. 4) VENTRICOSUS LeC.

Outside the Pacific Northwest this species ranges up to 10 mm. in length. LaRivers, Ann. Ent. Soc. Am. 40, 1947:322 (3); Ent. News 59, 1948:144 (4).

Subfamily Araeoschizinae

Casey 1907:275-522.

Araeoschizus LeC.

Pale reddish brown, opaque, with numerous fulvous decumbent squamules; head distinctly longer than wide, the epistoma feebly sinuate, the occiput feebly impressed at the base; pronotum as wide as long, widest at the anterior third, the apex arcuatotruncate, the base narrower than the apex, the sides arcuate toward the apex, straight basally, fringed with squamulae, the disc densely punctate and with a longitudinal impression from the apex to the base the sides of which are more densely squamate and terminate basally in a dense tuft of erect squamules; elytra with sides strongly arcuate basally, more gradually arcuate to the apex, the disc costate, the costae closely punctate, each puncture bearing a squamule, alternate costae less elevated and shorter, the interspaces each with a row of coarse punctures, intervals 7 and 8 with a double row of punctures, the punctures becoming less distinct toward the apex; femora dentate, the metafemora obsolescently so; genae acutely and strongly produced; a broad impression at the base of the mental peduncle; 4.5-4.75 mm.; s Id.; rare; found in ant nests (Pl. XXI, fig. 2) AIRMETI Tan.

Tanner, Great Basin Nat. 6, 1945:125 (3).

Subfamily Asidinae

The adults of the Pacific Northwest species of this subfamily, particularly of Pelecyphorus and Stenomorpha, appear in late summer when they sometimes may be found in great numbers swarming in the sage brush. Casey 1912:7-214.

Key to Genera

1 Pronotum with sides angulate, reflexed, the reflexed portion not extending to the basal angles, the base truncate becoming slightly anteriorly oblique

toward the basal angles; tarsi clothed with long decumbent coarse hairs ventrally; maxillary palp with last segment large and scalene in the male, smaller and rectitriangular in the female GONASIDA Csy.

1' Pronotum with sides not angulate, if reflexed, the reflexed portion extends from apex to base; tarsal vestiture setiform

2 Pronotum with the base arcuate or bisinuate; elytra with marginal costae or acostate

3 Pronotum with base rather strongly and evenly arcuate except sometimes with a small sinus near the angles, the basal angles anterior to the middle of the base; maxillary palpi with last segment large and scalene in the male, smaller and rectitriangular in the female STENOMORPHA Sol.

3' Pronotum with base bisinuate, the basal angles not apparently anterior to the middle of the base; maxillary palpi with last segment more or less similar in the sexes TRICHIASIDA Csy.

2' Pronotum with base more or less truncate varying to slightly anteriorly oblique toward the basal angles; elytra with disc with costae in addition to the marginal costae; maxillary palpi with last segment large and scalene in the male, smaller and rectitriangular in the female PELECYPHORUS Sil.

Gonasida Csy.
(Asida pars)

Black, shining, essentially glabrous, large, elongate; head with epistoma feebly emarginate, feebly notched at ends of the frontal suture, the disc weakly impressed medially, not coarsely or densely punctate; pronotum with apex rather deeply emarginate, widest before the middle, the sides straight before the obtuse hind angles, rather deeply sinuate behind the front angles which are acute and everted, the disc weakly convex, not finely and rather sparsely punctate, the punctures becoming much coarser denser and ultimately rugose toward the sides; scutellum triangular, longer than wide; elytra rather strongly sulcate, the sulci moderately coarsely and rugosely punctate, the interspaces convex and rather smooth, the apex becoming subexplanate; thorax coarsely moderately closely punctate ventrally; abdominal sternites finely sparsely punctate; 24-28 mm.; s Id., "Or."; locally common (Pl. XXI, fig. 6) ELATA LeC.

Horn 1870e:289 (4); 1872:389 (3). Ulke 1875:823 (4).

Stenomorpha Sol.
(Euschides LeC., Asida pars)

1 Pronotum strongly convex, the base rather strongly, sometimes obsolescently, impressed medially; head with epistoma not weakly emarginate, rather strongly notched at ends of frontal suture, the surface coarsely and closely punctate, rather strongly impressed; pronotum wider than long, the apex moderately emarginate, the sides evenly and rather strongly arcuate, the disc coarsely and quite densely punctate becoming more or less rugose laterally, the sides explanate to reflexed; elytra inflated, the sides rather evenly but not strongly arcuate, the bases obliquely truncate, the humeri obtuse to acute and feebly everted, the disc usually with feeble indications of 3 obtuse ridges on each side, the marginal costae varying from acute to completely absent, the surface rather finely but usually densely and roughly

punctate, the punctures usually simple; integument dull to shining, the pronotum and elytra usually rather densely clothed with short inconspicuous setae; 13. 5-19 mm. ; e Wn., ne Or. ; common (Pl. XXI, fig. 8)
PUNCTICOLLIS LeC.

LeConte 1866b:111 (4). Horn 1870e:287 (4). Casey 1912:148 (4). Hatch 1938a: 186 (2). *robusta* Gebien 1910:135 (4). *consobrina,* Malkin (nec LeC.) Pan-P. Ent. 28, 1952:162 (24).

The elytra are clothed with rather long conspicuous pale hairs in var. CRINITIS Csy. 1912:148 (4).

1' Pronotum moderately convex, the basal impression feeble or absent; head and pronotum similar to *puncticollis* LeC. except that the punctation is less dense; elytra with surface varying from rather finely and sparsely punctate to rather densely punctate, the punctures usually granulatomuricate, elytra otherwise similar to *puncticollis* LeC. ; 13. 5-17. 5 mm. ; s Id. ; not common CONSOBRINA Horn

Closely related or synonymous is *oregonensis* Csy. 1924:309-310, from south central Oregon.

Trichiasida Csy.

Piceous black, opaque, rather strongly alutaceous, the punctures bearing short fine erect rather conspicuous setae; head with epistoma moderately sinuate, the sides of the front rather strongly rounded, the disc moderately impressed; pronotum wider than long, widest behind the middle, the apex emarginate, the sides straight and more strongly converging toward the apex, the apical angles acute, blunt, subproduced, the basal angles subobtuse, the disc moderately convex, reflexed at sides, the lateral gutters more strongly impressed at the widest part of the pronotum, the surface moderately finely and not at all densely punctate becoming more coarsely and densely so laterally; elytra elongate, the sides rather evenly arcuate, not margined, each elytron with 3 very feeble ridges, finely and moderately closely punctate, the punctures finely granulatomuricate; 13 mm. ; se Id. ; rare (Pl. XXI, fig. 7) IDAHOENSIS Bod.

Boddy 1957:187 (3).

Pelecyphorus Sol.
(Asida pars)

Black, subshining to subopaque, usually moderately densely setose; pronotum with sides crenulate; elytra widest at about middle, the sides feebly arcuate, more strongly converging apically, becoming strongly so near the base, then sinuate at the humeri, the humeri subrectangular, the base equal or subequal to the pronotum in width, the marginal costae extending well down the apical declivity, the inner costae obsolete to absent, the middle costa extending just beyond the start of the apical declivity, the disc moderately densely granulate

1 Pronotum with disc rather strongly convex, the sides feebly explanate, the base rather strongly impressed medially, the surface densely and coarsely punctate, rugose, with a tendency for the interspaces to disappear giving a dense and coarse granulate appearance, slightly wider than long, the apex moderately emarginate, the sides widest before the middle, arcuate at the widest point becoming straight anteriorly, feebly and broadly sinuate and somewhat depressed in some specimens toward the base, the apical angles

acute and feebly produced to subobtuse or sometimes quite blunt or rounded, the basal angles subrectangular; 11-19.25 mm.; se B. C., e Wn., ne Or.; individuals have become so common in the Yakima valley on occasion as to necessitate their being shoveled out of irrigation ditches (Hatch 1937) (Pl. XXII, fig. 1) DENSICOLLIS Horn

Horn 1894:417 (24). Casey 1912:117 (4). Hatch IPSB 1937:391 (2); 1938a:186 (2). *corrosus* Csy. 1912:118 (2).

1' Pronotum with disc moderately convex, broadly and weakly concavoexplanate laterally, the base feebly impressed medially, the surface closely muricato-granulate becoming rugose laterally, wider than long, widest just before the middle, the apex moderately emarginate, the sides not strongly arcuate, weakly sinuate before the basal angles, rectangular; 13-16 mm.; se Id.; not common HARUSPEX Csy.

Subfamily Coniontinae

Casey 1908a:51-166.

Key to Genera

1 First protarsomere long, much longer than the second and third combined; pronotum with basal angles strongly produced posteriorly, the sides explanate; head with margin of epistoma and sides of front reflexed; protibia with apex strongly produced externally; mentum very deeply emarginate apically; elytra widely embracing sides of body, the inflexed portion not consisting entirely of epipleura EUSATTUS LeC.

1' First protarsomere shorter than the second and third combined; pronotum with basal angles not or only moderately produced posteriorly; mentum moderately emarginate apically

2 Antennae short, extending only a short distance beyond the apical angles of the pronotum; first protarsomere strongly produced ventrally into a blunt curved spur which extends to the middle of the last segment; protibial spurs strong; head strongly impressed along the frontal suture from eye to eye; pronotum with sides subexplanate; body ciliate COELUS Esch.

2' Antennae long, extending to or nearly to middle of pronotum; first protarsomere not strongly produced into a ventral spur; head variously impressed, but not from eye to eye along the frontal suture

3 Protibiae externally produced at the apices; head with frontal suture incomplete medially; pronotum with sides very narrowly explanate or reflexed, not margined; eye entire, deeply emarginate anteriorly; body ciliate CONISATTUS Csy.

3' Protibiae with external apical angle subrectangular, not produced; pronotum with sides margined; sides of body not ciliate

4 Eyes divided CONIONTELLUS Csy.

4' Eyes entire CONIONTIS Esch.

Eusattus LeC.
(Sphaeriontis Csy.)

Black, more or less shining, globose, the sides of the body strongly ciliate; head densely granulate, subopaque; pronotum about twice as wide as long,

the apex deeply emarginate, the base deeply bisinuate, the sides arcuate at the apical half, becoming straight toward the base, converging from base to apex, more strongly so toward apex, the apical angles rounded, the basal angles produced and rounded, the disc very convex, becoming strongly explanate laterally, more narrowly so toward the apex, the surface muricately punctate, the punctures fine and rather sparse becoming denser, more strongly muricate and setigerous laterally, the integument alutaceous and rather opaque, the apical and basal margins densely fringed with pale silken hairs; elytra with base narrower than base of pronotum, the sides evenly arcuate, the surface strongly convex rough and densely punctate, the punctures obsolescent but strongly muricate and minutely setigerous, the integument shining and weakly alutaceous; 9-11.5 mm.; e Wn., Id., e Or.; very common; reported damaging young peach trees in e Wn. by eating young leaves and buds (Yothers) (Pl. XXII, fig. 2) MURICATUS LeC.

LeConte 1851a:132 (4); 1878:472 (3). Walker 1866:311. Horn 1870e:294 (4). Ulke 1875:823 (4). Casey 1908a:76 (4). Yothers, Wash. Agr. Exp. Sta. Bull. 124, 1916:36-37 (2). Hatch 1938a:186 (2).

From "Or." is *E. compositus* Csy. 1908a:71, described as with the intercoxal process acute rather than obtuse, as in the preceding species, the coxae more narrowly separated, the body narrower and less convex; 10-10.7 mm.

Coelus Esch.

Testaceous to piceous, oval, convex, the sides strongly ciliated, the surface usually shining; head with anterior edge of frontal impression abrupt, the posterior edge more gradually declivous, the epistoma deeply emarginate, the sinus more or less transverse to evenly sinuate, the surface strongly coarsely densely punctate, more coarsely so in the sutural impression; pronotum wider than long, the apex deeply emarginate, the sides evenly arcuate or nearly straight at apical half, more strongly converging apically than basally, strongly margined, the apical angles subacute and rounded, the basal angles obtuse and rounded, the disc convex becoming subexplanate laterally, rather coarsely not sparsely punctate, the punctures muricate and bearing long hairs laterally; elytra with sides converging from base to apex, the surface strongly convex and punctate, the punctures becoming strongly tuberculomuricate laterally and apically and bearing rather long fulvous hairs; prosternal process strongly reflexed, convex; 5.3-7.5 mm.; sw B.C., w Wn., w Or.; very common in the sand of the sand dunes by ocean beaches (Pl. XXII, fig. 3) CILIATUS Esch.

LeConte 1869:371 (1). Wickham 1903:51 (4). Fletcher 1906:102 (1). Hatch and Kincaid 1958:17 (2). *globosus*, Fletcher (nec LeC.) 1904:85 (1).

Conisattus Csy.

Small, rufous to piceous with obscure rufopiceous to flavorufous markings, feebly shining; rather finely and moderately closely punctate, granulately so on the elytra, the punctures bearing moderately short conspicuous yellow hairs; sides of body ciliate, the ciliation of the elytra much longer at the base becoming uniformly shorter toward apex; head with epistoma impressed on each side and emarginate, the punctures minutely setigerous, the front rufous to piceous, the epistoma and lateral lobes flavous to rufous; pronotum

moderately convex, the apical margin deeply emarginate and with a fringe of short fine hairs, the basal margin subtruncate to feebly lobed medially, the basal angles feebly produced and subrectangular, the lateral margin strongly arcuate and strongly converging to the narrowly rounded apical angles, becoming straight and slightly convergent toward the basal angles, the base wider than the apex, the disc with the punctures somewhat denser laterally, the color rufous to piceous becoming lighter toward the apex and with a flavorufous band along the basal margin, the apical angles with a large flavorufous area with a central round darker spot; elytra strongly convex, the sides evenly arcuate from base to apex, the base wider than the base of the pronotum, the humeri rounded and partially overlain by the basal angles of the pronotum, the epipleura gradually widening from the apex to the humeral angles, the color piceous with a rufous band along the suture; ventral surface rufopiceous; protibiae with external edge serrate, the internal edge bearing several moderately long slender spines; 6-7.25 mm.; e Wn., ne Or.; rare; in sand dunes (Pl. XXII, fig. 4)
NELSONI Bod.

Boddy 1957:188 (2).

Conisattus rectus Csy. 1895:614; 1908a:146, the genotype, was described from "Squally Hill," probably near Astoria, nw Or., and appears to differ by having the upper surface glabrous, rufopiceous without paler or darker markings, the ciliation at the sides less marked, the pronotal apices less strongly everted; 6.5 mm.

Coniontellus Csy.
(Coniontis pars)

Small; elongate oval; sides subparallel, moderately convex; elytra somewhat inflated; head with epistomal lobes impressed, the sides of the front impressed anterior to the eye; pronotum with apex rather deeply emarginate, the base weakly bisinuate to truncate between the weakly produced basal angles, the sides more or less straight and parallel from just before the middle to the base, rather strongly converging and weakly arcuate toward the apex, the disc moderately finely not densely punctate, the punctures becoming coarser and denser laterally; scutellum prominent, triangular; elytra with sides weakly arcuate, the apex subexplanate and slightly produced, the disc with the punctures irregularly placed; protibiae with external edge weakly serrate

1 Elytra with more or less erect relatively long pale conspicuous hairs; punctures tending to be relatively coarse and dense; integuments moderately alutaceous; piceous, the ventral surface rufopiceous, the legs rufous, the antennae flavorufous; 6.6-8.6 mm.; sw Id., se Or.; not common (Pl. XXII, fig. 5) INFLATUS Csy.

1' Elytra with inconspicuous recumbent hairs or glabrous; piceous to black

2 Integuments weakly alutaceous, moderately shining, the punctures relatively coarse and dense; elytra with the surface somewhat undulatorugose, especially on the apical declivity; ventral surface nigrorufous; 7-8.5 mm.; e Wn., s Or.; rare SUBGLABER Csy.

2' Integuments moderately alutaceous, subshining, the punctures relatively shallow and moderately dense; elytra with the surface relatively smooth; ventral surface piceous to rufopiceous; 6.3-9 mm.; s Id., e Or.; not common ARCUTUS Csy.

Coniontis Esch.

Adults are usually found under stones, logs, etc.

1 Elytra with erect conspicuous more or less dense pubescence, the hairs varying from short and regular to rather long and shaggy, from fulvous to cinereous, from coarse to fine; body about twice as long as wide, subdepressed; head moderately finely sparsely punctate; pronotum with the rather fine sparse punctures becoming coarser and denser laterally, each usually bearing a long recumbent hair, the integument subshining and moderately alutaceous; elytra with sides somewhat inflated, rarely cuneiform (*pubifera* Csy.), the punctures fine, moderately dense to rather dense, usually muricatogranulate, especially on the apical declivity which is rather smooth, the integument shining, feebly alutaceous; color black to piceous; 8.1-12 mm.; e Wn., Id., e Or.; common SETOSA Csy.

Casey 1890a:387 (3); 1908a:116 (3). Hatch 1938a:186 (2). *pubifera* Csy. 1908a: 118 (2).

1' Elytra with the pubescence, if present, consisting of sparse more or less decumbent hairs, the punctures not noticeably muricatogranulate

2 Elytra with the apical declivity rather strongly and irregularly undulate, appearing crumpled, the punctures bearing small inconspicuous curved hairs; integument moderately alutaceous, subshining; body large, rather convex, the sides subparallel, the ratio between length and width about 2.5 to 2.1; pronotum moderately densely and not coarsely punctate, the punctures becoming denser laterally; elytra with sides slightly inflated from before the middle to the apex, the disc usually with the punctures moderately dense and rather shallow; propleura finely sparsely punctate, smooth except for some feeble rugules anteriorly and adjacent to the coxae; 12-16.75 mm.; se Id., Or.; common PROBA Csy.

Casey 1908a:104-105 (4).

2' Elytra with the apical declivity rugose, smooth, undulate, or undulatorugose, but, if undulate, the punctures bear conspicuous curved hairs

3 Elytra with the apical declivity undulate to undulatorugose, the punctures bearing rather long conspicuous curved decumbent fulvous hairs; body more or less depressed; elytral punctures rather shallow and moderately fine to moderately coarse, those of the pronotum coarser and deeper

4 Pronotum with base subtruncate between the weakly to moderately produced basal angles; elytra shining, subaeneous, slightly inflated to more or less parallel, the apical declivity undulatorugose, the hairs fine; 7.9-9.8 mm.; w Or.; rare; coastal, apparently maritime NEMORALIS Esch. subsp. BOREALIS Bod.

Boddy 1957:192 (4).

4' Pronotum with base bisinuate; elytra subshining to subopaque, moderately alutaceous, not at all inflated, the punctures coarser and denser than in the previous species, the apical declivity undulate, appearing crumpled, the hairs coarse and subsquamulose; body about twice as long as wide; 10.9-12 mm.; s Or.; rare MONTANA Csy.

This species is apparently closely allied to *subpubescens* LeC. (Blaisdell). Blaisdell 1918:11-14 (4). *canonica* Csy. Blaisdell 1918:11-14 (4); 1935:122 (4).

3' Elytra with apical declivity usually rugose, sometimes smooth, if feebly undulatorugose, the punctures bear short inconspicuous curved hairs

5 Pronotum with the punctures coarse and dense, becoming denser at the lateral fourth with a marked tendency to coalesce into short more or less

longitudinal rows; elytra with apical declivity strongly and usually compactly rugose, the sides more or less parallel, sometimes weakly inflated apically, sometimes cuneiform, the punctures coarse and rather dense; integument deep black, shining, that of the pronotum somewhat less shining than the elytra, being somewhat alutaceous, the elytra feebly alutaceous; 11-15 mm.; e Wn., e Or.; common locally LANEI Bod.

Boddy 1957:191 (24).

5' Pronotum with the punctures more or less regularly spaced in the lateral areas, with at most a few punctures coalescing into short rows, these usually restricted to the basal regions

6 Apical declivity of elytra moderately to strongly rugose

7 Body convex; elytra usually inflated, the apical declivity strongly but rather loosely rugose OVALIS LeC.

a Elytra with the apical declivity coarsely and strongly rugose; 9-12.6 mm.; sw B. C., w Wn., w Or.; common (Pl. XXII, fig. 6) subsp. OVALIS s. str.

C. *oregona* Csy. 1908a:123-124 described from Ashland, Or. is apparently an elongate individual of this species. LeConte 1852a:131 (4); 1857:20 (4); 1869:371 (1); 1877:109. Horn 1870e:197 (4). Casey 1890a:374 (124); 1908a:140 (4). Baker, Rep. Wash. St. Hort. Assoc. 26, 1930:210 (2). Exline and Hatch 1934:450 (2). Pratt and Hatch 1938:193 (2). Hatch 1938a:186 (2). Hanson and Webster 1938:38 (2). Guppy 1948:22 (1). Snyder, Bugs Sept. 8, 1941:9 (2). Boddy 1957:190 (124). Hatch and Kincaid 1958:17 (2). *opaca*, Wickham (nec Horn) 1890:88 (1). *breviuscula* Csy. 1908a:133 (2). *sculptipennis* Csy. 1908a: 133-134 (2). *parilis* Csy. 1908a:135 (1). *vancouveri* Csy. 1908a:135-136 (1). *pervilis* Baker, Rep. Wash. St. Hort. Assoc. 26, 1930:210 (2) (nom. nud.).

a' Elytra with the apical declivity moderately coarsely and strongly to somewhat weakly rugose

b Apices of elytra normal, not tumid; 8-13 mm.; extreme se B. C., e Wn. except the Okanogan and Methow valleys, Id., e Or.; very common subsp. OBLITA Csy.

An unusually small individual from Easton, Wn. measuring 6.5 mm. in length is apparently a malformed specimen of this subspecies. Casey 1908a: 137 (3). Stace Smith 1929:72 (1). Leech 1947a:108 (1). Boddy 1957:190 (1234). Spencer 1957:49 (1). Ayre, Ins. Soc. 6, 1959:109 (1). *ovata* LeC. 1878:472 (3). *affinis*, Wickham (nec LeC.) 1890:83-88 (4). *ovalis*, Ulke 1875:823 (4).

b' Apices of elytra with a slight to marked tendency toward tumidity in about 65% of the individuals; 9-11.5 mm.; south central B. C. and the Okanogan and Methow valleys in Wn.; common subsp. OKANAGANI Bod.

Boddy 1957:190 (2).

7' Body depressed, the sides parallel; elytra with the apical declivity coarsely strongly rather compactly rugose; 10.8-11 mm.; Mt. Rainier, Wn.; rare RAINIERI Bod.

Boddy 1957:191 (2).

6' Elytra with the apical declivity more or less smooth, sometimes weakly rugose and undulatorugose; body small to moderate in size, usually subdepressed, the sides parallel to more or less inflated; integument subshining to subopaque, feebly to moderately alutaceous; 8.4-11.5 mm.; e Wn., n Id., ne Or.; common REGULARIS Csy.

Casey 1908a:134 (2). *wadei* Csy. 1924:313 (2). *punctata* Csy. 1908a:135, "probably from the neighborhood of Puget Sound," is closely related or synonymous.

Subfamily Tenebrioninae

Key to Tribes

1 Metatarsus with first segment distinctly longer than the second, usually much longer; third abdominal sternite longer than the fourth and usually shorter than the second; antennae usually with the second segment small, the third segment usually larger, if the second segment is distinctly larger than the third (Leichenini), the protibiae are rather broadly expanded

2 Elytra with the apex usually rounded or pointed with at most the apex of the pygidium exposed, never with the apex broadly truncate largely exposing the pygidium; antennae, if clavate, with the club formed of the last 2 to 5 segments

3 Eyes entire or divided, if the latter, the division due entirely to the anterior canthus

4 Tarsi with penultimate segment entire, the meso- and metatarsi and usually the protarsi not inflated

5 Tarsi spiniferous or with sparse silken hairs, but not densely pubescent ventrally

6 Intercoxal process of first abdominal sternite broad, the sides subparallel or emarginate, the apex truncate to broadly rounded; tarsi spiniferous ventrally; elytra with sides usually broadly inflexed so that the inflexed portion consists of more than the epipleuron

7 Head with epistoma not strongly produced, the sides usually rather strongly emarginate at the ends of the frontal suture, the apex truncate to emarginate; apterous ELEODINI

7' Head with front rather strongly produced frequently concealing the labrum, the sides usually arcuate to straight at the ends of the frontal suture, slightly finely reflexed; antennae with second segment 1/3 or less the length of the third; intercoxal process of first abdominal sternite truncate; metafemora of male dentate SCAURINI

6' Intercoxal process of first abdominal sternite rather narrow, the sides narrowing to a pointed or narrowly rounded apex; tarsi usually with moderately long sparse hairs ventrally; elytra with the inflexed portion consisting entirely of epipleuron

8 Pronotum not or moderately widely explanate; head with the epistoma arcuato-truncate to broadly emarginate, the edge not reflexed, the anterior canthus usually rounded

9 Second antennal segment smaller than the third; protibiae usually not expanded, if so (Ulomini), the outer apical portion not everted

10 Pronotum with the base weakly to strongly lobed, never truncate

11 Mentum with the middle lobe present*

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*The following key may be used as an alternative, if the character of the mentum is difficult to determine.

a Scutellum with sides not narrowing from base, usually with the sides subparallel, sometimes slightly converging from the base, sometimes arcuate, the apex broadly rounded or obtusely pointed

b Epipleura incomplete

c Protibiae rather broadly expanded, the external edge serrate; pronotum with the sides strongly margined; head with anterior canthus rounded but

12 Protibiae rather broadly expanded, the external edge serrate; pronotum with sides strongly margined; head with the anterior canthus rounded but prominent; epipleura incomplete ULOMINI
12' Protibiae not broadly expanded TENEBRIONINI
11' Mentum with the middle lobe absent DIAPERINI
10' Pronotum with the base truncate to arcuatotruncate PHALERINI
9' Antennae with second segment larger than the third, the last 3 segments expanded into a club; protibia with the external apical angle everted LEICHENINI
8' Pronotum broadly explanate laterally; epistoma deeply and more or less angularly incised or arcuatotruncate and with the edge sharply reflexed; anterior canthus subangularly prominent
13 Head with epistoma deeply and more or less angularly incised, the eyes entire but deeply emarginate; epipleura apparently incomplete; mentum with the middle lobe well developed, more or less discoidal; elytra with prominent scale-like hairs, not costate OPATRINI
13' Head with the epistoma arcuatotruncate, the edge sharply reflexed, the eyes divided; epipleura complete; mentum with the middle lobe absent; elytra with minute hairs, costate; first pro- and mesotarsomeres short BOLITOPHAGINI
5' Tarsi densely pubescent ventrally
14 Mentum with middle lobe well differentiated, the apex not membranous; clypeal membrane scarcely or not visible UPINI
14' Mentum without a distinct middle lobe, the apex broadly coriaceous; clypeal membrane broad and widely exposed HELOPINI
4' Tarsi with the penultimate segments bilobed and inflated
15 Eye round; antennae with last 3 segments expanded into a club; tarsi

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prominent ULOMINI
c' Protibiae with sides subparallel; pronotum with sides very narrowly explanate; head with anterior canthus not prominent Bius Mels. in TENEBRIONINI
b' Epipleura complete Aphanotus LeC., Tribolium MacL. and Tenebrio L. in TENEBRIONINI
a' Scutellum triangular, the sides straight to arcuate, narrowing regularly from the base
d Epipleura incomplete, ending abruptly before the apex of the elytra
e Mentum with the middle lobe well developed, the sides margined; pronotum with the sides converging from the base Metaclisa Duv. in TENEBRIONINI
e' Mentum with the middle lobe absent; pronotum with the sides arcuate from the base Cynaeus LeC., Hoplocephala Cast. et Brullé and Gnathocerus Thunb. in DIAPERINI
d' Epipleura complete or gradually diminishing in size to near the apex
f Mentum with median lobe well developed; eye with dorsomedial border with a rounded flattened tubercle Alphitobius Steph. in TENEBRIONINI
f' Mentum with the medial lobe absent; eye with the dorsomedial border rounded, without a tubercle Alphitophagus Steph. and Platydema Cast. et Brullé in DIAPERINI

moderately dilated; mentum with the middle lobe absent; body pilose
HETEROTARSINI

15' Eye with anterior border strongly emarginate; antennae gradually widening to the apex; tarsi strongly dilated, densely pubescent beneath; mentum with a distinct middle lobe; body not strongly pilose
OPATRININI

3' Eyes completely divided by the fusion of the posterior and anterior canthus at about the middle of the eye; mentum with a middle lobe the apex of which is impressed or emarginate medially, the lateral lobes largely concealed
BLAPSTINI

2' Elytra with apex broadly truncate largely exposing the pygidium; antennae with segments 5 to 11 widened forming a long loose club; head with epistoma somewhat produced, the sides subparallel; mesocoxa with trochantin not visible; body small, cylindrical; abdomen with sternites 3 to 5 impressed at the sides; alate
CORTICEINI

1' Metatarsi with first segment short, subequal in length to second; antennae with second segment large, the third small; third abdominal sternite subequal in length to the fourth; protibiae not broadly expanded
PHTHORINI

Tribe Eleodini

Blaisdell 1909:1-524.

Key to Genera

1 Antennae with third segment more than 3 times as long as the second
2 Pronotal and elytral margins not reflexed; epipleura complete to base
ELEODES Esch.

2' Pronotal and elytral margins reflexed; epipleura obsolete at base
EMBAPHION Say

1' Antennae with third segment shorter, less than 3 times the length of the second
TROGLODERUS LeC.

Eleodes Esch.

Adults are usually found under rocks, boards, logs, etc. during the day. When disturbed individuals of many species exhibit a marked form of catalepsy, lowering their head and raising their abdomen high in the air and maintaining this position for a variable period of time. Further disturbance will cause them to exude a vile-smelling substance from the anal glands, a characteristic the members of this genus have in common with some of the other genera of the family. The larvae, known as "false wireworms," are subterranean and feed on roots, seeds, and seedlings, sometimes causing damage to agricultural crops such as wheat.

Key to Subgenera

1 Mentum with the middle lobe not discoidal, the lateral lobes at least in part visible without dissection
2 Elytra with large tubercles in linear series, a row of small reclinate granules between each series of tubercles, the humeri obsolete, the apex of the epipleura expanded into a small cauda
subg. PSEUDELEODES Blais.

2' Elytra without or with small to moderate sized tubercles

3 Apical angles of the pronotum acute, produced (except in *obscura* Say); elytra sometimes sulcate (*obscura* Say and *hispilabris* Say); profemora dentate, the tooth reduced in the female of *obscura* Say and obsolescent in both sexes in *longipilosa* Horn subg. ELEODES s. str.

3' Apical angles of pronotum rarely acutely produced; elytra never sulcate; profemora not dentate in Pacific Northwest species except in the males of *cognata* Hald. in Litheleodes, although sometimes deeply sinuate at the apex; never caudate

4 Body strongly pilose; apical angles of pronotum rectangular, narrowly rounded; over 10 mm. long subg. TRICHELEODES Blais.

4' Body not strongly pilose, or, if so (*propinqua* Blais. and *caseyi* Blais. in Blapylis), the apical angles of the pronotum are broadly rounded

5 Spurs of protibiae unequal in length and dissimilar in the sexes, the outer spur being slender and gradually tapering to the acute apex in the male and with the sides subparallel to the blunt or acute apex in the female subg. MELANELEODES Blais.

5' Spurs of protibiae subequal in length, the outer not being much longer than those of the meso- and metatibiae, not noticeably dissimilar in the sexes

6 Mentum with middle lobe small, fully exposing the lateral lobes, or, if moderately large (*schwarzi* Blais.), with the apex of the elytra suddenly vertically declivous to recurved; body elongate, large subg. METABLAPYLIS Blais.

6' Mentum with middle lobe moderately large, partially or completely concealing the lateral lobes; elytra with apex never suddenly declivous or recurved

7 Body subfusiform; pronotum subquadrate, never strongly arcuate at the sides; first protarsomere without a tuft of hairs in the male, or, if present (*cognata* Hald.), the profemora of the male dentate subg. LITHELEODES Blais.

7' Body not subfusiform; pronotum usually with the sides strongly arcuate or subangulate but never subquadrate; male with at least the first protarsomere with a tuft of hairs, usually with the second and sometimes the third protarsomere with tufts of hair, occasionally with the first and second mesotarsomeres with tufts of hair; femora always mutic subg. BLAPYLIS Horn

1' Mentum discoidal, the lateral lobes completely concealed subg. DISCOGENIA LeC.

Papp, Opusc. Ent. 26, 1961:115 records E. (*Steneleodes*) LeC. from Or.

Subgenus Pseudeleodes Blais.

Black, alutaceous, the body subfusiform; head feebly not densely muricato-punctate, each puncture bearing a black reclinate stiff seta; pronotum subquadrate, slightly wider than long, the apex moderately emarginate, the base feebly arcuate, the sides moderately arcuate becoming feebly sinuate toward the apex and straight toward the base, feebly crenulate, the apical angles acute and moderately produced, the basal angles obtuse, the disc rather strongly convex, coarsely densely confluently punctate, the punctures replaced by granules laterally, with relatively short setae; scutellum impunctate, the apex arcuate; elytra with the sides somewhat flattened, the apex somewhat attenuate, the disc impunctate and moderately convex, the tubercles shining, the series of large tubercles each bearing a stiff more

or less erect hair, the small tubercles each bearing a minute seta; ventral surface moderately densely granulate; prosternal process arcuate, not vertically declivous apically; profemora weakly sinuate apically on outer edge; 13.5 mm.; e Or.; rare

GRANOSA LeC.

The elytral tubercles bear long stiff more or less erect hairs in var. PILIFERA Bod.; e Or. Boddy 1957:193 (4).

Subgenus Eleodes s. str.

1 Pronotum with apical angles obtuse, blunt to rounded; elytra with humeri obsolete; protibia with spurs differing in the sexes, those of the male subsimilar, those of the female flatter with the posterior spur usually longer and wider and with the sides more parallel; tarsi similar in the sexes, the first protarsomere thickened, the groove obliterated and bearing a tuft of modified setae (*obscura*-group). Pronotum moderately convex, widest just before the middle, the sides moderately arcuate becoming sinuate toward the obtuse basal angles, the surface obsoletely alutaceous and rather opaque, the punctures moderately fine and sparse and with irregular impunctate areas; scutellum flat to concave, triangular, the apex blunt, impunctate; elytra rather deeply sulcate, the sulci ending obscurely at the base of the elytra, rather densely muricately punctate, each puncture bearing a small black seta, the interstrial spaces usually quite convex, each bearing a widely spaced row of submuricate setigerous punctures, the apices rather broadly rounded; middle lobe of mentum hexagonal, not sharply delimited from the lateral lobes, the apex truncate, strongly setose; prosternal process more or less porrect, not mucronate; male profemora with a strong tooth; female profemora with a short broad obtuse tooth or merely strongly sinuate; aedeagophore of male with the basale about twice as long as the apicale and strongly convex longitudinally; the apicale feebly convex longitudinally, moderately convex transversely, strongly attenuate, the apex drawn out into a relatively fine cylindrical point bent ventrally at the tip, the ventral surface flat to the bent tip, the sides of the disc continuous with those of the basale, weakly arcuate at the base becoming straight to the produced apical region, the base slightly narrowed and broadly but weakly lobed; 23-31 mm.; se B.C., e Wn., Id., e Or.; common; adults usually found in or about the burrows of the ground squirrel (*Citellus townsendi*) and the badger (Hyslop) (Pl. XXIV, fig. 1) OBSCURA Say subsp. SULCIPENNIS Mann.

LeConte 1857:19, 50 (4). Horn 1870e:396 (4). Ulke 1875:823 (4). Blaisdell 1909:191 (24). Hyslop 1912:73-87 (2). Brittain 1913:16 (1). Wakeland 1926:1-52 (3). Hatch 1938a:186 (2). Tanner 1961:71 (24). *acuta*, LeC. (nec Say) 1851a:133 (4). *conjuncta* Walk. 1866:328. LeConte 1870:401. Blair 1921:283. *convexicollis* Walk. 1866:328. LeConte 1870:401. Blair 1921:283. *obscura* auct. Ulke 1875:823 (4). Blaisdell 1909:191 (24). Brittain 1914:18 (1).

1' Pronotum with apical angles acute to subacute, usually produced, occasionally everted; elytra with humeri obtuse, subangulate; protibial spurs subequal in the sexes; protarsomeral groove entire, not bearing a tuft of modified setae (*dentipes*-group)

2 Meso- and metafemora mutic, profemora dentate or mutic

3 Body pilose; elytra caudate; profemora mutic; pronotum moderately convex becoming feebly subexplanate laterally, the sides strongly arcuate from the middle to the acute produced apical angles, more or less straight to feebly

sinuate or feebly arcuate toward the obtuse basal angles, the surface sparsely irregularly and not finely punctate, the punctures becoming denser and muricate laterally; elytra with base emarginate, the humeri obtuse and poorly defined, the disc not strongly sulcate, the sulci rather coarsely and uniserially punctate, the intervals weakly convex and with a series of distantly spaced muricate punctures, the cauda with the ventral surface consisting largely of expanded epipleura; mentum with middle lobe largely concealing the lateral lobes and strongly pilose; prosternal process mucronate; integument weakly to moderately alutaceous, subshining to subopaque; length including cauda 20-21 mm.; sw Id.; not common

LONGIPILOSA Horn

A single specimen in the UI collection, from Blackfoot, Id., has been identified by Blaisdell as *caudifera* LeC. It is almost completely lacking long hairs. This and a published record by LeConte (1878:472, Atalanta, Id.) probably involve denuded specimens of *longipilosa*. Wakeland 1926:1-52 (3).

3' Body not pilose; elytra not caudate; profemora acutely toothed in male, obtusely toothed in female

4 Elytra sulcate; pronotum wider than long, widest before the middle, the base slightly wider than the apex, the sides rather strongly arcuate becoming straight to sinuate toward the apex and base, the disc not strongly convex and becoming explanate at the sides in some individuals, the punctures fine and sparse becoming weakly granulate toward the sides, the surface moderately alutaceous and rather opaque; scutellum longitudinally convex, the apex broadly rounded to subrectangular, the surface shining and feebly alutaceous with at most a few punctures, usually impunctate; elytra about 3 times as long as the pronotum, the base sinuate and as wide as the base of the pronotum, the sulci usually deep, sometimes rather feeble, ending rather abruptly before the base of the elytra, closely punctate, the punctures submuricate to granulate and each with a short black seta, the interstrial spaces usually convex, sometimes very feebly so, each with a row of setigerous submuricate punctures which are much more widely spaced than those of the sulci; elytra with apices narrowly rounded, acute and more or less attenuate and subdivergent, the surface moderately alutaceous but more shining than the pronotum; prosternal process mucronate, the mucro more or less attenuate; protibial spurs not large, subequal in length; middle lobe of mentum hexagonal, the apex truncate to narrowly arcuate, largely concealing the lateral lobes, inconspicuously setose; aedeagophore of male flattened medially from before the middle of the apicale to beyond the middle of the basale, becoming convex on both ends of the flattened region, the basale slightly longer than the apicale; apicale with the sides continuous with those of the basale, broadly arcuate becoming sinuate toward the somewhat attenuate apex, the disc with a very indistinct fine groove from the apex, the base moderately and broadly lobed; 17-23 mm.; se B. C., e Wn., s Id., e Or.; very common; Wakeland (1926) reported this species as the chief insect enemy of dry-farmed wheat in e and se Id. (Pl. XXIV, fig. 2)

HISPILABRIS Say subsp. CONNEXA LeC.

LeConte 1857:19, 49 (4). *binotata* Walk. 1866:328. LeConte 1873a:334 (= *sponsa* LeC.) Leng 1920:227 (= *sponsa* LeC.). Blair 1921:283 (= *laevis* Blais.). *hispilabris* auct. Horn 1870e:313 (4). Ulke 1875:824 (4). LeConte 1878:472 (3). Wakeland IPSB 1922:197 (3); 1923:115 (3); 1927:261 (3); 1937:164 (3). *laevis* Blais. 1909:222 (2). Hyslop 1912:73-87 (2). *imitabilis* Blais. 1918a:167 (24).

Lane IPSB 1923:60 (2). Hatch 1938a:186 (2). Tanner 1961:72 (24). *immunda* Blais. Wakeland 1926:1-52 (3). Tanner 1961:72 (1).

4' Elytra striatopunctate, the striae not at all impressed and set with moderately coarse not distant punctures, the interstrial spaces uniseriately set with minutely setose muricatogranulate punctures which are equal to but more distantly spaced than the strial punctures; pronotum widest at about the middle, the sides strongly and evenly arcuate becoming sinuate at the apex and base, the disc moderately convex and set with moderately coarse and not densely placed punctures which become granulate laterally; elytra with the apex rather broadly rounded and notched at the sutural angles; prosternal process either mucronate or vertically declivous apically; mesosternum weakly impressed anteriorly; profemoral teeth not long, obtuse in the female, acute in the male; 21-25 mm.; e Wn. (3 specimens)
DENTIPES Esch.

This record needs confirmation. Walker 1866:311 referred to a Northwestern species, *Coelocnemis dentipes* Esch., a species never described in that genus. It may refer to this species.

2' All femora dentate, the teeth long and strongly acute; elytra striatopunctate, the striae not at all or weakly impressed; pronotum wider than long, widest before the middle, the base wider than the apex, the sides moderately arcuate becoming sinuate just before the apical angles and straight toward the obtuse basal angles, the base arcuatotruncate, the disc glabrous, rather strongly arcuate, and with fine and rather sparse punctures which become finely muricatogranulate toward the sides; elytra with the apex rather broadly rounded and notched at the sutural angle, the disc rather strongly arcuate and with fine distant very finely muricatogranulate minutely setose punctures, the interstrial spaces set with uniseriately placed very distantly spaced punctures; prosternal process strongly mucronate; mesosternum rather strongly impressed apically; integuments rather strongly alutaceous, more or less opaque; rarely shining; 21-26 mm.; sw Id., e Or.; not rare
AMADEENSIS Blais.

Closely allied to *armata* LeC.

Subgenus Tricheleodes Blais.

Body strongly pilose, the elytral hairs long and unequal in length; pronotum rather strongly convex, widest well before the middle, the sides rather straight behind the widest part, the apical angles right to feebly obtuse and not produced, the basal angles obtuse and poorly defined, the lateral margin becoming obsolete or sometimes absent behind the middle, the disc very coarsely and densely punctate becoming rugose to tuberculate or granulate laterally; elytra with the base truncate to weakly emarginate, the humeri obtuse and poorly defined, the sides rather evenly arcuate and widest behind the middle; elytral disc coarsely punctate in alternate close and distant series varying to confusedly punctate, frequently with impressed striae, the punctures finely to rather coarsely granulate; integument obsoletely alutaceous, rather shining; middle lobe of mentum largely overlapping the lateral lobes basally, with 2 rather deep basal impressions; prosternal process rather strongly convex, prominently mucronate apically; profemora broadly and feebly sinuate apically; protarsi not obviously modified; 11.5-14 mm.; e Wn., sw Id., e Or.; not common (Pl. XXII, fig. 7)
PILOSA Horn

Blaisdell 1909:144 (4). Tanner 1961:71 (34).

E. HIRSUTA LeC. has been recorded from s Id. by Wickham 1890a:83-88. It differs from *pilosa* Horn by being smaller, length 8.5-12 mm., with the hairs of the elytra shorter, softer, and subequal in length.

Subgenus Metablapylis Blais.

1 Elytra with the extreme apex suddenly and markedly declivous, the sutural overlap raised and prominent; pronotum moderately convex, widest just before the middle, the sides evenly and strongly arcuate from base to apex, the angles obtuse, the disc opaque and strongly alutaceous, obsoletely punctate but rather densely and strongly granulate; elytra with the base more or less truncate, the humeri obsolescent, the surface moderately densely muricately punctate, the integument alutaceous and rather shining; mentum with middle lobe distinctly separate from the lateral lobes concealing them in large part, the apex broadly rounded; prosternal process strongly reflexed posteriorly, feebly mucronate; profemora sinuate apically; protibial spurs subequal, similar in the sexes; protarsi similar in the sexes, the first segment thickened ventrally, obliterating the groove and bearing a dense tuft of modified setae; first and second abdominal sternites and part of the third strongly impressed in the male and coarsely strongly muricatopunctate, normally convex and normally sculptured in female; 15-21 mm.; e Wn., n Id., ne Or.; common (Pl. XXIV, fig. 5)
SCHWARZI Blais.

Blaisdell 1909:406 (2). Hyslop 1912:73-87 (2). Tanner 1961:75 (2).

1' Elytra with the extreme apex at most moderately and not markedly declivous, the sutural overlap normal; pronotum rather strongly convex, subquadrate, widest before the middle, the sides moderately arcuate or sometimes becoming straight toward the basal angles and sinuate toward the apical angles, the angles obtuse, the apical angles narrowly rounded, the surface moderately to quite densely and coarsely punctate becoming rather strongly granulate toward the sides; elytra usually elongate, the humeri obsolescent, the sides subparallel to evenly but not strongly arcuate, the disc moderately convex to subdepressed becoming rather suddenly declivous at the posterior fourth, the surface usually with alternate series of usually granulate close and distant punctures; middle lobe of mentum comparatively small, not much larger than the usually fully exposed lateral lobes, frequently bearing very long setae or hairs, the apex parabolically rounded; prosternal process convex, not strongly depressed apically, mucronate, the mucro usually acute and rather strongly setose; profemora usually strongly sinuate apically; abdominal sternites densely setose; first protarsomere strongly thickened, obliterating the grooves, usually bearing a dense tuft of setae (Pl. XXIV, fig. 3) NIGRINA LeC.

a Integument opaque to rather shining; pronotal punctures moderately to quite coarse and dense; elytral punctures usually distinctly granulate toward the suture

b Integument usually opaque, rather strongly alutaceous; pronotal punctures moderately fine and dense; the sexes rather markedly dimorphic, the males being more elongate; 15.5-21 mm.; s Id., se Or.; common
subsp. NIGRINA s. str.

Horn 1870e:313 (4). Ulke 1875:824 (4). Blaisdell 1909:396 (34). Tanner 1961:75 (34).

b' Pronotal punctures frequently quite dense and coarse; integument usually shining; the sexes less dimorphic; usually more robust

c Elytra rather coarsely punctate, the punctures becoming rather strongly rugose laterally; integument quite shining; 16.5-18.1 mm.; sw Or.; rare
subsp. MACLAYI Bod.

Boddy 1957:197 (4).

c' Elytra moderately coarsely punctate, rarely rugose laterally, the granules moderate in size; integument subopaque to shining, frequently minutely reticulate; 15-23 mm.; se B.C., e Wn., n Id., ne Or.; very common (Pl. XXIV, fig. 4) subsp. DIFFORMIS Blais.

Blaisdell 1925:389 (2). Lane IPSB 1923:60 (2). Hatch 1938a:186 (2). Tanner 1961:75 (2). *nigrina* auct. Blaisdell 1909:396 (2). Hyslop 1912:73-87 (2). Wakeland 1926:1-52 (3) (in part).

a' Integument usually quite shining, polished, rarely alutaceous, the punctures usually rather fine and sparse, the elytral granules frequently absent or obsolescent toward the suture; the sexes rather strongly dimorphic, the males being elongate; 17-20 mm.; se Id.; not common
subsp. PERLONGA Blais.

Wakeland 1926:1-52 (3). Malkin, Bull. Brook. Ent. Soc. 38, 1943:23 (3).

Subgenus Melaneleodes Blais.*

The 3 taxa included in this subgenus are closely related and further study may prove them to be geographical races of a single species.

Pronotum wider than long, widest just before the middle, the sides evenly arcuate becoming broadly and rather strongly to weakly sinuate toward the base, sometimes nearly straight or feebly arcuate, the apex wider than the base and moderately emarginate, the apical angles blunt, narrowly rounded and obtuse, the base truncate medially becoming oblique toward the basal angles which are obtuse and not sharp; elytra frequently with weakly impressed lines

1 Elytra with disc rather densely muricatogranulately punctate, the punctures scarcely distinguishable from the irregular interpunctural surface, their linear arrangement usually obscure, the sides usually more strongly arcuate toward the apex making the elytra more strongly inflated apically; both sexes subsimilar in shape, the male slightly more slender; integuments rather strongly alutaceous, the pronotum more strongly so than the elytra and subopaque, the elytra more or less shining with a rather dense fine reticulation; pronotum rather densely but irregularly punctate becoming more densely so toward the side and granulate at the margins; scutellum shining, usually impunctate; prosternal process sharply declivous apically, rarely obsolescently mucronate; male 14.5-16 mm.; female 15-17 mm.; se B.C., e Wn., n Id., ne Or.; common (Pl. XXII, fig. 8)
HUMERALIS LeC.

Wakeland's record of *carbonaria* Say may be a misidentification of this species; IPSB 1922:197 (3); 1923:115 (3). LeConte 1857:19, 50 (2). Horn 1870e: 309 (4). Hyslop 1912:73-87 (2). Brittain 1914:19 (1). Lane IPSB 1923:60 (2). Hatch 1938a:186 (2). Tanner 1961:70 (234). *forma typica* Blaisdell 1909:98

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*Blaisdell 1909:38 records *tricostata* Say from "Idaho," but the reference is undoubtedly intended for Wyoming. This is apparently the origin of the Idaho record by McColloch, Jr. Ec. Ent. 11, 1918:212-224.

(234). *latiuscula* Walk. 1866:328. LeConte 1873a:334. Blair 1921:283.

1' Elytra with disc not densely punctate, the punctures muricatogranulate, small and frequently in distinct linear series, the interpunctational areas nearly smooth, the sides usually rather evenly arcuate and not noticeably more strongly inflated apically; the sexes noticeably dimorphic, the male being subcylindrical; pronotal disc not densely punctate medially; prosternal process frequently at least submucroate

2 Elytra with the punctures rather large, nearly always in well defined linear series, the granules frequently obsolescent on the disc; integument rather shining, moderately to weakly alutaceous; male 11-15.9 mm.; female 14-16 mm.; se Id.; not common RILEYI Csy.

Blaisdell 1909:100; 1936:183 (3). Tanner 1961:70 (3).

2' Elytra with the punctures rather small as a rule, the linear arrangement sometimes obscure; the integument usually subopaque, rather strongly alutaceous; male 12-14.5 mm.; female 13.5-17 mm.; e Or.; not common CONCINNA Blais.

Subgenus Litheleodes Blais.

1 Pronotum impunctate, strongly and rather densely granulate, the apex emarginate, the base weakly arcuate, the sides widest before the middle, the apical angles subrectangular, the basal angles obtuse; elytra with the humeri obtuse and more or less rounded, the sides rather evenly arcuate, the disc strongly muricatogranulate, the granules in linear series, the punctures obsolescent, the apices acute; prosternal process strongly deflexed apically; last tarsal segments with long setae at their apex, the setae subequal in length to the unusually long claws; 12 mm.; se Or. SPOLITA Blais.

Blaisdell placed this species in the subgenus Tricheleodes. Despite the fact that the humeral angles of the elytra are oblique, it seems to be nearer Litheleodes. Blaisdell 1933:196 (4).

1' Pronotum punctate, at most with the punctures muricatogranulate

2 Apices of elytra usually more or less tumid leaving an impressed area along the suture, the apical flank of the tumidity usually more or less flattened; male profemora strongly dentate; integument, especially that of the elytra, rather strongly alutaceous, subopaque; sculpturing fine, the punctures usually very fine, the granules more or less obsolescent; pronotum wider than long, moderately to rather strongly convex, widest before the middle, the sides straight toward the apex and base or rather evenly arcuate, the apical angles subrectangular, the basal angles rounded, scarcely angulate; elytra with the punctures coarser than those of the pronotum, substriate, the striae closely punctate with a more distantly spaced series of punctures in the interspaces; first protarsomere of female swollen at apex, that of the male not noticeably swollen, apparently lacking a tuft of modified setae, the groove entire; male 12.5-15 mm.; female 12-15 mm.; e Wn., Id., e Or.; common COGNATA Hald.

This species has been considered a form of *extricata* Say. It is, however, distinct and apparently sympatric with *extricata* in at least part of its range. Wakeland 1926:1-52 (3). *extricata* auct. (nec Say) Horn 1870e:310 (4). Ulke 1875:824 (4). LeConte 1878:472 (3). Hyslop 1912:73-87 (2). Wakeland IPSB 1937:164 (3).

2' Apices of elytra not noticeably tumid, not or only feebly flattened, frequently acutely pointed or narrowly rounded and rather deeply notched at the sutural angle; male profemora not strongly toothed, at most broadly arcuate; integument usually less strongly alutaceous, frequently shining; sculpturing usually stronger

3 Pronotum subcylindrical with the disc strongly devlivous at the sides so that it is more or less evenly arcuate with the hypopleura, slightly wider than long, widest at about the apical third, the apex feebly emarginate, the sides briefly arcuate at the widest part, straight to feebly sinuate toward the apex, straight and nearly parallel toward the base, finely margined, the apical angles rectangular and pointed, the basal angles obtuse and more or less rounded, the discal punctures moderate in size and density, the integument moderately alutaceous and subopaque to subshining; elytra granulatomuricate, the granules rather strongly reclinate and acutely pointed laterally and apically, frequently seriate, the disc usually rather flattened, the integument feebly alutaceous and rather shining; first protarsomere swollen at the apex tending to obliterate the groove, that of the male bearing a tuft of modified setae at the apex; 8.8-12.7 mm.; se B.C., e Wn., se Id., ne Or.; not common PARVULA Blais.
Blaisdell 1909:137 (4); 1942:141 (34).

3' Pronotum not subcylindrical, less strongly devlivous laterally being obtusely angulate with the hypopleura

4 Elytra strongly and rather rugosely tuberculate; pronotum coarsely and rather densely punctate, with a tendency for coalescence of punctures in some parts of the pronotum and frequently with distinct impunctate areas in others; integument more or less polished; pronotum wider than long, widest before the middle, the apex rather weakly emarginate, the sides moderately sinuate at the basal fourth, the apical angles subobtuse and narrowly rounded, the basal angles obtuse and more or less rounded, the disc rather strongly convex; elytra slightly more alutaceous than the pronotum; first protarsomere very slightly more thickened in the male, the groove evident, the tuft of setae very poorly developed; 11.5-13 mm.; sw Or.; not common CORVINA Blais.

4' Elytra not rugosely tuberculate; pronotum not so coarsely and densely punctate

5 Pronotum with the punctures fine, the integument shining to polished; elytra with the punctures rather evident, the granulation reduced and rather sparse; 11-12.5 mm.; e Or.; not common SIMILIS Blais.
The position of this species is in doubt. Blaisdell described it as a subspecies of *vandykei* Blais., but it appears to be more closely allied to *letcheri* Blais. *Vandykei* appears to be synonymous with *granulata* LeC. Blaisdell 1942:142 (4).

5' Pronotum with the punctures moderately dense and moderately coarse to rather coarse; integument of pronotum moderately alutaceous as a rule, sometimes quite shining in specimens from B.C., n Wn., and n Id.

6 Elytra rather densely submuricately granulate, the setae with a marked tendency toward elongation; 10.1-13 mm.; s Id., e Or.; not common (Pl. XXV, fig. 1) LETCHERI Blais.
Wakeland IPSB 1923:115 (3). Blaisdell 1936:183 (3); 1942:143 (3). Tanner 1961:70 (3).

6' Elytra with the coarse granules varying from rather distant seriate pointed and reclinate to rather close subreclinate and large, the punctures distinct

to absent; elytra alutaceous to shining; pronotum alutaceous to subshining; setae not long; 12-14 mm.; considered an important pest of wheat and corn in e Wn. (Hyslop); common GRANULATA LeC.

a Elytral sculpturing relatively fine, the granules usually more or less reclinate and pointed but sometimes tending toward subreclinate; e Wn., n Id., e Or. subsp. GRANULATA s. str.

The type of *vandykei* Blais. has finer pronotal punctures and smaller and more sharply pointed granules on the elytra than is usual in this form but appears to be connected with it by intermediates. LeConte 1857:19, 50 (4). Horn 1870e:309 (4). Blaisdell 1909:127 (4); 1910:61; 1921a:131; 1925a:79; 1942: 140 (4). *vandykei* Blais. Hyslop 1912:73-87, fig. 26 (2). Blaisdell 1918b:384-385 (4). CIPR 1923:23 (2). Lane IPSB 1923:60 (2). Tanner 1961:70 (2). *subtuberculata* Walk. 1866:328. LeConte 1873:334. Blair 1921:282.

a' Elytral sculpturing usually rather rugose and coarse, the integument more shining; pronotum subshining; se B. C. subsp. MODIFICATA Blais. Blaisdell 1921a:131 (1); 1925a:79; 1942:141 (1). Gibson 1916:208 (1). Tanner 1961:71 (1).

Wakeland (1926:1-52) lists *extricata* Say from Idaho. This identification is probably based on an early opinion of Blaisdell and is difficult to interpret in the light of subsequent changes. Wakeland also lists *vandykei* Blais. from Idaho, a record which possibly refers to *letcheri* Blais., since the material on which it was based came from Teton Co.

Subgenus Blapylis

1 Aedeagophore of male with the sides of the apicale sinuate, sometimes feebly arcuate toward the apex, but always continuous with the relatively large broadly rounded basal lobes (Pl. XXIII, figs. 1, 3, 5, 7, 11); pronotum not typically subcordate, although sometimes rather broadly sinuate toward the basal angles, usually rather abruptly constricted at base

2 Aedeagophore of male with apicale rather evenly but not strongly convex longitudinally, not appearing strongly arched when viewed laterally, the apex usually rather strongly attenuate (Pl. XXIII, figs. 2, 6); elytra usually rather finely sculptured, the granulation usually rather fine and rounded to subconical and usually rather well separated; pronotum moderately to weakly convex, usually less convex than in the next group, the disc becoming discretely granulate toward the sides; body usually somewhat more elongate and depressed than in the next group

3 Elytra with the humeri obsolete to very obtusely rounded; pronotum with the base not noticeably narrower than the base of the elytra; aedeagophore of male with apicale with apex flattened in cross section

4 Male with the protarsal tufts of hair very strongly developed, extending over half the length of the first and second tarsomeres, present on the third and occasionally on the fourth protarsomere, also present on the first and second mesotarsomeres, the color golden to dark gold; pronotum with the sides varying from evenly arcuate to more strongly arcuate apically and feebly sinuate at the base, the basal angles obtuse, the disc rather irregularly and somewhat shallowly punctate, moderately shining, feebly to moderately alutaceous, more strongly convex toward the sides; elytra with disc rather distinctly striatopunctate, sometimes obscurely so, the punctures rather close, the interstrial punctures more distant, usually uniseriate but sometimes irregular, the granules moderately strong and rounded, the integument

shining and moderately alutaceous; prosternal process not mucronate; 10.5-15 mm.; se Wn., n Id., ne Or.; common (Pl. XXIII, figs. 1, 2)
MANNI Blais.

Blaisdell 1917:221 (2). Hyslop 1912:73-87 (2). Wakeland 1926:1-52 (3). Tanner 1961:74 (2).

4' Male with the protarsal tufts not strongly developed, restricted to the apices of the first and second protarsomere; pronotum rather densely punctate, the punctures rather uniformly distributed; elytra rather densely granulate, sometimes substriately punctate, but usually irregularly so; prosternal process frequently mucronate

5 Pronotum with sides evenly and strongly arcuate, sometimes briefly sinuate at the base, the punctures moderately coarse and extensively muricatogranulate and becoming strongly granulate laterally, the integument subopaque, rather strongly alutaceous; elytra rather densely granulate, the granules small, rounded, shining, frequently with obvious setae, and rarely with traces of serial arrangement, the punctures shallow but frequently large, the integument subopaque, rather strongly alutaceous; aedeagophore of male with apicale broad, moderately sinuate at sides; 11-15 mm.; Id., e Or.; common
TENEBROSA Horn

LeConte 1878:472 (3). Wakeland 1926:1-52 (3). Tanner 1961:73 (3).

5' Pronotum with sides more strongly arcuate toward apex becoming almost straight toward base and then usually briefly sinuate before the basal angles, the disc more strongly convex toward sides, the punctures rather coarse and usually quite dense, not as extensively muricatogranulate as in *tenebrosa* Horn, the sides strongly granulate, the integument subshining and moderately alutaceous; elytra rather densely granulate, the granules larger than in *tenebrosa,* subconical, shining and frequently subseriate, the punctures moderately shallow and coarse, the integument subshining and moderately alutaceous; aedeagophore of male with apicale with sides rather strongly sinuate; 11.9-15 mm.; e Wn., e Or.; not common
ROBINETTI Bod.

Boddy 1957:194 (24).

3' Elytra with humeri distinct although sometimes obtusely rounded, frequently rectangular, the base usually distinctly wider than the base of the pronotum; pronotum with sides strongly and evenly arcuate, usually becoming rather strongly sinuate toward base, thence parallel to subparallel

6 Opaque, strongly alutaceous; pronotum with sides strongly and evenly arcuate becoming rather briefly sinuate toward the basal angles which are acute, the disc evenly arcuate and very densely but obscurely punctate, the punctures nearly all minutely muricatogranulate; elytra with sides not strongly but evenly arcuate, the humeri prominent, margined, the disc flattened with moderately dense very shallow punctures and small shining muricate granules; prosternal process weakly mucronate; 14 mm.; sw Or.
TRITA Blais.

This description is based on a single female specimen from Del Norte Co., Calif. The male genitalia have not been seen, but the external morphology indicates that they are of the general type suggested here. In the single specimen seen the base of the pronotum is strongly and angulately emarginate, but this is probably a deformity. Blaisdell 1917:225 (4).

6' Subshining to shining, moderately to weakly alutaceous; pronotal punctures distinct; elytral punctures usually rather strong

7 Male aedeagophore with apicale with apex flattened in cross section

8 Pronotum with disc strongly densely and rather evenly punctate, the sides rather evenly and strongly arcuate becoming strongly sinuate toward the base and then straight and subparallel; elytra with humeri usually more or less rectangular and prominent, the disc with the punctures rather strong, subseriate and muricatogranulate, the granules becoming larger and distinctly muricate laterally and apically and sometimes distinctly rugose toward the sides; prosternal process mucronate; integuments moderately alutaceous, feebly shining; male aedeagophore with apicale long, the apex attenuate, the sides becoming briefly subparallel at the apex; 11.3-15 mm.; e Wn., sw Id. (Boise Co.), Or.; not common
VERSATILIS Blais.

Blaisdell 1921:217 (4). Wakeland's 1926 Idaho record perhaps refers to *producta* Mann.

8' Pronotum with disc rather strongly but irregularly and not densely punctate and becoming strongly rugose to almost granulate laterally, the sides evenly and rather strongly arcuate becoming strongly sinuate toward the basal angle and then straight and nearly parallel; elytra more or less inflated, the humeri obtusely rounded, the disc coarsely and densely punctate, the punctures not serially arranged and becoming rugose laterally and apically, the tubercles obsolescent toward the suture and becoming strongly rounded to subconical laterally and apically; prosternal process not mucronate; integuments feebly alutaceous, rather shining; male aedeagophore with apicale shorter than in *versatilis* Blais., the apex subtriangular; 8.9-10.5 mm.; w Wn., w Or.; very common; found at the base of plants in sand dunes along ocean beaches SCABROSA Esch.

Hatch and Kincaid 1958:17 (2). Tanner 1961:74 (4).

7' Male aedeagophore with apicale with apex rounded in cross section

9 Integument moderately alutaceous, subopaque; pronotum with sides strongly and evenly arcuate becoming strongly but briefly sinuate toward base and then straight and sometimes subparallel to the basal angles, the disc strongly coarsely and rather evenly punctate, sometimes with small irregular impunctate areas, becoming somewhat sparsely and coarsely granulate at the sides; elytra with humeri subrectangular, the disc coarsely strongly rather densely punctate, the punctures shallow, disappearing laterally and apically and tuberculogranulate, the granules becoming larger in the impunctate areas and well separated and rounded; prosternal process obsoletely mucronate; 11.6-14 mm.; e Wn., ne Or.; common
PATULICOLLIS Blais.

Blaisdell 1931:78 (2); 1941:159 (24). *dilaticollis* Blais. 1925:388 (2).

9' Integument weakly or occasionally moderately alutaceous, shining; pronotum with sides strongly and evenly rounded, becoming strongly sinuate basally and then straight and sometimes subparallel to the base, the disc usually moderately densely and coarsely punctate with frequent impunctate areas, becoming strongly and rather densely granulate laterally; elytra with humeri rather strongly obtuse to rectangular, frequently margined, the disc usually rugosely or confusedly and rather strongly punctate in the northern part of its range, the punctures becoming subobsolete toward the south, the tubercles irregular, rather small in the northern part of its range to rather strong toward the south, usually well separated, sometimes obsolescent toward the suture; prosternal process obsoletely or not mucronate; 10.1-15.5 mm.; sw B.C., Wn., s Id., Or.; common (Pl. XXIII, figs. 5, 6, 13, 14) PRODUCTA Mann.

This species has a wide range in western North America and shows considerable geographic variation, but material is still too scanty to determine subspecific limits. The type of *variolosa* Blais. is this species, although most specimens previously identified as *variolosa* are *indentata* Blais. Most specimens of *producta* from the Pacific Northwest have been identified as *constricta* LeC., which is, however, a Californian subspecies. A few specimens taken in the vicinity of Klamath Co., Or. are referable to this subspecies, but they appear to grade into the other variations found elsewhere.
LeConte 1869:371 (1). *variolosa* Blais. 1917:223 (2). Leech 1947a:108 (1). Tanner 1961:74 (2). *parvicollis* auct. (nec Mann.) LeConte 1878:472 (3). Exline and Hatch 1934:450 (2).

2' Male aedeagophore with apicale rather strongly arched in lateral view, the apical one third to one half rather strongly deflexed, usually weakly attenuate, sometimes with the sides feebly arcuate (Pl. XXIII, figs. 4, 8, 12); pronotum with disc usually rather coarsely and somewhat rugosely punctate, frequently quite densely punctate, usually strongly sinuate at base (not usually so in *indentata* Blais. and *oregona* Blais.), but never as broadly sinuate as in *cordata* Esch. and *propinqua* Blais.; elytra usually rather strongly and densely muricatotuberculate laterally (not usually so in *indentata* and *oregona*), usually becoming much less strongly so toward the suture; body usually rather robust; prosternal process apparently never mucronate

10 Elytra with disc impunctate, although occasionally rugose giving a vague suggestion of punctation, the granules rather gradually diminishing in size toward the suture; pronotum with sides usually rather strongly and evenly arcuate but occasionally becoming subangulate at the middle, the disc usually densely and frequently very densely punctate, the punctures usually distinctly punctiform although occasionally more or less coalescent

11 Elytra strongly tuberculogranulate, the granules not in linear series, the large granules interspersed with smaller granules, the granules more rounded than in *novoverrucula* Bod. but somewhat reclinate; pronotum with sides narrowly or not at all sinuate at base

12 Elytra rather strongly pilose; pronotum somewhat less densely punctate than in *nunenmacheri* Blais.; 9.4-11.2 mm.; s Id., se Or.; common CASEYI Blais.

12' Elytra not strongly pilose; pronotum with the punctures tending to coalesce; 10-12 mm.; se B.C., e Wn., s Or.; rare NUNENMACHERI Blais.
Blaisdell 1918a:163 (4). Tanner 1961:75 (124). No Wn. or B.C. specimens have been seen.

11' Elytra with the granules acuminate and reclinate and usually well separated and in linear series but in the eastern part of the range becoming thickened and flattened giving the parasutural area a rugose appearance, the disc usually rather flattened, the sides usually less arcuate at the middle giving the elytra a subrectangular appearance, this sometimes quite marked; pronotum with punctures usually rather coarse and dense but sometimes finer and consequently less dense, the sides usually strongly and evenly arcuate but sometimes subangulate at middle, usually distinctly but briefly sinuate at the base; 8.9-13.7 mm.; se B.C., e Wn., Id., ne Or.; very common; considered an important pest of wheat and corn in e Wn. (Hyslop) (Pl. XXIII, figs. 7, 8; Pl. XXV, fig. 2) NOVOVERRUCULA Bod.
Boddy 1957:195 (1234). *pimelioides*, Hyslop (nec Mann.) 1912:73-87, fig. 27 (2) (in part). *verrucula* auct. (nec Blais.) Lane IPSB 1923:60 (2). Wakeland 1926:1-52 (2) (part). Hatch 1938a:186 (2).

10' Elytra with disc usually punctate in the parasutural area although sometimes the punctures become shallow to obsolescent, the granules rather uniform in size in the parasutural area becoming rather suddenly larger toward the sides usually giving the appearance of a wide eroded strip down the middle; pronotum with sides strongly arcuate, usually becoming rather strongly sinuate toward the base and then straight and subparallel (except in *indentata* Blais. and *oregona* Blais.), the disc usually rather strongly but usually not densely punctate

13 Pronotum with sides usually not or only weakly sinuate toward the base, the disc frequently becoming granulate toward the sides; elytra with humeri usually strongly obtuse to obsolescent, the disc with the granules usually rather sparse and more or less reclinate

14 Elytra with punctures faint, granulate toward the suture; integuments subopaque, moderately alutaceous; size large; pronotum rather strongly transverse, the sides strongly arcuate and usually weakly sinuate just before the basal angles, the disc moderately convex sometimes becoming subexplanate toward the sides, the punctures coarse and rather dense but not deep; elytra with sides usually rather strongly arcuate, the humeri sometimes quite distinct, the disc with the granules small to moderate in size, rather well separated, more or less reclinate, but not usually very acuminate; ll. 9-15.3 mm.; Wn. and Or. along the eastern slopes of the Cascade Mts.; locally common OREGONA Blais.

Blaisdell 1941:157 (4).

14 Elytra with the punctures usually quite deep, the granules frequently obsolete toward the suture; integument shining, occasionally moderately alutaceous; size not large; pronotum rather rounded, the sides moderately arcuate and usually not or feebly sinuate toward the base, the punctures coarse but frequently rather sparse, occasionally rather dense; elytra usually more elongate than in *oregona* Blais., the disc with the granules reclinate, usually rather acuminate toward the sides, sometimes rather close and subrugose; 9.8-13 mm.; B.C., Wn., and Or. along the eastern slopes of the Cascade Mts. and at Yakima Park, Mt. Rainier; locally common (Pl. XXIII, figs. 11, 12) INDENTATA Blais.

Blaisdell 1935a:28 (2). Hatch 1948:45 (2). *cordata*, Stace Smith (nec Esch.) 1929:72 (1).

13' Pronotum with the sides usually rather strongly sinuate toward the base, becoming straight and frequently parallel before the basal angles, the disc strongly punctate, the punctures moderately to rather dense, usually becoming rugose toward the sides but sometimes scabrously granulate laterally; elytra variably sculptured, the punctures usually deep and subrugose, the tubercles usually strong subreclinate and not noticeably acuminate; 8.9-12.2 mm.; s B.C., Wn., s Id., Or.; very common ROTUNDIPENNIS LeC.

This use of the name *rotundipennis* LeC. differs considerably from previous usage. It has been formerly limited to that form found west of the Cascade Range. Here it is applied to the most widely distributed and abundant species in the Pacific Northwest, including the form to which the name has previously been limited. The species shows considerable geographic variation and it may prove that more than one species has been confounded under this name, but at present it appears that these variations tend to merge. Two subspecies are recognized here.

a Elytra with the disc convex; integuments usually shining; elytral punctures strong; west of the Cascade Range in s B. C., Wn. and Or.
subsp. ROTUNDIPENNIS s. str.

Individuals in the Willamette Valley and coastal Oregon vary from the usual form in being more alutaceous and less strongly sculptured. These need further study. LeConte 1857:19, 50 (4). Blaisdell 1909:384 (4); 1921:217 (124). Baker, Rep. Wash. St. Hort. Assoc. 26, 1930:210 (2). Hatch 1938a:193 (2). Hanson and Webster 1938:38 (2). Guppy 1948:22 (1). Hatch and Kincaid 1958: 17 (2). Tanner 1961:74 (124). *cordata* auct. (nec Esch.) Holland 1888:92 (1). Prov. Mus. 1898:75 (1). *stricta* LeC. 1857:19, 50 (4). *subligata* LeC. 1857: 19, 50 (4).

a' Elytra with disc less convex, somewhat flattened; other characters vary from being almost identical with *rotundipennis* s. str. in the northern part of its range to being subopaque and with the pronotal punctation denser and the elytral punctures shallow to almost obsolescent, the granules smaller and more rounded in the southern part of the range; east of the Cascade Range in s B. C., Wn., and Or. (Pl. XXIII, figs. 3, 4, 15)
subsp. VERRUCULA Blais.

Blaisdell 1918a:164-165 (4). Wakeland 1926:1-52 (3) (in part). *pimelioides*, LeC. (nec Mann.) 1878:472 (3). *rotundipennis*, Gibson 1916:208 (1).

1' Male aedeagophore with apicale triangular, the sides arcuate, usually quite distinctly so, and becoming quite strongly and rather abruptly sinuate at the basal lobes which are small but usually well differentiated from the disc and not continuous with the sides (Pl. XXIII, fig. 9); pronotum usually rather distinctly subcordate, the sides arcuate apically, very broadly and deeply sinuate basally frequently appearing more or less reentrant behind the widest part which may appear subangulate, subparallel before the basal angles, sometimes the sides weakly arcuate behind the widest part, the disc rather coarsely to very coarsely punctate, the punctures usually very dense and scabrous; elytra with humeri obtusely rounded and not very prominent, the disc strongly to moderately finely granulate, the granules frequently in linear series, becoming smaller and sometimes disappearing toward the suture, the discal area frequently rugose; prosternal process usually at least weakly mucronate, sometimes quite strongly so, always convex

15 Vestiture short and inconspicuous, the male tarsal tufts more strongly developed than in *propinqua* Blais., the body more robust; 11-15 mm.; e Wn., Or.; common (Pl. XXIII, figs. 9, 10) CORDATA Esch.

Anderson's 1914:57 record of this species from B. C. is probably a misidentification.

References to *cordata* Esch. are difficult to interpret. LeConte 1857:19 described *rotundipennis*, *stricta*, and *subligata* from "Oregon," but (1858) he was uncertain as to their relationship to *cordata*, suggesting that perhaps they were all one species. Horn (1870e) synonymized *rotundipennis* and *stricta* with *cordata* and *subligata* with *pimelioides*. Blaisdell (1935a) retained *rotundipennis* as a valid species, an opinion with which the present author agrees.

References to *pimelioides* Mann. are more difficult to interpret than are those for *cordata* Esch. *Pimelioides* was originally described from California in 1843, but subsequent authors have excluded it from California and pushed its distribution northward and eastward. Thus Tanner (1961) in the latest checklist of the species of Eleodes gives the distribution of

pimelioides as Washington, Nevada, and Montana. It is the present author's opinion that a true understanding of Mannerheim's species has been lost and the name forced onto a heterogeneous group of beetles including *cordata, rotundipennis, verrucula* Blais., *patruelis* Blais., and *novoverrucula* Bod. In this study *pimelioides* has not been recognized. Reference to the type may eventually show that the name must displace one of those given above.

15' Vestiture moderately long and conspicuous; male tarsal tufts less well developed, obsolescent on the mesotarsi; the body less robust; 9.5-11.5 mm.; sw Id., s Or.; common PROPINQUA Blais.

E. brunnipes Csy. is apparently related to *cordata* Esch. and *propinqua* Blais., the major difference being the dark brown legs. As Blaisdell (1909: 387) pointed out, this is a character that frequently appears in immature individuals of other species. Blaisdell also pointed out the "longer and more evident" setae in specimens from Pocatello, Idaho. This, along with the small size (length 9.2-9.5 mm.), suggests that it may be identical with *propinqua* Blais., in which case the name *brunnipes* Csy. would have priority. Casey 1890a:402 (3). Blaisdell 1909:387 (3). Tanner 1961:75 (4).

A single specimen of *E. blanchardi* Blais. in the UW collection bearing the data "E. Wash.," is probably erroneously labeled as to locality.

Subgenus Discogenia LeC.

Black, integument shining, rugosely sculptured; head duller and less coarsely sculptured than the rest of the dorsal surface, the punctures moderately shallow and not close; pronotum with the apex moderately and evenly emarginate, the base briefly arcuate, the sides strongly and rather evenly arcuate before becoming feebly sinuate before the basal angles, the basal angles obtuse and narrowly rounded, the apical angles obtuse and broadly rounded, the disc not strongly convex and becoming feebly explanate toward the margins, the surface rather coarsely and in part confluently punctate becoming granulate laterally; elytra with the humeri obtuse and broadly rounded, the sides rather evenly and not strongly arcuate becoming sinuate toward the acute apex, the disc rugosely but not strongly tuberculate becoming vaguely punctate toward the suture; ventral surface granulate becoming reticulately lined on the abdomen; prosternal process strongly declivous posteriorly; mentum discoidal with the sides vaguely angulate, the apex very feebly emarginate, the disc feebly impressed along the margins, irregularly punctate; a single specimen of undetermined sex with the profemora obtusely and not strongly dentate; 7 miles west of Keno, Klamath Co., Or. at 3800'; 20.1 mm. species uncertain

Embaphion Say

Elongate, black, subopaque, alutaceous; pronotum with apex rather deeply emarginate, the base truncate, the sides irregularly and rather broadly arcuate and crenulate, the apical angles subacute and blunt, the basal angles broadly rounded, the disc weakly convex and becoming rather strongly reflexed laterally, finely and sparsely punctate with finely setose punctures, finely granulate becoming coarsely so laterally; elytra with sides not strongly arcuate, the humeri obtusely rounded, the apex acute and notched at the suture, the disc feebly convex to flat, usually depressed behind the scutellum, moderately reflexed laterally, the acute margin minutely setose, the lateral margin extending to or almost to the apex; ventral surface finely

granulate; 15.2-17.5 mm.; s Id., se Or.; not common (Pl. XXVI, fig. 1)
ELONGATUM Horn

Horn 1870e:321 described *planum*, differentiating it from *elongatum* by the acute elytral margin not extending to the apex of the elytra. Specimens from Burns, Or. and Malta, Id. show this feature, but there are also intermediates, suggesting that *elongatum* is variable as regards this character, at least in the Pacific Northwest.

Trogloderus LeC.

Piceous, brown, shining; pronotum with apex truncate between the strongly produced acute apical angles, the base truncate between the feebly produced acute basal angles, the sides irregularly and not strongly arcuate becoming slightly sinuate before the basal angles, the disc moderately convex and strongly irregularly rugosely sculptured with a medial distinct fovea extending over most of its length; elytra each with 4 rather strong costae, the sides evenly and moderately arcuate, the humeri oblique, the intercostal spaces rugosely punctate, the costae cariniform; ventral surface more opaque; procoxal process horizontal, mucronate; 9.4 mm.; s Id.; rare
COSTATUS LeC. subsp. COSTATUS s. str.

LeConte 1879c:2 (3). Blaisdell 1909:486 (3). LaRivers, Ann. Ent. Soc. Am. 35, 1942:436 (3); Ent. News 57, 1946:37 (3).

Tribe Scaurini

Argoporis Horn
(Cerenopus pars)

Argoporis costipennis LeC. has been recorded from Oregon; elytra finely sulcate, the interstrices elevated; male with hind femora with an acute tooth with denticulate edges; 10.9-12.7 mm. Horn 1870e:325 (4) (*sulcipennis*).

Tribe Ulomini

Uloma Cast.

Testaceous, shining, elongate, sides parallel, elytra striate; head with epistoma moderately emarginate, the sides of the front straight, the frontal suture impressed in addition to a medial impression between the eyes and a transverse basal impression, the impressed area coarsely and rather densely punctate, the eyes reniform with the dorsomedial border rounded; pronotum wider than long, the apex emarginate, the base broadly and feebly lobed, the lobe truncate, the sides straight and subparallel from the base to about the middle and then arcuate to the apex, the apical angles obtuse and rounded, the basal angles subobtuse and rounded, the disc moderately convex and obsoletely to strongly impressed medially near the apex, the punctures not dense and rather fine; elytra with base emarginate, subequal in width to base of pronotum, the sides widest behind the middle, straight or feebly arcuate to the widest part and then arcuate to the apex, the striae weakly impressed toward the suture becoming more strongly impressed laterally, the ninth stria very strongly impressed, the strial punctures moderately coarse and close, the interstrial spaces minutely punctate, the

apex of the elytra briefly truncate exposing the apex of the pygidium; prosternal process convex; protibiae with external edge rather strongly serrate; mentum with middle lobe more or less discoidal; last antennal segment with apex rounded; profemora with ventral surface grooved, the posterior edge of the groove not noticeably sinuate toward the apex; alate; 8-10.3 mm.; B.C., Wn., Or.; subcortical; common (Pl. XXVI, fig. 2)
LONGULA LeC.

Fletcher 1906:102 (1).

Tribe Tenebrionini

These beetles are predominantly subcortical in habit. Many of the species have become pests of stored meal, the consistency of which they apparently find similar to the finely commuted material under the bark of logs. Such species are largely introduced in the Pacific Northwest.

Key to Genera

1' Scutellum with sides not narrowing evenly from the base, usually with the sides subparallel, sometimes slightly converging from the base, sometimes arcuate, the apex broadly or obtusely pointed
2 Epipleura incomplete; pronotum with sides very narrowly explanate; head with anterior canthus not prominent; alate BIUS Muls.
2' Epipleura complete
3 Size small, less than 8 mm. long; genae more or less acutely produced
4 Eye completely or almost completely divided; pronotum with apex margined toward the middle APHANOTUS LeC.
4' Eye with anterior border deeply incised by the anterior canthus but always with at least a few facets behind its apex; pronotum with apex margined at most at the angles; alate TRIBOLIUM MacL.
3' Size large, over 8 mm. long; genae not produced; alate
TENEBRIO L.
1' Scutellum triangular, the sides straight to arcuate but narrowing regularly from the base; alate
5 Epipleura incomplete, ending abruptly before the apex of the elytra; mentum with sides of middle lobe margined METACLISA Duv.
5' Epipleura not ending abruptly before the apex of the elytra, more or less complete; eye with the dorsomedial border with a rounded flattened tubercle
ALPHITOBIUS Steph.

Bius Muls.

Elongate, piceous or bicolored with the head and pronotum ferruginous to piceoferruginous and the elytra darker, the legs and antennae similar in color to the pronotum; head with epistoma truncate, the sides of the front straight to feebly emarginate, the eyes deeply emarginate anteriorly, the median border feebly rounded; pronotum with apex emarginate, the base weakly lobed, the sides moderately arcuate becoming sinuate toward the base, the apical angles acute and rounded, the basal angles subrectangular, the disc moderately convex and rather closely moderately finely punctate; scutellum with apex rounded, the sides converging to the base, finely and densely punctate; elytra with base slightly emarginate, the humeri minutely

denticulate, the sides feebly arcuate, the disc convex with vague suggestions of impressed striae, the apex rounded; prosternal process weakly convex; mentum with lateral lobes concealed, the middle lobe with the apex truncate, the sides margined; 5.5-6.8 mm.; s B.C., Wn., n Id., Or.; not common (Pl. XXVI, fig. 3) ESTRIATUS LeC.
Dennys 1927:24 (1). Stace Smith 1929:72 (1).

Aphanotus LeC.

Hinton (1948) regards this as a subgenus of Tribolium MacL.

Castaneous, subshining, elongate parallel; head with front emarginate; pronotum slightly wider than long, widest before the middle, the sides truncate medially, the base lobed, the sides arcuate at anterior half, straight basally, more convergent apically than basally, the apical angles produced, acute and blunt, the basal angles subrectangular, the disc moderately convex, coarsely and rather densely punctate; elytra with base wider than base of pronotum, the sides almost straight, the interstrial spaces finely carinate, the carinae smaller toward the suture and bordered on each side by a row of punctures, the strial punctures larger and more widely spaced than the carinal punctures; epipleura becoming very narrow toward apex; antennal segments gradually widening to apex; ventral surface coarsely rather densely punctate; prosternal process feebly convex; genae acutely produced; mentum with lateral lobes concealed, the middle lobe with the apex truncate and the sides weakly arcuate; protibiae apically produced; 5.5-6 mm.; sw B.C., w Wn., sw Or.; not common; possibly introduced (Pl. XVII, fig. 9) BREVICORNIS LeC.

Tribolium MacL.

Tribolium confusum Duv. and *castaneum* Hbst. are among the most abundant and destructive beetles infesting flour and other cereal products. They also infest cracked nuts, dried fruit, spices, etc., but are not major pests of these materials. Herbarium and insect specimens are likewise sometimes attacked. They are bred in laboratories as experimental animals and have been used as bird and fish food.

Small, elongate, parallel; head with epistoma feebly emarginate; pronotum with apex truncate, the base weakly lobed, the disc moderately convex and moderately coarsely densely punctate; elytra finely costate at least toward the sides, the base feebly emarginate, the humeri subobtuse; protibiae scarcely everted at apex.

1 Antennae with last 3 segments abruptly wider than the preceding; eye with dorsomedial border not strongly margined; genae moderately produced (subg. TRIBOLIUM s. str.)

2 Color black, the legs and antennae piceous; elytral carinae obsolete between the third stria and the suture; 4.1-4.4 mm.; s B.C., e Wn., Id., e Or.; common; introduced; subcortical and occasionally in stored food products (Pl. XXV, fig. 3) MADENS Charp.
Johnson 1897:83-85 (2). Gibson 1910:123 (1). Good 1936:16 (4). Spencer 1942: 26 (1). Leech, Can. Ent. 75, 1943:40 (1). Hatch 1953:26 (1).

2' Color rufocastaneous; elytral carinae obsolete between the fifth stria and the suture; 2.9-3.7 mm.; B.C., Wn., Id., Or.; common in stored food products; introduced (Pl. XXV, fig. 5) (red flour beetle) CASTANEUM Hbst.

Hatch 1940:34 (2); 1953:27 (2). Fisher IPSB 1941:126 (3). Spencer 1942:26 (1). Simkover and Reed 1952:3-5 (2). CEIR 1952-55, 1957-60 (234). Chao et al. 1953:905-907 (2). Chao 1954:261 (2). Johansen and Brannon 1955:21 (2). Swenson and Tunnock 1957:117-118 (4). CIPR 1957-58 (1). *ferrugineum* F. Treherne 1921:139 (1). Spencer CIPR 1932:42 (1). Hatch 1938a:186 (2). Clark 1956:40 (1).

1' Antennae gradually widening from the sixth segment; eye with dorsomedial edge rather strongly margined; elytral carinae obsolete between the second stria and the suture (subg. STENE Steph.)

3 Eyes with a single facet between the apex of the anterior canthus and the posterior edge of the eye, the eyes separated beneath by approximately 3 times the transverse diameter of the ventral part of the eye; genae rather strongly produced; color castaneous; integument shining; 2.6-4.4 mm.; B.C., Wn., Id., Or.; common in stored food products; introduced (Pl. XXV, fig. 6) (confused flour beetle) CONFUSUM Duv.

Lyne 1921:147 (1). IPSB 1923, 1940-41 (3). Stace Smith 1929:72 (1). Hatch 1938a:186 (2); 1940:34 (2); 1953:27 (2). Rousseau, Bull. Assoc. Oper. Millers 1941:1126 (2). Spencer 1942:26 (1). Simkover and Reed 1952:3-4 (2). CIPR 1953, 1957-58 (1). MacNay 1953:149 (1); 1958:78 (1); 1959:87 (1). Chao 1954:261 (2). Johansen and Brannon 1955:21 (2). CEIR 1955-56, 1960 (34). Clark 1956: 40 (1). Swenson and Tunnock 1957:117-118 (4). Zuk 1958:14-15 (1).

3' Eye with 2 or 3 facets between the apex of the anterior canthus and the posterior edge of the eye, the eyes separated beneath by approximately 2 times the transverse or greatest diameter of the ventral part of the eye; genae less strongly produced than in *confusum* Duv.; color castaneous, darker than in *confusum;* integument shining; 4.5-5.5 mm.; sw B.C., w Wn.; rare; introduced; in stored food products (Pl. XVII, fig. 10; Pl. XXV, fig. 4) (black flour beetle, large flour beetle) DESTRUCTOR Uyt.

CEIR 1957:753, 763 (2); 1958:269 (12). Spencer, Proc. Ent. Soc. B.C. 53, 1957:27-28 (1). CIPR 1958:20 (1); 1959:23 (1); 1961:296, 313 (1), suppl. 1:14 (1); 1962:184, 204 (1). Zuk 1958:14-15 (1).

Tenebrio L.

1 Pronotum with short longitudinal plicae at the basal sinuses, the plicae connected by a groove paralleling the base; scutellum with sides parallel; mentum with apical angles of middle lobe angular; protibiae curved; profemora rather strongly clavate; head with front prolonged, the sides of the front sinuate (subg. TENEBRIO s. str.)

2 Shining, piceous; dorsal punctation rather fine and dense but not approximate, that of the elytra finer and closer than that of the pronotum; pronotum with sides usually more strongly reflexed than in *obscurus* F., the basal angles scarcely produced, subrectangular to subobtuse, the disc occasionally with a punctiform impression on each side (var. LATICOLLIS Steph.); 12-17 mm.; B.C., Wn., Id., Or.; common; introduced; subcortical; a common pest in grain and grain products; frequently reared in laboratories as experimental animals or as bird food (Pl. XVII, fig. 13; Pl. XXV, fig. 7) (yellow mealworm) MOLITOR L.

Dennys 1927:24 (1). Cotton 1929:3 (3). Hatch 1938a:186 (2); 1940:34 (2); 1953: 26 (4). Rousseau, Bull. Assoc. Oper. Millers 1941:1126 (2). Spencer 1942: 26 (1); Proc. Ent. Soc. B.C. 52, 1956:21 (1). MacNay 1952a:94 (1); 1953:149 (1); 1958:78 (1); 1959:87 (1). CIPR 1953-54, 1957-59 (1). Chao 1954:261 (2).

Johansen and Brannon 1955:21 (2). Zuk 1958:13-15 (1).

2' Opaque, nigropiceous, the ventral surface lighter; dorsal punctation rather fine dense and approximate, that of the elytra finer than that of the pronotum; pronotum with sides subexplanate to scarcely reflexed, the basal angles acute, somewhat produced posteriorly; 13-17 mm.; B.C., Wn., Id., Or.; common; subcortical; sometimes occurs as a pest in stored grain and grain products (Pl. XVII, figs. 11, 12) (dark mealworm) OBSCURUS F.
Introduced. Cotton 1929:3 (34). Hatch 1938a:186 (2); 1940:34 (2); 1953:26 (2). Rousseau, Bull. Assoc. Oper. Millers 1941:1126 (2). Spencer 1942:26 (1). Johansen and Brannon 1955:21 (2).

1' Pronotum without basal plicae or grooves at the basal sinuses; scutellum with sides convergent from the base, more strongly so toward apex; mentum with apical angles of middle lobe rounded; protibiae nearly straight, the profemora moderately clavate; head with front not so strongly prolonged, the sides of the front nearly straight (subg. NEATUS LeC.). Dorsal punctation finer and less dense than in the preceding species, that of the pronotum of intermixed finer and coarser punctures; pronotum with sides narrowly reflexed, the basal angles subrectangular, not produced; color rufopiceous; shining; 10-11.8 mm.; se B.C., n Id., se Or.; rare; subcortical, apparently introduced, but not considered an important pest of stored products
PICIPES Hbst.

Metaclisa Duv.

Elongate, the sides parallel; castaneopiceous, shining; elytra striatopunctate; head with epistoma truncate to obsoletely emarginate, moderately coarsely and densely punctate, the eyes deeply emarginate anteriorly with the dorsomedian border round; pronotum slightly wider than long, the apex moderately emarginate, the base broadly and rather weakly lobed, the sides feebly arcuate and slightly converging from base to apex, the apical angles subrectangular and narrowly rounded, the basal angles rectangular, the disc moderately convex, narrowly explanate at the sides, rather strongly margined, rather coarsely but not densely punctate; elytra with base emarginate and subequal in width to the base of the pronotum, the humeri rounded but distinct, the sides subparallel to beyond the middle, the striae feebly impressed and closely punctate, the interstrial spaces flat and finely and moderately densely punctate; ventral surface piceous, the punctation subsimilar to that of the pronotum; prosternal process weakly convex to horizontal, not mucronate; mentum with sides of middle lobe margined; 6-6.75 mm.; e B.C., e Wn., Or.; not common (Pl. XXVI, fig. 4)
MARGINALIS Horn

Alphitobius Steph.

Piceous, shining; head with epistoma emarginate; pronotum with apex emarginate, the base lobed, the sides arcuate, strongly convergent toward apex and weakly so toward base, the disc moderately convex, rather finely punctate medially becoming coarsely so laterally; elytra with base emarginate and subequal in width to the base of the pronotum, the sides feebly arcuate and widening to beyond the middle and then strongly arcuate to the apex, the striae not impressed toward the suture becoming moderately so laterally, the interstrial spaces finely punctate toward suture, more coarsely so laterally, the punctures irregularly placed;

ventral surface coarsely and rather densely punctate; mentum with lateral lobes depressed but visible, the middle lobe with the apex truncate, the sides margined

1 Eyes completely or almost completely divided; pronotal punctures coarser and denser than in *diaperinus* Panz.; elytra with interstrial spaces becoming quite convex laterally; prosternal process convex; middle lobe of mentum with sides weakly diverging from the base; 5-6.6 mm.; adventitious, possibly not established in the Pacific Northwest; specimens taken in Vancouver, B.C., Seattle, Wn., Twin Falls, Id., and Milton-Freewater, Or. (Pl. XXVI, fig. 5) LAEVIGATUS F.

CEIR 1958:911, 918 (3); 1959:144 (3). *piceus* Ol. CEIR 1955:1097 (4).

1' Eyes not divided; pronotal punctures finer and sparser than in *laevigatus* F.; elytra with interstrial spaces less convex and more strongly punctate laterally than in *laevigatus;* middle lobe of mentum with sides more strongly diverging from the base; genae more strongly produced; 5.8-6.3 mm.; Wn. (Seattle, Puyallup, Walla Walla, Wenatchee); introduced (lesser mealworm) DIAPERINUS Panz.

Taken at Seattle in bone meal from China, in a copra ship, and in laboratory cultures of yellow mealworms and in numbers in poultry litter at Puyallup. Hatch 1938a:186 (2); 1953:27 (2). CEIR 1963:1399 (2).

Tribe Diaperini

Predominantly subcortical in habit. Some of the species have become pests in granaries, etc. and have been introduced into the Pacific Northwest.

Key to Genera

1 Epipleura incomplete, ending abruptly before the apex of the elytra

2 Head with sides of front arcuate, not expanded or reflexed; mandibles of male normal; alate

3 Pronotum with the angles rectangular, at most narrowly rounded; body elongate; male without horns on head CYNAEUS LeC.

3' Pronotum with the angles broadly rounded; body short, oval; male with margin of front with 2 short upright teeth and with 2 large upright horns at the middle edge of the eye HOPLOCEPHALA Cast. et Brul.

2' Head with sides of front expanded and reflexed, very strongly so in male, the mandibles of the male produced at the base in a long curved erect horn; alate GNATHOCERUS Thunb.

1' Epipleura complete or gradually diminishing in size near apex; alate

4 Head with side of front emarginate; pronotum with base weakly lobed, the sides weakly converging from the base; elytra vittate; body elongate oval, small, less than 3.5 mm. long ALPHITOPHAGUS Steph.

4' Head with sides of front arcuate; pronotum with base strongly lobed, the sides strongly convergent from the base; elytra immaculate in Pacific Northwest species; body broadly oval, larger, over 4.5 mm. long PLATYDEMA Cast. et Brul.

Cynaeus LeC.

Castaneous, opaque to subshining, sides parallel; head with front weakly emarginate, the surface not at all coarsely but rather densely punctate; pronotum with apex emarginate, the base weakly lobed, the sides evenly

arcuate and more convergent toward the apex, the apical angles subrectangular and blunt, the basal angles obtuse, the disc moderately convex becoming narrowly explanate at the sides and with a short plica on each side of the basal lobe that does not quite reach the basal margin, the punctures moderately coarse and dense; elytra with base feebly emarginate, the sides slightly diverging to the apical third, the humeri prominent and minutely subdentiform, the striae becoming rather strongly impressed laterally and feebly or not at all so at the suture, the interstrial punctures fine, irregularly distributed; 5-6 mm.; se B. C., Wn., n Id., Or.; common; apparently introduced (Hatch 1940); this species has recently become a pest of stored food products in some parts of North America (Pl. XXVI, fig. 6)

ANGUSTUS LeC.

IPSB 1939:481; 1940:125 (2). Hatch 1940:34 (2); 1942:1209 (2); 1949:18 (2); 1953:28 (2). Lane IPSB 1940:33 (2). Linsley, Jr. Ec. Ent. 35, 1942:435 (2). Krall and Decker, Iowa St. Coll. Jr. of Sci. 20, 1946:385 (2). Chao 1954: 261 (2).

Hoplocephala Cast. et Brul.

A single male collected in Seattle, Wn. in 1934 appears to have just emerged at the time of collection before developing its coloration. The supraorbital horns are very small for this genus, a characteristic suggesting that the specimen may represent an unnamed species.

Gnathocerus Thunb.

Castaneous, shining; eye almost completely divided; head in male with 2 acute prominent interocular tubercles and the epistoma produced; pronotum with apex emarginate, the base feebly arcuate, the apical angles more or less produced and rounded, the basal angles obtuse, the sides evenly arcuate, widest before the middle and weakly and briefly sinuate at the basal angles, the disc moderately convex and rather finely and moderately densely punctate; elytra with sides distinct, the humeri minutely dentiform, the strial punctures coarse and closely placed, the interstrial punctures fine and irregular, the interstrial spaces flat; fifth abdominal sternite deeply impressed basally; 3.5-4 mm.; sw B. C., w Wn., w Or.; introduced; not common (Pl. XXVI, fig. 7) (broad-horned flour beetle) CORNUTUS F.

A minor pest of stored food products in some parts of the world, but some of the records from the Pacific Northwest are dubious. The record from w Wn. (Seattle) is from a pet store culture where they were available as fish or bird food. Sometimes they are reared for experimental purposes. Spencer 1942:26 (1). Hatch 1953:25 (4). Zuk CIPR 1959:23 (1).

Alphitophagus Steph.

Pronotum wider than long, the apex truncate medially, the sides arcuate toward apex and straighter toward base, the apex narrower than the base, the apical angles broadly rounded and obtuse, the basal angles obtuse but not rounded, the disc strongly convex, the apical angles strongly deflexed, the surface rather finely and densely punctate; elytra with base equal in width to base of pronotum, the humeri obtuse, the sides arcuate, widest before the middle, the disc with the interstrial spaces flat to feebly convex and

finely but rather densely set with setigerous punctures and with transverse light and dark bands, the anterior light band more or less triangular; ventral surface more coarsely punctate; male with head complexly tuberculate; the epistoma with a strong transversely elongate tubercle at each side immediately behind each of which is a smaller and more acute tubercle, the region behind the frontal suture and between the eyes widely impressed, the impressed area more coarsely punctate and with 2 centrally placed parallel ridges perpendicular to the suture; 2.5-2.8 mm.; Wn., n Id., Or.; common; possibly introduced (Pl. XVII, fig. 2)
BIFASCIATUS Say

Feeds on moist tree fungi, but also occurs in damp cellars, store houses, mills, and houses, and feeds on refuse of cereals and cereal products which are fermenting or decaying (Essig). Essig 1926:432. Chao 1954:261 (2).

Platydema Cast. et Brul.

The members of this genus are found in fungi.

1 Pronotum narrowly explanate laterally; piceous black, subshining, rather finely and moderately densely punctate; head with frontal suture moderately impressed, feebly to moderately impressed from the frontal suture to the vertex; pronotum wider than long, the apex deeply emarginate, more or less transverse medially, the base rather narrowly and strongly lobed and straight toward the sides, the sides arcuate and strongly converging from the base to the apex, the apical angles obtuse and blunt, the basal angles subobtuse and not rounded, the disc moderately convex; elytra with sides evenly arcuate from the base to the apex, widest at about the middle, the humeri distinct and subrectangular, the disc with the interstrial spaces feebly convex to flat, the striae coarsely and closely punctate; prosternal process horizontal, produced; tibiae and tarsi clothed with yellow setae; ventral surface more coarsely punctate than the dorsal surface; fifth abdominal sternite rather strongly impressed basally, the fourth slightly; 4.5-5.75 mm.; B.C., Wn., Id., Or.; common OREGONENSE LeC.
LeConte 1857:20, 51 (2). Horn 1870e:383 (4). Holland 1888:92 (1). Wickham 1890a:83-88 (3). Stace Smith 1929:72 (1). Leech 1930:12 (1); 1931:12 (1); 1947a: 106 (1). Clark 1956:40 (1).

1' Pronotum with sides rather widely explanate, somewhat more strongly so medially, feebly to moderately impressed on the declivous sides of the pronotum just behind the middle, the punctures frequently distinctly larger in the lateral gutter; body more elongate than in *oregonense* LeC. and the impressions on the head feebler, otherwise quite similar; 5.5-6.5 mm.; se B.C., e Wn., e Or.; not common (Pl. XXVI, fig. 8)
AMERICANUM Cast. et Brul.

Leech 1947a:106 (1).

Tribe Phalerini

Key to Genera

1 Protibiae not or scarcely dilated at apex; body moderately convex; alate
SCAPHIDEMA Redt.

1' Protibiae broadly expanded at apex; body strongly convex, subglobose; apterous
PHALERIA Latr.

Scaphidema Redt.

1 Color piceous, subaeneous, the appendages pale; relatively coarsely and sparsely punctate; shining; pronotum with apex emarginate, more or less transverse medially, the sides strongly margined, converging from the base, straight and then rather suddenly arcuate to the obtuse apical angles, the basal angles obtuse, the base weakly and evenly arcuate, the disc rather strongly convex, without basal plicae; elytra widest behind middle, the base feebly emarginate, the sides nearly straight and diverging to the middle and then arcuate to the apex, the disc strongly convex, the strial punctures coarse and close with occasional distant punctures, the striae somewhat impressed, the interstrial spaces slightly convex and sparsely not finely punctate; 3.1-3.4 mm.; se B.C.; rare AENEOLUM LeC.

1' Color varying from castaneous to individuals with piceous markings on the elytra; shining; oval; head with epistoma truncate to feebly arcuate; pronotum nearly twice as wide as long, the apex weakly emarginate, the base weakly arcuate, the sides straight and slightly converging from the base to the apical third and thence more strongly converging, the apical angles obtuse and narrowly rounded, the basal angles subrectangular and blunt, the disc moderately convex with basal plicae at the lateral fourth, the plicae extending from the basal margin to the basal third; elytra with base truncate, the sides evenly arcuate, widest before the middle, the humeri distinct and obtuse, the interstrial punctures finer than those on the pronotum and relatively dense, the interstrial spaces feebly convex to flat, the striae finely impressed, the color pattern irregular in extent consisting of an oblique zigzag line running from the humerus to near the middle and a series of spots behind the middle and one near the apex; ventral surface piceous, more coarsely punctate; prosternal process horizontal, produced; 2.66-4 mm.; sw B.C., Wn., Or.; common; in sandy areas along river banks (Pl. XXVI, fig. 9) PICTUM Horn

Horn 1874:36 (4). Wickham 1893:227 (1). Clark 1956:40 (1). Hatch and Kincaid 1958:17 (2).

Phaleria Latr.
(Halophalerus Cr.)

Small, subglobose, shining, testaceous, usually with piceous markings, elytra striate; head with frontal suture rather strongly impressed, the epistoma broadly arcuate, the surface coarsely and rather densely punctate, the front labrum and postocular area piceous, the eyes dark large round strongly convex and feebly emarginate in front; pronotum transverse, the apex emarginate, the base truncatoarcuate, the sides arcuate, more strongly converging apically, the basal angles obtuse, the apical angles obtuse and strongly rounded, the surface moderately convex becoming moderately widely explanate laterally, the punctures moderately dense and rather coarse, the color testaceous with darker margins and a darker mottled pattern on the disc; elytra with sides evenly arcuate, widest at about the apical third, sparsely ciliate, the striae rather closely but not so coarsely punctate, scarcely impressed, the interstrial spaces wide, feebly convex to flat and rather densely but minutely granulate; elytral markings variable in size, consisting of a zigzag oblique line at apical third and a spot at basal third, the suture dark, especially near the apex; 2.8-3.9 mm.;

sw B. C., w Wn., w Or.; very common; along the ocean beaches (Pl. XXVII, fig. 1) GLOBOSA LeC.
Keen 1895:219 (1). Wickham 1903a:51 (4) (Phalergia). Hatch and Kincaid 1958:17 (2).

Tribe Leichenini

Key to Genera

1 Head with disc vertically declivous along a straight line transversely at about the level of the posterior margins of the eyes, or, if eyes are absent (Alaudes), the declivity in a corresponding position; body squamose
2 Eyes absent; body with deep contiguous median depressions at the bases of the pronotum and elytra ALAUDES Horn
2' Eyes present; body without deep contiguous depressions at the bases of the pronotum and elytra; protibial spurs stout, the inner one as long as the tarsus CNEMEPLATIA Costa
1' Head not vertically declivous behind the eyes; body ciliate along the edges but not squamose; protibial spurs both much shorter than the tarsus ANEMIA Cast.

Alaudes Horn

Head and pronotum with yellowish closely placed decumbent squamules, the elytra with more or less erect capitate clavate scales of uniform length; head with front rather deeply emarginate; pronotum with apex emarginate, close-fitting with the basal declivity of the head, the apical angles produced, the base deeply impressed in the middle and obliquely truncate toward the obtusely rounded basal angles, the sides arcuate anteriorly and sinuate posteriorly; elytra with base deeply impressed at the middle, much more feebly impressed between the humeral angles and the medial impression, the sides slightly arcuate, the disc striatopunctate, the striae not impressed and with deep coarse close punctures; protibiae broad, the apices strongly everted; l. 8 mm.; s Or.; rare; reported from an ant nest (Wickham) and from a mammal burrow (Pl. XXVII, fig. 2) SINGULARIS Horn
Wickham 1890a:83 (4). Fall, Pan-P. Ent. 4, 1928:145 (4). Hatch 1958:207 (4).

Cnemeplatia Costa

Small, elongate, the sides subparallel; the body almost completely covered with short gray and brown scales, the sides sparsely ciliate; head with epistoma strongly emarginate, the edge sharply reflexed from eye to eye; pronotum wider than long, subequal in width to the elytra, the apex weakly and broadly emarginate, the base broadly and strongly lobed in the middle, the sides straight and diverging from base to apex, the apical angles strongly rounded, the basal angles subrectangular, the disc evenly and moderately convex with a medial impression at base and feebly impressed on each side of the medial lobe; elytra with base slightly wider than the base of the elytra and emarginate, the sides subparallel to beyond the middle, the disc moderately convex, strongly striatopunctate; epipleura entire; prosternal process horizontal, produced; mesosternum not concave opposite

the prosternal process; metasternum long; intercoxal process of the first abdominal sternite acute; protibiae triangular, with a short narrow bare spot at the base on the inner side, the apex with the outer angle acute, the spurs thicker and longer than those of the outer tibiae and extending to the apex of the tarsi, the inner spur longer; alate; 2.75-3.25 mm.; e Wn., Or.; not common but appears to be increasing as a pest of stored food products (Pl. XXVII, fig. 3) SERICEA Horn
CEIR 1959:939 (2); 1960:109 (2).

Anemia Cast.

Small, strongly ciliate, rufopiceous, shining; head nearly as wide as base of elytra, the front rather deeply and broadly emarginate; eyes nearly divided, the upper portion much smaller than the lower portion; pronotum about twice as wide as long, the apex weakly emarginate, the base feebly and broadly lobed, the sides rather strongly arcuate, the apical angles broadly rounded, the basal angles more or less blunt and obtuse, the surface strongly and evenly convex, coarsely and rather densely punctate; elytra with base about as wide as base of pronotum, the sides straight to about the apical third and slightly diverging and then arcuate to apex, the humeri distinct, subrectangular and rounded, the surface wrinkled and coarsely but not closely punctate becoming muricate and setigerous laterally, with vague longitudinal lines; prosternal process not produced, convex; intercoxal process of first abdominal sternite very acute; ventral surface sparsely granulate, with long hairs; all tibiae more or less produced apically, the protibiae strongly so and bearing a medial external spur subsimilar to the apical spur; antennae short, apparently 10-segmented, the eleventh segment short and fused to the tenth, segments 7 to 10 expanded into a club; 3.28 mm.; e Wn.; rare (Pl. XXVII, fig. 4) CALIFORNICA Horn

Tribe Opatrini

Gonocephalum Chev.

Piceous, more or less shining, densely but not coarsely granulate; head strongly impressed along frontal suture, the epistomal lobes somewhat impressed, the margin of the eye deeply grooved, the surface densely punctate before the eyes and granulate between them; pronotum wider than long, the apex truncate between the produced apical angles, the base bisinuate and strongly lobed, the sides rather strongly arcuate but less so toward the apical angles, the apical angles subacute and blunt, the basal angles obtuse, the disc moderately convex and densely granulate, the sides sparsely and weakly ciliate, the granules in part bearing short curved more or less erect yellowish squamules; scutellum rather broadly rounded; elytra with base sinuate, the sides not strongly arcuate and straighter toward the base, the humeri obtuse, the disc rather strongly convex; each elytron with 2 impressed striae toward the suture and vague striae toward the sides, the surface with 2 series of granules: one of minute and dense granules, the other of stronger and sparser ones, each granule with a distinct more or less erect curved squamule; epipleura rather suddenly terminating before the apex of the elytra; mentum with apex of middle lobe acute; prosternal process moderately arcuate; intercoxal process of first abdominal sternite

broadly rounded; protibiae with apices oblique, the outer apical angle obtusely produced; antennae with third segment over 3 times as long as second; 7.6 mm.; sw B.C. (Vancouver Is.); rare; said to be introduced
BILINEATUM Walk.

This description is based on a rather battered specimen densely coated with earthy material, which may be a natural condition. Kazab, Ent. Arb. Mus. G. Frey 3, 1952:681. *latifrons* LeC. (Blapstinus) 1874:70 (1). Casey 1890a:393 (1). Leng 1920:232 (1).

Tribe Bolitophagini

Bolitophagus Ill.
(Eleates Csy.)

Head with sides of front more or less explanate to feebly reflexed, notched at ends of frontal suture, the anterior canthus strongly rounded, the disc strongly and densely punctate, the punctures finer in front of the frontal suture, not rugose or tuberculate, with a supraorbital tubercle; pronotum slightly less than twice as wide as long, the base wider than the apex, the sides moderately arcuate and somewhat more strongly convergent apically than basally, the apical angles produced, narrowly rounded, and subrectangular to obtuse, the basal angles obtuse and not rounded, the sides feebly crenulate behind the middle and broadly explanate and feebly reflexed, the surface moderately convex and strongly densely punctate; scutellum densely punctate, the apex rounded, the sides straight and parallel; elytra widest slightly behind middle, the sides straight, becoming arcuate behind the widest portion and reflexed laterally, the strial punctures coarse, the interstrial spaces costate, the costae cariniform, unequal in length and becoming interrupted toward the apex, the ninth interrupted throughout its length to almost complete obsolescence, with fine somewhat obscure punctures on both sides near the crests; epipleura wide, narrowing rapidly at apex, rugose; prosternal process reflexed; abdomen strongly densely punctate; body more or less opaque, the color piceous, the legs rufous; intercoxal process of fifth abdominal sternite rounded; 5-6 mm.; B.C., Wn., Or.; not common; found in fungus (Pl. XXVII, fig. 5) EXPLANATUS Csy.

Casey 1890a:486 (4). Criddle 1922:64 (1). Leech 1930:12 (1); 1931:12 (1). Clark 1956:40 (1).

Tribe Upini

The adults are found under bark of fallen trees and under logs, sometimes (Coelocnemis) only under logs and similar cover.

Key to Genera

1 Prothorax with sides scarcely angulate at junction of pronotum and proepisternum but more or less rounded; mentum with middle and lateral lobes more or less continuous, the lateral lobes in large part exposed, the apex of the middle lobe produced and parabolically rounded; alate
2 Elytra strongly rugosely punctate; mentum with middle lobe strongly impressed along sides UPIS F.
2' Elytra finely sculptured, striatopunctate; mentum with middle lobe not at all

impressed, continuous with the fully exposed lateral lobes MERINUS LeC.

1' Prothorax with sides obtusely to acutely but always distinctly angulate at the junction of the pronotum and episternum; mentum with middle lobe not continuous with the lateral lobes, the lateral lobes usually concealed, the middle lobe usually discoidal

3 Elytra tuberculate; mentum with middle lobe more or less pentagonal, the apex narrowly rounded, the sides impressed; apterous CIBDELIS Mann.

3' Elytra not tuberculate

4 Mentum with middle lobe more or less rectangular, the apex truncate, the disc strongly impressed on each side of the mid-line; protibiae modified in the male; apterous CENTRONOPUS Sol.

4' Mentum with middle lobe discoidal; protibiae similar in the sexes

5 Antennae with segments 8 to 10 symmetrical, their sides more or less parallel, tapering to the base; body rather flattened, elongate; eye without the dorsomedian border margined by a fold; prosternal process weakly convex; alate

6 Pronotum scarcely wider at the middle than at the base, the sides weakly arcuate, the disc moderately strongly convex especially toward the sides ALOBATES Mots.

6' Pronotum transverse, narrowing strongly toward the base, the sides strongly arcuate and crenulate, the disc weakly convex IPHTHIMUS Tru.

5' Antennae with segments 8 to 10 asymmetrical, the forward edge straight and oblique, the backward edge more or less arcuate; elytra rather convex; eye usually with the dorsomedial border margined by a prominent fold; apterous COELOCNEMIS Mann.

Upis F.

Black; head with the epistoma somewhat produced, the sides of the front emarginate, the disc rather densely and moderately coarsely punctate, the integument alutaceous; pronotum with apex truncate, the base feebly lobed, the apical angles very broadly rounded and depressed, the basal angles obtuse, the disc rather densely and moderately coarsely punctate, the punctures irregular, the integument alutaceous; scutellum with apex narrowly rounded, punctate; elytra with base feebly emarginate, the sides straight and diverging to about the apical third, the humeri rounded, the rugose elytral punctures very coarse, without trace of order except at the suture and the epipleura, the interpunctural area very finely and rather sparsely punctulate, the integument shining, the epipleura gradually disappearing before the apex of the elytra; 13.8-18.6 mm.; nw and e B. C., nw and e Wn., n Id., e Or.; rare (Pl. XXVII, fig. 6) CERAMBOIDES L.

LeConte 1877:109. Wickham 1893:227 (1). Dennys 1927:24 (1). Stace Smith 1929:72 (1). Clark 1956:40 (1).

Merinus LeC.

Black, subshining, alutaceous, finely and rather sparsely punctate; head with epistoma somewhat produced, the sides emarginate; pronotum with apex weakly emarginate, the base irregularly arcuate, the apex and base strongly

margined, the sides rather finely margined; elytra with base feebly emarginate, the sides rather straight and diverging to about the apical third, the humeri rounded, the strial punctures very fine and closely spaced and not impressed; epipleura virtually entire; ventral surface rather more coarsely punctured; male with metatibiae bearing a strong slender spine at apical fourth on anterior edge, the protibiae with the posterior edge bearing a short subobtuse spine at about the basal third, the metafemora with a tubercle at about the middle on the ventral surface; 21 mm.; "Wn." (Pl. XXIV, fig. 6) LAEVIS Ol.

A single specimen in the UW collection labeled "Wash.," possibly in error. The male characters in the description are based on specimens from the eastern United States.

Cibdelis Mann.

Black, subshining; head with epistoma truncate, the sides feebly arcuate and somewhat reflexed, the disc very densely and somewhat coarsely punctate; pronotum wider than long, widest at about the middle, the apex truncate, the base feebly lobed, the sides moderately arcuate becoming moderately sinuate before the basal angles, the apical angles obtuse rounded depressed, the basal angles subobtuse, the disc rather strongly convex and densely punctate in 2 series, one of dense shallow rather indistinct punctures, the other of sparser more distinct but not larger punctures which are usually on top of vague elevations; elytra with base truncate, the sides evenly and not strongly arcuate, the humeri angulate and weakly produced, the disc striate, the strial punctures somewhat impressed laterally, the interstrial spaces finely and relatively densely punctate, each space bearing a row of tubercles, the tubercles shining and the summit of each with a puncture, each elytron with a medial ridge at the apex; epipleura vaguely complete; prosternal process strongly arcuate; ventral surface rather densely punctate; 13.6-14.2 mm.; "Wn." (Pl. XXVII, fig. 7) BLASCHKEI Mann.

This record needs confirmation. It is based on 2 specimens in the UW collection labeled "Wash."

Centronopus Sol.

Black, shining; head with epistoma truncate to feebly sinuate, the disc closely punctate; pronotum moderately convex, less densely punctate than the head, the apex emarginate, the apical angles broadly rounded, the sides arcuate to the basal tenth becoming sinuate and then subparallel, the basal angles somewhat produced and acute to subrectangular, the base arcuatotruncate between the produced basal angles; scutellum punctate, triangular, bluntly pointed at apex; elytra with sides feebly arcuate, more strongly so at apical third, widest at about the middle, the striae interrupted, the interruptions rather uniform giving the appearance of a series of short lines, each interruption with a single indistinct puncture, the interstrial spaces flat and obsolescently to distinctly and densely punctate, the punctures always finer than the pronotal punctures; epipleura finely sparsely punctate; male with protibiae sinuate and denticulate on inner surface, the metatibiae with a patch of yellow pubescence on the inner surface, the meso- and metafemora with dense patches of yellow pubescence basally on the inner surface; female without patches of yellow pubescence, the protibiae adenticulate, the sides

more or less parallel; 16-19 mm.; e Wn., Or.; common (Pl. XXVII, fig. 8) PARALLELUS LeC.

Blaisdell 1933:217 (4).

Alobates Mots.
(Nyctobates auct.)

Black, subopaque; head with epistoma feebly emarginate, the sides feebly sinuate; pronotum with apex truncate, the sides arcuate becoming briefly sinuate basally, the apical angles rounded and obtuse, the basal angles subacute to subrectangular, sharply pointed; elytra widest at about apical third, the humeri rounded, the striae unimpressed and rather coarsely punctate, the interstrial spaces flat and feebly to distinctly punctate; mentum with apex more or less bilobed, the disc without hairs and punctate; 18-20 mm.; sw Or.; rare (Pl. XXVII, fig. 9) PENNSYLVANICUS DeG.

Iphthimus Tru.

1 Head punctatorugose; pronotum with disc rugosopunctate, with variably impunctate areas consisting largely of a medial longitudinal strip and an irregular patch on both sides at about the apical fourth, with impressions at the lateral fourth and halfway between the base and apex; elytra with disc strongly sculptured, the strial punctures deep, the interstrial spaces between striae 2 and 4 and between 4 and 5 more strongly convex than the others, the surface with impressed areas near the humeral angles, the humeri more or less impressed anteriroly to receive the basal angles of the pronotum, the sides straight and more or less diverging to about the apical third; 19 mm.; w B. C.; rare OPACUS LeC. subsp. SALEBROSUS Csy.
Casey 1924:327 (1). *opacus*, Hippisley (nec LeC.) 1922:64 (1). Clark 1956: 40 (1).

1' Head rather coarsely and densely punctate; pronotum with disc rather coarsely and densely punctate becoming more or less confluently so laterally, never so strongly rugose as in *salebrosus* Csy. and without the marked impunctate areas and impressions of that form; elytra with disc less strongly sculptured, the strial punctures less marked, the interstrial spaces more or less flat although transversely and finely rugose and moderately densely coarsely punctate, the surface not impressed toward the humeral angles or on the anterior face of the humeral angles, the sides straight and divergent to about the apical third; 16.5-22.5 mm.; B. C., Wn., Id., Or.; very common (Pl. XIII, fig. 7) SERRATUS Mann. s. str.
LeConte 1857:20, 51 (4) (Nyctibates); 1869:371 (1); 1878:472 (3). Horn 1870e: 334 (14); 1894:346 (24). Brodie 1888:215 (1). Holland 1888:92 (1). Evans 1906: 100 (1). Bush 1914:60 (1). Stace Smith 1929:72 (1). Leech 1930:12 (1); 1931:12 (1). Clark 1956:40 (1). Hatch and Kincaid 1958:17 (2). *servilis*, *servator*, and *subligata* Walk. 1866:326 (1). LeConte 1870:401. Blair 1921:282 (1).

Coelocnemis Mann.

Large, black, more or less shining; elytra striatopunctate, the striae sometimes obscure.

1 Dorsal punctation moderately coarse to coarse
2 Pronotum subquadrate, the sides moderately arcuate usually becoming

narrowly sinuate at the base, the apex not weakly emarginate, the base feebly arcuate, the disc moderately convex and more strongly declivous laterally, the punctures moderately large and dense; elytra elongate, the sides more or less evenly arcuate, the striae not at all impressed, the strial punctures rather distinct, the interstrial punctures smaller and moderately dense; 21-23.5 mm.; s Id., se Or.; rare PUNCTATA LeC.
LeConte 1878:472 (3).

2' Pronotum more transverse, the sides frequently subangulate, distinctly constricted at the base where the sides become subparallel; elytra tending to be inflated behind the middle

3 Length 19-29 mm.; pronotum distinctly angulate at sides which are straight to arcuate in front of the medial angle and more or less abruptly sinuate behind the angle varying to broadly strongly rounded, the apex weakly emarginate, the base truncate, the disc not very convex, the punctures moderately coarse, not at all dense; elytra elongate, more or less inflated behind the middle, the striae not at all impressed but with the punctures quite coarse and distinct as a rule, the interstrial punctures smaller and moderately dense, the surface sometimes moderately rugose; B.C., Wn., Id., Or.; very common (Pl. XIII, fig. 6) CALIFORNICUS Mann.
Walker 1866:311. Casey 1924:315, 320 (4). *dilaticollis* auct. LeConte 1869:371; 1878:472 (3). Horn 1870e:336 (4). Evans 1906:100 (1). Fletcher 1906:102 (1); 1907:101 (1). Fletcher and Gibson 1908:127 (1); 1909:109 (1). Stace Smith 1929:72 (1). *columbiana* Csy. 1924:314 (1). Leech 1930:12 (1); 1931:12 (1); 1947a:106 (1). *idahoensis* Csy. 1924:317-318 (3).

3' Length 14.5-19 mm.; more densely and rugosely punctate; pronotum not distinctly angulate at sides, widest at about middle, the sides arcuate before the middle and more or less straight behind the middle to the basal constriction, the apex and base subtruncate, the disc rather strongly declivous laterally and rather coarsely and densely punctate; elytra more abbreviated, the strial punctures frequently obscured, the interstrial punctures as coarse as the strial punctures and dense and rather strongly rugose; Or.; not common RUGOSA Linnell

1' Dorsal punctation very fine; pronotum with the apex truncate, the base very feebly arcuate, the sides strongly arcuate becoming broadly and strongly sinuate toward the base and then straight and parallel or subangulate at the middle and then nearly straight becoming briefly sinuate at the base, the disc moderately convex and not sparsely punctate; elytra widest at about the middle, the sides moderately arcuate, the apex somewhat attenuate, the strial punctures distinct but fine; 22.5-25.5 mm.; 3 specimens labeled Pullman, Wash., a record that needs confirmation OBESA LeC.

Tribe Helopini

Helops F.

1 Male with protarsi strongly dilated; male aedeagophore with apicale densely spinulate, with a median dorsal ridge, the apex blunt; antennae with apical segment asymmetrical, oblique; elytra with first and ninth striae coalescing at apex; pronotum frequently explanate or reflexed at sides

2 Protibiae with external apical angle slightly but noticeably produced; apex of prosternal process mucronate or lobed; pronotum not strongly explanate or

reflexed at sides which are usually more or less sinuate toward basal angles

3 Subopaque, black; pronotum with sides not at all explanate; dorsal surface densely punctate, the elytra rugosely so with the striae more or less interrupted; propleura coarsely and densely punctate

4 Male aedeagophore with apicale with sides arcuate to straight to the apex, the median ridge feeble, the disc not at all impressed on each side of it; wings abbreviated, less than 3/4 as long as the elytra; pronotum rather strongly and evenly convex, densely punctate, very densely punctate laterally, the apex and base truncate; elytra inflated, the sides evenly arcuate; 9-13.5 mm.; s Id., Or.; common OPACUS LeC.

Horn 1872:389 (3).

4' Male aedeagophore with apicale with sides deeply sinuate before the rounded apex, the median ridge strong, the disc deeply impressed on each side of it; wings at least 3/4 as long as elytra; pronotum not strongly convex, rather more strongly declivous toward sides, densely punctate but less so than in *opacus* LeC., the apex and base subtruncate; elytra more elongate, less convex, the sides less evenly arcuate, the disc less densely punctate; 12-16 mm.; sw Or.; rare SIMULATOR Blais.

3' Shining, piceous; pronotum rather sparsely but coarsely punctate medially, the apex truncate, the base feebly lobed to truncate; elytra not rugose, very finely punctate, the striae entire; pronotum with disc subexplanate laterally to rather evenly convex; male 9.5-15.8 mm.; female 13-19 mm.; rare in w Wn., common in w Or. EDWARDSII Horn

Horn 1870e:395 (4).

2' Protibiae with external apical angle not produced, more or less truncate; prosternal process with apex simply and strongly declivous; integument shining

5 Elytra with sides parallel or impressed at basal third, evenly arcuate and inflated to apex, the disc with the interstrial spaces finely punctate and feebly convex, the striae not deep and obsoletely punctate; elytra finely margined along suture except at basal fourth; pronotum wider than long, moderately convex becoming subexplanate at sides, with a weak mediolateral impression, the apex truncate, the base broadly but weakly lobed, the sides not strongly arcuate but frequently becoming straight and subparallel behind the middle, the apical angles rounded, the basal angles subrectangular to obtuse, the surface rather coarsely and moderately densely punctate; propleura longitudinally rugulose laterally, rugosopunctate toward the coxae; alate; integument polished, violaceous; 5-9.5 mm.; w Wn., Or.; common LAETUS LeC.

LeConte 1857:19, 50 (2); 1869:371 (1). Horn 1870e:395 (4). Larson and Hinman 1932:44 (4).

5' Elytra more or less inflated, the sides evenly arcuate and widest behind the middle, the interstrial spaces feebly convex and very finely and sparsely punctate, the striae finely impressed, the suture margined except at basal fourth; pronotum wider than long, the disc moderately convex becoming widely and rather strongly reflexed at the sides, moderately coarsely not densely punctate, the apex truncate, the base feebly and broadly lobed, the sides moderately strongly and evenly arcuate, the apical angles rounded, the basal angles obtuse; propleura longitudinally rugulose laterally, rugosopunctate toward coxae; alate; integument piceous to subviolaceous; 9-12 mm.; sw B.C., Wn., Or.; common (Pl. XXVIII, fig. 1) PERNITENS LeC.

LeConte 1861:353 (4). Horn 1870e:395 (4). Holland 1888:92 (1). Wickham

1890a:83-88 (4). Hardy 1927a:39 (1). Larson and Hinman 1932:44 (4). Foster 1942:22 (1).

1' Male with protarsi weakly dilated; male aedeagophore with apicale very sparsely clothed with short inconspicuous setae, with a median dorsal groove, the apex more or less attenuate; antennae with apical segment elongate, more or less symmetrical; elytra with the first stria not coalescing with the ninth although occasionally approximating it; pronotum convex to lateral margin, the sides evenly arcuate, the disc moderately coarsely and densely punctate; elytra with striae finely impressed, the interstrial spaces very finely and sparsely punctate; integument shining

6 Alate; piceous; elytra margined along suture except for about the basal fourth; body more or less depressed, elongate; elytra with sides straight and parallel at basal third and then evenly arcuate and inflated to apex; 5.5-8 mm.; s B.C., Wn., n Id., Or.; common CALIFORNICUS Mann.
LeConte 1857:19 (4); 1878:472 (3). Evans 1906:100 (1). Stace Smith 1929:72 (1).

6' Wings abbreviated; color piceous to dark rufous; elytra margined along suture at apical third; body rather convex, the elytra subglobose with the sides evenly and moderately strongly arcuate; 6-8.5 mm.; se B.C., e Wn., Id., ne Or.; common CONVEXULUS LeC.
LeConte 1878:472 (3). *regulus* Blais. 1921:227 (2). Brittain 1914:19 (1) (nom. nud.). Gibson 1917:151 (1) (nom. nud.). Leech, Can. Ent. 79, 1947:141 (1). *rugulosus*, Gibson (nec LeC.) 1914:117 (1) (*regulosus*). *inclusus* Walk. 1866: 311, 330. LeConte 1870:421 (= *laetus* or *pernitens* LeC.). Blair 1921:283.
Leng 1920:236 records *punctipennis* LeC. from "Wn."

Tribe Heterotarsini

Paratenetus Spin.

Small, castaneous, shining, the appendages pale; head with epistoma small, the apex arcuate, the sides notched at the ends of the frontal suture, the disc finely impressed along the frontal suture, coarsely and rather densely punctate; pronotum slightly wider than long, widest at about the apical third, rather strongly convex, the apex truncate, the base weakly arcuate between the acute more or less produced minute basal angles, the sides moderately arcuate and finely denticulate with approximately 5 teeth, the disc coarsely moderately densely but not closely punctate; scutellum rounded from the base; elytra widest at about the middle, the base truncate, the sides moderately arcuate, the humeri subobtuse and rounded, the disc convex and obscurely striatopunctate, the punctures very coarse and not as close as those of the pronotum; epipleura entire; antennae with terminal 3 segments darker than the preceding segments; prosternal process strongly convex; the hairs long, cinereous; 3.1 mm.; a single specimen from North Pine, ne B.C. FUSCUS LeC.

Tribe Opatrinini

This tribe is represented in the Pacific Northwest by two adventitious tropical species.

Key to Genera

1 Epipleura entire, more strongly narrowed beyond the apex of the fourth abdominal sternite, deeply impressed opposite the third and fourth sternites for reception of the strongly inflexed edges of these sternites; mesosternum weakly concave opposite the weakly convex prosternal process; mentum with middle lobe reduced to a strong medial ridge, the apex wider and bifurcate; trochantin of mesocoxa visible; alate OPATRINUS Latr.

1' Epipleura incomplete; mentum with middle lobe large, flattened, the apex truncate to feebly emarginate and much wider than the base, the sides feebly arcuate; mesosternum deeply excavate opposite the weakly convex more or less produced prosternal process; trochantin of mesocoxa not visible; alate ALEGORIA Cast.

Opatrinus Latr.

Black, subopaque; head with epistoma emarginate, the sides of the anterior canthi straight and slightly converging anteriorly, the sides of the head straight or feebly sinuate, the disc rather finely and densely punctate; pronotum with apex truncate medially, then sinuate to the apical angles, not margined medially, the base broadly and rather strongly bisinuate and medially feeble truncate, not margined at the truncation, the sides weakly arcuate becoming straight basally and more strongly convergent toward the apex than toward the base and moderately strongly margined, the apical angles produced subacute and blunt, the basal angles acute and not produced beyond the basal lobe, the disc moderately convex and less coarsely punctate than the head, the punctures dense laterally but less so medially; scutellum with apex rounded, the surface punctate; elytra with base sinuate and slightly wider than the base of the pronotum, the humeri obtuse and rounded, the sides widest at about the middle, straight to about the middle and then arcuate to the apex, the striae somewhat impressed apically and toward the suture, the strial punctures large, the interstrial spaces feebly convex to flat and minutely irregularly and not densely punctate; prosternal process horizontal, not strongly produced, the apex broadly arcuate; ventral surfaces with the punctures distinctly setose; 7. 5-8 mm. ; 2 specimens taken in Seattle, w Wn., apparently on a ship from Ecuador; probably not established GIBBICOLLIS Muls.

The specific identity of this species is somewhat uncertain.

Alegoria Cast.

Black, polished; head with epistoma deeply emarginate, the sides broadly and weakly emarginate, the frontal suture finely impressed, the punctures coarsest and deepest at the impression; pronotum with apex emarginate, the base weakly trisinuate, the sides rather strongly and evenly arcuate becoming weakly sinuate before the basal angles, the apical angles broadly and strongly rounded, the basal angles obtuse and blunt, the disc moderately convex with a transverse basal impression on each side at the lateral third, the punctures fine and rather sparse medially becoming distinctly coarser toward the angles; elytra with the base truncate, impressed opposite the basal angles of the pronotum, the sides widest near the middle and weakly

arcuate, the striae impressed laterally, the ninth stria very deeply impressed, the interstrial spaces feebly convex to flat but more strongly convex laterally and with very minute sparse punctures; protibiae with outer edge bidentate, the basal tooth obtuse, and short, the apical tooth acute and longer; profemora strongly clavate; 9-9.5 mm.; 6 specimens taken in Seattle, w Wn., on a ship from Ecuador and in bananas from Panama (Pl. XXVIII, fig. 2) DILATATA Cast.

Tribe Blapstini

Adults occur under rocks and logs, frequently in rather dry situations.

Key to Genera

1 Head with sides of front emarginate at the ends of the frontal suture; pronotum with base arcuatotruncate, vaguely lobed; antennae compact; dorsal surface glabrous; protarsi not dilated in male; apterous CONIBIUS LeC.

1' Head with sides of front not or very feebly emarginate at ends of frontal suture; pronotum with base bisinuate or strongly lobed; antennae more elongate; dorsal surface with distinct hairs or scales; protarsi slightly to strongly dilated in male; alate, although the wings may be abbreviated BLAPSTINUS Latr.

Conibius LeC.

Small; bicolored; head, pronotum, appendages, epipleura and thoracic sterna rufous; elytra black; abdominal sternites nigrorufous; subshining; head with eyes small, the disc moderately finely and not closely punctate; pronotum wider than long, widest at about apical third, the apex emarginatotruncate and about equal in width to the base, the sides moderately evenly arcuate, the apical angles subrectangular, the basal angles obtuse, the disc moderately convex, the punctation similar to that of the head; elytra with sides subparallel, the humeri subobtuse, the disc weakly convex becoming strongly declivous at the sides, striatopunctate, the striae feebly impressed, the strial punctures not close and moderately fine, the interstrial spaces flat toward the suture becoming weakly convex laterally and finely not closely punctate; prosternal process strongly convex; 3.75 mm.; sw Or.; rare SERIATUS LeC.

Blapstinus Latr.

1 Color castaneous; conspicuously clothed with long coarse pale flavous hairs; pronotum with sides straight to feebly arcuate toward base, the disc relatively weakly convex and densely punctate, not much more sparsely so at the middle and usually with the punctures longitudinally coalescent; elytra with interstrial spaces ąlutaceous, the punctures fine; male with protarsi moderately dilated; wings long; 4.9-5.25 mm.; e Wn., se Id., e Or.; rare HESPERIUS Csy.

Casey 1890a:454 (4).

Casey lists BREVICOLLIS LeC. from "Wn."; it differs from *hesperius*

Csy. by being slightly darker with the dorsal vestiture fine, piceous, and much less conspicuous.

1' Color black or piceous above, the legs frequently paler; dorsal vestiture usually darker, less conspicuous and finer; male with protarsi strongly dilated

2 Wings very short, about 1/4 the length of the elytra; pronotum with sides weakly arcuate, almost straight toward base, the disc closely punctate at the middle; elytra with interstrial spaces alutaceous and finely punctate, the hairs cinereous and rather coarse and obvious; 4.8-4.9 mm.; se Id., e Or.; rare BARRI Bod.

Boddy 1957:198 (3).

2' Wings more than 1/4 the length of the elytra; dorsal hairs darker, fulvocinereous, usually less conspicuous

3 Wings about 1/2 the length of the elytra; integument polished; pronotum with sides weakly arcuate becoming broadly and feebly sinuate, sometimes almost straight, toward the base; pronotum moderately strongly convex, rather densely punctate, the punctures rarely coalescent at the mid-line; elytra with the interstrial spaces rather coarsely punctate; 4.2-5.5 mm.; w Wn., w Or.; common PULVERULENTUS Mann.

LeConte 1857:20 (4).

3' Wings about 3/4 the length of the elytra

4 Pronotum with sides arcuate from apex to base, the disc densely punctate at middle, the punctures usually longitudinally coalescent toward the mid-line; legs piceous; dorsal surface usually somewhat more shining than in *oregonensis* Csy.; 3.5-5.3 mm.; s B.C., Wn., Id., Or.; common (Pl. XXVIII, fig. 3) GREGALIS Csy.

Specimens from sw B.C. and w Wn. tend to be smaller, more shining, the pronotal punctation less dense, the dorsal hairs scantier and less conspicuous. Casey 1890a:442 (2). Brown 1934:150 (1). Hanson and Webster 1938: 38 (2). Guppy 1948:22 (1) (Blapstimus). CEIR 1958:455 (3).

4' Pronotum with sides broadly and weakly sinuate toward base, occasionally almost straight, the disc not very densely and never coalescently punctate at the middle; legs dark rufous; dorsal surface generally duller than in *gregalis* Csy.; 5.1-6.3 mm.; sw B.C., Wn., Id., Or.; common OREGONENSIS Csy.

Casey 1890a:435 (4). Hatch 1938a:186 (2).

LeConte 1878:472 listed *pratensis* LeC. from Atalanta, sw Id.; it is possibly the same as *oregonensis* Csy.

Tribe Corticeini
(Hypophloeini)

Corticeus Cr.
(Hypophloeus F.)

The species of this genus are subcortical, frequently being associated with Scolytidae according to Peyerimhoff (Butler, Trans. Roy. Ent. Soc. London 100, 1949:266). There appears to be no host specificity, adults having been collected from the following conifers: *Picea engelmanni*, *Pinus ponderosa*, *P. contorta*, *P. monticola*, *Abies lasiocarpa*, *Pseudotsuga mucronata* and *P. taxifolia*.

1 Head, pronotum and apex of elytra with moderately long pale hairs; subopaque; dark castaneous, the legs, antennae, front and labrum paler; dorsal surface very densely punctate; head with front finely punctate, the sides of

the front weakly reflexed, the hairs directed forward; pronotum slightly longer than wide, the apex truncate, the apical angles obtuse and not at all produced, the sides finely margined and evenly and weakly arcuate, the base arcuate, the basal angles obtuse and not produced, the disc rather strongly convex, the punctures close and rugulose at the middle, much sparser at the sides; elytra with disc less closely punctate than pronotum, the apical third moderately sparsely granulate, the hairs curved posteriorly; pygidium dark, rather finely and not sparsely punctate; fifth abdominal sternite not impressed, with a small apical tooth; 2.65-2.75 mm.; e Or.; rare HATCHI Bod.

Boddy 1957:197 (4).

1' Dorsal surface glabrous; pronotum moderately densely to moderately sparsely punctate; fifth abdominal sternite without an apical tooth

2 Pronotum with apical angles rather strongly produced, the sides strongly margined; head with sides of front rather strongly reflexed, the disc rather uniformly punctate; pronotum with base broadly and weakly lobed, the sides evenly but not strongly arcuate, the disc moderately convex and rather coarsely and moderately densely punctate; elytra vaguely striatopunctate, the punctures moderately coarse, the strial punctures almost as coarse as those of the intervals and closely placed; fifth abdominal sternite rather strongly impressed; color rufocastaneous, polished; 4.51-4.6 mm.; se B.C., e Wn., n Id., Or.; common (Pl. XXV, fig. 8) SUBSTRIATUS LeC.

LeConte 1878:423 (4). Wickham 1890a:83-88 (3). Criddle 1922:64 (1).

2' Pronotum with apical angles not or weakly produced, the apex usually truncate, the sides finely margined; head with sides of front weakly to feebly reflexed; fifth abdominal sternite weakly or not impressed

3 Bicolored, the head, scutellum and pygidium piceous, the elytra castaneous becoming obscurely darker toward the apex; subshining; body small, elongate, rather strongly convex; head with sides of front feebly reflexed, the disc uniformly punctate, the front paler than the rest of the head; pronotum with apex truncate, the base arcuate, the sides weakly arcuate, the angles obtuse, the disc distinctly but not closely punctate; elytra vaguely striatopunctate, the punctures not fine but obscure; pygidium rather strongly and moderately densely punctate; fifth abdominal sternite vaguely impressed; 2.5-2.65 mm.; se B.C.; not common OCCIDENTALIS Wallis

Wallis 1933b:249 (1).

3' Unicolorous or, if bicolored, with the pygidium and elytra nearly unicolorous; front more obscurely punctate than the rest of the head; apex of pronotum obscurely margined at middle; size generally larger

4 Dorsal surface subopaque, particularly the pronotum, which is frequently darker than the elytra; head with epistoma obscurely punctate and alutaceous, the remainder of the disc distinctly punctate and subshining and darker in color, the sides of the front feebly reflexed; pronotum with apex truncate, obscurely margined at middle, the sides feebly arcuate but frequently becoming broadly but weakly sinuate toward the basal angles which may be minutely acute and produced, the apical angles obtuse, the disc moderately strongly convex, the punctures moderately dense; elytra with the punctures finer than those of the pronotum and moderately dense; pygidium rather densely punctate; fifth abdominal sternite not impressed; 2.7-3.5 mm.; se B.C., n Id.; common SUBOPACUS Wallis

Wallis 1933:247 (1).

4' Dorsal surface shining to polished; head with discal punctures rather uniform, the sides of the front moderately reflexed; pronotum with apex finely but distinctly margined at middle, the apical angles not at all to feebly produced, the sides rather evenly but weakly arcuate, the basal angles obtuse, the disc moderately convex; elytra with the punctures denser than those of the pronotum; pygidium rather densely punctate; fifth abdominal sternite vaguely impressed; castaneous; 2.8-4.5 mm.; se B.C., Wn., n Id., Or.; common STRUBLEI Blais.

This species may prove to be a complex, but at present no consistent variation has been found. *parallelus*, Criddle (nec Melsh.) 1922:64 (1).

Tribe Phthorini

Key to Genera

1 Antennae with segments 9 to 11 expanded forming a club; head with disc unimpressed, the sides not at all reflexed; pronotum with sides strongly margined; mesocoxae with trochantin visible PHTHORA Muls.

1' Antennae not clubbed; head impressed along frontal suture, the sides more or less reflexed; pronotum with sides finely margined; mesocoxae with trochantin not visible externally PALORUS Muls.

Phthora Muls.

Castaneous to dark castaneous, shining; body robust, the sides subparallel; head with epistoma evenly arcuate in front from eye to eye; pronotum with apex truncate, the apical angles produced but blunt, the base obliquely truncate from the scutellum to the basal angles, the basal angles subrectangular to obtuse, the sides straight but slightly converging from base to middle and then becoming arcuate and more strongly converging, the disc moderately convex and coarsely but not densely punctate; scutellum small, rounded; elytra with sides subparallel from base to beyond middle, the striae moderately impressed and coarsely punctate, the interstrial spaces weakly convex to flat and finely irregularly punctate; ventral surface coarsely but shallowly punctate; 3-3.25 mm.; sw B.C., Wn., w Or.; very common; subcortical (Pl. XXVIII, fig. 4) AMERICANUM Horn

Horn 1874:35 (4). Wickham 1890a:83-88 (1) (Pthora). Hatch and Kincaid 1958:17 (2).

Palorus Muls.
(Caenocorse Thoms.)

Small, elongate parallel; color castaneous; pronotum truncate between the slightly produced apical angles, the base weakly arcuate, the sides straight and diverging from the base and then arcuate to the apex, the disc moderately convex, moderately finely and not closely punctate; elytra striatopunctate, the interstrial spaces flat and with a single row of smaller punctures

1 Head with reflexed sides of front extending to about the middle of the dorsal border of the eye, the eye large and irregularly rounded; scutellum very transverse, the apex arcuate (subg. CIRCOMUS Fleisch.). 2.75-2.8 mm.; Id., ne Or.; rare; introduced; found in granaries but possibly not established in the Pacific Northwest

(depressed flour beetle) SUBDEPRESSUS Woll.
Krantz CEIR 1958:56 (4). *depressus* auct. (nec F.) Wakeland IPSB 1923:52 (3).

1' Head with reflexed sides of front extending just posterior to the anterior border of the eye, the eye small and round; scutellum not so transverse, the apex obtusely angulate, the sides diverging from the base (subg. PALORUS s. str.). 2.75 mm.; Wn., Or.; rare; introduced; found in granaries but possibly not established in the Pacific Northwest (Pl. XXV, fig. 9) RATZEBURGI Wissm.
Swenson and Tunnock 1957:117 (4).

Family Alleculidae (Cistellidae)

The Alleculidae or comb-clawed beetles are found for the most part beneath bark or on flowers and leaves. The larvae are said to inhabit rotten wood. Casey 1891:69-170.

Subfamily Alleculinae

Key to Genera

1 First visible abdominal sternite with the intercoxal process broadly evenly rounded; tarsi with the third (metatarsi) or third and fourth (pro- and mesotarsi) segments lobed beneath; elytra striate with evanescently punctate striae STENOCHIDUS LeC.
1' First visible abdominal sternite with the intercoxal process acutely angulate
2 Tarsi with the third (metatarsi) or third and fourth (pro- and mesotarsi) segments lobed beneath; elytra striate, the intervals evidently finely punctate
3 Pronotum with sides arcuately narrowed from the base or nearly so or with the sides subparallel behind the middle, the anterior margin arcuate HYMENOPHORUS Muls.
3' Pronotum with sides obliquely convergent behind the middle, the anterior margin truncate TELESICLES Champ.
2' Tarsi not lobed beneath
4 Antennae with third segment distinctly shorter than the fourth; elytra striate with micropunctulate intervals CHROMATIA LeC.
4' Antennae with third segment subequal to fourth
5 Dorsal surface finely minutely densely punctate and pubescent, the elytra scarcely striate in the Pacific Northwest species; form more oval ISOMIRA Muls.
5' Dorsal surface more coarsely discretely punctate and pubescent, the elytra with some of the coarser punctures in more or less evident striae in Pacific Northwest species; form more elongate MYCETOCHARA Berth.

Stenochidus LeC.

Facies suggestive of Upis F. (Tenebrionidae); black; glabrous; head densely punctate, shining above, transversely wrinkled below, narrower than pronotum; antennae elongate, the third segment longer than the fourth, the last 3 segments somewhat shorter; maxillary palpus with the last segment enlarged, triangular; pronotum about 6/7 as long as wide, widest about

apical third, narrower than elytra, convex, strongly contiguously punctate, alutaceous, convex, the sides arcuate, the angles rounded, the basal impressions very feeble; elytra with 9 finely incised and more coarsely distantly punctate striae, the intervals strongly alutaceous, evanescently punctulate; pro- and mesothorax below and side pieces of metasternum coarsely punctate, alutaceous; metasternum and abdominal sternites finely punctate, shining; 7.7-8.8 mm.; Or. (Pl. XXVIII, fig. 5)

CYANESCENS LeC.

Hymenophorus Muls.
(Hymenorus Muls.)

Fall 1931:161-247.

1 Pronotum never very much narrower at base than the base of the elytra, the humeri at most only very narrowly exposed; pubescence recumbent, not bristling

2 Eyes separated by more than their own width; antennae with third and fourth segments subequal in length

3 Pronotum with sides arcuate from the hind angles

4 Pronotum with punctures separated by more than their own diameter, not or scarcely wider before base; body oblong oval; blackish brown; head, pronotum, and the 9 impressed elytral striae and a scutellar stria somewhat coarsely punctate, the elytral intervals more finely punctate; dorsal surface with rather conspicuous recumbent pubescence; pronotum about 2/3 as long as wide, almost as wide as the elytra, the sides arcuately narrowed almost from the base, the hind angles rounded; 6.5-8.3 mm.; s B.C., nw Or.; from *Pseudotsuga taxifolia* at Creston, B.C. (Pl. XXVIII, fig. 6)

CAURINUS Fall

Fall 1931:167, 185 (1).

4' Pronotum more densely punctate, the punctures frequently separated by less than their diameter, widest just before base; oblong oval; rufotestaceous, the appendages somewhat paler; head and pronotum closely punctate; the 9 subentire elytral striae and a scutellar stria somewhat more coarsely punctate, the striae nearer the suture feebly impressed, the more lateral striae scarcely impressed, the intervals more finely punctate; dorsal surface with rather conspicuous recumbent pubescence; pronotum nearly 3/5 as long as wide, fully as wide as elytra, the hind angles rounded; 5.7 mm.; sw Or.

PUNCTULATUS LeC.

3' Pronotum with the sides behind the middle subparallel, broadly feebly distinctly sinuate, the hind angles rectangular, prominent; elongate, subparallel, rufopiceous, the head and pronotum somewhat darker; head and pronotum and the 9 subentire somewhat impressed elytral striae and a scutellar stria closely coarsely punctate, the punctures of the head and pronotum separated by their own diameter or somewhat less, the elytral intervals finely sparsely punctate; dorsal surface with recumbent pubescence; pronotum 5/7 as long as wide, nearly as wide as elytra; 6.8-7 mm.; s B.C., Or.

SINUATUS Fall

Fall 1931:168, 187 (1).

2' Eyes separated by about 1/3 their own width; elongate, subparallel; rufopiceous, the head and pronotum a little darker; head and pronotum coarsely densely punctate, the punctures separated by less than their own diameter; elytra with 9 coarsely punctate subentire striae and a scutellar stria, the

4 or 5 inner striae more or less impressed, the intervals somewhat more finely punctate; dorsal surface with recumbent pubescence, some of the outer elytral intervals with occasional nearly erect hairs; eyes prominent; antennae with third segment about 3/4 as long as fourth; pronotum a little narrower at base than elytra, about 2/3 as long as wide, the sides behind the middle subparallel, evanescently broadly sinuate, the hind angles arcuate, the disc before the base transversely impressed; 6-6.5 mm.; sw B. C., e Wn., n Id., nw Or.; rare MEGOPS sp. n.

Type: McMinnville, Ore. VI-14-1942, K. M. and D. M. Fender; paratypes: B. C. (Pender Harbor), e Wn. (Yakima Indian Res.), n Id. (Priest L., Princeton), Or. (Hubbard, LaGrande, Marshfield = Coos Bay) in UW, Downie, and CAS collections.

1' Pronotum smaller, narrower and more quadrate, much narrower than the elytral base, the humeri rather widely exposed; pubescence long, more bristling, subrecumbent, the hairs arising from the single series of minute punctures in the elytral intervals longer and more erect; testaceous; head coarsely closely punctate, the eyes somewhat more distant below than above; antennae about 2/5 as long as body, the third segment distinctly shorter than the fourth; pronotum transverse, more than 3/4 as long as wide, widest before base, the sides arcuate, the hind angles obtuse, the disc coarsely punctate, the punctures separated by about their own diameter at middle, denser toward the sides; elytra with about 9 scarcely impressed series of coarse punctures, the intervals finely uniseriately punctate; prosternum densely opaquely punctate; abdomen finely punctate, the last 2 sternites more sparsely so; 5.5 mm.; sw Or. SETOSUS sp. n.

Type: Ore.; Rogue Rv. N. F., Beaver Sulphur F. C., Aug. 10, 1950. K. M. Fender. Distinguished from the generally similar *crinitus* Fall by the somewhat shorter setae of the pronotum and elytra, the somewhat shorter antennal segments, the more densely punctate occiput, and the slightly more transverse pronotum with more strongly rounded anterior angles.

Telesicles Champ.

Rufopiceous, the head and pronotum piceous; head and pronotum densely punctate, the head a little more densely so; elytra with 9 subentire impressed coarsely punctate striae and a scutellar stria, the intervals finely punctate; body above with fine recumbent pubescence; head transversely depressed before the eyes, convex between the eyes, antennae with third segment about 5/6 as long as the fourth; pronotum 2/3 as long as wide, widest just before middle before which the sides curve into the straight apical margin, the sides oblique behind to the obtusely rounded hind angles, the base trisinuate, the disc convex, before the base with a larger median and 2 somewhat smaller sublateral impressions; scutellum finely punctate; thorax below somewhat coarsely punctate, the metasternum more finely punctate at middle behind; abdominal sternites finely punctate; 8.5 mm.; w Wn. MAGNUS sp. n.

Type: Seattle, Wash. VII-[19]28. Distinguished from *cordatus* Champ. by its larger size (length 5.5-5.8 mm. in *cordatus*) and the absence of a transverse impression on the base of the pronotum. The type was apparently labeled but not collected by me and may represent an adventitious occurrence of an exotic species.

Chromatia LeC.
(Cistella F. 1775 nec Forst. 1771; Pseudocistela Cr.)

1 Antennae strongly serrate in both sexes; pronotum with basal angles acute; black, shining, above finely densely punctulate with inconspicuous recumbent pubescence; antennae with third segment shorter in male, about twice as long as second and less than half as long as fourth, in the female much more than twice as long as second and more than half as long as fourth, the 3 apical segments evidently shorter in the female; maxillary palp with terminal segment more than twice as long as wide; pronotum nearly 3/5 as long as wide, widest at base, the sides oblique before the acute hind angles and thence arcuate, the base bisinuate, the basal impressions faint; elytra with a scutellar and 9 impressed finely incised punctate striae, the intervals convex; 7-10.8 mm.; s B.C., Wn., n Id., Or. (Pl. XXVIII, fig. 7)
PACIFICA Hopp.
Hopping 1933a:284 (1). *opaca* auct. (nec LeC.) Stace Smith 1930:24 (1).

1' Antennae subpectinate in male, the pectinations stout and not more than about 1/3 as long as the antennal segment, in the female feebly serrate; pronotum with basal angles almost right; black, shining; head densely finely punctate; maxillary palpi with last segment twice as long as wide; pronotum densely punctate, the sides gradually rounded to apex, the base bisinuate; elytra with striae rather deeply impressed and evidently punctured, the intervals notably convex; 10-11 mm.; se B.C. PECTINATA Hopp.
Hopping 1933a:285 (1).

Isomira Muls.

Elongate oval; testaceous to rufopiceous; head and pronotum finely densely contiguously punctate, elytra finely more sparsely punctate; dorsal surface with short recumbent pale pubescence; eyes small, not prominent; antennae with third and fourth segments subequal; maxillary palpi with last segment elongate, obtusely angulate on inner margin; pronotum about 3/5 as long as wide, widest just before base, the sides arcuate, the basal angles rectangular, the base feebly bisinuate, the basal impressions feeble; elytra with feebly impressed nearly entire sutural stria and 2 or 3 adjacent discal striae at apical end; 4.5-6.5 mm.; s B.C., Wn., Id., Or.; on flowers; common (Pl. XXVIII, fig. 8) VARIABILIS Horn
Holland 1888:92 (1) (Cistela). Casey 1891:147 (2). Stace Smith 1930:24 (1).

Mycetochara Berth.

Body with recumbent pubescence

1 Procoxae separated with a comparatively wide prosternal process which is longitudinally convex and attains the level of the posterior margin of the coxae

2 Pronotum as wide at base as elytra at humeri, about 1/2 wider than the head and 2/3 wider than long, the sides arcuate, feebly narrowed behind, the punctures well separated, the mid-line feebly impressed before and behind middle, the hind angles rounded; head shining, coarsely densely punctate, the eyes prominent and separated by a distance that is subequal to their width, tempora obsolete, the head behind the eyes subtransverse to the neck; elytra punctate, with 3 or 4 scarcely impressed striae toward the suture,

the striae scarcely or not more evidently punctate than the intervals; piceous, finely pubescent, the head nearly black, the mouth, basal antennal segments and legs testaceous, the elytra with an oblique subbasal pale spot extending mesocaudad from the humerus; 5.5 mm.; se B. C.; rare FRATERNUS Say

2' Pronotum much narrower than elytra at humeri, about 1/5 wider than the head and 1/2 wider than long, the sides subparallel at basal half and thence gradually arcuate into the apex which is about half as wide as the base, the hind angles subrectangular, the punctures distinct and well-separated, the hind angles broadly and the lateral margin more narrowly deplanate, the surface before the scutellum somewhat broadly flattened; head evidently punctate, transversely impressed between the antennae, the eyes large, separated by less than their width, the tempora subobsolete, the head behind the eyes subtransverse to the neck; elytra punctate, with 2 or 3 evanescent impressed striae toward the suture, the striae scarcely more strongly punctate than the intervals; reddish brown, finely pubescent, the head somewhat darker, the appendages and ventral surface testaceous, the elytra concolored; 7.3 mm.; n Id. DOWNEI sp. n.

Type: Sandpoint, Id. 6-26-1954. N. M. Downie. This species runs to *gracilis* LeC. in Casey's key, from which it is distinguished by its larger size and other characters.

1' Procoxae separated by a thin prosternal lamina that may be concealed by the coxae posteriorly; elytra with a scutellar and 9 entire discal series of punctures which are scarcely larger than the punctures of the intervals; maxillary palpi with last segment triangular

3 Procoxae more prominent, more or less contiguous at apex, the prosternal lamina deeply placed between them and more or less concealed posteriorly; elytral striae well-impressed; testaceopiceous, the appendages testaceous, the head and pronotum except the very narrow margins piceous black; head densely punctate, the eyes prominent, separated above by a distance that is scarcely more than half the width of an eye, the tempora short, rapidly narrowing to the neck; pronotum transverse, widest just before base, coarsely punctate, the punctures more widely separated than on the head, the base wider than the apex, the sides arcuate, the basal margin and lateral margins behind the apical fourth narrowly explanate; 8.3 mm.; se B. C., se Wn., ne Or. DAVISI sp. n.

Type: Walla Walla, Wn., June 1, 1948. J. J. Davis; paratypes: B. C. (Creston, ex *Populus trichocarpa*), Or. (Brownlee in Baker Co.), in UW, UBC, and ODA collections. Named for the collector of the type, Dr. Jared J. Davis.

A specimen from East Pine, B. C. in the UBC collection is doubtfully associated with this species; pronotum somewhat larger and more transverse, the sides subparallel behind; 8 mm.

3' Procoxae less prominent, separated by a thin lamina that is visible throughout, attaining the posterior margin of the coxae; elytral striae feebly impressed, usually visible only in oblique light

4 Pronotum with sides behind straight, subparallel, much narrower than the elytra across the humeri, about 1/5 or 1/6 as long as the elytra, its length from 3/5 to 3/4 of its width, the hind angles narrowly round, the surface along the basal margin and toward the hind angles more or less depressed; head with short tempora behind which it rapidly narrows; elongate; piceous, the mouth parts and tibiae and tarsi testaceous, occasional specimens

somewhat paler, probably from immaturity; 5.5-6.7 mm.; se B. C., s Wn., se Id., Or.; not rare; from *Pinus ponderosa* in se B. C. (Pl. XXVIII, fig. 9) PROCERA Csy.

Casey 1891:140-141 (3).

4' Pronotum with the sides convergent behind, about 3/5 as long as broad and somewhat larger than in the previous species

5 Head virtually without tempora, the eyes prominent, the head transversely arcuately narrowed from immediately behind the eyes; pronotum narrower than the elytra across the humeri, rather broadly exposing the humeri, about 1/5 as long as the elytra, widest a little before middle before which it rather rapidly arcuately narrows to the apical margin, the sides behind feebly arcuate to the obtusely rounded hind angles, the disc feebly impressed at middle before base and deplanate in the region of the hind angles; elongate; rufotestaceous, the head behind the front piceous, the appendages testaceous; 6 mm.; nw Or. ANGUSTA sp. n.

Type: Baker Creek [Yamhill Co.], Ore. 6-11-1939. K. M. and D. M. Fender; paratypes: Or. (Corvallis, Portland) in CAS collection.

5' Head with arcuate tempora behind which it is transversely arcuately narrowed, the eyes small; pronotum about 3/10 as long as elytra

6 Pronotum more or less evidently somewhat narrower than the elytra across the humeri, rather broadly exposing the humeri, about 1/3 or 2/7 as long as the elytra, widest a little before middle before which it is arcuate to the apical margin, the sides behind feebly arcuate or suboblique to the obtuse hind angles, the disc convex, the basal impressions feeble; elytra with the punctures in the striaform series somewhat larger than in the intervals; elongate oval; rufotestaceous, the head and sometimes the pronotum somewhat darker, the appendages testaceous; 4.7-5.5 mm.; se B. C., Wn., sw Or. MALKINI sp. n.

Type and 10 paratypes: Ore.: Ashland Park, Siskiyou Mts., 7000 ft., June 20, 1952, B. Malkin and I. M. Newell; paratypes: B. C. (Midday Valley), Wn. (Goodman Springs on Lewis Peak in Blue Mts., Mt. Adams, Port Angeles, Yakima Ind. Res.), Or. (Colestine in Jackson Co.). Paratypes in UW, CAS, CNHM, and OSU collections. This species is similar to *crassulipes* Csy., but is darker, larger, and with longer antennal segments.

6' Pronotum as wide as or wider than elytra, very narrowly exposing the humeri

7 Pronotum at widest about as wide as elytra across humeri, widest at about middle before which the sides are strongly arcuate and behind which the sides are suboblique before the obtuse hind angles, the disc convex, the basal impressions feeble; elongate oval; rufopiceous, the head frequently somewhat darker, the appendages testaceous; 5.5-6.8 mm.; se B. C., Wn., Or.; not rare CASEYI sp. n.

Type: Bear R. [Pacific Co.], Wash. July 16, 1930. Paratypes: B. C. (Midday Valley), Wn. (Easton, Elwa R., Kent, Lewis Peak in Blue Mts., Mt. Adams, Nisqually, Olds Ferry on Snake R., Skye in Clarke Co., Stehekin, Yakima Indian Res., Yakima Park on Mt. Rainier), Or. (Bald Mt. in Yamhill Co., Bear Springs in Wasco Co., Boyer, Cornucopia, Elk L., Maupin, Mottet Ranger Sta. in Blue Mts., Oregon Caves, Rogue R. Nat. For., Wallowa L.). *pubipennis*, Csy. (nec. LeC.) 1891:127, 141. The true *pubipennis* LeC. has the pubescence of the pronotum and elytra longer with some erect setae, is rufotestaceous with the head somewhat darker, and is 4.75 mm. long.

7' Pronotum at widest somewhat wider than elytra across humeri, widest somewhat before the middle, the sides arcuate, the hind angles obtusely rounded, the basal impressions feeble, the disc convex with a feeble longitudinal impression at middle and another feeble impression on each side of middle; elongate oval; piceous, shining, the head and prothorax below and appendages testaceous; 6. 7 mm. ; sw Wn. LATA sp. n.

Type: Ore., Ashland Peak, Siskiyou Mts., 7000 ft. June 20, 1952. B. Malkin and I. M. Newell. The first four protarsal segments are somewhat produced along their inner (anterior) margins, the protibiae feebly arcuate toward base.

Bibliography

The following list includes works to which abbreviated reference is made in the text. Full bibliographical identification is given in the text for works cited only once or twice.

Anderson, E. M.
1914 Insects collected in the Okanagan Valley, 1913. Proc. Ent. Soc. B. C. 4:54-58.

Arnett, Ross H.
1951 A revision of the Nearctic Oedemeridae (Coleoptera). Am. Midl. Nat. 45:257-391.
1953 A review of the beetle family Cephaloidae. Proc. U. S. Nat. Mus. 103:155-161.
1960-1963 The beetles of the United States. Washington. 1112 pp.

Balduf, Walter Valentine
1935 The bionomics of entomophagous Coleoptera. St. Louis. 220 pp.

Balfour-Browne, Frank
1958 British water beetles. Volume III. 210 pp.

Blackwelder, Richard E.
1931 The Sphaeridiinae of the Pacific Coast. Pan-P. Ent. 8:19-32.
1939 Fourth supplement 1933 to 1938 (inclusive) to the Leng Catalogue of Coleoptera of America, north of Mexico. 146 pp.

Blair, K. G.
1921 Types of Heteromera described by F. Walker now in the British Museum. Trans. Ent. Soc. London 21:268-283.

Blaisdell, Frank E.
1909 A monographic revision of the Coleoptera belonging to the tribe Eleodini inhabiting the United States, Lower California, and adjacent islands. U. S. Nat. Mus. Bull. 63, 524 pp.
1910 Studies in the Tenebrionid tribe Eleodini. Order Coleoptera. Ent. News 21:60-66.
1917 Studies in the Tenebrionid tribe Eleodini, No. 2 (Coleop.). Ent. News 28:221-227.
1918 Studies in the Tenebrionidae (Coleopt.). Ent. News 29:7-14.
1918a Studies in the Tenebrionid tribe Eleodini, No. 3 (Coleop.). Ent. News 19:162-169.
1918b Studies in the Tenebrionid tribe Eleodini, No. 4 (Coleop.). Ent. News 19:380-387.
1921 New species of Melyridae, Chrysomelidae, and Tenebrionidae (Coleoptera) from the Pacific Coast, with notes on other species. Stanford U. Publ. Biol. Sci. 1:133-231.
1921a Miscellaneous studies in the Coleoptera, No. 1. Can. Ent. 52:129-132.
1925 Studies in the Tenebrionidae, No. 2 (Coleoptera). Proc. Cal. Acad. Sci. 14:369-390.

1925a Revised check-list of the species of Eleodes inhabiting America, north of Mexico, including Lower California and adjacent islands. Pan-P. Ent. 2:77-80.
1929 A revision of the beetles of the Tenebrionid tribe Usechini, with descriptions of a new genus and a new species. Proc. U. S. Nat. Mus. 75 (19):1-14.
1931 Two new species of Eleodes from Utah (Coleoptera: Tenebrionidae). Pan-P. Ent. 8:74-78.
1933 Studies in the Tenebrionidae no. III. A monographic revision of the species of Centronopus inhabiting America north of Mexico (Coleoptera, Tenebrionidae). Trans. Amer. Ent. Soc. 59:191-228.
1935 Facts determined by rearing species of Coniontis (Coleoptera: Tenebrionidae). Ent. News 46:119-123.
1935a Two new species of Eleodes from the Pacific Coast Region (Coleoptera: Tenebrionidae). Can. Ent. 67:28-31.
1936 Notes on *Eleodes letcheri* and *rileyi*. Pan-P. Ent. 41:183.
1941 A new species of Eleodes from Oregon, belonging to the subgenus Blapylis (Coleoptera, Tenebrionidae). Pan-P. Ent. 17:156-159.
1942 Miscellaneous studies in the Coleoptera, no. 6 (Melyridae and Tenebrionidae). Trans. Amer. Ent. Soc. 68:129-149.

Blatchley, W. S.
1910 An illustrated descriptive catalogue of the Coleoptera or beetles (exclusive of the Rhynchophora) known to occur in Indiana. Indianapolis. 1386 pp.

Boddy, Dennis W.
1957 New species and subspecies of Tenebrionidae (Coleoptera). Pan-P. Ent. 33:187-199.

Bradley, J. Chester
1930 A manual of the genera of beetles of America north of Mexico. Ithaca. 360 pp.

Brittain, W. H.
1913 Report from Okanagan district. Proc. Ent. Soc. B. C. 2:13-16.
1914 Report from the Okanagan district: Insect pests of the year in the Okanagan. Proc. Ent. Soc. B. C. 4:14-19.

Brodie, William
1888 List of Coleoptera collected by Mr. Bruce Bailey, in Kicking Horse Pass, Rocky Mountains, C. P. R. 1884. Proc. Can. Inst. Toronto 3 (5):213-215.

Brown, W. J.
1931 New species of Coleoptera (II). Can. Ent. 63:115-122.
1931a The entomological record, 1930. 60th Ann. Rep. Ent. Soc. Ont. 1930:86-94.
1933 New species of Coleoptera IV. Can. Ent. 65:43-47.
1934 The entomological record, 1931, 1932, 1933. 25th and 26th Rep. Queb. Soc. for the Protection of Plants 1934:140-162.
1940 Notes on the American distribution of some species of Coleoptera common to the European and North American continents. Can. Ent. 72:65-78.
1940b New and poorly known Coleoptera. Can. Ent. 72:182-187.

Brues, C. T.
1932 Further studies of the fauna of North American hot springs. Proc. Amer. Acad. Arts & Sci. 67 (7):186-303.

Bush, A. H.
1914 A trip up Mount Chem. Proc. Ent. Soc. B. C. 4:58-60.
Casey, Thomas L.
1889a-1890 Coleopterological notices I. Ann. N. Y. Acad. Sci. 5, 1889:39-96; 1890:97-198.
1890a Coleopterological notices II. Ann. N. Y. Acad. Sci. 5, 1890:307-504.
1891 Coleopterological notices III. Ann. N. Y. Acad. Sci. 6:9-214.
1895 Coleopterological notices VI. Ann. N. Y. Acad. Sci. 8:435-838.
1897 Coleopterological notices VII. Ann. N. Y. Acad. Sci. 9:285-684.
1898a Studies in Cephaloidae. Ent. News 9:193-195.
1907 A revision of the American components of the Tenebrionid subfamily Tentyriinae. Proc. Wash. Acad. Sci. 9:275-522.
1908a A revision of the Tenebrionid subfamily Coniontinae. Proc. Wash. Acad. Sci. 10:51-166.
1912 A revision of the American genera of the Tenebrionid tribe Asidini. Mem. Col. 3:70-214.
1924 Additions to the known Coleoptera of North America. Mem. Col. 11:1-336.
CEIR Cooperative economic insect report, Vol. 1, 1950 to Vol. 14, 1964. Issued by U. S. Dept. of Agric., Washington, D. C.
Chamberlin, W. J.
1949 Insects affecting forest products and other materials. Corvallis. 159 pp.
Chandler, Harry P.
1956 Dryopidae, pp. 254-367, in Robert L. Usinger, Aquatic insects of California. Berkeley. 508 pp.
Chao, Yung-Chang
1954 Insects in grain elevators at Pullman and Albion, Washington. Pan-P. Ent. 30:260-262.
Chao, Yung-Chang, H. G. Simkover, and H. S. Telford
1953 Field infestations of stored grain insects in eastern Washington. Jr. Econ. Ent. 46:905-907.
CIPR Canadian Insect Pest Review. Vol. 1, 1923 to Vol. 42, 1964. Issued by Canada Dept. of Agric., Ottawa, Ont.
Clark, M. E.
1948-1956 An annotated list of the Coleoptera taken at or near Terrace, British Columbia. Part I, Proc. Ent. Soc. B. C. 44, 1948:24-27; Part II. 45, 1949:21-24; Part 3, 52, 1956:39-43.
Clausen, Curtis Paul
1940 Entomophagous insects. New York. 688 pp.
Clemens, W. A., R. E. Foerster, N. M. Carter, and D. S. Rawson
1938 A contribution to the limnology of Shuswap Lake, British Columbia. Rep. B. C. Fish. Dept. for 1937, 1938:T91-T97.
Cotton, R. T.
1929 The mealworms. U. S. Dept. Agric. Tech. Bull. 95, 37 pp.
Criddle, Norman
1921 The entomological record, 1920. 51st Ann. Rep. Ent. Soc. Ont., 1920:72-90.
1922 The entomological record, 1921. 52nd Ann. Rep. Ent. Soc. Ont., 1921:57-66.
1924 The entomological record, 1923. 54th Ann. Rep. Ent. Soc. Ont., 1923:87-102.

Crowson, R. A.
1955 The natural classification of the families of Coleoptera. London. 186 pp.
Darlington, P. J., Jr.
1933 Charles Albert Frost: a biographic sketch and list of publications. Psyche 70:3-6, portrait.
Dennys, A. A.
1927 Some notes on the hibernating habits of insects in dry trees in the interior of B.C. Proc. Ent. Soc. B.C. 24:19-25.
Doane, R. W., E. C. Van Dyke, W. J. Chamberlin, and H. E. Burke
1936 Forest Insects. New York. 463 pp.
Enns, Wilbur R.
1956 A revision of the genera Nemognatha, Zonitis, and Pseudozonites (Coleoptera, Meloidae) in America north of Mexico, with a proposed new genus. Univ. Kans. Sci. Bull. 37 (II):685-909.
Essig, E. O.
1926 Insects of western North America. New York. 1035 pp.
Evans, J. D.
1906 List of Coleoptera in the collection of J. D. Evans, Trenton, Ont., which have not heretofore been recorded as having been taken in Canada. Can. Ent. 38:96-100.
Exline, Harriet, and Melville H. Hatch
1934 Note on the food of the black widow spider. Jr. N.Y. Ent. Soc. 42: 449-450.
Fabricius, Jo. Christ.
1775 Systema entomologicae. Flensburg. 832 pp.
Fall, Henry C.
1901 Notes on Dichelonycha and Cantharis, with descriptions of new species in other genera. Trans. Am. Ent. Soc. 27:277-310.
1901a List of the Coleoptera of southern California with notes on habits and distribution and descriptions of new species. Occ. Pap. Cal. Acad. Sci. 8, 282 pp.
1915 The West Coast species of Pedilus Fisch. (Corphyra Say). Pomona Coll. Jr. of Ent. and Zool. 7:10-33.
1924 New species of North American Hydrobiini. Jour. N.Y. Ent. Soc. 32:85-90.
1924a Some notes on Cercyon, with descriptions of three new species. Psyche 31:247-253.
1931 The North American species of Hymenorus (Coleoptera: Alleculidae). Trans. Am. Ent. Soc. 57:161-247.
Fauvel, Albert
1889 Liste des Coléoptères communs à l'Europe et à l'Amérique du Nord. Rev. d'Ent. 8:92-174.
Fender, Kenneth M.
1951a The Usechini of Oregon (Tenebrionidae). Col. Bull. 5:19-20.
Fletcher, James
1903 The entomological record, 1902. 33rd Ann. Rep. Ent. Soc. Ont. 1902, pp. 87-98.
1904 The entomological record, 1903. 34th Ann. Rep. Ent. Soc. Ont. 1903, pp. 85-99.
1905 The entomological record, 1904. 35th Ann. Rep. Ent. Soc. Ont. 1904, pp. 56-78.

1906 The entomological record, 1905. 36th Ann. Rep. Ent. Soc. Ont. 1905, pp. 90-105.
1907 The entomological record, 1906. 37th Ann. Rep. Ent. Soc. Ont. 1906, pp. 86-104.

Fletcher, James and Arthur Gibson
1908 The entomological record, 1907. 38th Ann. Rep. Ent. Soc. Ont. 1907, pp. 113-133.
1909 The entomological record, 1908. 39th Ann. Rep. Ent. Soc. Ont. 1908, pp. 99-116.

Forster, Johann R.
1771 A catalogue of the animals of North America or faunula Americana. London. 43 pp.

Foster, R. E.
1942 Insects active throughout the winter at Vancouver, B.C. Part I: Introduction and lists of the Coleoptera and Neuroptera. Proc. Ent. Soc. B.C. 38:19-23.

Gebien, H.
1910-1911 Tenebrionidae in Junk-Schenkling Coleopterorum Catalogus, Parts 15, 22, 28, 37; 740 pp.
1937 Katalog der Tenebrioniden (Col. Heteromera): Part I. Publ. d. Mus. Ent. "Pietra Rossi," Duino No. 2, pp. 505-886.

Gibson, Arthur
1910 The entomological record, 1909. 40th Ann. Rep. Ent. Soc. Ont. 1909, pp. 110-128.
1912a Blister beetles. 42nd Ann. Rep. Ent. Soc. Ont. 1911, pp. 83-88.
1913 The entomological record, 1912. 43rd Ann. Rep. Ent. Soc. Ont. 1912, pp. 113-140.
1914 The entomological record, 1913. 44th Ann. Rep. Ent. Soc. Ont. 1913, pp. 116-139.
1916 The entomological record, 1915. 46th Ann. Rep. Ent. Soc. Ont. 1915, pp. 194-230.
1917 The entomological record. 1916. 47th Ann. Rep. Ent. Soc. Ont. 1916, pp. 137-158.
1919 The entomological record, 1918. 49th Ann. Rep. Ent. Soc. Ont. 1918, pp. 97-123.

Gibson, Arthur, and Norman Criddle
1921 The entomological record, 1920. 51st Ann. Rep. Ent. Soc. Ont. 1920, pp. 72-98.

Good, N. E.
1936 The flour beetles of the genus Tribolium. U.S. Dept. Agric. Tech. Bull. 498, 57 pp.

Guppy, Richard
1948 A list of Coleoptera collected near Lagoon Head, Wellington, V.I. Col. Bull. 2:21-23.

Hamilton, John
1889 Catalogue of the Coleoptera common to North America, northern Asia and Europe, with the distribution and bibliography. Trans. Am. Ent. Soc. 16:88-162.
1894 Catalogue of the Coleoptera of Alaska, with the synonymy and distribution. Trans. Am. Ent. Soc. 21:1-38.
1894a Catalogue of the Coleoptera common to North America, northern Asia and Europe, with distribution and bibliography. Second Edition.

Trans. Am. Ent. Soc. 21:345-416.

Hanson, Arthur J., and R. L. Webster
1938 and 1941 Insects of the blackberry, raspberry, strawberry, currant, and gooseberry. St. Coll. Wash. Agric. Exp. Sta. Pop. Bull. 155, 1938:1-38; 164, 1941:1-40.

Hardy, George A.
1927 Report on a collecting trip to Garibaldi Park, B. C. Prov. B. C. Rep. Prov. Mus. Nat. Hist. 1926, pp. C15-C26.
1927a Accessions. Prov. B. C. Rep. Prov. Mus. Nat. Hist. 1926, pp. 38-40.
1944a [Insects of the Forbidden Plateau.] Prov. B. C. Rep. Prov. Mus. Nat. Hist. 1943, pp. D31-D33.
1955 The natural history of the Forbidden Plateau area, Vancouver Island, British Columbia. B. C. Prov. Mus. Nat. Hist. Rep. 1954, pp. B24-B63.

Harvey, R. L.
1906a [Coleoptera from British Columbia.] Bull. B. C. Ent. Soc. No. 2, June 1906, p. 3; No. 4, Sept. 1906, p. 2.

Hatch, Melville H.
1931 Note on Pacific Coast Sphaeridiinae. Pan-P. Ent. 8:78.
1933 Coleoptera pp. 29-30 in Victor B. Scheffer, Biological conditions in a Puget Sound lake. Ecol. 14:15-30.
1938a A bibliographical catalogue of the injurious arachnids and insects of Washington. Univ. of Wash. Publ. Biol. 1:163-224.
1940 Stored-grain beetles in western Washington with special reference to the Tenebrionid *Cynaeus angustatus* LeC. Pan-P. Ent. 16:34-36.
1942 The biology of stored grain insects. Bull. Assoc. Operative Millers 1942:1207-1211.
1946 Notes on European Coleoptera in Washington, including a new species of Megasternum. Pan-P. Ent. 22:77-80.
1948 On collecting beetles in Washington. Col. Bull. 2:45-46.
1949 A century of entomology in the Pacific Northwest. Seattle. 43 pp.
1949c Studies on the fauna of Pacific Northwest greenhouses (Isopoda, Coleoptera, Dermaptera, Orthoptera, Gastropoda). Jr. N. Y. Ent. Soc. 47, 1949:141-165.
1950 An account of the life of Orson Bennett Johnson in Studies Honoring Trevor Kincaid 1950:11-28.
1953 The beetles of the Pacific Northwest. Part I. Introduction and Adephaga. Univ. Wash. Publ. Biol. 16, 348 pp.
1957 A biographical memoir of the Rev. John Henry Keen. Col. Bull. 11: 62-64.
1964 Gordon Stace Smith (1886-1962). Proc. Ent. Soc. B. C. 61:46-48, portrait.

Hatch, Melville H., and Trevor Kincaid
1958 A list of Coleoptera from the vicinity of Willapa Bay, Washington. Seattle. 21 pp.

Hinton, H. E.
1948 A synopsis of the genus Tribolium MacLeay, with some remarks on the evolution of its species-groups (Coleoptera, Tenebrionidae). Bull. Ent. Res. 39:13-45.

Hippisley, Mrs. W. W. (later Mrs. M. E. Clark)
1922 Notes on northern British Columbian Coleoptera. Can. Ent. 54:63-66.

Holland, W. J.
1888 Captures while traveling from Winnipeg to Victoria, B. C. Can. Ent. 20:89-92 (60 species from Nanaimo).

Hopping, Ralph
1925 New Coleoptera from western Canada. Can. Ent. 57:206-208.
1933a New Coleoptera from western Canada IV. Can. Ent. 65:281-286.
1935 New Coleoptera from western Canada V. Can. Ent. 67:8-9.
1935a Revision of the genus Mycterus Clairv. (Coleoptera, Pythidae). Pan-P. Ent. 11:75-78.

Hopping, Ralph, and George Hopping
1934 A revision of the genus Cephaloon Newm. Pan-P. Ent. 10:64-70.

Horn, George H.
1868 New species of Coleoptera from the Pacific district of the United States. Trans. Am. Ent. Soc. 2:129-240.
1870a Contributions to the coleopterology of the United States. Trans. Am. Ent. Soc. 3:69-97.
1870e On the revision of the Tenebrionidae of America, north of Mexico. Trans. Am. Phil. Soc. 14 (n. s.):253-404.
1872 Coleoptera, pp. 382-392 of Prelim. Rep. U. S. Geol. Surv. Mont. and portions of adjacent terr.; 5th Ann. Rep. of Progress by F. V. Hayden. Washington. 538 pp.
1873 Revision of the species of several genera of Meloidae of the United States. Proc. Am. Phil. Soc. 13:88-117.
1873a Revision of the genera and species of the tribe Hydrobiini. Proc. Am. Phil. Soc. 13:118-135.
1874 Descriptions of new species of United States Coleoptera. Trans. Am. Ent. Soc. 5:20-43.
1875 Synonymical notes and descriptions of new species of North American Coleoptera. Trans. Am. Ent. Soc. 5:126-156.
1885a A note on some Hydrophilidae. Can. Ent. 17:137-139.
1888 Miscellaneous coleopterous studies. Trans. Am. Ent. Soc. 15:26-48.
1890 The species of Heterocerus of boreal America. Trans. Am. Ent. Soc. 17:1-16.
1890a Notes on the species of Ochthebius of boreal America. Trans. Am. Ent. Soc. 17:17-26.
1890b Notes on some Hydrobiini of boreal America. Trans. Am. Ent. Soc. 17:237-278.
1890c A revision of the Sphaeridiini inhabiting boreal America. Trans. Am. Ent. Soc. 17:279-314.
1894 The Coleoptera of Baja California. Proc. Cal. Acad. Sci. Ser. 2. 4:302-449.
1895a The Coleoptera of Baja California. Supplement I. Proc. Cal. Acad. Sci. Ser. 2. 5:227-259.
1896 The Oedemeridae of boreal America. Proc. Cal. Acad. Sci. Ser. 2. 6:382-421.

Hyslop, J. A.
1912 The false wire worms of the Pacific Northwest. U. S. Dept. Agric. Bur. Ent. Bull. 95(5):73-87.

IPSB Insect pest survey bulletin, Vol. 1, 1921 to Vol. 22, 1942. Issued by U. S. Dept. of Agric., Washington, D. C.

Johansen, Carl A., and David Brannon
1953 Insects and related pests of agriculture in Washington. Wash. Agric. Exp. Sta. Circ. 274, 22 pp.
Johnson, W. G.
1897 Notes of some little known insects of economic importance. U. S. Dept. Agric. Div. Ent. Bull. 9 (n. s.):83-85.
Keen, F. P.
1952 Insect enemies of western forests. U. S. Dept. Agric. Misc. Publ. 273 rev., 280 pp.
Keen, John Henry
1891 Some British Columbia Coleoptera. Can. Ent. 23:282.
1895 List of Coleoptera collected at Massett, Queen Charlotte Islands, B. C. Can. Ent. 27:165-172, 217-220.
1898 Coleoptera or Beetles, pp. 71-74 of A preliminary catalogue of the collections of natural history and ethnology in the Provincial Museum, Victoria, British Columbia. Victoria. 196 pp.
1905 Beetles from northern British Columbia. Can. Ent. 37:297-298.
Knisch, Alfred
1922 Hydrophiliden-Studien (Op. 10). Arch. f. Naturg. 88 (A5):89-126.
Knowlton, George F.
1934 Blister beetles. Ut. Agric. Exp. Sta. Leaflet 52, 2 pp.
LaRivers, Ira
1954 Nevada Hydrophilidae (Coleoptera). Amer. Midl. Nat. 52:164-174.
Larnder, G. H.
1930 Coleoptera new to the Museum collection. Prov. B. C. Rep. Prov. Mus. Nat. Hist. 1929, p. F15.
Larson, A. O., and Frank G. Hinman
1932 A list of insects collected in moss and lichens on oak trees near Corvallis, Oregon. Proc. Ent. Soc. Wash. 34:43-44.
LeConte, John L.
1851a-1852a Descriptions of new species of Coleoptera from California. Ann. Lyc. Nat. Hist. 5:125-216.
1853 Synopsis of the Meloidae of the United States. Proc. Acad. Nat. Sci. Phila. 6:328-350.
1854 Descriptions of some new Coleoptera from Oregon, collected by Dr. J. G. Cooper of the North Pacific R. R. Expedition, under Gov. J. J. Stevens. Proc. Acad. Nat. Sci. Phila. 7:16-20.
1854a Synopsis of the Oedemeridae of the United States. Proc. Acad. Nat. Sci. Phila. 7:20-22.
1857 Report upon insects collected on the survey. In Reports of explorations and surveys to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean. . . ., pp. 1-72. Washington, D. C., 1860.
1858 Note on the species of Eleodes found within the United States. Proc. Acad. Nat. Sci. Phila. 1858:180-188.
1859 Catalogue of the Coleoptera of Fort Tejon, California. Proc. Acad. Nat. Sci. Phila. 1859:69-90.
1859a Additions to the Coleopterous fauna of northern California and Oregon. Proc. Acad. Nat. Sci. Phila. 1859:281-292.
1860 Notes on Coleoptera found at Fort Simpson, Mackenzie River, with remarks on northern species. Proc. Acad. Nat. Sci. Phila 1860: 315-321.

1861 New species of Coleoptera inhabiting the Pacific district of the United States. Proc. Acad. Nat. Sci. Phila. 1861:338-359.
1862 Synopsis of the Mordellidae of the United States. Proc. Acad. Nat. Sci. Phila. 1862:43-51.
1866b New species of North American Coleoptera. Part I. Smiths. Misc. Coll. 167:87-168.
1869 List of Coleoptera collected in Vancouver's Island by Henry and Joseph Matthews, with descriptions of some new species. Ann. Mag. Nat. Hist. Ser. 4. 4:369-385.
1870 Synonymical notes on North-American Coleoptera. Ann. Mag. Nat. Hist. Ser. 4. 6:394-404.
1873a Synonymical remarks upon North American Coleoptera. Proc. Acad. Nat. Sci. Phila. 1873:321-336.
1874 Descriptions of new Coleoptera chiefly from the Pacific slope of North America. Trans. Am. Ent. Soc. 5:43-72.
1877 List of Coleoptera. Geol. Surv. Can. Rep. of Prog. 1875-76, pp. 107-109. These species are all credited to "B. C." by Harrington, Can. Ent. 22, 1890, p. 136, even though some were probably taken in northern Alberta.
1878-1879 The Coleoptera of the alpine regions of the Rocky Mountains. U. S. Geol. and Geogr. Surv. 4 (2), 1878, pp. 447-480; Part II. 5 (3), 1879:499-520.
1879c New North American Coleoptera. North Amer. Ent. 1:1-5.
1880 Short studies of North American Coleoptera. Tr. Am. Ent. Soc. 8:163-218.

Leech, Hugh B.
1930 Notes on new methods of collecting beetles. Proc. Ent. Soc. B. C. 27:11-12.
1931 Coleoptera by "smoking" stumps. Bull. Brook. Ent. Soc. 26:12.
1935a British Columbia records of Carabidae and Hydrophilidae. Pan-P. Ent. 11:120-124.
1943 Miscellaneous records of beetles in British Columbia. Proc. Ent. Soc. B. C. 40:26-27.
1946 Collecting in southern British Columbia: finding of the water beetle *Deronectes spenceri*. Can. Ent. 78:198-200.
1946a Remarks on some Pacific Coast species of Tropisternus (Coleoptera, Hydrophilidae). Can. Ent. 77:179-184.
1947a Collecting in southern British Columbia: hilltop to lakeshore for beetles. Can. Ent. 79:105-108.
1948 Contributions toward a knowledge of the insect fauna of Lower California. No. 11. Coleoptera: Haliplidae, Dytiscidae, Gyrinidae, Hydrophilidae, Limnebiidae. Proc. Cal. Acad. Sci. Ser. 4. 24:375-484.
1948a Some Nearctic species of Palpicorn water beetles, new and old (Coleoptera: Hydrophilidae). Wasmann Coll. 7:33-46.
1949 New species and subspecies of Nearctic water beetles (Coleoptera: Dytiscidae and Hydrophilidae). Wasmann Coll. 7:243-256.
1956 Aquatic Coleoptera (part), pp. 293-371 in Robert L. Usinger, Aquatic Insects of California. Berkeley. 508 pp.

Leech, Hugh B., and Milton W. Sanderson
1959 Coleoptera pp. 981-1023 in Edmondson, Fresh-water biology. New York. 1248 pp.

Leng, Charles W.
1920 Catalogue of the Coleoptera of America north of Mexico. Mount Vernon, N.Y. 470 pp.
Leng, Charles W., and Andrew J. Mutchler
1927 Supplement 1919 to 1924 (inclusive) to Catalogue of the Coleoptera of America north of Mexico. Mount Vernon, N.Y. 78 pp.
Lepesme, P.
1944 Les Coléoptères des denrées alimentaires et des produits industriels entreposés. Paris. 335 pp.
Liljeblad, Emil
1945 Monograph of the family Mordellidae (Coleoptera) of North America, north of Mexico. Misc. Publ. Mus. of Zool., Univ. of Mich. 62, 229 pp.
Lindroth, Carl H., and Ernst Palmén
1956 Coleoptera pp. 69-75 in S. L. Tuxen, Taxonomist's glossary of genitalia in insects. Copenhagen. 284 pp.
Linsley, E. Gorton, and J. W. MacSwain
1951 The Rhipiphoridae of California (Coleoptera). Bull. Cal. Ins. Surv. 1:79-87.
Lyne, W. H.
1921 A talk on insects imported from the Orient. Proc. Ent. Soc. B.C. 13/15:146-148.
MacNay, C. G.
1950-1959 A summary of the more important insect infestations and occurrences in Canada in 1950. 80th Ann. Rep. Ent. Soc. Ont. 1949, 1950:57-77; 81st, 1951:106-125; 82nd, 1952:91-115; 83rd, 1952a:66-94; 84th, 1953:118-150; 88th, 1958:63-78; 89th, 1959:73-87.
MacSwain, J. W.
1952 A synopsis of the genus Gnathium with description of new species (Coleoptera, Meloidae). Wasmann Jr. Biol. 10:205-224.
1956 A classification of the first instar larvae of the Meloidae (Coleoptera). Univ. Cal. Publ. Ent. 12:1-182.
Malkin, Borys
1958 On some water beetles from Oregon hot springs. Col. Bull. 12:34-35.
Meeuse, Bastiaan J. D., and Melville H. Hatch
1960 Beetle pollination in Dracunculus and Sauromatium (Araceae). Col. Bull. 13:70-74.
Miller, David C.
1963 The biology of the Hydrophilidae. The Biologist 45:33-38.
1963a *Paracymus tarsalis*, a new species from the northwestern United States (Coleoptera: Hydrophilidae). Col. Bull 17:91-93.
1964 Notes on northwestern Enochrus and Cymbiodyta (Coleoptera: Hydrophilidae). Col. Bull. 18:69-78.
1965 Notes on northwestern Berosus (Coleoptera: Hydrophilidae), with two new species. Jr. N.Y. Ent. Soc. 73:28-33.
In press New species of Laccobius (Coleoptera: Hydrophilidae) from the Pacific Northwest, with notes on the identity of previously named species.
d'Orchymont, A.
1934 Notes sur quelques Hélophores paléarctiques et néarctiques (Col. Palpic.). Bull. Ann. Soc. Ent. Belg. 74:251-269.
1939 Les espèces du groupe *Chaetarthria pallida* (LeConte) (Coleoptera,

Palpicornia). Bull. Mus. Roy. Hist. Nat. Belg. 15(3):1-7.
1942 Contribution à l'étude de la tribu Hydrobiinae Bedel spécialement de sa sous-tribu Hydrobiae (Palpicornia, Hydrophilidae). Mem. Mus. Roy. Hist. Nat. Belg. 24:1-68.
1942a Revision des Laccobius américains (Coleoptera, Hydrophilidae, Hydrobiini). Bull. Mus. Roy. Hist. Nat. Belg. 18(30):1-18.
1945 Notes sur des Helophorus spécialement Américains (Coleoptera Palpicornia Hydrophilidae). Bull. Mus. Roy. d'Hist. Nat. Belg. 21:1-28.
1946 Notes on some American Berosus (s. str.) (Coleoptera, Palpicornia, Hydrophilidae). Bull. Mus. Roy. Hist. Nat. Belg. 22 (13):1-20.

Peterson, Alvah
1951 Larvae of insects. An introduction to Nearctic species. Part II. Coleoptera, Diptera, Neuroptera, Siphonaptera, Mecoptera, Trichoptera. Columbus, Ohio. 416 pp.

Pratt, Robert Y., and Melville H. Hatch
1938 The food of the black widow spider on Whidby Island, Washington. Jr. N.Y. Ent. Soc. 46:191-193.

Prov. Mus.
1898 Coleoptera collected near Victoria. pp. 74-75 in A preliminary catalogue of the collections of natural history and ethnology in the Provincial Museum, Victoria, British Columbia. Victoria. 196 pp.

Ray, Eugene
1947 Studies on North American Mordellidae, V. Pan-P. Ent. 23:121-131.

Rice, Paul L.
1933 Insects collected in flight traps in the vicinity of Moscow, Idaho. Jr. Ec. Ent. 26:1079-1083.

Rivnay, Ezekiel
1929 Revision of the Rhipiphoridae of North and Central America (Coleoptera). Mem. Am. Ent. Soc. 6, 68 pp.

Rozen, Jerome G., Jr.
1960 Phylogenetic-systematic study of larval Oedemeridae (Coleoptera). Misc. Publ. Ent. Soc. Am. 1:33-68.

Seidlitz, Georg
1920 Pythidae in Naturgesch. d. Ins. Deutschl. 1 (Coleoptera) 5 (2), 1202 pp.

Selander, Richard B.
1960 Bionomics, systematics, and phylogeny of Lytta, a genus of blister beetles (Coleoptera, Meloidae). Ill. Biol. Mon. 28, 295 pp.

Sharp, David
1915-1916 Studies in Helophorus. Ent. Mo. Mag. (3) 1:2-5, 27-30, 113-118, 130-138, 156-163, 198-204, 233-238, 270-277; (3) 2:83-86, 108-112, 125-130, 164-177, 193-200.

Simkover, H. G., and M. R. Reed
1952 A limited survey of insect, rodent, and bird contamination of grain storage facilities in eastern Washington. St. Coll. Wash. Agr. Exp. Sta. Circ. 205, 10 pp.

Smith, John B.
1882 A synopsis of the Mordellidae of the United States. Tr. Am. Ent. Soc. 10:73-100.

Spencer, G. J.
1942 Insects and other Arthropods in buildings in British Columbia.

Proc. Ent. Soc. B.C. 39:23-29.
1957 On the danger of blanket sprays and dusts. Proc. Ent. Soc. B.C. 54:49-50.
1963 Mrs. M. E. (Hippisley) Clark. Proc. Ent. Soc. B.C. 60:53-54, portrait.

Stace Smith, Gordon.
1929-1930 [Coleoptera of Copper Mt., B.C.] Mus. and Art Notes 4, 1929: 69-74; Part II. 5, 1930:22-25.
1930a Coleoptera new to the Museum collection. Prov. B.C. Rep. Prov. Mus. Nat. Hist. 1929, p. F15.

Swenson, K. G., and A. Tunnock
1957 Beetles infesting stored grain in the Willamette Valley of Oregon. Jr. Ec. Ent. 50:117-118.

Tanner, Vasco M.
1961 A check-list of the species of Eleodes and descriptions of new species (Coleoptera, Tenebrionidae). Great Basin Nat. 21:55-78.

Treherne, R. C.
1921 A further review of applied entomology in British Columbia. Proc. Ent. Soc. B.C. 13/15:135-146.

Tuxen, S. L.
1956 Taxonomist's glossary of genitalia of insects. Copenhagen. 284 pp.

Ulke, Henry
1875 Report upon the collections of Coleoptera made in portions of Nevada, Utah, California, Colorado, New Mexico, and Arizona during the years 1871, 1872, 1873, and 1874. Rep. U.S. Geol. Surv. (Wheeler) 5:809-827.

Van Dyke, Edwin Co.
1924a The Coleoptera collected by the Katmai Expeditions. Nat. Geog. Soc. Contrib. Tech. Pap. 2:1-26.
1928a A reclassification of the genera of North American Meloidae (Coleoptera) and a revision of the genera and species formerly placed in the tribe Meloini, found in America north of Mexico, together with descriptions of new species. Univ. Cal. Publ. Ent. Publ. Ent. 4: 395-474.

Wakeland, C.
1926 False wireworms injurious to dry-farm wheat and a method of combatting them. Agr. Exp. Sta. Univ. Id. Res. Bull. 6, 52 pp.

Walker, Francis
1866 List of Coleoptera in Lord's Naturalist in Vancouver Island and British Columbia, Vol. 2, pp. 309-334. (Walker's authorship is attested to on p. 290.)

Wallis, J. B.
1933b New species of Hypophloeus (Coleoptera). Can. Ent. 65:247-249.

Werner, Floyd G.
1945 A revision of the genus Epicauta in America north of Mexico (Coleoptera, Meloidae). Bull. Mus. Comp. Zool. at Harvard Coll. 95:421-517.

Wickham, H. F.
1890 A month on Vancouver Island. Can. Ent. 22:169-172.
1890a Remarks on some western Tenebrionidae. Ent. Amer. 6:83-88.
1893 Report on an entomological reconnaissance of southern Alaska and adjacent portions of British Columbia. Bull. Lab. Nat. Hist. St.

Univ. Ia. 2:202-233.

1903a The beetles of an Oregon beach. Ottawa Nat. 17:49-52 (Yaquina Bay).

Winters, Fred C.

1926 Notes on the Hydrobiini (Coleoptera, Hydrophilidae) of Boreal America. Pan-P. Ent. 3:49-58.

Zuk, Peter

1958 Distribution of stored food insects in British Columbia. Proc. Ent. Soc. B.C. 55:13-16.

PLATE SECTION

Explanation of Plate I

Fig. 1. *Limnichius (Eulimnichius) analis* LeC. (p. 6)

Fig. 2. *Helichus striatus* LeC. (p. 6)

Fig. 3. *Narpus concolor* LeC. ab. *solutus* Brown (p. 9)

Fig. 4. *Dubiraphia guilianii* VanD. (p. 9)

Fig. 5. *Ampumixis dispar* Fall (p. 10)

Fig. 6. *Cleptelmis ornata* Schaef. (p. 10)

Fig. 7. *Optioservus seriatus* LeC. (p. 10)

Fig. 8. *Heterlimnius koebeli* Mart. (p. 11)

Fig. 9. *Zaitzevia parvula* Horn (p. 11)

(Figures by H. Houk)

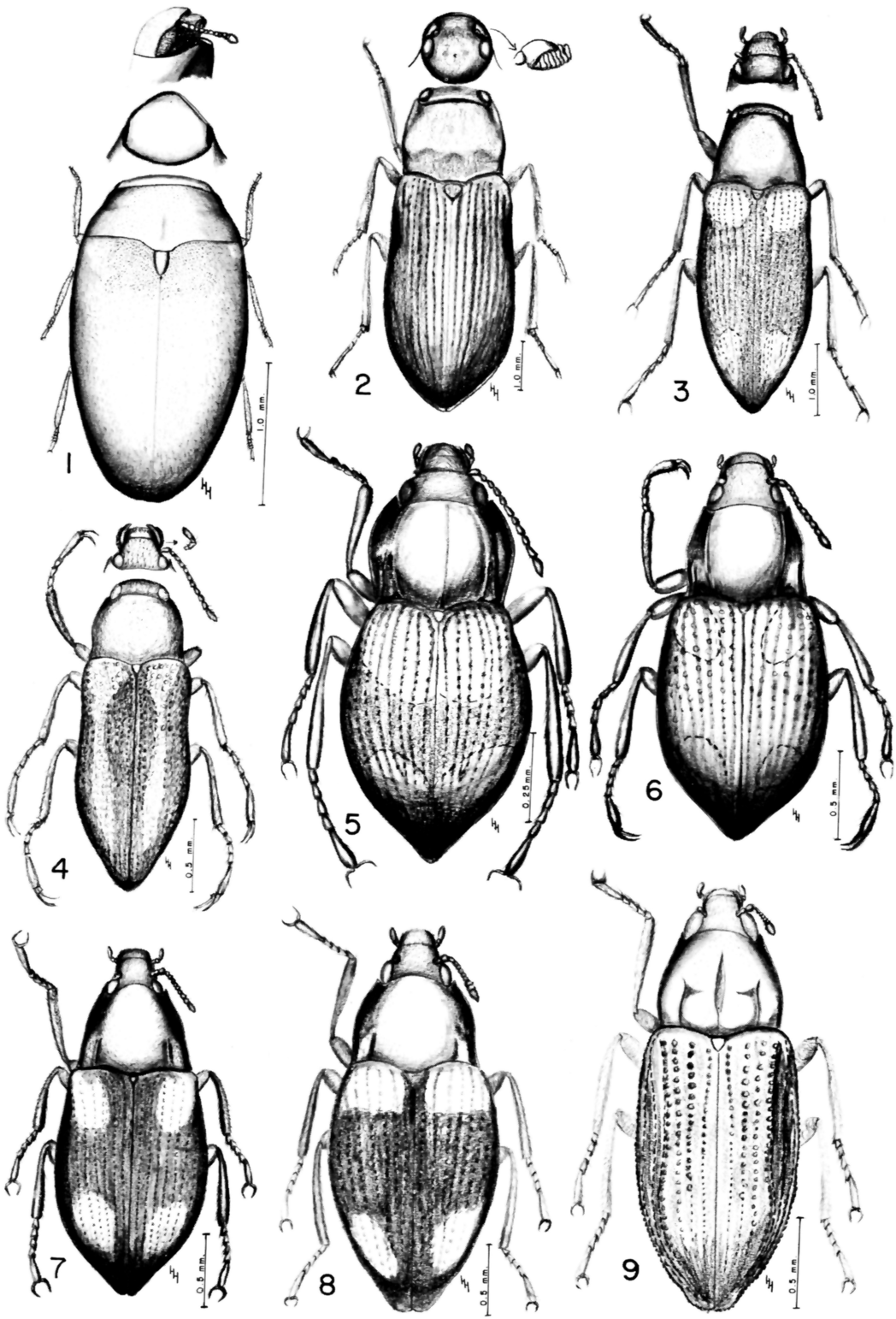

Plate I

Explanation of Plate II

Fig. 1. *Microcylloepus thermarum* Darl. (p. 12)

Fig. 2. *Heterocerus* (s. str.) *gemmatus* Horn (p. 14)

Fig. 3. *Georyssus pusillus* LeC. (p. 15)

Fig. 4. *Hydraena vandykei* d'Orch. (p. 20)

Fig. 5. *Limnebius columbianus* Brown (p. 21)

Fig. 6. *Hydrochus squamifer* LeC. (p. 23)

Fig. 7. *Elophorus* (s. str.) *auricollis* Esch. (p. 25). Fig. 7a. Pronotum; 1, Median groove; 2, Internal interval; 3, Intermediate groove; 4, Middle interval; 5, Submarginal groove; 6, External interval; 7, Marginal groove

Fig. 8. *Sphaeridium (Sphaeridiolinus) bipustulatum* F. (p. 39)

Fig. 9. *Cercyon* (s. str.) *haemorrhoidalis* F. (p. 42)

(Figures by H. Houk)

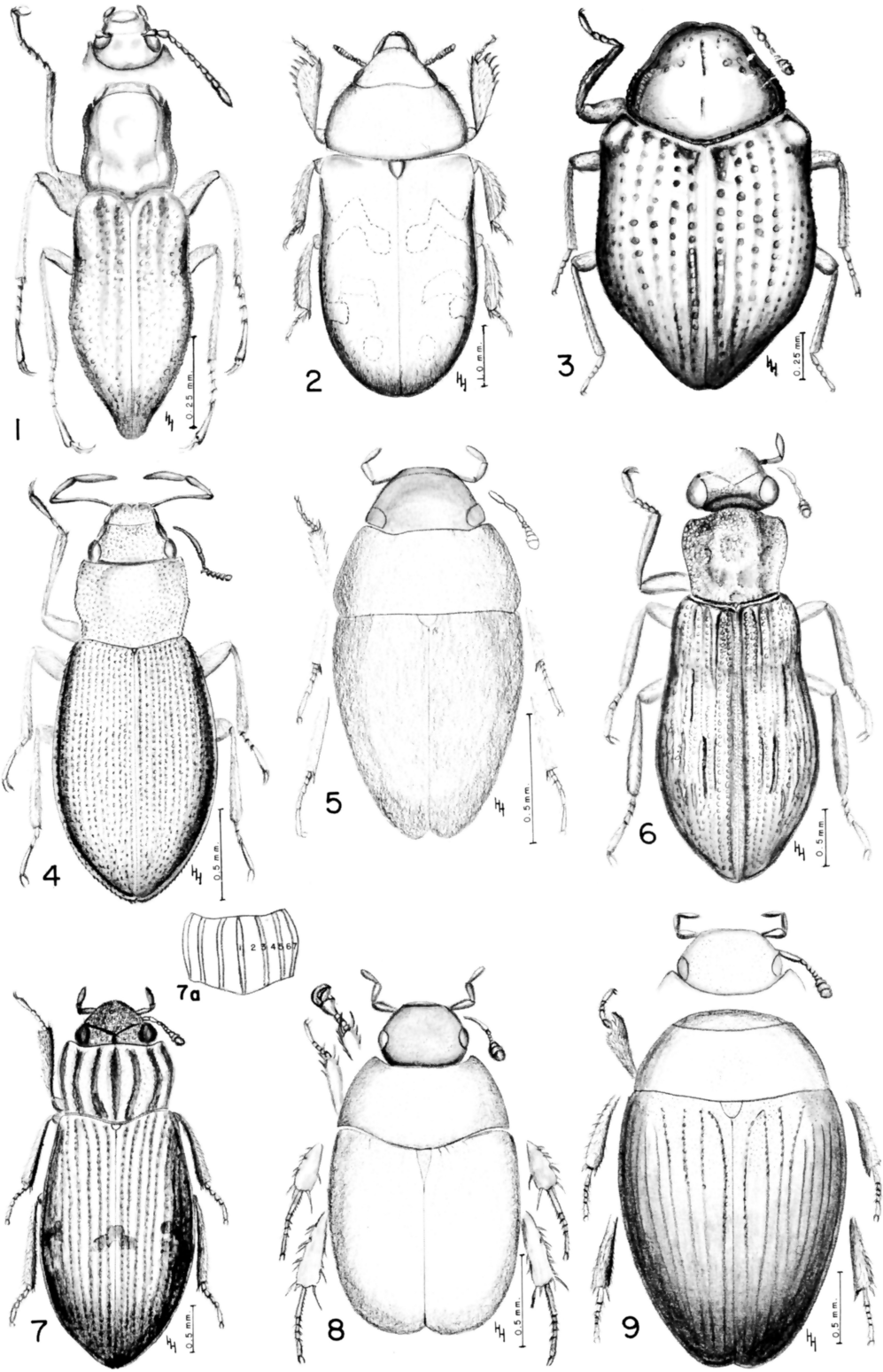
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Plate II

Explanation of Plate III

Fig. 1. *Lara gehringi* Darl. (p. 8)

Fig. 2. *Lara avara* LeC. subsp. *avara* LeC. (p. 8)

Fig. 3. *Lara avara* LeC. subsp. *amplipennis* Darl. (p. 8)

Fig. 4. *Ochthebius* (s. str.) *interruptus* LeC. (p. 17), pronotum

Fig. 5. *Ochthebius* (s. str.) *lineatus* LeC. (p. 18), pronotum

Fig. 6. *Ochthebius* (s. str.) *holmbergi* Mann. (p. 18), pronotum

Fig. 7. *Ochthebius (Asiobates) discretus* LeC. (p. 19), pronotum

Fig. 8. *Ochthebius (Asiobates) rectus* LeC. (p. 19), pronotum

Fig. 9. *Ochthebius (Homalochthebius) cribricollis* LeC. (p. 19), pronotum

Fig. 10. *Ochthebius (Bothochius) laevipennis* LeC. (p. 20), pronotum

Fig. 11. *Laccobius agilis* Rand. (p. 53), aedeagus, dorsal view

Fig. 12. *Laccobius agilis* Rand. (p. 53), aedeagus, lateral view

Fig. 13. *Paracymus tarsalis* Mil. (p. 55), terminal protarsal segments of male, lateral view

Fig. 14. *Paracymus tarsalis* Mil. (p. 55), terminal protarsal segments of male, anterior view

Fig. 15. *Paracymus tarsalis* Mil. (p. 55), aedeagus

Fig. 16. *Paracymus subcupreus* Say (p. 55), terminal protarsal segments of male, lateral view

Fig. 17. *Paracymus subcupreus* Say (p. 55), aedeagus

(Figs. 1-3 after Darlington, Psyche 36, 1929:329; figs. 4-10 after Horn 1890a, pl. II, figs. 9, 11, 13, 6, 4, 8, and 3 respectively; figs. 11-17 by D. Miller)

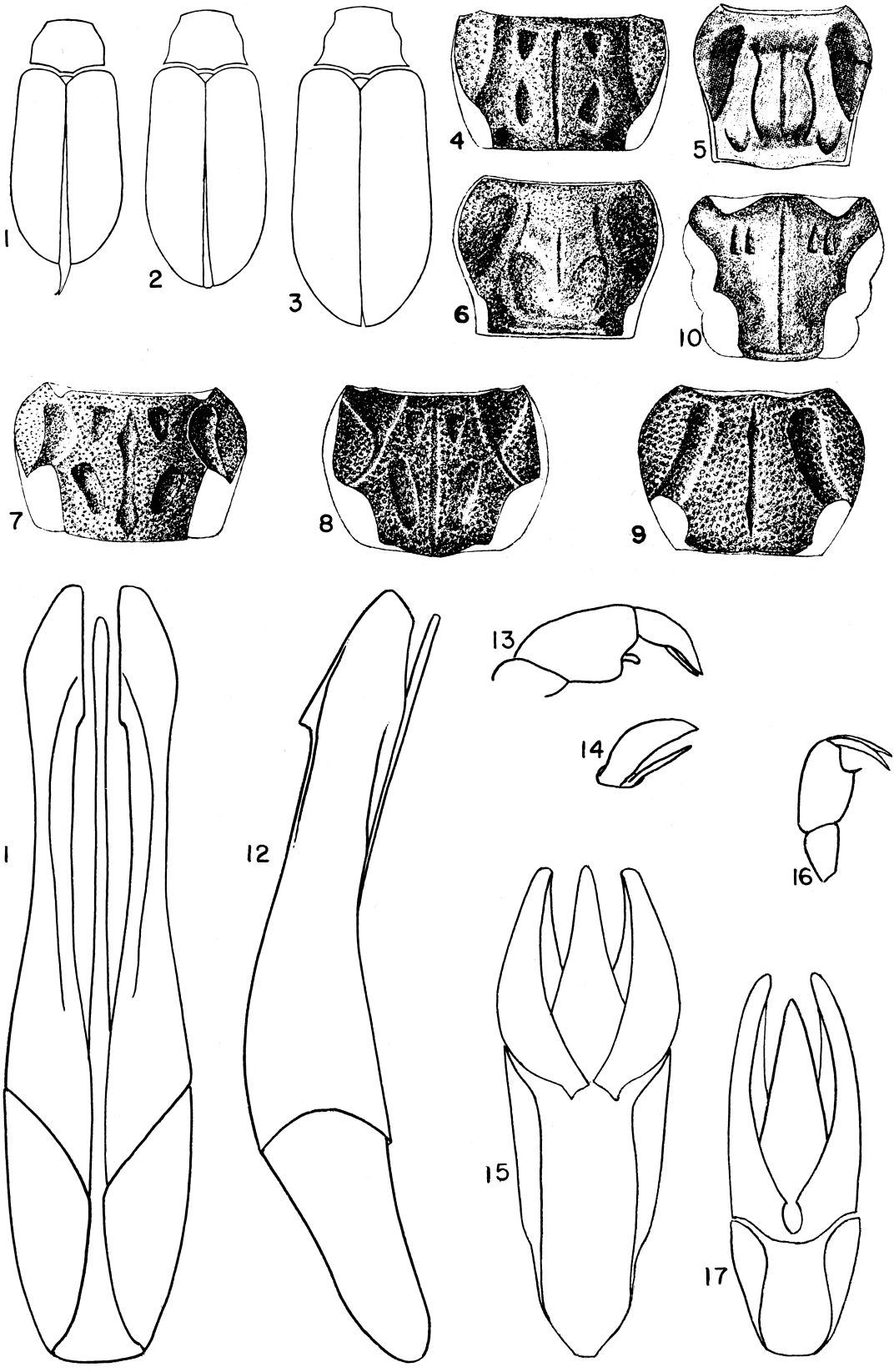

Plate III

Explanation of Plate IV

Fig. 1. *Megasternum posticatum* Mann. (p. 45)

Fig. 2. *Cryptopleurum minutum* F. (p. 46)

Fig. 3. *Chaetarthria nigrella* LeC. (p. 46)

Fig. 4. *Berosus* (s. str.) *striatus* Say (p. 47)

Fig. 5. *Hydrochara obtusatus* Say (p. 49)

Fig. 6. *Tropisternus lateralis* F. subsp. *limbalis* Leech (p. 50)

Fig. 7. *Laccobius agilis* Rand. (p. 53)

Fig. 8. *Hydrobius fuscipes* L. (p. 54)

Fig. 9. *Ametor scabrosus* Horn (p. 55)

(Figures by H. Houk)

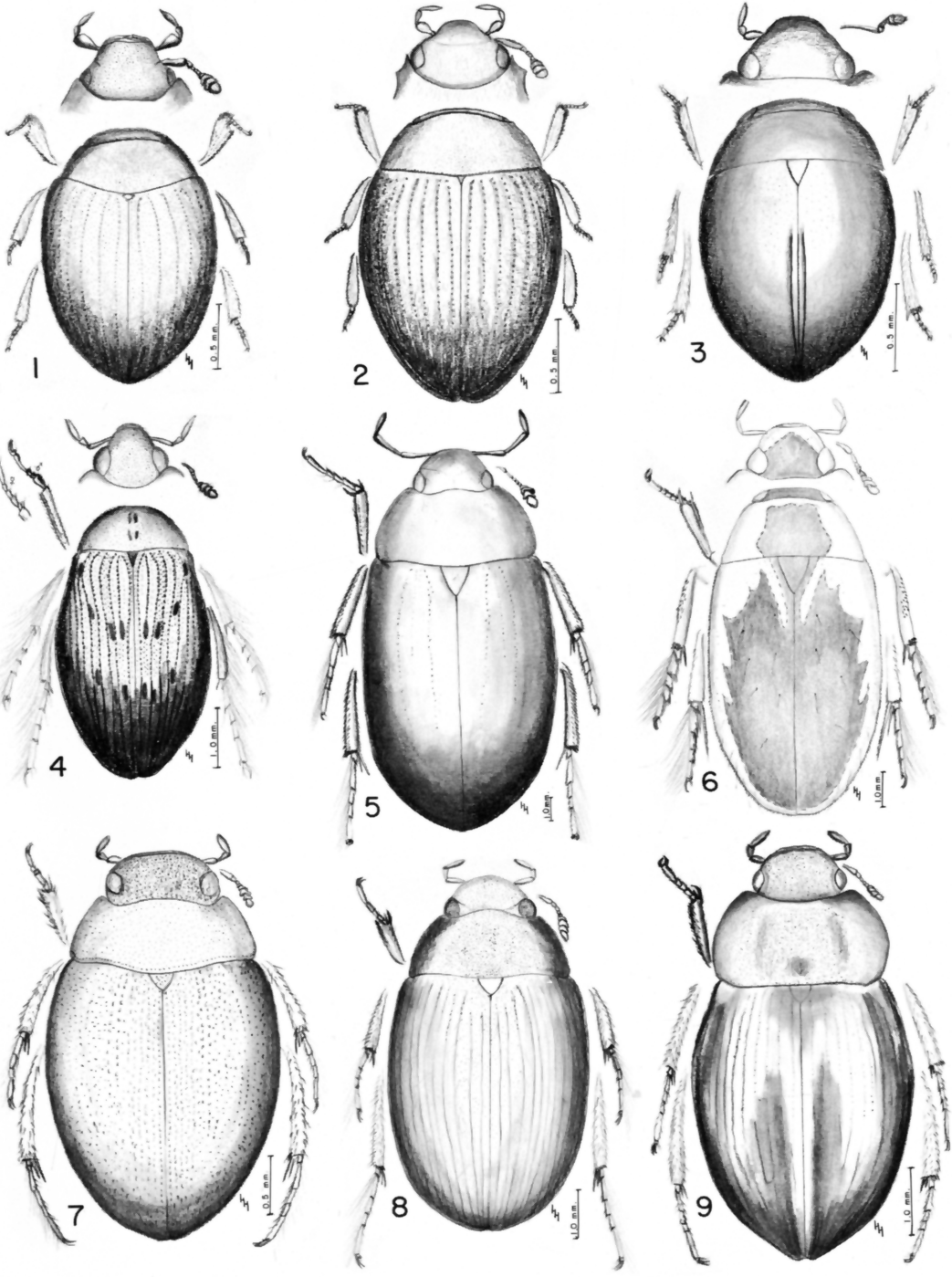

Plate IV

Explanation of Plate V

Aedeagi of Species of Elophorus

(The figures are in dorsal view, the figure numbers corresponding to the numbers assigned to the species in the text.)

Fig. 1. *Elophorus (Cyphelophorus) tuberculatus* Gyll. (p. 24); Seattle, Wn.
Fig. 2. *Elophorus* (s. str.) *auricollis* Esch. (p. 25); Bothell, Wn.
Fig. 3. *Elophorus* (s. str.) *brevipalpis* Bed. (p. 26); Little Malad River, Id., 5 mi. w. of Malad City.
Fig. 4. *Elophorus* (s. str.) *jacutus* Pop. (p. 26); Nation River Dist., B. C.
Fig. 5. *Elophorus* (s. str.) *hatchi* McC. sp. n. (p. 27); Fish L., Steens Mts., Or.
Fig. 6. *Elophorus* (s. str.) *nitidulus* LeC. (p. 27); Dry Falls, Wn.
Fig. 7. *Elophorus* (s. str.) *oregonus* McC. sp. n. (p. 28); Lake of Woods-Ashland Rd., Or.
Fig. 8, 8a. *Elophorus* (s. str.) *fenderi* McC. sp. n. (p. 29); 8, Tokeland, Wn.; 8a, Charleston, Or.
Figs. 9, 9a, 9b. *Elophorus* (s. str.) *ledatus* d'Orch. (p. 30); 9, Grand Coulee, Wn.; 9a, Cheney, Wn.; 9b, McMinnville, Or.
Figs. 10, 10a, 10b. *Elophorus* (s. str.) *columbianus* McC. sp. n. (p. 30); 10, Fish L., Steens Mts., Or.; 10a, Dry Falls, Wn.; 10b, Enderby, B. C.
Fig. 11. *Elophorus* (s. str.) *inflectus* McC. sp. n. (p. 31); Enderby, B. C.
Figs. 12, 12a. *Elophorus* (s. str.) *linearoides* d'Orch. (p. 32); 12, Burns, Or.; 12a, Sprague R. 12 mi. e. Chiloquin, Klamath Co., Or.
Fig. 13. *Elophorus* (s. str.) *lacustris* LeC. (p. 32); Spokane, Wn.
Figs. 14, 14a. *Elophorus* (s. str.) *nitiduloides* d'Orch. (p. 33); 14, Deer Park, Wn.; 14a, Montesano, Wn.
Fig. 15. *Elophorus* (s. str.) *lecontei* Knisch (p. 33); Lunch Cr., Dixie Pass, Or.
Fig. 16. *Elophorus* (s. str.) *leechi* McC. sp. n. (p. 34); Cle Elum, Wn.
Figs. 17, 17a. *Elophorus* (s. str.) *oblongus* LeC. (p. 35); 17, Cheney, Wn.; 17a, Enderby, B. C.
Fig. 18. *Elophorus* (s. str.) *schuhi* McC. sp. n. (p. 36); Burns, Or.
Fig. 19. *Elophorus* (s. str.) *alternatus* LeC. (p. 37); Burns, Or.
Fig. 20. *Elophorus* (s. str.) *electus* d'Orch. (p. 38); Fish L., Steens Mts., Or.

(Figures by D. McCorkle)

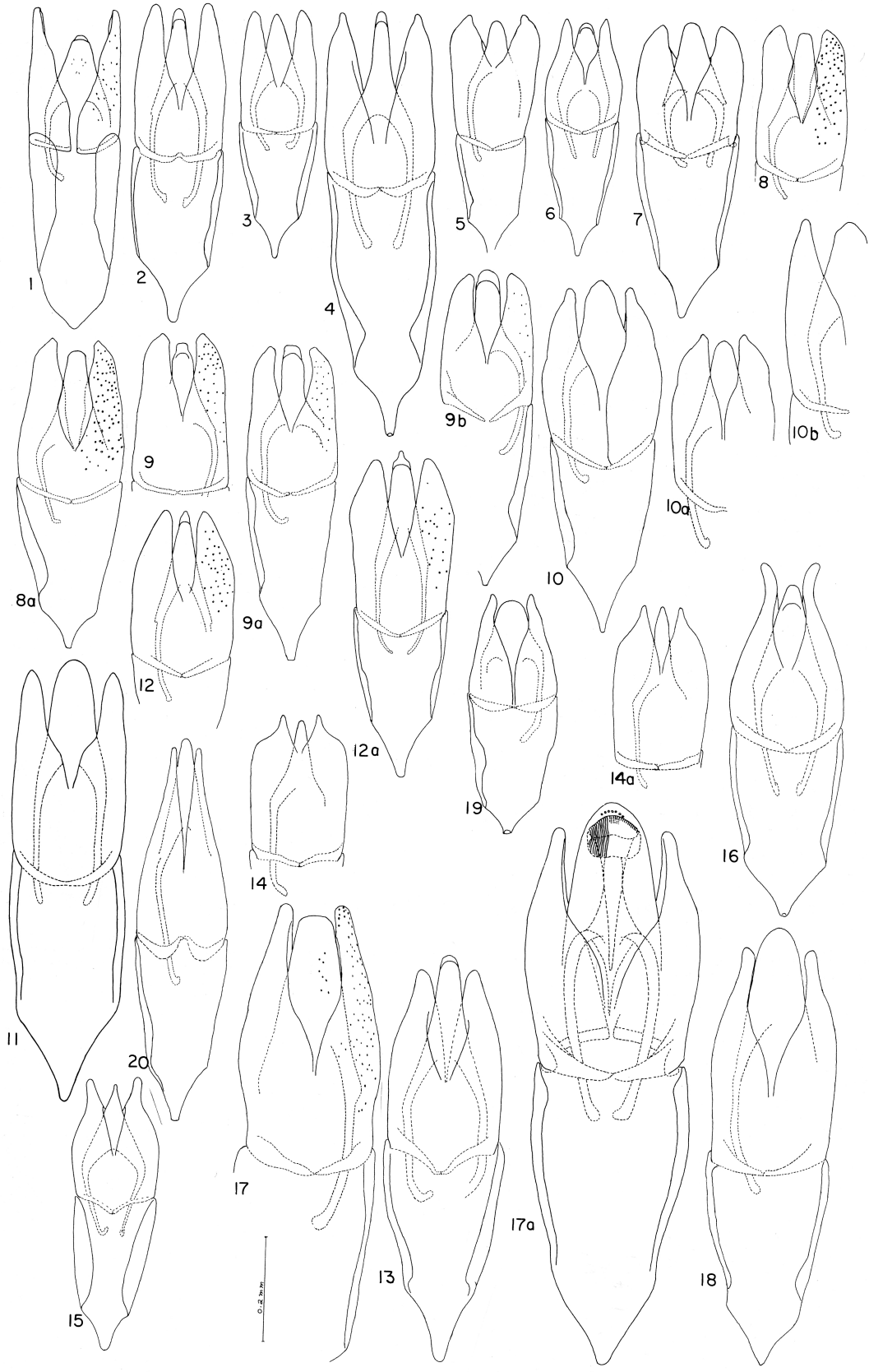
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Plate V

Explanation of Plate VI

Fig. 1. *Berosus* (s. str.) *striatus* Say (p. 48), female, apex of elytron

Fig. 2. *Berosus* (s. str.) *fraternus* LeC. (p. 48), female, apex of elytron

Fig. 3. *Berosus* (s. str.) *stylifer* Horn (p. 47), aedeagus, dorsal view

Fig. 4. *Berosus* (s. str.) *stylifer* Horn (p. 47), aedeagus, lateral view

Fig. 5. *Berosus* (s. str.) *oregonensis* Mil. (p. 47), aedeagus, dorsal view

Fig. 6. *Berosus* (s. str.) *oregonensis* Mil. (p. 47), aedeagus, lateral view

Fig. 7. *Berosus* (s. str.) *hatchi* Mil. (p. 48), aedeagus, dorsal view

Fig. 8. *Berosus* (s. str.) *hatchi* Mil. (p. 48), aedeagus, lateral view

Fig. 9. *Berosus* (s. str.) *striatus* Say (p. 47), aedeagus, dorsal view

Fig. 10. *Berosus* (s. str.) *striatus* Say (p. 47), aedeagus, lateral view

Fig. 11. *Berosus* (s. str.) *ingeminatus* d'Orch. (p. 48), aedeagus, dorsal view

Fig. 12. *Berosus* (s. str.) *ingeminatus* d'Orch. (p. 48), aedeagus, lateral view

Fig. 13. *Berosus* (s. str.) *infuscatus* LeC. (p. 48), aedeagus, dorsal view

Fig. 14. *Berosus* (s. str.) *infuscatus* LeC. (p. 48), aedeagus, lateral view

Fig. 15. *Berosus* (s. str.) *fraternus* LeC. (p. 47), aedeagus, dorsal view

Fig. 16. *Berosus* (s. str.) *fraternus* LeC. (p. 47), aedeagus, lateral view

(Figures by D. Miller)

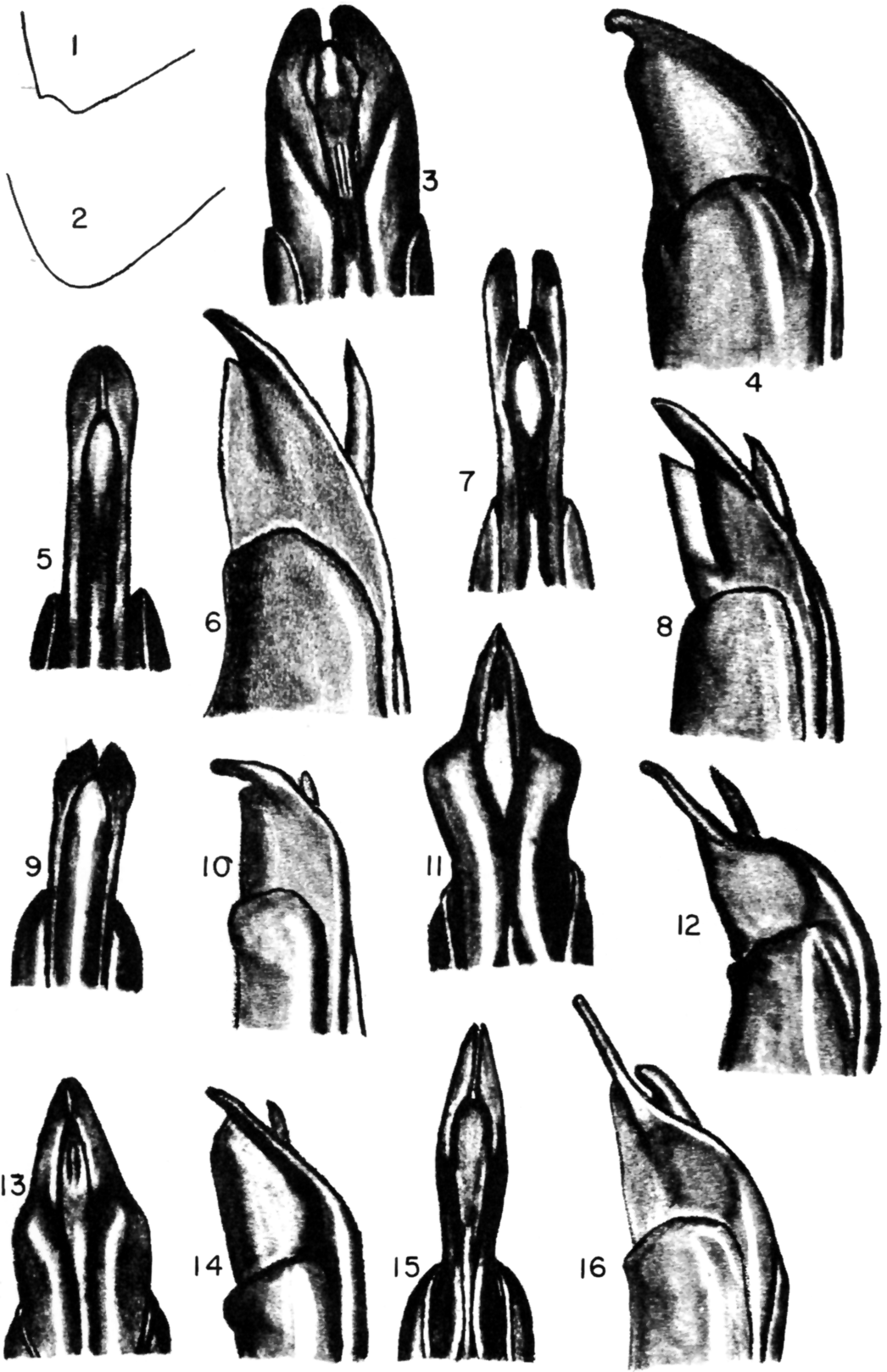

Plate VI

Explanation of Plate VII

Fig. 1. *Laccobius acutipenis* Mil. (p. 53), aedeagus, dorsal view
Fig. 2. *Laccobius acutipenis* Mil. (p. 53), aedeagus, lateral view
Fig. 3. *Laccobius columbianus* Mil. (p. 53), aedeagus, dorsal view
Fig. 4. *Laccobius columbianus* Mil. (p. 53), aedeagus, lateral view
Fig. 5. *Laccobius nevadensis* Mil. (p. 53), aedeagus, dorsal view
Fig. 6. *Laccobius nevadensis* Mil. (p. 53), aedeagus, lateral view
Fig. 7. *Laccobius carri* d'Orch. (p. 53), aedeagus, ventral view
Fig. 8. *Laccobius carri* d'Orch. (p. 53), aedeagus, lateral view
Fig. 9. *Laccobius pacificus* Mil. (p. 54), aedeagus, lateral view
Fig. 10. *Laccobius pacificus* Mil. (p. 54), aedeagus, ventral view
Fig. 11. *Laccobius truncatipenis* Mil. (p. 54), aedeagus, dorsal view
Fig. 12. *Laccobius truncatipenis* Mil. (p. 54), aedeagus, lateral view
Fig. 13. *Hydrochus pseudosquamifer* Mil. (p. 22), aedeagus, dorsal view
Fig. 14. *Hydrochus pseudosquamifer* Mil. (p. 22), aedeagus, lateral view
Fig. 15. *Hydrochus squamifer* LeC. (p. 23), aedeagus, dorsal view
Fig. 16. *Hydrochus squamifer* LeC. (p. 23), aedeagus, lateral view
Fig. 17. *Crenitis palpalis* Mil. (p. 58), terminal segment of maxillary palpus
Fig. 18. *Crenitis snoqualmie* Mil. (p. 57), aedeagus, dorsal view
Fig. 19. *Crenitis malkini* Mil. (p. 57), aedeagus, dorsal view
Fig. 20. *Crenitis dissimilis* (Horn) (p. 57), aedeagus, dorsal view
Fig. 21. *Cymbiodyta acuminata* Fall (p. 60), maxillary palpus
Fig. 22. *Cymbiodyta leechi* Mil. (p. 60), maxillary palpus
Fig. 23. *Cymbiodyta acuminata* Fall (p. 60), aedeagus, dorsal view
Fig. 24. *Cymbiodyta leechi* Mil. (p. 60), aedeagus, dorsal view
Fig. 25. *Cymbiodyta vindicata* Fall (p. 61), aedeagus, dorsal view
Fig. 26. *Cymbiodyta hatchi* Mil. (p. 61), aedeagus, dorsal view
Fig. 27. *Chaetarthria nigrella* LeC. (p. 46), male protibia
Fig. 28. *Chaetarthria nigrella* LeC. (p. 46), aedeagus, dorsal view
Fig. 29. *Chaetarthria nigrella* LeC. (p. 46), aedeagus, lateral view

The scale of magnification is approximately as follows: Figs. 1-12, x 60; figs. 13-16, x 58; figs. 17-20, x 94; figs. 21-26, x 96, figs. 27-29, x 56.

(Figures by D. Miller)

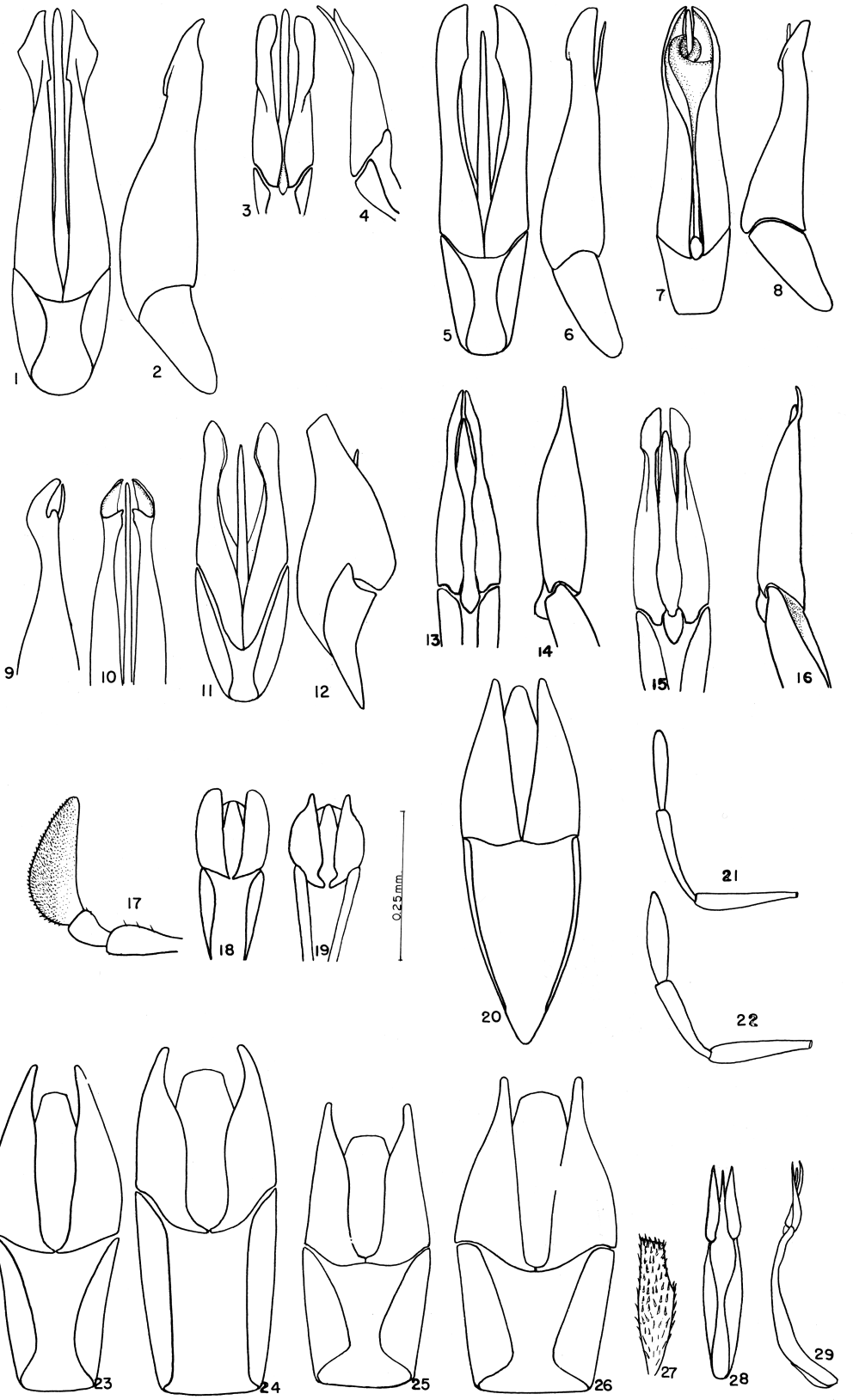
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Plate VII

Explanation of Plate VIII

Fig. 1. *Paracymus subcupreus* Say (p. 55)

Fig. 2. *Anacaena limbata* F. (p. 56)

Fig. 3. *Crenitis morata* Horn (p. 56)

Fig. 4. *Enochrus (Lumetus) horni* Leech (p. 59)

Fig. 5. *Cymbiodyta pacifica* Leech (p. 61)

Fig. 6. *Sphalma quadricollis* Horn (p. 64)

Fig. 7. *Tetratoma concolor* LeC. (p. 64)

Fig. 8. *Eupisemus elongatus* LeC. (p. 64)

Fig. 9. *Synstrophus repandus* Horn (p. 66)

(Figures by H. Houk)

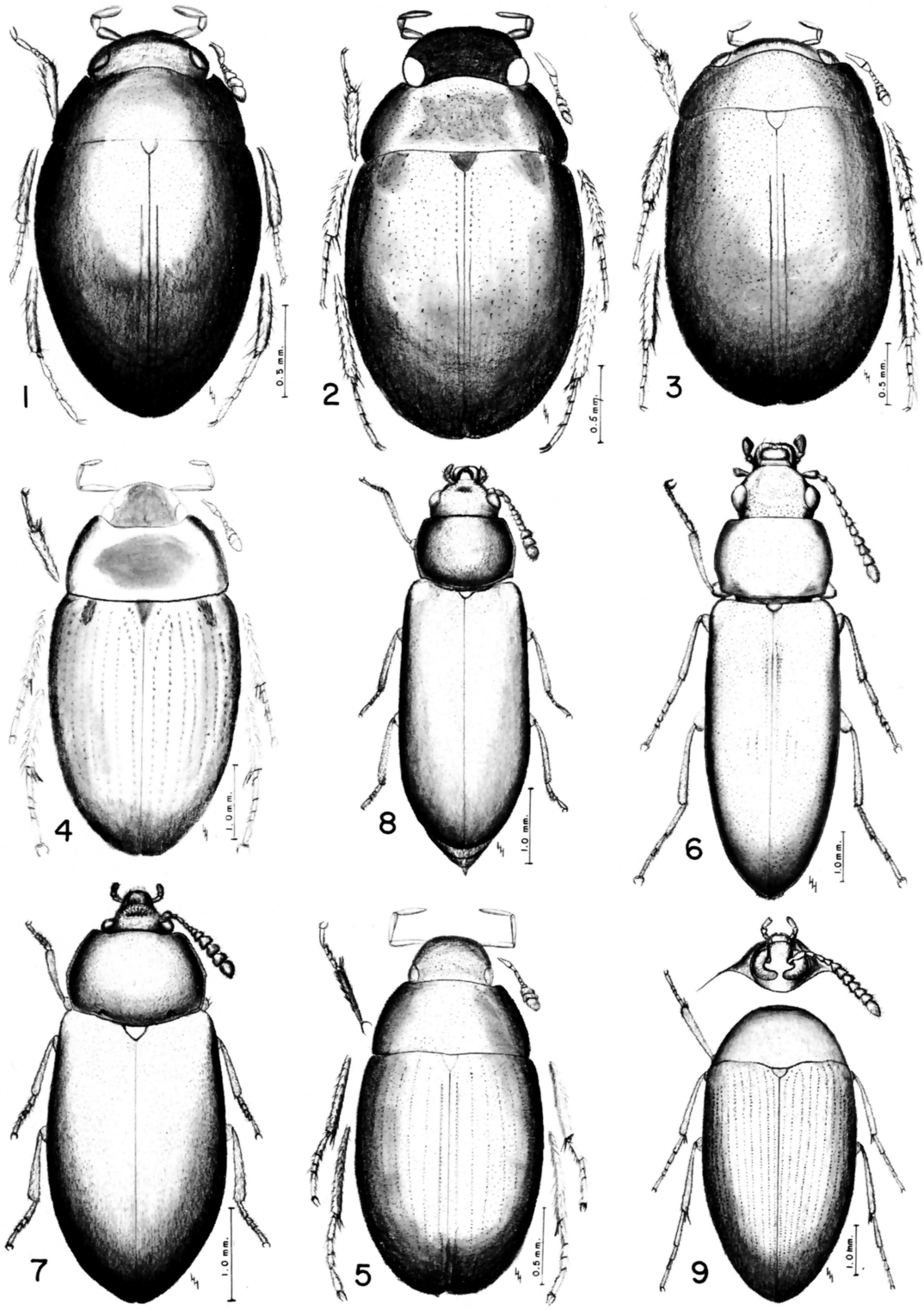


Plate VIII

Explanation of Plate IX

Fig. 1. *Holostrophus impressicollis* LeC. (p. 67)

Fig. 2. *Hallomenus scapularis* Mels. (p. 67)

Fig. 3. *Orchesia ornata* Horn (p. 75)

Fig. 4. *Lederia arctica* Horn (p. 76)

Fig. 5. *Phloeotrya vaudoueri* Muls. (p. 69)

Fig. 6. *Xylita laevigata* Hellen. (p. 70)

Fig. 7. *Xylita testacea* sp. n. (p. 71)

Fig. 8. *Rushia californica* Fall (p. 70)

Fig. 9. *Scotochroa basalis* LeC. (p. 71)

(Figures by H. Houk)

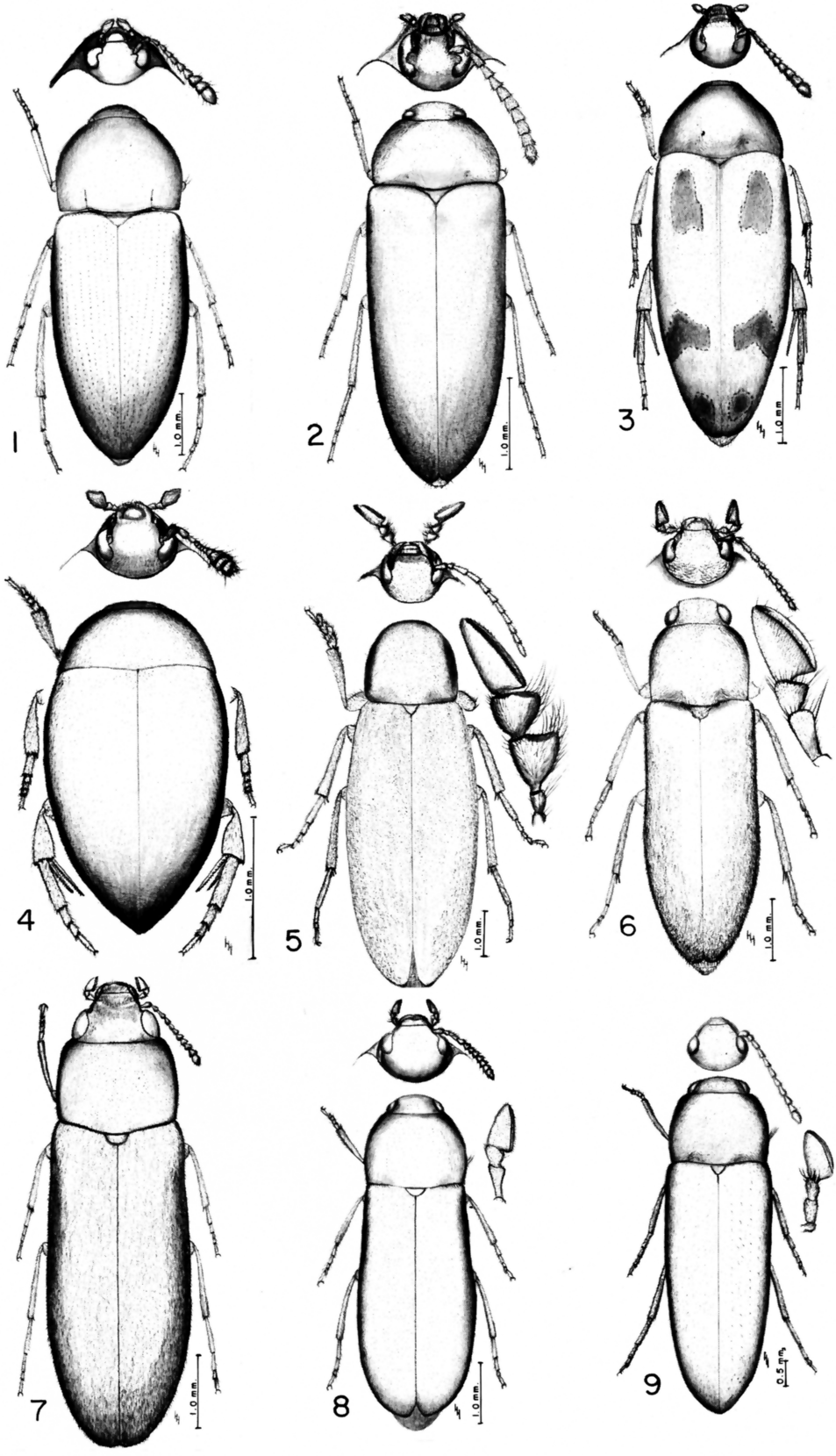


Plate IX

Explanation of Plate X

Fig. 1. *Serropalpus substriatus* Hald. (p. 72)

Fig. 2. *Zilora hispida* LeC. (p. 73)

Fig. 3. *Prothalpia holmbergii* Mann. (p. 73)

Fig. 4. *Melandrya striata* Say (p. 74)

Fig. 5. *Phryganophilus collaris* LeC. (p. 74)

Fig. 6. *Emmesa testacea* VanD. subsp. *leeperi* Malk. (p. 75)

Fig. 7. *Phellopsis porcata* LeC. (p. 78)

Fig. 8. *Usechus nucleatus* Csy. (p. 79)

Fig. 9 *Usechimorpha barberi* Blais. (p. 79)

(Figures by H. Houk)

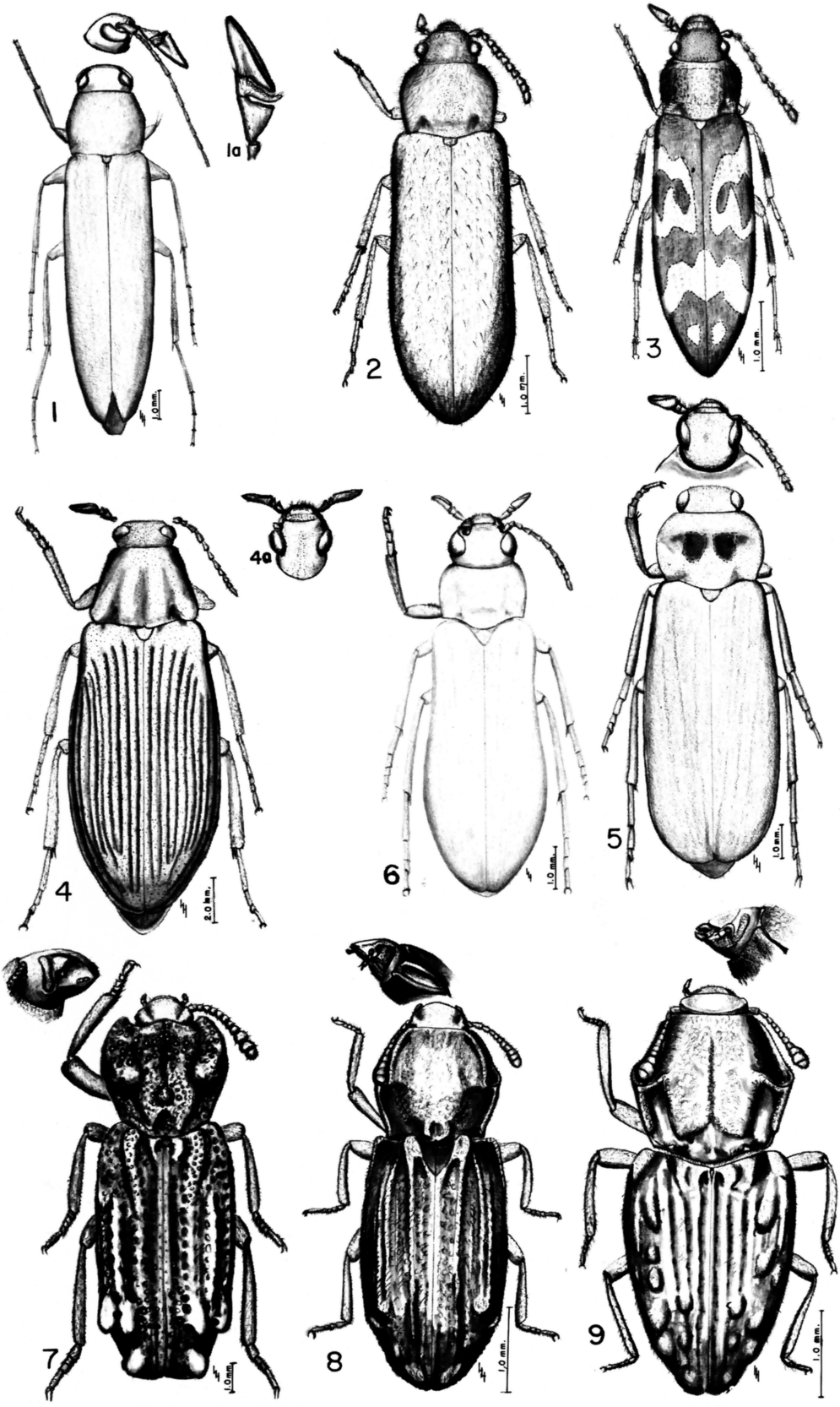


Plate X

Explanation of Plate XI

Fig. 1. *Ditylus quadricollis* LeC. (p. 80)

Fig. 2. *Oxacis sericea* Horn (p. 81)

Fig. 3. *Copidita quadrimaculata* Mots. (p. 81)

Fig. 4. *Asclera nigra* LeC. (p. 82)

Fig. 5. *Calopus angustus* LeC. (p. 82)

Fig. 6. *Xanthochroa testacea* Horn (p. 83)

Fig. 7. *Nacerdes melanura* L. (p. 83)

Fig. 8. *Lecontia discicollis* LeC. (p. 85)

Fig. 9. *Priognathus monilicornis* Rand. (p. 85)

(Figures by H. Houk)

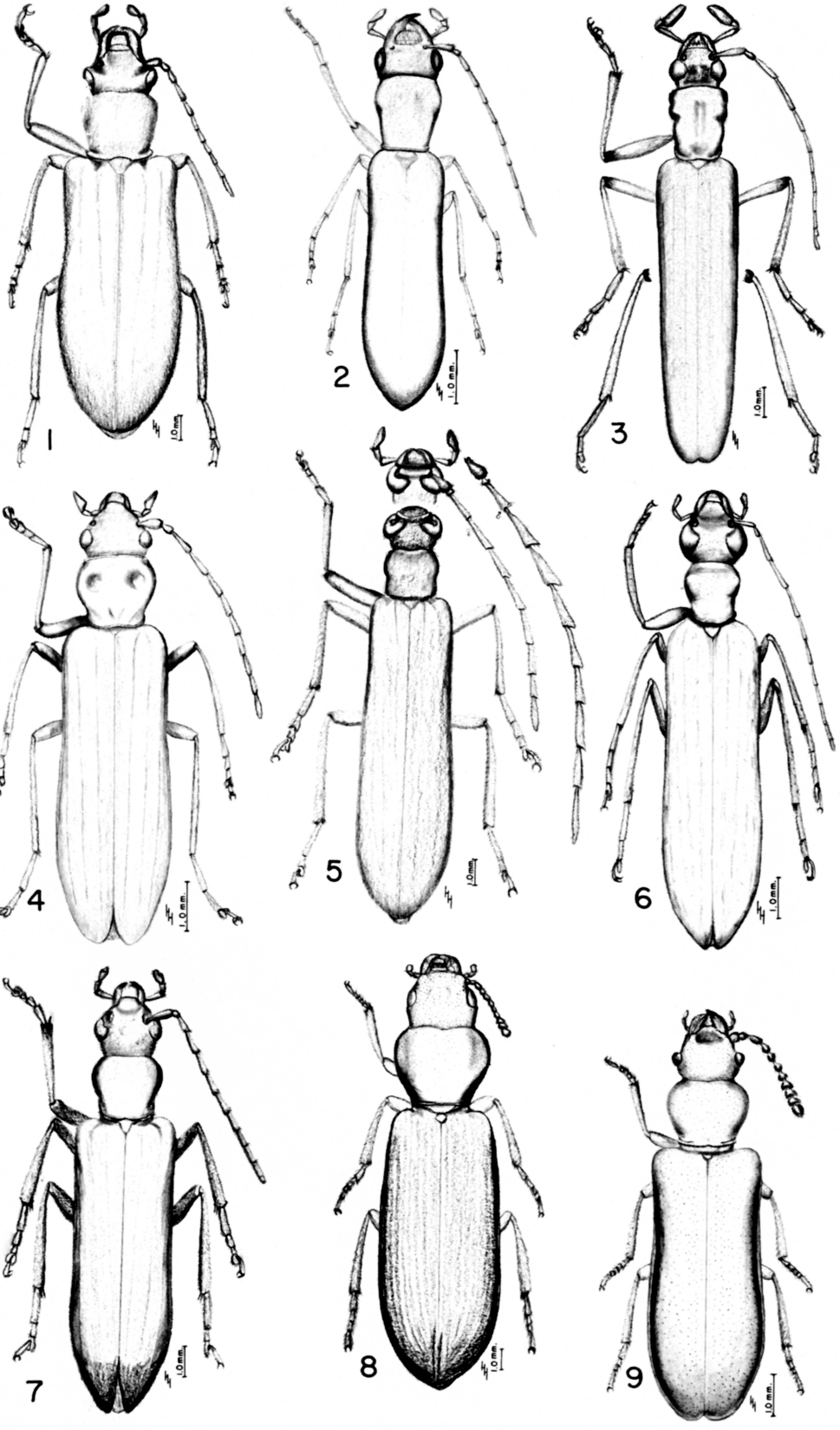


Plate XI

Explanation of Plate XII

Fig. 1. *Pytho americanus* Kby. (p. 85)

Fig. 2. *Epicauta normalis* Wer. (p. 105)

Fig. 3. *Epicauta puncticollis* Mann. (p. 106)

Fig. 4. *Meloe* (s. str.) *barbatus* LeC. (p. 110)

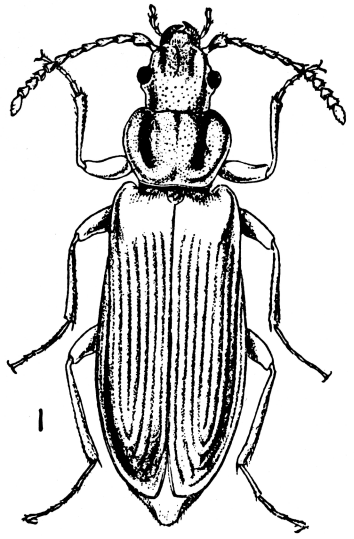
Fig. 5, 6. *Meloe (Proscarabaeus) opacus* LeC. (p. 110)

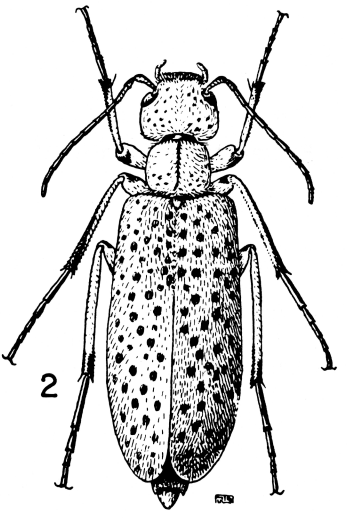
Fig. 7. *Meloe (Proscarabaeus) afer* Bland. (p. 110)

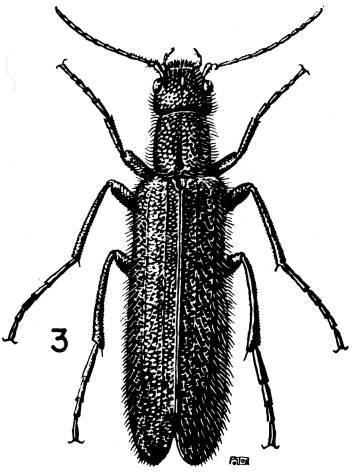
Fig. 8. *Meloe (Proscarabaeus) californicus* VanD. (p. 110)

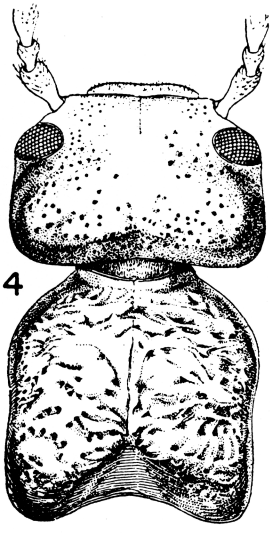
Fig. 9. *Meloe (Proscarabaeus) montanus* LeC. (p. 111)

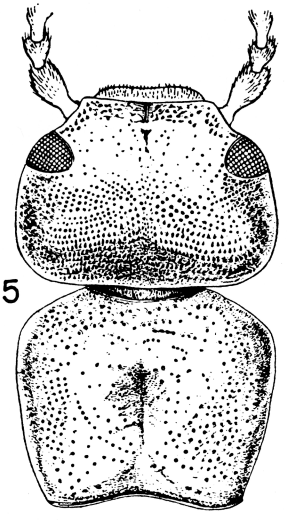
(Fig. 1 reproduced by permission from Forest Insects by Doane, Van Dyke, Chamberlin and Burke, 1936, p. 229, fig. 128, McGraw-Hill Book Co. Figs. 2 and 3 after Knowlton 1934, p. 1, figs. 1 and 2. Figs. 4-9 after Van Dyke 1928a, pl. 18 and 19, figs. 28, 26, 27, 25, 16 and 20 respectively)

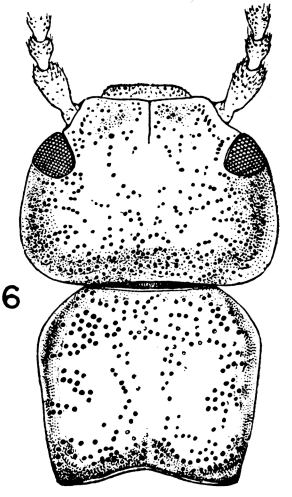


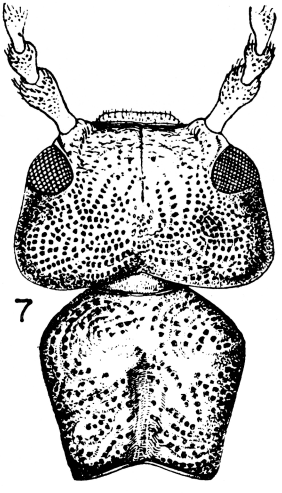


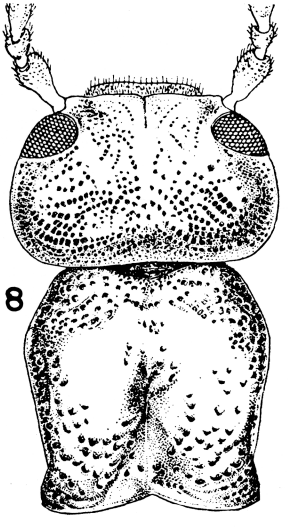












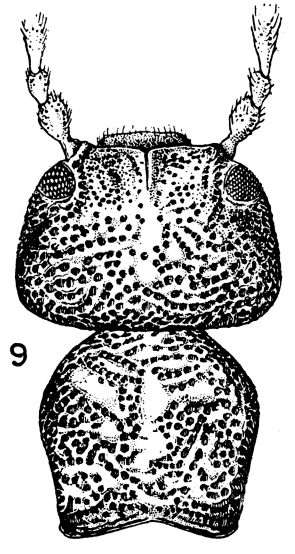


Plate XII

Explanation of Plate XIII

Fig. 1. *Hydrophilus triangularis* Say (p. 49)

Fig. 2. *Lytta vulnerata* LeC. subsp. *cooperi* LeC. (p. 107)

Fig. 3. *Meloe (Proscarabaeus) montanus* LeC. (p. 111)

Fig. 4. *Meloe (Proscarabaeus) strigulosus* Mann. (p. 111)

Fig. 5. *Lytta cyanipennis* LeC. (p. 107)

Fig. 6. *Coelocnemis californicus* Mann. (p. 175)

Fig. 7. *Iphthimus serratus* Mann. (p. 174)

(Figures by D. Bonnell)

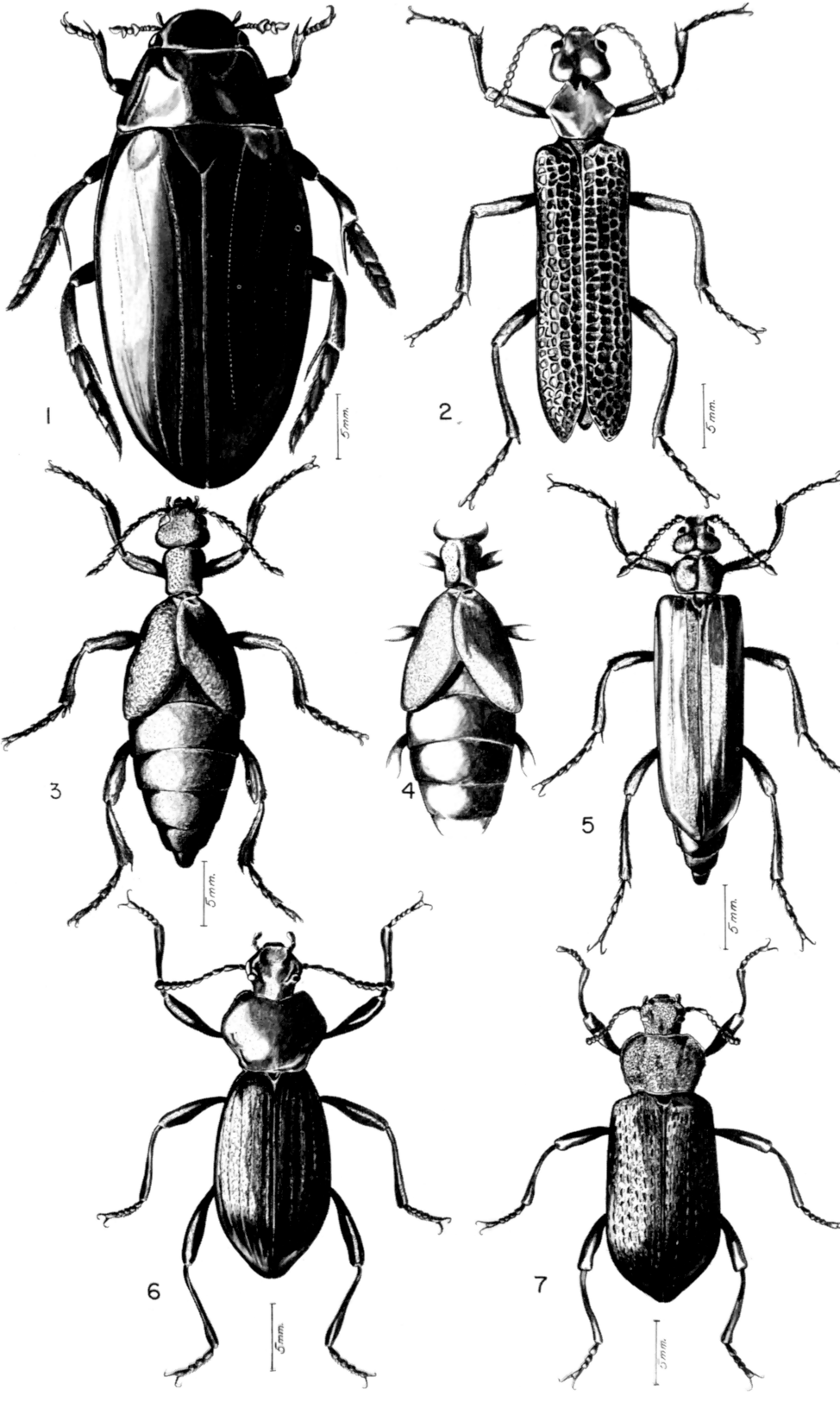


Plate XIII

Explanation of Plate XIV

Fig. 1. *Rhinosimus* (s. str.) *viridiaeneus* Rand. (p. 87)

Fig. 2. *Mycterus (Mycterimus) concolor* LeC. (p. 88)

Fig. 3. *Aegialatis californicus* Mots. (p. 89)

Fig. 4. *Cephaloon (Spondium) tenuicornis* LeC. (p. 89)

Fig. 5. *Neoscraptia testacea* Fend. (p. 91)

Fig. 6. *Canifa pallipes* Mels. (p. 91)

Fig. 7. *Pentaria trifasciata* Mels. (p. 93)

Fig. 8. *Naucles tibialis* Champ. (p. 93)

Fig. 9. *Larisia nigricolor* Lilj. (p. 93)

(Figures by H. Houk)

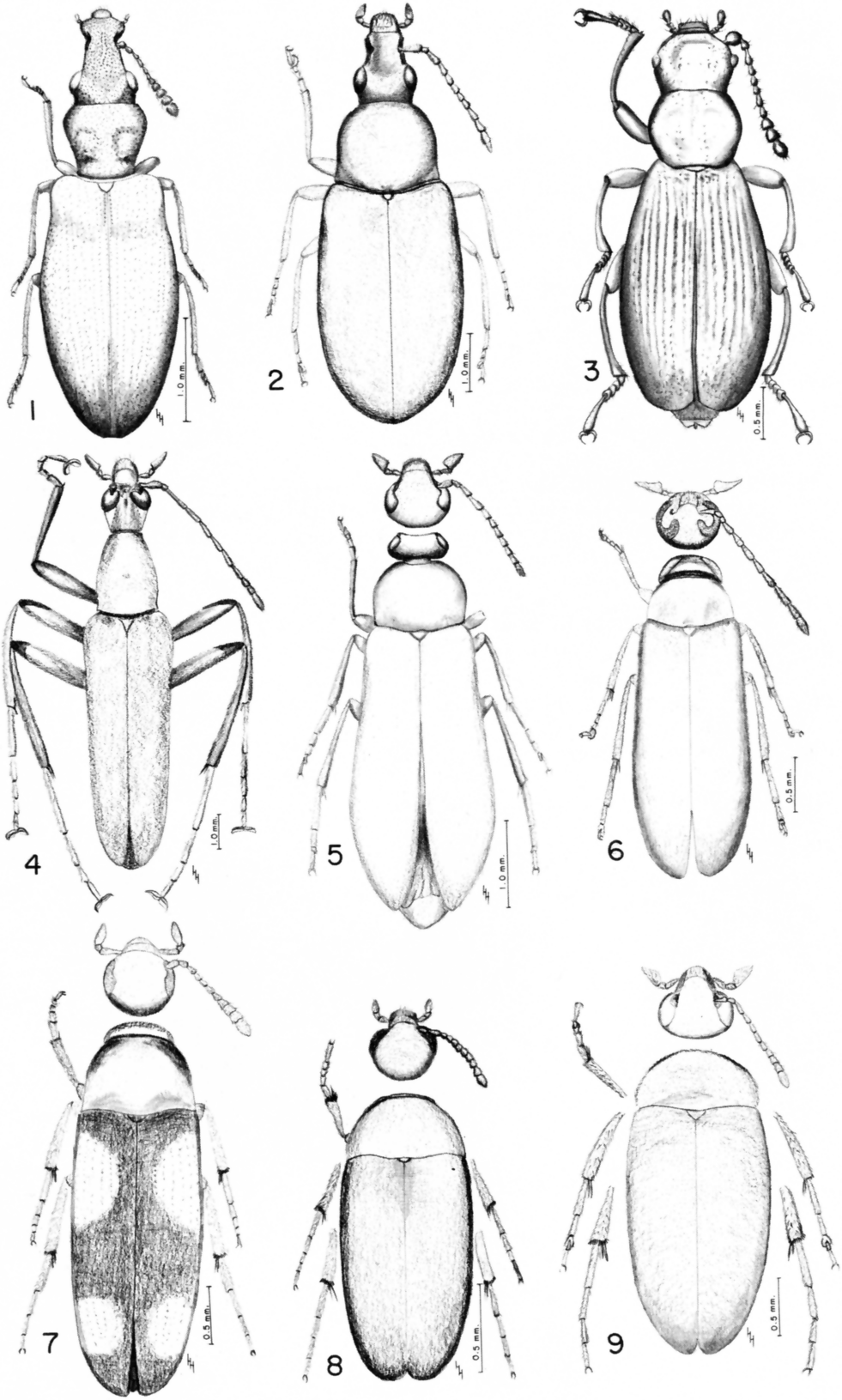


Plate XIV

Explanation of Plate XV

Fig. 1. *Nassipa hoppingi* Lilj. (p. 94)

Fig. 2. *Anaspis atrata* Champ. (p. 94)

Fig. 3. *Mordella atrata* Melsh. ab. *albosuturalis* Lilj. (p. 98)

Fig. 4. *Tomoxia borealis* LeC. (p. 98)

Fig. 5. *Gliptostenoda ambusta* LeC. (p. 99)

Fig. 6. *Mordellistena sericans* Fall (p. 100)

Fig. 7-12 Third, fourth, and fifth abdominal sternites in male of species of Anaspis: a, appendages of third sternite; b, appendages of fourth sternite; c, impression in fifth sternite; d, emargination in apex of fifth sternite.

Fig. 7. *Anaspis atrata* Champ. (p. 94)

Fig. 8. *Anaspis seposita* Lilj. (p. 95)

Fig. 9. *Anaspis rayi* sp. n. (p. 95)

Fig. 10. *Anaspis olympiae* sp. n. (p. 95)

Fig. 11. *Anaspis duryi* Lilj. (p. 96)

Fig. 12. *Anaspis rufa* Say (p. 96)

(Figures 1-6 by H. Houk; figures 7-12 by M. Hatch)

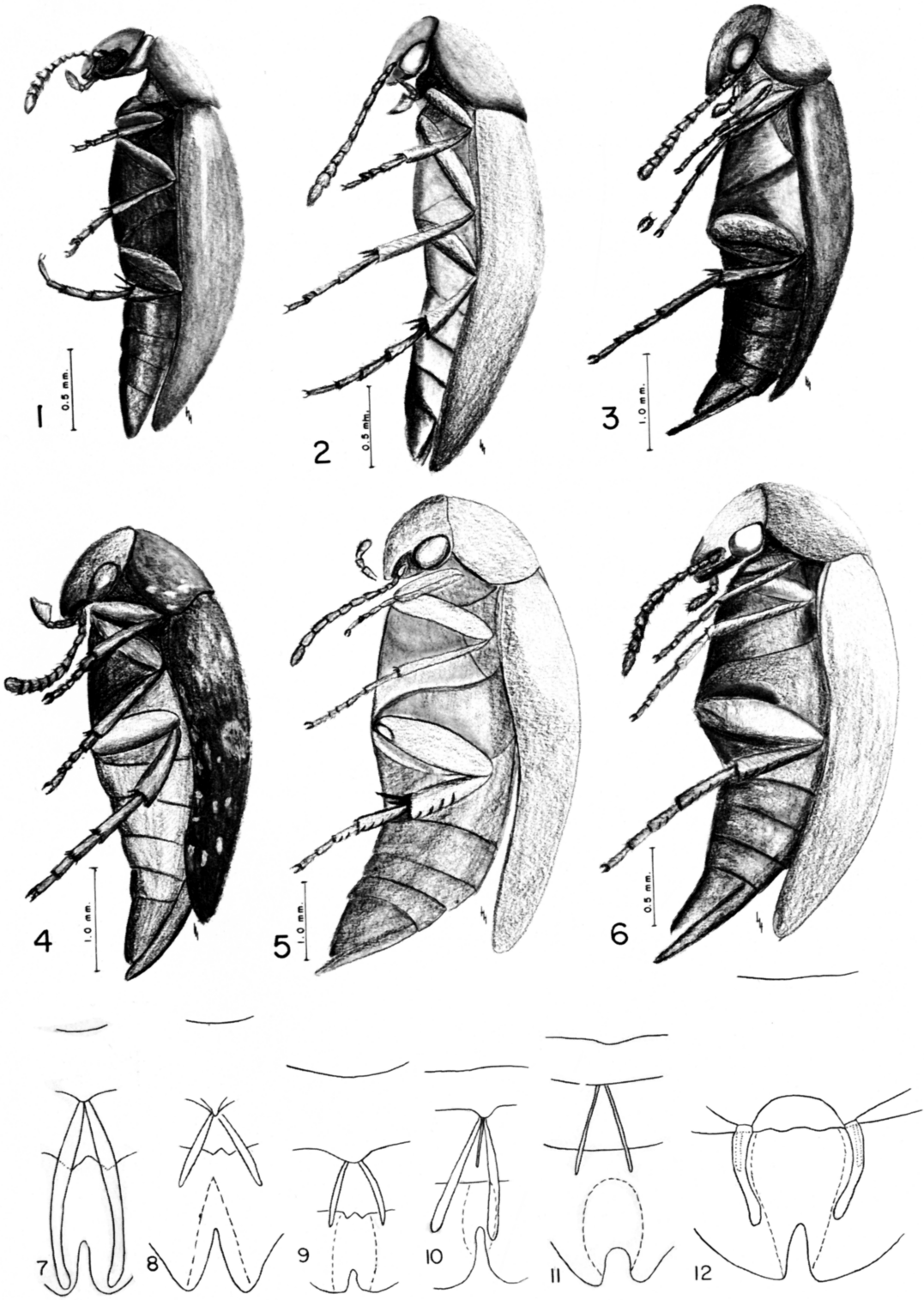


Plate XV

Explanation of Plate XVI

Fig. 1. *Macrosiagon cruentum* Germ. (p. 102)

Fig. 2. *Ripiphorus californicus* LeC. (p. 102)

Fig. 3. *Linsleya (Linsleyina) sphaericollis* Say (p. 104)

Fig. 4. *Zonitis vermiculata* Schaef. (p. 113)

Fig. 5. *Gnathium minimum* Say (p. 115)

Fig. 6. *Nemognatha (Meganemognatha) lutea* LeC. subsp. *dichroa* LeC. (p. 114)

Fig. 7. *Tricrania stansburii* Hald. (p. 116)

Fig. 8. *Dendroides ephemeroides* Mann. (p. 118)

Fig. 9. *Pedilus cavatus* Fall (p. 121)

(Figures by H. Houk)

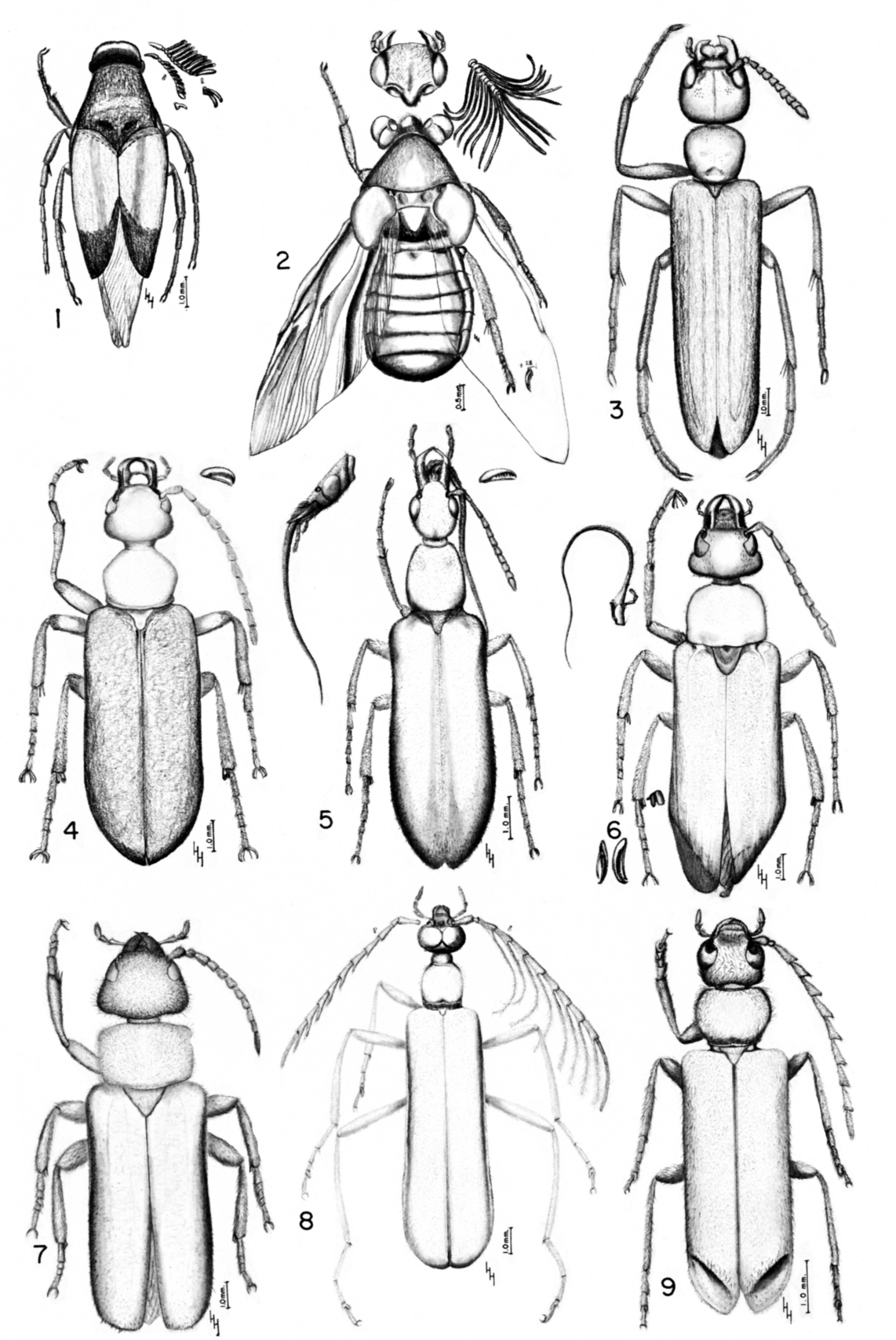


Plate XVI

Explanation of Plate XVII

Fig. 1. *Meloe (Proscarabaeus) americanus* Leach subsp. *occidentalis* VanD. (p. 111)

Fig. 2. *Alphitophagus bifasciatus* Say (p. 167)

Fig. 3. *Pedilus picipennis* Fall (p. 119), aedeagus; ventral view

Fig. 4. *Pedilus bardii* Horn, aedeagus, ventral view

Figs. 5a, 5b. *Pedilus serratus* Fall, aedeagus: dorsal (5a) and ventral (5b) views

Fig. 6. *Pedilus monticola* Horn (p. 120), aedeagus, ventral view

Fig. 7. *Pedilus cavatus* Fall (p. 121), aedeagus, ventral view; 7a, lateral view of apex of median lobe

Fig. 8. *Pedilus flabellatus* Horn (p. 121), aedeagus, ventral view

Fig. 9. *Aphanotus brevicornis* LeC. (p. 162), front angle of pronotum

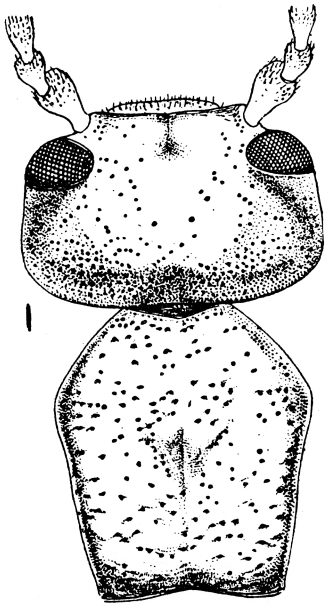
Fig. 10. *Tribolium (Stene) destructor* Uyt. (p. 163), front angle of pronotum

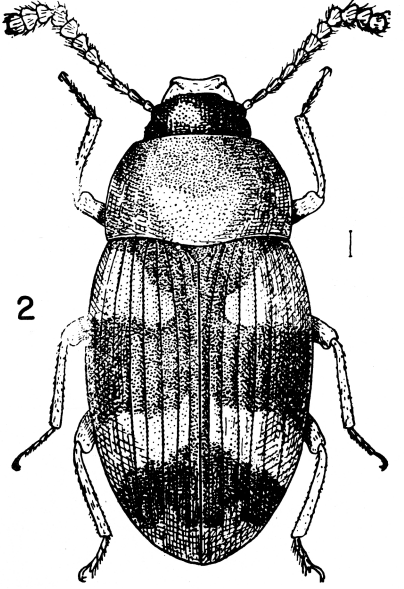
Fig. 11. *Tenebrio* (s. str.) *obscurus* F. (p. 164), pronotum

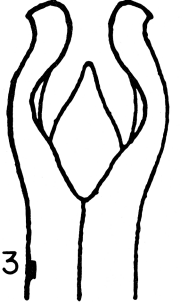
Fig. 12. *Tenebrio* (s. str.) *obscurus* F. (p. 164), antenna

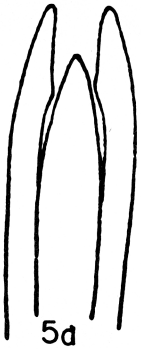
Fig. 13. *Tenebrio* (s. str.) *molitor* L. (p. 163), antenna

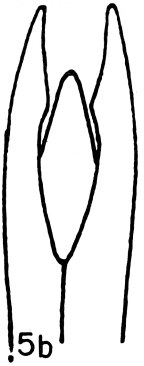
(Fig. 1 after Van Dyke 1928, pl. 18, fig. 14; Figs. 2, 11, 12, and 13 after Lepesme 1944, p. 167, fig. 147 and p. 187, figs. 170, 172, and 171 respectively; Figs. 3-8 after Fall 1915:33, figs. 16, 11, 9a, 9b, 10, 12, 12a, and 7 respectively; Figs. 9 and 10 after Hinton 1948:30, figs. 3 and 2 respectively)

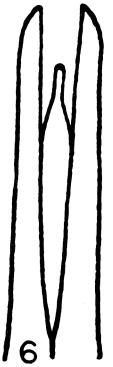


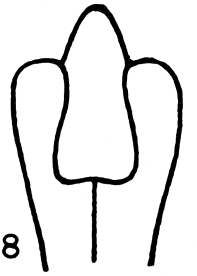


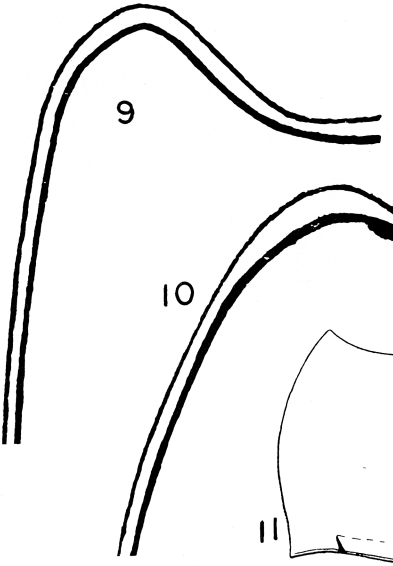












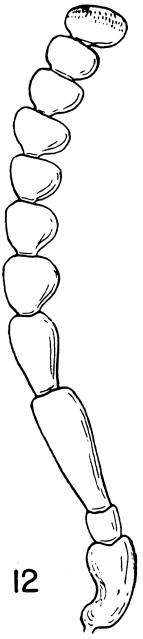


Plate XVII

Explanation of Plate XVIII

Fig. 1. *Ischalia vancouverensis* W. Harr. (p. 118)

Fig. 2. *Phomalus brunnipennis* LeC. (p. 129)

Fig. 3. *Stereopalpus guttatus* LeC. (p. 122)

Fig. 4. *Notoxus serratus* LeC. (p. 124)

Fig. 5. *Lappus nitidulus* LeC. (p. 125)

Fig. 6. *Thicanus mimus* Csy. (p. 126)

Fig. 7. *Anthicus cervinus* Laf. (p. 128)

Fig. 8. *Vacusus nigritulus* LeC. (p. 129)

Fig. 9. *Othnius lugubris* Horn (p. 130)

(Figures by H. Houk)

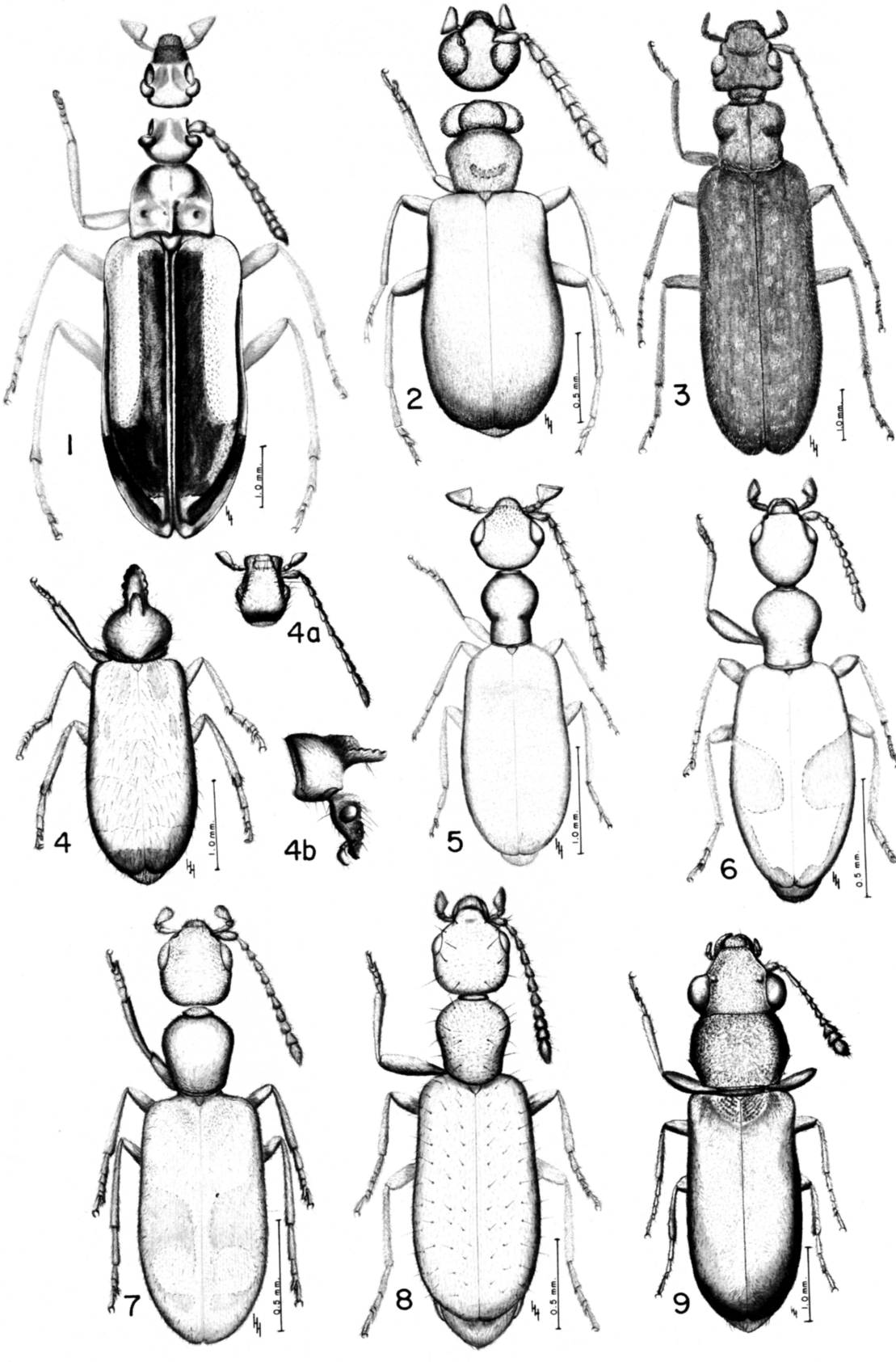


Plate XVIII

Explanation of Plate XIX

Male aedeagi of selected species of Anthicidae showing dorsal (figs. 1a, 2a, 3a, etc.) and lateral views (1b, 2b, 3b, etc.)

Fig. 1. *Mecynotarsus delicatulus* Horn (p. 124)

Fig. 2. *Notoxus schwarzi* Horn (p. 124)

Fig. 3. *Notoxus nevadensis* Csy. (p. 124)

Fig. 4. *Notoxus serratus* LeC. (p. 124)

Fig. 5. *Notoxus robustus* Csy. (p. 124)

Fig. 6. *Notoxus breviusculus* Fall (p. 125)

Fig. 7. *Notoxus constrictus* Csy. (p. 125)

Fig. 8. *Notoxus calcaratus* Horn (p. 125)

Fig. 9. *Lappus nitidulus* LeC. (p. 125)

Fig. 10. *Lappus turgidicollis* Csy. (p. 125)

Fig. 11. *Tanarthrus salicola* LeC. (p. 126)

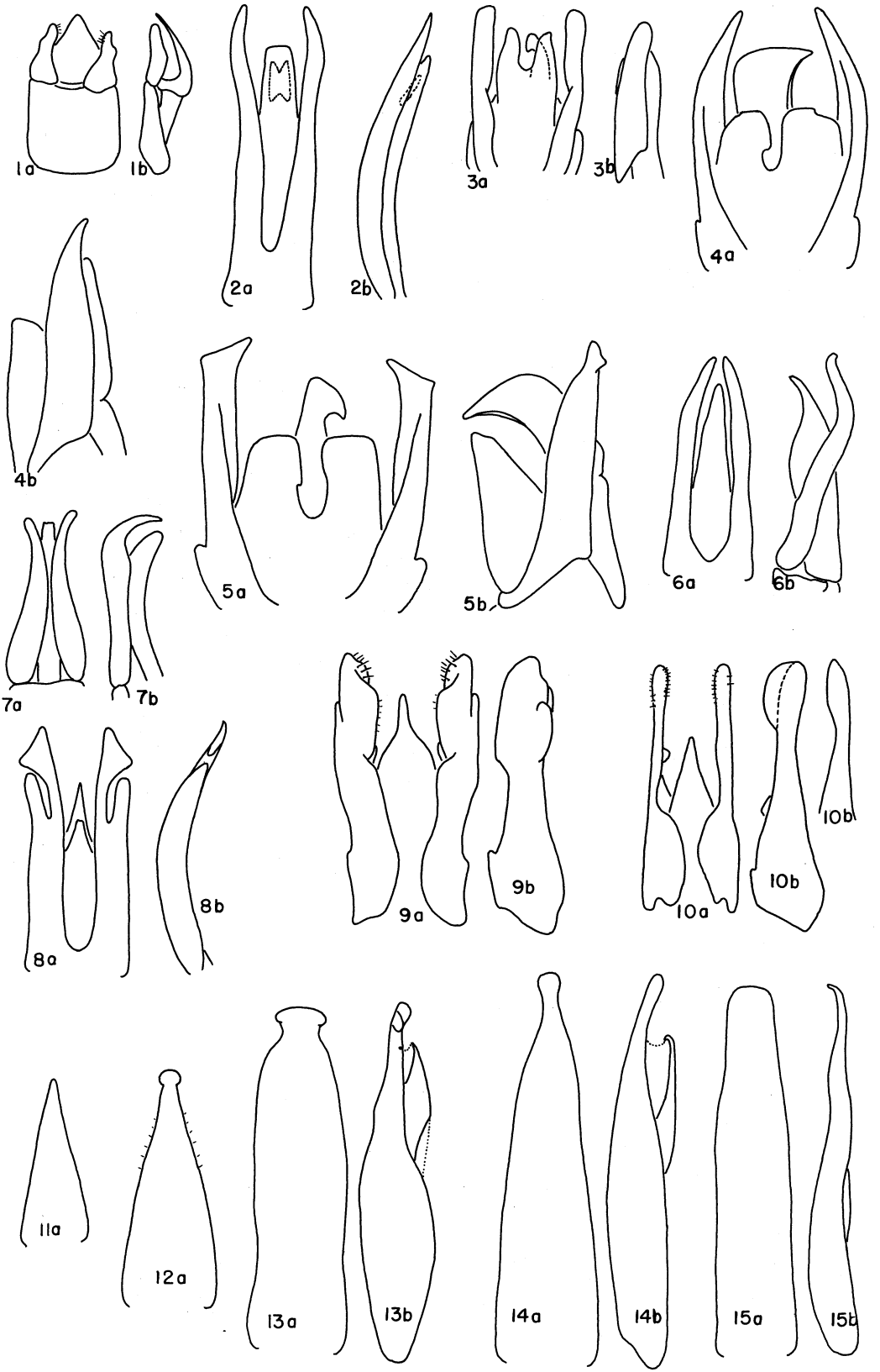
Fig. 12. *Thicanus mimus* Csy. (p. 126)

Fig. 13. *Anthicus floralis* L. (p. 126)

Fig. 14. *Anthicus formicarius* Goeze (p. 126)

Fig. 15. *Anthicus coracinus* LeC. (p. 126)

(Figures by F. Werner)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15b

Plate XIX

Explanation of Plate XX

Male aedeagi of selected species of Anthicidae showing dorsal (figs. 1a, 2a, 3a, etc.) and lateral views (1b, 2b, 3b, etc.)

Fig. 1. *Anthicus flavicans* LeC. (p. 127)

Fig. 2. *Anthicus ancilla* Csy. (p. 127)

Fig. 3. *Anthicus biguttulus* LeC. (p. 127)

Fig. 4. *Anthicus hastatus* Csy. (p. 127)

Fig. 5. *Anthicus lecontei* Champ. (p. 127)

Fig. 6. *Anthicus bellulus* LeC. (p. 127)

Fig. 7. *Anthicus nanus* LeC. (p. 127)

Fig. 8. *Anthicus cribratus* LeC. (p. 127)

Fig. 9. *Anthicus punctulatus* LeC. (p. 128)

Fig. 10. *Anthicus tobias* Mars. (p. 128)

Fig. 11. *Anthicus cervinus* Laf. (p. 128)

Fig. 12. *Anthicus praeceps* Csy. (p. 128)

Fig. 13. *Anthicus ephippium* Laf. (p. 128)

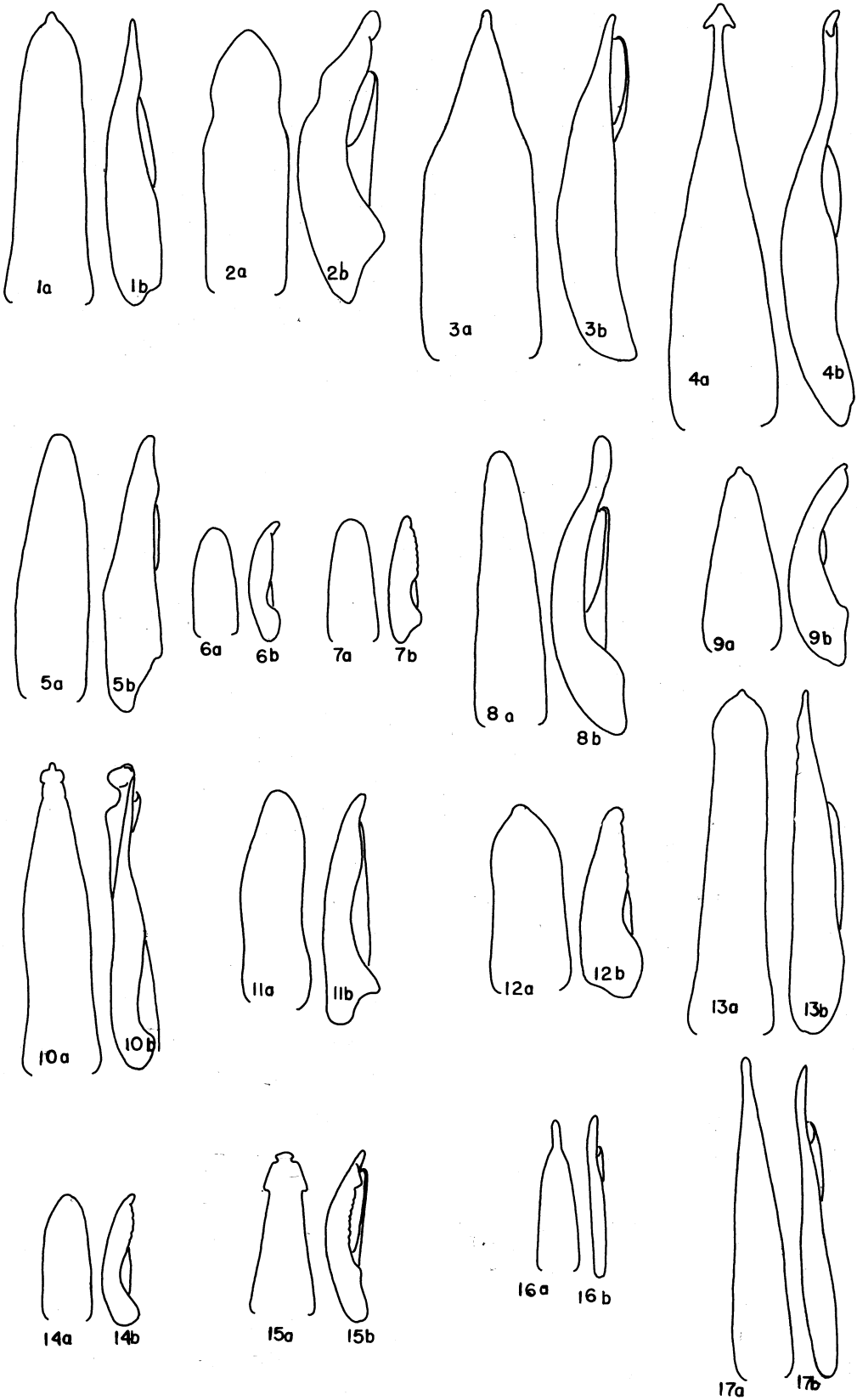
Fig. 14. *Anthicus lutulentus* Csy. (p. 128)

Fig. 15. *Anthicus obscurellus* LeC. (p. 128)

Fig. 16. *Vacusus nigritulus* LeC. (p. 129)

Fig. 17. *Vacusus confinis* LeC. (p. 129)

(Figures by F. Werner)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17a
17b

Plate XX

Explanation of Plate XXI

Fig. 1. *Telabis serrata* LeC. (p. 132)

Fig. 2. *Araeoschizus airmeti* Tann. (p. 134)

Fig. 3. *Oxygonodera hispidula* Horn (p. 133)

Fig. 4. *Edrotes ventricosus* LeC. (p. 134)

Fig. 5. *Melanastus* ater LeC. (p. 133)

Fig. 6. *Gonasida elata* LeC. (p. 135)

Fig. 7. *Trichiasida idahoensis* Bod. (p. 136)

Fig. 8. *Stenomorpha puncticollis* LeC. (p. 136)

(Figures by H. Houk)

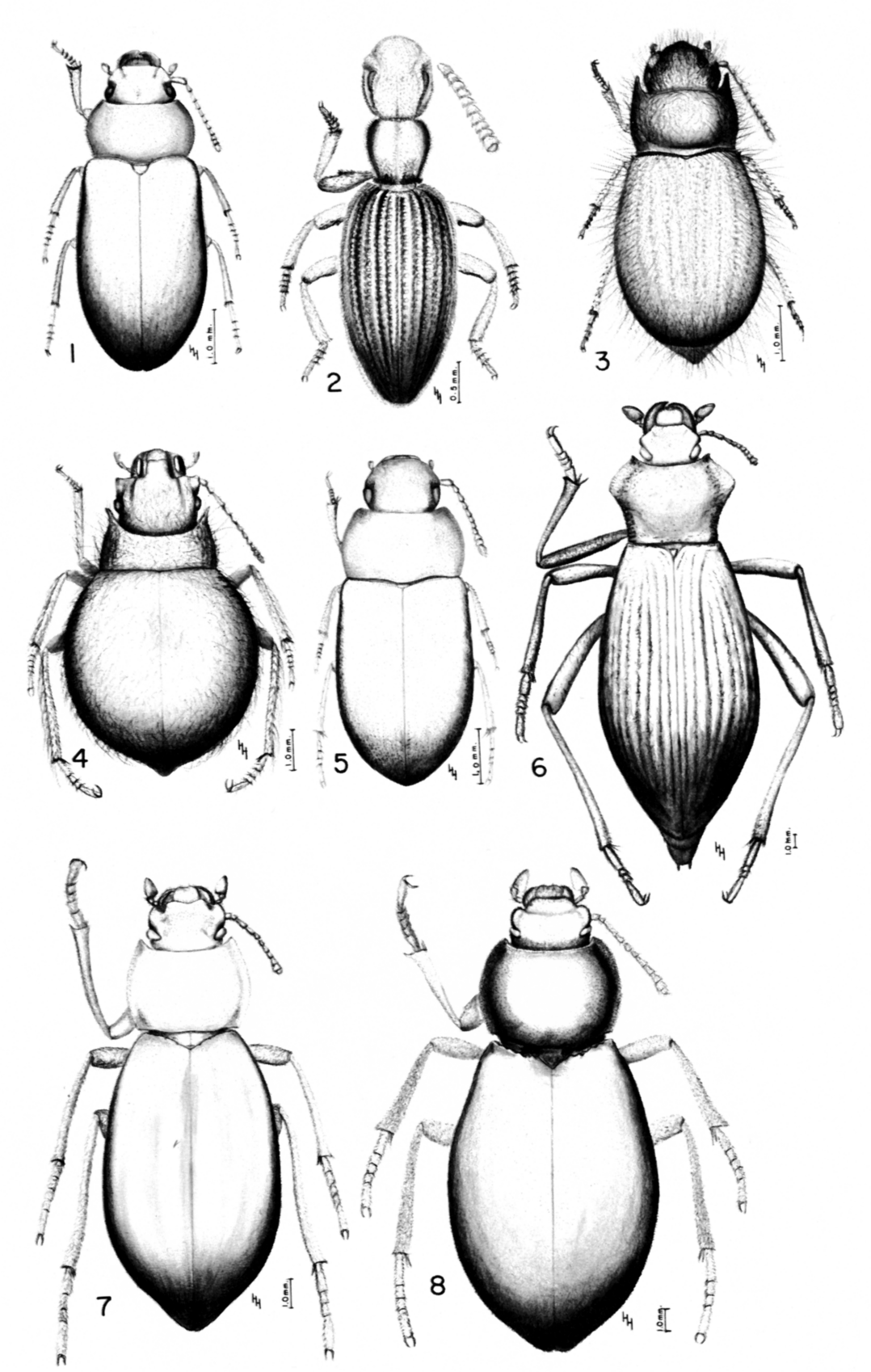

Plate XXI

Explanation of Plate XXII

Fig. 1. *Pelecyphorus densicollis* Horn (p. 137)

Fig. 2. *Eusattus muricatus* LeC. (p. 138)

Fig. 3. *Coelus ciliatus* Esch. (p. 138)

Fig. 4. *Conisattus nelsoni* Bod. (p. 139)

Fig. 5. *Coniontellus inflatus* Csy. (p. 139)

Fig. 6. *Coniontis ovalis* LeC. subsp. ovalis s. str. (p. 141)

Fig. 7. *Eleodes (Tricheleodes) pilosa* Horn (p. 148)

Fig. 8. *Eleodes (Melaneleodes) humeralis* LeC. (p. 150)

(Figures by H. Houk)

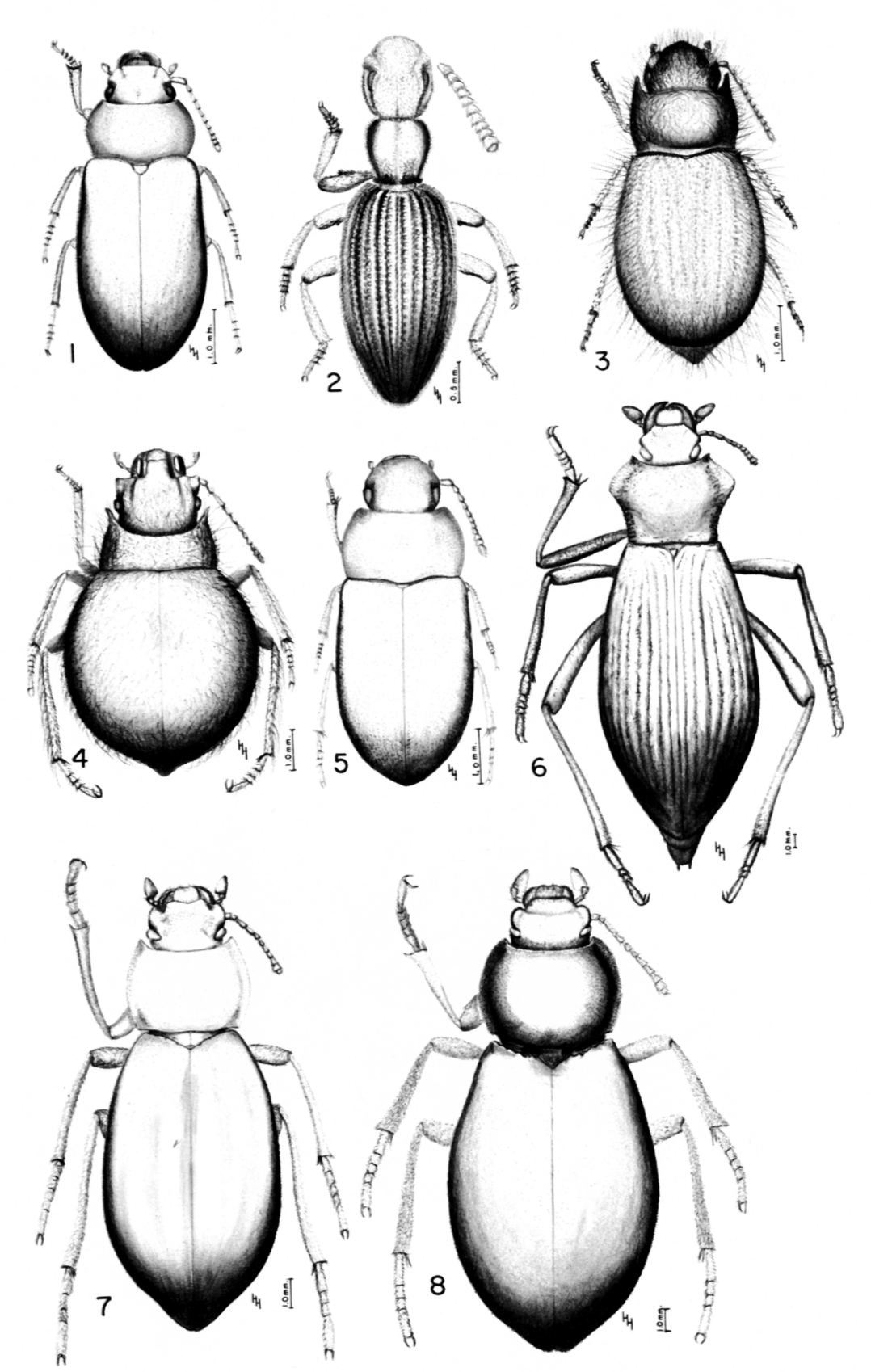

Plate XXI

Explanation of Plate XXIII

Genitalia of selected species of Eleodes

Fig. 1. *Eleodes (Blapylis) manni* Blais. (p. 154), dorsal surface of fused lateral lobes (ll), basal lobe (bl), and basal piece (bp) of male aedeagus

Fig. 2. *Eleodes (Blapylis) manni* Blais. (p. 154), lateral aspect of apical portion of male aedeagus showing the median lobe (ml)

Fig. 3. *Eleodes (Blapylis) rotundipennis* LeC. subsp. *verrucula* Blais. (p. 158), dorsal surface of fused lateral lobes of male aedeagus

Fig. 4. *Eleodes (Blapylis) rotundipennis* LeC. subsp. *verrucula* Blais. (p. 158), lateral aspect of apical portion of male aedeagus

Fig. 5. *Eleodes (Blapylis) producta* Mann. (p. 155), dorsal surface of fused lateral lobes of male aedeagus

Fig. 6. *Eleodes (Blapylis) producta* Mann. (p. 155), lateral aspect of apical portion of male aedeagus

Fig. 7. *Eleodes (Blapylis) novoverrucula* Bod. (p. 156), dorsal surface of fused lateral lobes of male aedeagus

Fig. 8. *Eleodes (Blapylis) novoverrucula* Bod. (p. 156), lateral aspect of apical portion of male aedeagus

Fig. 9. *Eleodes (Blapylis) cordata* Esch. (p. 158), dorsal surface of fused lateral lobes of male aedeagus

Fig. 10. *Eleodes (Blapylis) cordata* Esch. (p. 158), lateral aspect of lateral lobes of male aedeagus

Fig. 11. *Eleodes (Blapylis) indentata* Blais. (p. 157), dorsal surface of fused lateral lobes of male aedeagus

Fig. 12. *Eleodes (Blapylis) indentata* Blais. (p. 157), lateral aspect of lateral lobes of male aedeagus

Fig. 13. *Eleodes (Blapylis) producta* Mann. (p. 155), right valve of female genital armature showing the ventral surface, with the mid-line on the right

Fig. 14. *Eleodes (Blapylis) producta* Blais. (p. 155), inner surface of apex of the valve of female genital armature

Fig. 15. *Eleodes (Blapylis) rotundipennis* LeC. subsp. *verrucula* Blais. (p. 158), inner surface of apex of the valve of the female genital armature

(Figures by D. Boddy)

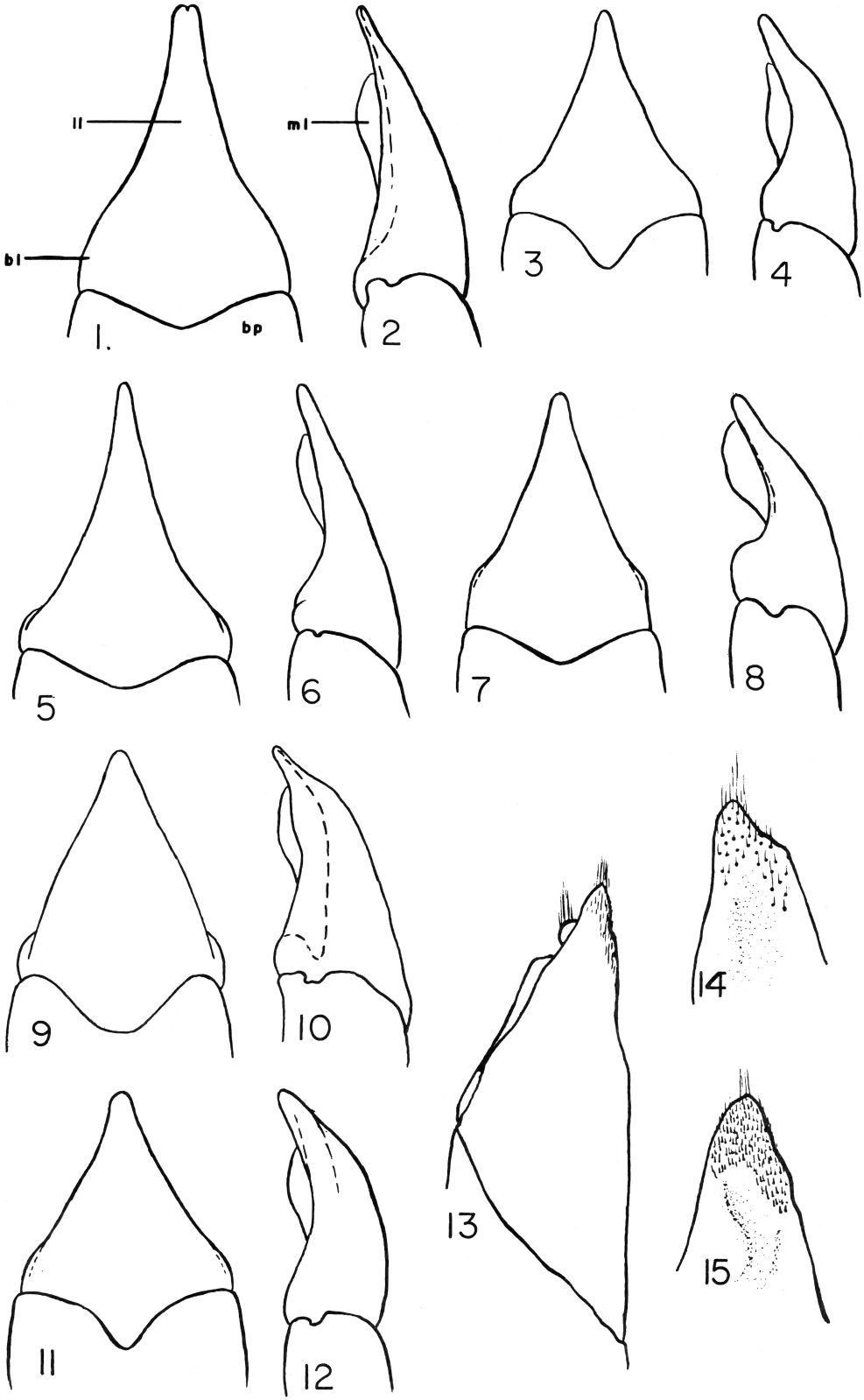

Plate XXIII

Explanation of Plate XXIV

Fig. 1. *Eleodes* (s. str.) *obscura* Say subsp. *sulcipennis* Mann. (p. 146)

Fig. 2. *Eleodes* (s. str.) *hispilabris* Say subsp. *connexa* LeC. (p. 147)

Fig. 3. *Eleodes (Metablapylis) nigrina* LeC. (p. 149)

Fig. 4. *Eleodes (Metablapylis) nigrina* LeC. subsp. *difformis* Blais. (p. 150)

Fig. 5. *Eleodes (Metablapylis) schwarzi* Blais. (p. 149)

Fig. 6. *Merinus laevis* Ol. (p. 173)

(Figures by D. Bonnell)

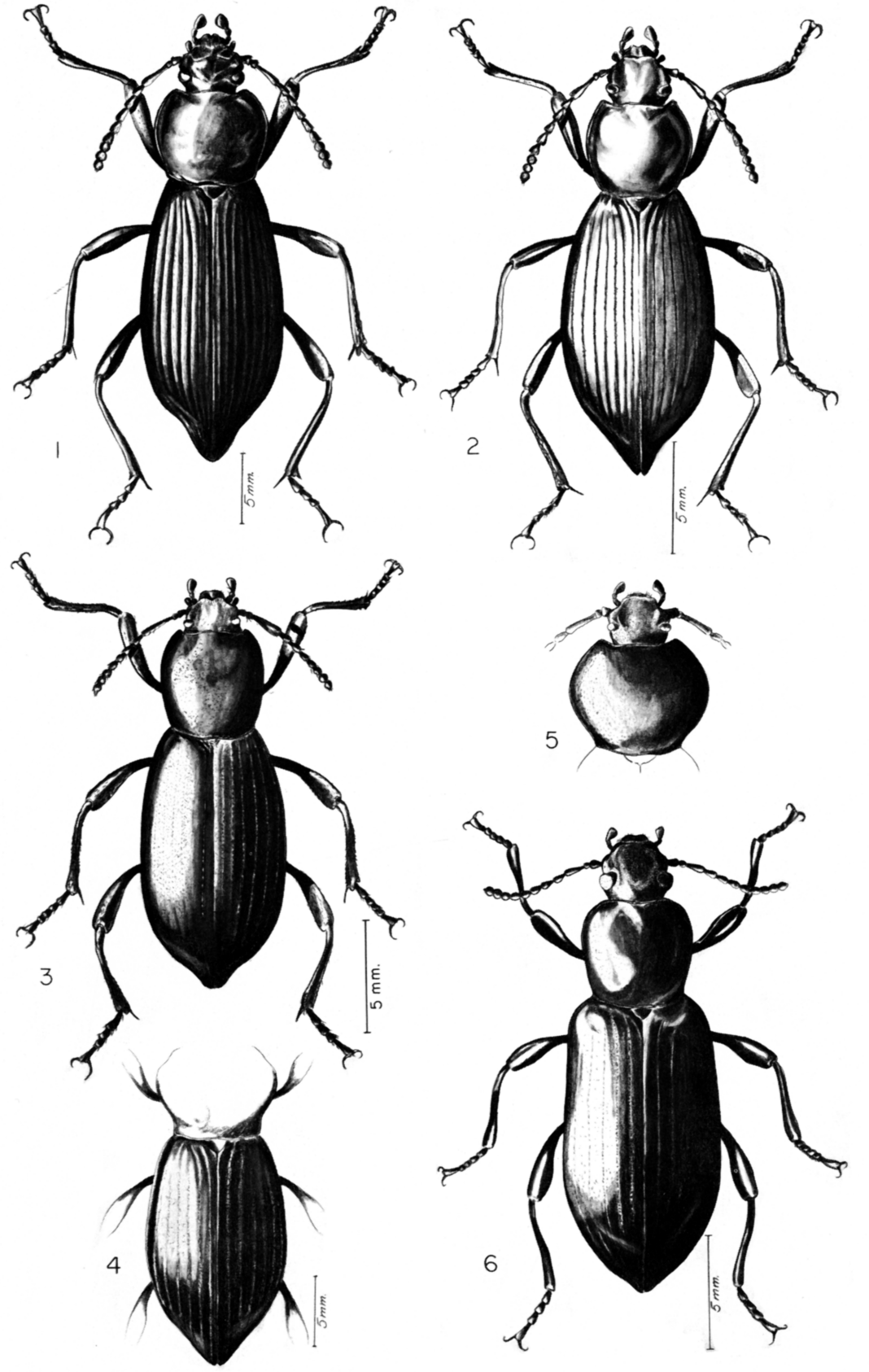

Plate XXIV

Explanation of Plate XXV

Fig. 1. *Eleodes (Litheleodes) letcheri* Blais. (p. 152)

Fig. 2. *Eleodes (Blapylis) novoverrucula* Bod. (p. 156)

Fig. 3. *Tribolium* (s. str.) *madens* Charp. (p. 162)

Fig. 4. *Tribolium* (s. str.) *destructor* Uyt (p. 163)

Fig. 5. *Tribolium* (s. str.) *castaneum* Hbst. (p. 162)

Fig. 6. *Tribolium (Stene) confusum* Duv. (p. 163)

Fig. 7. *Tenebrio* (s. str.) *molitor* L. (p. 163)

Fig. 8. *Corticeus substriatus* LeC. (p. 181)

Fig. 9. *Palorus ratzeburgi* Wissm. (p. 183)

(Figs. 1 and 2 after Hyslop 1912:80-81, figs. 26 and 27; Figs. 2, 7, and 9 after Lepesme 1944, p. 167, fig. 147; p. 186, fig. 169; p. 180, fig. 161; Figs. 3 and 4 after Good 1936, p. 11, fig. 4, p. 8, fig. 2; Figs. 4 and 6 after Hinton 1948, p. 37, fig. 20, p. 36, fig. 15; Fig. 8 reproduced by permission from Forest Insects by Doane, Van Dyke, Chamberlin and Burke, 1936, p. 226, fig. 125, McGraw-Hill Book Co.)

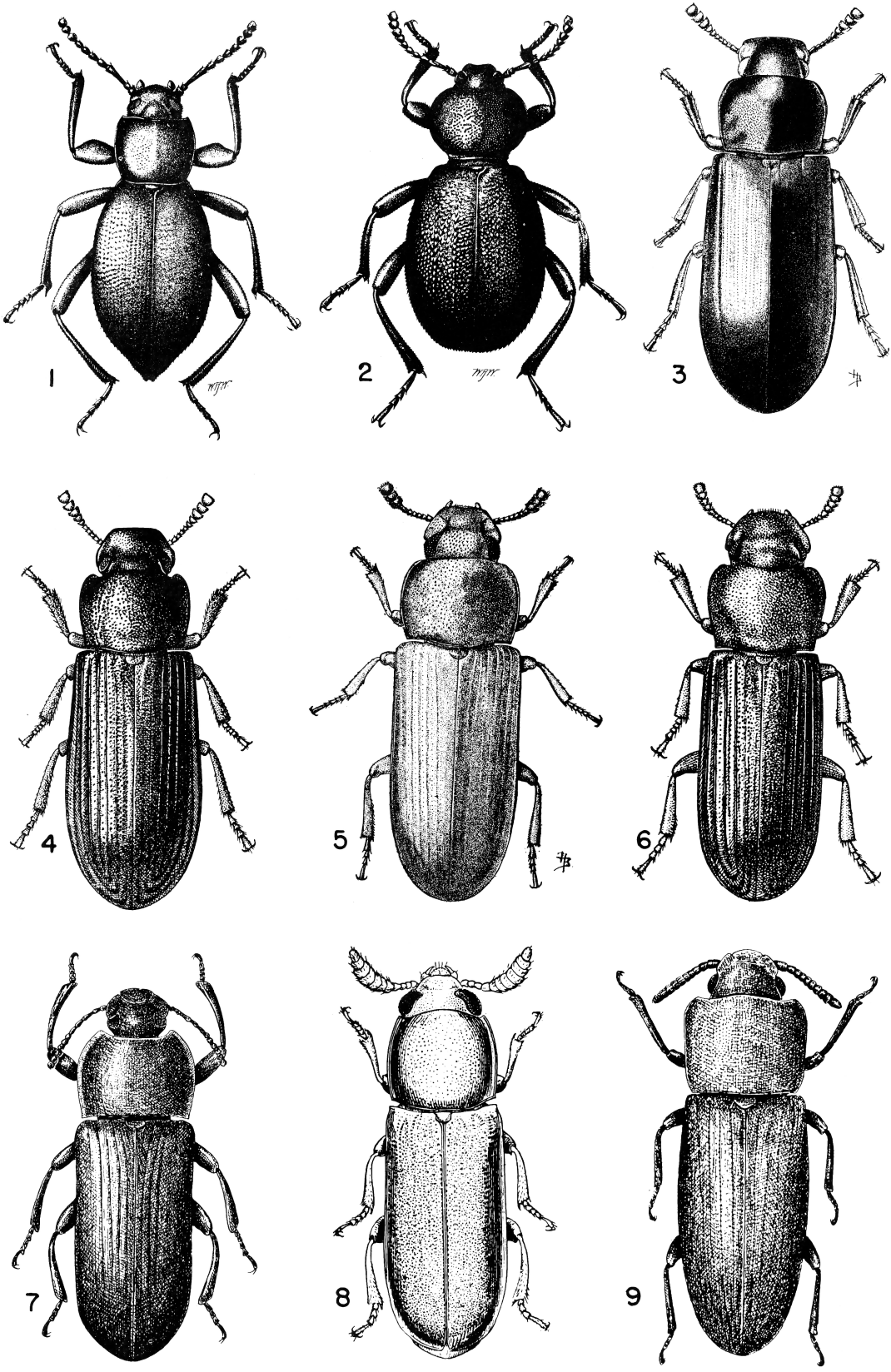

Plate XXV

Explanation of Plate XXVI

Fig. 1. *Embaphion elongatum* Horn (p. 160)

Fig. 2. *Uloma longula* LeC. (p. 161)

Fig. 3. *Bius estriatus* LeC. (p. 162)

Fig. 4. *Metaclisa marginalis* Horn (p. 164)

Fig. 5. *Alphitobius laevigatus* F. (p. 165)

Fig. 6. *Cynaeus angustus* LeC. (p. 166)

Fig. 7. *Gnathocerus cornutus* F. (p. 166)

Fig. 8. *Platydema americanum* Cast. et Br. (p. 167)

Fig. 9. *Scaphidema pictum* Horn (p. 168)

(Figures by H. Houk)

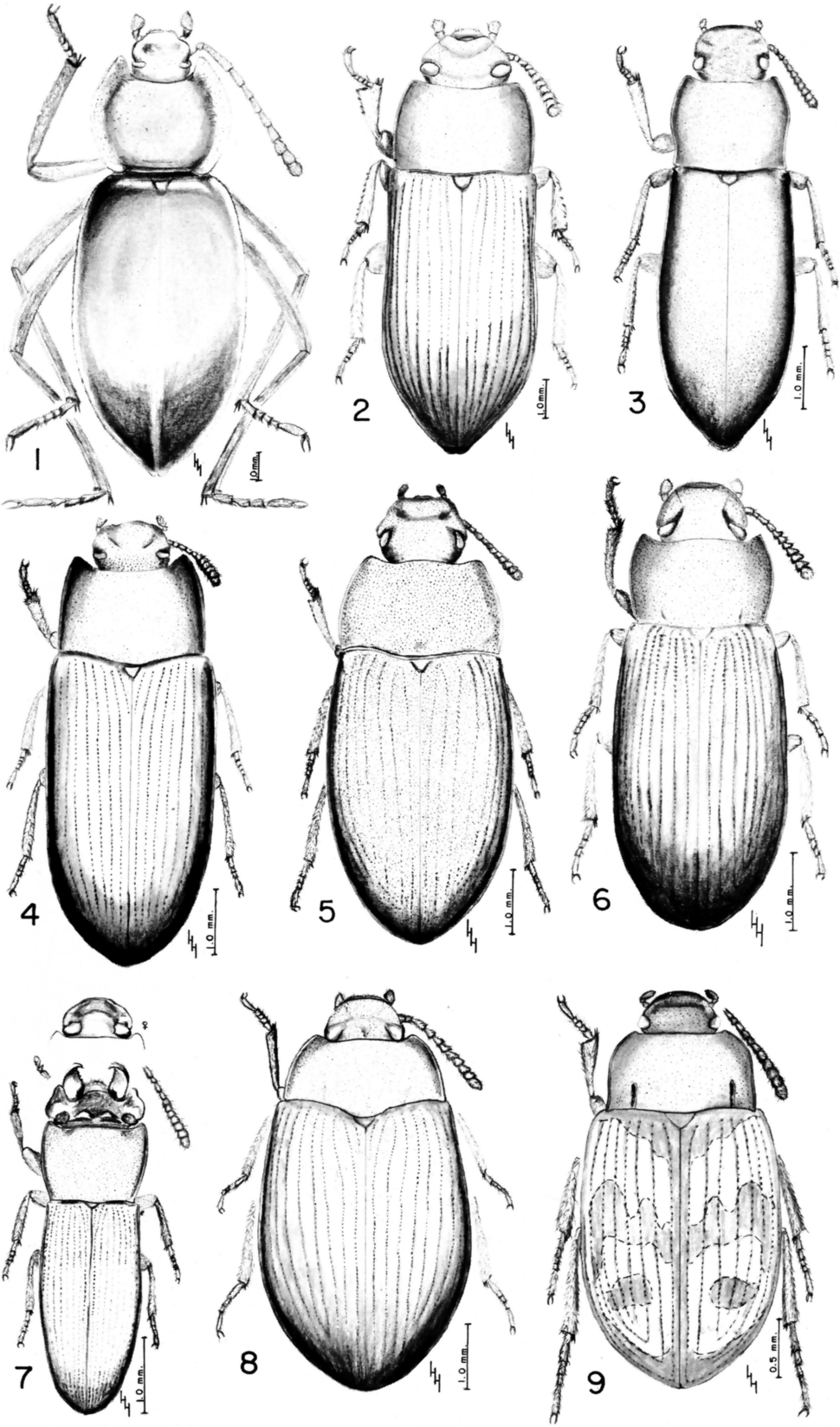

Plate XXVI

Explanation of Plate XXVII

Fig. 1. *Phaleria globosa* LeC. (p. 169)

Fig. 2. *Alaudes singularis* Horn (p. 169)

Fig. 3. *Cnemeplatia sericea* Horn (p. 170)

Fig. 4. *Anemia californica* Horn (p. 170)

Fig. 5. *Bolitophagus explanatus* Csy. (p. 171)

Fig. 6. *Upis ceramboides* L. (p. 172)

Fig. 7. *Cibdelis blaschkei* Mann. (p. 173)

Fig. 8. *Centronopus parallelus* LeC. (p. 174)

Fig. 9. *Alobates pennsylvanicus* DeG. (p. 174)

(Figures by H. Houk)

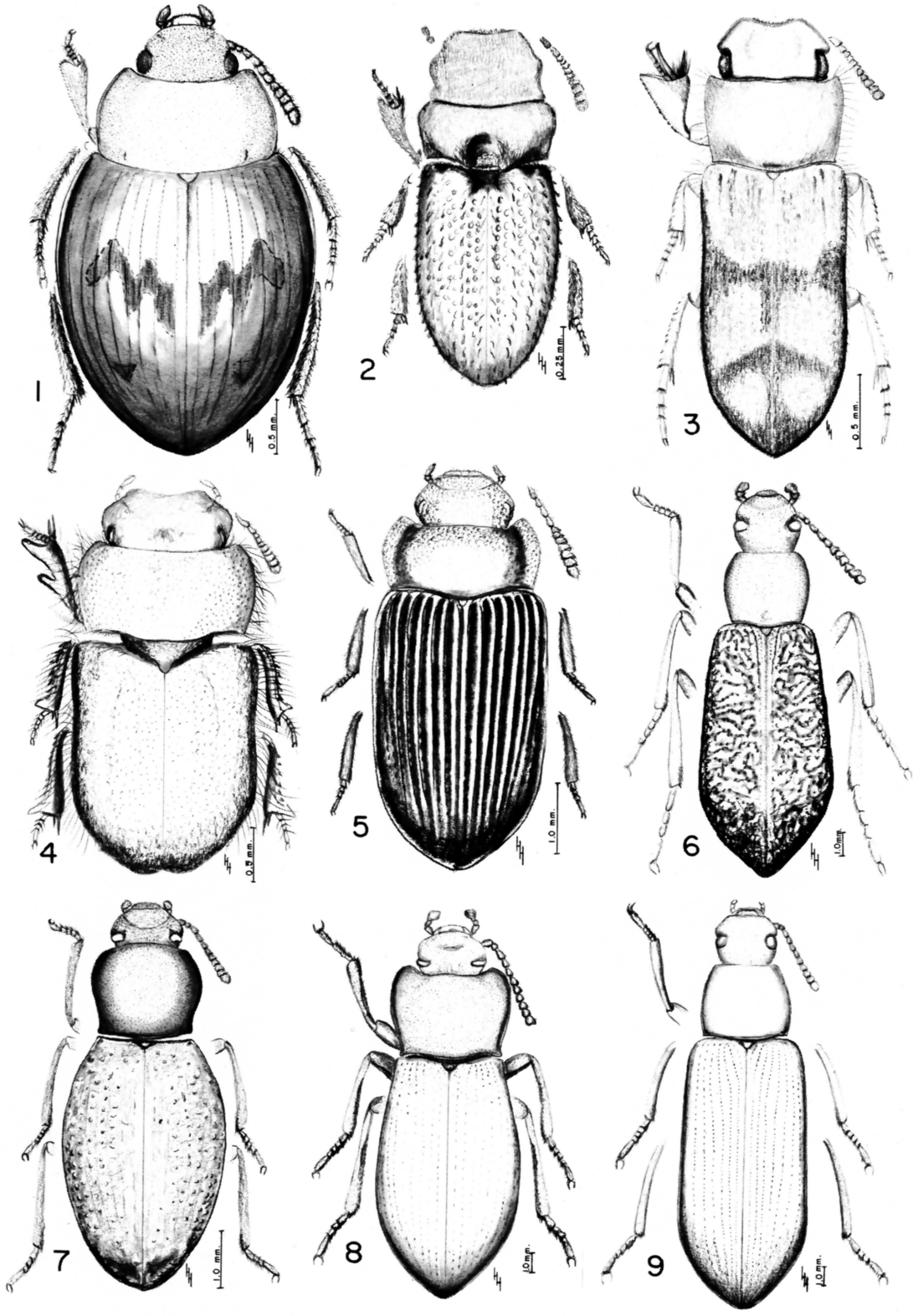

Plate XXVII

Explanation of Plate XXVIII

Fig. 1. *Helops pernitens* LeC. (p. 176)

Fig. 2. *Alegoria dilatata* Cast. (p. 179)

Fig. 3. *Blapstinus gregalis* Csy. (p. 180)

Fig. 4. *Phthora americanum* Horn (p. 182)

Fig. 5. *Stenochidius cyanescens* LeC. (p. 184)

Fig. 6. *Hymenophorus caurinus* Fall (p. 184)

Fig. 7. *Chromatia pacifica* Hopp. (p. 186)

Fig. 8. *Isomira variabilis* Horn (p. 186)

Fig. 9. *Mycetochara procera* Csy. (p. 188)

(Figures by H. Houk)

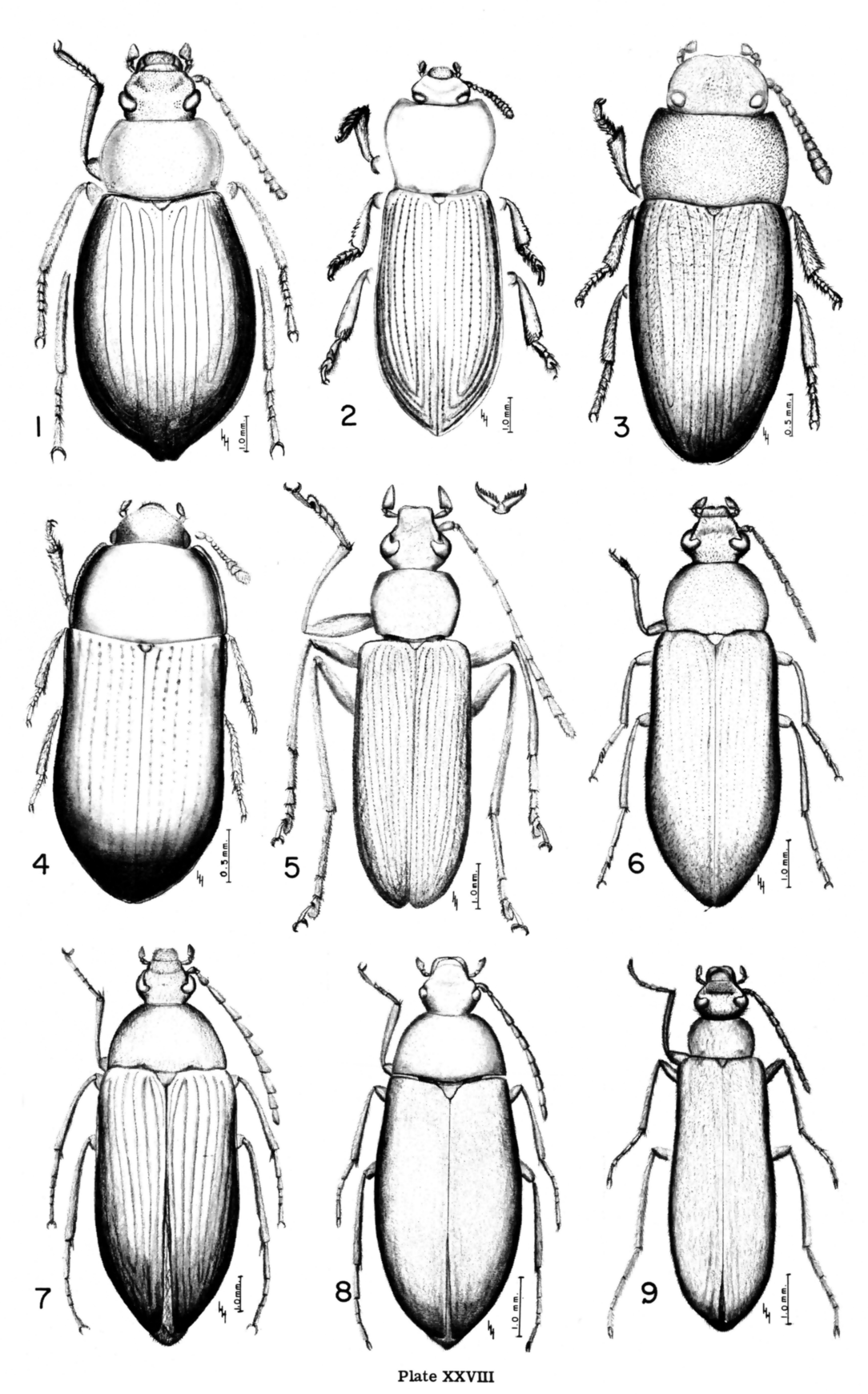

Plate XXVIII

Index to Generic and Subgeneric Names

(Pages 206 to 261 contain plates)

Index to Trivial Names

(Pages 206 to 261 contain plates)