

that region. It is numbered 1535 and was collected in Los Angeles Co., Cal., by Mr. Coquillett. A specimen evidently belonging to this same species is in the U. S. National Museum from the same locality, but has lost its abdomen.

I have not seen the *Calioxys* (*C. rufitarsis*, *C. mæsta* and *C. tristis*) recorded by the Abbé Provancher.

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NEW SPECIES OF SPHENOPHORUS WITH NOTES ON  
DESCRIBED FORMS.

BY F. H. CHITTENDEN, SC. D.

In three earlier papers on this genus, published in the Proceedings of our Society,<sup>1</sup> the writer has treated as many groups. There remain to be reviewed several more or less perfectly defined groups and a number of isolated species and other forms which do not possess easily discernible characters indicative of their position in a natural arrangement of the entire series. In the present paper the simplest forms, based on the structure of the tarsal joints, will be considered first, and those forms in which the third joint of the anterior and sometimes median tarsi are widest will be discussed later. Some questions of nomenclature will be taken up, as economic workers frequently inquire in regard to these matters, and it is preferable to have these questions considered in a technical paper.

**Sphenophorus marinus**, new species.

Of similar form to *inaequalis*; smaller and less robust; surface opaque black, with antennæ, tarsi, and lateral margin of the elytra piceous.

Rostrum two-thirds as long as thorax, stout, moderately arcuate, strongly punctate in basal three-fourths, especially coarse at the base, and finely sparsely punctate at apex, which is very slightly dilated but compressed and prolonged posteriorly into an acute point, strongly dilated over scrobes but scarcely more compressed than at apex. Head strongly but somewhat sparsely punctate. Eyes with a fine reflexed posterior margin, separated from the head by a strongly impressed wide extra-orbital line.

Thorax longer than wide by about the shortest diameter of the apical constriction; posterior two-thirds with sides nearly parallel; base strongly arcuate. Surface very coarsely, moderately, deeply and very densely to confluent punctate, leaving a distinct but irregular elevated median line, not quite attaining either apex or base and occasionally slightly interrupted; a few punctures coalescing near sides posteriorly, forming

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<sup>1</sup> See Volume XII, p. 50, 1905.

a shallow fossa each side. Scutellum large subtriangular, concave at base, rounded at apex, nearly one-half longer than wide.

Elytra moderately acuminate; striæ moderately fine, deep, especially at base, with punctures much wider basally and not wider at apex. Intervals flat, subequal except third which is a little the widest, punctures large and placed at very irregular intervals except on first where they are smaller and twice as closely placed. Humeral and subapical callosities of moderate size, shining black and finely punctate, the latter prominent. Pygidium coarsely and deeply punctate.

Lower surface strongly and coarsely punctate, sparsely on metathorax and first abdominal segment. Legs finely punctate; tibiæ weakly sinuate on inner border, finely fimbriate, obliquely truncate at apices.

♂.—Pygidium wide and subtruncate at apex, with fringe of yellow hairs nearly uniform; ventral concavity distinct, shallow.

♀.—Pygidium narrow and rounded at apex, with hair normally in tufts at sides; first and second abdominal segments connate at middle, where the punctures are very sparse.

Length 4.8–6.0 mm.; width 1.9–2.4 mm.

Sea Isle City, N. J., June 10; Westville, N. J., collected by Mr. Charles R. Boerner, to whom we are indebted for this well-marked and interesting species. It is evidently maritime and probably very local.

*Type*.—No. 9449, U. S. National Museum. Cotypes in Mr. Boerner's collection.

This species is the smallest *Sphenophorus* occurring in the United States. The tarsal and tibial structure is similar to *parvulus* and *minus*, which also have the same extraorbital grooves. The coarse subconfluent thoracic sculpture alone is quite sufficient for the separation of this species. The elevated median line of the thorax, the large concave scutellum, and prominent subapical callosities are also important characters.

The three species which have been mentioned are related to the *venatus* group. They may be classified as follows:

Thorax and elytra of about equal width.

Surface with fine cinereous coating of argillaceous material; thorax densely, regularly reticulately punctate, median line absent or very thin. N. Y.—Ill., Fla.—Tex..... *parvulus* Gyll.

Surface with velvety brown coating; thorax sparsely, irregularly and coarsely punctate, median line absent or short. W. Pa.—Ill., Fla.—Tex..... *minus* Hart

Thorax distinctly narrower than the elytra.

Black without coating; thorax densely to confluent and very irregularly deeply punctate, median line long and broad. N. J. (coast), *marinus* n. sp.

***Sphenophorus graminis*, new species.**

Black, moderately shining without coating, of robust appearance due to the elytra being much wider than the thorax.

Rostrum less than two-thirds as long as the thorax, robust, moderately arcuate, much compressed, most strongly at the apex; base moderately wide, suddenly and strongly dilated over the scrobes with dilated portion angular, very feebly or scarcely conalicate; interocular fossa round, shallow, sometimes indistinct; impressed line more or less indistinct, scarcely longer than the width of the rostrum over the scrobes; apex with a shallow concave triangular space on anterior face, subacutely rectangular on posterior face; surface finely moderately and densely punctate, gradually coarser in basal half. Head feebly, very sparsely punctulate.

Thorax (without apical constriction) nearly as wide as long, apical half arcuate, apical constriction strong; base distinctly bisinuate; surface somewhat densely and finely punctate, punctures nearly uniform except along the median line where there is a small narrow smooth space of varying extent (sometimes nearly absent) and at the middle of the basal margin where they are a little coarser and denser. Scutellum feebly concave or nearly flat.

Elytra about one-third wider than thorax and scarcely one-fourth longer than wide, moderately narrowed at apex; striæ finely uniformly punctate, punctures not visible on the surface, sutural stria strongly curved outwardly at base; intervals flat, alternate in width, narrower ones finely uniseriately punctate, wider ones with two or three rows of similar punctures, antepenultimate interval depressed more or less strongly. Pygidium finely moderately densely punctate, each puncture with a short pale yellowish gray seta, apical tufts wholly wanting or exceedingly minute.

Lower surface finely, nearly uniformly punctate, punctures shallow and more dense than on thorax. Legs more sparsely and finely punctate than on thorax; tibiæ feebly sinuate on inner surface and sparsely fimbriate; anterior tibiæ with outer angle considerably prolonged. Anterior tarsi with third joint less than one-third wider than first.

♂.—Ventral concavity broad and shallow.

♀.—First and second abdominal segments connate or subconnate at middle. Pygidium comparatively broad.

Length 7-9 mm., width 2.8-3.8 mm.

The Dalles, Oregon, June 18, 19 (Hubbard and Schwarz); Laramie, Wyo. (Soltau); Salt Lake, June 25 (Hubbard and Schwarz), Salt Lake City, Utah, April 19 (Soltau); Cal. (coll. Ulke); Idaho (coll. Fall).

Observed by Messrs. Hubbard and Schwarz inhabiting the roots of a grass growing on dry sand hills at The Dalles, Oregon, sometimes a foot or so under ground.

*Type*.—No. 8966, U. S. National Museum.

The Wyoming and Utah specimens agree in having the abdomen proportionately narrower and the median smooth thoracic line and the apical tufts of the pygidium more distinct. This species is very generally labeled "*vomerinus*" to which it is related.

### *Sphenophorus subopacus*, new species.

Of nearly the same form as *vomerinus*, still duller black, punctuation finer and deeper and nearly uniform throughout. Rostrum less than half as long as thorax, narrow. Thorax very nearly uniformly punctate except near base, where it is more densely subrugosely punctate; smooth space very small, extending posteriorly from a point just in front of the middle. Scutellum not deeply sulcate. Elytra at base strongly sinuate and finely marginate, disk somewhat unequal; striæ very narrow, punctures indistinct, first and third striæ approximating at base; intervals flat, punctuation practically uniform, punctures same size as those of striæ; intervals 1, 3 and 5 wider than 4 and 6, 1 with four rows of punctures at base, 3 beyond, 3 and 5 with three rows of fine punctures, 2 and 4 with from one to three rows. The second and third intervals from the margin are strongly depressed as in *graminis*. Anterior tibiæ less dilated and not so prolonged laterally. In other respects there is so nearly an agreement of the type with *vomerinus* that a more elaborate definition is unnecessary, especially so in the absence of better material.

Length 9.5 mm., width 3.8 mm.

California (Ulke) two females.

*Type*.—In the Carnegie Museum at Pittsburg, Pa., co-type No. 8967, U. S. National Museum.

### *Sphenophorus monterensis*, new species.

Of very similar appearance to *graminis*, with the same shaped rostrum. Black, shining on ventral surface, opaque on dorsal.

Rostrum half as long as thorax, with distinct rounded interocular fossa and feebly indicated, wide, shallow sulcus; otherwise as in *graminis*.

Thorax two-thirds as wide as long, basal two-thirds subparallel, basal margin slightly bisinuate, apical constriction strong, surface somewhat densely and nearly uniformly finely punctate; a distinct smooth impunctate median line about as long as the width of the thorax and with extremities as near the apex as the base. Scutellum feebly concave.

Elytra about one-fourth wider than thorax; striæ fine, somewhat feebly punctate, sutural stria moderately curved at base; intervals (except third, which is slightly elevated near base) flat, alternate in width, narrow ones irregularly uniseriately punctate, wider ones irregularly triseriately. Pygidium finely densely punctate, with pale yellowish apical tufts.

Lower surface finely sparsely punctate, more coarsely and sparsely on metasternum and last ventral segment. Legs polished, finely and sparsely



punctate; tibiæ feebly sinuate on inner surface, moderately fimbriate, anterior tibiæ with outer angle acutely or moderately produced; anterior tarsi with third joint widely dilated, more than one-third wider than first joint.

♂.—Ventral concavity moderately deep, especially deep in metasternum. Pygidium scarcely subtruncate, sides broadly rounded.

♀.—First and second ventral segments with fine dividing line. Pygidium with concave area each side with strong median dividing line.

Length 8.5 mm., width 3.2 mm.

California: Monterey Co. (Koebele); San Diego Co. (Coquillett); "Cal." (Riley and Ulke); Long Beach, June 15 (Fall); Fresno, May 25 (Schwarz).

*Type*.—No. 8969, U. S. National Museum.

The very close resemblance of this species to *graminis* is remarkable, considering the difference in the tarsal structure. There is a tendency toward a second row of punctures on the narrower elytral intervals and the outer angle of the anterior tibiæ is of variable length. In one individual the legs are dark rufous. There is considerable variation also in the width of the third joint of the anterior tarsi, but these and other variations from the type are perhaps individual, although the presence of a larger series with definite localities may show that there are two species included under this name.

As to habits, the only available data are that it was collected by Mr. Schwarz associated with *S. ockreus* in wet ground on the banks of irrigating ditches, on the roots of a rush of unknown species.

### **Sphenophorus diversus, new species.**

Slender, black, with antennæ, portions of legs, apex of abdomen at sides, and margins of elytra, piceous.

Rostrum less than half as long as thorax, moderately arcuate and compressed, more strongly at apex than at base; apex flat on anterior face, rectangular on posterior aspect; at base fully twice as wide as at middle, strongly dilated above scrobes with acute angles; interocular fossa round and deep; scarcely canaliculate, and with impressed line faint, very short, about twice as long as the diameter of the interocular fossa. Surface coarsely but sparsely punctate, gradually becoming finer to the apex.

Thorax fully one-third as long as wide; apical constriction moderate; sides moderately arcuate. Vittæ somewhat distinctly indicated by smoother, more finely and sparsely punctate areas, elevated in their posterior half; median extending from base to apical constriction, narrowed at each end to about half the width of the scutellum, widely and somewhat suddenly dilated at a point behind the middle, and becoming confluent with the lateral vittæ just in front of the middle. Interspaces

in the form of two rows of six or more punctures gradually increasing in size to apical constriction, in posterior half with large, irregularly placed, and confluent, foveate punctures. In the posterior third there is also on each side a rather large oval slightly depressed area, with contiguous shallow punctures considerably smaller than those in the interspaces and much larger than the punctures of the sides, which are fine but distinct and sparse. Scutellum flat, shining, moderately declivous to base.

Elytra one-fifth wider than thorax, somewhat strongly narrowed to apex, where the surface is a little uneven. Striæ moderately fine and deep, finely and closely punctate (16-20 punctures on longest striæ); punctures short, oval on disc, round and shallow at sides. Intervals nearly equal in width and convexity; 1, 3, 5, and 9 partially biserially and very finely punctulate, others uniserially and scarcely less finely but less closely punctulate, 3 distinctly elevated in anterior half, 5 less distinctly; 8 and 9 considerably depressed and coated; humeral callosities small but well defined, subapical ones subtubercular. Pygidium very strongly, coarsely and densely punctate.

Lower surface strongly, coarsely, and moderately sparsely punctate, punctures not remarkably coarser on the sides. Legs a little less strongly punctate than middle of abdomen. Tibiæ sinuate, and finely fimbriate on inner surface, subapical spurs minute. Anterior tibiæ with inner spur acute and long, placed nearly at a right angle, outer angle slightly produced; middle tibiæ a little rounded at apex, posterior tibiæ obliquely truncate. Third joint tarsi: anterior one-fourth, middle one-fifth, posterior one-fifth+, wider than first joint.

♂.—Pygidium wider than long, broader and more broadly rounded at sides of apex, lateral tufts minute. Ventral surface much more uniformly punctate than in ♀, first and second abdominal segments weakly concave, third and fourth distinctly but sparsely punctate, last segment densely punctate and without finely punctate basal area.

♀.—Pygidium a little longer than wide, moderately narrowed and rounded at apex, strongly divided by a median carina, each side of which there is a large deep fossa; vestiture not visible, except at apex, where there are two minute tufts each side. Metasternum nearly flat, strongly divided at base, very sparsely but not coarsely punctate; first and second abdominal segments strongly convex, second and third with same punctation except in posterior third or half, where the surface is impunctate. Last segment strongly and coarsely punctate except at apex and a small median area near base, which are finely and densely punctate. Femora glabrous.

Length 8.5 mm. (♀)—6.0 mm. (♂); width 3.9 mm. (♀)—2.5 mm. (♂).

California (1 ♀, coll. Ulke); Pullman, Wash. (1 ♂, coll. Fall).

*Type*.—In Carnegie Museum at Pittsburg, Pa.; cotype, No. 8968, U. S. National Museum, a donation from Mr. H. C. Fall.

In its thoracic sculpture this species bears some likeness

to *ulkei*, but the punctuation of the elytral striæ, as well as that of the intervals, is without a parallel in our representatives of the genus; in short, the species does not display any great affinity to any others known to the writer.

***Sphenophorus nevadensis*, new species.**

Form similar to *vomerinus*, more depressed, shining black.

Rostrum two-thirds as long as thorax, interocular fossa distinct, elongate-oval, with fine impressed line reaching to dilated portion above scrobes. Thorax as long or nearly as long as wide, sides nearly evenly strongly arcuate, a little more strongly anteriorly. Elytra one-fifth wider than thorax and fully one-fourth longer than wide. Striæ deep with much stronger punctures than in *vomerinus* group, visible on surface, less obvious apically, and stronger to the sides, somewhat distantly placed; penultimate and antepenultimate striæ indicated by large deep punctures, middle of sixth stria usually similar; intervals 1, 3, and 5 slightly concave or flat, closely and finely punctulate, either in one or two rows, the others less closely uniseriately punctulate except antepenultimate (9) which is biseriata. Pygidium densely punctate, coarsely except at apex where it is much finer, vestiture wanting or very sparse. Lower surface punctuated more finely than on thorax. Legs nearly as coarsely, but more sparsely punctate than on thorax. Anterior tibiæ obliquely truncate at apex. Third joint tarsi: anterior  $\frac{1}{3}$ , middle and posterior  $\frac{1}{4}$ , wider than first.

Length 8.5-9 mm., width 3.2-3.8 mm. A small individual measures 7 mm.

♂.—As in *graminis*, with which the species agrees very closely in characters which to save repetition have not been mentioned.

♀.—Pygidium narrow, acuminate to apex where it is narrowly rounded.

California (Roberts); Nevada (Ulke).

*Type*.—No. 8975, U. S. National Museum. Cotypes in Carnegie Museum at Pittsburg, Pa.

In the punctuation of the elytral striæ this species is unique, resembling somewhat *retusus* and *subulatus* in both of which, however, the intervals are convex.

***Sphenophorus fallii*, new species.**

Of similar form to *arizonensis*, more shining; elytra rufopiceous. Rostrum shorter, more suddenly compressed at apical fourth; interocular puncture elongate, terminating in a strongly impressed line extending beyond the scrobes. Thorax more finely punctate. Elytral striæ interrupted by less rounded more or less subcordate punctures more closely set, about 18 to each stria. Lower surface with last segment coarsely and deeply punctate. Anterior tibiæ truncate; subapical spurs feebly developed. Anterior and middle femora fimbriate in middle half. An-

terior tarsi with third joint transverse cordate, twice as wide as first spongy pubescent on under surface.

♂.—Ventral concavity moderately deep. Pygidium with feeble median, dividing line; apical tufts minute.

Length 8.3 mm., width 3.2 mm.

Santa Fé, New Mexico, August, 1887 (coll. H. C. Fall).

Type.—No. 9726, U. S. National Museum, 1 ♂.

This form might readily pass as the male of *arizonensis*, of which I have seen only the female, but for the spongy pubescent lower surface of the third joint of the anterior tarsi which throws the species into a distinct group. The characters furnished in the description indicate the main differences. Otherwise the two are remarkably alike.

### *Sphenophorus subulatus*, new species.

Form slender, resembling *simplex*; general color polished black; antennæ piceous, and portions of legs more or less indistinctly piceous, dorsal surface sometimes piceous.

Rostrum three-fifths to four-fifths as long as thorax, somewhat feebly and uniformly arcuate, cylindrical, a little more compressed at base and narrowed at apex; apical fifth to third laterally subcarinate. Base somewhat feebly dilated, little more over scrobes, not canaliculate; interocular fossa inconspicuous, rounded; impressed line wanting or feebly indicated each side of scrobes, not extending to the fossa. Apex flat or slightly convex on anterior face.

Thorax about one-fourth longer than wide, nearly uniformly arcuate at sides to apical fourth, where it suddenly narrows to apex, the latter strongly constricted; surface more coarsely, sparsely, and deeply punctate than in *simplex*, with median smooth line half as long as thorax, extending from in front of middle and not attaining base; each side of median line the punctures are deeper and confluent. Basal margin nearly straight. Scutellum flat or channeled at middle.

Elytra one-fourth wider than thorax, one-half longer than wide, somewhat strongly narrowed to apex. Striæ half to nearly as wide as narrow intervals, coarsely and closely punctate, punctures encroaching on intervals gradually more strongly from sutural to lateral, where the striæ tend toward obsolescence. Intervals all convex, subequal except third, which is widest, alternately uniseriately and biseriately punctulate, 5 and 7 sometimes uniseriately. Pygidium coarsely and densely punctate, punctures becoming confluent at apex and at sides, glabrous except apical tufts at sides.

Lower surface coarsely and densely punctate, punctures deep, not varying conspicuously in size, except in the customary extreme places,

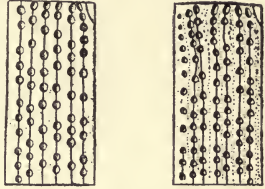


FIG. 19.—Sections of elytra, showing strial punctuation: *Sphenophorus arizonensis* at left, *fallii* at right,



those of sides being considerably larger than the middle on the third and fourth ventral segments. Legs strongly and somewhat finely punctate. Tibiæ densely fimbriate with short hairs. Third joint tarsi: anterior one-fourth, middle and posterior one-fifth, wider than first.

♂.—Ventral concavity somewhat faint, last ventral segment with large deep rounded fossa. Pygidium comparatively wide at apex, with sides somewhat broadly rounded.

♀.—Metasternum flat or nearly so, abdominal segments convex, the last narrowly transversely concave at the apex. Pygidium narrower at the apex and more broadly rounded than in ♂.

Length 8-9 mm., width 3.9 mm

New Mexico, 2 ♂ ♂, 1 ♀ (coll. Ulke). One male of this small series is much more finely punctate over the entire surface than the other two, otherwise it does not differ.

*Type*.—In the Carnegie Museum, Pittsburg, Pa. Cotype, No. 8970, U. S. National Museum (♂) through the courtesy of Dr. W. J. Holland.

This species is very different from any other *Sphenophorus* occurring in the United States, but three closely related forms in the National collection, from Mexico, display great similarity, evidence that the type may be a common one in Central America and that there may be many more species of this group in that region. The rostrum is more slender than in others of our fauna, while the anterior tibiæ are less dilated at the sides than in the *simplex* and *vomerinus* groups, and are very slightly angulate.

### ***Sphenophorus destructor*, new species.**

Of similar form to *zeæ*, proportions variable, but with an average width of four-tenths the length. Surface usually so thickly coated with dull clay-colored or pale brown argillaceous deposit that the punctuation, more especially of the elytra, is much obscured.

Rostrum three-fourths as long as thorax, moderately arcuate, nearly straight on middle half of anterior margin, feebly compressed in the middle third, thence widening gradually to the apex, which is subobtusely angled behind. It is slightly protuberant above the eyes, considerably dilated in front of the scrobes, and somewhat deeply and broadly channeled from the base to a little beyond the scrobes, this channel frequently filled with argillaceous deposit; surface rather deeply and densely punctate, at base coarsely. Head moderately finely and sparsely punctate.

Thorax a little longer than wide, posterior half with sides nearly parallel, anterior half strongly arcuate, moderately constricted at apex, strongly bisinuate at base; surface irregularly trivittate; vittæ variable, tending toward obliteration in some individuals, middle vitta irregular elongate fusiform, with an irregular, interrupted, shining, black, elevated line

extending from apex to near base, sometimes only half as long, rarely but slightly indicated; lateral vittæ sinuate, narrower than median, their most elevated portion showing in a very irregular much interrupted shining black line; surface of vittæ very coarsely, irregularly, rather sparsely, punctate, intervals still more coarsely sparsely punctate; a large shallow fossa each side of the apical half of the thorax and a similar deeper fossa each side of the base. There is usually an indistinct branch of the lateral vittæ. Scutellum opaque or subopaque, channeled.

Elytral surface comparatively even, with obscure punctuation. Striæ moderately, deeply, coarsely and remotely punctate, about 12 punctures on the sutural and next three striæ, so closely placed as to form at the base four small shallow fossæ between alternate intervals; intervals very irregular owing to the large elytral punctures, alternately very slightly elevated, elevated intervals closely uniseriately punctulate, the others half as closely punctulate, the third with a tendency to produce 2 rows of fine punctures. Pygidium rather coarsely, deeply and sparsely punctate, with short golden yellow hairs and short lateral apical tufts.

Lower surface very coarsely, sparsely punctate, at the sides scarcely different from the middle and the lower surface of the thorax; second, third and fourth ventral more finely, apex of last segment densely and coarsely punctate. Anterior tibiæ with inner apical tooth moderately long, subapical less than half as long and obtuse. Third joint of tarsi: anterior and middle about one-fourth or one-fifth wider than the first joint, of posterior tarsi scarcely wider.

♂.—Pygidium subquadrate. Ventral concavity broad and very shallow.

♀.—Pygidium distinctly narrowed to rounded apex. Metasternum, first and second abdominal segments flat, the last two connate or nearly so.

Length 7.0-9.5 mm., width 3.2-4.0 mm.

Atoka, Mo., June 7, (W. J. Moss); Texas (Belfrage, Riley); Georgia City, Mo. (C. B. Guinn); Stillwater, Okla. (A. N. Caudell); Medora, Kans., May 22 (Knaus); Anglesea, N. J., June 15 (C. Boerner).

*Type*.—No. 8971, U. S. National Museum.

At first sight this species might be taken for an aberrant form of *zeæ*, and this applies particularly to large individuals, but it is more nearly related to *callosus*, and occupies a position about midway between these two as regards the thoracic pattern. A somewhat striking character is the distinctness of the four thoracic and six basal elytral fossæ in clean well-marked individuals and the coarsely punctate elevated lines of the vittæ. The smallest individuals seen, *e. g.*, the eastern ones, are less strongly marked than the typical Texas and Kansas examples, approaching *callosus* in the sculpture of the thorax but differing by being proportionately stouter.

This species has been reported as quite injurious to corn

in portions of Missouri from 1884 to 1903, and to chufa (*Cyperus esculentus*) in Oklahoma.

**Sphenophorus sublævis**, new species.

Very similar to the above but distinguishable by its uniform dull black color due to the absence of argillaceous coating and by having much deeper, coarsely foveate punctures on the entire dorsal surface. The rostrum is more protuberant in front of the eyes, more strongly compressed, and the apex is acutely or subacutely angled posteriorly. The elevated portions of the thoracic vittæ are much wider, without elevated lines. The four fossæ are scarcely indicated. The elytral surface is much more irregular and the very deep and large strial punctures and more minute punctures of the intervals are conspicuous. The apical tibial spurs are very long as are the subapical spurs, the latter being nearly as thick and half as long in the anterior pair. Pygidium with much paler, scarcely yellow hairs. Sexual characters about as in *destructor*.

Length 9-10 mm., width 3.5-4.2 mm.

Indiana and Wisconsin (Wickham); St. Louis, Mo., July 10, 1873 (C. V. Riley); Champaign, Ill., April 23; Cook Co. Ills. (Hart).

*Type*.—No. 8972, U. S. National Museum.

**Sphenophorus callosus** Olivier. (Fig. 20).

*Calandra callosa* Olivier, Hist. Nat. des Ins., Vol. V., p. 92, Pl. XXVIII fig. 416, 1807.

*Sphenophorus sculptilis* Horn (*nec* Uhler) Proc. Am. Phil. Soc. p. 424 1873.



FIG. 20.—*Sphenophorus callosus*.

This species was united by Le-Conte<sup>1</sup> and Horn with *cariosus* Ol., but wrongly so, as I shall attempt to prove. Olivier's description reads in substance as follows:

Body black with dark cinereous coating. Antennæ brownish black, shining, cinereous at apex. Rostrum black, *dark cinereous at base*. Thorax uneven, "and one sees on the superior portion an elevation in the form of a cross, feebly marked." Elytra uneven, feebly variolate, marked toward the apex with a callous point, nearly spinose, blackish, shining.

Olivier's illustration is imperfect in that it is very crude, showing neither punctuation nor sculpture and the general impres-

<sup>1</sup> Rhynch. N. A., p. 425.

sion is that of a shining species, which was certainly not intended. The thorax is a little short, otherwise the form coincides with the species which is figured herewith.

The cinereous base of the rostrum is an important character, as it signifies that a considerable portion of the base is coated while in *cariosus* it is not. The cross-like elevation of the thoracic disc is aptly described as *feebly* indicated, in fact is requires a little imagination to discern it in many individuals; moreover, it is not shown in Olivier's figure. In the true *cariosus* the cross is black, shining and well-marked, and the cariniform base of the third elytral interval which is always present is so prominent as to attract the attention of the veriest tyro.

The type locality "Carolina" will answer for either species. North Carolina appears to be the metropolis of *callosus*.

### *Sphenophorus cariosus* Olivier.

*Sphenophorus sculptilis* Uhler, Proc. Acad. Nat. Sci. Phila., 1855, p. 416

As the original description of *sculptilis* may not be accessible to many, it is transcribed below together with italicized words of my own and brackets to indicate portions of the description which are not specific.

*Entirely black, elevated portions shining; thorax with a sphenoid, posteriorly acuminate, medial, and two undulating, prominent elevations. 8½ lines long to tip of rostrum. Baltimore.*

Black punctured; rostrum, rather robust, *finely punctured at base sulcated* [and dilated immediately in front of base; club of antennæ, whitish at tip; thorax round, constricted in front, and slightly dilated a little before the middle], densely and coarsely punctured at sides, and between the elevations, puncta becoming finer anteriorly; scutel deltoid, excavated; elytra with *two elevated*, interstitial lines, a *prominent* elongated tubercle each side behind the humerus, and a *round* one near the apex of each elytron, sutural lines slightly elevated; [the three medial, and subsutural ones a little punctured at base; pygidium somewhat coarsely punctulate, punctures becoming finer at base; legs finely punctulate, patella more coarsely so; a large deep fovea upon the base of the postpectus, posteriorly; venter with gradually enlarging punctures, increasing in size toward the base].

After carefully comparing several species with this description I have come to the conclusion, in the absence of a knowledge of the whereabouts of Uhler's type, which cannot be located and may be destroyed, that it was based upon a somewhat unusually large specimen of *S. cariosus*, which measure somewhat less than "8½ lines" including the rostrum. Horn, in his



synopsis, recognized *zeæ* Walsh as distinct from *sculptilis* Uhl., but while the former is correctly described, showing that he had the Walsh species, he states of the second; "Body above entirely covered with dense argillaceous coating, ochraceous or pale brownish in color," which is never true of *zeæ* in any specimens which I have seen. Nevertheless LeConte<sup>1</sup> united these two species, sinking *zeæ* as a synonym of *sculptilis*, at the same time that the name *callosus* was suppressed in favor of *cariosus*.

To place Uhler's description in shorter words, it means a species about three-fourths of an inch in length, including rostrum, which is sulcated and finely punctured at base, "with two elevated, interstitial lines, a prominent elongated tubercle each side behind the humerus, and around one near the apex of each elytron." The rostrum of *zeæ* is neither sulcated nor finely punctate at base. Moreover, no species which I have seen other than *cariosus* would be apt to be described in the terms of the first three lines of Uhler's description and at the same time agree to the characterization of the elytra.

The *Calandra callosa* of Olivier, according to the writer's interpretation, is entirely distinct from *cariosus*, as will be seen by reference to figure 20.

### Sphenophorus *zeæ* Walsh.

The name of this species, which was described in "The Practical Entomologist,"<sup>2</sup> and in the 3d Report of the State Entomologist of Missouri,<sup>3</sup> may now be restored to technical entomology, as it has never been quite dropped out of economic writings. The description, and above all the figure, undoubtedly from Walsh's type or cotype, is unmistakable.

### Sphenophorus *soltauui*, new species.

Body subfusiform, half as wide as long; subopaque black, elevated portions somewhat feebly shining, no trace of alutaceous coating.

Head deeply and rather densely punctate above the eyes, less distinctly and more sparsely on the vertex. Rostrum three-fifths as long as the thorax, irregularly feebly arcuate, considerably compressed; proximal fourth produced in front of the eyes, basal fourth variolately punctate, marked by a very short and fine median line (channel and interocular fossa wanting), strongly dilated at the sides, angles rounded; middle half of rostrum nearly straight and parallel as viewed from the side; apical fourth more compressed with inner angle not produced, obtuse.

<sup>1</sup> Rhynch. N. A., 1876, p. 425.   <sup>2</sup> Vol. II, p. 117.   <sup>3</sup> Page 59.

Thorax longer than wide, posterior three-fourths moderately arcuate-apical constriction very feebly, surface very coarsely, densely, unevenly punctate, punctures frequently confluent. The median vitta takes the form of an irregular smooth, unelevated space of varying length, and of a width about the same as an elytral interval; lateral vittæ absent. Scutellum sulcate with median line.

Elytral striæ irregularly, very deeply, coarsely, confluent punctate in the basal portion, becoming very narrow toward the apex. Intervals irregularly alternate in width and convexity, 1, 5, 7 uniseriately punctate except in the basal portion, third interval wider and distinctly biseriately punctate in basal half; intervals 2, 4, 6 more coarsely and sparsely punctate. Pygidium subtriangular, as long as wide at base; apex subacute, hairs whitish gray, apical tufts minute but distinct.

Lower surface moderately coarsely and moderately sparsely punctate. Anterior and middle tibiæ with the outer angle somewhat feebly prolonged. Anterior and middle tarsi with third joint strongly, of the posterior feebly, dilated.

Length 7.5 mm., width 3.8 mm.

Greeley, Colo., April 22 (Soltau); Iowa City, Ia., May 21 (Wickham); Northern Illinois (coll. Roberts); Texas (coll. Ulke); Pittsburg, Pa., August (1 ex., H. G. Klages).

*Type*.—No. 8973, U. S. National Museum.

### **Sphenophorus blanchardi**, new species.

Form moderately robust, resembling *scoparius* in size and proportions, general color subopaque black on dorsal, moderately shining on ventral, surface. Larger punctures filled with gray extraneous argillaceous material. Antennæ and tarsi slightly piceous, nearly black.

Rostrum two-thirds as long as thorax, moderately, nearly uniformly arcuate, except at base and apex, where it is perceptibly and about equally compressed. Base strongly dilated, fully twice as wide as at middle of rostrum, strongly and angulately dilated over scrobes; basal fossa large, deep and broad near head, usually ending in a distinct line beyond dilated portion of rostrum. Apex flattened on anterior face, usually concave, on posterior face more or less strongly and acutely produced. Surface strongly punctate, very coarsely at base and finely at apex.

Thorax about one-fourth longer than wide, moderately arcuate at sides; apex strongly constricted, with the extreme apical margin also strongly constricted on each side, the lower portion projecting beyond the upper. Surface very coarsely foveate-punctate, more finely on a slightly elevated area just in front of middle, and on two variable areas

(which resemble obsolete vittæ) on each side of basal half. The spaces separating these from the median area are most coarsely punctate. Basal margin strongly bisinuate. Scutellum broadly but not deeply channeled at middle.

Elytra one-fifth wider than thorax, one-third longer than wide, moderately narrowed toward apex. Striæ fine, very coarsely and sparsely punctate, with punctures nearly as wide as the intervals, which they distort. Intervals all convex except at base, strongly punctate; larger punctures foveate; 1 finely, closely, and irregularly biserially punctate (sometimes uniserially); 3 with two or three series of punctures in basal third or less and uniserial in remainder; 5 and 7 narrower than 3, but similarly punctate; 2, 4 and 6 sparsely foveate-punctate, punctures more than one-third larger than on 1, 3 and 5; remaining intervals except at base very irregular and obscured by coating. Pygidium much exerted, finely punctured in proximal portion; remainder coarsely, deeply, and irregularly punctate; golden yellow hairs forming tufts each side.

Lower surface finely and sparsely punctate, varying as usual in the genus; legs strongly but much more finely punctate, tibiæ distinctly sinuate and somewhat densely fimbriate, with short black hairs. Third joint of tarsi: anterior and middle one-third, posterior one-fifth, wide than first joint.

♂.—Ventral concavity moderate, punctuation variable, disposed to be coarser than in female. Pygidium truncate at apex, with sides rounded.

♀.—First ventral segment strongly convex, the last with distinct fossa. Pygidium much narrowed at apex.

Length 10.5–12.5 mm., width 3.9–4.8 mm.

Texas. Described from 3 ♂♂ and 1 ♀.

*Type*.—No. 8974, U. S. National Museum (♂). Cotypes in the collection of Mr. Frederick Blanchard, who has kindly divided his material with our National Museum.

This species does not suggest any other in our fauna which has come to my notice. The projecting lower portion of the apical face of the thoracic constriction or collar is apparently peculiar to this species.

### *Sphenophorus striatipennis*, new species.

Form of *costipennis*. General color red variegated with black, head and rostrum, median thoracic vitta, sutural intervals, abdominal segments, metepisternum, coxæ, knees, and tarsi black; somewhat weakly shining above, more polished on lower surface. Thoracic interspaces and elytral intervals with bright but light colored alutaceous coating. Rostrum less arcuate, not suddenly recurved and compressed in apical fourth; apex deeply concave on anterior face. Thorax less sinuate at base, median lobe more feebly prolonged; branch of lateral vitta less prominent. Elytral striæ fine and distinct, punctures small, distinct and

deep and closely set. Lower surface more strongly coarsely punctate, ventral segments, particularly 2, 3, and 4 more densely. Femora and especially tibiae more strongly fimbriate. Posterior tarsi same as middle, third joint strongly explanate, as wide as long, about twice as wide as first.

Length 9.5-12.5 mm., width 3.8-5.0 mm.

Chicago, Ill. (Chittenden); Indiana, Wisconsin, and Texas (U. S. N. M.); Marquette, Mich., July 14 (Hubbard and Schwarz); Spirit Lake, Ia., June (Wickham); Nevada and California (Ulke). Evidently somewhat rare.

*Type*.—No. 9727, U. S. National Museum.

The above description applies to the most distinct form of this species. There is, however, a color variation which does not seem deserving of a different name. It agrees with the typical form except in the fact that black is the predominating color; the vittae and intervals are all more or less shining black.

This species is quite closely related to *costipennis* but is distinct by the more fimbriate tibiae, wider third joint of the posterior tarsi, and stronger punctuation of the lower surface. The typical form is distinct by color alone, but the less strongly marked form is duplicated by a Michigan specimen of *costipennis* (1 in 300). This species as such was overlooked by Horn, as also by the writer, in considering species of the *perlinax* group. The former mentioned it, however, as a variety "with the upper surface red, with the sutural interval and the median vitta black. The under surface is red varied with black, and the legs also red with the knees black."

### *Sphenophorus æqualis* Gyllenhal.

This common, well-known species is quite different from *ochreus* Lec., the former being an eastern, the latter a western form; in fact, the two species are quite as distinct by many characters, more particularly by the punctuation of the elytra and the coloration of the thoracic vittae, as are either from *discolor* Mann. The principal differences may be expressed in tabular form, as follows:

Body covered with thick coating, subopaque on dorsal surface.

Thoracic vittae *pale*, usually buff, distinctly elevated; median not wider at base than at apex; lateral with branch more or less indistinctly indicated; interspaces and sides distinctly *deeply* somewhat irregularly punctate. Scutellum coated, pale.

Elytral striae with moderate *rounded* and deep punctures.

Metasternum, first and second ventral segment ♂ concave and villous at middle; interior surfaces of femora and tibiae ♂ strongly



- fimbriate. Anterior and posterior femora ♀ feebly fimbriate.  
 Atl. Sts.—S. Dak., .....*æqualis* Gyll.  
 Body covered with thin, less dense coating, shining throughout.  
 Thoracic vittæ *black*, less elevated; median wider at base than at apex; lateral without distinct indication of branch; interspaces and sides with *shallow* nearly uniform punctures. Scutellum not coated, shining black.  
 Elytral striæ with smaller shallow, *oval* punctures.  
 Metasternum, first and second ventral ♂ naked or feebly villous; interior surface of anterior and posterior femora ♂ feebly fimbriate as in ♀ *æqualis*. Posterior femora ♀ glabrous. Utah Mex. ....*ochreus* Lec.

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NEW CULICIDÆ FROM THE WEST INDIES AND CENTRAL AMERICA.

By D. W. COQUILLET.

The following new forms of mosquitoes were found among a very valuable collection made in the West Indies and Central America during the past summer by Messrs. August Busck and Frederick Knab, under the direction of Dr. L. O. Howard. Quite a large proportion of the species were bred from the larva state.

**Tæniorhynchus flaveolus**, new species.

Scales of proboscis yellow and with several black ones intermixed, those of the palpi mixed yellow and black, with a band of white ones at the sutures of the joints; palpi slightly widening at the apex; appressed scales of the occiput light yellow, the numerous upright ones brown. Body yellowish, scales of mesonotum and scutellum light yellow, the hairs black, scales of abdomen golden yellow, a few black ones on the first three and the last segment. Scales of legs mixed yellow and black, not forming distinct spots or bands, those on the apices of the joints of the middle and hind tarsi wholly black, on the broad bases of the last four joints white; claws of front and middle tarsi with a tooth under one of the claws, none under the other, hind tarsal claws simple. Wings hyaline, the scales oval, mixed black and yellow, not forming distinct spots. Length nearly 5 mm.

St. Thomas, W. I. A male specimen collected by Mr. A. Busck.

*Type*.—No. 8288, U. S. National Museum.

**Mansonia fascipes**, new species.

Distinguished by the coloring of the hind tarsi. Scales of palpi mixed