

## ON THE SPECIES OF SPHENOPHORUS RELATED TO PERTINAX OL., WITH DESCRIPTIONS OF OTHER FORMS.

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The series of descriptions of new species of *Sphenophorus* presented in this paper were, for the most part, prepared in the spring of 1903. Before the main work on this genus, which it is contemplated will be in the form of an illustrated revision, could be completed, press of other more imperative duties caused its almost complete abandonment. As a consequence the writer has not found time to bring together all of the matter desired to be presented on this topic. The present paper is in continuation of two others published in Volume IV of the Proceedings, pp. 128-137, which treated of species hitherto considered as *simplex* LeConte and *placidus* Say, respectively. Its presentation for publication at this time is made necessary because of the desirability of returning material which has kindly been loaned by various institutions and private collectors for study, and because it cannot now be foretold when opportunity will offer for the completion of the monographic work originally planned. This preliminary article will be followed by one or more additional contributions as rapidly as opportunity offers.

As with the several species that have been generally placed in collections as *placidus* Say, we find that *pertinax* Ol. readily separates into several undescribed forms in addition to those which were named by Dr. Horn in his paper on the Curculionidæ of the United States published in 1873 (Proc. Amer. Philos. Soc., vol. XIII, 1873, pp. 417-421.) The species of this group may be characterized as follows:

## PERTINAX group.

Rostrum arcuate, from three-fourths to the same length as the thorax, considerably dilated at base, channeled, interocular puncture at base terminating in a finely impressed line beyond the scrobes.

Thorax usually distinctly trivittate, occasionally subobsoletely so (*abrasus* and *maidis*); vittæ entire, subequal in length and width, median not forked anteriorly, extending nearly or quite from apex to base; lateral vitta with an outer branch extending from near the middle nearly to the base.

Elytral intervals unequal in width, and varying in convexity.

Third joint of anterior tarsi about twice (*i. e.*, more or less) as wide as the first joint; of the middle pair perceptibly narrower than the anterior; of the posterior pair one-sixth to one-half wider than the first with occasionally slight individual variation in the same species. For convenience of reference this may be expressed in the following formula: ant. 2+; mid. 2-2; post.  $\frac{1}{8}$ - $\frac{1}{2}$ .

The sexual characters are strongly developed, especially in the ♂ of many forms. Thus, in *ludovicianus* the metasternum and first abdominal segment are as deeply and widely concave as in the *æqualis* or *ochreus* group. The species are mostly large, from three-eighths of an inch in length to double that size.

Rostrum subcylindrical, slightly narrower at extreme base, angles rounded.

Elevated intervals irregular and interrupted; unelevated intervals interrupted by elevated shining black areas. Second abdominal segments of ♂ without transverse brush of setæ.

Thoracic vittæ distinct.

Lower surface coarsely punctate. Ventral concavity of ♂ moderately deep; metasternum with tuft of long, sparse, fine hairs nearly covering each side of posterior half. Tibiæ sparsely fimbriate with short bristle-like hairs. U. S.,

*pertinax* Olivier.

Lower surface more finely punctate. Ventral concavity of ♂ more shallow; metasternum with a few minute hairs each side along posterior margin. Tibiæ densely fimbriate with long hairs. Cal., Nev., Ore. . . . . *typhæ*, n. var.

Thoracic vittæ subobsolete. Cal. . . . . *abrasus*, n. sp.

Rostrum moderately, subequally compressed, posterior angles of apex acute or subacute, scarcely produced.

Thoracic vittæ with curved or sinuous outlines.

Second abdominal segment of ♂ with a short transverse brush of brown setæ; metasternum of ♂ with a lateral row of short setæ each side in concavity.

Elytra mostly opaque gray; odd intervals convex, black and shining; even ones thickly coated, flat except a narrow, more or less distinctly elevated, smooth black median line.

Rostrum about three-fourths as long as thorax.

E. U. S. . . . . *setiger*, n. sp.

Elytra mostly shining black; even intervals nearly as convex and prominent as odd ones.

Rostrum as long as, or five-sixths the length of, the thorax. Ia., Tex. . . . . *ludovicianus*, n. sp.

Elytra, except humeri and basal elevated portions of first and sometimes third intervals, covered with natural thick ochraceous coating which extends to the sides. Other intervals subequal. Body slender. Fla., *peninsularis*, n. sp.

Elytra with natural thin subsericeous gray coating, black lines between the stria punctures. Body robust, rostrum shorter. Mich.—Cal. . . . . *robustus* Horn.

Rostrum strongly compressed at apical fourth or fifth, and suddenly bent backward, anterior face of apex flat or slightly concave, posterior angles obtuse. Thoracic vittæ subparallel.

Elytral intervals alternately black or coated.

Thoracic vittæ moderately curved, nearly straight, moderately separated. Elytral intervals 1, 3, 5, and 7 long, broad and costiform, black and shining; 2, 4, 6, and 8 narrower, with distinct alutaceous coating. Scutellum elongate, concave. Anterior face of apex of rostrum more or less concave. First ventral segment of ♂ with small dense tuft of brown setæ each side, sometimes much abraded, metasternum sometimes with a few scattering setæ. E. U. S. and N. W. . . . . *costipennis* Horn.

Thoracic vittæ less elevated, feebly curved and sinuous. Intervals 1, 3, 5, and 7 with *elevated* portions narrower; elevated portion of 3 and 5 short and narrowed apically, of 7 still narrower or wanting. Scutellum flat, deltoid. Anterior face of apex of rostrum flat or feebly concave. Ventral segments 1 and 2 of ♂ nearly uniformly sparsely villous, last with long hairs. Mass., N. Y., Va., D. C. . . . . *villosiventris*, n. sp.

Elytral intervals all black and polished.

Thoracic vittæ more curved or sinuous, wider and less distinctly separated. Elytral intervals with alternate widest ones moderately elevated, narrower ones nearly or quite naked. Scutellum elongate, concave. First ventral segment and metasternum of ♂ with lateral tufts of brown setæ. Utah,

*levigatus*, n. sp.

Rostrum strongly, subequally compressed throughout, anterior face of apex deeply concave, posterior angles acutely produced.

Thoracic vittæ subobsolete, frequently confluent anteriorly. Lower surface scarcely less strongly punctate at the middle than at the sides.

First ventral segment of ♂ feebly concave. Kans., Ala., S. C. . . . . *maidis*, n. sp.

### **Sphenophorus pertinax** Olivier.

*Calandra pertinax* Olivier, Entom. Hist. Nat. des Insectes, v, No. 83, p. 90, pl. 28, fig. 417, 1807.

*Sphenophorus pertinax* Gyllenhal, in Schönherr's Gen. et Sp. Curc., iv, p. 938, 1837; Horn, Proc. Am. Phil. Soc., pp. 418, 419, 1873.

*Sphenophorus truncatus* Say, Descr. N. A. Curc., p. 22, 1831; Compl. Writings, Lec. Ed., i, p. 288.

*Sphenophorus ? canaliculatus* Boheman, in Schönherr's Gen. et Sp. Curc., VIII, 2, p. 253, 1845.

Length 11-15 mm., width 4.2-5.5 mm.

This species is correctly named in most collections, although it frequently happens that the label specimen is quite otherwise, *e. g.*, *ludovicianus*. The outline illustration of the rostrum (fig. 10, a), which is about four-fifths the length of the



FIG. 10.—Outline views of the rostrum in *Sphenophorus*: a, *pertinax*; b, *ludovicianus*; c, *costipennis*; d, *maidis*; e, *villosiventris*—all greatly enlarged (original).

thorax, will facilitate its separation from species] with which it is confused, *costipennis* among others.

The distribution extends from New York City to Utah, but southward the typical form does not appear to have been collected beyond the District of Columbia. It is a very common species and occasionally injurious to corn.

With erstwhile varieties eliminated as species, *pertinax* still exhibits considerable variation. The merely colorational varieties are scarcely worth indicating. Some specimens have the general color dull rufous, with the vittæ and alternate intervals less distinctly elevated.

#### Var. *australis*, new variety.

Larger than typical *pertinax*, with slightly longer rostrum. Surface coating more dense, ochraceous, gray-brown or cinereous. Median thoracic vitta narrower at base than at apex, in which respect it differs from *typhæ* which it greatly resembles. Third elytral intervals obsolete or interrupted. in apical half or more, fifth still shorter and more interrupted. Mesepisternum normally completely covered with coating, but becoming abraded with age.

New Orleans, La., October 26 (Soltau); "Louisiana," July 10, 1873 (C. V. Riley); Arizona (1♀ so labeled, possibly by error).

*Type*—No. 8220, U. S. National Museum.

Cinereous-coated individuals are from Texas (Roberts) and western Kansas (Popenoe).

The writer is disposed to consider this form as a geographical race.

#### Var. *typhæ*, new variety.

Of similar appearance to variety *australis*; moderately shining black, with sparser dull ochraceous coating. Thoracic vittæ less elevated, wide; median at base as wide or wider than at apex; suddenly and widely dilated just in front of middle, sometimes contiguous to the lateral. Elytral intervals with the third and fifth at least three-fourths shining black, all unelevated intervals with small elevated areas, mostly at the sides, co-

alescing with the larger elevated ones. Tibiæ densely fimbriate with long hairs.

♂.—Ventral concavity shallower than in *pertinax*, more sparsely punctate, punctures shallow along the middle; metasternum with a few minute hairs each side along posterior margin; first abdominal segment apparently without hairs.

California: Los Angeles (Koebele); Long Beach, July; S. Monica and Riverton, May 24 (Fall); Reno, Nev., July 2 (Wickham).

*Type*.—No. 8221, U. S. National Museum.

Reared from roots of *Typha latifolia*, September, 1886, at Los Angeles by Mr. Albert Koebele.

I have designated this form as a variety, since there is some doubt of its specific distinctness. It is certainly entitled to racial rank, or might more properly be classed as a subspecies.

### **Sphenophorus abrasus**, new species.

Form like that of *pertinax*, with which it closely agrees in many characters which will, therefore, not be repeated; color moderately shining black, with dark gray alutaceous coating, very sparse, visible on the thorax only at the sides and at middle of base and in portions of the elytral intervals. Rostrum two-thirds as long as thorax, feebly punctate even at base. Thorax, except a small strip at sides and a very small space each end of middle, which are coarsely punctate, nearly uniformly smooth, sparsely and finely punctulate; vittæ strongly confluent, nearly obsolete, surface having the appearance of being abraded. Elytral intervals alternate in width, but less in convexity, discal ones, 2, 4, and sometimes 6, more covered with elevated black areas than with gray alutaceous deposit; 7 and sometimes 6 less convex and more nearly covered with deposit. Lower surface very sparsely, finely and somewhat indistinctly punctate, scarcely more coarsely on last segment.

♂.—Ventral concavity shallow, as in *typhæ*; apex of pygidium more rounded at sides; anterior and middle femora sparsely fimbriate on inner surface; posterior femora subglabrous.

♀.—Abdominal surface very finely and sparsely punctate; pygidium with apex more narrowed, sides distinctly curved inward; anterior femora nearly glabrous, posterior glabrous; middle femora with very minute short hairs.

Length 12 mm., width 4.5 mm.

California (1♂, 1♀, Coll. Roberts).

*Type*.—No. 8222, U. S. National Museum. Types kindly presented by Mr. C. H. Roberts.

More nearly related to *pertinax* than to *typhæ*, and quite distinct from either by the nearly obsolete vittæ which are more strongly confluent than in extreme forms of *ludovicianus* or *maidis*.

**Sphenophorus setiger**, new species.

Similar to *ludovicianus*, but smaller and proportionately more robust. General color black, with cinereous or gray-brown alutaceous coating. Rostrum shorter, three-fourths to four-fifths as long as thorax, otherwise scarcely different. Elytra more nearly opaque than shining; striæ more distinct; intervals unequal in width and convexity, smaller (even) intervals less developed, and variable in convexity; elevated shining black portions as follows: 2 a thin, slightly interrupted line half as long as 1; 4 a little wider and longer; 6 short or wanting; sometimes 1, 3 and 5 are the only intervals that are black. Lower surface less strongly punctate.

♂.—Rostrum a little shorter and more slender, thorax scarcely narrower anteriorly than in ♀; ventral concavity deep and broad; metasternum with a row of short brown setæ just within the lateral margin, a few minute setæ each side of the first abdominal segment, second with a transverse brush of longer dark ochraceous hairs. Fossa of last ventral segment of variable depth, usually more shallow than in *ludovicianus*.

♀.—Scarcely larger than the male, otherwise as in *ludovicianus*, which is true of most other obvious characters that have not been described.

Length 10.0–12.5 mm., width 4.0–5.2 mm.

Highland, N. J., July 2 (Chittenden); "N. J.;" Ithaca, N. Y. (Chittenden); Massachusetts (Ulke); Burlington, Vt. (Roberts); Coney Island, N. Y. (Roberts); "N. Y.;" Maryland and District of Columbia (Ulke); Virginia Beach, Va., July 16 (Hubbard and Schwarz); Pennsylvania; Iowa; Illinois (Ulke); "Dakota" (Ulke); Texas.

*Type*.—No. 8223, U. S. National Museum.

**Sphenophorus ludovicianus**, new species.

Of the same form as *pertinax*, but larger, with all elytral intervals black and convex. General color polished black, with a natural ochraceous alutaceous coating which covers the thoracic interspaces, elytral striæ, inner surface of the tibiæ, the pygidium, and the larger punctured areas.

Head finely sparsely punctulate. Rostrum the same length as, or scarcely shorter than, the thorax, slender, moderately dilated at base and at apex, moderately compressed, a little more strongly at the apex, moderately arcuate, more distinctly toward apex; surface finely punctulate, at base more coarsely and distinctly; base distinctly channeled with distinct interocular puncture, the whole forming a lanceolate depression terminating apically in a short impressed line.

Thorax a little longer than wide, strongly arcuate at the sides, moderately constricted at apex, basal half subparallel but somewhat constricted at extreme base; surface with three feebly or moderately elevated, entire, nearly smooth, broad vittæ; median vitta strongly and suddenly dilated just in front of middle, the apical half forming a wide cuneiform or triangular space, basal half narrower toward base; lateral vittæ nearly as wide

at basal half as the dilated portion of the median, rather feebly separated from the median by the foveate interspaces. Scutellum broadly, sometimes feebly sulcate.

Elytral striæ distinctly punctate; intervals alternating in width but equal or nearly equal in convexity, surface smooth, shining, faintly, minutely, and sparsely punctulate. Pygidium coarsely and strongly punctate, clothed with short bristly reddish hairs, becoming more dense toward the apex and forming tufts at the sides; apex truncate in both sexes.

Lower surface coarsely, sparsely punctate at the sides; second, third fourth, and anterior half of last abdominal segments faintly punctulate at middle. Legs finely punctulate.

♂.—Body more slender, thorax narrower anteriorly; rostrum more slender, just perceptibly shorter and with apex less acute. Metasternum and first abdominal segment deeply broadly concave at middle, with a long row of short brown bristly hairs each side within the concavity; second abdominal concave on the anterior portion with the more elevated portion perfectly curved and bearing at its summit a transverse brush of dark bristly hairs; last segment also concave, forming between its middle and the posterior margin a deep or moderately deep fossa, coarsely punctate interiorly and with a row of smaller punctures near the posterior margin.

♀.—Metasternum slightly concave, abdomen convex, last segment nearly flat at apex.

Length, ♂ 11–14 mm., ♀ 15–16 mm.; width 4.5–6.0 mm.

New Orleans, La., March 11, 14, October 26 (Soltau); "Louisiana;" Texas. The geographical distribution is evidently limited to the Gulf region, and the center of greatest abundance is probably in the western Gulf States near the seaboard.

*Type*.—No. 8224, U. S. National Museum.

Distinct from all other species of the genus on account of its longer rostrum (fig. 10, *b*), and from related species by its subequally convex elytral intervals. It is the largest North American species outside of the *equalis* group.

Say's description of *pertinax* fits this species, as well as the true *pertinax* of Olivier, but his *interstitialis* is different, nor does Horn's interpretation of Say's *interstitialis* apply, since the latter states that the body beneath is as coarsely punctured at the sides as at the middle.

### **Sphenophorus peninsularis**, new species.

Form similar to *setiger*, but distinctly more slender. General color black and with an abundant clay-colored natural coating covering a large portion of the dorsal and ventral surfaces. It covers the apical constriction except a transverse band, narrower than the head, which joins the median vitta, also the elytra, except the humeri and anterior half of the sutural and third elytral intervals.

Rostrum fully five-sixths as long as the thorax, at apex slightly more dilated, and slightly subacutely produced on the posterior face. Thoracic vittæ about as in *setiger* but more widely separated, posterior third of median very narrow. Elytra without subapical callosity, striæ finely punctate, intervals feebly convex except anterior half of sutural and third, which are a little more prominent. Lower surface subopaque or feebly shining, faintly, rather coarsely punctate in thoracic region, more faintly in abdominal region. Natural coating completely covering the mesepisternum, metepisternum and metepimeron, sides of the metasternum and posterior portions of the abdominal segments.

Length 14 mm., width 4.8 mm.

Jacksonville, Fla. One ♀ and one imperfect specimen, a donation to the National collection by Dr. Wm. H. Ashmead.

*Type*.—No. 8227, U. S. National Museum.

### **Sphenophorus robustus** Horn.

*Sphenophorus robustus* Horn, Proc. Am. Phil. Soc., pp. 419, 420, 1873.

Most closely allied to *setiger* and *peninsularis*, but of more robust form, and differing also by the more arcuate rostrum, which is a little more compressed and truncate at the apex with the inner or posterior angle acute. The thoracic vittæ are more elevated; median vitta distinctly dilated at middle, posterior portion broad and attaining the base, lateral vittæ slightly sinuous internally, gradually from apex to base, lateral branch feeble. Elytra finely, distinctly striate and punctate; intervals flat, subequal; surface evenly clothed with a thin cinereous or plumbeous subsericeous coating.

♂.—Ventral concavity feebly concave, nearly as coarsely punctate as at the sides.

♀.—Normal, with ventral punctures smaller and sparser.

Length 11–14 mm., width 4.5–5.5 mm.

This species ranges from Indiana and Michigan through Wisconsin, Minnesota, and western Kansas to California. It is a northern form not occurring in the East. Nothing appears to be known of its habits, references to *robustus* and its injuries to corn being due to a distinct species, my *S. maidis*.

### **Sphenophorus costipennis** Horn.

*Sphenophorus costipennis* Horn, Proc. Am. Phil. Soc., p. 420, 1873.

Length, 7–12.5 mm.; width, 3–4.5 mm.

This species, with *villosiventris* eliminated, should be easily distinguished by the characters furnished in the table. The female is not so readily separated. In the structure of the rostrum these two forms exhibit a very slight difference. The average size is a little less than *pertinax*. There is considerable variation as regards dimensions and color, which, however, do



not indicate geographical races. The rostrum (fig. 10, *c*) is somewhat variable in contour.

The material examined shows this to be the most northern form in our fauna. It occurs commonly from the Atlantic to the Pacific, from Massachusetts through our most northern States and Ontario, Canada, to Winnipeg, Manitoba, and Kamloops, B. C.

### **Sphenophorus villosiventris**, new species.

Form similar to *costipennis*; black with humeri, antennæ, tarsi and some other portions of the legs and of the ventral surface piceous or reddish; surface coating brownish gray, subsericeous, somewhat dense, especially on apical portion of elytra.

Rostrum perfectly straight in middle three-fifths of anterior face, apical fifth suddenly and strongly bent backward. Thoracic vittæ moderately elevated, subparallel, median little wider near middle. Scutellum deltoid, flat. Elytral striæ closely punctate; alternate intervals narrow, slightly elevated, third narrowing in posterior half, vanishing before attaining the apex, fifth striæ narrower and shorter, seventh coated, apical tubercles inconspicuous, narrow. Lower surface with very shallow punctures. Pygidium with longer hairs than in *costipennis*.

♂.—Metasternum scarcely concave, with a few scattered setæ. First ventral segment moderately concave, coarsely punctate, punctures with short setiform hairs; second abdominal finely punctate, punctures with short and finer hairs, last segment scarcely more coarsely punctate at base than second to fourth, with long hairs.

♀.—Does not appear to differ from *costipennis* by any sexual characters except those of the pygidium.

Length, 10–12 mm., width, 3.7–4.4 mm.

Buffalo, N. Y.; Ithaca, N. Y. (Chittenden); Ft. Monroe, Va. (Hubbard and Schwarz); Long Island, Massachusetts, Maryland and the District of Columbia (Ulke).

*Type*.—No. 8225, U. S. National Museum.

This is a most peculiar species, although to outward appearance merely *costipennis* with weakly elevated elytral intervals. It apparently combines the characters of several species, having a similar rostrum (fig. 10, *e*) to *lævigatus*, thoracic vittæ much as in *costipennis*, elytra between *peninsularis* and *setiger*, while the hirsute ♂ abdomen is very like that of the *æqualis* or *ochreus* group.

### **Sphenophorus lævigatus**, new species.

Of similar form to *costipennis*, but smaller, more slender, about two-fifths as long as wide, and with elytral costæ less prominent. Color deep shining black, antennæ, tibiæ and tarsi dark piceous; alutaceous coating cinereous, very thin and sparse like a fine bloom, showing more or less dis-

tinctly between the interspaces, feebly at the apices of the elytra, on the pygidium and in the larger surface punctures, often nearly wanting.

Head moderately sparsely finely but distinctly punctulate. Rostrum three-fourths as long as the thorax, slender, strongly compressed, moderately dilated at base, a little stronger over the scrobes, gradually feebly dilated toward apex; moderately arcuate, more strongly and nearly equally on the posterior margin; on the anterior surface protuberant at basal fourth, nearly straight on middle half and more strongly curved and compressed at the apical fourth; apex rounded anteriorly, obtusely angled posteriorly; surface finely sparsely punctulate; punctures larger and stronger at base, which is deeply narrowly channeled with interocular puncture well defined.

Thorax nearly one-fourth longer than wide, moderately constricted at apex, vittæ broad, strongly elevated, entire, subparallel; lateral broadly branched; intervals coarsely, densely punctate, transversely subrugose in some individuals. Scutellum elongate, broadly concave.

Elytra deeply striate, striæ interrupted by moderately large rounded punctures, 20-24 on the first two discal striæ; intervals rather feebly alternate in width and in convexity, the first, third and fifth finely feebly punctulate, first and third biserially, fifth biserially only at base, the other intervals scarcely less elevated, also polished black, distinctly and finely uniserially punctate. Pygidium sparsely coarsely and deeply punctate, with short yellowish white hairs and with the usual apical tufts pale yellowish.

♂.—Ventral surface less coarsely punctate than in *costipennis*; prosternum sparsely punctate, last segment more coarsely. Metasternum and first ventral segment broadly feebly concave, metasternum with a few short dark brown hairs each side of the posterior margin, first ventral with a broad longitudinal row each side, converging posteriorly.

♀.—Ventral surface much more finely punctate, the punctures very fine and sparse on the prosternum and middle of the first to fourth abdominal segments.

The sexes do not differ in size or in general appearance.

Length, 10-11 mm., width, 3.6-4.2 mm.

Salt Lake City, Utah, June 14 (Hubbard and Schwarz).

*Type*.—No. 8230, U. S. National Museum.

Readily distinguished from *costipennis* by the nearly total absence of natural alutaceous coating, the deeply punctate, scarcely costiform elytra, pale pygidial vestiture and the larger tufted areas in the ventral concavity of the ♂.

### **Sphenophorus maidis, new species.**

Body two-fifths as wide as long, of robust appearance because of the subquadrate thorax which is nearly as wide as the elytra; general color black or piceous, moderately shining; alutaceous deposit on unelevated surfaces

inconspicuous, appearing to be normally dark rufous or piceous velvety when the extraneous argillaceous covering does not persist.

Rostrum three-fifths the length of the thorax, considerably arcuate, strongly subequally compressed, apex prolonged at the posterior angle with an acute spine, producing the appearance of greater curvature of the inner surface, base feebly protuberant, moderately dilated; anterior face of apex broadly deeply concave; surface minutely punctate, more distinctly and densely at base, base moderately deeply channeled with distinct deep interocular puncture and short impressed line.

Thorax longer than wide, fully three-fourths as long as the elytra, sides usually widest just in front of middle, anterior third suddenly and very strongly arcuate and constricted at apex, posterior two-thirds or three-fourths subparallel, or gradually narrowing to the base which is feebly bisinuate. Vittæ feebly elevated, tending toward obsolescence, moderately finely but distinctly and sparsely punctate, more coarsely and densely at the ends; median vitta extending from a fine line and rapidly widening to a point just in front of the middle where it is broadly dilated, then more abruptly narrowed, extending in a narrower line to near the base; lateral vittæ sinuous with a tendency to become confluent with the median in the apical half, generally a little wider in basal half but narrower than the median, branch wide but ill-defined; interspaces and surface at sides coarsely foveate-punctate, punctures becoming confluent, especially posteriorly at sides. Scutellum deeply broadly concave.

Elytra little wider than the thorax; striæ usually deep and well defined, distinctly closely punctate; intervals with first, third and fifth elevated, with two or more series of rows of fine punctulation; first or sutural with basal third triseriately, posterior two-thirds biseriately punctulate; third widest and most elevated, with four or five rows of fine punctulations; fifth biseriately punctulate; seventh little or not at all more elevated than the remaining intervals; intervals 2, 4, 6, 8, as also 7, more coarsely and closely uniseriately punctulate. Pygidium deeply, coarsely and rather sparsely punctate, with sparse golden yellow hairs proceeding from the punctures and forming a short tuft each side, frequently abraded.

Lower surface coarsely and rather densely punctate, scarcely less strongly at the middle than at the sides, punctures largest at the middle of the metathorax. Punctures of the metepisterna (side pieces) more or less confluent. Second, third and fourth abdominal segments nearly uniformly punctured throughout, like the legs.

♂.—First abdominal segment very feebly concave; pygidium truncate at apex.

♀.—First ventral scarcely different; pygidium narrowed and rounded at apex.

Aside from the differently shaped pygidium and the slightly shorter and less compressed rostrum there is little difference between the sexes.

Length, 10-15 mm., width, 4.5-6.0 mm.

<sup>Type loc</sup>  
 Augusta, Kansas (E. L. Williams); Riley Co., Kans. (P. J. Parrott); Florence, Kans.; Dadeville, Ala. (S. M. Robertson); Wetumka, Ala. (F. S. Earle); Columbia, S. C. (L. O. Howard); Ballentine, S. C. (J. Duncan); Texas (Ulke, 1 ex.); "Mich." (Knaus).

*Type*.—No. 8226, U. S. National Museum.

A very injurious species, destructive to corn in both larval and adult stages in the localities given, except Texas and Michigan.

Owing to the somewhat general confusion of *maidis* with *robustus* and *pertinax*, especially in economic literature, it has been included in the table of the *pertinax* group, although it possesses quite obvious characters which might justify its removal to a class by itself. Viewed from the dorsal surface, it bears a greater resemblance to *scoparius* than to any other species. The rostrum (fig. 10, *d*) is unique in this group. In a natural arrangement the last mentioned species would follow together with *cariosus*, each constituting a distinct group.

There are two singular species which so greatly resemble others of the *pertinax* group that they may properly be described in this paper, although in reality they do not, on account of their tarsal characters, fall in the same class. A third form, which displays no affinity to any other group completes the list of descriptions.

#### UNCLASSIFIED SPECIES.

#### *Sphenophorus incongruus*, new species.

Superficial appearance of *costipennis*, more slender, black with light ochreous coating, covering thoracic interspaces, elytra except three intervals and four callosities, the larger punctures on sides, and the mesepimera.

Rostrum two-thirds the length of the thorax, moderately arcuate and compressed, a little more strongly at basal and apical fourths, anterior face of apex flat, posterior face suddenly bent forward, interocular puncture distinctly rounded, producing a strongly obtuse angle.

Thorax one-fourth longer than wide, posterior two-thirds subparallel. Vittæ polished black, narrow, moderately elevated, continuous, subparallel; median slightly dilated in front of middle; lateral as wide in basal half as median where dilated, at which point they are narrow with strong curvature on the medial (?) side, branch feebly indicated. Interspaces wide. Scutellum polished, deeply concave.

Elytral striæ very thin, with small punctures remotely placed. Intervals 3 and 5 and sutural half of 1 moderately shining, feebly elevated in apical half or more, 1 with a single row of fine closely placed punctures

along the suture, 3 and 5 either uni- or bi-seriately punctulate, humeral and subapical callosities well marked, the latter long.

Ventral surface sparsely foveate-punctate, coarsest on metasternum, sparse and finer on first, still finer on second to fourth ventral segments.

♂.—Pygidium truncate, ventral concavity moderately shallow.

♀.—Pygidium a little more narrowed to apex, which is moderately rounded.

Length, 9-11 mm., width, 3.3-3.8 mm.

Wisconsin (1♂, coll. Roberts); Maryland (1♂, 1♀, coll. Ulke.)

*Type*.—No. 8228, U. S. National Museum. Mr. Ulke's specimens are in the Carnegie Museum, Pittsburg, Pa. The Wisconsin example has been kindly given to the National Museum by Mr. C. H. Roberts.

In some purely superficial characters there is great resemblance between this species and *costipennis*, and *villosiventris*, but the singular construction of the rostrum precludes its classification with those species, while the tarsal structure prevents its being placed in the *pertinax* group. The third joints of all the tarsi are very little wider than the first. The club of the antenna is wide, the funicular joints very narrow, and the pedicel is very wide and rounded. The antennal structure of preceding species is radically different, the club and pedicel being comparatively smaller and the funicular joints larger, thus preventing their being grouped together.

### **Sphenophorus robustior**, new species.

Of similar appearance to *robustus* but still more robust, and shorter, with shorter rostrum and less elevated vittæ. Black with much gray coating above.

Rostrum three-fourths the length of thorax, strongly subequally compressed, bent backward in apical third where it gradually enlarges to the apex, which bears a small, moderately deep, rounded concavity, posterior face at apex subobtuse. Base rather broad, with interocular puncture usually not clearly defined.

Thorax with vittæ feebly elevated, somewhat coarsely and densely punctate; median not attaining base, lateral with lateral branch variable. Scutellum smaller than in *robustus*. Elytra deeply striate, finely punctate; intervals 3 and 5 wider, remainder subequal in width; 1 strongly elevated, 3 and sometimes 5 slightly elevated and black apically. Intervals 1, 3, 5 and 7 biseriately punctulate except at base, remainder uniseriately and a little more coarsely and not so closely punctulate.

♂.—Pygidium pentagonal, with pale gold hairs scarcely extending out of the punctures. Lateral tufts minute. Lower surface moderately coarsely punctate; ventral concavity moderate.

♀.—Pygidium narrow, rounded at apex; punctures deeper, hairs scarcely visible; lower surface more finely punctate than in *robustus*.

Length, 10–11.5 mm., width, 4.5–4.8 mm.

Cook Co., Ill.; “Ills.” (Forbes and Hart).

*Type*.—No. 8229, U. S. National Museum. Types kindly presented by Messrs. Forbes and Hart. Cotypes in collection of Illinois State Laboratory of Natural History.

This species has been compared with *robustus* merely because of the superficial resemblance of the two. As a matter of fact the two species do not belong to the same group. The coarse punctation of the vittæ and the finer punctation of the elytra alone would distinguish them even without the peculiar tarsal structure, which is similar to *incongruus*.

### **Sphenophorus pontederiæ**, new species.

Form similar to *venatus*, about one-third as wide as long, general color dull black without alutaceous coating.

Rostrum four-fifths the length of the thorax, slender, nearly perfectly cylindrical, moderately dilated at base, a little more above the scrobes, dilated portion rounded, moderately rather narrowly canaliculate, interocular puncture rounded, usually deep; surface somewhat sparsely and finely punctulate except basal portion. Head sparsely punctulate, nearly smooth.

Thorax longer than wide, moderately arcuate, gradually narrower to the apex, apical constriction not strong; disc densely coarsely and very deeply punctate, the punctures frequently confluent. Vittæ broad shining, feebly elevated, and finely sparsely punctate; median vitta bifurcate inclosing an apical fossa and extending in a faint line through fossa but not attaining the base of the thorax, broadly dilated at and in front of the middle; lateral vittæ extending from the forked portion of the median vitta with which they are confluent and curving around the expanded portion of the median vitta to basal margin of thorax, being partially interrupted at apical third. Scutellum polished, moderately concave.

Elytral surface somewhat unequal, finely striate, striæ moderately coarsely punctate, punctures gradually finer to apex; intervals nearly flat, distinctly or slightly alternating in width and scarcely in convexity, very finely uniseriately punctulate. Pygidium coarsely punctate, hairs golden yellow, comparatively long, particularly about the apex where they extend beyond the lateral tufts.

Lower surface coarsely and densely foveate-punctate, nearly uniform at sides and middle, punctures largest, becoming confluent on the metasternum, also on last segment where they form a small fossa at apex; first and second abdominal segment divided by a faint sutural line. Legs long, finely sparsely punctate.

♂.—Metasternum and first abdominal segment feebly and narrowly concave at middle, second ventral very feebly. Pygidium feebly rounded at apex.

♀.—Metasternum nearly flat. Pygidium a little more distinctly rounded at apex.

Length, 9-11 mm., width, 3.5-4.4 mm.

New Orleans, La. (H. Soltau, R. W. Shufeldt); "Louisiana"; St. Lucie, Fla., and Savannah, Ga. (Hubbard and Schwarz); Texas (1 ex.)

Reared August, 1883, by Mr. Albert Koebele from larvæ found on the roots of pickerel-weed (*Pontederia cordata*) in July.

*Type*.—No. 7907, U. S. National Museum.

A single example, from New Orleans, has the punctured surface of the dorsum, a considerable portion of the lower surface of the thorax and small irregular areas on the abdomen coated with a shining ochreous integument like that of *æqualis*.

A very distinct species, showing no apparent affinity to any other form. From *venatus* or "*placidus*," with which it has been confounded in many collections, it may be distinguished by its naked body; long, cylindrical rostrum; with rounded apex; longer legs; more narrowed thorax; broader thoracic vitæ; divided apical fossa, and ventral punctuation as well as sexual characters. The tarsal structure is very similar to that of the *venatus* group.