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New Species of Melyridae,
Chrysomelidae and Tenebrionidae
(COLEOPTERA)

From the Pacific Coast, with Notes
On Other Species

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(COLEOPTERA)

from the Pacific Coast, with Notes

STANFORD UNIVERSITY
PRESS

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INTRODUCTION

The material on which the present avocational studies are based, was collected chiefly in California, the smaller part having been taken in Washington, Oregon, Nevada, Lower California and Islands off the coast. The following Coleoptera are described as new to science: Twenty species and one subspecies of *Listrus*; two species and one variety of *Dasytes*; one species of *Dasytastes*; one species and the genus *Listri-morpha*; two species of *Glyptoscelis*; two species of *Centrioptera*; three species of *Schizillus*; one species of *Coniontis*; one species of *Coniontides*; one species of *Eusattus*; five species and three races of *Eleodes* and three species of *Helops*. Notes on a few other species are also given. At all times an effort has been made to examine long series, and uniques have been considered only when they presented well marked characters, and even then collateral evidence was at times obtained from colleagues or collectors in the field.

I am greatly indebted to the California Academy of Sciences for the privilege of studying the material in the collection of its entomological department; also, to Mr. Van Duzee, curator of the department, for personal favors. The following friends and collectors have responded generously to my requests for material and, to them I express my sincere thanks: Mr. J. O. Martin for the liberal gift of specimens from the Bear Lake region in San Bernardino County, and Mr. F. W. Nunenmacher for similar gifts and the opportunity of studying long series of specimens from different regions in California. Mr. Chas. Liebeck of Philadelphia very kindly loaned the material in his collection. To Mr. H. C. Fall, Mr. Chas. L. Fox and Mr. O. N. Sanford my appreciation is due for less extensive but none the less valuable assistance.

PART I.

Family Melyridae.

As recently decreed by the leading Coleopterists of the United States, the old family name Malachidae gives way to Melyridae¹; the latter includes three subfamilies, namely: Malachiinae, Melyrinae and Rhadalinae.

Nothing of any extent has been written on the American Melyrinae since Col. Casey's excellent paper published in 1895². Fall added a few species in 1901³ and 1907⁴. In 1906⁵ I described two new species of *Dasytes*.

Listrus Mots.

The genus *Listrus* is proving to be more extensive and a less homogeneous aggregate than was at first suspected. Its specific units are characterized by an elongate and more or less subparallel convex body, more or less sparse and variegated vestiture without intermixed setae, tarsi more or less variable as to length and stoutness, with the basal joint of the posterior slightly longer than the second, the fifth somewhat dilated toward the tip and canaliculate above at apex as usual throughout the family, the anterior tibiae slender, cylindrical, usually with closely decumbent ashy pubescence and only occasionally with two or three very slender, distant, external spines, these being completely obsolete as a rule.

Antennae somewhat variable as to length, more or less feebly incrassate, only slightly though distinctly serrate, with the first joint always much dilated and stout apically and usually darker in color, the fifth larger than the fourth or sixth, usually triangular, sometimes the sixth and eighth joints are smaller than the seventh, and the eleventh more or less evenly elongate-ovoidal or obovate and obtusely acuminate or truncate at tip. The pronotum is dilated behind the middle, with the lateral edge more or less minutely serrulate and having an even fringe of short superiorly recurved setae, which are almost invariably cinereous in color, the apical angles usually more or less rounded. Epipleura very narrow but dilated toward base, with their plane strongly inclined upward throughout. The unguall appendages are thick, equal and fully as long

¹ "Leng's Catalogue of the Coleoptera of America North of Mexico," 145, 1921.

² "Coleopterological Notices," 6, *Annals New York Academy of Sciences*, 8, 456, July, 1895.

³ "Occasional Papers," *California Academy of Sciences*, 8, 248-251, 1901.

⁴ "The Coleoptera of New Mexico," *Transactions of the American Entomological Society*, 33, 236-240, 1907 (Malachidae).

⁵ *Entomological News*, 17, 74-76, March, 1906.

as the claws, the apical third or fourth of which is free. The above characterization has been modified from Casey.

Fall has called attention to the fact that the males of all species have the protibiae mucronate at the tip. The spurs of the meso- and meta-tibiae are variable, especially on the latter; generally moderately short and blunt on the former. A study of the spurs and mucros will constitute a special line of investigation. A monographic treatment of the genus should not be attempted until a greater amount of collecting has been done and a larger series of a greater number of species been secured.

From my own studies it is evident that for the proper description and diagnosis of the species, attention must be paid to the structure of the antennae, pronotum, pattern of maculation, fifth ventral abdominal segment, and the legs, especially the femora and the metatrochanters.

I have assumed that the fundamental type of maculation in its discrete form, consisted of four transverse fasciae of more or less cinereous pubescence that divided the dark elytral field into five dark fasciae which may be known as the basal, post-basal, median or submedian, subapical and apical; it is by the extension of the light fasciae that the dark areas are broken up, or by the diffusion and coalescence of the dark fasciae or maculae that the varied pattern of maculation is produced. This conception of a definite fundamental pattern of maculation will help greatly in the interpretation of the species from color markings.

It is necessary to caution students who endeavor to identify the different species, that it is absolutely essential for the proper recognition and appreciation of antennal characters to view the several joints at right angles to their broad surfaces, which according to my terminology are the dorsal and ventral surfaces; viewing the antennae edgewise—antero-posteriorly—determines the degree of compression. The careless viewing of the surface at a tangent will result in an erroneous conception of the relative proportions of the parts.

It is not sufficient to simply examine the specimens with a low-power hand lens, but with as powerful a glass as can be obtained. The failure to recognize the many undescribed species in the past has been due to the inability to see the abundance of good specific characters. In the present study the binocular and stereoscopic microscopes were used.

DESCRIPTIONS OF NEW SPECIES.

Listrus cephalicus, new species.—*Form* oblong-oval, very moderately convex. *Color* black, upper surface with a bluish or subaeneous metallic lustre; antennae and legs nigro-piceous.

Pubescence moderately short and sparse, recumbent, cinereous hairs not abundant; brownish-black hairs arranged in an indefinite pattern in which the maculae and fasciae observed in other species diffuse and

coalesce, so that the prevailing color is dark. Pronotal maculae not discernible on account of the abundance of dark hairs.

Head comparatively large and moderately transverse; eyes large and more strongly convex in anterior two-thirds and, there unusually prominent, anterior surface quite abrupt, posteriorly forming a straight line with the tempora which are quite strongly convergent behind; frons broad, rather strongly and very broadly impressed, surface densely indentato-punctate, punctures coarser and less crowded on the vertex. *Antennae* long and stout, slightly compressed, gradually but not strongly incrassate; second joint stout, as wide as the sixth, nearly oval but slightly narrowed at base; third subequal in length to the second, rather strongly obconical and almost twice as long as wide; fourth subtriangular, about as long as wide, subserrate anteriorly, apical margin oblique and about as wide as the seventh; fifth subequilaterally triangular, distinctly serrate anteriorly, apical margin oblique and about as wide as the ninth; sixth, seventh and eighth subequal in size, sixth triangular, about as long as wide, subserrate anteriorly; seventh very slightly longer, triangular; eighth slightly transverse and triangular; ninth stouter, wider than long, anterior margin not strongly arcuate; tenth wider than long, subtriangular with sides distinctly arcuate; eleventh obovate, not wider than the tenth, truncate at tip, almost a half longer than wide.

Pronotum almost a third wider than long, widest just behind the middle; apex arcuato-truncate in circular arc; apical angles quite broadly rounded; sides rather strongly and evenly arcuate in posterior two-thirds, thence straight and rather strongly convergent to apex, serrules strong, subobtusate, about as long as wide at base, fimbria rather short and not closely placed; base quite broadly and moderately arcuate, rather broadly but not strongly sinuate within the basal angles, which are more or less obtuse; disk broadly and quite evenly convex posteriorly, more strongly so anteriorly and arcuately declivous antero-laterally, densely and rather strongly indentato-punctate, punctures rather coarse and strong.

Elytra oblong, rather less than twice as long as wide, humeri somewhat prominent, base rather transverse; disk quite coarsely punctate, surface more or less transversely rugose or wavy, smoother toward apex where the punctures are finer and not impressed; feeble parascutellar prominences rather discretely punctured and not rugose. Scutellum quadrate.

Abdomen finely punctulate and densely microreticulate; broad at base, sides converging rather strongly toward apex.

Legs rather stout and somewhat long; tarsi elongate and also stout.

Male.—Oblong-suboval. Metafemora broad and moderately flat-

tened; metatibiae distinctly thickened in apical two-thirds, very feebly arcuate; fifth ventral abdominal segment about as long as the second, broadly and transversely truncate at apex; a sixth segment is visible and the under surface of the pygidium rather flat and fringed with quite short and stout black hairs.

Female unknown.

Measurements.—Length, 3.4 mm.; width, 1.2 mm. Holotype, male, in the collection of the California Academy of Sciences. Described from a unique, collected by Mr. E. P. Van Duzee, on April 21st, 1918.

Type locality.—Salada Beach, San Mateo County, California.

Cephalicus is a very distinct and unique species in its prominent and peculiarly convex eyes, broad head, stout antennae and legs, besides the preponderance of dark hairs on the upper surface with consequent obscuration of the maculation.

Listrus coloradensis, new species.—*Form* oblong, subovate, moderately convex. *Color* black, surface rather dull and with a feeble bluish lustre; antennae piceous, legs rufo-piceous.

Pubescence very short, rather coarse and more or less squamiform, not dense, rather inconspicuous, plumbeo-cinereous in color above but more cinereous beneath where it is somewhat longer and closely recumbent; noticeably coarse on front of the head.

Head slightly transverse, eyes rather large and moderately prominent; front broadly impressed, more strongly and somewhat bi-impressed between the antennae, densely but not coarsely indentato-punctate, sometimes with a small subglabrous convexity close to the middle of the epistomal base. *Antennae* rather short and somewhat stout and nearly similar in the sexes; second joint slightly oblong-oval, just a little longer than wide; third distinctly obconical and nearly twice as long as wide; fourth a little stouter, subobconico-triangular and about as long as the sixth; fifth subequal to the ninth in width, subtriangular and serrate, very little longer than wide and obliquely truncate at apex; sixth and eighth subequal, quite distinctly smaller than the contiguous joints, very slightly wider than long and feebly triangular; seventh triangular and about as long as wide, more prominent anteriorly than posteriorly, slightly longer than the sixth or seventh; ninth and tenth stouter, a little wider than long subtriangular, sides feebly arcuate; eleventh obovate-triangular, scarcely a half longer than wide.

Pronotum about a fourth wider than long, quite equal in width to the elytral base; apex arcuato-truncate in circular arc; sides moderately rounded in basal half, thence almost straight to the apical angles as viewed from above, serrules small, fimbriae rather short and stout; apical angles obtusely rounded; base broadly arcuate, rounding evenly into the sides;

disk moderately convex basally, arcuately declivous antero-laterally, densely but not coarsely indentato-punctate.

Elytra oblong-oval, about twice as long as wide, humeri rather prominent; disk not strongly punctate, punctures shallow, separated by a distance equal to two or three times their diameters, surface microscopically reticulate; apex parabolically rounded, sutural angles rather more than narrowly rounded.

Abdomen finely and sparsely punctate, surface microscopically reticulate.

Legs rather short.

Male.—Slightly narrower. Fifth ventral segment arcuato-truncate at apex. Antennal joints five, six and seven similar in form, subtriangular, more prominent anteriorly than posteriorly, eighth smaller by one-eighth.

Female.—Slightly broader. Fifth ventral rather parabolically rounded. Antennae slightly more slender, joints six and eight smaller, similar in form; tenth and eleventh feebly transverse, sides arcuate and symmetrical.

Measurements.—Length (Types), 2.9-3 mm.; width, 1-1.2 mm. Holotype, male, and allotype, female, and two paratypes in my own collection.

Type locality.—Colorado, without definite locality.

In *senilis* the pubescence is coarse, dense and cinereous, and the tenth antennal joint is transverse; in *clavicornis* the pubescence is moderately long, not so coarse, and the tenth antennal joint is transverse as in *senilis*, while in *coloradensis* the pubescence is coarse on the head, pronotum and elytral base, the antennae are almost similar in the sexes, and the fifth ventral abdominal segment is arcuato-truncate in the male. Col. Casey has examined specimens of this species and pronounced it new.

Listrus dilutus, new species.—Sexes similar in form, oblong-oval, subparallel and somewhat robust, moderately convex. *Color* black, with a dark virido-metallic lustre; tarsi rufous to rufo-piceous.

Pubescence very short and inconspicuous, rather plumbeo-cinereous in color, recumbent and moderate in abundance. The maculation is difficult of determination, dark areas invested with dark-brownish hairs. Basal fascia is represented by a large parascutellar and a humeral macula on each elytron; a variable post-basal macula at middle of each which is frequently connected to the humeral forming a lunule; median fascia rather broad, edges feebly zig-zag, usually more or less interrupted at suture; subapical fascia rather wide, more or less entire and tending to dilate on the suture, edges rather irregular; apical maculae variable as to

size. Pronotal central macula evidently hourglass-shaped or oval, it may have a narrow median reëntrant pale line from apical and basal margins; lateral semilunar lines rather obscure; hairs darkish on front of head. Pronotal fimbriae moderately short and pale in color.

Head somewhat transverse, front nearly plane, feebly and longitudinally bi-impressed anteriorly, impressions separated by a feeble convexity, which is more or less glabrous at the epistomal base, punctures moderate, well defined, feebly impressed, separated by a distance equal to one or two times their diameter, intervals flat, feebly indentated toward the periphery; muzzle short. *Antennae* somewhat slender and rather long, very feebly incrassate and slightly compressed, less noticeably so in the outer joints, somewhat dissimilar in the sexes; first joint very stout; second oval, about a fourth longer than wide, narrowing slightly toward base; third subcylindrical, about twice as long as wide, as long as the fourth; fourth moderately compressed, almost subtriangular, feebly subangulate anteriorly; fifth elongate; sixth and seventh equal in length, less than a half longer than wide, scarcely subtriangular; eighth a little longer than wide, shorter than the ninth, slightly oblong-triangular; ninth and tenth distinctly longer than wide, somewhat oblong-triangular; eleventh elongate oval, slightly narrowed at apex, twice as long as wide; outer joints not noticeably wider.

Pronotum about a fourth wider than long, rather evenly convex, but more declivous antero-laterally; apex arcuato-truncate; apical angles broadly rounded into the sides; base broadly and rather strongly arcuate, somewhat lobed, more or less sinuate laterally; basal angles obtuse and more or less evident but not strong; sides broadly and moderately strongly arcuate, straighter and moderately convergent anteriorly, serrules short, blunt to subacute, intervals equal to their base; disk rather discretely punctured in middle third, punctures distinct, separated by a distance equal to one or two times their diameter, intervals more or less glabrous centrally, more or less indentated apically and basally, laterally very densely indentato-reticulato-punctate, surface rather dull.

Elytra oblong, about twice as long as wide, sides parallel, very feebly arcuate, apex broadly rounded, punctures rather coarse, separated by a distance equal to half to three times their own diameter, surface more or less irregular from feeble transverse impressions, punctures finer and more widely spaced toward apex.

Abdomen very finely and evenly punctured, more densely so on the fifth segment which is unmodified in the male.

Legs moderate in length and stoutness; femora rather stout, metafemora somewhat rapidly narrowed at the trochanters; tarsi rather long and slender.

Male.—Usually smaller. Fifth antennal joint elongate, oblong-triangular, broadly arcuate anteriorly, not noticeably wider than the following joints. Fifth ventral abdominal segment rather broadly sinuato-truncate.

Female.—Usually larger. Fifth antennal joint shorter, more triangular and more subangulate anteriorly; all the joints rather less robust. Fifth ventral broadly rounded at apex. Femora less stout and more parallel.

Measurements.—Length (Types), 3-3.3 mm.; width, 1-1.2 mm.

Holotype, male, in the collection of the California Academy of Sciences; allotype, female, and paratypes in that of the author.

Type locality.—Blood's Meadow, Alpine County, California; collected by the author on July 14th, 1907, at an elevation of 7000 feet. Beaten from the blossoms of a white *Ceanothus*, in company with *Amphichroum pallidum* Casey and another species of *Listrus* which is referred to *montanus* Casey. *Dilutus* is distinct in the similarity of the sexes, short dark pubescence and inconspicuous maculation. In *montanus* the pubescence and maculation are well developed, hairs rather long, form different in the sexes and more oval, and besides the antennae are distinctly incrassate, the eleventh joint is shorter, more robust, oval and wider than the preceding joints.

Listrus martini, new species.—*Form* somewhat elongate, more or less oblong-ovate, distinctly more than twice as long as wide. *Color* black, with a feeble purpureo-cupreous lustre, surface shining; mouth-parts pale rufo-testaceous, last two joints of the maxillary palpi blackish; first joint of the antennae black, second rufo-testaceous, succeeding joints similarly pale becoming gradually infusate to tip; legs pale rufo-testaceous, femora rarely slightly infusate.

Pubescence not dense, rather short and slender, more or less plumbeo-cinereous, with broad fasciae of nigro-fuscous hairs arranged as follows: A moderately wide transverse basal fascia, usually unbroken; post-basal fascia absent; a broad median fascia extending from margin to margin; a similar subapical fascia joining the median fascia along the suture; apical maculae absent. The median and subapical fasciae may by diffusion nearly coalesce, in such cases separated laterally by a narrow line of pale hairs, rarely distal two-thirds of the elytra are nearly dark. Pronotal lateral vittae not distinct; median dark area oblong-oval, extending from apical to basal margins, usually widest at middle and not constricted as in the hourglass figure. Head slightly maculate in the central area.

Head rather broad and relatively short, muzzle small; front broadly and feebly convex, sometimes feebly impressed behind the epistoma, with

a slight convexity at middle against the frontal suture; punctures rather small and sparse, slightly denser at the periphery; eyes relatively large, rather finely faceted, and moderately prominent. *Antennae* rather slender, last three joints rather heavy and not compressed; third joint rather slender and subcylindrical, fourth and fifth subangulate anteriorly, fifth slightly wider than the following three joints; sixth, seventh and eighth subequal; ninth and tenth about as long as wide and thicker; eleventh nearly as long as the preceding two taken together and pointed obovate.

Pronotum about a fourth wider than long, evenly and rather strongly convex from side to side, very feebly so antero-posteriorly; apex very feebly arcuate in circular arc, angles obtusely rounded; sides feebly arcuate, moderately converging toward apex, almost broadly and feebly sinuate adjacent to the angles, serrules small and acute, fimbriae moderately short, even and not dense; basal angles obtuse and rather distinct; base broadly and slightly arcuate; disk sparsely punctate in central third, punctures moderately small, separated by at least one or three times their diameter, intervals flat and smooth, rather strongly indentato-punctate in lateral thirds.

Elytra oblong, rather less than twice as long as wide; sides feebly arcuate and parallel, rather broadly rounded at apex; punctures rather sparse, at base equal in size to those of the pronotum, finer apically, surface slightly and sparsely rugose.

Abdomen finely and sparsely punctate, surface rather shining. Fifth ventral segment unmodified in the male.

Legs moderate in length; metafemora not in the least constricted behind and adjacent to the trochanters.

Male.—Narrower and oblong. Fifth ventral segment truncate at apex.

Female.—Slightly broader, more oblong-oval. Fifth ventral subangulate at apex and obliquely arcuate laterally.

Measurements.—Length (Types), 2.3-2.4 mm.; width, .9-1 mm.

Holotype, male, in the author's collection.

Allotype, female, in the collection of the California Academy of Sciences.

Paratypes in both collections and in that of Mr. J. O. Martin, who collected the species on April 13th, 1917.

Type locality.—Mecca, Colorado Desert, California.

Distribution.—Besides the specimens from the type locality, others in the Liebeck collection have been studied, these were collected in Utah. They agree in every particular with the types. A series of about thirty specimens have been studied.

Martini belongs to the same group of species as *annulatus*, *rubripes* and *parviceps* described below. In *rubripes* the antennae are stouter, surface lustre duller, and the pronotal central field is distinctly but not densely indentato-punctate and the sides are more strongly arcuate, it is found in Colorado. In *annulatus* the pronotal field is indentato-punctate and the antennae are dark. In both *rubripes* and *annulatus* the elytral dark fasciae are distinctly defined and do not tend to diffusion, as in *martini* and *parvicollis*. In *parvicollis* the pronotum is noticeably small. My series of *annulatus* are from the high Sierras, 7000 feet, and Mono Lake, Mono County, California.

Listrus maculosus Casey.—Very distinct from *amplicollis* Casey with which it is usually confused. In *amplicollis* the fifth ventral abdominal segment is modified on the disk, while in *maculosus* it is simple; in the latter the third, fourth and fifth antennal joints are distinctly compressed, large and triangular in form, the third joint is furthermore elongate and comparatively large and bears a distinct stout chitinous seta at apical border anteriorly in the male; the antennae have their usual form in the female.

Maculosus is taken abundantly about San Francisco and in Marin County. I took a very large series in Humboldt County, at Green Point Ranch and Willow Creek, in 1917. Casey mentions only having had a single male at the time of drawing up his description.

Listrus vestitus, new species.—Form elongate oval, distinctly more than twice as long as wide and moderately convex. Color black, surface more or less shining; second, third and fourth joints of the antennae pale, second always so, remaining joints more or less rufo-piceous, terminal ones usually quite black; mouth and basal joints of the palpi pale, epistoma more or less so; tarsi and distal half or two-thirds of the tibiae pale. A metallic lustre scarcely discernible, although the pronotum may be slightly subcupreous.

Pubescence distinctly cinereous, moderately long and recumbent. Maculae of dark brownish or blackish hairs are arranged on the elytra as follows: Basal fascia broken into a smaller humeral and a larger sub-scutellar macula on each elytron; post-basal fascia represented by a mid-elytral subquadrate macula, which rarely extends arcuately forward to the humeral forming a lunule; median fascia more or less narrow, distinctly and more or less sharply zig-zag, usually almost interrupted at the suture and on middle of each elytron; subapical fascia broader, usually interrupted at middle of each elytron, the median portions forming a more or less rhomboidal and usually rather large macula across the suture; apical maculae variable in size and form. Pronotal central macula more

or less constricted at middle, with reëntering slender median lines of paler hairs at apex and base; lateral lunules more or less distinct.

Head wider than the pronotal apex; frons more or less broadly impressed and usually a small glabrous area is present behind the base of the epistoma, punctures distinct and discrete, intervals somewhat indentato-punctate, surface rugulose at the epistoma. Eyes rather large and moderately strongly prominent. Antennae moderately long and different in the sexes.

Pronotum about a fourth wider than long, moderately and evenly convex, more strongly so anteriorly and laterally; apex arcuato-truncate and distinctly narrower than the base; apical angles rather broadly rounded; base broadly and rather strongly arcuate, angles not evident and almost continuously rounded with the broadly arcuate sides, which become less arcuate and moderately convergent to apex, serrations small and rather acute; disk rather discretely punctured in the central area, intervals flat and as wide or wider than the punctures, almost feebly indentate in part, lateral thirds densely rugoso-indentato-punctate.

Elytra oblong-oval, punctures rather smaller than on the pronotum, and separated by a distance equal to two times their diameter, somewhat smaller on apical third; surface more or less feebly transversely impresso-rugose; apex rather broadly rounded.

Abdomen quite densely punctato-rugulose; fifth ventral abdominal segment not modified on the disk.

Legs moderate in length and stoutness.

Male.—Narrower elongate oval. Smaller males not distinctly parallel. *Antennae* rather stout, outer three joints incrassate and not compressed; first joint about as long as wide, second a little longer than wide; third obconico-cylindrical, equal to the fourth in length; fourth subtriangular, obtusely angulate anteriorly, wider than the third; fifth a little longer than wide, triangular, distinctly wider than the next three following joints; sixth subtriangular, equal to the seventh in length; seventh less subtriangular; eighth less compressed than the preceding joints, a little longer than wide, more obconic than triangular; ninth, tenth and eleventh joints more robust; ninth as long as wide, sides oblique; tenth as long as wide and subquadrate in outline, circular in transverse section; eleventh wider than preceding joints, obtusely obovate and about a half longer than wide. Fifth ventral segment rather broadly and feebly sinuate at apex; surface rather asperately sculptured, hairs scarcely darker.

Female.—Somewhat broader. *Antennae* more slender, relative length and size of the joints similar; second and third rather elongate and equal in length, sixth not noticeably smaller than the seventh.

Measurements.—Length (Types), 3.2-3.4 mm.; width, 1.1-1.3 mm.

Holotype, male, allotype, female, in my own collection; paratypes in that of Mr. J. O. Martin, who collected them on June 5th, 1919.

Type locality.—Bear Lake, San Bernardino County, California. Eight specimens studied—four of each sex.

Vestitus is quite distinct from *elegantulus* and *bifasciatus*, where the males are distinctly elongate and parallel. In *vestitus* the differences in form between the sexes are less noticeable; the last three joints of the antennae are circular in section and stouter in the male.

Listrus bifasciatus, new species.—*Form* elongate, parallel to ovate, moderately convex. *Color* black, second to the sixth antennal joint inclusive piceous, second sometimes paler; tibiae and tarsi more or less piceous; surface scarcely feebly purpureo-aeueous in lustre and slightly shining.

Pubescence moderately short, not very conspicuous, brownish-black hairs about as abundant as the paler plumbeo-cinereous hairs and arranged in rather large maculae which appear as follows: A large parascutellar macula, an humeral elongate one extending arcuately backward and continuous with the post-basal at middle of the elytron, this macula varies in size; median fascia moderately wide and distinctly zig-zag, scarcely attaining the lateral margin, but extending forward along the suture, these extensions frequently separated and appearing as post-basal sutural maculae; subapical fascia similar in form, or divided at middle of each elytron, the sutural portions tending to form a subrhomboidal macula on the suture; apical maculae rather large. The elytral pattern is suggestive of that seen in *pardalis* Casey; the pale hairs form relatively narrow areas between the dark fasciae and maculae. Pronotal central macula quite distinctly constricted at middle and apparently somewhat different in the sexes; lateral semilunar vittae more or less distinct. Central area of the head usually darkish.

Head slightly broader than the pronotal apex, moderate in size, about as long as wide; front almost feebly convex, although feebly and broadly impressed anteriorly, punctures rather coarse and close, slightly impressed, intervals somewhat indented at the periphery, a small glabrous and slightly convex area at the epistoma. Eyes rather large. *Antennae* long, almost quite similar in the sexes, very feebly compressed, rather stout, very gradually incrassate, outer joints distinctly heavier; first very stout; second oval and a little longer than wide; third obconically subtriangular, almost twice as long as wide; fourth wider than the fifth or sixth, slightly elongate, triangular and angulate anteriorly, and with the fifth noticeably compressed; fifth similar to the fourth but obtuse

anteriorly; sixth about as long as wide and obtusely rounded anteriorly; seventh and eighth subtriangular, about as long as wide, almost circular in transverse section; ninth and tenth similar in form but slightly longer; eleventh less than twice as long as wide, slightly obovate, obtusely rounded at apex. All joints beyond the third are quite abundantly set with rather stiff and moderately short hairs.

Pronotum about a fourth wider than long; apex arcuato-truncate, apical angles broadly rounded into the sides, the latter broadly arcuate in basal half, thence less so and converging moderately to apex, serrules short and rather broad, not very distinct; base broadly arcuate, rounding into the sides, angles absent; disk widest behind the middle, quite evenly convex, somewhat declivous antero-laterally, punctures moderate in size, well defined, separated by a distance equal to one or two times their diameters, in central third the intervals are flat, glabrous, not noticeably indented, lateral thirds strongly indentato-reticulato-punctate.

Elytra elongate, punctures rather smaller than those of the pronotum, almost arranged in irregular transverse lines of twos or fours, separated by a distance equal to one-half to three times their diameters, intervals between the punctate lines more or less feebly and transversely impressed, surface very finely rugulose.

Abdomen very finely and almost thickly punctate; sixth ventral segment usually visible; apex with rather long and slightly blackish pubescence; fifth ventral unmodified on the disk in the male.

Legs moderate in length and stoutness; tarsi long and slender.

Male.—Narrow and parallel. Second and third antennal joints stouter than in the female; pronotal hourglass-shaped macula with narrow median lines of pale hairs at apex and base; fifth ventral segment broad at apex and truncate.

Female.—Elongate ovate, sides rather feebly arcuate, second and third antennal joints less stout; pronotal central macula usually without median pale lines; fifth ventral broadly rounded at apex.

Measurements.—Length (Types), 3-3.6 mm.; width, 1-1.4 mm.

Holotype, male, and paratypes in my own collection; allotype, female, and paratypes in the collection of the California Academy of Sciences.

Type locality.—Vine Hill, near Martinez, Contra Costa County, California. Collected by myself on November 28th, 1908. About twenty specimens studied.

Distribution.—California.—(Besides at the type locality, specimens have been seen from Alhambra Valley, Contra Costa County; these were collected on December 25th, 1913; Niles Canyon, Alameda County, April 19th, 1914.)

Apparently related to *fidelis* Casey, from which it differs in the fourth antennal joint being wider and more prominent anteriorly than the fifth, shorter pubescence and two distinct elytral fasciae; pubescence not dense and coarse, the elytral pattern somewhat resembles that seen in *pardalis* Casey.

Listrus simplex, new species.—*Form* parallel to subovate and moderately convex. *Color* black, more or less shining and with a slight viridoneous lustre; antennae rufo-testaceous throughout, frequently the distal joints are more or less rufo-piceous; tibiae and tarsi more or less rufous.

Pubescence short, somewhat sparse and rather less than coarse, cinereous in color, with dark fasciae of brownish-black hairs arranged as follows: A basal that may be narrowly interrupted at the scutellum; post-basal maculae absent or small at middle of each elytron; submedian fascia rather wide with edges more or less slightly irregular; the sub-apical likewise rather wide, entire or interrupted by a few pale hairs on the suture; apical maculae small or obsolete. Pronotal maculae apparently more or less different in the sexes; lateral semilunar vittae more or less evident, sometimes very narrowly separated from the central macula.

Head about as long as wide, moderately finely punctate, punctures slightly sparse, intervals almost smooth or feebly indentato-rugulose; front slightly concave, impression broad, with a small median almost glabrous convexity at the epistomal base. *Antennae* extending to about the pronotal base and quite similar in the sexes, rather stout and somewhat incrassate, feebly compressed to about the tenth joint; second, third and fourth joints subequal in length; second oval, about as wide as the fifth; third subcylindrical; fourth feebly angulate anteriorly; fifth subtriangular, wider than the two preceding and following joints, as wide as the ninth, apical angle prominent anteriorly; sixth and seventh similar in length and form, the former slightly smaller and obconico-triangular; eighth oblong-obconic; ninth slightly wider and almost subquadrate; tenth oblong-triangular and slightly transverse; eleventh suboblong-oval, about a half longer than wide; joints from the sixth to the eleventh gradually increasing in width; outer joints rather abundantly set with pale hairs.

Pronotum a little wider than long, strongly convex from side to side, widest behind the middle; sides evenly arcuate in basal half, thence feebly arcuate and moderately convergent to apex, serrules small; base broadly and slightly arcuate, apparently rather briefly and obliquely sinuate within the obtusely rounded basal angles; apical angles obtusely rounded; apex broadly and feebly arcuate; disk with moderately small punctures, separated by a distance equal to their diameter in the central area from

apex to base, intervals rather smooth, although very feebly indentato-punctate, densely reticulato-punctate laterally.

Elytra about twice as long as wide, oblong; sides parallel to feebly divergent posteriorly, apex broadly rounded; punctures of the disk rather coarse and separated by a distance equal to one or three times their diameter, finer and more widely spaced toward apex.

Abdomen finely and not noticeably densely punctate, except on the fifth segment, which is unmodified on the disk in the male.

Legs slightly elongate, femora subparallel.

Male.—Rather elongate, parallel and narrower. Pronotal central macula more or less oval. Antennae slightly stouter. Abdomen more coarsely punctate toward the apex; fifth ventral segment truncate at apex.

Female.—Subparallel, stouter and slightly wider posteriorly; sides very feebly arcuate. Pronotal central macula more or less hourglass-shaped, anterior lobe about reaching to the apical margin, posterior lobe with a short reëntering median line of pale hairs; lateral semilunar lines rather indefinite. Fifth ventral rounded at apex.

Measurements.—Length (Types), 2.0-3.0 mm.; width, .8-1.1 mm.

Type locality.—Marsh Ranch, Green Point, Humboldt County, California.

Holotype, male, and paratypes in my own collection; allotype, female, in that of the California Academy of Sciences.

Habitat.—California (on Green Point and Redwood Creeks, Humboldt County, in June; in May, F. W. Nunenmacher; Del Norte County, F. W. Nunenmacher; Duncan Mills, Sonoma County, June, F. E. Blaisdell).

Number of specimens studied, 29.

Variations.—Antennae and legs may be piceous. The basal dark fascia of the elytra may be dissolved into a juxta-scutellar macula on each side, and a humeral lunule that may join the post-basal macula.

Simplex in color and maculation resembles *annulatus*, but is more elongate and less stout, with pronotum narrower. In *annulatus* the basal fascia is usually rather widely interrupted at the scutellum and suture and no variations have been observed.

Listrus incestus, new species.—*Form* elongate, oblong-oval and moderately convex. *Color* black, appendages nigro-piceous, second joint of the antennae pale, terminal joints black; surface somewhat shining, lustre more or less feebly purpureo-cupreous anteriorly.

Pubescence short and decumbent, argenteo-cinereous in color and arranged in maculae and fasciae of brownish hairs on the elytra as follows: A broken basal fascia, forming a small humeral and parascutellar macula on each elytron, usually small but variable in size; a post-basal

macula usually extending forward to the humeral forming a lunule; a rather wide entire median fascia with slightly zig-zag edges, sometimes tending to extend basalward along the suture; a similar but usually slightly narrower subapical fascia, and an apical varying in size, sometimes involving the apex. Pronotal median macula constricted at middle, frequently with a short reëntrant and median line of pale hairs at apex and base; lateral vittae narrow or broader. Frontal region of the head sometimes darkish.

Head about as long as wide. Front feebly and broadly concave, scarcely convex in the median line behind the epistoma, surface densely indentato-punctate. *Antennae* extending a little beyond the pronotal base, not noticeably slender, feebly compressed; second joint oval, almost as wide as long; third cylindrico-obconical, scarcely longer than the second; fourth noticeably subangulate anteriorly; fifth wider, distinctly angulate, sides unequal, apical margin oblique; sixth smaller, as long as wide, obtusely rounded anteriorly; seventh oblong-triangular and about as long as wide; eighth similar and slightly thicker; ninth subtriangular and slightly wider than long; tenth scarcely wider than long, sides arcuate; eleventh oblong-oval, apex obtusely rounded, about a half longer than wide; last four joints gradually incrassate.

Pronotum about a fifth wider than long, evenly convex; apex arcuato-truncate, apical angles distinctly rounded; base broadly arcuate, angles obtuse, small and more or less reflexed, sometimes scarcely discernible; sides strongly and evenly arcuate in basal half, thence straighter and moderately converging to apex, serrules equal, rather thick and sub-obtuse, almost equally spaced; fimbriae moderately long and not dense; disk densely indentato-punctate. Sometimes the sides are very briefly sinuate before the basal angles.

Elytra oblong-suboval, twice as long as wide; base truncate, apex rather broadly rounded; punctures rather coarse, separated by a distance equal to once or twice their own diameter, finer toward apex; surface somewhat transversely impresso-rugose.

Abdomen densely and finely sculptured. Fifth ventral segment unmodified in the male.

Legs not stout. Femora subparallel; surface finely punctato-rugulose.

Male.—Narrower. Fifth ventral truncate at apex.

Female.—Somewhat broader, slightly wider posteriorly. Antennae similar to those of the male, but rather less stout. Fifth ventral rather broadly rounded at apex.

Measurements.—Length (Types), 2.5–3.2 mm.; width, 1–1.2 mm.

Holotype, male, and allotype, female, in the author's collection.

Collected by Mr. J. O. Martin, who possesses paratypes.

Type locality and habitat.—Bear Lake, San Bernardino County, California. Collected May 5, 1919.

Remarks.—*Incestus* resembles both *simplex*, n. sp., and *incertus* Casey. In *incertus* the sexes are shorter and rather more robust, the male being rather more oblong; centrally the pronotal disk is simply punctate, antennae slenderer, joints five to ten triangular, tibiae and tarsi pale.

Simplex has the central area of the pronotum simply punctate; antennae more compact, fourth joint somewhat shorter than the third and distinctly obconical, fifth scarcely wider and feebly angulate anteriorly; elytral dark fasciae rather broader and straighter, tibiae, tarsi and antennae more or less pale.

In *difficilis* the third joint of the antennae is cylindrical, the fifth longer than wide, distinctly wider, sixth and following joints distinctly shorter than the fourth. Central area of the pronotal disk not densely indentato-punctate.

Listrus giffardi, new species.—*Form* oblong-oval, subparallel, slightly elongate and very moderately convex. *Color* black, upper surface of body with a more or less noticeable aeneous lustre; antennae rufous, blackish distally; legs rufous throughout.

Pubescence moderately short, not coarse, recumbent, moderate in abundance and plumbeo-cinereous in color; slightly longer on the under surface of the body, scarcely paler anteriorly. Elytral dark-brownish hairs arranged in maculae and fasciae as follows: An elongate narrow humeral and a broader posteriorly elongate parascutellar macula on each elytron; a post-basal small macula at middle on each side; submedian and subapical transverse fasciae rather wide with edges irregular; apical maculae rather large and distinct. Pronotal pubescence similar to that on the elytra, maculae obscure, central constricted figure and moderately wide lateral vittae feebly evident; front of head darkish in the central area.

Head about as long as wide, not large, eyes moderately prominent and evenly convex; front feebly and broadly impressed, punctures moderately coarse, rather sparse, intervals smooth and obsoletely indentate; muzzle small. *Antennae* rather long and somewhat slender, moderately compressed; second joint oval, not stout, not twice as wide as the third, the latter cylindrical, more than twice as long as wide, equal to the fourth in length; the latter obconical, slightly prominent anteriorly at apex; fifth about a half longer than wide, not widely triangular, about as wide as the eighth or ninth, apical margin oblique, moderately prominent anteriorly; sixth and seventh subequal in length and size, almost a little longer than wide, apical margin oblique; eighth to the tenth tri-

angular, slightly longer than wide, increasing very slightly in width and size in the order named; eleventh almost evenly oval, slightly narrowed apically, about twice as long as wide.

Pronotum a little wider than long, widest just behind the middle, length equal to breadth of the head across the eyes; apex arcuato-truncate in circular arc; apical angles rounded; sides not strongly arcuate in basal half, slightly sinuate before the basal angles, anteriorly rather straight and moderately convergent to apex, serrules small, not very distinct although a few may be larger and subacute, fimbriae moderate in length; base broadly arcuate, feebly sinuate laterally; basal angles obtuse and more or less distinct; disk rather strongly convex, rather strongly arcuately declivous antero-laterally, sides feebly impressed within the basal angles and laterally anteriorly, punctures moderate in size, rather sparse in the central two-fourths, intervals flat, rather smooth, apparently obsolete indented, lustre rather dull, in lateral fourths not strongly nor very densely reticulato-punctate.

Elytra oblong-oval, twice as long as wide and parallel; humeri not prominent; disk rather distinctly transversely impressed behind the base, punctures rather indented and thereby appearing coarse, separated by rather less than twice their own width and slightly arranged in transverse rows, with the intervals feebly and transversely impressed giving the surface the appearance of being subrugose, surface smoother apically with the punctures finer; apex evenly but not very broadly rounded.

Abdomen very finely and densely punctulate and microscopically reticulate, less than moderately convex.

Legs moderate in length and stoutness.

Salient male characters.—Subparallel and elongate, moderately narrow; sides of the fifth ventral segment moderately convergent posteriorly, apex equal in width to about a third of the base and truncate at tip; surface not in the least modified, apical tactile setae noticeably few.

Female unknown.

Measurements.—Length, 3 mm.; width, 1 mm.

Holotype, male, in my own collection; collected on June 9, 1917, by Mr. Walter M. Giffard of Honolulu, Hawaii.

Type locality.—Santa Cruz County, at an elevation of 600 feet.

Giffardi is peculiar in its sparsely punctured pronotum and entirely pale legs, the elytral maculation is different from that observed in *luteipes* to which it is apparently related, the fasciae being more sharply defined and the basal maculae sharper and more elongate, and besides the pronotum is narrower than in that species where the male is more ovate in form. I take pleasure in naming this species after its discoverer, Mr. Giffard.

Listrus parvicollis, new species.—*Form* elongate subovate, moderately convex. *Color* black with a faint purpureo-aeneous lustre; labrum more or less rufous, head and pronotum opaque, antennae piceo-rufous, joints two, three and four more rufous than the terminal ones, elytra more or less shining; femora rufo-piceous, tibiae and tarsi rufous.

Pubescence short and sparse, dark cinereous in color with brownish hairs arranged in a pattern as follows: A broad median fascia that extends along the suture to base and dilating about the scutellum, the humeral and lateral area with irregular grayish markings; a wide subapical fascia that involves most of the apex, where there are scattered grayish hairs. The median and subapical fasciae are separated by a very narrow transverse zig-zag fascia of pale hairs. Pronotal central macula very faintly indicated, but apparently constricted at middle and with a narrow median grayish line; lateral semilunar vittae more or less obsolescent.

Head notably small, about as wide as long, muzzle small and relatively narrow; front moderately impressed, impressions broad and separated by a feeble but distinct, glabrous raised area behind the base of the epistoma; surface densely punctato-rugose, eyes rather prominent. *Antennae* extending to the base of the pronotum, rather slender and somewhat incrassate; second joint oval and rather stout; third cylindrical and about twice as long as wide; fourth, fifth and sixth distinctly angulate on their anterior borders; fifth distinctly wider than the fourth but subequal in width with the sixth; seventh, eighth, ninth and tenth not stout, but evidently slightly transverse; eleventh oval and obtusely pointed and about a half longer than wide.

Pronotum notably small, about a third wider than long; sides evenly and rather strongly rounded in basal half, thence straight and convergent to apex, and coinciding with the inner border of the eyes, serrules small and acute, fimbriae not close and moderately short; apical angles obtuse; apex rather arcuate and distinctly narrower than the head; base broadly rounded, continuously so with the sides; disk very densely indentato-punctate, indentations same size as the punctures, the deeper punctures separated by one or two indentations; surface rather strongly and evenly convex from side to side, especially anteriorly.

Elytra distinctly wider than the pronotum, slightly more than twice as long as wide; sides broadly and not strongly arcuate; apex rather broadly rounded; disk not very coarsely punctate, punctures separated by a distance about equal to twice their own diameter, finer toward apex.

Abdomen very finely punctate and more or less finely reticulate.

Male unknown.

Female.—Fifth ventral abdominal segment rounded at apex, tip deflexed, surface with a small but distinct impression in front of the deflexed margin.

Measurements.—Length, 2.4 mm.; width, .9 mm.

Holotype, female, in my own collection.

Type locality.—Mokelumne Hill, Calaveras County. Collected in May. A single specimen studied. A very distinct species in the characters of the head, pronotum and elytral maculation.

Listrus trochantericus, new species.—*Form* slightly robust, oblong-ovate, rather more than twice as long as wide. *Color* black; tibiae and tarsi rufo-testaceous, tibiae at base and tarsi toward tip, blackish; second joint of the antennae rufo-testaceous, first joint black as usual, remaining joints rufo-piceous, last two or three may be quite black.

Pubescence rather dense and coarse, almost concealing the general surface, cinereous in color, with brownish-black maculae and fasciae arranged on each elytron as follows: A rounded parascutellar macula and a humeral lunule more or less interrupted behind the umbo, umbonal dot small or absent, apical portion feebly arcuate, appearing as a post-basal macula; a narrow transverse fascia a little behind the middle, slightly zig-zag, and interrupted at the suture, often broken into two maculae on each elytron; subapical transverse fascia similar in form; apical macula present or absent. Pronotal pattern consists of lateral semilunar vittae and a somewhat constricted central figure, the former broken into two and the latter more or less dissolved into four parts. Central area of the head submaculate. Maculae of the head and pronotum not very distinct.

Head slightly transverse, front rather broadly impressed, or longitudinally impressed within the eyes, with a feeble central longitudinal convexity, punctures not coarse, rather crowded in the impressions, somewhat sparse elsewhere, intervals scarcely indented, a small impunctate area at base of the epistoma; muzzle short, margin evenly arcuate from side to side. *Antennae* rather slender, feebly incrassate, outer joints noticeably heavier, slightly compressed; third cylindrical, fourth obconico-triangular, both slightly elongate; fifth serrate, a little wider than the sixth, sixth to the tenth inclusive, subtriangular.

Pronotum less than a fourth wider than long; sides evenly and rather strongly arcuate, moderately convergent anteriorly and less arcuate, serrules not strong; basal angles not evident and well rounded; base broadly arcuate; disk evenly convex, more strongly so anteriorly, closely punctate, punctures moderate in size, separated by a distance more or less equal to their diameter, intervals scarcely indented in the central area, but

densely indentato-punctate in the lateral two-fifths, lustre dull; fimbriae moderate in length, even and cinereous in color.

Elytra oblong, less than twice as long as wide and a little wider posteriorly; sides feebly arcuate, subparallel, moderately convex on the disk; punctures separated by a distance equal to about twice their diameter, at base subequal to those of the pronotum, finer apically and more widely spaced; apex rather broadly rounded.

Abdomen finely and rather sparsely punctate; surface extremely finely rugulose; pubescence slightly longer and finer. Fifth ventral segment modified on the disk in the male.

Legs moderate in length and stoutness. Metatrochanters triangular; femora quite cylindrical behind the trochanters and more or less arcuate.

Male.—Narrower. Metatrochanters subacute on their inner angle; femora more strongly cylindrical and arcuate behind the trochanters. Fifth ventral segment shorter and evidently sinuato-truncate at apex; hairs of the genital segment more or less brownish or blackish.

Female.—Broader. Metatrochanters rounded on their inner angle; femora less cylindrical and arcuate at base; fifth ventral longer with the margin broadly rounded at apex.

Measurements.—Length (Types), 2.5–3 mm.; width, .9–1.1 mm.

Holotype, male, and allotype, female, in my own collection. Paratypes in my own and that of Mr. J. O. Martin.

Type locality.—Bear Lake, San Bernardino County, California. Collected by Mr. J. O. Martin, on May 5, 1919. A series of twenty specimens studied.

Trochantericus differs from all known species in the form of the metatrochanters and metafemora. The elytral fasciae are usually broken up into rounded or slightly transverse maculae, never attaining the suture in the series at hand. The central dark figure of the pronotum may be broken up or shaped like two U's with their bases together.

Listrus liebecki, new species.—*Form* distinctly oblong-oval and moderately convex. *Color* very black, with a more or less dark virido-metallic lustre; basal joints of the palpi and mandibles more or less rufopiceous; second antennal joint rufous, the four following joints more or less dark rufopiceous; tarsi and distal half of the tibiae more or less dark rufous to rufopiceous.

Pubescence sparse, short, closely recumbent and very inconspicuous, dark plumbeous in color, dark areas clothed with very dark-brown hairs. Maculation very obscure and apparently consists of rather broad fasciae and maculae arranged as follows: A large parascutellar and a smaller humeral macula on each elytron; a post basal macula at middle of each;

a median and subapical fascia, the latter very indefinite; apical maculae not discernible in the type. Pronotal central macula apparently oval, lateral semilunar vittae not discernible. Hairs on the head more or less diffusely brownish; those on the prosternum longer and more cinereous, elsewhere beneath similar in length but somewhat darker.

Head slightly transverse, distinctly wider than the pronotal apex; eyes moderately large and prominent; front broadly impressed, a small and convex, median and more or less glabrous area just behind the epistomal base; punctures rather coarse, well defined and rounded, intervals more or less indented. *Antennae* moderately long, slightly stout, scarcely incrassate; second joint oval, about a half longer than wide, rather less than half the width of the first; third joint cylindrical, scarcely longer than the second, slightly widest at apex; fourth feebly compressed, subtriangular, not prominent anteriorly, about a half longer than wide; fifth slightly compressed, subtriangular, about a fourth longer than wide, wider than the four following joints, apical angle prominent anteriorly; sixth, seventh, and eighth subtriangular, less compressed, about as long as wide; ninth similar in form and a little longer; tenth slightly stouter, more oblong, very slightly longer than wide; eleventh almost oblong-oval, rather less than twice as long as wide, not strongly narrowed at apex.

Pronotum about a fourth wider than long, rather evenly convex; apex arcuato-truncate; apical angles rather broadly rounded into the sides, the latter broadly arcuate, rather more strongly so in basal half, converging moderately to apex, serrules small, rather widely spaced, subacute, fimbriae moderate in length and plumbeo-cinereous in color; base broadly arcuate and not strongly lobed, sinuate laterally; basal angles obtuse and distinct; disk moderately coarsely punctate in the central area, intervals about equal to the diameter of the punctures, indentato-punctate apically and basally, laterally very densely indentato-reticulato-punctate.

Elytra oblong, about twice as long as wide, base rather broadly emarginate, scutellum transversely oblong; disk rather coarsely punctate, punctures somewhat shallow, separated by a distance equal to one or two times their diameter, a few coalescing transversely producing a somewhat but slight rugoseness, punctures finer toward apex, the latter rather parabolically rounded.

Abdomen rather densely punctate; fifth ventral segment modified in the male.

Legs rather short and moderate in stoutness.

Male.—Fifth ventral distinctly modified, apex rather deeply sinuate, adjacent surface somewhat impressed, impression limited by denser punctation, hairs slightly coarser, but pale in color, or at least very slightly

darker about the abdominal apex; metafemora thickened and apparently arcuate, sides at apical third moderately swollen.

Female unknown.

Measurements.—Length, 3.2 mm.; width, 1.1 mm.

Holotype, male, in my own collection; paratypes in that of Mr. Chas. Liebeck.

Type locality.—Fort Collins, Colorado. Only known from the type locality.

Remarkably distinct from *interruptus* and the unicolorous species of the same region. It has not been possible to study the metatrochanters on account of their being hidden by glue and the lack of specimens for dissection.

Listrus olympianus, new species.—*Form* elongate suboval, slightly robust and rather strongly convex. *Color* deep black with a slight bluish metallic lustre; head and pronotum feebly purpureo-aeneous; tarsi and tips of the tibiae somewhat rufo-piceous; second antennal joint more or less rufous, third joint rufo-piceous.

Pubescence of less than moderate length, rather sparse, mouse-colored and in certain lights flavo-plumbeous, dark areas difficult of determination. Basal fascia broken into two maculae on each elytron, the humeral small and the parascutellar larger; post-basal represented by an indefinite macula at middle of each elytron; median fascia irregularly and obscurely transverse; subapical fascia transverse, entire or broken and rather indefinite; apical maculae more or less obscure. Maculations are moderately wide as a rule. Pronotal median macula constricted at middle, faintly incised anteriorly and posteriorly on the median line; lateral semilunar vittae distinct or more or less atrophic. Pronotal fimbriae not long nor close and cinereous in color.

Head rather large and slightly wider than the pronotal apex; front broadly impressed between the eyes, a feeble median longitudinal convexity is discernible; rather closely and distinctly punctate, intervals obsolete indented, antennal convexities punctato-rugose; muzzle short with sides convergent. *Antennae* reaching to about the pronotal base, not distinctly incrassate and dissimilar in the sexes, slightly compressed, clothed rather thickly with short, stiff grayish hairs; joints rather densely punctate.

Pronotum about a fourth wider than long, very slightly narrower than the elytral base; sides rather evenly and moderately arcuate in basal half, less so anteriorly and slightly converging and rounding into the apex, the latter arcuato-truncate at middle, serrules rather coarse; basal angles obtusely rounded; base arcuate; disk moderately strongly convex, less so

across the base, more declivous antero-laterally, punctures rather coarse, separated by a distance about equal to their diameter, intervals smooth and shining, in the central area obsoletely indentate, not widely indentato-punctate along apex and base, laterally rather widely and densely indentato-rugoso-punctate; apex slightly narrower than the base.

Elytra about twice as long as wide; sides parallel, very feebly arcuate, somewhat wider posteriorly; apex rather broadly rounded, sutural angles obtusely and narrowly rounded; punctures rather coarse, separated by a distance two or three times their diameter, surface very finely crinkled.

Abdomen finely punctate; fifth segment quite densely so and different in the sexes.

Legs moderate in length and stoutness.

Male.—Similar in form to the female although slightly narrower. *Antennae* stouter, second joint globular; third narrowest and obconical, about equal in length to the fourth; the latter triangular, distinctly wider, equal in width to the sixth or seventh, apex transverse; fifth slightly longer and subtriangular, broader than the fourth, sixth or seventh, anteriorly prominent; sixth and seventh about as long as wide, subtriangulo-obconical; eighth rather more triangular and a little longer; ninth about as long as wide, rather subtriangular and with sides more arcuate; tenth almost as wide as long, widest joint of all but not suddenly so, almost quadrato-triangular in outline; eleventh narrower, about as wide as the ninth, a half longer than wide, tapering gradually in apical half and almost subfusiform. Fifth ventral segment moderately broad at apex, distinctly sinuato-truncate, adjacent surface rather glabrous and impressed, sides of the impression rather more prominent, pubescence longer, somewhat denser and more conspicuous, in part blackish at margins and on the genital segment; longer tactile hairs rather abundant.

Female.—Scarcely stouter. *Antennae* moderately slender, second joint slightly less globular; third subtriangular and comparatively narrow; fourth, sixth, seventh and eighth subtriangular, slightly longer than wide; fifth slightly longer than wide, subtriangular, apex rather oblique and distinctly angulate anteriorly, scarcely as wide as the ninth; ninth and tenth subtriangular, about as long as wide, sides of the tenth moderately arcuate; eleventh obovate, wider than the tenth, about a half longer than wide. Fifth ventral rather broadly rounded at apex. Pubescence longer, denser and darker about the abdominal apex.

Measurements.—Length (Types), 3.1–3.4 mm.; width, 1.0–1.2 mm.

Holotype, male, and allotype, female, in my own collection; paratypes in that of Mr. Chas. Liebeck.

Type locality.—Olympia, Washington State. Eight specimens studied.

Remarks.—*Olympianus* is evidently rather closely related to *dilutus*, from which it differs in the stouter and shorter antennae, flatter and scarcely impressed front, and in the male the fifth ventral is modified. In *dilutus* the same segment is squarely truncate and narrowly beveled on the margin in middle third. The maculae in *dilutus* tend to transverse fasciae, in both they are equally difficult of determination. In *liebecki* the second antennal joint is elongate, in *olympianus* it is globular—as long as wide.

Listrus occidentis, new species.—*Form* comparatively small, oblong-oval, subparallel and moderately convex. *Color* black, with a distinct aeneous lustre; mouth parts more or less rufo-testaceous, palpi more or less black; antennae, tibiae and tarsi rufo-testaceous; femora at times slightly rufescent apically.

Pubescence moderately short, abundant but not completely hiding the body surface, recumbent, plumbeo-cinereous in color; longer on the under surface of the body, snowy white on the head, sterna and their side pieces; slightly darker on the abdomen but snowy on the apex. Dark brown hairs of the upper surface reduced to a minimum, maculation of the elytra nearly obsolete; a basal parascutellar dot and a very small post-basal macula at middle of each elytron; submedian and subapical fasciae represented by indefinite small maculae, apical dots obsolete. Pronotal maculae indefinite, central figure apparently constricted at middle; lateral vittae broken into two dots each, the anterior of which appears as a rounded macula in the antero-lateral quadrant of the disk.

Head about as long as wide, eyes large and rather strongly convex; front broadly impressed, feebly convex on the vertex, punctures moderately large, rather sparse, denser toward the epistoma, intervals feebly rugulose and rather shining; white hairs on the muzzle and anterior canthi of the eyes rather conspicuous. *Antennae* moderately long, extending to about the pronotal base, three apical joints rather stout and quite circular in transverse section, intermediate joints moderately compressed; second joint oval, about as long as wide; third slender and cylindrical, about as long as the second or the fourth, the latter subtriangular and rather prominent anteriorly; fifth slightly elongate, apparently constricted at base and as wide as the ninth, anterior margin prominent and arcuately rounded; sixth and seventh triangular, subequal and as long as wide; eighth apparently wider than long and subtriangular; ninth subtriangular with sides somewhat arcuate; ninth and tenth a little stouter, about as long as wide, sides arcuate; eleventh short ovate, less than a half longer than wide.

Pronotum about a fourth wider than long, widest behind the middle; apex feebly arcuate in circular arc; sides evenly and rather moderately

strongly arcuate in posterior half, thence rather straight and somewhat strongly convergent to apex as viewed from above, serrules small and subacute, fimbriae cinereous and moderate in length; apical angles obtusely rounded; base broadly arcuate, feebly sinuate laterally; basal angles represented by a denticle, otherwise rounded; disk evenly and moderately convex posteriorly, arcuately and strongly declivous antero-laterally; punctures in the central area moderate in size and separated by a distance equal to about one or two times their diameter, intervals slightly rugulose, or very obsoletely indented, laterally not very coarsely reticulato-punctate.

Elytra oblong, about twice as long as wide, rather evenly convex from side to side; disk moderately closely punctate, punctures not strongly outlined, separated by a distance equal to one or two times their diameter, surface somewhat feebly transversely rugose; punctures finer and more widely spaced toward apex, the latter evenly rounded.

Abdomen finely and densely punctured; fifth ventral segment modified on the disk in the male.

Legs moderate in length and stoutness; metafemora somewhat constricted at base.

Male.—Parallel, slightly elongate. Fifth ventral distinctly sinuate, slightly blackened on the impressed area, hairs pale and normal elsewhere.

Female unknown.

Measurements.—Length, 2.6 mm.; width, .9 mm.

Holotype, male, in my own collection.

Type locality.—San Diego, California, without other data. Collected by Mr. O. N. Sanford.

Occidens is quite distinct in its feebly marked elytral maculation, rufous antennae, tibiae and tarsi, modified fifth ventral segment of the abdomen, ashy pubescence and several other minor differences.

Listrus angulatus, new species.—*Form* oblong-ovate, about three times as long as wide and moderately convex. *Color* black, feebly shining, with a very slight aeneous lustre anteriorly; tarsi and distal part of the tibiae dark rufo-piceous; antennae nigro-piceous throughout.

Pubescence abundant, conspicuous, moderate in length and coarseness, recumbent, longer on the under surface of the body, plumbeo-cinereous in color and somewhat silvery on oblique inspection. The dark brownish hairs are arranged in more or less discrete maculae as follows: Basal maculae obsolete, or a small humeral and a parascutellar which in some instances coalesce on each elytron remaining rather widely interrupted at the scutellum; post-basal macula variable in size at middle of each elytron; a submedian fascia which is very narrow and zig-zag, or

broken into two maculae on each side, of which the lateral may be obsolete; a subapical transverse row of four maculae that seldom unite on the suture; apical maculae obsolete or variable in size. Pronotal central figure dissolved into four maculae that may unite more or less to form lobes or an almost constricted macula; lateral vitta broken into two dots, it is seldom entire.

Head relatively small, wider than the pronotal apex, about as long as wide; eyes large, only moderately prominent; front broadly and not strongly impressed, feebly convex on the vertex, punctures scarcely coarse, dense anteriorly and more widely spaced on the vertex, muzzle short. *Antennae* similar in the sexes, moderate in length, feebly compressed, apical joints somewhat circular in transverse section, joints four and five noticeably compressed; second joint rather stout, subglobular, very slightly longer than wide, about as wide as the eighth; third about as long as the second, about half as wide, obconico-cylindrical; fourth subtriangular, slightly longer than wide, apical margin oblique, prominent anteriorly; fifth nearly as wide as the tenth, subtriangular, slightly longer than wide, apical margin slightly oblique, anterior margin prominent but not sharply angulate; sixth to the ninth similar in form, subtriangulo-moniliform and subequal in length; tenth stouter, about as long as wide, subtriangular in outline as viewed from above; eleventh scarcely twice as long as wide, obovate, equal in width to the tenth.

Pronotum about a third wider than long, rather evenly convex, a little more declivous antero-laterally; apex subtruncate in moderately circular arc; sides broadly arcuate, less so anteriorly and moderately convergent to apex, serrules small, subacute and rather widely spaced, fimbriae moderate in length and coarseness, not very close; apical angles sub-obtusely rounded; base broadly arcuate, almost moderately sinuate laterally within the angles, which are evident but not strong; disk dull in lustre, at center not very densely asperately indentato-punctate, strongly so laterally.

Elytra oblong-oval, humeri rather prominent; sides rather moderately arcuate, apex rather broadly rounded; disk not strongly punctate, punctures rather shallow, separated by a distance equal to one or two times their diameter, finer and sparser toward apex.

Abdomen densely and finely punctate, surface rather microreticulate; fifth ventral segment modified on the disk in the male.

Legs somewhat slender, femora rather moderate in stoutness.

Male.—Subparallel, oblong-subovate; fifth ventral segment rather short and broad, distinctly sinuate at apex, lateral angles moderately rounded, sinus rather feebly rounded at bottom where the edge is slightly beveled; adjacent surface more or less glabrous and the surrounding

hairs not modified, although brownish in color and slightly denser than on the preceding segments.

Female.—More robust, oblong-ovate; fifth ventral segment rather long, only moderately broad and rather strongly rounded at apex.

Measurements.—Length (Types), 3.5–4.0 mm.; width, 1.3–1.4 mm.

Holotype, male, and paratypes in my own collection; allotype, female, in that of the California Academy of Sciences.

Type locality.—Mono Lake, Mono County, California; collected by Mr. Chas. L. Fox, on June 17, 1917. Seven specimens studied.

Angulatus differs from the other species in its dark antennae, distinct basal angles of the pronotum, stouter ovate form and simple modification of the disk of the fifth ventral in the male. It resembles *montanus* Casey in appearance.

Listrus salicis, new species.—*Form* oblong-oval, similar in the sexes and moderately convex. *Color* black, dull in lustre with a feeble aeneous tinge; mouth-parts piceous; second joint of the antennae rufous, third, fourth and fifth joints more or less rufo-piceous, apical joints black; tibiae and tarsi piceous, the latter may be rufo-piceous.

Pubescence rather coarse, linearly subsquamiform, rather short and recumbent, quite dense, plumbeo-cinereous on the upper surface; longer on the under parts, dense and snowy-white on the prosternum and sternal side-pieces, slightly darker on the abdomen. The dark brownish hairs form rather moderate-sized maculae which are usually rather obsolete toward base but otherwise arranged as follows: An occasional small humeral and parascutellar macula; post-basal small at middle of each elytron, or obsolete; submedian fascia obsolete or very narrow and zig-zag, or broken into two short oblique dots on elytron; subapical transverse row of four maculae which are usually subequal and discrete; apical maculae small or obsolete. Pronotal maculae obscure, discernible as faint clouds, the central one at times appears somewhat oblong.

Head about as long as wide, eyes large and moderately strongly convex; front broadly and rather deeply impressed between the antennae and anterior canthi of the eyes, feebly convex toward vertex; surface rather finely and densely indentato-punctate, punctures coarser on the vertex with intervals rugulose; muzzle short and relatively small; hairs at sides of the front and before the eyes rather dense and white. *Antennae* similar in the sexes, moderately long and attaining the pronotal base, rather slender and moderately compressed, apical three joints slightly thickened; second joint oval, slightly longer than wide; third feebly obconical—nearly cylindrical, subequal in length to the fourth, the latter obconico-triangular, apical margin slightly oblique,

feebly prominent anteriorly at the apical angle; fifth as wide as the tenth, triangular, slightly elongate, prominent anteriorly, apical margin feebly oblique; sixth to the eighth subequal in width, sixth and eighth about equal in length, sixth subtriangular and as long as wide; seventh a little longer than wide, subtriangular; eighth about as long as wide, less triangular; ninth about as wide as long, sides feebly arcuate; tenth a little broader, about as long as wide, sides more arcuate, with the ninth and eleventh more circular in transverse section; eleventh about a half longer than wide, obovate; pubescence short and very inconspicuous. The seventh joint tends to be slightly wider than the sixth or eighth.

Pronotum about a third wider than long, quite evenly convex, slightly more declivous antero-laterally; apex feebly arcuate in circular arc; sides broadly arcuate, more strongly so behind the middle, less so and moderately convergent anteriorly to apex, serrules small and inconspicuous; fimbriae moderately short, cinereous and rather close; apical angles obtusely rounded; base broadly arcuate and rather feebly sinuate within the very obtuse basal angles, which are as a rule rather broadly rounded; disk widest just behind the middle, rather coarsely and densely indentato-punctate.

Elytra oblong, twice as long as wide, sides parallel; disk rather closely and regularly punctate, punctures separated by a distance equal to their diameter, finer and sparser apically; surface very finely microscopically rugulose; apex parabolically rounded.

Abdomen densely and finely punctate, pubescence abundant and hiding the body surface; fifth ventral segment modified on the disk in the male.

Legs moderate in length; metafemora not swollen, subparallel.

Male.—Slightly more parallel. Fifth ventral segment distinctly sinuate, bottom of the sinus transverse, angles obtuse and hidden by the pubescence; adjacent surface impressed and somewhat shining, subglabrous, hairs of the impressed area and terminal segment brownish black, longer and not noticeably bristling, pubescence beyond impressed area normal. Abdomen but very slightly longer than a femur.

Female.—Slightly stouter, sides of the body rather more arcuate. Abdomen about twice as long as a femur; fifth ventral rather strongly rounded at apex and less broadly so than in some of the other species.

Measurements.—Length (Types), 3.5–4.0 mm.; width, 1.2–1.4 mm.

Holotype, male, in my own collection; allotype, female, in the collection of the California Academy of Sciences; paratypes in both collections.

Type locality.—Hullville, Gravelly Valley, Lake County, California. Collected by myself on June 18, 1917. Found abundantly on the catkins of the willow.

Salicis appears distinct by its dull lustre, sparse maculation, even and rather dense pubescence and even, close elytral punctuation. Closely related to *niveicanthus* which has a more pronounced maculation. Sometimes *salicis* is almost unicolorous from diminution of the maculae.

Listrus niveicanthus, new species.—*Form* oblong-oval, slightly robust and moderately convex. *Color* black, with a feeble aeneous tinge anteriorly; mouth-parts pale; antennae and tarsi rufous; tibiae toward apex more or less rufous. First antennal joint black as usual.

Pubescence moderately short, rather fine, recumbent, somewhat sparse and plumbeo-cinereous in color; a tuft of dense snowy-white hairs at anterior canthus of each eye. The areas of dark brown hairs are arranged as follows: Basal maculae more or less obsolete or small when present, the humeral frequently absent when a parascutellar is present on each elytron; post-basal macula not large but variable in size, tending to extend toward the humeral; submedian very narrow and zig-zag, often interrupted at suture and middle of each elytron; subapical usually interrupted forming a transverse row of four maculae, sometimes nearly entire or the sutural two may coalesce to form a small rhomboidal macula on the suture; apical maculae obsolete or small and somewhat transverse. Pronotal central figure usually dissolved into four maculae, two anterior and two posterior, which with those from the broken lateral vittae, make a circle of six small maculae; in some instances the constricted figure appears. The pubescence is longer on the under surface of the body, snowy-white and dense on the prosternum and sternal side-pieces, duller in color on the abdomen and not quite as dense.

Head somewhat transverse, distinctly wider than the pronotal apex, eyes moderately large and prominent; front broadly impressed, a small and somewhat glabrous convexity just behind the base of the epistoma; surface densely indentato-punctate. *Antennae* moderate in length and nearly similar in the sexes, moderately compressed; second joint oval, a little longer than wide; third equal in length to the second, obconico-cylindrical in form, a little less than twice as long as wide; fourth and fifth noticeably compressed, fourth slightly elongate and triangular, moderately prominent anteriorly, apical margin oblique; fifth about as wide as the ninth, distinctly wider than the joints between the first and ninth, slightly elongate, about a half longer than wide, angulate anteriorly, apical margin oblique; sixth, seventh and eighth triangular, subequal in length, just a little longer than wide and slightly angulate anteriorly; ninth and tenth triangular, anterior margins moderately arcuate, subequal in width with the eleventh, the latter less than a half longer than wide, oval, slightly narrower at apex.

Pronotum transverse, about a fourth wider than long, almost evenly convex; apex broadly arcuate; sides broadly and moderately strongly arcuate, widest a little behind the middle, arcuately convergent anteriorly, angles broadly rounded, the basal sometimes slightly obtuse; base broadly arcuate, feebly sinuate laterally within the angles when obtuse; disk dull in lustre and densely indentato-punctate.

Elytra oblong, about twice as long as wide; apex rather parabolically rounded; not deeply punctate, punctures separated by a distance equal to one or two times their diameter, surface more or less transversely and feebly rugose, punctures finer toward apex.

Abdomen finely and very densely granulato-punctate; pubescence almost hiding the body surface; fifth ventral segment modified on the disk in the male.

Legs moderate in length and stoutness; metafemora rather strongly arcuate dorsally in basal third, rather stout and subparallel, i. e., less narrowed at base.

Male.—Slightly narrower, subparallel, antennae slightly heavier; fifth ventral segment distinctly sinuate, adjacent surface impressed and asperate, impressed area invested with black hairs which are not noticeably bristling, pubescence unmodified beyond margin of the impression, sometimes brownish, especially on the genital segment, tactile hairs rather long and somewhat numerous.

Female.—Slightly broader, a little more ovate; antennae a little more slender, anterior margin rather less serrate. Metafemora rather more parallel; fifth ventral broadly rounded at apex.

Measurements.—Length (Types), 3.2 mm.; width, 1.2–1.3 mm.

Holotype, male, in my own collection; allotype, female, in that of the California Academy of Sciences; paratypes in both collections.

Type locality.—Bartlett Springs, Lake County, California. Collected in June by Dr. A. Fenyès.

Distribution.—Besides the typical phase taken at Bartlett Springs, I have eight specimens from Pasadena, in Southern California. These are smaller with the apical joints of the antennae somewhat darker, and the central pronotal constricted macula is represented by a rounded macula corresponding to the basal lobe of the "hourglass" spot. In the males the impressed area of the fifth ventral is quite glabrous and the pubescence is longer at the angles. In some *Listri* there is an apparent sixth segment, but it is exceedingly difficult to determine the true structure in dried specimens, especially when they are few in number. Careful dissection is necessary.

From reading Casey's description of *Listrus tritus* Casey, one would refer *niveicanthus* to that species as regards maculation. In *tritus* the

fifth ventral segment in the male is truncate at apex and unmodified on the disk; in *fidelis* Casey it is likewise truncate and unmodified, the pubescence being of the usual character. *Extricator* Casey is recognized and properly placed from material taken at San Diego and Pasadena, in this species the antennae are stouter and incrassate, and blackish in color, except the second joint which is rufous or testaceous. The above variant of *niveicanthus* taken at Pasadena may be known as *tincticornis*, new subspecies.

Listrus elegantulus, new species.—*Form* oblong-oval to oblong-ovate, rather strongly convex. *Color* black, a feeble purpureo-aeneous lustre, especially on the head and pronotum; mouth pale, second joint of the antennae rufo-testaceous, succeeding joints more or less rufo-piceous, apical joints usually blackish; tibiae dark rufo-piceous, tarsi more or less rufous.

Pubescence moderately long, abundant and cinereous in color; dark areas of dark brownish hairs arranged as follows: Elytral maculation conspicuous, basal fascia rather broad, usually narrowly interrupted at middle by the albescent scutellum; post-basal macula small at middle of each elytron; median fascia quite broad, edges irregular, extending somewhat along the suture anteriorly; subapical fascia narrower, with edges zig-zag, widening more or less on the suture to form a subrhomboidal figure, and constricted at middle of each elytron almost to the point of division; apical maculae rather large, but variable as to size. Pronotal central macula usually distinctly constricted at middle, basal lobe rather larger than the apical, reëntering lines not evident; lateral vittae more or less obsolete or divided at middle. Central area of the head with darkish hairs.

Head somewhat transverse and wider than the pronotal apex, eyes large and prominent; front more or less broadly impressed, at times apparently bi-impressed, a feeble median convexity behind the epistomal base; surface densely indentato-punctate; sometimes the intervals are smooth on the vertex and adjacent front where the punctures are rather coarse, but anteriorly between the antennae they are more densely placed. *Antennae* rather long and slender, feebly compressed toward base, apical joints feebly incrassate; second joint longer than wide and rather obconical; third rather slender and cylindrical, about as long as the fourth or second; fourth more evidently compressed, obconico-subtriangular, slightly prominent anteriorly toward apex; fifth slightly elongate, subtriangular, apical margin rather oblique, anterior border angulate, distinctly wider than the fourth or third, about equal in width to the eighth; sixth and seventh just a little narrower, less noticeably compressed, subtriangular and very slightly longer than wide; eighth triangular in outline

and not noticeably compressed; ninth distinctly wider than long and with the tenth and eleventh just a little wider than the fifth; tenth a little longer than the ninth, subtriangular; eleventh not more than twice as long as wide, nearly an elongate oval.

Pronotum about a fourth wider than long, evenly convex, more declivous antero-laterally; apex arcuato-truncate in circular arc; sides broadly arcuate, less so anteriorly and moderately convergent to apex, serrules short and more or less acute, fimbriae rather short and not closely placed; angles broadly rounded, the anterior less so; base broadly and rather evenly arcuate, scarcely sinuate laterally within the angles; disk in the central area rather sparsely punctured, punctures less than coarse, not very sharply defined although deep, intervals rather irregular in width and from two to four times wider than the punctures, not noticeably indented, lateral thirds distinctly and moderately coarsely and densely indentato-punctate.

Elytra somewhat oblong-oval, sides moderately arcuate although subparallel, about twice as long as wide; discal punctures not coarse, separated by a distance equal to one or three times their diameter, finer toward apex and more widely spaced, surface feebly transversely rugose.

Abdomen finely and rather densely punctate; fifth ventral segment modified on the disk in the male.

Legs moderate in length and stoutness; tarsi of medium length.

Male.—Oblong-oval, subparallel, somewhat robust as compared to the male of *bifasciatus*. Antennae just a little stouter than in the female. Fifth ventral segment distinctly emarginate, emargination arcuate and moderately deep, lateral angles prominent, impressed surface of the segment subasperate; pubescence longer and blackish to brownish. Metafemora moderately stout and subfusiform.

Female.—Oblong-ovate, rather more convex posteriorly, sides a little more arcuate; pronotal sides more strongly arcuate posteriorly. Antennae slightly shorter and a little more slender; fifth ventral rather broadly rounded at apex; abdominal apex with blackish pubescence.

Measurements.—Length (Types), 3–3.3 mm.; width, 1–1.2mm.

Holotype, male, allotype, female, in my own collection; paratypes in that of the California Academy of Sciences and that of Mr. F. W. Nunenmacher.

Type locality.—Willow Creek, Humboldt County, California. Collected by Mr. Nunenmacher on May 20, 1911, and myself on June 13, 1916.

Distribution.—California (Humboldt County; Siskiyou County, June 2, 1911; Mokelumne Hill, Calaveras County, April).

This elegant species in its oblong-ovate or oblong-oval form, rather wide elytral fasciae, quite slender antennae which are very nearly similar

in the sexes, and modified fifth ventral in the male and cinereous pubescence, gives a facies notably different from the other species described in the present paper and also those previously described by Col. Casey.

Elegantulus is apparently related to *interruptus* Lec. According to Casey, in *interruptus* the dark pubescence of the elytra is arranged in spots, and he distinctly states that the interstitial spaces of the head and pronotum are polished and without reticulation. In *interruptus* the fifth ventral segment in the male is strongly sinuato-truncate at apex, flattened on the disk and clothed with long erect and bristling hairs, which become black in apical half of the segment. In *elegantulus* the hairs are not very bristly, although rather long and brownish to black in color; the apex of the fifth ventral in the male is distinctly emarginate, with the lateral angles quite prominent.

Interruptus is distributed from Nebraska to California, where it does not descend the western slope of the Sierras in California, according to Col. Casey.

Listrus fulvipilosus, new species.—*Form* subparallel to elongate-oval and convex. *Color* black, with a feeble bluish metallic lustre and rather shining; antennae more or less rufo-piceous; tibiae dark piceous, tarsi rufous to rufo-piceous.

Pubescence rather short, sparse and somewhat coarse, for the greater part fulvous in color, varying in some specimens to plumbeo-cinereous. The darker hairs are arranged in an obscure elytral pattern as follows: A small or moderate humeral and a parascutellar macula on each elytron; a post-basal at middle of each; a narrow zig-zag fascia at middle, which may be dissolved into a transverse row of narrow irregular maculae; subapical transverse row of more or less distinct maculae, and one on each elytron at apex. In some specimens the markings are quite distinct when viewed longitudinally from behind. Pronotal central figure indistinct, or evidently constricted at middle with the lobes divided longitudinally by a median line of pale hairs; lateral vittae more or less dissolved into two maculae. Elytral pattern similar to that observed in *niveicanthus* and its subspecies *tincticornis*. Hairs of the under surface of the body rather long.

Head about as wide as long, quite strongly and broadly bi-impressed between the eyes and antennae, impressions separated by a feeble median convexity that is more or less subglabrous toward the epistomal base, the latter more or less transversely rugulose; surface rather coarsely and densely indentato-punctate, slightly strigose against the eyes. *Antennae* rather slender and moderately dissimilar in the sexes, sometimes pale in color and apparently extending to the pronotal base.

Pronotum transverse, about a fourth wider than long, widest at basal third; sides broadly arcuate in basal half and less so anteriorly, converging moderately to apex, serrules small and subacute, fimbriae moderate in length; apex broadly arcuate-truncate, angles obtusely and rather broadly rounded; base broadly arcuate in middle six-eighths, sinuate within the angles, the latter subdentate and obtuse; disk moderately arcuate from side to side, more strongly so anteriorly, more or less coarsely indentato-punctate, densely so laterally, less so in the central area where the indentations are rather shallow.

Elytra slightly more than twice as long as wide, at base about equal to the width of the pronotum; rather coarsely punctate, punctures separated by a distance equal to one-half to three times their diameter, surface finely and rather obsoletely rugulose; punctures much finer toward apex, the latter subserrulate on the edge, sutural angles obtusely but not strongly rounded.

Abdomen finely, rather densely punctate; fifth ventral segment different in the sexes, being modified on the disk in the male.

Legs moderate in length and stoutness; metafemora moderate in stoutness with their dorsal outline distinctly arcuate.

Male.—Parallel and slightly oblong. *Antennae* with the second joint oval, slightly narrowed at the base, about a third longer than wide, quite equal in length to the third; the latter cylindrical, twice as long as wide, comparatively narrow; fourth obconical, feebly prominent anteriorly, about a half wider than long, subequal in length to the third; fifth rather elongate, subtriangular, about a third longer than the width of the apex, apical margin transverse, as wide as the seventh, distinctly wider than the sixth, fourth, third or second, moderately prominent anteriorly; sixth and eighth triangular, about as long as wide and subequal; seventh almost triangular, longer than wide, sides slightly arcuate; ninth wider, triangular, about as long as wide; tenth subtriangular, less narrowed toward base, sides noticeably arcuate, very slightly longer than wide; eleventh elongate oval, feebly narrowed apically, almost twice as long as wide. Fifth ventral segment modified; broadly and rather deeply emarginate, emargination rounded, adjacent surface of the segment rather glabrous and shining, the impressed area semilunar in outline, surface beyond subasperate, set with rather long but not dense blackish hairs which extend somewhat on to the apex of the fourth segment; hairs rather long at the angles of the emargination, the latter rather obtuse. Modified area blackish.

Female.—Subparallel, sides of the body slightly arcuate. *Antennae* more slender, joints proportioned as in the male; the fourth rather subtriangular; fifth slightly narrower, less prominent anteriorly, apical

margin rather oblique, obtusely angulate anteriorly; tenth noticeably less stout, about as long as wide, quite triangular; eleventh obovate, shorter, about a half longer than wide. Fifth ventral broadly and evenly arcuate at apex, somewhat broadly flattened, margin slightly deflexed.

Measurements.—Length (Types), 3.0–3.5 mm.; width, 1.1–1.3 mm.

Holotype, male, and allotype, female, in my own collection; paratypes in that of Mr. F. W. Nunenmacher, who collected the material on June 4, 1913.

Type locality.—Lassen County, California.

Twenty specimens studied. *Fulvipilosus* resembles *amplicollis* Casey, from which it differs in the densely punctured pronotum, male sexual characters and more or less fulvous pubescence.

Listrus cervicalis, new species.—*Form* oblong-oval and moderately convex. *Color* black, with a slight aeneous lustre, chiefly on the head and pronotum; antennae more or less piceous, second joint rufo-piceous; tibiae and tarsi piceous.

Pubescence moderate in length, abundant and plumbeo-cinereous in color, longer on the under surface of the body, cinereous on the sterna and sternal side-pieces, slightly darker on the abdomen. Brownish black hairs of the elytra are arranged in rather large maculae as follows: A narrow and elongate humeral and a rounded parascutellar macula; post-basal macula at middle of each with a tendency to diffuse toward the humeral; a submedian rather wide and more or less zig-zag fascia which may or may not be interrupted at the suture or at middle of each elytron; subapical transverse row of four rather large maculae; apical maculae of good size. There is a tendency for the maculae to coalesce transversely to form five transverse dark fasciae. Pronotal central figure constricted and more or less divided by a narrow median line of pale hairs into four maculae, lateral vittae broken into two distinct maculae; hairs of the central area of the frons more or less dark. Hairs of the pronotum are rather stiff, closely recumbent and somewhat abundant.

Head rather large, about as long as wide, eyes moderately prominent and evenly convex. Front broadly impressed, a slight median convexity near the epistomal base, punctures moderate in size and rather sparse, denser at the periphery, intervals more or less smooth and more or less feebly punctulate or subindentate; muzzle short and rather broad, margin evenly arcuate from side to side. *Antennae* quite long, somewhat slender, and only slightly compressed, feebly incrassate and similar in the sexes; second joint oval narrowing somewhat toward base; third cylindro-obconical and as long as the fourth, the latter wider and triangulo-obconical; fifth wider, about as wide as the ninth, triangular and just a little longer than wide, quite prominent anteriorly; sixth to the eighth

subequal in length and size, subtriangular, almost circular in transverse section; ninth and tenth stouter, a little longer, subtriangular and circular in section; eleventh obovate, rather stout, about a half longer than wide.

Pronotum about a fourth wider than long, slightly transversely oblong; apex wide, moderately broadly arcuate in circular arc; apical angles rather obtusely rounded; sides quite broadly arcuate, converging very moderately anteriorly, more or less feebly sinuate before the basal angles (see sexes), serrules moderate in size and rather irregular, fimbriae moderate in length; base broadly and rather strongly arcuate, feebly sinuate laterally, angles apparently rounded although subobtuse from a rather broad and reflexed denticle; disk quite strongly convex, rather strongly declivous antero-laterally, punctures rather large, somewhat widely spaced in the central area, intervals flat, more or less indented toward base, densely indentato-reticulato-punctate laterally.

Elytra scarcely twice as long as wide, oblong, apex rather broadly and evenly rounded; sides parallel and slightly arcuate; punctures rather coarse, separated by a distance equal to two or three times their diameter; surface smooth, punctures finer toward apex.

Abdomen finely and more or less densely ruguloso-punctulate; fifth ventral segment modified on the disk in the male.

Legs moderately stout and a little longer than usual.

Male.—Slightly narrower and a little more parallel. Pronotal sides rather less arcuate, as a rule slightly sinuate before the basal angles, serrules a little coarser, basal angles more obtuse. Fifth ventral broadly and somewhat deeply sinuate, lateral angles rather prominent and narrowly rounded, adjacent surface distinctly impressed and more or less glabrous, margin of impression asperate and set with rather stout black hairs which may extend forward on to the fourth segment for a short distance; terminal segment of the abdomen set with shorter black hairs.

Female.—A little broader and more arcuate at the sides. Pronotal sides, as a rule more arcuate, scarcely sinuate before the basal angles, the latter more broadly rounded. Fifth ventral not very broad at apex, sides converging more strongly, tip not very strongly rounded, margin narrowly deflexed and asperate, surface of the segment feebly impressed.

Measurements.—Length (Types), 3.3–3.5 mm.; width, 1.2–1.3 mm.

Holotype, male, and allotype, female, both in the collection of the California Academy of Sciences; paratypes in the Academy's and my own collection.

Type locality.—Huntington Lake, Fresno County, California, at an elevation of 7000 feet. Beaten from fir trees. A large series were secured by Mr. E. P. Van Duzee and myself during July, 1919.

Cervicalis at first sight resembles *montanus* Casey; in the former the maculation is more distinct, pronotum broader and more convex and the fifth ventral segment is modified in the male, besides there is a tendency for the elytral maculae to unite to form five transverse dark fasciae, which are frequently in evidence and unique.

SYNOPSIS OF THE SPECIES OF LISTRUS.

The species of *Listrus* may be divided into two Sections as follows:

- Fifth ventral abdominal segment in the male, truncate or sinuato-truncate at apex.....Section I
 Fifth ventral more deeply sinuate and modified on the disk in the male.....Section II
 The species can be arranged in the following Groups:

SECTION I.

- Elytral apices different in the sexes.....Definitus Group
 Elytral apices similar in the sexes 1
 1. Eyes very prominent and more strongly convex in anterior two-thirds; head broad, male.....Cephalicus Group
 —. Eyes moderately prominent and evenly convex..... 2
 2. Elytral pubescence unicolorous.....Senilis Group
 —. Elytra ornate with a pattern of blackish or brownish-black hairs..... 3
 3. Elytral pubescence very short, pattern very obscure from sparseness of pale hairsPunctatus Group
 —. Elytral pubescence longer and more abundant, pattern distinct..... 4
 4. Elytra with three rather wide transverse black fasciae, the basal of which may be more or less interrupted.....Annulatus Group
 —. Elytral fasciae more or less modified or broken up..... 5
 5. Species with legs more or less piceous or rufo-piceous, femora never paleDifficilis Group
 —. Species usually scarcely over 2.5 mm. in length, except *luteipes* (3 mm.); legs entirely pale; basal and post-basal fasciae broken up into variable small maculaeLuteipes Group

SECTION II.

- Metatrochanters triangular.....Trochantericus Group
 Metatrochanters of the usual form, suboval..... 1
 1. Pubescence short and sparse, elytral pattern obscure but discernible.....Liebecki Group
 —. Pubescence longer, elytral pattern distinct..... 2
 2. Elytral maculation tending to form fasciae and nearly constant in characterInterruptus Group
 —. Elytral maculation consisting of isolated maculae tending to obsolescenceSalicis Group

DEFINITUS GROUP.

- Elytra with a wide subapical black fascia; apices acuminate produced in the female and rounded as usual in the male; pronotum longer than wide; legs entirely pale..... 1. *definitus* Fall

CEPHALICUS GROUP.

Head broad, eyes very prominent and strongly convex anteriorly, forming a straight and posteriorly convergent line with the temporal region; elytral maculation obscure; legs and antennae stout..... 2. *cephalicus*, n. sp.

SENILIS GROUP.

Body densely and uniformly clothed with coarse and dense cinereous hairs..... 3. *senilis* Lec.
 Body more sparsely clothed with finer and less cinereous pubescence..... 1
 1. Tenth antennal joint almost as long as wide; male elongate and parallel; antennae distinctly longer than the pronotum..... 4. *uniformis* Casey
 —. Tenth antennal joint transverse..... 2
 2. Fifth ventral abdominal segment truncate at apex, male; pronotal disk broadly, evenly convex..... 5. *clavicornis* Casey
 —. Fifth ventral longer, arcuato-truncate at apex, male; pronotal disk arcuately declivous antero-laterally 6. *coloradensis*, n. sp.

PUNCTATUS GROUP.

Basal angles of the pronotum distinctly obtuse and angulate; sixth and eighth antennal joints distinctly smaller than the contiguous joints..... 7. *obscorellus* Lec.
 Basal angles of pronotum broadly rounded and quite continuously so with the sides and base..... 1
 1. Smaller species and not elongate; antennae subclavate, joints four to eight scarcely longer than wide; frons and central area of pronotum sparsely and distinctly punctate; fimbriae very short..... 8. *punctatus* Motsch.
 —. Larger species; antennae not clavate, long and slender, joints distinctly elongate; pronotum more transverse; fimbriae moderate in length; pubescence longer; elytral pattern discernible..... 9. *dilutus*, n. sp.

ANNULATUS GROUP.

Elytra with three transverse fasciae, the median widest, tending to diffuse along the suture; head and pronotum noticeably narrower than the elytral base; central area of pronotum very sparsely punctate.....10. *martini*, n. sp.
 Elytra with three almost even transverse dark fasciae; surface somewhat dull; fourth and fifth antennal joints triangular..... 1
 1. Legs piceous or black; form stouter and oblong (male), or oblong-ovate (female)11. *annulatus* Casey
 —. Legs rufous; form feebly elongate, oblong-oval.....12. *rubripes* Casey

DIFFICILIS GROUP.

Pronotum strongly and closely indentato-punctate in the central area..... 1
 Pronotum not closely punctate in the central area but with the intervals flat and more or less smooth..... 7
 1. Third antennal joint in the male with a moderately stout chitinous seta near the antero-apical angle; male parallel and elongate, antennae heavy; female elongate ovate, antennae moderately slender.....13. *maculosus* Casey
 —. Third antennal joint in the male without a stouter seta..... 2
 2. Third antennal joint elongately triangular; elytral maculae more or less rounded14. *montanus* Casey
 —. Third antennal joint more or less cylindrical..... 3

3. Dark elytral maculae small and few in number, pubescence otherwise cinereous15. *confusus* Casey
- Dark elytral maculae well developed..... 4
4. Tibiae and tarsi clear rufous; lustre more or less cupreous; antennae similar in the sexes, fifth joint scarcely wider than the contiguous joints16. *extricatus* Casey
- Tibiae and tarsi more obscure, black to rufo-piceous in color..... 5
5. Elytra with submedian and subapical fasciae.....17. *difficilis* Lec.
- Elytra without two distinct fasciae..... 6
6. Elytral subapical fascia alone distinct; submedian resolved into two strongly V-shaped maculae; pubescence dense and very coarse.....18. *fidelis* Casey
- Elytral dark areas in large maculae; pubescence rather short, sparse and readily removable19. *subaeneus* Casey
7. Tarsi and distal part of tibiae rufous..... 8
- Tarsi and tibiae more or less piceous..... 9
8. Submedian elytral fascia zig-zag, narrow, V-shaped on each elytron; subapical forming a moderate rhomboidal macula on the suture, apical maculae rather large; tarsi and tibiae rufous.....20. *vestitus*, n. sp.
- Submedian and subapical fasciae transverse, the latter rather broad; tarsi and distal half of tibiae rufous or paler.....21. *incertus* Casey
9. Size larger. Pubescence noticeably long; elytral maculation complex, subapical fasciae broken into four rather large maculae, the two median of which may form a subordinate macula on the suture..... 10
- Size smaller; elytral pattern simpler..... 12
10. Form different in the sexes; male rather narrow, parallel and elongate; female oblong-ovate; second antennal joint a half longer than wide, third obconic, fourth distinctly triangular; pubescence quite abundant on abdominal apex22. *bifasciatus*, n. sp.
- Form somewhat similar in the sexes; male oblong-oval; female oblong-ovate; antennae similar in the sexes; third and fourth antennal joints elongate and subequal in length..... 11
11. Fifth antennal joint distinctly longer than wide at apex. Surface with a purplish metallic reflection; fifth ventral segment broadly truncate at apex; pale elytral fasciae narrow and distinctly zig-zag.....23. *pardalis* Casey
- Fifth antennal joint about as long as wide at apex. Surface with a bluish-metallic reflection; fifth ventral broadly and feebly sinuato-truncate; pale elytral areas broader about the more or less round maculae.....
-24. *motschulskii* Lec.
12. Elytra distinctly fasciate with dark hairs..... 13
- Elytra not fasciate, but with discrete maculae that are more or less atrophic 16
13. Upper surface of body shining and polished; surface with a greenish- or bluish-metallic lustre 14
- Upper surface more or less dull and with a cupreous or violaceous lustre.... 15
14. Elytra with three distinct and rather broad transverse fasciae, the basal narrowly interrupted at scutellum, post-basal maculae obsolete; pronotum quite strongly convex25. *simplex*, n. sp.
- Elytra without three fasciae; pubescence short, sparse, maculation rather obscure; punctures at middle of pronotum sparse, intervals more or less punctulato-rugulose26. *interstitialis* Casey

15. Surface lustre above cupreous throughout; pubescence rather short, maculation less distinct; antennae rather slender basally, last three joints stouter and feebly incrassate.....27. *variegatus* Casey
- Surface lustre cupreous on head and pronotum, violaceous or darker on elytra; pubescence longer, maculation distinct, antennae somewhat stouter28. *incestus*, n. sp.
16. Surface lustre slightly brassy; pubescence rather long, coarse and cinereous, except for a few dark maculae behind middle of the elytra, of which four are arranged in a subapical transverse row.....29. *tritus* Casey

LUTEIPES GROUP.

- Antennal joints (male) from the third to the ninth distinctly elongate; pubescence rather short and cinereous; median and subapical fasciae well defined and moderately narrow; legs entirely pale.....30. *giffardi*, n. sp.
- Antennal joints not elongate; elytral pubescence unevenly distributed toward base 1
1. Head and thorax noticeably small, distinctly narrower than the elytral base; elytral dark fasciae more or less diffused; legs pale.....31. *parvicollis*, n. sp.
- Head larger, pronotum about as wide as the elytral base..... 2
2. Pronotum longer, central area rather sparsely and distinctly punctate, intervals more or less smooth; fourth antennal joint obconico-triangular; legs pale.....32. *luteipes* Lec.
- Pronotum shorter, transverse, densely indentato-punctate..... 3
3. Albo-cinereous hairs of the elytra elongate-lanceolate and somewhat squamiform, very dense in a narrow transverse fascia at apical third; fourth antennal joint triangular; legs bright rufous.....33. *famelicus* Casey
- Cinereous hairs of the elytra slender as usual..... 4
4. Legs piceous; elytral pubescence unevenly distributed anterior to a moderately wide subapical dark fascia; fourth antennal joint obconical.....
-34. *ornatulus* Casey
- Legs rufous 5
5. Smaller species (1.9 mm.); fourth antennal joint feebly triangular; basal joint pale; elytra with a dark wide median and a narrower subapical fascia, and two rounded maculae on each toward base.....35. *concurrrens* Casey
- Larger species (1.9-2.3 mm.); fourth antennal joint triangular (male), or obconical (female); elytra with an even transverse subapical fascia, apex with a few scattered dark hairs, and feeble trace of small brownish maculae toward base.....36. *balteellus* Casey

TROCHANTERICUS GROUP.

- Pubescence coarse, cinereous, rather dense; form feebly elongate; median elytral fasciae narrow, zig-zag or broken up; pronotal central area closely indentato-punctate. Antennae moderate in length, slightly compressed; third joint cylindrical; fourth obconico-triangular; sixth, seventh and eighth subequal in size and length; fifth serrate as usual in the male37. *trochantericus*, n. sp.

LIEBECKI GROUP.

- Antennae long and rather stout; joints three, four and five elongate; fourth quite triangular; third rather slender, slightly more than twice as long as wide (male).....38. *liebecki*, n. sp.

Antennae notably stout; joints sixth to the ninth subequal in size and form; fourth distinctly triangular and scarcely longer than wide; third rather short, not twice as long as wide (male). More slender and subclavate in the female.....39. *olympianus*, n. sp.

SALICIS GROUP.

Central area of the pronotum not indentato-punctate, intervals flat; smaller species, lustre aeneous; antennae and legs clear rufous; antennal joints six to nine not elongate.....40. *occidens*, n. sp.

Central area of the pronotum densely indentato-punctate..... 1

1. Antennae moderately stout and blackish in color; lustre dark, maculation well developed; fourth antennal joint triangular; fifth joint serrate and about as wide as the ninth (male); pubescence of the fifth ventral segment scarcely modified in the male; antennae moderately dissimilar in the sexes.....41. *angulatus*, n. sp.

— Antennae rufous or rufo-piceous in color, lustre more or less aeneous; tibiae and tarsi more or less rufo-piceous..... 2

2. Fourth antennal joint obconico-triangular; fifth joint scarcely wider than the sixth; joints three to nine moderately elongate in the male; antennae moderately dissimilar in the sexes.....42. *salicis*, n. sp.

— Fourth antennal joint not strongly triangular; joints three, four and five elongate, six, seven and eight less so; fifth not strongly serrate; antennae more slender in the female.....43. *niveicanthus*, n. sp.

Form smaller, apical joints of antennae darker.....*tincticornis* n. subsp.

INTERRUPTUS GROUP.

Interstitial spaces of the central area of the pronotal disk, flat and smooth; spaces variable in width..... 1

Interstitial spaces more or less indentate; surface more or less densely indentato-punctate..... 5

1. Pubescence short, very sparse; maculation scarcely discernible; antennae slender, more or less rufo-piceous, fifth joint scarcely wider than the following two or three joints.....44. *ampliocollis* Casey

— Pubescence longer and denser; maculation distinct..... 2

2. Lustre more or less aeneous; pubescence moderately long; antennae rufo-piceous..... 3

— Lustre dark, bluish or greenish metallic; pubescence shorter..... 4

3. Maculation consisting of rounded maculae on the elytra; fifth ventral of the male broadly and strongly sinuato-truncate at apex, flattened on the disk and clothed with long erect and bristling hairs which become black in apical half.....45. *interruptus* Lec.

— Maculation consisting of three moderately wide fasciae, median and sub-apical with irregular edges; fifth ventral clothed with brownish gray hairs on the flattened area.....46. *elegantulus*, n. sp.

4. Lustre with a dark steel-blue metallic reflection; legs and antennae black throughout; pubescence very short, decumbent and coarse, a median and subapical fascia with basal, post-basal and apical maculae, or with fasciae broken into maculae.....47. *rotundicollis* Casey

— Lustre with a virido-aeneous reflection; legs and antennae more or less picescent, second joint paler; pubescence rather short, dark areas large, two wide and straight transverse fasciae on the elytra behind the

- middle48. *canescens* Mann.
5. Antennae rufo-testaceous, tibiae rufo-piceous, tarsi rufous; antennae moderately long, joints three, four and five rather elongate, sixth triangular and about as wide as the fifth.....49 *fulvipilosus*, n. sp.
- Antennae, tibiae and tarsi dark piceous; antennae long, heavy, last two joints particularly stout; sixth, seventh and eighth feebly incrassate, about equal in length and size; maculation tending to form five transverse fasciae on elytra, the basal two of which are usually broken.....50. *cervicalis*, n. sp.

The following two species have not been recognized with certainty in the material that has passed through my hands. Both species were founded on females. The following descriptive outlines have been epitomized from Casey:

51. *Listrus plenus* Casey.—*Form* elongate-oval, strongly convex. *Color* polished black, without metallic lustre; second joint of the antennae piceous. Pubescence short, sparse, feebly persistent and with large dark areas on the elytra.

Head sparsely perforato-punctate, the interspaces flat and somewhat rugose. Antennae slender, quite distinctly longer than the pronotum, the tenth joint about as long as wide.

Pronotum two-fifths wider than long; sides evenly and moderately convergent and feebly arcuate from near the base to the obtuse and somewhat rounded apical angles; apex broadly arcuato-truncate and wider than the pedunculiform part of the base, which is more pronounced than usual; disk widest at basal third, moderately coarsely, deeply and very closely perforato-punctate, scabrous and opaque in lateral fourth; punctures separated by barely their own dimensions, the narrow interspaces sparsely and feebly punctulate. *Elytra* three-fourths longer than wide, fully one-third wider than the pronotum, parallel, acutely parabolic in apical third, coarsely and rather sparsely punctate, more finely so toward apex as usual.

Length, 3.0 mm.; width, 1.2 mm.

Type locality.—Vancouver Island.

52. *Listrus densicollis* Casey.—*Form* stout, oblong-oval, somewhat depressed above. *Color* black with a greenish-brassy lustre. Pubescence short, sparse, cinereous, not very persistent, with large indefinite dark patches on the elytra.

Head densely punctate, interspaces feebly rugose; frontal impressions distinct. Antennae only very little longer than the pronotum, tenth joint one-half wider than long.

Pronotum one-half wider than long, widest at basal third, where the sides are rather broadly and evenly rounded, thence strongly convergent

and feebly arcuate to the apex, the latter truncate and scarcely narrower than the pedunculate base; apical angles very obtusely rounded; lateral serrules strong; disk somewhat finely but deeply and closely perforato-punctate, the intervals flat and feebly, sparsely punctulate, only slightly wider than the punctures; rugose area in lateral fourth.

Elytra oblong, two-thirds longer than wide, fully one-third wider than the pronotum, parallel, parabolic in apical third; humeri tumid and prominent; punctures rather coarse, deep and sparse.

Length, 3.2–3.8 mm.; width, 1.2–1.4 mm.

Type locality.—Napa County, California.

In the Leng Catalogue of the Coleoptera of North America recently issued, Motschulsky's *Listrus tibialis* has been given a regular place in the arrangement of species. Casey was unable to identify it when he wrote his revision of the genus *Listrus* Mots. in 1895. I have likewise failed to recognize it up to the present time. Inasmuch as I have mentioned two of Casey's species that I could not identify, it will be quite proper at the present time to give the translation of Motschulsky's description, which is as follows:

53. *Listrus tibialis* Mots.—*Form* elongate-subovate, rather convex and shining; punctate and sparsely clothed with cinereous pubescence. *Color* nigro-aeneous above, black beneath; tibiae rufo-testaceous, labrum and tarsi infuscate; antennae and femora blackish.

Head between the eyes transversely carinulate, carinula strongly shining.

Pronotum transverse, narrowed anteriorly; apical angles distinct, the posterior angles rounded; sides subcrenulate and set with rather long fimbriae.

Elytra subovate and arcuately narrowed posteriorly; clothed with cinereous pubescence.

Measurements.—Length, $1\frac{1}{6}$ l.; width, $\frac{1}{3}$ l.

Habitat.—Ross (Sonoma County, California).

It is hoped that the synoptical arrangement as given above will aid the student in placing the several species of these pretty little melyrids. There will be disappointment in its application, as there are yet many species to be discovered, and these undescribed forms will unwittingly be intermixed and referred to some of the species already named. The selected characters are not as complete as I wish they were, for a considerable per cent of the specimens studied were mounted in such a way that it was impossible to see the antennae, metatrochanters or fifth ventral abdominal segment. An attempt was made to remount some of the specimens, but they proved too fragile and could not be properly manipulated without destruction. So it was decided at the present time not to

delay making known the species that have already in part been distributed under manuscript names.

Before closing this thesis it will be well to urge the student to familiarize himself with the pronotal sculpturing, to determine that it consists of distinct and well defined punctures and that the intervals may be more or less distinctly indented after the manner of hammered brass. The basal joint of the antennae is always black, with one exception, and that is in *concurrans* Casey.

Genus **DASYTES** Payk.

Dasytes nevadensis, new species.—*Form* subcuneiform, elongate. *Color* polished black, with a very faint greenish metallic lustre; tibiae and tarsi scarcely or feebly nigro-piceous.

Pubescence nigro-fuscous, sparse, moderate in length, rather coarse, semierect, very irregularly directed on the head and pronotum; marginal cilia widely spaced and not noticeably fimbriiform.

Head rather large, wider across the eyes than the pronotal apex; front very broadly and feebly bi-impressed, punctures sparse, rather small; surface shining and somewhat wrinkled along the eyes and frontal margin; muzzle short. Eyes moderately prominent, broadly convex, setigerous, setae short and sparse. *Antennae* rather long, reaching well beyond the pronotal base, joints four to ten inclusive subequal, eleventh about twice as long as wide.

Pronotum about a fourth wider than long, widest behind the middle where the sides are distinctly and evenly arcuate, somewhat constricted anteriorly where the sides are rather deeply sinuate behind the apical angles, lateral margins distinctly and rather strongly serrulate; apex broadly and feebly arcuate, rather arcuato-truncate in middle third, narrower than the base; apical angles obtuse and more or less rounded; base broadly arcuate, continuously so with the broadly rounded angles, which are really obtuse and reflexed when viewed obliquely; disk rather strongly convex anteriorly and centrally, less so toward the basal angles, submarginal line very strong and passing arcuately from side to side along the basal margin, central area very sparsely punctate, punctures quite evenly spaced, intervening surface glabrous and shining, lateral area rather narrow and strongly reto-rugose.

Elytra about one and a half times longer than wide, widest behind the middle, sides converging anteriorly, apex rather broadly and parabolically rounded; disk moderately convex, punctures rather sparse and not strong, somewhat obscured by the transverse subrugulation.

Abdomen densely and rather coarsely punctate, surface distinctly and transversely rugulose.

Male.—Somewhat narrow. Fifth ventral segment truncate, adjacent surface rather broadly and lunately impressed; pygidium arcuately emarginate, lateral angles rounded.

Female.—Somewhat broader. Fifth ventral arcuately rounded at apex, sometimes the adjacent surface is somewhat flattened.

Measurements.—Length, 3.0–3.4 mm.; width, 1.0–1.4 mm.

Type locality.—Goldfield, Esmeralda County, Nevada.

Holotype, male, and allotype, female, in my own collection. Collected by Mr. F. W. Nunenmacher, who also possesses paratypes. Obtained by beating.

Remarks.—By the heavy submarginal line and the pubescence not being intermingled with longer erect hairs and black legs, it is related to *nitens* Casey. In *nitens* however, the pronotal sides are much more evenly arcuate and not constricted and emarginate behind the apical angles.

Dasytes angulatus, new species.—*Form* elongate ovate, wider posteriorly, somewhat depressed. *Color* black, sometimes brownish, moderately shining; mouth parts more or less pale, tibiae and tarsi pale rufous or rufo-piceous.

Pubescence brown to grayish-brown, short, decumbent and sparse; pronotal and elytral fimbriae very short and somewhat blackish, on the former somewhat erect, on the latter a little longer and paler at apex.

Head about as wide as the pronotal apex; front feebly convex, impressions feeble, rather long and separated by a median and very slight longitudinal convexity; surface finely, sparsely punctate and microscopically reticulate.

Pronotum about a fourth wider than long; sides scarcely arcuate, rather broadly sinuate behind the angles, convergent from base to apex as viewed from above, or feebly arcuate at middle, straight and converging anteriorly, converging to base in basal fourth as viewed obliquely from the side; apex rather broadly emarginate; apical angles blunt and subrectangular; base broadly arcuate, distinctly sinuate within the angles, these are subacute and more or less minutely prominent; disk with a distinct submarginal line that is somewhat abbreviated anteriorly and passing arcuately into the basal submarginal groove, surface declivous laterally, feebly impressed before and within the basal angles so that the intervening surface appears oblique and more or less gable-like toward the impressed line at basal fourth; central area very feebly and sparsely punctate, laterally microscopically reticulato-asperate.

Elytra about twice as long as the width at base; sides moderately divergent to basal third, thence broadly and evenly arcuate to apex;

margin narrow, not noticeably reflexed; disk very gradually declivous posteriorly, more strongly so laterally, surface very finely and reticulato-rugulose; punctures fine and moderately sparse; humeri not prominent and without umbones.

Abdomen very finely punctate.

Male.—Fifth ventral segment rather broadly rounded but truncate at middle third of apex; surface rather broadly impressed before the truncature, margin set with short stiff hairs.

Female.—Broader. Pronotal sides more broadly arcuate and less convergent toward apex, surface not noticeably impressed in the basal region and more evenly convex, submarginal line less deeply impressed toward base. Fifth ventral broadly rounded.

Measurements.—Length (Types), 2.8–3.1 mm.; width, 1.2–1.4 mm.

Holotype, male, and allotype, female, in the collection of the California Academy of Sciences. Paratypes in the Academy's and my own collection.

Type locality.—Mt. Eddy, Siskiyou County, California. Collected by Mr. E. P. Van Duzee, on July 28, 1918, at an elevation of 9000 feet.

In many specimens the trochanters and anterior femora are pale dorsally at base. The first joint of the hind tarsi is about equal in length to the third and fourth taken together. *Angulatus* by its distinct basal angles of the pronotum differs from all other species of the genus, its pubescence is uniform over the upper surface, longer, denser and grayer on the abdomen beneath.

Dasytes shastensis horridulus, new subspecies.—*Size* comparatively large and quite similar in the sexes. *Form* oblong-oval, about two and a seventh times longer than wide, moderately convex. *Color* black; mouth-parts, antennae, tibiae and tarsi more or less piceous; surface more or less shining, metallic lustre scarcely discernible.

Pubescence quite long and abundant, consisting of erect, black, bristling and paler almost recumbent hairs.

Head scarcely as wide as the pronotal apex; front quite plane, feebly and broadly impressed; quite coarsely and closely punctate. Muzzle short and broad. Eyes large and moderately convex, distinctly setigerous.

Antennae similar in the sexes, rather long and loose-jointed, rather moderately compressed, not incrassate; second and third joints subequal in length, second about a half longer than wide, nearly twice as stout as the third, which is relatively slender and almost twice as long as wide; fourth and fifth joints subequal in length, subtriangular and slightly longer than wide; sixth to the tenth inclusive triangulo-moniliform, about as long as wide; eleventh elongate, subovate and distinctly as long as wide.

Pronotum about a fourth wider than long; apex feebly arcuate; apical angles quite broadly and obtusely rounded; sides evenly and moderately strongly arcuate, serrations short and blunt; base broadly and rather strongly arcuate, rounding into the sides without basal angles; disk evenly and moderately strongly arcuate from side to side, punctures moderate in size, evenly placed, separated by a distance equal to their diameter, submarginal line coarse, sometimes more or less broken anteriorly, lateral area reticulato-rugose.

Elytra oblong, a little wider posteriorly, sides parallel, very feebly arcuate, apex very broadly rounded; punctures distinctly smaller than on the pronotum, and separated by a distance equal to twice their diameter; base equal to the width of the pronotum.

Abdomen finely and rather densely punctate; fifth segment more densely and subasperately sculptured.

Legs moderate in length and not stout; metatarsi long and slender, quite equal to the length of their tibia.

Male.—Fifth ventral segment broadly and feebly arcuato-truncate.

Female.—Fifth ventral broadly rounded at apex.

Measurements.—Length (Types), 3.8–4 mm.; width, 1.7–1.8 mm.

Holotype, male, and allotype, female, and one paratype (male) in my own collection.

Type locality.—Crystal Lake, San Mateo County, California. Collected by myself on June 27, 1919.

Distribution.—Occurs also on Mt. Tamalpais, Marin County, California; captured June 25, 1920.

Quite distinct in its large size, longer and moderately close pubescence, stouter and more elongate second antennal joint; the submarginal pronotal line is coarse and oftentimes much broken up anteriorly. It is undoubtedly closely related to *shastensis* Blais., which when compared with *horridulus*, is smaller in size, pronotum less strongly punctured in the central area, second antennal joint less elongate, less stout and inclined to narrow toward the base.

SYNOPSIS OF THE SPECIES OF DASYTE PAYK.

Submarginal line of the pronotum feeble, frequently only evident as an abrupt division between the smooth and rugose portions of the surface.....	1
Submarginal line strong, impressed and usually entire.....	2
1. Elytra each with longitudinal dark vittiform lines.....	1. <i>lineellus</i> Casey
— Elytra without vittae.....	11
2. Pubescence distinctly intermingled with longer, erect black hairs.....	3
— Pubescence not intermingled with longer, erect black hairs.....	8
3. Elytral vestiture blackish throughout.....	2. <i>hudsonicus</i> Lec.

- Elytral vestiture more or less pale..... 4
4. Vestiture cinereous but becoming dark and inconspicuous behind the middle of the elytra which are broad and depressed..... 3. *expansus* Casey 5
- Vestiture cinereous with longer, erect black hairs on the elytra..... 5
5. Basal angles broadly rounded; pale hairs recumbent..... 6
- Basal angles obtuse 7
6. Size usually under 3 mm.; pubescence shorter..... 4. *shastensis* Blais. 7
- Size larger, 4 mm.; pubescence longer, form more oblong..... 5. *horridulus*, n. subsp. 7
7. Thoracic punctures coarse and impressed; pale hairs suberect.. 6. *vicinus* Blais.
- Thoracic punctures fine and sparse..... 7. *obtusus* Casey 9
8. Legs pale throughout..... 9
- Legs bicolored, femora black..... 10
9. Pronotal margins serrulate and deeply sinuate behind the apical angles, pubescence blackish 8. *nevadensis*, n. sp. 10
- Pronotal margins feebly serrulate and feebly sinuate anteriorly; pubescence yellowish 9. *nitens* Casey 10
10. Elytral pubescence blackish and inconspicuous but becoming ashy toward base; antennae stouter and longer..... 10. *breviusculus* Casey 13
- Elytral pubescence pale cinereous throughout, even but rather sparse; body more elongate; antennae shorter..... 11. *dissimilis* Casey 13
11. Elytral vestiture uneven in distribution, brownish-black hairs forming a basal and subapical broad fascia..... 12. *seminudus* Lec. 13
- Elytral vestiture uniform in distribution..... 12 13
12. Basal angles of pronotum rounded..... 13 13
- Basal angles more or less distinct..... 17 13
13. Legs black or blackish in color throughout..... 14 14
- Legs more or less pale in color..... 15 14
14. Pubescence coarse, cinereous, dense, short, recumbent, and uniformly distributed 13. *musculus* Fall 15
- Pubescence cinereous, moderately dense, rather short, not very coarse, suberect and intermixed toward sides with a few black setae on pronotum 14. *macer* Casey 15
15. Legs bicolored, pale rufous, femora black..... 15. *cruralis* Lec. 16
- Legs rufo-ferruginous throughout, femora occasionally slightly darker..... 16 16
16. Prothorax much narrower than the base of the elytra..... 16. *pusillus* Lec. 16
- Prothorax equal in width to base of elytra..... 17. *minutus* Casey 16
17. Basal angles of pronotum subrectangular and distinct, base sinuate within the angles; legs pale..... 18. *angulatus* n. sp. 17
- Basal angles obtuse 18 17
18. Legs dark in color; elytral vestiture consisting of shorter and longer hairs which are confusedly intermingled..... 19. *fastidiosus* Casey 17
- Legs entirely pale or bicolored..... 19 17
19. Legs bicolored, femora black; erect hairs of elytra extremely short and indistinct, only visible toward apex..... 20. *depressulus* Casey 17
- Legs rufo-testaceous; pubescence luteo-cinereous, rather long, suberect, consisting especially on elytra of somewhat uniformly mixed shorter, more inclined and recurved, longer, and a little less inclined hairs..... 21. *clementae* Fall 17

NOTES ON THE DISTRIBUTION OF THE SPECIES OF DASYTES PAYK.

1. *Dasytes lineellus* Casey.—California: Los Angeles County (Casey); Mount Wilson, June 18th, (Fall); Bear Lake, San Bernardino County, June 5, 1919, (J. O. Martin); Hesperia, June 30, 1918, (J. O. Martin); Mokelumne Hill, Calaveras County, July, elevation 2300 feet, (Blaisdell); Mariposa County, June 17, 1914, (F. W. Nunenmacher).
2. *Dasytes hudsonicus* Lec.—Hudson Bay Territory. Colorado: Leadville, July 7-14, 1896, elevation 10,000-11,000 feet, (Wickham); Clear Creek, June 2, 1881, (Liebeck). Arizona (Casey).
3. *Dasytes expansus* Casey.—California: North of San Francisco (Casey).
4. *Dasytes shastensis* Blais.—California: Shasta Retreat, Siskiyou County, elevation 2416 feet, July, 1905, (Blaisdell); Clayton, Shasta County, July 13, 1918, (E. P. Van Duzee); Fairfax, Marin County, June, (Blaisdell); Mariposa County, June.
5. *Dasytes shastensis horridulus*, new subspecies.—California: Crystal Lake, San Mateo County, June 27, 1919, (Blaisdell); Mount Tamalpais, Marin County, June 25, 1919, (Blaisdell).
6. *Dasytes vicinus* Blais.—California. San Diego, (Blaisdell).
7. *Dasytes obtusus* Casey.—Colorado: Glenwood Springs, July, (Dr. A. Fenyés).
8. *Dasytes nevadensis*, new species.—Nevada: Goldfield, Esmeralda County, June 6, 1908, (F. W. Nunenmacher).
9. *Dasytes nitens* Casey.—California: Duncan Mills, Sonoma County, June 30, 1908, (Blaisdell); Samoa, Humboldt County, June 21, 1916, (Blaisdell); Marin County, (Casey).
10. *Dasytes breviusculus* Casey.—California: Sisson, Siskiyou County, July 26, 1918, (E. P. Van Duzee); Clayton, July 17, 1918, (Van Duzee).
11. *Dasytes dissimilis* Casey.—California: San Bernardino Mountains, (Fall).
12. *Dasytes musculus* Fall.—California: Mount Wilson, July 23, 1905; Pasadena, Pomona and Riverside, (Fall).
13. *Dasytes seminudus* Lec.—California: Vine Hill, Contra Costa County, June 7, 1908, (Blaisdell); Davis Meadow near Railroad Flat, Calaveras County, July, 1918, elevation 2800 feet, (Blaisdell); Mount Diablo, July 16th, W. M. Giffard); Mojave, in May.
14. *Dasytes macer* Casey.—Southern California (Casey).
15. *Dasytes cruralis* Lec.—California: Mokelumne Hill, Calaveras County, June, 1898, (Blaisdell); Shasta Retreat, Siskiyou County, July, elevation 2416 feet, (Blaisdell); Yosemite, Mariposa County, June; Mariposa County, June 16th, W. M. Giffard); Tuolumne County, May 14, 1914, (F. W. Nunenmacher); Duncan Mills, Sonoma County, July 14, 1908, (Blaisdell); Lodi and Stockton, San Joaquin County, May 14, 1911, (Blaisdell). Oregon: Colestin, Jackson County, July 31, 1918, (E. P. Van Duzee).
16. *Dasytes pusillus* Lec.—California: San Diego, (Casey); Palm Springs, Imperial County, May, (Dr. Fenyés); Mecca, Colorado Desert, April 13, 1917, (J. O. Martin).
17. *Dasytes minutus* Casey.—California. (Casey).
18. *Dasytes angulatus*, new species.—California: Mount Eddy, 9000 feet, July 28, 1918, (E. P. Van Duzee).
19. *Dasytes fastidiosus* Casey.—California: Sausalito, Marin County, April 26, 1914, (Blaisdell); Vine Hill near Martinez, Contra Costa County, June 7, 1908, (Blaisdell).

20. *Dasytes depressulus* Casey.—Nevada: (Casey).

21. *Dasytes clementae* Fall.—Island of San Clemente: (Fall).

LISTRIMORPHA, New Genus.

Form of a female *Eschatocrepis constrictus* Lec., sparsely and uniformly pubescent. Pronotum without a submarginal line, lateral margins finely serrulate and feebly fimbriate; disk broadly impressed within the basal angles. Last joint of the maxillary palpi conical.

Antennae with a feeble three-jointed club; fifth joint larger than the fourth and angulate anteriorly nearly as in *Listrus*; joints sixth, seventh and eighth much smaller than the fifth and narrower than those of the club.

Epipleura rather narrow at base, gradually narrowing to become evanescent behind the middle, superior margin feeble.

Ungual appendages slightly longer than the length of the claws, attached nearly throughout their length; equal, subacute on the middle and posterior claws.

Legs slender. Claws slender. Tarsi slender, third and fourth joints together about equal to the fifth, the latter and the first subequal; second, two-thirds as long as the first. Femora not stout, somewhat compressed.

Listrimorpha pallipes, new species.—*Form* elongate ovate, wider posteriorly. *Color* black, somewhat dull to shining. *Antennae*, except the first joint which is dark, and legs testaceous; labrum yellowish, femora more or less piceous toward base. Surface microscopically reticulato-rugulose. Pubescence short, sparse, recumbent and pale in color, not conspicuous; elytral margins loosely fimbriate, hairs longer on the apex.

Head moderate, as wide as the pronotal apex; front feebly convex, feebly bi-impressed, impressions somewhat elongate, beginning on a line opposite the antennal base; vertex obsoletely impressed at the middle; very finely and sparsely punctate. Eyes rather large and somewhat strongly convex.

Antennae reaching to about the pronotal base; first joint smaller than in *Listrus*, second evenly oval and about equal in diameter to the first; third and fourth somewhat compressed; third obconical a little shorter than the second; fourth subtriangular (isosceles) and angulate anteriorly; fifth larger and similarly angulate anteriorly, as long as the second and distinctly larger than either the sixth, seventh or eighth; sixth smallest and about as long as wide, two-thirds as wide as the fifth, seventh a little larger and triangulo-oval; eighth about as long as the sixth and slightly wider, sides more parallel and more arcuate, about as long as wide; eleventh pointed oval and a half longer than wide.

Pronotum transverse, about a third wider than long, base slightly wider than the apex; sides angulate just slightly in front of the middle, thence quite straight and convergent to apex, straight, convergent or parallel posteriorly to base, margin serrulate; apex feebly emarginate; apical angles obtuse and very slightly rounded; basal angles distinct, obtuse to rectangular and somewhat reflexed; base transverse in middle two-fourths, thence oblique and feebly sinuate to the basal angles; disk moderately convex, rather evenly so in central area and at apex, more or less broadly and distinctly impressed in the region of the basal angles and along the sides to the angulation, and very feebly so across in front of the base, slightly constricted laterally behind the apex, very finely and sparsely punctate, slightly asperate in the lateral area.

Elytra oblong, slightly dilated behind the middle, about twice as long as wide, feebly convex on the disk, more strongly so laterally; apices slightly dehiscent, angles obtuse; finely and sparsely punctate. Scutellum transversely oblong.

Under surface of the body finely sculptured.

Measurements.—Length, 2.6 mm.; width, 1.0 mm.

Holotype, male, and allotype, female, in my own collection; paratypes in that of Mr. F. W. Nunenmacher.

Type locality.—Goldfield, Esmeralda County, Nevada. Collected by Mr. Nunenmacher on June 29, 1907. Five specimens studied.

Remarks.—This species is distinct in having the pronotum without a submarginal line or lateral rugose area and short unguis appendages. In Casey's table of the Melyrid tribe Dasytini it falls between *Dasytastes* and *Eschatocrepis*, and by its general facies and structural characters it is more closely related to the latter genus. From both *Listrus* and *Eschatocrepis* it can be recognized by the subangulate sides of the pronotum, the latter less convex and with serrulate lateral margins.

The fifth ventral segment has the apical margin set with a line of short and rather stiff hairs. Sexual differences are not very evident in the small series at hand.

Listrimorpha should precede *Eschatocrepis* in our lists.

Dasytastes vanduzeei, new species.—*Form* subovate. *Color* black; head, prothorax, legs and basal portion of the antennae, rufo-fulvous; metasternum more or less rufous.

Pubescence rather short and recumbent, quite dense on the elytra, somewhat less so on the pronotum and under surface of the body. Abdominal surface dull. Elytra feebly aeneous and maculate with several slightly elongate blackish spots, those of the apical half anastomosing to a greater or less extent.

Front of the head flat, finely and evenly punctate, eyes not prominent.

Pronotum finely and evenly punctate; apex arcuato-truncate; base arcuate; sides more strongly arcuate in the basal half, thence broadly and evenly so to apex, very slightly sinuate just before the almost rounded basal angles, serrulations small; apical angles rounded; margins fimbriate, fimbriae not long.

Elytra finely punctate, apical margins serrulate.

Measurements.—Length, 2.2 mm.; width, 1.0 mm.

Type locality.—Palm Springs, Riverside County, California. Collected on May 20th, by Mr. E. P. Van Duzee.

Described from two females, both in the collection of the California Academy of Sciences.

Remarks.—*Vanduzeei* differs from *bicolor* Casey in the color and maculation of the elytra. In *bicolor* the elytral pubescence is blackish, while in *vanduzeei* it is pale, except in spots as stated above. *Vanduzeei* should follow *bicolor* in our lists.

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PART II.

CHRYSOMELIDAE.

Glyptoscelis sequoiae, new species.—*Form* oblong-oval, broadly rounded posteriorly, moderately convex; head and prothorax narrowing anteriorly. *Color* a beautiful cupreous; antennae more or less rufous, terminal three joints black, seventh and eighth blackish in about apical half; legs rufous. Surface more or less shining, sparsely and quite evenly clothed with a rather long, soft fulvous pubescence which is recumbent, subsquamiform and linear, each hair marked with a longitudinal median stria.

Head and *pronotum* somewhat coarsely, regularly punctate; punctures well defined, separated by a distance equal to one-half their diameter. *Head* with an impunctate median line, front broadly, transversely but not strongly prominent at the clypeo-frontal junction, broadly and more or less moderately impressed between the eyes. Antennae long and slender.

Pronotum a little wider than long; sides rather evenly arcuate, moderately convergent anteriorly as viewed from above; apex quite broadly arcuate; base slightly lobed at middle, feebly sinuate laterally and scarcely wider than the disk at middle; pubescence slightly denser laterally and more hair-like centrally.

Elytra oblong, about one-half longer than wide, sides parallel, scarcely arcuate, and broadly, evenly arcuate in apical one-fourth; disk evidently flattened about the scutellum; pubescence appearing feebly vittate when viewed longitudinally; punctures evenly and rather closely placed, somewhat smaller than on the pronotum, finer toward apex.

Pubescence of under surface somewhat whitish, scarcely longer than on the upper surface, hair-like and apparently not striate. Punctuation finer than above.

Claws cleft. Inner division of each much shorter and smaller than the outer part, acute, especially on the middle and posterior claws.

Male.—Fifth ventral abdominal segment somewhat arcuately deflexed apically, and with a somewhat broad, oblong-oval impression at middle, which may be more or less impunctate at bottom.

Female.—Fifth ventral distinctly arcuately deflexed apically, and more or less concave throughout the width.

Measurements.—Length (Types), 6-7 mm.; width, 3-3.5 mm.

Holotype, male, and allotype, female, in the collection of the California Academy of Sciences. Paratypes in that of the Academy's and my own collection.

Type locality.—Cazadero, Sonoma County, California. Collected on April 12, 1918, by Mr. E. P. Van Duzee.

Collected from the foliage of *Sequoia sempervirens* Endl. It appears somewhat probable that when the species of *Glyptoscelis* are better known, the food plant will be found to be more or less different in case of each species. *Glyptoscelis illustris* Cr. is usually taken from yellow pine (*Pinus ponderosa* Dougl.), in the vicinity of Mokelumne Hill, Calaveras County, California; *squamulatus* Cr. is found plentifully on willow and a closely related species is found on a composite shrub growing along the San Diego River in Mission Valley, San Diego County, California. Two species were taken from juniper trees on Black Mountain (elevation 8100 feet), at Huntington Lake, Fresno County, California, during the month of July, 1919; another from fir in Humboldt County, California; finally, Mr. Van Duzee has taken the species described below from wild rose near Sacramento, California. Other phases are at hand the food plants of which are not known. Ulke has reported that the eastern species *pubescens* Fab. and *barbatus* Say are common on pine.

Glyptoscelis parvulus, new species.—*Form* rather short oblong-oval, robust and moderately convex; prothorax distinctly narrower than the elytra. *Color* black, with an aeneous, cupreous or virido-aeneous tinge; legs rufo-piceous, palpi and antennae more or less rufous. Surface more or less shining, sparsely and evenly clothed with rather long recumbent hair-like scales, each scale longitudinally unistriate, grayish in color.

Head rather strongly convex on the vertex; front broadly and feebly impressed above the scarcely prominent clypeo-frontal junction, a smooth and narrow median line more or less evident; punctuation rather coarse and sparse. Antennae moderately long and slender, joints less elongate than in *sequoiae* and similar to those in *squamulatus* and its allies, apical five joints somewhat stouter, third to the sixth subequal in length and slightly shorter than the seventh.

Pronotum about a third wider than long, widest at middle, rather moderately convex, strongly and precipitously declivous at the sides in region of the apical angles; apex moderately arcuate, post-ocular lobes distinct and rather strong; sides moderately, broadly and rather evenly arcuate, somewhat straight before the obtuse basal angles, as viewed from above, marginal bead distinct in basal third and more or less feeble anteriorly; base feebly arcuate; disk distinctly and somewhat sparsely punctate, punctures moderately coarse, separated by a distance equal to their diameter.

Elytra less than half longer than wide, rather broadly and obtusely rounded posteriorly; sides very feebly arcuate, humeri moderately narrowly rounded, umbones rather distinct; base very slightly emarginate; surface strongly transversely convex; punctuation somewhat finer than on the pronotum, punctures separated by a distance equal to about twice their own diameter, still finer on the apical declivity. Scutellum slightly transverse, apex feebly angulate, surface with a few small punctures.

Abdomen rather more thickly punctate than above.

Legs comparatively short and rather stout. Anterior tibiae quite straight; middle and posterior tibiae slightly outwardly curved at apex.

Claws cleft. In the male the anterior claws are cleft to slightly behind the middle; the inner divisions are one-fourth shorter than the outer part and rather acute. In the female the anterior claws are cleft to the middle, the inner divisions are short and acute, scarcely separated from the outer part; claws of the middle and posterior tarsi similar, more distinctly cleft to about basal third, inner portions longer, more slender and acute.

Male.—Narrower. Rather broadly impressed at middle of the fifth ventral segment, this impression impunctate or more or less sparsely punctate and pubescent.

Female.—Broader. Fifth ventral rather moderately concave throughout the width and apically more or less arcuately deflexed.

Measurements.—Length (Types), 5.5–7.5 mm.; width, 3.8–3 mm.

Holotype, male, and allotype, female, in the collection of the California Academy of Sciences; paratypes in the collection of the Academy and in that of the author.

Type locality.—Sacramento, California. Collected by E. P. Van Duzee, May 28, 1918. Beaten from wild rose.

Parvulus somewhat resembles *Adoxus vitis* Fab. in form, but is rather narrower and more elongate. The individuals vary quite a little in form, some are shorter and more robust than others and intermediates are abundant. It is the smallest species known to the author. In all species of *Glyptoscelis* examined there is a rounded setigerous fovea at the apical and basal angles of the pronotum.

In *pubescens*, *illustris* and *sequoiae* there is a circum-scutellar depression and an impression within the humeral umbones. The latter impression is also present in *parvulus*.

The two species here described cannot be the same as *albidus* Lec., where the pubescence is very easily removable according to Dr. Horn. A species taken in El Dorado and Calaveras Counties answers the latter peculiarity very well. In *illustris* and *squamulatus* the vestiture is quite persistent.

TENEBRIONIDAE.

Centrioptera pectoralis, new species.—*Form* elongate and subparallel. *Color* black and more or less shining. Pronotum extremely finely and sparsely punctate; elytra with distinct and rather stout muricate tubercles laterally and on the apical declivity.

Head less than moderately convex, fronto-epistomal margin quite evenly arcuate, feebly deflexed apical margin scarcely truncate or slightly sinuate at middle; punctuation very irregular, leaving large smooth areas; punctures moderate in size and sharp across the middle of the frons and at periphery of the epistoma. Antennae slender, joints equal in width and elongate, tenth equilaterally triangular, not at all large, eleventh small and short, pointed oval.

Pronotum about a fourth wider than long; sides broadly and evenly arcuate in anterior two-thirds, thence broadly sinuate to the basal angles which are subrectangular, marginal bead moderately coarse and slightly reflexed; apex broadly emarginate between the rather acute and anteriorly prominent angles; base broadly and feebly emarginate; disk moderately and rather evenly convex, slightly more declivous at the apical angles, scarcely transversely impressed before the base, punctuation extremely fine and sparse, scarcely granulate or more distinct at the sides.

Propleura smooth, opaque with a few punctures anteriorly

Elytra oblong, about a half longer than wide, not strongly convex centrally but more strongly and arcuately so laterally; sides broadly and feebly arcuate, parallel, slightly wider behind the middle, apex rather broadly rounded; disk moderately convex, rather abruptly and obliquely declivous posteriorly; central area with simple punctures, laterally and on apex the punctures of the intervals are replaced by strong and moderately large muricate tubercles, the punctures and tubercles serially arranged; punctures equal in size, those of the striae not muricate and not closely placed, those of the intervals in the central and sutural area more distantly spaced and more or less granulate; base scarcely arcuate, humeri obtuse and not at all prominent.

Parapleura moderately coarsely and sparsely punctate.

Sterna.—Prosternum glabrous laterally and anteriorly along the margin, elsewhere coarsely rugoso-punctate; process broadly and slightly impressed, apex sublaminately but briefly mucronate, mucro small and variable. Mesosternum moderately declivous, then briefly vertical, very coarsely rugoso-punctate, narrowly glabrous between the coxae. Meta-sternum coarsely and sparsely punctate.

Abdomen horizontal and not strongly convex, with large glabrous and impunctate areas, punctures rather coarse, most in evidence on the process, sides and fifth segment, a few scattered across the other segments.

Legs rather long, moderately strongly and densely sculptured.

Measurements.—Length, 25 mm.; width, 10 mm.

Holotype, female, as described above, in the collection of the California Academy of Sciences. An allotype in my own collection.

Type locality and habitat.—San Benito Island, off the coast of Lower California. Collected July 15, 1905, by F. X. Williams, while with the Galapagos Expedition.

Pectoralis is distinct by its parallel form, punctuation of under surface and other characters; apparently not identical with any described in the Biologia.

In *spiculifera* Lec. the mesosternum is almost declivous anteriorly, in *pectoralis* it is strongly so, as it is in *dulzuræ* described below. The mesosternum is vertical and emarginate anteriorly in *asperata* Horn, *angularis* Horn, *variolosa* Horn, *seriata* Lec. and slightly declivous in *muricata* Lec. *Pectoralis* somewhat resembles *spiculifera*, with *muricata* next in order. *Spiculifera* is a larger and broader species, with the abdomen almost impunctate and the legs more sparsely and less coarsely sculptured. In *spiculifera*, also, the mentum is transversely cordate, apex feebly emarginate, surface slightly convex and coarsely punctate, with the antennae less slender and parallel, with the ninth and tenth joints triangular, the eleventh longer. In *pectoralis* the mentum is cordate, relatively larger, somewhat concave, more strongly emarginate at apex, feebly subcarinate along the median line, longitudinally and not strongly impressed laterally, coarsely punctate and more scabrous.

Centrioptera dulzuræ, new species.—*Form* elongate-oblong, similar to *muricata*. *Color* dull black; pronotum sculptureless, elytra with muricate tubercles laterally and on apical declivity. Mesosternum declivous anteriorly; abdomen smooth with a few scattered punctures.

Head slightly convex, fronto-epistomal margin arcuate, somewhat oblique laterally; surface punctate, punctures irregularly and very sparsely placed, finer in the central area. Antennae rather short with joints of equal width, joints four to eight suboblong, ninth triangular, tenth subquadrate, eleventh short pointed ovate. Mentum feebly convex, more oval than cordate, slightly transverse, apical emargination not strong; surface narrowly impunctate at apex, elsewhere rather coarsely and closely punctured, somewhat longitudinally impressed laterally.

Pronotum rather more than a fourth wider than long; sides broadly and evenly arcuate anteriorly, somewhat convergent and broadly sinuate posteriorly to the basal angles which are rectangular: apex truncate between the strong, anteriorly prominent and acute angles; base truncate; disk evenly and very moderately convex, a little less so basally, sculpture-

less and smooth with a few obsolete granules along the margin, lateral bead rather moderate and briefly reflexed.

Propleura dull, almost sculptureless and smooth.

Elytra oblong-oval, somewhat widest behind the middle, obliquely declivous posteriorly, less than twice as long as wide, almost flattened dorsally; sides rather broadly rounded and moderately inflexed, feebly sinuate before the apex which is slightly prominent; disk with ten series of punctures, punctures moderate in size, rather corroded, closely and slightly irregularly placed, series feebly impressed, intervals perfectly flat centrally and basally and with a single series of smaller and widely spaced, feebly submuricate punctures; laterally and on the apical declivity the intervals are scarcely convex, and with a single series of widely spaced muricate tubercles which are scarcely longer than their width at base.

Sterna.—Prosternum smooth and sculptureless anteriorly and laterally; process between the coxae rather broadly oval, longitudinally impressed and coarsely rugoso-punctate, apex rounded with a small mucro at tip. Mesosternum obsoletely and sparsely punctate laterally, moderately declivous and briefly vertical at middle anteriorly, coarsely rugoso-punctate, smooth posteriorly between the coxae. Metasternum smooth and very strongly punctate.

Parapleura smooth, sparsely and more or less obsoletely punctate.

Abdomen flattened throughout middle third, smooth and very sparsely punctate; process oblong-quadrate, surface with an oval and slightly raised swelling at middle, otherwise more or less rugose; first segment with a few punctures behind the coxae, fourth with a subapical line of punctures, fifth sparsely and evenly punctured, punctures somewhat coarse throughout.

Legs moderate in length; femora sparsely punctate; tibiae densely sculptured, each puncture with a ferruginous seta; tarsi with similarly colored setae, plantar grooves open.

Male.—Narrower and more parallel.

Female.—Slightly broader and a little inflated. (Only an abdomen at hand.)

Measurements.—Length (Male), 21 mm.; width, 9 mm. An abdomen of a female measures 10 mm. in width.

Holotype, male, in my own collection.

Type locality.—Dulzura, San Diego County, California.

Habitat.—Dulzura and Poway, San Diego County, California.

Dulzurae was identified for me as *asperata* Horn more than twenty-five years ago. For about twenty years I had only an abdomen on a pin representing this species. On my ranch at Poway, where I lived for eleven years, I took only one living specimen, but the dead bodies of this

beetle were very abundant in the nests of wood rats. *Dulzurae* is nocturnal in habits. Having secured but one living specimen in eleven years does not speak well for my ability as a collector; unfortunately I was more interested in farming at that time than in worrying over beetles.

In appearance *dulzurae* resembles *pectoralis*, which is a larger species; next in order it resembles *muricata* Lec., which is a more or less shining species, a moderate series of which is before me. In *muricata* the propleura are distinctly punctate, the abdomen is quite coarsely and much more abundantly punctate and the parapleura are more densely and strongly punctured. The pronotum of *muricata* is impressed and punctato-granulate along the side margins. *Pectoralis* is more elongate and more strongly sculptured beneath. The apparent sequence of species should be *spiculifera*, *pectoralis*, *muricata* and *dulzurae*; then follow *angularis*, *asperata*, *variolosa* and *seriata*. *Infausta* and *utahensis* I have not seen. This arrangement agrees with that given in Henshaw's List.

Schizillus Horn.

In 1874, Dr. Geo. H. Horn created the above genus for *laticeps*, a member of the Tribe *Cryptoglossini*, collected on the Mohave Desert, California, by Mr. Crotch. In 1913, Mr. J. R. Slevin took a considerable series at Hesperia, California, which are in the collection of the California Academy of Sciences.

In 1908, Mr. F. W. Nunenmacher took three interesting specimens at Goldfield, Nevada. Two of these look like a modified *laticeps*, the other somewhat resembles the smooth *Cryptoglossa laevis*. For more than twenty-eight years I have had a specimen that was unique as far as my collection was concerned. During this time it was labeled *laticeps*, but it undoubtedly represents a new species. From the material before me it is evident that three new species are to be recognized.

The salient generic characters of *Schizillus* are the completely divided eyes, the transverse mentum, the broader genae and the front is hemi-hexagonal. The antennae are eleven-jointed, first joint stout and invisible from above, the terminal joint oval and smaller than the preceding. In regard to the size of the eleventh joint, I must differ from Dr. Horn, for it is smaller than the preceding. The broad head is a striking character when compared with our *Centriopterae*. Dr. Horn's description of the type species may be modified as follows:

Schizillus laticeps Horn.—*Form* elongate oblong-oval and moderately robust. *Color* black and subopaque.

Head broad, front hemi-hexagonal and moderately convex, sparsely punctured, very broadly impressed between the eyes along the frontal

suture, punctures moderately small and densest along the apical margin, neck densely and finely granulate. Antennae rather stout and parallel, the terminal four joints slightly narrower and less stout than the preceding joints.

Pronotum broader than long; apex moderately deeply emarginate, slightly broader than the base; sides moderately arcuate, sinuate near the base, hind angles rather less than rectangular; base broadly emarginate; surface moderately convex, sparsely punctured and subopaque and with a more or less deep, transverse, ante-basal impression; apical angles quite broad, anteriorly prominent and subobtuse.

Propleura sparsely punctate, punctures subobsolete, many rugulae more or less evident.

Elytra oblong-oval, not wider at base than the pronotum, widest at middle, sides moderately arcuate; surface moderately convex, with rows of punctures on the disk which become irregular and submuricate at the sides and apex, intervals flat and submuricately punctate; serial punctures a little larger than the interstitial; disk almost vertically declivous posteriorly.

Parapleura irregularly and sparsely punctate.

Sterna.—Prosternum sparsely punctate, more or less impunctate within the oblique sutures; process slightly produced, subevenly oval, margin prominent, surface impressed and sparsely punctate and with a few rugae. Mesosternum moderately declivous, quite deeply impressed, surface smooth and narrowly punctate along the periphery. Metasternum very short and punctato-rugose.

Abdomen sparsely and very obsoletely punctate; intercoxal process rugose, fourth and fifth segments distinctly punctate apically, the former glabrous in about basal half, the latter in basal third; first suture perfectly straight, the third and fourth quite strongly arcuate.

Legs rather short. Femora rather sparsely punctate, tibial grooves distinctly and rather more densely punctured; tibiae quite densely muricato-punctate; tarsi stout and similar in the sexes, plantar grooves open, the setae ferruginous.

Male.—Narrower. Abdomen feebly oblique to the sterna and slightly more flattened between the metacoxae.

Female.—Broader. Abdomen perfectly horizontal and slightly more convex. Elytra more broadly oblong-oval.

Measurements.—Length, 21–25 mm.; width, 9–11 mm.

Type in the Horn collection at the Philadelphia Academy of Sciences.

Type locality.—Mohave Desert, California.

Habitat.—Hesperia and the Mohave Desert, California.

In *laticeps* the elytral sculpturing resembles that observed in *Eleodes consobrina* Lec.; the epipleura are sparsely and very obsoletely punctate and smooth. It is a large and more elongate species with abdomen very smoothly sculptured.

Schizillus convexus, new species.—*Form* oblong-oval. *Color* black and more or less subopaque.

Head broadly and strongly transversely impressed between the antennae, vertex convex and declivous; fronto-epistomal margin somewhat hemi-hexagonal, almost evenly arcuate; surface more or less densely and irregularly punctate on the epistoma, front sparsely punctured, punctures moderately coarse. Antennae slender, joints nearly of equal width throughout, last three joints almost narrower than the preceding joints, ninth and tenth longer than wide and subtriangular, eleventh smaller and pointed-oval, a little longer than wide; apical joints with a number of rather long tactile hairs.

Pronotum about a third wider than long; apex slightly broader than the base, moderately deeply emarginate, margin rather straight and oblique within the angles; sides moderately arcuate in anterior three-fourths, sinuate before the base, marginal bead coarse and reflexed only near the angles; base broadly and not strongly emarginate, beaded; basal angles subrectangular; disk smooth and moderately convex, more strongly so anteriorly and centrally, moderately declivous at the apical angles, somewhat impressed within the basal angles, more or less obsoletely to distinctly punctate, punctures rather coarse and more distinct laterally; transverse ante-basal impression short, not strongly defined and slightly more impressed at middle and more strongly so within the basal angles.

Propleura rather coarsely, sparsely but distinctly punctate and rugose.

Elytra oblong-oval, widest a little behind the middle (in type), base scarcely wider than the pronotal base; surface moderately convex, strongly rounded at the sides, rows of punctures not distinct, muricately punctate throughout, more strongly so on the sides and apical declivity, the latter rather abruptly oblique; muricate punctures shining at tip and subequal throughout; apex somewhat lobed and rather broadly rounded.

Parapleura.—Mesosternal side-pieces distinctly and densely punctate; metasternal side pieces sparsely punctured, punctures larger.

Sterna.—Prosternum rather coarsely and quite densely punctate throughout; process slightly produced, rather broadly rounded at tip, marginal bead coarse and raised; surface depressed, coarsely and densely punctate. Mesosternum closely punctate, declivous, deeply impressed at middle, impression glabrous. Metasternum very short, densely punctate and rugose.

Abdomen more or less closely and moderately coarsely punctate, intercoxal process rugose and smooth at middle; segments more or less transversely rugose along the sides, second segment more or less glabrous in middle third, third quite glabrous at middle, fourth and fifth rather more densely punctate, fourth more or less glabrous along the base; first suture straight, third and fourth strongly arcuate.

Legs rather slender, posterior tibiae slightly inwardly arcuate; femora densely punctate throughout including the tibial grooves, punctures smaller than those of the abdomen; tibiae densely muricato-punctate; tarsi similar in the sexes, rather stout, plantar grooves open; terminal joints of all of the tarsi fringed with rather long and closely-placed ferruginous setae.

Male unknown.

Female.—Abdomen convex and horizontal. Elytra oblong subovate and moderately broad.

Measurement.—Length (Type), 23 mm.; width, 10 mm.

Holotype, female, in my own collection. A paratype in the collection of Mr. F. W. Nunenmacher.

Type locality.—Goldfield, Esmeralda County, Nevada. Collected June 16, 1908. Two females studied.

Convexus, as compared with *laticeps*, is more convex and not so broad, the body beneath is much more densely and strongly punctate, the pronotum is more distinctly punctate, especially within the angles, the mentum is less transverse, densely punctured, with the sides broadly arcuate and the surface at apex impressed so as to make the margin appear slightly emarginate.

Schizillus nunenmacheri, new species.—*Form* elongate, oblong-subovate. *Color* dull black, more or less opaque. Subobsoletely sculptured.

Head very broadly and transversely but not strongly impressed between the antennae and along the sides before the eyes; central area of the epistoma slightly prominent and convex; fronto-epistomal margin rather hemi-hexagonal; surface smooth, obsoletely punctate, except on the epistoma along the margin where the punctures are more or less distinct. Antennae quite slender, third joint very elongate, about equal to the next four taken together, joints four to eleven rather narrower than the third, about twice as long as wide, tenth slightly narrower, eleventh smaller, pointed-oval and about as long as wide.

Pronotum almost a half wider than long; apex rather deeply and broadly emarginate, apical angles subacute and anteriorly prominent; sides feebly arcuate in anterior one-half, thence almost straight and moderately convergent to the basal angles, marginal bead very fine to subobsolete; base broadly and feebly emarginate; basal angles sub-

rectangular; disk sculptureless, smooth, almost without impressions, central area anteriorly rather strongly convex, elsewhere moderately so, gradually declivous at the apical angles.

Parapleura smooth and opaque, with few rugae on the coxal convexities.

Elytra about a half longer than wide, suboblong-oval, widest at about the middle; base feebly arcuate, quite equal to the pronotal base; disk moderately convex, more strongly and rather broadly rounded at the sides, obliquely declivous posteriorly; apical lobe moderate and not broadly rounded; surface smooth and dull, striae obsolete or very faintly evident when viewed obliquely, interstices with a row of rather small muricate tubercles; these are obsolete along the suture, becoming gradually stronger laterally and on the apical declivity.

Epipleura smooth and without sculpturing.

Sterna.—Prosternum obsoletely rugose anteriorly and on the process, the latter a little produced, suboval with the sides converging slightly behind the coxae, tip rather broadly rounded, marginal bead not evident; surface longitudinally impressed along the middle, with few punctures along the margin. Mesosternum not sculptured, declivous anteriorly, broadly impressed at middle, sides prominent and subtuberculate. Metasternum rugose at middle, smooth laterally.

Parasterna sculptureless, or with a few fine obsolete punctures.

Abdomen obsoletely sculptured; a few very fine punctules more or less evident, few coarse punctures behind the coxae; fifth segment with very small indistinct punctures.

Legs rather slender, anterior pair apparently a little stouter. Femora and tibiae rather densely but not strongly sculptured throughout including the tibial grooves, the former punctate, the latter muricato-punctate. Tarsi without doubt similar in the sexes, rather stout, plantar grooves open, setae ferruginous; terminal joints of all the tarsi fringed with closely placed ferruginous setae.

Male unknown.

Female.—Abdomen convex and horizontal.

Measurements—Length, 18.2 mm.; width, 8 mm.

Holotype a female in my collection. Collected on Aug. 14, 1908, by Mr. F. W. Nunenmacher.

Type locality and habitat.—Goldfield, Esmeralda County, Nevada.

Nunenmacheri is distinct in its obsolete sculpturing, long third antennal joint and less rounded sides of the pronotum. The mentum is smooth and partly hidden by dried regurgitated ingesta. This species is suggestive of *Cryptoglossa laevis* on account of its smooth integuments, with the exception of the elytra; it is more elongate and less robust, the

mesosternum is different and the eleventh joint of the antennae is oval as in *Centrioptera* while in *laevis* it is short and truncate. The form is similar in *nunenmacheri* and *convexus*, but the latter is larger.

Schizillus lomae, new species.—*Form* oblong-oval, moderately broad and rather robust, elytra slightly flattened on the disk. *Color* black, feebly shining, somewhat alutaceous anteriorly.

Head moderately broad, feebly and broadly impressed between the antennae, epistoma very feebly convex at middle; surface smooth, sparsely punctate; punctures small and not strong, densely placed along the fronto-epistomal margin which is hemi-hexagonal. Antennae slender, joints of equal width, third joint a little longer than the fourth, the latter a little longer than the fifth; fifth, sixth and seventh nearly subequal, ninth and tenth somewhat compressed, tenth triangulo-oval, eleventh oval, about as long as wide, pointed at middle of tip.

Pronotum about a third wider than long, transverse; apex deeply emarginate, bottom of the emargination almost transverse in the middle two-fourths, thence oblique to the apical angles, which are subacute, broad and anteriorly prominent, marginal bead present within the angles; sides strongly, broadly and evenly arcuate in the anterior four-fifths, thence sinuate and parallel to the basal angles, marginal bead rather coarse and somewhat reflexed; base broadly and arcuately emarginate, bead coarse; basal angles less than a right angle, blunt and somewhat prominent posteriorly, marginal bead strong about the angles; surface smooth and obsolete sculptured, moderately strongly convex in the central area, especially anteriorly, less so posteriorly, rather broadly impressed laterally, with a gutter posteriorly which is continuous with the short ante-basal transverse impression, the latter moderately strong; slightly impressed within the apical angles and strongly impressed within the basal angles.

Propleura smooth, with a submarginal line of short rugulae.

Elytra broadly oval, about a fourth longer than wide, dorsum rather feebly convex, strongly but not broadly rounded at the sides, apical declivity almost vertical, apical lobe short and broadly rounded; humeri obsolete, base equal to the pronotal base; scutellum very small and triangular; surface sculptured with rather close series of punctures which are simple in the central area of the disk, becoming muricate and then muricato-rugose on the lateral and apical declivities; striae punctures more closely placed and slightly larger, the interstitial series a little smaller and more widely spaced.

Epipleura rather wide and obsolete sculptured.

Parapleura.—Mesosternal pieces rather densely punctured; metasternal pieces sparsely punctate, punctures a little larger, surface smooth.

Sterna.—Prosternum not strongly punctate in front of the coxae, rather transversely glabrous at middle. Process slightly produced, oval between the coxae with the sides arcuately converging posteriorly to the obtuse tip; surface broadly and feebly impressed, rather densely punctate, bead not distinct. Mesosternum arcuately declivous anteriorly, rather deeply impressed in middle third, sides coarsely punctate. Metasternum coarsely and irregularly rugose, sides sparsely punctate and rather smooth.

Abdomen not strongly convex, slightly oblique to the sterna; surface smooth, with widely scattered fine punctures on the first three segments; the punctures are slightly stronger on the apical half of the third segment; intercoxal process rugose; fourth and fifth segments more or less densely punctate, punctures small; first suture almost straight, third and fourth strongly arcuate, especially at the middle.

Legs rather long and moderately slender, anterior pair a little stouter, rather densely sculptured, femora punctate, tibiae not coarsely muricato-punctate; tarsi stout, plantar grooves open, setae ferruginous; terminal joints of all the tarsi fringed with rather long and closely-placed ferruginous setae.

Male.—Abdomen not strongly convex and slightly oblique to the sterna.

Female.—Unknown.

Measurements.—Length, 20 mm.; width, 10 mm.; elytral length, 13 mm.

Holotype, male, in my collection. Collected by Mr. O. N. Sanford.

Type locality and habitat.—Point Loma, San Diego, California.

Lomae is very distinct from the other species. The mentum is cordato-oval, slightly transverse, apex slightly emarginate, lobes arcuately rounded into the broadly arcuate sides; surface distinctly but not strongly convex, closely punctured, punctures moderate in size.

The scutellum in the Tenebrionidae as a rule is a very unreliable and variable structure in any well defined species. In *Schizillus* it enters between the elytra but a short distance. The scutellum is more or less triangular, short and more transverse in *laticeps*, *convexus* and *nunenmacheri*. In the type of *lomae* it is small and equilaterally triangular.

The following table will serve to separate the species of the genus *Schizillus*:

Humeri obsolete, elytra broadly oval.....	<i>lomae</i> , n. sp.
Humeri more or less distinct, elytra oblong oval.....	1
1. Third antennal joint very elongate, about equal in length to the four following joints.....	<i>nunenmacheri</i> , n. sp.
— Third joint shorter than the next two taken together.....	2
2. Abdomen very finely and sparsely punctate.....	<i>laticeps</i> Lec.

- . Abdomen very distinctly, rather closely punctured, punctures moderate in size.....*convexus*, n. sp.

The following antennal differences may be noted:

- Third joint a little longer than the fourth, the latter relatively longer than in *laticeps* *lomae*
 Third joint about equal to the next four taken together, these being subequal in length and about a third longer than wide.....*nunenmacheri*
 Third joint about twice as long as wide, distinctly shorter than the next two taken together; fourth, fifth and sixth subequal in length.....*laticeps*
 Third joint distinctly twice as long as wide, fourth longer than the fifth.....*convexus*

Euschides lecontei Horn.—This species inhabits the valleys and foothills of the southern San Joaquin Valley. To what altitude in the foothills is not definitely known. Series are before me that were collected near Los Angeles and at Bakersfield. There is a noticeable difference between the extremes of the two series. In the Bakersfield specimens the males are comparatively slender and quite parallel, the elytra are distinctly narrower than the pronotum; in the female the elytra are broader and distinctly wider than the pronotum, with the sides moderately arcuate; in both sexes the dorsum is less convex than in the Los Angeles specimens. In the latter the males are less narrow and parallel, the elytra being at least as wide as the pronotum, with the sides broadly and more strongly arcuate than in the Bakersfield males; in the females there is often present a short costa between the margin and the second discal, these costae are not strong and are usually obsolescent; both sexes are more robust and the dorsum more convex.

In both series the sculpturing is similar and the variations are analogous in every way. The surface lustre is somewhat duller in the Bakersfield specimens. The characters appertaining to the two series as mentioned above, gradate completely one into the other. The largest specimen mentioned by Casey measured 20 mm.

In the collection of the California Academy of Sciences is a specimen, as well as one in my own, that was collected in the Kings River Canyon, California, both taken by Mr. Frank Daggett; these two specimens are giants as compared to the other specimens seen by me. They measure as follows: Length, 24–25 mm.; width, 10–10.3 mm. In these the discal costae become obsolescent before becoming coalescent on the apical declivity and there is no evidence of a third costa. The pronotum is transverse, disk more convex and less deplanate at the sides, the central area is smooth, sparsely punctate, punctures smaller, less strong, becoming coarser laterally and on the deplanate area more or less punctato-rugose, and the margin is less reflexed than in the two series mentioned above; the base is nearly arcuate, scarcely bisinuate; the head has a large cordate depression. The legs are relatively stouter than in the Los Angeles and

Bakersfield specimens; in the former they are stouter than in the latter, where they are quite slender. In both the Bakersfield and Los Angeles specimens the antennae are slender and the last three joints form a club; in those from Kings River Canyon the antennae are stouter and gradually incrassate and the under surface of the body is more coarsely and densely punctate. For this large phase I propose the name *gigantea*, new subspecies. Among the specimens referred to these three series there are the usual individual variations observed in other species, and, when these are arranged in a block system, the gradations are complete. These forms are the result of geographical position and environment which produce such modifications and reveal the plasticity and adaptability of the organisms.

Coniontis santarosae, new species.—*Form* oblong-oval, about twice as long as wide, rather more than moderately convex. *Color* black, tibiae and tarsi piceous, surface smooth and shining; pubescence microscopical above, longer and more abundant beneath.

Head very finely and sparsely punctate; punctures stronger and more numerous on the epistoma; frontal suture distinct; epistomal sinuation moderate and arcuately reëntrant. Antennae shorter than the length of the pronotum, three terminal joints subequal in size and moderately compressed, scarcely wider than the preceding joints.

Pronotum almost twice as wide as long, evenly arcuate from side to side, more strongly arcuate and declivous at the apical angles; sides not strongly convergent anteriorly, feebly arcuate, more strongly so in apical one-half; marginal bead fine; apex arcuate in circular arc, almost truncate when viewed from above, finely beaded, but less so at middle; base almost truncate, very feebly sinuate laterally, angles scarcely more prominent posteriorly than the broad and very feebly arcuate median lobe; basal angles subrectangular; apical angles obtusely and narrowly rounded; disk with sparse and extremely fine punctules, each with a microscopical hair.

Elytra oblong, about a third longer than wide, evenly arcuate transversely, more gradually so on the apical declivity; surface smooth and polished, sometimes very finely wrinkled, feeble grooves and costae sometimes noticeable; each puncture with a microscopical hair.

Prosternum feebly and sparsely punctured, with numerous pseudo-punctules scattered throughout; process finely margined on apex or not.

Abdomen very sparsely and finely punctulate.

Male.—Somewhat narrower. Pronotum relatively broader. Abdomen less convex.

Female.—Broader. Pronotum relatively narrower. Abdomen more convex.

Measurements.—Length (Types), 12.0 mm.; width, 6.0–6.5 mm.

A series of fifty-two specimens studied.

Variations.—These include those of size, slight cuneateness in some males, feebler and stronger punctuation and rugulosity of the elytral surface, margining of the prosternal process not constant; posterior canthi of the eyes not always the most prominent, occasionally stronger on one side and feebler on the other.

Extremes in size measure as follows: Length (Male), 9.0 mm.; (Female), 12.5 mm.; width, 4.0–6.5 mm.

Holotype, male, and allotype, female, in the collection of the California Academy of Sciences; paratypes in the same and the author's collection.

Type locality.—Santa Rosa Island, off the coast of Southern California. Collected by Mr. Van Duzee, May 20, 1919.

Habitat.—Santa Rosa and San Miguel Islands. Mr. Van Duzee says: "Found under dry 'cow-chips' near the entrance to the pier on Santa Rosa Island, where they seemed to be abundant."

Santarosae was at first referred to *Coniontides infinitimus* Casey, as that species according to its author is more elongate than *latus* or *insularis*. The habitat of *infinitimus* is uncertain but Casey believes it to be the Island of Santa Rosa. The form of the pronotal base in *santarosae* forbids any association with the *Coniontides*. Its general facies associates it with the *viatica* group while the measurements suggest the *robusta* group. These groups are arbitrary and can only be used as a convenience.

The mentum in *santarosae* is transverse, lobes obtusely angulate at apex, sides arcuate; apex broadly sinuate in the middle three-fifths, sinuation more or less moderate in depth and arcuately reëntrant; surface feebly convex, slightly asperate and irregular on the lobes, more or less impressed at base within the broad margin and sparsely and more or less regularly punctate, the punctures shallow and each with a short yellow hair.

Coniontis musculus Blais.—One of the most important things relating to the study and knowledge of organisms is habitat. Habitat, when known, makes it possible to correlate the effect of geographical position and environment on the organisms of different regions. In the majority of cases when that knowledge is lacking it is folly to describe a species or race, all data accredited to such a species is presumptive or a pure postulation and without scientific value. Especially is this true in cases of organisms that are particularly variable as regards individual form and sculpturing, as in such genera as *Coniontis*, *Eleodes*, *Pterostichus* and many others.

In the collection of the California Academy of Sciences there are specimens of a species of *Coniontis* which must be referred to *musculus* Blais. These specimens were collected in the Kings River Canyon by Mr. Frank Daggett, no altitude is given and this is a stumbling block to a correct understanding of these specimens. *Musculus* inhabits the San Joaquin Valley as far south as Tehachapi, and westward and eastward into the foothills, to just what altitude it attains is not known. *Musculus* appears to be exceedingly abundant in Ventura County, especially in the vicinity of Oxnard. The specimens from this latter locality show some deviation from the typical form from the more northern limit of its distribution. So it is with the specimens from the Kings River Canyon; these are relatively narrower, and therefore less robust than the true *musculus*. If all of the specimens that I have seen referable to *musculus* could be arranged in a block system, the observable differences would become evanescent, for a few individuals from each locality would resemble similar ones from other places. It is often the general habitus or facies in the broad sense that should guide in the limitation of species in such genera as *Coniontis*, *Eleodes* and others.

Genus *Coniontides* Casey.—A series of sixty-nine specimens in this genus are before me. They were collected on the different islands off the coast of Southern California, namely: San Clemente, Santa Rosa, Santa Barbara, Santa Cruz, Anacapa, Prince and San Nicolas; on the mainland near Los Angeles a small series was taken by Dr. E. C. Van Dyke.

The character that gives *Coniontides* any claim to generic standing, is "the marked prolongation backward of the thoracic angles, recalling the *Eusatti*, and in every way similar to the form there prevailing" (Casey), and in the insular habitat; Dr. Van Dyke's series, however, shows that the species are not entirely confined to the islands. *Coniontides* has as much claim to generic standing as has *Coniontellus*; in the latter the eyes are completely divided by the sides of the head, otherwise it is similar to *Coniontis*. In *Coelus* and *Coelotaxis* the first joint of the anterior tarsi is prolonged beneath the second, but in the former it is much longer. I see no reason why *Coniontides* should not remain as a valid genus.

Coniontides latus Lec.—As usual in a large series, there is great variation in size and sculpturing. The condition of cuneateness possessed by many males is not a group, a generic, nor a specific character. It is observed in all species and races of *Coniontis*. Body form or outline varies greatly and between the extremes all degrees of intermediates are found.

The connectants invalidate any particular value assigned to a given form. The prosternal process is usually unmargined, some specimens,

however, have it margined and all degrees exist between the extremes. The mentum presents great variation as regards sculpturing; some specimens have the lobes quite deeply concave or impressed with the surface subcarinate in the median line and rather coarsely punctured throughout; others have the surface feebly convex, not at all impressed, but punctate as indicated above, or more or less glabrous at the apical situation. All intermediate degrees are at hand. Punctuation is the only character available for subdividing the species into races. Here the separation is artificial, arbitrary and opinionative.

In *latus* the elytral punctures are almost as coarse as are those of the pronotum and the surface lustre is dull. Specimens collected November 3, 1916, on the Island of San Clemente are before me.

Clementinus Casey is only an individual variation, a certain number of specimens can be selected to constitute a group. This phase is identical with *latus* and the name falls in synonymy.

In the race *insularis* Casey the surface is more shining and the elytral punctures are finer, the pronotal punctures are also a little smaller than in *latus*. The characters presented by this phase gradate into those of *latus*.

Infinimus Casey has not been recognized in the material before me. The habitat is uncertain but Casey believes the type came from the Island of Santa Rosa. A large series of specimens collected by Mr. Van Duzee on this island prove to be a true *Coniontis*, for the pronotal base is almost truncate from angle to angle, and is described in this paper as *santarosae*. More work will be done on the anatomy of these forms.

The specimens collected by Dr. Van Dyke at Los Angeles represent a species which may be described as follows:

Coniontides vandykei, new species.—*Form* elongate oval, about twice as long as wide, moderately convex; surface moderately shining. *Color* black, legs and tarsi, antennae and mouth-parts more or less rufo-piceous.

Head quite evenly punctate, punctures well defined and not densely placed, rather more numerous anteriorly; epistomal situation shallow and arcuately reentrant. Antennae rather short, about two-thirds the length of the pronotum; outer joints scarcely wider than the preceding and moderately compressed.

Pronotum rather more than a third wider at base than long, moderately and evenly convex throughout; sides moderately arcuate, more strongly so anteriorly, apex three-fifths the width of the base, lateral bead rather fine, that of the apex very fine, base not beaded; disk finely and not very distinctly punctate, punctures rather evenly but not closely placed.

Elytra evenly, moderately convex; surface very finely and less distinctly punctate, punctures finer than those of the pronotum, becoming stronger with slight rugulosity on the apical declivity.

Prosternum not strongly punctate, punctures rather close, sparse on the process, which is not margined at tip.

Abdomen finely, rather evenly and closely punctate, denser on the fifth segment.

Male.—Somewhat narrower; pronotum relatively broader; abdomen less convex.

Female.—Slightly broader; pronotum relatively narrower; abdomen more convex.

Measurements.—Length, 10 mm.; width, 5 mm.

Type locality.—Near Los Angeles, California. Collector, Dr. E. C. Van Dyke.

Holotype, female, in the author's collection; paratypes in the collection of Dr. Van Dyke.

Habitat.—Dr. Van Dyke states that it occurs near Los Angeles, at the entrance to the Griffith National Park.

This is the first instance of finding a *Coniontides* on the mainland. The characteristics of *vandykei* are the finer punctuation and less robust facies. Seven specimens have been studied.

Eusattus difficilis Lec.—A large series of this species is before me which was collected at San Diego and Coronado, in 1890 and 1891, during the months of October, November, April and June. Part of the series was taken by Mr. O. N. Sanford and Mr. G. W. Dunn. Casey gives San Diego as the habitat of this species. My series gives an amazing amount of variation in the characters used by taxonomists for the separation of species. Casey considers epipleural characters of generic value and states that Horn goes so far as to give such trivial characters as the margination of the prosternal lobe precedence over the epipleural structure (*Proc. Washington Acad. Sciences*, 10, 65, 1908). I am discussing here intra-specific, not generic, characters. Margination of the prosternal process is just as valuable in *Eusattus* as it is in *Coniontis*, and it is of no positive value in either; but is helpful in a limited number of species. Are differences only to be considered in the recognition of species, and must a preponderance of resemblances be overlooked with taxonomic acumen? Study a series of *Blapstinus*, *Coniontis*, *Eleodes*, *Cryptadius*, *Metoponium*, *Telabis*, *Melanastus*, *Coelocnemis*, etc., taken from a limited area of territory and what are ostensibly the same species; compare them character for character, sex for sex. Do they appear to have been cast in exactly the same mold? Does not the punctuation vary, also the margining of the prosternal process, body form, relative length of the appendages in the

different individuals? So it is with my series of *Eusattus difficilis*, taken on the same small peninsula, about the same bay, same climate and at different seasons. They vary in surface lustre, from opaque to somewhat shining, prosternal process fully margined to not at all, elytra with irregular and more convex longitudinal lines or none at all, sides of the pronotum noticeably declivo-explanate to scarcely so, pronotal disk with small but distinct punctures or obsoletely punctate, prosternal process narrow or broader,—all these variations are present in my series of specimens, they gradate one into the other. So far the diagnosis is clear.

In the collection of the California Academy of Sciences there are a few specimens of *Eusattus* taken on San Martin Island, Lower California, July 11, 1905, by F. X. Williams while on the Galapagos Islands Expedition. These specimens agree, character for character, with certain of the specimens collected at San Diego. The individuals of the small series differ among themselves, the pronotum is distinctly declivo-explanate laterally in one, scarcely so in another and to an intermediate degree in another. The most surprising thing is that I cannot separate them by any character from a specimen taken by Mr. Frank Daggett, in the Kings River Canyon, California. The San Martin Island specimens are smaller and rather more oblong than the average *difficilis*, but agree in these characters with a minority of specimens from San Diego. Does geographical position make the San Martin Island specimens a distinct species from those taken at San Diego? Or, am I right in my conclusions that they are all of one species—namely, *difficilis*?

Eusattus vanduzeei, new species.—*Form* oblong-oval, strongly convex, and about one-half longer than wide. *Color* deep black, surface smooth and shining.

Vertex of the head quite impunctate, elsewhere rather evenly and not closely punctate, punctures rather less than moderate in size, densest on the epistoma, the latter triangularly sinuate at middle, angles rounded into the arcuate sides, which are feebly or not sinuate at the oblique sutures, the latter may or may not be evident; frontal suture more or less distinct and arcuate between the oblique sutures; margin of the epistomal lobes slightly reflexed.

Pronotum strongly convex from side to side, quite obliquely declivous laterally and rather more than narrowly explanate at the sides; apex and side margins finely beaded, base not beaded but sinuate laterally, median lobe broad and feebly arcuate; basal angles obtuse and rather narrowly rounded; apical angles subobtuse; disk sparsely punctate laterally, punctures fine and subobsolete in the central area, coarser laterally; sides ciliate.

Elytra with very fine remotely spaced punctures; inflexed sides more distinctly punctured and sometimes subasperately so, each puncture with a rather long hair; surface sometimes more or less finely wrinkled.

Epipleura finely punctured, each puncture with a hair as on the inflexed side of the elytra; gradually wider from apex to base.

Body beneath pubescent, each puncture bearing a hair. Inflexed sides of the pronotum fimbriate with long fulvous hairs. Pubescence longest on the sterna and femora.

Prosternum asperato-punctate, with abundant hairs; process margined throughout; surface smooth and impunctate between and behind the coxae.

Abdomen very finely and remotely punctulate, punctules most abundant laterally and on the fifth segment, hairs short and scarcely evident centrally.

Anterior tibiae very finely serrulate on their external edge.

Male.—Somewhat narrower. Pronotum usually as wide as or slightly wider than the elytra. Abdomen less convex.

Female.—Broader and slightly more inflated. Pronotum as wide as the elytra or slightly narrower. Abdomen more convex.

Measurements.—Length (Types), 12 mm.; width, 7.0–7.5 mm.

A series of seventy-seven specimens studied. The individuals are quite uniform as regards shape, although one variant is subovate, narrowing anteriorly, with the pronotum distinctly narrower than the elytra, but continuing the side lines of the elytra. Several specimens have the elytra distinctly more or less crinkled. The extremes in size measure as follows: Length, 11–13 mm.; width, 7–8 mm.

Type locality.—Prince Island, off the coast of Southern California. Collected by E. P. Van Duzee on May 20, 1919.

Holotype, male, and allotype, female, in the collection of the California Academy of Sciences. Paratypes in the collection of the Academy and that of the author.

Habitat.—Prince and Santa Rosa Islands, off the California coast south of Santa Barbara County.

This fine species is dedicated to its discoverer. There has been some doubt as regards its relation to *politus* Horn, found at Santa Barbara. While *vanduzeei* is undoubtedly related to *politus*, it can not be identical if the published descriptions are complete. In *vanduzeei* the sides of the pronotum are fimbriate, the inflexed sides of the elytra and epipleura clothed with fulvous hairs, and the under surface of the body is more or less pubescent throughout. The sides of the pronotum are somewhat explanate. These characters are not mentioned as possessed by *politus* Horn. In *vanduzeei* the size and form are apparently different.

Mr. H. C. Fall has made the necessary comparisons at Cambridge, and found two examples referred to *politus*. "The second specimen is not *politus* at all. The first bears the name label in Horn's handwriting and is evidently one of his type series. It is rather old and worn, hence the setae are not well preserved. They are present, however, on the inflexed sides of the thorax, but appear to be practically absent from the epipleura, nor is there any evidence of setigerous punctures to show where they may have been, except possibly two or three very small ones." He further states that "the punctuation of the upper surface is distinct enough though sparse and fine. Your specimens are distinctly smoother."

Mr. Van Duzee states that the specimens were "taken on the steep southern slope of Prince Island at the entrance to the harbor of San Miguel Island. They were found beneath prostrate weeds more or less imbedded in light sandy soil brought down by the small surface washes. In the right kind of soil they were not uncommon, an hour's work yielding about seventy specimens.

The mentum in *vanduzeei* is transverse, with the apex broadly sinuate, sinuation nearly semicircular at middle third, thence oblique and feebly arcuate to the tips of the lobes, the latter are obtusely rounded; sides distinctly arcuate; surface nearly impunctate centrally, broadly impressed laterally on the lobes and punctate, impression deep at base; each puncture bearing a yellow seta; lateral bead thick.

In *Eusattus difficilis* the surface of the mentum is feebly convex, nearly impunctate, with only a few scattered punctures; otherwise as in *vanduzeei*. The mentum is still smoother in *Eusattus reticulatus* Say.

Female genital segment.—Each valve consists of a dorsal, a lateral plate terminating in the apex, and a ventral plate. *Lateral plate* strongly chitinized, dilated at base but continuous with the less chitinized dorsal and ventral plates; surface with very sparse punctures, each with a long hair; apex slightly recurved, flattened dorso-internally, feebly convex on the ventro-lateral surface; the rather elongate oval fossa bears a pencil of about eight long hairs situated near base of the apex; fossa membranous at bottom; tip of apex strongly chitinized and narrowly rounded. *Dorsal plate* pale in color, not moderately chitinized, internal border apparently arcuate, reaching to a point about midway between the fossa and tip of apex; surface coarsely and rather closely punctate, each puncture bearing a long hair. *Ventral plate* narrower and elongate, pale in color and not strongly chitinized, reaching to a point opposite the tip of the ventral plate; surface densely and coarsely punctate, each puncture bearing a long hair. Dorsal and ventral plates blend with the lateral plate. Described from the dried specimen.

Eleodes rotundipennis Lec.—Recent studies demand that *rotundipennis* be raised from the grade of variety to that of a valid species, with the following brief diagnosis: *Pronotal* sides evenly and broadly rounded (as in *parvicollis*), basal constriction short and the angles rectangular. Otherwise as in *cordata* Esch. It should follow *scabrosa* Lec. and precede *cordata* in our lists. For further remarks see the author's Monograph of the Eleodiini (*Bull.* 63, *U. S. Nat. Mus.*).

Habitat.—Oregon (Koebele); British Columbia (Victoria and North Bend.—Hubbard and Schwarz); State of Washington (Easton and Olympia).

Eleodes rotundipennis versatilis, new variety.—*Form* elongate sub-oblong, not strongly convex and a little more than twice as long as wide. *Color* piceous to deep black, more or less shining. *Pronotum* rather strongly and moderately coarsely punctate, punctures irregularly distributed, leaving small smooth areas; disk flat between punctures. *Elytra* muricato-tuberculate, scarcely rugose.

Head feebly convex, rather closely punctate, punctures rather less than moderate and more or less evenly distributed; impressions broad, shallow and within the antennal prominences. *Antennae* rather long, slightly incrassate; ninth and tenth joints slightly transverse, eleventh subtrapezoidal.

Pronotum rather transversely oblong, moderately and evenly convex, widest at middle; disk quite evenly convex, punctures more or less discrete, moderate in size and distinct, irregular in distribution, leaving small glabrous areas, slightly denser laterally and feebly subasperate, intervals flat; sides rather evenly and broadly arcuate in anterior five-sixths, suddenly constricted at base, where the sides are straight and parallel, marginal bead fine; apex feebly emarginate in a circular arc; apical angles obtuse and not in the least prominent; base truncate, equal to the apex; basal angles rectangular.

Propleura opaque, sparsely and muricately punctate.

Elytra distinctly oblong-oval, moderately convex, widest in the middle third; base truncate, scarcely wider than the pronotum, humeri distinct and obtusely rounded; sides evenly and not strongly arcuate, obliquely converging to apex in apical third, apex obtusely rounded; disk arcuately declivous at apex, evenly and not very closely muricately punctate but not strongly so, punctures becoming quite tuberculate laterally and on apex, tubercles shining at summit.

Abdomen rather strongly and densely punctate, except on the fourth and fifth segments, which are finely punctate.

Legs moderate in length; anterior femora mutic as usual in the subgenus. Anterior and middle tarsi dissimilar in the sexes.

Male.—Somewhat narrow and parallel, antennae extending to or just beyond the pronotal base. Abdomen moderately convex, slightly oblique to the sterna, somewhat flattened along the middle. First three joints of anterior tarsi with small subacute tufts of yellowish pubescence at tips beneath, that of the third joint smaller than the others; first two joints of the middle tarsi with similar and smaller tufts.

Female.—More robust. Abdomen more convex. First joint of the anterior tarsi slightly thickened at apex beneath, plantar groove more or less distinct throughout.

Measurements.—Length, 14.5 mm.; width, 6 mm.

Holotype, male, in the collection of the California Academy of Sciences. Paratype in the academy's and the author's collection.

Type locality.—Colestin, Jackson County, Oregon. Collected July 30, 1918, by E. P. Van Duzee; one specimen taken at Easton, Washington.

Versatilis was one of the puzzling forms studied at the time the Monograph of the Eleodiini was written, and no decision was reached. Two closely related forms are still doubtful, these having been collected in central and southern California.

Versatilis has the pronotum of *parvicollis* and the sculpturing of *cordata*.

Eleodes dentipes marinae, new variety.—*Form* moderately robust, oval to ovate and almost subfusiform, convex and very smooth, punctuation fine and distinct; punctures subequal throughout.

Head feebly convex, impressions obsolete, punctures rather irregularly distributed. Antennae rather short, not reaching to base of the pronotum, gradually incrassate to tip, ninth and tenth joints transverse, eleventh obliquely truncate at apex.

Pronotum widest at middle, about two-sevenths wider than long; disk rather evenly and strongly convex, rather strongly declivous at the apical angles, finely, distinctly, not closely punctate throughout; punctures equal in size and distinct to the margin, lateral bead fine; sides evenly and moderately strongly arcuate in anterior two-thirds, thence straight and convergent almost to the basal angles, which are slightly prominent laterally, making the margin feebly sinuate just in front of them; apex broadly and feebly emarginate, feebly arcuate in middle third; apical angles short, rather stout, somewhat prominent, sometimes more or less everted; base feebly arcuate.

Propleura smooth, feebly, sparsely punctate and more or less rugulose.

Elytra oval, widest at middle, smooth, quite evenly convex from side to side; punctuation fine, punctures evenly distributed, not close and equal

in size, diffuse or with striae of punctures more or less evident; base feebly emarginate; disk rather gradually and arcuately declivous apically, the apex obtusely rounded; sides arcuate throughout, converging to apex.

Abdomen finely and sparsely punctured.

Legs moderate in length.

Male.—Narrower, elongate, subfusiform oval. Elytra gradually narrowed posteriorly, rather gradually and arcuately declivous apically; apex obtusely rounded, sometimes feebly divergent at tip. Abdomen moderately convex, first two segments scarcely impressed or flattened. Anterior femora with a slender and well developed tooth. Posterior femora slightly arcuate, gradually widened toward apex.

Female.—Rather robust. Elytra more or less broadly oval, rather strongly although gradually declivous posteriorly; apex rather more broadly rounded. Abdomen rather moderately and evenly convex. Anterior femora with an obtuse tooth, posterior quite straight.

Measurements.—Length (Types), 22–24 mm.; width, 8.2–9.5 mm.

Holotype, female, and allotype, male, in the collection of the California Academy of Sciences. Paratypes in the Academy's and the author's collection.

Type locality.—Fairfax, Marin County, California, March 9, 1919; E. P. Van Duzee, collector.

Habitat.—As far as known, found only in Marin County, California.

A moderate series has been studied. *Marinae* caused considerable trouble until Mr. Van Duzee took a colony which adhered to a common type form. *Marinae* should precede *confinis* Blais. in our lists. In *confinis* the pronotal sides posteriorly are straighter to the angles than in *marinae*; there is a shallow and broad situation in front of the basal angles, the latter being somewhat prominent laterally in *marinae* while in *confinis* the angles are not at all prominent; in *confinis* the punctuation is fine and indistinct; in *marinae* it is less fine, distinct and well defined.

Eleodes laticollis apprima, new subspecies.—Since the publication of the Monograph of the Eleodiini, a large series of specimens of what was then referred to *Eleodes laticollis forma insularis*, has been studied and the resulting conclusion is that it is a valid subspecies and should be raised to that grade, as indicated above. The material at hand includes collections made on San Nicolas, Prince, San Clemente, Santa Barbara, Anacapa and San Miguel Islands. Material ample enough to force a change of opinion.

In *apprima* the pronotum is as a rule a little longer when compared with the width, notably shining, and the form is more elongately robust. The individuals vary in every way as they do in *laticollis*.

Measurements.—Length (Types), 18–20.5 mm.; width, 10–12.5 mm.

Holotype, female, and allotype, male, in the collection of the California Academy of Sciences; paratypes in the Academy's and the author's collection.

Type locality.—San Nicolas Island, March 28, 1918; J. R. Slevin, collector.

The characters are quite similar in *laticollis* and *apprima*; the former has a relatively more transverse pronotum and is usually dull in lustre.

Eleodes sanmartinensis, new species.—*Form* elongate, oblong-oval to suboblong-oval. *Color* black and more or less shining; surface smooth.

Head about as long as wide, equal to one-half the width of the pronotum; front slightly convex, punctures small and irregular in distribution, sparse centrally and denser laterally. Antennae extend slightly beyond the base of the pronotum, feebly incrassate apically, last three joints scarcely wider and more or less globular.

Pronotum about a fifth wider than long; sides evenly and broadly arcuate from apex to base, marginal bead more or less moderate and slightly reflexed; apex more or less truncate between the rather small and more or less everted apical angles, finely beaded, bead more or less obsolete at middle; base truncate, rather finely and evenly beaded; disk evenly and moderately convex, rather narrowly impressed along the sides, punctuation fine and more or less obsolete, except laterally where the punctures are more distinct and slightly punctato-rugulose on the impressed area, surface smooth; basal angles obtuse and more or less distinct.

Propleura smooth and obsoletely rugose.

Elytra more or less oval, humeri obsolete; sides evenly arcuate, in apical fourth evenly converging to the obtuse apex; base transverse; disk smooth and more or less indistinctly sculptured; punctures small and subequal, not in the least asperate, apparently more or less serial in arrangement, double series sometimes present.

Parapleura more or less coarsely punctured.

Sterna not strongly sculptured.

Abdomen smooth, finely and sparsely punctate, punctures denser on the fifth segment, more or less rugulose.

Legs long, femora heavy and markedly compressed, anterior femora dentate; tibiae densely punctato-muricate. Tarsi apparently similar in the sexes.

Male.—More or less parallel and elongate oblong-oval. Elytra not wider than the pronotum, more gradually declivous posteriorly. Femora notably stout, long and compressed, the anterior distinctly swollen, tooth at outer fourth, subcylindric, everted and backwardly curved, resulting

apical sinus more or less arcuately narrowed; metatibiae quite straight. Abdomen notably flattened and moderately oblique to the sterna.

Measurements.—Length, 22.9 mm.; width, 9.5 mm.

Female.—Suboblong-oval, elytra moderately inflated, distinctly wider than the pronotum, more abruptly declivous posteriorly. Femora less stout, tooth of profemora less stout, sinus more open. Abdomen moderately convex and on the same plane with the sterna.

Measurements.—Length, 26 mm.; width, 11 mm.

Holotype, female, in the collection of the California Academy of Sciences. Allotype, male, in the author's collection.

Type locality and habitat.—San Martin Island, off the coast of northern Lower California, July 11, 1905; F. X. Williams collector.

Sanmartinensis differs from *laticollis* subspecies *apprima* in the broadly rounded sides of the pronotum, without basal constriction. An unusual character in the *dentipes* and *laticollis* sections of the genus. The general form is that of a male *grandicollis* Mann.

Eleodes sanmartinensis moesta, new variety.—*Form* elongate ovate, surface lustre dull, elytra sparsely and muricately sculptured.

Sides of head in front of the antennae rather rapidly converging, frons rather flat, sparsely, finely and distinctly punctate. Antennae rather short and slender, ninth and tenth joints transversely oval, eleventh truncate oval.

Pronotum a little wider than long; sides broadly arcuate, somewhat more strongly so in anterior half, thence somewhat straight to the basal angles; punctuation of the disk fine, sparse and distinct.

Elytra suboval, humeri obtuse but distinct; disk feebly flattened in the central area, punctuation consisting of small, distinct granulate punctures; granules shining on summit; each puncture with a distinct black semi-erect seta, punctures serially arranged in the central part of the disk with an interstitial and more widely spaced row; punctures fine, becoming rather coarse and asperate on the sides and apical declivity; sides rather broadly arcuate, somewhat oblique in apical fourth to apex, the latter obtuse.

Legs densely sculptured and comparatively short.

Otherwise as in *sanmartinensis*.

Female.—Abdomen convex; femora normal in thickness.

Measurements.—Length, 21 mm.; width, 9.5 mm.

Holotype, female, in the collection of the California Academy of Sciences.

Type locality and habitat.—San Martin Island, off the coast of northern Lower California. Collected July 11, 1905; F. X. Williams, collector.

Moesta bears the same relation to *sanmartinensis* that var. *minor* does to *laticollis* Lec. There is a slight indication of an obtuse salient at apical fourth of the mesofemora. The present race is based on analogy that has been observed in series of many species. *Moesta* differs so radically in sculpturing from the type species that it can not be considered as heterotypical and therefore a *form*.

Eleodes mutilata, new species.—*Form* elongate ovate to fusiform ovate, convex. *Color* black, surface smooth, femora edentate; legs slender and moderate in length.

Head moderately small, rather short, front moderately convex, epistomal suture fine and more or less impressed; surface smooth, very finely and sparsely punctate. Antennae long and slender, reaching about two joints beyond the pronotal base; joints four to eight inclusive elongate and subequal, ninth and tenth triangulo-oval, eleventh obovate, pointed at apex and about as long as wide, last three joints scarcely wider to slightly so.

Pronotum quadrate, a little wider than long; apex broadly and not strongly emarginate between the anteriorly prominent angles, the latter subacute and rather broadly subdentiform; base broadly and feebly arcuate, apex and base obsoletely beaded; sides broadly and not strongly arcuate, very slightly sinuate behind and before the apical and basal angles, the latter subobtuse and not at all prominent, marginal bead very fine, almost subobsolete; disk rather strongly, evenly convex and impunctate, or with fine, sparse and subobsolete punctures.

Propleura sparsely and obsoletely punctate and rugose.

Elytra oval to subfusiform-oval, rather strongly convex, sometimes slightly flattened on the dorsum; sides evenly arcuate, slightly more oblique in apical third, apex obtusely rounded; disk smooth, obsoletely sculptured, punctures small and subequal in size throughout and arranged in closely placed series; base feebly and broadly emarginate, subequal to the pronotal base; humeri minutely dentiform.

Parapleura rather distinctly and densely punctate.

Sterna more or less obsoletely sculptured.

Abdomen smooth, apical half of fifth segment finely and densely punctured; surface more or less obsoletely and irregularly rugose.

Legs rather feebly sculptured, except the distal half of the tibiae, which are densely muricato-punctate. Tarsi dissimilar in the sexes. Femora mutic.

Male.—Rather more elongate, less convex and a little narrower. Abdomen slightly oblique to the sterna, feebly flattened. First two joints of the anterior tarsi clothed beneath with pads of rather coarse golden

brown setiform hairs, which are graduated from base to apex; similar setiform hairs form apico-marginal tufts on the other joints, divided at middle, and leave the plantar grooves open; on the middle tarsi the plantar grooves are open, the joints are fringed beneath with golden brown setiform hairs.

Female.—Stouter, body rather more inflated and broader. Abdomen horizontal, rather evenly and not strongly convex. Plantar grooves open on all of the tarsi; joints with apico-marginal tufts of golden brown setiform hairs.

Measurements.—Length (Types), 28–26 mm.; width, 11 mm.

Holotype, male, in the collection of the California Academy of Sciences; paratypes in the Academy's and the author's collection. Three specimens studied.

Type locality and habitat.—Sierra Laguna, Lower California; collected by J. R. Slevin on August 15, 1919.

The form and habitus are exactly alike in *mutilata* and *lucae* Lec. It has the appearance of being an edentate and smooth *lucae*. The anterior femora are entirely mutic. As nothing is known regarding the status of similar forms it is best to consider it a species rather than a race of *lucae*.

The following are the genital characters:

Male.—Edeagophore oblong-ovate, moderate in size, about two and a half times longer than wide and feebly arched.

Basale not strongly convex, less so on the dorsum, with an impressed median groove; sides parallel, less than moderately and broadly arcuate, apex bilobed, median emargination arcuately rounded at bottom.

Apicale triangular, apex short and rather obtusely rounded; sides broadly arcuate, but briefly sinuate at sides of apex; surface convex with an impressed median groove extending from apex to base; base sinuate laterally, adapted to the apical lobes of the basale, obtusely lobed at middle.

Female.—Genital segment subtriangulo-parabolic, moderate in size and setose.

Valvula.—Dorsal plate oblong, rather narrow, sides feebly arcuate, with apex rounded; surface feebly concave, finely and very sparsely punctate, each puncture with a very small seta. Apex short, stout, rather broadly rounded at tip, somewhat divergent with that of the opposite valve. Appendage situated at and almost beneath the apical margin of the dorsal plate, very small and not easily seen within the fossa. Fossa moderate in size, adjacent surface of apex with many short hairs. Superior pudendal membrane attaining the middle of the

dorsal plate, broadly and rather parabolically exposed, longitudinally rugulose.

Valvular membranes visible between the apices and finely setose. Ventro-lateral surfaces evenly convex, not noticeably swollen; sub-marginal groove moderate and continuous with the concavity on the under surface of the apex; surface with very fine and very sparsely placed punctures and setae. Internal margins of the valves contiguous apically and briefly so at base. Genital fissure ample and fusiform, exposing the inferior pudendal membrane.

Eleodes corvina, new species.—*Form* elongate subovate, about twice as long as wide, moderately convex. *Color* deep black, rather shining, head and pronotum somewhat duller.

Head short, wider than long, feebly convex, frontal suture more or less distinct and moderately impressed; surface closely and evenly punctured, punctures almost coarse and more or less coalescent. Antennae moderate in length, reaching to the base of the pronotum, gradually and feebly incrassate; third joint equal to the fourth and fifth taken together; fifth, sixth and seventh subequal in length and very little longer than wide; eighth subtriangular, ninth triangulo-oval, tenth transversely oval; eleventh short ovate, about as long as wide, rather obliquely truncate at tip.

Pronotum moderately transverse, widest at middle, apex almost truncate, apical angles distinct, not in the least prominent and obtuse; sides rather strongly and broadly arcuate, almost straight posteriorly and convergent to the base, marginal bead fine; base slightly arcuate to subtruncate, obsolete beaded; basal angles obtuse and deflexed with the discal surface; disk rather strongly convex, most strongly so laterally and at the basal angles, where it is quite declivous; densely, somewhat irregularly punctate, punctures a little larger than those of the head, slightly coarse, rather smaller and sparsely placed centrally, becoming more or less crowded and coalescent laterally.

Propleura full and convex, more or less but not strongly muricately punctato-rugose.

Elytra elongately ovate to oval, moderately convex, obliquely and rather rapidly declivous posteriorly, apex rather narrowly rounded; humeri distinct, not in the least prominent; base feebly emarginate and a little wider than the contiguous pronotal base; disk distinctly and strongly sculptured, rather coarsely punctato-rugose centrally along the suture, becoming rugoso-tuberculate laterally and on the apical declivity.

Parapleura and *sterna* rather densely and not coarsely punctate.

Abdomen rather densely punctate and more or less rugose.

Legs somewhat short and moderately stout, rather densely sculptured. Tarsi similar in the sexes, plantar grooves open throughout.

Male.—Narrower and more elongate ovate, somewhat less convex. Abdomen slightly oblique to the sterna and noticeably flattened; tibial spurs short.

Female.—Broader, more elongate oval, elytra more convex; abdomen horizontal and more convex.

Measurements.—Length (Types), 14–15 mm.; width, 5–6 mm.

Holotype, male, and allotype, female, in my own collection. Paratypes in that of Mr. Ralph Hopping.

Type locality.—Dry Lake, Klamath National Forest. Collected on September 17, 1912, by Mr. Ralph Hopping.

The elytral sculpturing in *corvina* is almost like that observed in *Eleodes cuneaticollis* Casey, but more coarsely punctate centrally and more distinctly tuberculate laterally. *Papillosa* Blais., a closely related congeneric species, is larger and more elongate, the elytral tubercles are rounded, distinct, shining at their summits and not intermixed with rugae; in *granulata* Lec. the surface is more opaque and the elytral tubercles are rather elongate, while in the variety *obtusa* Lec. the sculpturing is more eroded and dull, with the body form more like that of *corvina*, but in the latter the elytral sculpturing is distinctly punctato-tuberculato-rugose. The sculpturing of *vandykei* Blais. is much less developed and more of the muricato-punctate type, while in its race *parvula* Blais. the size is smaller, the pronotum more quadrate, and the elytral tubercles are evident, variable in number and more or less muricato-tuberculate.

Eleodes acutangula, new species.—*Form* oblong-oval and moderately convex as in *scabricula* Lec. *Color* black and quite opaque.

Head rather less than one-half as wide as the pronotum, feebly convex with broad and very shallow impressions within the antennal convexities; rather coarsely and irregularly punctate. Antennae about attaining the pronotal base, outer joints feebly compressed and slightly wider.

Pronotum distinctly opaque, widest at middle and transverse; apex broadly, evenly and moderately emarginate in circular arc; sides quite evenly and broadly arcuate, straighter posteriorly to base, margin more or less feebly reflexed; apical angles quite prominent anteriorly and rather acute; basal angles obtuse, distinct and slightly prominent laterally on account of the basal bead.

Elytra oval, opaque, sculptured as in *consobrina* Lec., but somewhat coarser, that is, rather coarsely punctate centrally and granulato-

muricate laterally and on the apical declivity; humeri rather distinct; disk moderately convex to somewhat flattened at times.

Otherwise as in *scabricula*.

Male.—Elongate oval and narrower.

Female.—More robust.

Measurements.—Length (Types), 20–21 mm.; width, 9–10 mm.

Holotype, male, and allotype, female, in my own collection. Paratypes in that of Mr. Ralph Hopping.

Type locality.—Cannel Meadow, Kern County, California; collected June 11, 1913, by Mr. Ralph Hopping.

Habitat.—Cannel Meadow and Breckenridge Mountain, Kern County, California. A paratype from the latter locality was taken at an altitude of 6000 feet. Number of specimens studied, nine.

Acutangula differs from *scabricula* in its distinct and quite strong apical pronotal angles, coarser sculpturing and more opaque lustre. In *scabricula* the apical angles are distinctly obtuse and rather narrowly rounded, basal angles obtuse and not in the least prominent. In *acutangula* the basal angles are distinct and obtuse, and rendered slightly prominent by the basal bead alone.

A single specimen taken by Mr. J. R. Slevin, at Glenbrook, Nevada, on August 25, 1913, is referred to this species.

Tenebrio tenebroides Beauv.—This phase or race of *T. picipes* Herbst., according to the Leng Catalogue of the Coleoptera of North America, has a wide range of distribution, being particularly mentioned as occurring in Southern California, Newfoundland and Florida. In all probability it is only one of the modifications of the cosmopolitan *picipes*.

Some thirty years ago I took a single specimen from beneath the bark of a tree on top of the Bolcan Mountain, near Julian, San Diego County, California. This region was isolated as far as commerce was concerned, but not far distant from the Santa Isabel Indian Reservation. At any rate the specimen remained a unique in my collection until quite recently, when Mr. F. W. Nunenmacher found another in Shasta County, and meanwhile Mr. Ralph Hopping collected another at Fort Tejon, California. All these localities were away from commercial warehouses. These specimens differ from the eastern examples in being more *distinctly punctured* on the upper surface. In the more abundant specimens of *picipes* Herbst. the punctuation of the head, pronotum and elytral intervals is scarcely distinct. In both forms the punctures of the elytral striae are distinct. The manner of dispersion of cosmopolitan species is an interesting problem.

Helops simulator, new species.—*Form* elongate-ovate, alate; wings about as long as the elytra; densely punctate above. Color black.

Head about as long as wide, transversely impressed on the epistoma; front scarcely convex, densely punctate, punctures moderate in size. Antennae moderately long and slender, outer joints compressed.

Pronotum subquadrate, slightly wider than long; apex truncate; base subtruncate, very feebly sinuate laterally; sides moderately arcuate in anterior two-thirds, thence slightly convergent to base and more or less sinuate to parallel before the angles; disk moderately convex, declivous at the apical angles and slightly flattened about the basal angles, densely punctate, punctures moderate and just a little larger than those on the head; apical angles narrowly rounded; basal angles rectangular.

Propleura densely punctate.

Elytra widest at the posterior third, a little more than one-half longer than wide; humeri small; sides diverging and feebly arcuate to apical half, thence more strongly and broadly arcuate to apex, the latter obtusely rounded; disk rather strongly convex posteriorly, less so anteriorly, evenly and arcuately declivous posteriorly, densely ruguloso-punctate, striate, striae fine and broken up into short lines by the rugulae, sometimes scarcely evident.

Male.—Form somewhat narrower. Anterior tarsi moderately dilated.

Measurements.—Length, 12–20 mm.; width, 5.2–7.75 mm.

Habitat.—Under bark.

Holotype, female, and allotype, male, in my own collection. Paratypes in my own and Mr. F. W. Nunenmacher's collection.

Type locality.—Male taken at Sisson, and the female at Shasta Retreat, Siskiyou County, California.

Distribution.—California (Humboldt County: Green Point Ranch, elevation 1500 feet, June; Siskiyou County: Sisson, July; Shasta Retreat, elevation 2416 feet, July; Shasta County, May).

Remarks.—*Simulator* appears to be absolutely distinct from *opacus* Lec. The latter is apterous and the pronotum is much more strongly convex. They may or may not inhabit the same territory. *Opacus* is taken quite commonly in Calaveras County. As Horn states, the "winged species has the elytra depressed, more elongate and less rounded on the sides; the thorax is also less convex, rather broader and with less rounded sides." These remarks apply to *simulator*, which Dr. Horn considered a form of *opacus*.

Helops regulus, new species.—*Form* elongate oval, slightly narrowed anteriorly, convex. Color nigro-piceous, scarcely submetallic, shining; legs and antennae more or less rufo-piceous; beneath rather rufo-piceous.

Head convex, more or less deeply and transversely impressed behind the frontal suture, rather coarsely, strongly and moderately densely punc-

tate, punctures rounded, scarcely coalescent. Antennae moderately short and somewhat stout, reaching a little beyond the base of the pronotum.

Pronotum nearly as long as wide, not noticeably transverse, apparently widest at the middle; sides rather moderately arcuate, finely beaded; apex and base subtruncate, not strongly beaded; apex a little narrower than base; apical angles subrectangular; basal angles obtuse and somewhat rounded; disk moderately strongly convex from side to side, quite narrowly explanate and impressed within the bead; punctate, punctures more or less irregularly placed, moderately coarse, partly somewhat slightly elongate at the sides.

Elytra oval, about three-sixths longer than wide; sides evenly arcuate and subparallel, obtusely rounded at apex; base truncate, humeri small and slightly prominent anteriorly and distinct; disk rather evenly convex, striae of small punctures which are slightly irregularly spaced and feebly impressed; intervals sometimes slightly convex, finely and sparsely punctulate, not tuberculate nor rugulose on the apical declivity.

Propleura finely and more or less irregularly longitudinally rugulose.

Abdomen somewhat rugulose and rather more thickly punctate on the first two than on the succeeding segments.

Tarsi clothed beneath with rather soft yellow hairs.

Male.—Rather narrower, antennae slightly stouter.

Female.—Somewhat broader, antennae somewhat more slender.

Measurements.—Female holotype: Length, 5.8 mm.; width, 2.2 mm.

The accompanying male allotype measures 7.5 mm. in length; the elytra are separated and the wings are rudimentary.

The types are in my own collection. Collected by Mr. W. M. Mann, on May 15, 1904. About twenty specimens in various collections have been studied.

Type locality.—Wawawai, State of Washington.

Regulus was first referred to *pernitens* Lec. with considerable doubt. It at first sight resembles *aereus* Germ. in general facies, from which it differs in the narrower elytra and different punctuation of the head and pronotum. In *pernitens* the pronotum is distinctly transverse, antennae longer and more slender, elytra broader, sides of the pronotum distinctly explanate with margin reflexed. In both species the mentum is longitudinally carinate at middle with the sides opaque, carina smooth and shining. In *regulus* the pronotum is rather more punctate than rugulose, the reverse in *pernitens*. The propleura in *aereus* is sculptured with rather regular, strong, parallel, longitudinal rugae, some of which divide.

Helops obtusangula, new species.—*Form* elongate ovate, subparallel, moderately depressed. Color brownish to piceous, not metallic; legs and under surface more or less rufo-piceous. Apterous.

Head subquadrate, front scarcely convex between the eyes, flattened toward the epistoma, sides of front moderately prominent; feebly and transversely constricted behind the eyes; densely, not coarsely punctate, punctures more or less slightly coalescent. Eyes slightly prominent. Antennae slender, outer joints slightly compressed, last three just a little wider, eleventh oval.

Pronotum subquadrate, about a fourth wider than long; apex almost truncate, somewhat feebly arcuate centrally; apical angles obtuse; sides feebly arcuate from apex to base, most strongly so anteriorly, less so posteriorly and just the least converging, marginal bead not strong or prominent; base almost truncate; basal angles obtuse and narrowly rounded, scarcely distinct; disk not strongly convex, most so anteriorly and centrally at apex, there rather strongly declivous laterally, vaguely and transversely impressed in front of base, surface very slightly flattened in lateral fourths, densely punctate, punctures small, more or less coalescent longitudinally, intervals not conspicuous.

Propleura distinctly and not coarsely longitudinally rugulose; rugulae uniting to a greater or less extent, with large, shallow and scarcely distinct punctures in the broad sulci between.

Elytra elongate oval, a little more than twice as long as wide, moderately evenly convex from side to side, a little wider than the pronotum, humeri obtusely rounded, base transverse; surface finely striate, striae not noticeably punctate, intervals finely, irregularly and somewhat sparsely punctate, feebly convex especially on apical declivity, there with feeble, small tuberculiform eminences; sides parallel, feebly arcuate, apex somewhat ogival and rather narrowly rounded.

Abdomen shining, rather evenly and not densely nor coarsely punctate. Legs rather short.

Male.—Narrower. Antennae elongate, joints eight to eleven inclusive at least twice as long as wide, not incrassate, scarcely compressed. Anterior tarsi feebly dilated, and with the middle tarsi quite densely clothed beneath with yellow hairs.

Female.—Somewhat broader. Antennae shorter, outer four joints distinctly broader, not twice as long as wide, ninth and tenth subtriangular, slightly compressed. Anterior tarsi very slightly dilated. All the tarsi clothed beneath with yellow hairs, denser on the anterior and middle tarsi.

Measurements.—Length (Types), 10.5–8 mm.; width, 3.5–2.6 mm.

Holotype, female, larger sex, in the collection of the California Academy of Sciences. Allotype, male, and paratypes in the collection of the author.

Holotype collected by Mr. Geo. R. Wilson; allotype and paratypes by Dr. E. C. Van Dyke.

Type locality.—Corona, California (Holotype); Los Angeles, California (Allotype).

Obtusangula has been labeled as *angustus* Lec. in my collection for many years. An examination of my series shows it to be wingless and the propleura distinctly but not strongly rugulose, punctures not evident.

Horn states that *angustus* is winged and that the propleura are coarsely punctate.

Obtusangula is related to *stenotrichoides* Blais., similar in form, but less elongate, less robust, and less convex, integuments thinner and the small tubercles of the lateral and apical intervals of the elytra are less evident, besides, the basal angles of the pronotum are obtuse and more or less slightly rounded.

In *stenotrichoides* the basal angles are distinct, propleura puncto-rugulose, punctures distinct and shallow on the coxal convexities; outer joints of the antennae slightly compressed in the male and twice as long as wide; antennae more elongate in the female than in the same sex of *obtusangula*; with joints six, seven and eight rather more elongate. In *strigicollis* Horn the form is narrower, elytra scarcely wider than the pronotum, the latter is distinctly longitudinally strigose, antennae heavier, propleura distinctly punctate. *Strigicollis* and *obtusangula* were taken at the same time at Corona, California, by Mr. Wilson.

Attenuatus belongs to the same group of species. My only specimen referred to this species was collected by Mr. Nunenmacher at Goldfield, Nevada. The form is almost subcylindrical, pronotum almost discretely and rather sparsely punctate, antennae with joints four to eleven subequal, propleura coarsely punctate, each puncture with a small yellow hair. I can not agree with Horn in considering that *attenuatus* should be associated with *bachei* Lec. It is very desirable to study the genitalia of the different species, but the scarcity of specimens forbids any dissection at the present time.

The above species, as I view them, may be separated as follows:

Body winged	<i>angustus</i> Lec.
Body wingless	1
1. Pronotum distinctly strigose.....	<i>strigicollis</i> Horn.
-. Pronotum distinctly punctate	2
2. Body distinctly subcylindrical.....	<i>attenuatus</i> Lec.
-. Body more or less depressed.....	3
3. Antennae elongate in both sexes, slightly longer in the male; basal angles of the pronotum distinct.....	<i>stenotrichoides</i> Blais.
-. Antennae elongate in the male, distinctly shorter in the female; basal angles obtuse and slightly rounded.....	<i>obtusangula</i> , n. sp.

In the above species the color is brownish to piceous, legs more or less rufous with the abdomen darker rufo-piceous.

ADDENDUM

Mr. Ralph Hopping, of the Canadian Forestry Service, has very recently submitted to me a species of *Listrus*, collected at Vernon, B. C. It has proved to be an undescribed species to which I have given the name *provincialis*, n. sp. The description will in all probability appear in the *Canadian Entomologist* in the near future. The types will be placed in the National Collection at Ottawa. *Provincialis* should follow *difficilis* Lec. in the synoptical arrangement given above.