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A REVISION OF THE GENUS *PRISTOCERA*
IN THE AMERICAS (HYMENOPTERA, BETHYLIDAE)

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WITH FIVE PLATES

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No. 4 — *A Revision of the Genus Pristocera in the Americas*
(Hymenoptera, Bethylidae)¹

By Howard E. Evans

INTRODUCTION

The species of *Pristocera* are among the better known and more commonly collected Bethylidae. They are relatively large, and the males are often taken by sweeping low vegetation in fields and open woodlands. The females are less commonly collected, since they are apterous and closely associated with the soil. The larvae develop as external parasites of wireworms (Elateridae) and are among the few known parasites of those insects.

There has been no treatment of the North American species of *Pristocera* since the early and very inadequate studies of Ashmead (1893) and Kieffer (1914). The Neotropical species were covered in part by Cameron (1888) and by Kieffer (1914), but these authors made several generic misassignments. The present treatment does not pretend to be definitive, but it may at least serve to point out that the genus is larger than had been appreciated, and that much further collecting is needed in the tropics and subtropics.

Pristocera is in many ways one of the most tiphiid-like of the Bethylidae: the males have a relatively full venation and the general facies of Tiphinae, while the females are apterous like those of several other subfamilies of Tiphidae. However, since most female Bethylidae are winged and much like the males, it is difficult to believe that the family was derived from a group with wingless females. Reid (1941) finds the thorax of wingless female Bethylidae such as *Pristocera* to be basically similar to that of certain Tiphidae. Doubtless there has been parallel evolution in the two groups, with genera which attack subterranean or cryptobiotic larvae bearing much resemblance.

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indication of the abbreviation by which each is designated in the text:

Academy of Natural Sciences of Philadelphia (ANSP)
American Museum of Natural History, New York (AMNH)
British Museum (Natural History), London (BMNH)
California Academy of Sciences, San Francisco (CAS)
California Insect Survey, Berkeley (CIS)
Canadian National Collections, Ottawa (CNC)
Carnegie Museum, Pittsburgh, Pa. (CM)
Cornell University, Ithaca, N. Y. (CU)
Florida State Plant Board, Gainesville (FSPB)
H. K. Townes Collection, Ann Arbor, Mich. (HKT)
Illinois Natural History Survey, Urbana (INHS)
Kansas University, Lawrence (KU)
Kansas State University, Manhattan (KSU)
K. V. Krombein Collection, Arlington, Va. (KVK)
Museum of Comparative Zoology, Cambridge, Mass. (MCZ)
University of Arizona, Tucson (UA)
University of California, Davis (UCD)
United States National Museum, Washington (USNM)

BIOLOGY OF THE GENUS

Pristocera armifera (Say), a common species throughout eastern United States, is the only American species to have been studied. Hyslop (1916) found a larva feeding on the ventral surface of the abdomen of a larva of *Limonius agonus* (Say) (Elateridae) near Brattleboro, Vermont. This wireworm was found about six inches deep in a corn field, where the wireworms were doing serious damage. The parasite larva reduced its host to an empty skin and then attached itself (in a rearing tin) to a second wireworm "by inserting the mouth parts in the sternum of the third abdominal segment and lay appressed to the ventron of the host with the head directed caudad" (see Hyslop's figure 2). The parasite also consumed most of the second host and then spun a silken cocoon 9 mm. long and 3.5 mm. in diameter. Thirty-three days later (on August 30) a male *Pristocera armifera* emerged from this cocoon. Hayes (1927) repeated Hyslop's observations in Kansas, again obtaining an adult during the same season; in this case the wireworm was tentatively identified as *Aeolus elegans* (Fabr.). Hyslop's specimen is in the collection of the USNM, and I have confirmed its identity as *Pristocera*

armifera. There is also a specimen of this species in the collection of Robert Fouts from East Windsor Hill, Conn., labeled "parasite of *Limoni* larva (H. L. Parker)."

Miwa and Sonan (1935) reared *Pristocera formosana* Miwa and Sonan from the elaterids *Melanotus tamsuyensis* Bates and *Agonischius obscuripes* Gyllenhal in Formosa. Their paper is in Japanese and I have not read it. Yasumatsu (1955), in his review of the Japanese species, records *P. japonica* from an "unknown elaterid larva." There is a good possibility that all species of *Pristocera* will be found to attack elaterid larvae.

Yasumatsu reports a pair of *P. formosana* taken "while they were flying in copula." I have seen four different pairs of North American *Pristocera* taken in copula (three different species); one of these is labeled "on window," another "on wooden wall in old sawmill." Apparently the male flies with the female in somewhat the manner of certain Tiphidae and Mutillidae, but more data are needed on this point. Since I have seen about 500 male *Pristocera* and only four taken with females, I cannot believe that they remain together in flight very long.

STRUCTURE AND TERMINOLOGY

Because of the pronounced sexual dimorphism in this genus, the sexes are treated separately both here and in the keys and descriptions. The abbreviations used in the text are listed at the end of this section.

Males. — Males are fully winged and usually black in color; they vary in length from about 4 to 14 mm., individual species often exhibiting much size variation. In the descriptions, length of the fore wing (LFW) is employed, as it can be measured more accurately than body length. The mandibles have either four or five teeth; these are numbered one to five starting with the apical (outermost) tooth. The clypeus is short, broadly truncate or somewhat emarginate, and has a median carina. The eyes have minute setae and in a few species long, conspicuous setae; the eyes usually converge somewhat below. Length of the head (LH) is measured from the vertex crest to the median apical margin of the clypeus, width of the head (WH) at the maximum point, including the eyes. Width of the front (WF) is measured at its minimum point, usually toward the bottom of the eyes. Height of the eye (HE) is measured at its maximum in lateral aspect. The width of the ocellar triangle (WOT) is measured across and including the posterior ocelli.

while the ocello-ocular line (OOL) is measured from a lateral ocellus to the nearest eye margin. The ocelli vary little in size within the genus, the species being largely diurnal fliers. The occipital carina is complete although situated well back of the vertex crest. The antennae are elongate, 13-segmented; measurements are given for the third and eleventh segments only, as these are typical of the basal and apical flagellar segments. The antennae are typically filiform, but they may be weakly serrate or moniliform (Figs. 48-51).

The term thorax is employed to mean the functional thorax or alitrunk. The pronotum has an anterior collar followed by a more or less vertical anterior face and finally a dorsal, posterior portion called the disc. The shape and sculpturing of the pronotal disc are of much importance in species discrimination. In all species there is a transverse impression paralleling the posterior margin of the pronotum. The mesonotum has the notauli strong and complete or nearly so, as well as a strong transverse groove at the base of the scutellum. The propodeum has a dorsal portion called the disc, a sloping posterior declivity, and vertical sides. The disc has a basal, more or less triangular portion, called simply the basal triangle, which is usually marked off by a depression or carina, sometimes both. The disc has a median carina which usually becomes indistinct shortly before reaching the declivity; there may also be a transverse carina at the edge of or slightly down on the declivity. The posterior part of the propodeal disc is covered with sculpturing. The mesopleurum is punctate and has a small callus above, which is subtended by a depression and which leads anteriorly into a longitudinal carina. The tarsal claws have a basal swelling and two additional teeth, such that they are indistinctly tridentate or trifid (Figs. 55-60). The wing venation is typical of the tribe, with the discoidal vein of the fore wing always being present at least in some measure, the discoidal cell more or less closed in most species.

The genitalia are of striking form and show excellent specific differences (Figs. 1-4, 9-31, 36-41). The most lateral, apical structures are the parameres. Mesad of these are the volsellae, which terminate in a rigid digitus (which generally fits into a concavity in the paramere) and a more mesal, apparently movable and somewhat knobbed cuspis. The aedoeagus is of very complex structure and can scarcely be described or figured in all its intricate detail; it is conveniently considered to consist of three sets of "valves" (see, for example, Fig. 4). The ventral valves are the shortest and are of simple structure. The middle

valves usually extend beyond the ventral valves and may be blunt apically (Fig. 11), acute (Fig. 12), and sometimes very complicated (Fig. 29). The third set of valves, the dorsal valves, extend beyond the middle valves and form the apical parts of the aedoeagus; sometimes there are two lobes, which may be connected (Fig. 4) or unconnected (Fig. 11), at other times there are four lobes (Fig. 10) or even more (Fig. 28). All in all, the genitalia provide an abundance of characters of importance, and it is a good procedure to examine the genitalia routinely in this genus.

Females. — Females are completely apterous and without tegulae, and show corresponding reductions in the thorax as well as adaptations for digging in the soil. Reid (1941) has discussed and figured the thorax of the related genus *Mangesia*, from Africa. The females vary in length from about 4 to 9 mm., with individuals of a given species showing much size variation and the females running smaller than the males. The eyes are small but have at least several facets and may have more than can be conveniently counted (more than 50). The known American species all have 4-toothed mandibles. The clypeus is carinate medially, the antennae short and usually somewhat incrassate. The head is slightly longer than wide. Length of the head (LH) is measured from the median apex of the clypeus to the median crest of the vertex, in full front view; width of the head (WH) is measured at the mid-point of LH. The occipital carina is obsolescent dorsally. Ocelli are absent.

Length of the thorax (LT) is measured from the anterior end of the pronotal disc (omitting the collar) to the posterior end of the propodeum. The pronotal disc is longer than wide; its width is measured at its maximum, which is at or near the posterior margin. The mesonotum is measured exclusive of the anterior, transversely depressed portion. The propodeum extends around each side of the mesonotum to about half the length of the latter; behind the mesonotum it is strongly constricted and then once again expanded. The total length of the propodeum is measured from the anterior end of these projections to the point of articulation with the abdomen (gaster). The minimum and maximum widths of the propodeum are also measured and compared. The disc of the propodeum is usually smooth and polished and is margined laterally by a delicate carina. The mesopleura are large and form the widest portion of the thorax. The femora are compressed, the middle tibiae strongly spinose. The claws have a single, weak tooth.

The following is a summary of the abbreviations used in the text:

HE: height of eye (maximum, lateral view)

LFW: length of fore wing

LH: length of head (including clypeus, not mouthparts)

LT: length of thorax (excluding collar but including propodeum)

OOL: ocello-ocular line

WF: width of front (at minimum point)

WH: width of head

WOT: width of ocellar triangle (including lateral ocelli)

X: times

TAXONOMY OF AMERICAN SPECIES

The American species of *Pristocera* form a somewhat heterogeneous lot, and cut across several of the characters established by Yasumatsu (1955) for separating the subgenera *Pristocera* and *Neopristocera* Yasumatsu. All of them do, however, lack the deeply divided subgenital plate of the males of *Pristocera sensu stricto*, and the male genitalia are consistently different from those of the species of *Pristocera sensu stricto* that I have examined. Although the females of the two groups cannot presently be distinguished, I am inclined to recognize the two subgenera. However, the name *Acrepyris* Kieffer applies to the same group as *Neopristocera* Yasumatsu and has priority. All of the American species are assignable to the subgenus *Acrepyris*, although some of them (particularly *sinaloa* n. sp.) come very close to *Pristocera sensu stricto* in all respects other than the male terminalia. The subgenus *Pristocera* is treated briefly below in order to clarify its differences from *Acrepyris*.

Nineteen American species can currently be assigned to *Pristocera* (*Acrepyris*), though there may still be undiscovered species, especially in Central America. Several species described in *Pristocera* or referred to *Pristocera* by Kieffer (1914) do not properly belong there. I have seen the types of most of these species and hope to treat them in future papers. In the meantime I shall merely list these species and indicate the genera to which they belong. Species here reassigned to *Pseudisobrachium* Kieffer are: *burchellana* Westwood (Brazil), *coxalis* Cameron (Panama), *crassicornis* Westwood (Brazil), *haemorrhoidalis* Westwood (Brazil), and *rufiventris* Kieffer (Brazil). Species here reassigned to *Apenesia* Westwood are: *columbana* Westwood

(Columbia), *fulvicollis* Westwood (Brazil), *microchela* Kieffer (Mexico), *photophila* Ogloblin (Argentina), and *punctatus* Cameron (Mexico).

Key to Subgenera of Pristocera (Males)

- Subgenital plate divided all the way to its base (Fig. 7); genitalia with the digiti in the form of broad, truncate plates, aedoeagus slender and tapering, its parts closely consolidated (Fig. 1); flagellum with short, subrecumbent setulae and also with some erect setae which stand out above them; claws with middle ray close to outer ray and subparallel to it (Fig. 55) *Pristocera* Klug
- Subgenital plate entire, at most weakly emarginate (Figs. 5, 6, 8); genitalia with the digiti in the form of slender, curved rods, aedoeagus complex, with three sets of valves which are not closely consolidated (Figs 2-4, 9-31, 36-41); flagellum with suberect, bristling setulae, most species without erect setae which stand above the pubescence; claws variable (Figs. 56-60) *Acrepyris* Kieffer

Subgenus **PRISTOCERA** Klug

Pristocera Klug, 1808, Mag. Gesell. Naturf. Freunde Berlin, 2: 49. —Kieffer, 1905, *In* André, Spec. Hymen. Eur. Alger., 9: 287. —Kieffer, 1914, Das Tierreich, 41: 453-470 (key to spp. of world). —Yasumatsu, 1955, Jour. Fac. Agri., Kyushu Univ., 10: 233-249 (Japanese species). —Benoit, 1957, Explor. Parc Nat. Albert, Mission DeWitte, fasc. 88, pp. 46-55 (Central African spp.).

Type species. — *Bethylus depressus* Fabricius, 1804, Syst. Piez., p. 237 (monobasic).

Subgeneric characters (males). — Antennae short or of moderate length, flagellum with subrecumbent pubescence and also with at least a few longer, erect setulae; eyes glabrous; pronotum variable, with or without transverse rugosities, with or without a transverse impression paralleling the posterior margin; propodeum without a transverse carina margining the disc behind; claws bifid or indistinctly trifid, somewhat variable but always with the tooth elongate and more or less parallel to the outer ray; subgenital plate deeply divided to the base; parameres of genitalia rather elaborately modified, in most species quite long; digiti broad and truncate apically; aedoeagus relatively slender and with the parts closely consolidated (Figs. 1, 7, 55).

Remarks. — This subgenus occurs in the Palearctic, Oriental, and Ethiopian regions. I have studied the type species and several unidentified African and Oriental species. Benoit (1957) has provided descriptions and illustrations of the propodeum

and terminalia of several African species. I have seen females of *depressa* and two other species, but like Yasumatsu (1955) I can find no characters for separating them from females of the subgenus *Acrepyris*. This subgenus does not occur in the Western Hemisphere and will not be treated further here.

Subgenus *ACREPYRIS* Kieffer

Acrepyris Kieffer, 1905, *In* André, Spec. Hymen. Eur. Alger., 9: 249.

—Kieffer, 1914, *Das Tierreich*, 41: 236, 418.

Neopristocera Yasumatsu, 1955, Jour. Fac. Agri. Kyushu Univ., 10: 248 (proposed as subgenus of *Pristocera* with *P. japonica* Yasumatsu as type species). New synonymy.

Type species. — *Epyris reticulatus* Kieffer 1904 (= *Pristocera armifera* Say, 1828) (monobasic and original designation).

Subgeneric characters (males). — Antennae rather long, filiform, submoniliform, or weakly serrate, flagellum densely clothed with erect or suberect pubescence which may be short or long, one species with erect setae which stand out above this pubescence; eyes with or without hairs; pronotum smooth or transversely rugose, always with a transverse impression at or paralleling posterior margin; propodeum with or without a transverse carina margining the disc behind; claws with a broad, weak basal tooth and two additional rays which may be well separated or close together and subparallel, the inner ray short or rather long; subgenital plate simple, undivided, its apical margin rounded, truncate, or emarginate; genitalia with parameres short or fairly long, variously lobed or excavated but not modified as in *Pristocera sensu stricto*; digiti slender and curved; aedoeagus with three sets of valves, ventral valves in the form of slender plates, middle valves blunt or acute, exceeding ventral valves except in *armifera*, dorsal valves lobate or greatly expanded apically (Figs. 2-6, 8-54, 56-60).

Remarks. — This subgenus occurs throughout temperate and tropical North and Central America and also occurs in Japan, the Philippines, and Java. I have seen no specimens from the West Indies or from South America, although two species are known from Panama and doubtless enter northwestern South America. Several South American species described in *Pristocera* actually belong elsewhere (see list on a previous page). I would expect *Acrepyris* to have evolved in North or Central America during the Tertiary, when this area was cut off from South

America. The ancestral stock was doubtless *Apenesia*, a genus well represented in this area, some members of which approach *Acrepyris* rather closely. An early invasion from North America to Asia may have given rise to the more highly evolved subgenus *Pristocera*, while a much later invasion may have resulted in the east Asian species of *Acrepyris*. The fact that the Asian species of *Acrepyris* are few in number and rather homogeneous in structure suggests that the group may have had its origin in North or Central America, where there are many more species and much more structural diversity.

I have studied specimens of *japonica*, the type species of *Neopristocera*, and find this species very similar to the American forms. The genitalia of this species are shown in Figure 3; it will be noted that the aedoeagus and parameres are shaped differently than in any of our species, but the differences are not striking. The African species placed by Benoit (1957) in *Neopristocera* are not congeneric with *japonica*, *armifera*, and their allies. The synonymy of *reticulatus* Kieffer, type species of *Acrepyris*, with the common North American species *armifera* Say is discussed under that species.

There are two specimens of *P. japonica* in the U. S. National Museum from Moorestown, New Jersey, labeled "from Tiphia 6-6, ship't 5-6-34." Doubtless these were brought in during the importations of parasites of the Japanese beetle. There is no evidence that this species is established in the United States, and it is not included in the key below.

Despite the fact that the species of *Pristocera* (*Acrepyris*) are the largest in size of American Bethylidae, the genus is a difficult one. The most reliable characters are to be found in the male genitalia, and persons encountering difficulties in the key which follows are advised to examine the genitalia and compare them with the figures. The tarsal claws and shape and sculpture of the pronotum provide important specific characters, but these differences are not always easy to express in words; furthermore, a certain amount of intraspecific variation occurs in both characters. Unfortunately, the nineteen American species do not fall into clear-cut species groups. There are certain species centering around the common eastern species *armifera* (species 1-8), others centering around the hairy-eyed species *hyalina* (species 11-17), but the limits of these groups are ill-defined and there are several species not closely allied to either group or to each other. The females of only five of the nineteen species are known.

*Key to species of Pristocera (Acrepyris) in the Americas**Males*

1. Claws with inner ray (or tooth) well separated from outer ray and not larger than outer ray (if somewhat thicker then abruptly truncate and much shorter) (Figs. 57-60); aedoeagus of variable form but with the ventral valves elongate and overlapping the middle valves, the dorsal valves not abruptly and broadly expanded apically as below (Figs. 2, 4, 9-12, 18-21, 29-31, 36-41) 2
- Claws with inner ray arising very close to outer ray, subparallel to it and actually larger than outer ray (Fig. 56); aedoeagus of unusual form, the ventral and middle valves both very short and not overlapping, the dorsal valves remarkably expanded apically (Figs. 27, 28) 18
2. Mandibles unusually straight, the lower margin but little curved, the five teeth in a strongly oblique series (Fig. 54); basal flagellar segments conspicuously serrate in profile (Fig. 48); apical lobes of aedoeagus somewhat boot-shaped (Fig. 12) (Carolinas and Florida to New Mexico) 10. *atra* Klug
- Mandibles more distinctly curved and with the four or five teeth in a less strongly oblique series (Figs. 32-35); basal flagellar segments not or indistinctly serrate in profile (Figs. 49-51); aedoeagus not as above 3
3. Propodeum long for the genus, the dorsal surface about as long as wide; propodeum polished and weakly sculptured behind the basal triangle; aedoeagus of unusual form in that the middle valves are hooked dorsad, the dorsal valves hooked ventrad, closely embracing the middle valves (Figs. 2, 31); size small for the genus (LFW 3.7-5.0 mm.) (Guerrero, Mexico) 7. *oriplana* Kieffer
- Propodeum short, the dorsal surface considerably wider than long (at least 1.1 X as wide as long); propodeum rather coarsely sculptured; aedoeagus not as described above; size variable (LFW 3.2-9.0 mm.) 4
4. Pronotum with at least a few more or less distinct transverse rugae, and with a generally smaller number of setigerous punctures than below; eyes glabrous or with minute setae; aedoeagus with the middle valves blunt apically (Figs. 4, 9, 11, 29, 40), or if acute somewhat separated (Figs. 10, 41) 5
- Pronotum with smooth contours except transversely depressed posteriorly, with a large number of setigerous punctures which tend to be somewhat transverse, but without transverse rugae; eyes with short to fairly long setae; aedoeagus with the middle valves acuminate, closely associated apically and forming a sharp wedge between the somewhat bulbous apical lobes of the dorsal valves (Figs. 18-21, 30, 36-38) 11
5. Wings with a yellowish tinge and prominently banded; parameres of genitalia broadly, abruptly truncate apically (Fig. 4); antennae

- light yellowish-brown and legs in large part of this color; apical half of abdomen rufous (Panama and Costa Rica) 8. *erythropoda* (Cameron)
- Wings hyaline or lightly clouded, not strongly banded; parameres longer than above, not broadly truncate apically; color rarely as above 6
6. Pronotum weakly and irregularly transversely rugulose, without a transverse ridge which stands out prominently above the rugae; antennae very long and slender, segment eleven at least 3.5 X as long as thick 7
- Pronotum with a transverse ridge before the posterior depression which stands out strongly above the rugae; antennae generally shorter, segment eleven at most about 3 X as long as thick 10
7. Mesopleurum strongly polished and with small, well separated punctures; apical lobes of aedoeagus directed somewhat laterad (Figs. 29, 41) 8
- Mesopleurum with large, subcontiguous punctures; apical lobes of aedoeagus directed mesad (Figs. 9, 40) 9
8. Punctures of mesopleurum very small, separated by more than their own diameters; basal triangle of propodeum large, bordered by carinae and a shallow depression; apical lobes of aedoeagus large, close together, middle valves acute, simple (Fig. 41) (Wyoming and Utah to California) 3. *californica* n. sp.
- Punctures of mesopleurum larger, separated by mostly less than their own diameters; basal triangle of propodeum indistinct; apical lobes of aedoeagus slender, well separated, middle valves blunt, of complex structure (Fig. 29) (central Mexico) 6. *otomi* n. sp.
9. Pronotum rather elongate and with sides of disc weakly concave as seen from above (Fig. 43); pubescence of flagellum unusually coarse, setulae of antennal segment eleven two-thirds as long as width of segment; aedoeagus with middle valves extending beyond apex of ventral valves, apical lobes of dorsal valves thick, strongly reflexed (Fig. 40) (Carolinas, Florida, Kansas) 2. *fraterna* n. sp.
- Pronotum shorter and with sides nearly straight (Fig. 42); setulae of antennal segment eleven generally about half as long as width of segment; aedoeagus with middle valves not extending beyond apex of ventral valves, apical lobes of dorsal valves flap-like, directed mesad but not downward (Fig. 9) (eastern United States, west to Dakotas, Colorado, and Texas) 1. *armifera* (Say)
10. Collar and anterior face of pronotum very smooth and polished; transverse ridge of pronotum very abruptly declivous to posterior impression; apical lobes of aedoeagus very slender and extending far beyond remainder of aedoeagus (Fig. 11) (Arkansas) 5. *bridwelli* n. sp.
- Collar and anterior face of pronotum with some sculpturing, not as strongly or extensively polished as above, transverse ridge also less sharply set off from posterior depression than above; apical lobes

- of aedoeagus extending only slightly beyond other structures, connected by a membrane (Figs. 10, 39) (Texas and Arizona to Oaxaca) 4. *cockerelli* n. sp.
11. Pronotum of moderate length, disc somewhat roundly produced anteriorly, generally measuring more than half as long as mesoscutum along midline (Fig. 44); apical lobes of aedoeagus simple, moderately bulbous (Figs. 21, 36-38); claws with the inner ray (tooth) variable, but never broad and abruptly truncate (Figs. 59, 60) 12
- Pronotum very short, transverse, anterior margin of disc forming a rather even arc, disc generally measuring less than half as long as mesoscutum along midline (Fig. 45-47); either with inner ray of claws abruptly truncate (Fig. 58) or with the apical lobes of the aedoeagus strongly bulbous (Fig. 20) or variously modified (Figs. 18, 30) 15
12. Flagellar pubescence very long, longest setulae of antennal segment eleven about .8 as long as width of segment; eyes with only short setae; apical lobes of aedoeagus somewhat thicker than below (Fig. 21) (Guatemala) 14. *nebulosa* n. sp.
- Flagellar pubescence short or moderately long, setulae of antennal segment eleven not over half as long as width of segment; eyes (except in rubbed specimens) with some fairly long setae on upper part; apical lobes of aedoeagus more slender than above (Figs. 36-38) 13
13. Propodeum with sculpturing rather irregular, transverse striations indistinct; setulae of antennal segment eleven about .4 as long as width of segment; aedoeagus with middle valves extending three-fourths the distance from apex of ventral valves to apex of dorsal valves (Fig. 37) (Morelos and state of Mexico) 13. *tenochca* n. sp.
- Propodeum with strong, rather regular transverse striations behind; setulae of antennal segment eleven not more than .3 as long as width of segment; aedoeagus with middle valves reaching only about half the distance from apex of ventral valves to apex of dorsal valves, not extending between the apical lobes of the latter (Figs. 36, 38) 14
14. Clypeus not emarginate; apical lobes of aedoeagus very slender (Fig. 38) (San Luis Potosi, Mexico) 12. *intermedia* n. sp.
- Clypeus with a broadly V-shaped apical emargination; apical lobes of aedoeagus moderately thick (Fig. 36) (southern half of Mexico) 15. *varidens* (Cameron)
15. Eyes with only very short setae; inner ray of claws sloping outward, subparallel to outer ray, so that the claws are somewhat bifid (as in Figs. 55, 58) (central Mexico, Guatemala) 16
- Eyes with some rather long setae above (except in rubbed specimens); claws dentate, tooth short and erect, well separated from outer ray (as in Fig. 60) (southern United States and northern Mexico) 17
16. Inner ray of claws acute; setulae of antennal segment eleven .5 X as long as width of segment; parameres simple (Fig. 22); apex of dorsal valves of aedoeagus deflected ventrad (Fig. 30) (Orizaba, Mexico) 9. *orizabae* (Cameron)

- Inner ray of claws broad and truncate (Fig. 58); setulae of antennal segment eleven .25 X as long as width of segment; parameres excavated and lobed on margins (Fig. 26); apex of dorsal valves of aedoeagus not deflected ventrad (Fig. 19) (Guatemala) 17. *rugifrons* (Cameron)
17. Anterior margin of clypeus more narrowly produced than below, median portion truncate or weakly concave; setulae of antennal segment eleven .2-3 X as long as width of segment; wings hyaline or weakly infuscated; apical lobes of aedoeagus in the form of twisted flaps (Fig. 18) (Louisiana, Texas, New Mexico) 11. *hyalina* Brues
- Anterior margin of clypeus broadly produced and with a broadly V-shaped anterior emargination; antennal pubescence very fine, almost velvety, setulae of segment eleven about .15 X as long as width of segment; wings of most specimens heavily infuscated except apically; apical lobes of aedoeagus strongly bulbous (Fig. 20) (Chihuahua and Arizona) 16. *chihuahua* n. sp.
18. Flagellar pubescence bristling and of moderate length, flagellum without erect setae which extend above the pubescence; middle and hind tarsi whitish basally; median apical lobes of aedoeagus exceeding lateral lobes (Fig. 27) (Panama to Tabasco, Mexico) 18. *palliditarsis* (Cameron)
- Flagellar pubescence short, basal segments with some erect setae which extend well above pubescence; middle and hind tarsi light yellowish-brown; lateral apical lobes of aedoeagus exceeding median lobes (Fig. 28) (Sinaloa, Mexico) 19. *sinaloa* n. sp.

Females

1. Mandibles slender, lower margin turned somewhat downward, teeth in a strongly oblique series (Fig. 53); propodeum unusually long and weakly constricted (maximum width about twice minimum width); pronotal disc flat, long, gradually narrowed anteriorly; hind tibiae densely clothed with short, thick setae (Texas to Florida and Carolinas) 10. *atra* Klug
- Mandibles wider, lower margin not curved downward, teeth in a less strongly oblique series (Fig. 52); propodeum less elongate and more constricted (maximum width 2.3-3.3 minimum width); pronotal disc less elongate, sides not convergent as above; hind tibiae with only some weak setae 2
2. Eyes small, only slightly higher than wide, each with only about 15 facets, HE about .12 X WH; sides of head weakly convergent to near posterior margin (Texas to Arizona and to Oaxaca) 4. *cockerelli* n. sp.
- Eyes larger, much higher than wide, each with 50 or more facets, HE about .16-.18 X WH 3
3. Head strongly polished and non-alutaceous; LH about 1.36 X WH; propodeum about 1.9 X as long as maximum width (Carolinas, Florida, Kansas) 2. *fraterna* n. sp.

- Head polished but (on close inspection) weakly and regularly alutaceous; LH 1.14-1.32 X WH; propodeum usually about 2.1 X as long as maximum width 4
4. Punctures of head rather small and shallow, separated by (for the most part) about their own diameters (absent medially); WH 1.14 X LH, sides of head strongly bulging; propodeum punctate over most of surface (Arkansas) 5. *bridwelli* n. sp.
- Punctures of head strong, for the most part separated by less than their own diameters and showing some tendency to form longitudinal series (absent medially); sides of head subparallel or weakly bulging, LH 1.18-1.32 X WH; propodeum punctate only on extreme sides (eastern United States) 1. *armifera* (Say)

1. PRISTOCERA (ACREPYRIS) ARMIFERA (Say)

Bethylus armiferus Say, 1828, Contr. Maclurian Lyceum Phila., 1: 80. [Type: ♂, INDIANA (destroyed)].

Scleroderma thoracica Westwood, 1839, Trans. Ent. Soc. London, (1)2: 167. [Type: ♀, "AMERICA BOREALI" (? no longer extant)]. Placed in synonymy with *atra* by Ashmead, 1893 (see under "Remarks" below).

Scleroderma contracta Westwood, 1839, Trans. Ent. Soc. London, (1)2: 169. [Type: ♀, "CAROLINA" (? no longer extant)]. Synonymy by Ashmead, 1893, who had seen the type.

Epyris laeviventris Cresson, 1872, Trans. Amer. Ent. Soc., 4: 193 [Type: ♂, TEXAS (Belfrage) (ANSP no. 1829)]. Placed in synonymy by Ashmead, 1893.

Pristocera armifera Ashmead, 1893, Bull. U.S. Nat. Mus., 4: 34-35. —Kieffer, 1914, Das Tierreich, 41: 466. —Hyslop, 1916, Proc. Ent. Soc. Wash., 18: 169-170, pl. XI (biology). —Hayes, 1927, Proc. Ent. Soc. Wash., 29: 20-22 (biology).

Epyris reticulatus Kieffer, 1904, Ark. Zool., 1: 527. [Type: ♂, TEXAS (Belfrage) (Naturhist. Riksmus. Stockholm, no. 229)]. New synonymy.

Acrepyris reticulatus Kieffer, 1905, In André, Spec. Hymen, Eur. Alger., 9: 249. Made type of new genus *Acrepyris*. —Kieffer, 1914, Das Tierreich, 41: 418-419.

Plesiotype. —♂, INDIANA: New Harmony, 2 Sept. 1886 (S. A. Forbes) [INHS].

Description of plesiotype. —Length 8 mm., LFW 5.4 mm. Head and thorax black, flagellum, legs, and abdomen dark reddish brown; wings subhyaline, veins and stigma brown. Mandibles with five teeth, fourth tooth somewhat weaker than the others, lower margin strongly arched (about as in Fig. 32). Clypeus truncate, median keel strong, arched in profile. Antennae elongate, first four segments in a ratio of about 22:4:16:16, segment three 2.2 X as long as thick, segment eleven 4 X as

long as thick; pubescence pale, suberect, setulae of segment eleven about .4 as long as thickness of segment; basal flagellar segments weakly depressed, flagellar segments barely thickened apically (about as in Fig. 50). Eyes with only weak, short hairs. Surface of head shining; front, vertex, and temples covered with very large punctures which are so crowded that the space between them is reduced to a network of ridges. Head about as wide as long; WF .68 X WH, 1.6 X HE; ocelli in a right triangle, WOT .9 X OOL. Pronotum with anterior slope perpendicular to collar and to disc; disc with sides evenly expanded posteriorly (Fig. 42), sharply margined anteriorly and wholly covered with weak, irregular transverse rugae and transversely elongate punctures; setae pale, short, not especially dense; sides of pronotum striate. Mesonotum smooth and polished, with strong, well separated punctures. Propodeal disc with several irregular longitudinal carinae basally, the median one extending nearly to posterior margin; basal triangle large, rather weakly defined; disc otherwise with irregular transverse striae except reticulo-punctate laterally and posteriorly like posterior slope; disc separated from posterior slope by an arching, rather weakly defined carina. Mesopleura shining, with large punctures which are separated by less than their own diameters, callus weakly punctate. Claws dentate, tooth erect, well separated from outer ray (Fig. 60). Fore wing with radial vein short, reaching only about half the distance from its base to wing tip; discoidal vein well developed for a short distance, then fading out; discoidal cell faintly outlined. Abdomen shining, somewhat depressed. Subgenital plate arcuately emarginate apically (Fig. 5). Genitalia as shown in Figure 9; parameres subtriangular apically; middle valves of aedoeagus not exceeding the ventral valves and therefore not readily visible; apex of dorsal valves in form of thin, rounded lobes which are directed ventrad and mesad.

Males examined.—I have examined 426 males, from the following localities: VERMONT: Newfane; NEW HAMPSHIRE: Hampton; MASSACHUSETTS: Forest Hills, Holliston; RHODE ISLAND: Westerly; CONNECTICUT: E. Hartford, Meriden, Manchester, Canaan, East Windsor Hill, S. Kent, Stonington; NEW YORK: Ithaca, Poughkeepsie, White Lake, New Baltimore, New York City, Wyandauch, L.I., Sea Cliff, L.I., Cold Spring Harbor, L.I., Farmingdale, L.I.; NEW JERSEY: Haddon Heights, Adele, Lakewood, Ramsay, Laurelton, River-ton, Sea Isle City, Wildwood, Moorestown, Brown's Mills, Princeton; PENNSYLVANIA: Dupont, Harrisburg, Philadelphia,

Swarthmore, Roxboro, Pittsburgh; MARYLAND: Bowie, Takoma Park, Rockville, Plummer's Island, Cumberland, Kenwood Beach, Silver Springs, Cabin John, Beltsville; DISTRICT OF COLUMBIA: Washington; VIRGINIA: Falls Church, Dunn Loring, Chain Bridge, Vienna, Glencarlyn, Galax, Portsmouth, Virginia Beach, Charlottesville, Shenandoah Nat. Park, Nelson Co., Smyth Co.; WEST VIRGINIA: Bolivar, Lewis Co.; NORTH CAROLINA: Kitty Hawk, Robertsonville, Andrews, New River, Wake Co., So. Pines, Black Mts., Tuckasegee, Macon Co., Yancey Co., Highlands, Garland, Cedar Mt., Flat Rock; SOUTH CAROLINA: Kingstree, Georgetown, Clemson, Table Rock, Greenville, McClellanville, Walhalla, Greenwood; GEORGIA: Atlanta, Athens, Fort Mt., Ft. Gordon, Blood Mt., Tifton, Thomas Mills, Toccoa, Waycross, Millwood, Adel, Okefenokee Swamp, Prattsburg, Decatur Co., Pine Mt., Hiawasse; FLORIDA: Hilliard, Jacksonville, Alachua Co., Lakeland, Levi Co., Williston, Suwanee Springs, Hillsboro Co., Orlando, Sanford, Lake Placid, Hudson, Capron, Ft. George, Miami, Biscayne Bay, Glades Co., Long Key, Big Pine Key, Upper Matecumbe Key; ALABAMA: Coleta, Chilton Co., Sheffield, Kushla, Mobile; MISSISSIPPI: Natchez; LOUISIANA: Tallulah; TENNESSEE: Monteagle, Chattanooga; OHIO: Lawrence Co.; MICHIGAN: Ann Arbor, Livingston Co.; INDIANA: Jackson Co., New Harmony; ILLINOIS: Beach, Jonesboro, Fountain Bluff, Carbondale, Aldridge, DuBois, Algonquin, Forest Park, Urbana, Rockford; IOWA: Dubuque, Sioux City, Ames; SOUTH DAKOTA: Phillip, Fairfax; NEBRASKA: Valentine, Dunning; MISSOURI: St. Louis, Monroe City; KANSAS: Douglas Co., Baldwin, Ottawa Co., Riley Co., Onaga, Silver Lake, Leon, Sedgwick Co., Reno Co., Bourbon Co., Republic Co., Hays; COLORADO: Wray; TEXAS: Galveston, Denison, Sealy, Port Isabel. Dates of capture, in the northern states, range from June to October, with August the most common month; Florida dates range from April to December.

Variation in males. — The smallest male examined measures 4.5 mm., LFW 3.2 mm.; the largest measures 9 mm., LFW 6.3 mm. In many specimens the legs and abdomen are black or nearly so. In some specimens the fore wing is distinctly clouded, especially in and about the radial cell. Neither size nor wing color appear to vary geographically, specimens from one locality often showing much variation in each. In most specimens the length of the antennae approximates that of the plesiotype, but

specimens from the southwestern parts of the range have consistently shorter antennae. For example, in the series from near Sealy, Texas, the length of antennal segment three averages 2.0 X as long as thick, while in a single specimen from Cameron Co., Texas, this segment measures 1.7 X as long as thick. In some specimens minor variation in sculpture can be noted, and in some the vertex is unusually strongly produced above the eye tops. The mandibles always have five teeth, but in some specimens the fourth tooth is small, more as in Figure 33. The subgenital plate is sometimes less deeply emarginate than figured. In some specimens the parameres are subtruncate apically, though seldom as distinctly so as in the species which follows; minor variation can be noted in the shape of the apical parts of the ventral and inner valves of the aedoeagus.

Plesiallotype. — ♀, INDIANA: Lafayette, 11 April 1933, bluegrass sod (H. R. Painter) [USNM].

Description of plesiallotype. — Length 6.3 mm., LH 1.37 mm., LT 2.3 mm. Body uniformly bright castaneous; legs and apices of antennae bright yellowish-brown. Mandibles with four teeth, as shown in Figure 52. Clypeus broadly rounded apically and with a small median notch; median carina arched in profile. Head shining, weakly and uniformly alutaceous, with strong punctures except along median line; punctures separated for the most part by somewhat less than their own diameters, showing some tendency to form longitudinal series. LH 1.25 X WH, sides of head subparallel to near posterior margin, where they converge arcuately to a straight vertex. Eye higher than wide, with a large number of facets (more than 50); HE .18 X WH, slightly greater than maximum width of flagellum. Antennae slightly thickened apically, segment eleven about .9 as long as thick. Pronotal disc 1.15 X as long as wide, shining and non-alutaceous, punctures strong, well separated, absent along median line. Disc of mesonotum about .7 X as long as wide, shining and with a few small punctures. Propodeum 2.1 X as long as its maximum width, 5 X as long as its minimum width, maximum width 2.5 X minimum width; surface strongly shining, non-alutaceous, with a few weak punctures on sides. Femora and tibiae moderately compressed, middle tibia with about 20 strong spines, hind tibia with short, weak hairs.

Females examined. — I have examined 36 females, from the following localities: MASSACHUSETTS: Forest Hills, Blue Hills; CONNECTICUT: East Hartford; NEW YORK: Ithaca,

Van Cortlandt Park, Riverhead, L.I., Sea Cliff, L.I., PENNSYLVANIA: Rockville; VIRGINIA: Vienna, Black Pond; NORTH CAROLINA: Highlands, Nantahala Gorge; SOUTH CAROLINA: Brunson, Charleston; GEORGIA: Atlanta, Ft. Gordon, Lawrenceville; ALABAMA: Coleta, Chambers Co., Tuscaloosa; MISSISSIPPI: Jackson; LOUISIANA: Minden, INDIANA: Lafayette; ILLINOIS: Beach, Muncie, Dixon Springs, Herod, Havana; WISCONSIN: Baraboo; IOWA: County 88; KANSAS: Riley Co., Onaga; TEXAS: Willis, Wallisville, Sharpsburg. Most dates of capture are for midsummer months; specimens taken in February, March, October, and November are marked as being taken under bark or in soil, where the females may possibly overwinter.

Variation in females. — There is considerable variation in the series available, but good reason to believe that all belong with this species. Two of the females (Sea Cliff, N.Y., and Atlanta, Ga.) are pinned with males, and a good many of the females are from areas where no other *Pristocera* occurs; from these specimens it is possible to obtain a good impression of the variation to be expected before specimens from within the range of other species need to be considered. The smallest specimen (Sea Cliff, N.Y.) is only 4.5 mm. long, LH 1.0 mm., LT 1.8 mm. The largest (Lawrenceville, Ga.) is 8.5 mm. long, LH 1.8 mm., LT 2.8 mm. While most specimens approximate the specimen described above in coloration, there are some striking variants. A specimen from Blue Hills, Mass., and another from Minden, La., have the head and thorax piceous, the abdomen dark reddish-brown; several others approach this condition but have the head and thorax somewhat paler. A striking specimen from Black Pond, Va., has the head piceous, the abdomen nearly as dark, and the thorax contrastingly rufo-castaneous except the middle and hind femora bright yellowish. Head shape varies slightly, LH/WH varying from 1.18 to 1.32; in some specimens the sides of the head bulge somewhat. Some variation can be noted in the size and spacing of the punctures of the head and thorax. While in all specimens the length of the propodeum approximates 2.1 X as long as its maximum width, as in the specimen described above, there is some variation in the degree to which the propodeum is constricted; the maximum condition is reached in the Lawrenceville, Ga., specimen, where the propodeum is 7.2 X as long as its minimum width, the maximum width 3.3 X the minimum width.

Remarks. — This is the most abundant and widely distributed member of the genus in North America. Ashmead (1893) stated

that he had examined the types of Westwood's *thoracica* and *contracta* in the Berlin Museum. Dr. G. Steinbach informs me that the types are not presently in that museum, and I have found that they are not in the Westwood Collection at Oxford nor at the British Museum. Ashmead placed *thoracica* in the synonymy of *atra*, stating that the type was from "Carolina" and that Westwood had suggested it represented the female of *atra*. Actually, Westwood had suggested in 1881 that *contracta*, not *thoracica*, was the female of *atra*. Since the type of *contracta* is in fact from "Carolina" and is a considerably larger insect than *thoracica*, it seems very probable that Ashmead was confusing the two names and intended to place *thoracica* in the synonymy of *armifera*. In any event, I am convinced that both of Westwood's names belong in the synonymy of *armifera*. The female here associated with *atra* is a striking insect which has not previously been described.

Through the courtesy of Mr. K. J. Heqvist of the Naturhistoriska Riksmuseet of Stockholm, I have recently had the opportunity to examine the type and paratypes of Kieffer's *reticulatus*. These specimens are perfectly typical males of *armifera* Say, which one assumes was otherwise unfamiliar to Kieffer. Kieffer based his genus *Acrepyris* on these specimens, placing the genus in the Epyrini and separating it from related genera by the fact that the scutellum lacked pits or a transverse furrow. Although the type and paratypes of *reticulatus* are pinned through the mesonotum, in all three specimens the transverse furrow at the base of the scutellum is evident.

2. PRISTOCERA (ACREPYRIS) FRATERNA new species

Holotype. — ♂, NORTH CAROLINA: Kill Devil Hills, Dare Co., 29 July 1952 (K. V. Krombein) [USNM, no. 65675].

Description of type. — Length 7.5 mm. LFW 4.8 mm. Color black; tarsi dark brown; wings subhyaline, veins and stigma brown. Mandibles with five teeth, fourth tooth smaller than the others, basal tooth with a distinct cutting edge (Fig. 33). Clypeus slightly emarginate, its median carina weakly arched in profile. Antennae elongate, first four segments in a ratio of about 20:4:14:14, segment three 2.6 X as long as thick, segment eleven 4.5 X as long as thick; pubescence erect, pale, setulae of segment eleven two-thirds as long as thickness of segment. Eyes with only very weak, short hairs. Surface of head strongly polished, non-alutaceous; front, vertex, and temples with large punctures which for

the most part are separated by less than their own diameters, spaces between the punctures flat, not reduced to mere ridges as in *armifera*; front with a median impunctate strip which bears a linear impression. Head very slightly wider than high; WF .62 X WH, 1.33 X HE; WOT .9 X OOL. Pronotum somewhat larger than in *armifera*, its sides, as seen from above, weakly concave (Fig. 43); anterior face perpendicular to disc and to collar, both of which are irregularly transversely rugulose; setae pale, rather short; sides of pronotum striate. Mesonotum strongly polished, with small, well separated punctures. Propodeum as in *armifera* except sculpturing generally somewhat weaker; disc irregularly transversely striate. Characters of mesopleurum and fore wing as described for *armifera*, and claws as in that species. Subgenital plate as figured for *armifera*. Genitalia much as in *armifera* except as follows: parameres (Figs. 14, 15) more distinctly truncate apically and with a stronger lobe on inner ventral margin; aedoeagus (Fig. 40) with ventral valves prominently rounded apically, middle valves slightly exceeding ventral valves, dorsal valves forming thick apical lobes which are strongly reflexed ventrally.

Paratypes. — NORTH CAROLINA: 1 ♂, same data as type but dated 9 Aug. 1958 [KVK]; 1 ♂, Pisgah Forest, 12 Aug. 1957 (W. R. Richards) [CNC]; SOUTH CAROLINA: 1 ♂, Seneca, 9 Aug. 1957 (W. R. Richards) [CNC]; FLORIDA: 1 ♂, Fort George (Ashmead coll.) [USNM]; KANSAS: 1 ♂, Manhattan, 24 Sept. 1950 (H. E. Evans) [MCZ].

Variation in males. — Four of the five paratypes have the punctures on the sides of the lower front more crowded than in the type, such that in this area the space between them is reduced to a network of ridges, as it is over most of the head in *armifera*. LFW varies from 3.8 to 4.8 mm.; the type and the Kansas specimen are distinctly larger than any of the others.

Female (assigned here tentatively). — SOUTH CAROLINA: Isle of Palms, 3 June 1948 (O. L. Cartwright) [HKT].

Description of supposed female. — Length 5.8 mm., LH 1.12 mm., LT 1.85 mm. Body and appendages uniformly light castaneous. Mandibles and clypeus as in *armifera*. Head shining, barely alutaceous, punctures large, on middle of front separated by more than their own diameters (absent from median strip), on sides and under surface of head separated by mostly slightly less than their own diameters. LH 1.36 X WH, sides of head very weakly convergent to near posterior margin, where they are rounded off to the broad, straight vertex. Eye higher than

wide, with a large number of facets (more than 50); HE .18 X WH, very slightly greater than maximum width of flagellum. Antennae compact and slightly thickened apically, segment eleven about .8 as long as thick. Pronotal disc slightly longer than its maximum (posterior) width, its surface shining, weakly punctate. Mesonotum about as in *armifera* (pierced by pin). Propodeum 1.9 X as long as its maximum width, about 6 X as long as its minimum width, maximum width 3.4 X minimum width; surface strongly shining, with a few weak punctures confined to the extreme sides. Legs as in *armifera*.

Remarks. — Since the female *armifera* is quite variable, as noted under that species, it is difficult to be sure that the female described above is not simply an unusual *armifera*. However, I am inclined to think that it is not, and if I am correct then it must surely be the female of *fraterna*.

3. PRISTOCERA (ACREPYRIS) CALIFORNICA new species

Holotype. — ♂, CALIFORNIA: Mill Creek Canyon, San Bernardino Co., 22 Sept. 1923 (E. P. VanDuzee) [CAS].

Description of type. — Length 7.5 mm., LFW 5.6 mm. Color black, basal three abdominal tergites suffused with dark reddish-brown apically and laterally, tarsi dark brown; wing veins brown, stigma nearly black. Mandibles with five teeth, fourth tooth very small, slightly smaller even than in Figure 33. Clypeus subtruncate apically, median carina arched in profile. Antennae very long, first four segments in a ratio of about 22:4:18:15, segment three 2.8 X as long as thick, segment eleven 3.9 X as long as thick; pubescence pale, erect, setulae of segment eleven about half as long as thickness of segment. Eyes with only weak, short hairs. Surface of head strongly polished, punctate except along a narrow, slightly depressed median strip; punctures of front large, separated by less than their own diameters though for the most part not actually contiguous, the spaces between them flat or round-topped; punctures of vertex, temples, and under surface of head smaller, separated for the most part by about their own diameters. Head slightly higher than wide, WH .95 X LH; WF .63 X WH, 1.37 X HE; WOT .76 X OOL. Pronotum with anterior face steep though not actually vertical, collar and sides polished, without rugae; disc polished, punctate, with a weak transverse elevation followed by a weak depression, much less evidently rugose than in *armifera*. Mesonotum polished, punctures small and well separated. Propodeum with median

carina strong but not quite reaching the transverse carina margining the declivity, the latter barely distinguishable from the adjacent rugae; disc with a pair of converging carinae which form a large basal triangle, with large foveae basally but otherwise transversely striate both inside and outside the triangle. Mesopleurum polished, punctures small and well separated, on the ventral surface almost impunctate. Claws dentate, as in *armifera*. Fore wing with discoidal cell well outlined, in fact the first recurrent vein weakly pigmented and the subdiscoidal vein nearly reaching the wing margin. Subgenital plate broadly rounded apically (Fig. 6). Genitalia not unlike those of *armifera*, but the parameres more elongate (Fig. 16); aedoeagus with middle valves sharply pointed and extending well beyond apices of ventral valves, apical lobes of dorsal valves slightly reflexed laterally (Fig. 41).

Paratypes. — CALIFORNIA: 1 ♂, Riverside, Oct. 1917 [CIS]; 2 ♂♂, Davis, Sept. (Bechtel, Schlinger) [UCD, MCZ]; 1 ♂, Yorba Linda, Orange Co., 31 Apr. 1934 [Los Angeles Co. Mus.]; 1 ♂, Winters, Yolo Co., 31 July 1933 [UCD]; UTAH: 1 ♂, Logan, Sept. 1943 (P. E. Telford) [USNM]; 1 ♂, White Valley, Sept. 1947 (R. A. Haws) [USNM]; WYOMING: 1 ♂, South Pass, 27 Aug. 1954, on *Achillea millefolium* (G. E. Bohart) [UCD].

Variation in males. — The paratypes vary in length from 6 to 8.2 mm., LFW 4.6 to 6.4 mm. In the specimens from White Valley, Utah, and South Pass, Wyo., the mandibles are 4-toothed, the small fourth tooth being entirely absent (Fig. 34). In several specimens there are weak rugae on the collar and sides of the pronotum. In some specimens the head is as wide or even slightly wider than high, but there is little variation in the other head measurements. In the three specimens from Yolo Co., Calif., the subgenital plate is more truncate apically than in the type.

Female. — Unknown.

4. PRISTOCERA (ACREPYRIS) COCKERELLI new species

Holotype. — ♂, NEW MEXICO: Mesilla Park, 21 June 1898 (T. D. A. Cockerell) [USNM, no. 65676].

Description of type. — Length 6.8 mm., LFW 4.3 mm. Color black, abdomen dark reddish-brown; apical half of mandibles ferruginous; antennae dark castaneous; legs bright castaneous, coxae somewhat infuscated, tarsi light brown; wings hyaline, stigma brown, veins light brown. Mandibles with five strong

teeth (Fig. 32). Clypeus weakly emarginate, its median carina arched in profile. Antennae of moderate length, first four segments in a ratio of about 18:4:10:9, segment three 2.2 X as long as thick, segment eleven 2.6 X as long as thick; flagellar segments, especially middle ones, very slightly thickened in the middle, so that the antennae are submoniliform (Fig. 51); pubescence erect, pale, setulae of segment eleven one-third as long as thickness of segment. Eyes with scattered weak, short hairs. Head shining but covered with large punctures which are separated by much less than their own diameters, spaces between punctures round-topped or narrowly flat-topped, not actually forming a reticulum of ridges as in *armifera*; middle of front narrowly impressed. Head about as wide as high; WF .63 X WH, 1.40 X HE; WOT .8 X OOL. Pronotum shaped much as in *armifera*; collar and sides obscurely rugulose; disc subcarinate along edge of anterior declivity and also with a large transverse elevation parallel to and a short distance before the posterior margin. Mesonotum strongly shining, punctures small and well separated. Propodeum with a strong median carina which attains the transverse carina bordering the declivity, the latter also rather strong; disc with a large basal triangle bordered by carinae, with transverse ridges both inside and outside the triangle. Mesopleurum with large punctures much like the head, callus barely differentiated. Claws dentate. Fore wing with radial vein reaching slightly more than half-way from its base to the wing-tip and continued as a faint pigmented streak to wing margin; discoidal cell very faintly outlined. Subgenital plate emarginate, about as in *armifera*. Genitalia (Fig. 10) with the parameres rounded apically, grooved on the inner margin for reception of the elongate, curved digiti; aedoeagus unusual in that the dorsal valves terminate in four lobes, the lateral ones slender, the mesal ones shorter and more rounded, exceeded slightly by the acute middle valves.

Paratypes. — NEW MEXICO: 1 ♂, Mesilla, 13 Aug. (Cockerell) [MCZ]; 1 ♂, Dona Ana Co., 27 July 1954, swept from cotton (R. E. Fye) [USNM]; 1 ♂, Jemez Springs, 18 June 1916 (John Woodgate) [CU]; 1 ♂, Las Vegas, 6 August (Barber & Schwarz) [USNM]; ARIZONA: 1 ♂, southern part [USNM]; 1 ♂, Sabino Canyon, Pima Co., 14 March 1937 (R. A. Flock) [UA]; 1 ♂, St. David, 5 Nov. 1955 (G. D. Butler) [UA]; 1 ♂, Willcox, Cochise Co., 18 Aug. 1958 (on *Asclepias*, P. D. Hurd) [CIS]; TEXAS: 1 ♂, San Antonio, 10 Sept. 1942 (on window, E. S. Ross) [CAS]; MEXICO: SONORA: 1 ♂, Nogales, 28 June 1940, on cut flowers [USNM]; OAXACA: 1 ♂, Huajapan de Leon, 30

Sept. 1961 (J. Avila R.) [Escuela Nac. Agri., Chapingo, Mex.].

Variation in males. — The smallest male (Dona Ana Co., N. Mex.) is 4.8 mm. long, LFW 3.4 mm.; the largest (Jemez Springs, N. Mex.) is 8.6 mm. long, LFW 5.8 mm. Several Arizona and New Mexico specimens are darker than the type, having the abdomen nearly as dark as the head and thorax, the antennae dark brown, and the legs medium brown except for the paler tarsi. The specimens from Texas and Oaxaca are brightly colored, having the mandibles wholly castaneous, the legs bright yellowish-brown or ferruginous. The antennae of the Texas specimen are wholly castaneous and are filiform rather than submoniliform; the genitalia of this specimen differ in having more slender parameres and certain differences in the aedoeagus (Fig. 39). However, the genitalia of the specimen from Jemez Springs, N. Mex., are intermediate in structure between this specimen and the one selected as type. The Texas specimen lacks the median impression present on the front of all the remaining specimens in the series, and also has the abdomen wholly light castaneous. The only known female is associated with this Texas specimen. The Oaxaca specimen has the first two antennal segments ferruginous, but the antennae are otherwise as described for the type; in this specimen the abdomen is blackish and the genitalia virtually identical to those of the type. In this specimen the front is rather broad, WF measuring .67 X WH, 1.60 X HE.

Allotype. — ♀, TEXAS: San Antonio, 10 Sept. 1942 (on window, E. S. Ross) (on card point on same pin as ♂ paratype listed above) [CAS]

Description of allotype. — Length 5.2 mm., LH 1.10 mm., LT 1.9 mm. Uniformly bright castaneous, legs and tips of antennae very slightly paler than body. Mandibles and clypeus as in *armifera*. Head strongly shining, very weakly alutaceous, punctate in much the same way as in *armifera*. LH 1.25 X WH, sides of head weakly convergent to near posterior margin, then more abruptly convergent to a weakly concave vertex. Eye small, only slightly higher than wide, with only about 15 facets; HE about .12 X WH, distinctly less than maximum width of flagellum. Flagellum moderately thickened, segment eleven about .8 as long as thick. Pronotal disc 1.2 X as long as wide, shining, with some fairly strong punctures except along median line. Mesonotum about .8 as long as wide, with a few punctures. Propodeum 2.2 X as long as its maximum width, 6 X as long as its minimum width, maximum width 2.7 X minimum width; surface strongly shining, non-alutaceous, weakly punctate on

extreme sides. Femora and tibiae moderately compressed, middle tibiae with about 20 strong spines, hind tibiae with short, weak hairs.

5. PRISTOCERA (ACREPYRIS) BRIDWELLI new species

Holotype. — ♂, ARKANSAS: Dodd City, Marion Co., July 1897 (J. C. Bridwell), on card point on same pin as a female, the two labeled "in coitu afternoon on wooden wall in old saw-mill" [USNM, no. 65677].

Description of type. — Length 6 mm., LFW 4.7 mm. Color black, abdomen dark brown, somewhat paler basally; mandibles dark reddish-brown; scape brown, flagellum dull castaneous; tegulae light brown, translucent; legs brown, tarsi light brown; wings hyaline, veins and stigma brown. Mandibles with five strong teeth. Clypeus broadly truncate, very slightly emarginate; median carina arched in profile. Antennae relatively short, first four segments in a ratio of about 17:4:10:8, segment three 1.9 X as long as thick; pubescence pale, suberect, setulae about one-third as long as thickness of flagellum (the right antenna is missing beyond segment four, the left antenna entirely missing). Eyes with only very short setae. Punctures of front large, contiguous, the interspaces reduced to mere ridges; punctures of vertex and temples not quite as close, interspaces flat-topped; median line of front narrowly impressed. Head slightly wider than high; WF .62 X WH, 1.4 X HE; vertex very broadly rounded, not strongly produced above eye tops; WOT .9 X OOL, lateral ocelli about equidistant from eye tops and margin of vertex. Pronotum with anterior face strongly polished; collar and sides obscurely rugose; disc short, subcarinate along anterior margin and with a very strong transverse elevation about midway, behind which it is flat. Mesonotum shining, punctures small and well separated. Propodeal disc short, median carina indistinct, posterior transverse carina fairly well developed, disc otherwise with coarse reticulate sculpturing. Mesopleurum with large, subcontiguous punctures, callus small, smooth and polished. Fore wing as described for *cockerelli*. Subgenital plate broadly truncate apically. Genitalia (Fig. 11) with the parameres broadly rounded apically, provided with an accessory flap on the ventral surface; aedoeagus with the middle valves much exceeding the ventral valves, the dorsal valves much exceeding the middle valves, forming very slender apical processes.

Allotype. — ♀, ARKANSAS: same data as type and on minuten nadeln affixed to same pin [USNM].

Description of allotype. — Length 6.2 mm., LH 1.45 mm., LT 2.3 mm. Body dark castaneous, abdomen somewhat paler and more shining than head and thorax; legs and antennae bright castaneous. Mandibles and clypeus as in *armifera*. Head shining, weakly and uniformly alutaceous; punctures small, separated by approximately their own diameters, absent from median strip. LH 1.14 X WH, sides of head distinctly bulged toward the middle, convergent behind to a straight vertex. Eye of moderate size, higher than wide, with more than 50 facets; HE about .16 X WH, distinctly greater than maximum width of flagellum. Flagellum moderately thickened, segment eleven about .85 X as long as thick. Pronotal disc slightly longer than wide, weakly and uniformly alutaceous, with well-defined punctures except along median line. Propodeum 2.1 X as long as its maximum width, 5 X as long as its minimum width, maximum width 2.3 X minimum width; surface weakly alutaceous and with well defined punctures over most of surface except median strip. Characters of legs as described for *armifera*.

6. PRISTOCERA (ACREPYRIS) OTOMI new species

Holotype. — ♂, MEXICO: MEXICO: Atlacomulco, 8500 feet, 18 Aug. 1954 (J. G. Chillcott) [CNC, no. 7552].

Description of type. — Length 7.5 mm., LFW 5.6 mm. Entirely black; wings subhyaline, veins dark brown, stigma nearly black. Mandibles with five teeth, the fourth tooth smaller than the others. Clypeus broadly truncate, actually very weakly concave apically. Antennae elongate, first four segments in a ratio of about 24:4:19:16, segment three 2.3 X as long as thick, segment eleven 3.5 X as long as thick; pubescence whitish, suberect, setulae on segment eleven .4 as long as width of segment. Eyes with only weak, very short setae. Punctures of front large, subcontiguous, interspaces narrow, round-topped; punctures of vertex and temples separated for the most part by about half their own diameters; front with a linear median impression. Head about as high as wide, vertex very broadly rounded off a distance above eye tops about equal to HE; WF .68 X WH, 1.7 X HE, front thus relatively very wide; ocelli in a close triangle, front angle less than a right angle, WOT .6 X OOL. Pronotum with collar transversely striate and strongly setose; sides polished, with weak striae; anterior face short, with some sculpturing; disc moderately long, with weak and irregular transverse striae, with the usual transverse subapical depression. Mesoscutum with rather strong punctures, scutellum with weak punctures.

Propodeal disc with median carina strong, not quite reaching the transverse carina margining the disc posteriorly, the latter weak and somewhat irregular; disc with strong reticulations medio-basally, behind weakly reticulo-striate, basal triangle not clearly differentiated. Mesopleurum with a large number of small punctures which are separated by mostly somewhat less than their own diameters; callus convex, impunctate. Claws dentate, as in *armifera*. Fore wing with discoidal cell weakly outlined, subdiscoidal vein continued on beyond discoidal cell but terminating well before wing margin. Subgenital plate emarginate apically (about as figured for *armifera*, Fig. 5). Genitalia (Fig. 29) with parameres rather broad, rounded apically, margins simple except ventral margin with a small lobe; aedoeagus with ventral valves rather broad and wing-like, middle valves blunt, complex medio-apically and apparently with some pores on the mesal surface, dorsal valves terminating in well separated, slender, reflexed lobes.

Remarks. — The genitalia of this species are most like those of *bridwelli*, though there are a number of differences. However, the antennae are more elongate than in that species and the configuration of the pronotum is more like that of *armifera* and *californica*.

Female. — Unknown.

7. PRISTOCERA (ACREPYRIS) ORIPLANA Kieffer

Pristocera oriplana Kieffer, 1911, Ann. Soc. Sci. Bruxelles, 35: 215.

[Type: ♂, MEXICO: GUERRERO: Omilteme, 8000 feet, Aug. (H. H. Smith) (BMNH)].

Propristocera oriplana Kieffer, 1914, Das Tierreich, 41: 487. —Evans, 1958, Proc. Ent. Soc. Wash., 59: 296.

Description of type. — Length 5.7 mm.; LFW 5.0 mm. Entirely black, including legs and antennae; wings subhyaline, veins and stigma dark brown. Mandibles with five teeth, fourth tooth somewhat smaller than the others. Clypeus truncate apically, its median carina arched in profile. First four antennal segments in a ratio of about 17:5:16:14, segment three 2.7 X as long as thick, segment eleven 4 X as long as thick; pubescence pale, suberect, setulae of segment eleven .7 as long as width of segment. Eyes not hairy. Front with large, subcontiguous punctures, interspaces for the most part reduced to round-topped ridges; punctures of vertex and temples less closely spaced; front with a median impression. WH 1.02 X LH; inner orbits convergent below, WF .61 X WH, 1.4 X HE. Ocelli

in a compact triangle, WOT .7 X OOL. Vertex rather narrowly rounded off a distance above eye tops nearly equal to eye height. Pronotum rather irregularly transversely rugulose, with one of the rugae toward the middle standing out somewhat above the others; disc with strong, transverse setigerous punctures which are more sparse along the major ruga. Mesoscutum polished, with small punctures; scutellar disc weakly punctate. Propodeal disc relatively elongate, actually about as long as wide; median carina strong for most of its length, also with some shorter longitudinal carinae on the sides basally, disc otherwise with transverse striae, the stria margining the disc behind barely differentiated from the others except somewhat stronger on the sides; basal triangle poorly differentiated, weakly depressed. Mesopleurum polished, its punctures shallow, obsolescent; callus small, impunctate. Claws dentate, the tooth fairly long but well separated from outer ray. Fore wing with discoidal cell weakly outlined, discoidal vein arising well down on transverse median vein, subdiscoidal vein weakly continuous to outer wing margin. Subgenital plate truncate. Genitalia (Figs. 2, 24, 31) with the parameres elongate, rounded apically, inner side with two small lobes; aedoeagus of unusual structure, ventral valves very long and slender, middle valves strong, hooked dorsad apically, dorsal valves hooked ventrad apically and more or less embracing apices of middle valves.

Other males examined. — Two, from the following localities: MEXICO: GUERRERO: 1, Amula, 6000 feet, Sept. (H. H. Smith) [BMNH]; 1, Tepetlapa, 3000 feet, June (H. H. Smith) [BMNH].

Variation. — The two above specimens are both smaller than the type (LFW 3.7-4.0 mm.) and both have the front somewhat narrower (WF about 1.27 X HE). The Amula specimen resembles the type closely in most respects, but the front is somewhat less coarsely and closely punctate and the propodeal disc more distinctly margined behind. The Tepetlapa specimen has the front strongly polished and the punctures still further reduced, rather irregularly spaced but with many of the interspaces fairly broad; this specimen also has the pronotum unusually smooth, with virtually no rugae or irregularities except for a transverse preapical impression. In spite of these differences, the genitalia are strikingly similar, so there seems little question that the three specimens are conspecific.

8. PRISTOCERA (ACREPYRIS) ERYTHROPODA (Cameron)

Epyris erythropoda Cameron, 1888, Biol. Centr.-Amer., Hymen. I, p. 450, pl. 19, fig. 14. [Type: ♂, PANAMA: Volcan de Chiriqui, 3-4000 feet (G. C. Champion) (BMNH)].

Pristocera erythropoda Kieffer, 1908, Genera Insect., 76: 22. —Kieffer, 1914, Das Tierreich, 41: 467.

Description of type. — Length 8 mm., LFW 5.5 mm. Head and thorax black, basal three segments of abdomen dark brown except basal segment suffused with light brown on sides, remainder of abdomen light rufo-castaneous; mandibles and clypeus rufo-castaneous; antennae light yellowish-brown, apical segment somewhat infuscated; tegulae testaceous; legs pale castaneous except hind femora and all the coxae brown; wings subhyaline, lightly tinged with yellowish-brown, fore wing vaguely infuscated about basal vein and with a preapical brownish band which starts at the stigma and radial vein, where it is strong, and extends to the posterior margin of the wing. Body hairs golden, rather short and not especially dense. Mandibles with five teeth, fourth tooth somewhat weaker than the others (about as in Fig. 32). Clypeus truncate apically, its median carina weakly arched in profile. Antennae with first four segments in a ratio of about 23:5:15:14, segment three 3 X as long as thick, segment eleven 4 X as long as thick; pubescence whitish, erect, setulae of segment eleven about half as long as width of segment. Head shining, with strong punctures which, on the sides of the front, tend to be subcontiguous in longitudinal rows; center of front, vertex, and temples with punctures well separated. Eyes not hairy. Front rather narrow, WF .60 X WH, 1.3 X HE; ocelli in a small triangle, front angle less than a right angle, WOT .8 X OOL. Pronotum with anterior face strongly polished, nearly perpendicular to collar and to disc; sides polished, with some very weak rugae; disc transversely rugose anteriorly, then with a strong transverse ridge behind which it is depressed and nearly smooth. Mesonotum shining, with strong punctures on the sides, weaker punctures medially. Propodeum with basal triangle small, margined by a strong carina; median carina absent in front, weak behind; posterior transverse carina well defined; most of disc covered with strong, well spaced transverse ridges. Mesopleurum with large, well-separated punctures, callus smooth and polished. Claws with middle tooth erect, nearly as long as outer tooth, making the claws appear somewhat bifid (Fig. 57). Fore wing with the discoidal and subdiscoidal veins indicated by pigmented streaks, the latter nearly

reaching the wing margin, but the vein closing off the outer side of the discoidal cell barely pigmented. Abdomen slender, polished, apically with golden setae. Subgenital plate emarginate. Genitalia (Fig. 4) with parameres unusually short, broadly truncate; aedoeagus with middle valves prominent, much exceeding ventral valves, dorsal valves terminating in a pair of slender lobes connected by membrane.

Other males examined. — Two, from the following localities: PANAMA: 1, Bugaba (G. C. Champion) (BMNH); COSTA RICA: 1, Turrialba, 25 June 1949 (K. W. Cooper) [USNM].

Variation. — The two above specimens are slightly larger than the type (LFW 5.8 in both), but there are no important differences in sculpturing or in standard measurements. In the Costa Rica specimen the legs are somewhat darker, the middle and hind legs being brown except for the tarsi.

Remarks. — This striking species has no close relatives, although the pronotum and the genitalia suggest *cockerelli* and *bridwelli* more than any other species. The color pattern is strikingly like that of the Brazilian *Pseudisobrachium haemorrhoidalis* (Westwood).

Female. — Unknown.

9. PRISTOCERA (ACREPYRIS) ORIZABAE (Cameron) new combination

Epyris orizabae Cameron, 1897, Ann. Mag. Nat. Hist., (6)19:273. [Type: ♂, MEXICO: VERACRUZ: Orizaba, Dec. 1887 (H. H. Smith) (BMNH)]. —Cameron, 1899, Biol. Centr.-Amer., Hymen. I, Suppl., p. 473.

Description of type. — Length 7 mm.; LFW 5.4 mm. Head and thorax black, abdomen dark brown; palpi brown; mandibles black except somewhat rufous apically; antennae very dark brown; legs very dark brown except tips of tarsi light brown; wings subhyaline, veins and stigma dark brown. Mandibles with five strong teeth. Clypeus truncate except very weakly produced medially. First four antennal segments in a ratio of about 20:4:15:13, segment three twice as long as thick, segment eleven three times as long as thick; pubescence pale, suberect, setulae of segment eleven .5 as long as width of segment; basal segments of flagellum distinctly flattened, in profile very weakly serrate. Eyes with some short hairs above. Front very coarsely punctate, interspaces reduced to round-topped ridges; punctures of vertex and temples somewhat smaller and more widely separated; front weakly impressed medially. WH 1.03 X LH; inner

orbits convergent below, WF .54 X WH, 1.22 X HE. Ocelli in a right triangle, WOT .88 X OOL. Vertex broadly rounded off a distance above eye tops equal to not much over half HE. Pronotum rather short (Fig. 46), coarsely punctate, with smooth contours except depressed subapically. Mesoscutum polished, with small, rather evenly spaced punctures. Propodeal disc with basal triangle not clearly marked off, filled with longitudinal carinae; median carina strong, flanked by a series of reticulations, reaching the transverse carina, which is unusually well formed for the genus; latero-posterior parts of disc with weak, irregular sculpturing; extreme posterior part of disc, and posterior slope, strongly reticulate. Mesopleurum polished, strongly punctate. Claws dentate, the tooth strong and sloping outward somewhat. Fore wing with discoidal cell outlined by pigmented lines; first recurrent vein distinct; subdiscoidal vein continuing to outer wing margin as a pigmented streak. Subgenital plate truncate. Genitalia with the parameres simple, tapering to a narrowly rounded apex (Fig. 22); aedoeagus with the dorsal valves slightly exceeding the strong middle valves, their apices reflexed strongly ventrad (Fig. 30).

Remarks. — This species is known only from the type. It was apparently overlooked by Kieffer in his review of the Bethyilidae in *Das Tierreich*, 1914. The species is an interesting one, since it resembles *hyalina* and related species in most respects, yet has the eyes weakly hairy, an aedoeagus somewhat resembling that of *fraterna*, and parameres not unlike those of *atra*.

Female. — Unknown.

10. PRISTOCERA (ACREPYRIS) ATRA Klug

Pristocera atra Klug, 1810, Beitr. Naturk., 2: 206. [Type: ♂, GEORGIA (said by Ashmead, 1893, to be in Berlin Mus.; I have not seen it)].

—Westwood, 1874, Thes. Ent. Oxoniensis, p. 163, pl. XXXI, fig. 5.

—Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 33-34. —Kieffer, 1914, *Das Tierreich*, 41: 465.

Plesiotype. — ♂, GEORGIA: Milledgeville, 25 April 1940 (P. W. Fattig) [USNM].

Description of plesiotype. — Length 13.5 mm.; LFW 8.5 mm. Entirely black, apices of tibiae weakly tinged with rufous; fore wing wholly weakly infuscated, hind wing subhyaline. Mandibles 5-toothed, prominent, lower margin but weakly curved, teeth in a strongly oblique series (Fig. 54). Clypeus truncate, median carina abruptly declivous near margin. Antennae elongate, first

four segments in a ratio of about 15:2:13:12, segment three 1.9 X as long as its maximum width, segment eleven 3.6 X as long as thick; middle segments of antennae, most particularly 4-9, slightly depressed and slightly thickened apically on the under side, so that in lateral view the antennae are subserrate (Fig. 48); pubescence erect, light brown, setulae on segment eleven about one-fourth as long as thickness of segment. Eyes with some weak, short hairs. Head shining, strongly punctate, punctures on front so close together that the interspaces form a network of round-topped ridges, punctures on vertex and temples slightly weaker and more widely separated. Head slightly wider than high; WF .64 X WH, 1.45 X HE; vertex very broad, in the center almost straight; ocelli in a broad, flat triangle, WOT and OOL subequal. Pronotum with anterior face perpendicular to disc and to collar; collar, anterior face, and sides all weakly rugose; disc short, transverse, without strong rugosities but transversely depressed just before posterior margin, region anterior to this depression transversely rugoso-punctate. Mesonotum shining, rather weakly punctate, especially medially. Propodeal disc with strong reticulate sculpturing, basally with short longitudinal carinae, median carina the longest but not reaching posterior margin of disc as a clearly defined carina; transverse carina margining the disc behind moderately well defined, weakly arching on each side. Mesopleurum with a great many small punctures which are separated by mostly less than their own diameters; callus small, with minute punctures. Claws dentate, tooth small, erect. Fore wing with radial vein extending half way from its base to wing tip, then continued nearly to tip as a pigmented streak; discoidal cell fully outlined by pigmented lines, subdiscoidal vein extending on nearly to wing margin; first recurrent vein well pigmented; cubital vein weakly pigmented and extending nearly to wing margin. Subgenital plate emarginate apically, much as figured for *armifera* (Fig. 5). Genitalia (Figs. 12, 17) with characteristically shaped parameres; aedoeagus with middle valves much exceeding ventral valves, acutely pointed; lobes of dorsal valves prominent, somewhat boot-shaped.

Males examined. — I have examined 37 males, from the following localities: NORTH CAROLINA: 2, Southern Pines, April (S. W. Foster) [MCZ]; 1, Columbus Co., April (H. K. Townes) [HKT]; 1, no further data (T. Pergande) [USNM]. SOUTH CAROLINA: 1, Salina, March (H. K. Townes) [HKT]. GEORGIA: 1, Milledgeville, April (P. W. Fattig) [USNM];

1, Fort Valley, June (O. I. Snapp) [USNM]; 1, Thomasville, June (W. D. Pierce) [USNM]. FLORIDA: 1, Titusville, 1919 (Griffin) [CM]; 1, 4 mi. W. Titusville, March (Howden & Howell) [CNC]; 2, Lake Placid, Feb., July (Crowder; Cazier) [KU, AMNH]; 3, Alachua Co., March, June [FSPB]; 2, no further data [USNM]; 1, Crescent City, June (C. T. Brues) [MCZ]; 1, 3 mi. SW Micanopy, Marion Co., April (T. H. Hubbell) [FSPB]; 1, Georgetown, Nov. 1948 (C. T. Brues) [MCZ]. MISSISSIPPI: 1, Natchez, May (E. S. Tucker) [USNM]. LOUISIANA: 7, Opelousas (G. R. Pilate) [USNM]; 1, Natchitoches, May [USNM]. TEXAS: 1, Willis, May (J. C. Bridwell) [USNM]; 1, Gilmer, Upshur Co., April (J. G. Hall) [UCD]; 1, Lexington, April (L.D. Beamer) [KU]; 1, nr. Lufkin, Angelina Co., May (W. Gertsch) [AMNH]; 1, Mineola, July (F. C. Bishopp) [USNM]; 1, Calvert (C. R. Jones) [USNM]; 1, Hearne, April (W. W. Yothers) [USNM]. NEW MEXICO: 1, Aden, July [MCZ].

Variation in males.—This species shows great variation in size. Several specimens from the Carolinas, Georgia, and Florida approximate in size the plesiotype described above, but most specimens are smaller. The smallest specimen (Opelousas, La.) measures only 6 mm. long, LFW 5 mm. The mean LFW of specimens from various states is as follows: N.C. 7.5, S.C. 6.5, Ga. 7.1, Fla. 6.8, Miss. 5.1, La. 6.4, Tex. 6.3, N. Mex. 6.4. The wings vary from moderately infuscated (sometimes more distinctly so on the apical third) to clear hyaline, the wings of some Texas and the New Mexico specimen being especially pale, the veins light brown; in these latter specimens most of the veins and pigmented lines beyond the basal and radial veins are absent. The New Mexico specimen further differs in having the vertex rounded off only a short distance above the eye tops. The specimen from Crescent City, Florida, has the antennae, legs, and abdomen dark castaneous, contrasting to the black head and thorax. I had originally segregated this specimen and that from Aden, N. Mex., as distinct species, but the genitalia appear identical to those of *atra* as do most other structural features.

Plesiallotype.—♀, TEXAS: Cleveland, 6 June 1934, *ex* armadillo [USNM].

Description of plesiallotype.—Length 6.6 mm., LH 1.23 mm., LT 2.2 mm.; abdomen unusually elongate, nearly 4 X as long as maximum width. Uniformly castaneous, tips of antennae slightly paler. Mandibles slender and of unusual form, lower margin bent downward and bearing some long setae; apical tooth

large, second and third teeth small, rounded, basal tooth prominent and angular; basal three teeth drawn well back along inner mandibular margin (Fig. 53). Clypeus truncate, with a high median ridge. Head shining, non-alutaceous; punctures strong but very sparse on vertex and median third of front, on sides and under side of head separated by roughly their own diameters. Head rather convex in cross-section, slender, LH $1.3 \times$ WH, sides of head weakly convergent to near posterior margin, then abruptly convergent to a rather narrow, straight vertex. Eye small, with 16-20 ill-defined facets; HE about $.13 \times$ WH, distinctly less than maximum width of flagellum. Flagellum strongly thickened apically, segment eleven about $.7$ as long as thick. Pronotal disc rather flat, gradually broadened posteriorly, length $.3 \times$ maximum width; disc shining and with five asymmetrically placed punctures. Disc of mesonotum slightly wider than long, shining and impunctate. Propodeum unusually elongate, length $2.35 \times$ as long as maximum width, $4.6 \times$ as long as minimum width, maximum width only about twice minimum width; disc shining, non-alutaceous, impunctate. Mesopleurum unusually flat, shining, with only a few punctures. Femora strongly expanded and flattened, tibiae also somewhat flattened; middle tibiae with thick, spinelike setae mixed in with the spines, hind tibiae also with dense, thick, almost spinelike setae.

Remarks. — Various females have from time to time been associated with *atra*, but all of these are, in my opinion, simply large or unusually colored females of *armifera*. The female described above is sufficiently unusual to belong to a different species complex from *armifera*, and the structure of the mandibles suggests *atra* as the probable male. The significance of the ecological data on the specimen (*ex armadillo*) I do not know; presumably its occurrence on that host was accidental.

11. PRISTOCERA (ACREPYRIS) HYALINA Brues

Pristocera hyalina Brues, 1906, Bull. Wisc. Nat. Hist. Soc., 4: 143. [Type: ♂, TEXAS: Austin (C. T. Brues) (Milwaukee Public Museum)].
—Kieffer, 1914, Das Tierreich, 41: 465.

Plesiotype. — ♂, TEXAS: Houston, 6 July 1939 (J. Vick) [MCZ].

Description of plesiotype. —Length 7.5 mm., LFW 5.5 mm. Entirely black except flagellum, palpi, and apices of legs dark brown; body densely clothed with whitish pile; wings subhyaline, veins brown, stigma almost black. Mandibles five-toothed

and with the lower margin strongly arched, about as in Figure 32. Clypeus truncate and with a high, arched median carina. Antennae elongate, first four segments in a ratio of about 20:4 15:14, segment three 1.6 X as long as thick, segment eleven 3.5 X as long as thick; middle antennal segments very weakly thickened apically beneath, so that the antennae are very indistinctly serrate in profile (Fig. 50); pubescence pale, bristling, setulae on segment eleven about one-fourth as long as width of segment. Eyes with a band of rather long hairs just above the middle. Head shining, non-alutaceous, with many strong though small punctures which for the most part are separated by less than their own diameters; on the sides of the front the punctures are very close and tend to form longitudinal series. Head about as wide as high; front broad; vertex broadly rounded off well above eye tops; WF .63 X WH, 1.4 X HE; ocelli in a broad, rather flat triangle, WOT 1.2 X OOL. Pronotum with the disc short, transversely depressed posteriorly, anteriorly rounded into the vertical anterior face (Fig. 45). Mesonotum strongly shining, both scutum and scutellum wholly covered with strong, well-separated punctures. Propodeum with basal triangle set off by a shallow depression bordered by an irregular carina; median carina strong, reaching the transverse posterior carina, the latter barely discernible amid the reticulate sculpturing. Mesopleurum with a large number of rather small punctures; callus small, weakly punctate. Claws dentate, the tooth short, erect. Fore wing with radial vein rather long and continued nearly to wing tip as a pigmented streak; discoidal cell fully outlined by pigmented lines; cubitus and first recurrent vein represented by weakly pigmented lines; subdiscoidal vein continuing nearly to wing margin as a weakly pigmented streak. Abdomen stout, shining, with abundant setae on the apical segments. Subgenital plate emarginate, about as figured for *armifera* (Fig. 5). Genitalia (Figs. 18, 25) with the parameres strongly excavated on the inner margin such that they present a characteristic profile in both ventral and lateral views; aedoeagus with middle valves terminating in a pair of slender processes which are nearly as long as the lobes of the dorsal valves, the latter thin and somewhat twisted.

Males examined. — Nine, from the following localities: LOUISIANA: 1, Opelousas, March 1897 (G. R. Pilate) [USNM]. TEXAS: 2, Iron Bayou, between Henderson and Carthage, 17 April (A. Stone) [USNM]; 1, Houston, July (J. Vick) [MCZ]; 1, Austin (C. T. Brues) [type, Milwaukee Museum]; 1, San

Antonio, 24 May 1941 [CAS]; 1, 1 mi. S. Marathon, Brewster Co., 17 July 1950 (R. F. Smith) [AMNH]; 1, 7 mi. NE Dell City, Hudspeth Co., 31 July 1950 (R. F. Smith) [AMNH]. NEW MEXICO: 1, Roswell, 12 Sept. 1937 (R. H. Crandall) [UA].

Variation. — The males vary in size from 6 to 9.5 mm., LFW from 4.5 to 7 mm. The specimens from Austin and from western Texas and New Mexico have the wings clear hyaline, the discoidal, subdiscoidal, and recurrent veins barely if at all evident. On the other hand, the Louisiana specimen has the wings lightly clouded on the apical half. This specimen also has the flagellar pubescence very short (setulae of segment eleven only about .2 as long as width of segment) and the ventral valves of the aedoeagus broader and more acute apically than in the other specimens. In several specimens the antennae are shorter than described above (segment eleven about 2.5 X as long as thick) and not at all serrate; in three of the East Texas specimens, most particularly in the type, the ocellar triangle is rather compact, the front angle less than a right angle, the ocello-ocular line exceeding the width of the ocellar triangle.

Remarks. — Unfortunately, the type of this species is a "humbug"; the abdomen is missing, and the abdomen of a *Sierolomorpha* (minus the first segment) is glued to the side of the mount. This specimen (that is, the head and thorax) is also unusually small (LFW 4.5 mm.) and has shorter antennae and a more compact ocellar triangle than is typical of most members of the series before me. For these reasons I have preferred to base my description on a different specimen. I have little doubt that the type is conspecific with the other specimens considered here, but since the genitalia are missing it may never be possible to be certain of this. I am indebted to Dr. Kenneth MacArthur of the Milwaukee Public Museum for letting me borrow the type of this species.

Female. — Unknown.

12. PRISTOCERA (ACREPYRIS) INTERMEDIA new species

Holotype. — ♂, MEXICO: SAN LUIS POTOSI: 18 mi. S. of San Luis Potosi, 1 Sept. 1958 (H. F. Howden) [CNC, no. 7551].

Description of type. — Length 7.5 mm., LFW 5.2 mm. Entirely black; body densely clothed with long, whitish pile; wings moderately heavily infuscated except apical fourth of fore wing paler, veins dark brown, stigma black. Mandibles with five well-developed teeth, about as in Figure 32. Clypeus truncate, its

median carina relatively low. Antennae elongate, first four segments in a ratio of about 20:4:16:15, segment three gradually expanded apically, about twice as long as its maximum width, segment eleven nearly 5 X as long as wide; flagellar segments, except apical four, slightly thickened apically so that the antennae are indistinctly subserrate; pubescence whitish, bristling, setulae of segment eleven .3 as long as width of segment. Head strongly shining, non-alutaceous, punctures relatively weak; punctures on sides of lower front shallow, separated by mostly somewhat less than their own diameters; punctures of upper front and temples very shallow, well separated. Eyes with a few long hairs on upper part. Head slightly wider than high, vertex broadly rounded off a distance above eye tops about equal to eye height; front broad, eyes slightly convergent below; WF .62 X WH, 1.45 X HE; front angle of ocellar triangle about a right angle, WOT .85 X OOL. Pronotal disc somewhat longer than in *hyalina*, about as in *tenochca* (Fig. 44); pronotum with even contours, densely punctate and setose. Mesonotum strongly shining, punctures small, rather sparse medially. Propodeum with basal triangle set off by a shallow depression, longitudinally ridged, remainder of disc with rather strong and regular transverse striae. Mesopleurum strongly shining, with many small punctures which are separated by somewhat more than their own diameters. Claws dentate. Fore wing with discoidal cell weakly outlined, subdiscoidal vein continued beyond it nearly to wing margin, first recurrent vein weakly indicated. Subgenital plate truncate apically. Genitalia with the lateral elements about as in *hyalina*; aedoeagus (Fig. 38) with the ventral valves slender, the middle valves acute and extending about .6 the distance from the apices of the ventral valves to the apices of the dorsal valves, the latter structures somewhat thicker than in *hyalina* and less distinctly twisted than in that species.

Female. — Unknown.

13. PRISTOCERA (ACREPYRIS) TENOCHCA new species

Holotype. — ♂, MEXICO: MORELOS: 9 mi. N. of Cuernavaca, 8500 feet, 27 June 1959 (H. E. and M. A. Evans) [MCZ, no. 30285].

Description of type. — Length 7.5 mm., LFW 5.8 mm. Entirely black; wings subhyaline, with dark setulae, veins dark brown, stigma nearly black; body clothed with whitish pile of moderate length but slightly less dense than in *hyalina* and in

the three species which follow. Mandibles with five teeth, about as in Figure 32. Clypeus rather narrowly subtruncate, weakly notched medially, median carina high and arched. Antennae elongate, first four segments in a ratio of about 22:5:17:15, segment three 2.2 X as long as thick, segment eleven 3.7 X as long as thick; basal flagellar segments weakly depressed, but with no suggestion of serrations; pubescence erect, pale golden, setulae of segment eleven about .4 as long as thickness of segment. Eyes with a band of long hairs just above the middle. Head shining, non-alutaceous; punctures of front strong, separated by generally less than half their own diameters, punctures of vertex and temples very slightly more widely spaced; front with a strong median groove in front of the anterior ocellus. Head about as wide as high; front broad, WF .63 X WH, 1.45 X HE; ocelli in a right triangle, WOT .8 X OOL. Pronotum with disc of moderate length (Fig. 44) closely punctate, transversely depressed before posterior margin; sides and collar striate. Mesonotum shining and almost impunctate medially, sides closely punctate. Propodeum with basal triangle set off by a shallow depression, sculpturing rather irregular, somewhat transverse behind; median carina strong, but no transverse carina behind which is clearly set off from the general sculpturing. Mesopleurum with punctures rather small, separated for the most part by slightly more than their own diameters; callus elongate, weakly punctate, continuous with a longitudinal ridge passing anteriorly and giving rise to some vertical striations. Claws not strongly bent, tooth small, erect. Fore wing with discoidal cell outlined by pigmented lines and subdiscoidal vein continuing nearly to wing margin. Abdomen stout, shining, strongly setose apically. Subgenital plate shallowly emarginate apically. Genitalia with the lateral elements not differing noticeably from those of *hyalina*, shown in Figure 18; aedoeagus (Fig. 37) with the middle valves very prominent and acute, extending about .7 the distance from the apex of the ventral valves to the tip of the aedoeagus; apical lobes moderately thick, hollowed out on the inner margin.

Paratype. — ♂, MEXICO: MEXICO: Agua Bendita, 9700 feet, 2 Aug. 1962 (H. E. Evans) [MCZ].

Variation. — The paratype is slightly smaller than the type (LFW 5.0 mm.) but is closely similar to it in all respects, including the distinctive antennae and aedoeagus. In this specimen antennal segment eleven measures 3.2 X as long as thick; WF is 1.40 X HE, WOT .83 X OOL.

Remarks. — Both type and paratype were collected near the ground in open fields in forested areas at high elevations. This species bears much resemblance to *hyalina*, but the pronotum is slightly longer and less densely hairy, the antennae are slightly longer and more strongly pubescent, and the sculpturing of the propodeum is slightly different.

Female. — Unknown.

14. PRISTOCERA (*ACREPYRIS*) *NEBULOSA* new species

Holotype. — ♂, GUATEMALA: Cerro Zunil, 4-5000 feet (G. C. Champion) [BMNH].

Description of type. — Length about 10 mm.; LFW 7.8 mm. Head and thorax black, abdomen piceous; scape black, flagellum very dark brown; legs nearly black except tips of tarsi fading to medium brown; fore wing subhyaline basally, apical half (starting below stigma) distinctly infuscated; hind wing lightly infuscated on apical half. Body clothed rather densely with whitish erect setae. Mandibles with five teeth, the fourth tooth somewhat smaller than the others (about as in Fig. 32). Clypeus broadly emarginate apically, its median carina arched in profile. Antennae elongate, first four segments in a ratio of about 32:6:27:23, segment three 3 X as long as thick, segment eleven 5 X as long as thick; basal flagellar segments rather strongly flattened, as seen in profile only very slightly thickened apically; pubescence erect and bristling, setulae of segment eleven .8 as long as width of segment. Eyes with some short hairs on upper part. Front entirely covered with coarse punctures, the interspaces reduced to a reticulum of round-topped ridges; front weakly impressed along the midline. WH 1.05 X LH; WF .60 X WH, 1.36 X HE; ocelli in a compact triangle, front angle very slightly less than a right angle; WOT .7 X OOL. Vertex broadly rounded off a distance above eye tops equal to about two-thirds HE. Pronotal disc moderately long, about as in *tenochca* (Fig. 44), along the midline measuring about three-fourths as long as mesoscutum; surface densely covered with transverse setigerous punctures; sides and collar weakly striate. Propodeal disc about 1.2 X as wide as long; median carina complete; basal triangle weakly depressed but not bordered by carinae, basally with some short longitudinal carinae, apically with transverse carinae; disc rather weakly sculptured and shining postero-laterally, but the declivity coarsely reticulate, the declivity not otherwise separated from the disc. Mesopleurum

covered with strong punctures. Claws strongly bent, tooth small but subparallel to outer ray, subtruncate apically (Fig. 59). Fore wing with discoidal cell strongly outlined, subdiscoidal vein strong nearly to wing margin, first recurrent vein also strongly pigmented. Subgenital plate emarginate apically (Fig. 8). Genitalia (Figs. 21, 23) having the general form of those of *hyalina*, the parameres bent slightly laterad at their tips; aedoeagus with the middle valves very strong, as in *hyalina* and *tenochca*, the dorsal valves somewhat thicker than in those species.

Remarks. — There can be no doubt of the close relationship of this species to *hyalina* and *tenochca*, but the eyes are less prominently hairy and the genitalia slightly different. The unusual claws and the weakly hairy eyes suggest *rugifrons*, and in fact the type is a paratype of Cameron's *rugifrons*. However, the longer pronotum and longer middle valves of the aedoeagus readily distinguish it from that species; also, the tooth of the claws is more slender and less conspicuously truncate.

Female. — Unknown.

15. PRISTOCERA (ACREPYRIS) VARIDENS (Cameron) new combination

Epyris varidens Cameron, 1904, Trans. Amer. Ent. Soc., 30: 262. [Type: ♂, MEXICO (no further data) (BMNH)]. —Kieffer, 1914, Das Tierreich, 41: 344.

Pristocera alticola Kieffer, 1911, Ann. Soc. Sci. Bruxelles, 35: 213. [Type: ♂, MEXICO: GUERRERO: Xucumanatlan, 7000 feet, July (H. H. Smith) (BMNH)]. New synonymy. —Kieffer, 1914, Das Tierreich, 41: 466.

Description of type. — Length 8.2 mm., LFW 6.0 mm. Entirely black, including legs and antennae, latter with a bluish cast; wings lightly tinged with brownish, setulae dark, veins brown, costa, subcosta, and stigma nearly black; head and thorax clothed rather densely with long, whitish hairs. Mandibles with four teeth, a considerable gap separating the basal two teeth (as in Fig. 35). Clypeus with a broadly V-shaped emargination, median carina low, not arched. Antennae elongate, first four segments in a ratio of about 24:5:22:20, segment three 2.3 X as long as thick, segment eleven about four times as long as thick; basal segments of flagellum slightly depressed, very weakly serrate in profile; pubescence suberect, light brown, rather dense and short as compared to preceding two species, setulae of segment eleven only .3 as long as thickness of flagellum. Eyes with long setae on upper half. Head shining, strongly

punctate, punctures of sides of front very crowded, those of vertex and temples weaker and well separated; front with a strong linear median impression. WH 1.05 X LH; front of moderate breadth, WF .58 X WH, 1.35 X HE; ocelli in a right triangle, WOT .9 X OOL. Vertex broadly rounded off a distance above eye tops about equal to HE. Pronotal disc moderately long, with the usual transverse subapical depression, contours otherwise rather even (shape about as in *tenochca*, Fig. 44); punctures close; sides and collar striate. Mesonotum shining, punctures sparse medially, crowded laterally. Basal triangle of propodeum small, margined by a carina, disc shallowly depressed bordering outside of carina; entire disc outside triangle with rather strong, regular transverse rugae. Mesopleurum polished, with small punctures even on callus. Claws dentate, the tooth acute, sloping outward somewhat, subparallel to outer ray. Fore wing with radial vein continued as a pigmented streak nearly to wing tip, discoidal cell fully outlined by pigmented streaks, subdiscoidal vein continued as a faint streak nearly to wing margin, first recurrent vein also weakly indicated. Subgenital plate shallowly emarginate. Genitalia with the lateral elements much as in related species (as in Figs. 18, 20); aedoeagus (Fig. 36) much as in *tenochca* but the middle valves shorter, extending only about half the distance from the apex of the ventral valves to the tip of the aedoeagus; apical lobes of dorsal valves slightly thicker and more bulbous than in *tenochca*, less so than in *chihuahua*.

Other males examined.—Eight, from the following Mexican localities: MORELOS: 1, 4 mi. NW Cuernavaca, 7500 feet, 28 June 1959 (H. E. Evans) [MCZ]; 1, YMCA Camp, Tepoztlan, 21 Aug. 1958 (H. F. Howden) [CNC]; MEXICO: 1, 10 miles E. of Toluca, 8900 feet, 31 July 1954 (J. G. Chillcott) [CNC]; 1, Real de Arriba, Temascaltepec, 10 July 1933 (H. E. Hinton & R. L. Usinger) [CAS]; PUEBLA: 1, Atlixco, 13 Aug. 1903 (W. L. Tower) [AMNH]; QUERETARO: 1, 10 mi. E. of San Juan del Rio, 30 July 1954 (J. G. Chillcott) [CNC]; MICHOACAN: 1, Tuxpan, 11 July 1951 (P. D. Hurd) [CIS]; GUERRERO: 1, Xucumanatlan, July (H. H. Smith) [type of *alticola*, BMNH].

Variation.—The specimens from Cuernavaca, Toluca, Tuxpan, and San Juan del Rio have the mandibles five-toothed, but in all the others they are four-toothed. The wings vary from nearly hyaline to somewhat clouded, and in the San Juan del Rio and Tuxpan specimens the wings are heavily infuscated except

apically. Variation in mandibular dentition is known in other species (*californica*, *chihuahua*) and considerable variation in wing color is also exhibited by other species (*atra*, *hyalina*, and especially *chihuahua*). Thus I believe all eight specimens to belong to one species, and the genitalia confirm this. The smallest specimen is that from Tepoztlan (LFW 5.4 mm.), the largest that from Atlixco (LFW 9 mm.). The strength of the tooth of the tarsal claws shows an unusual amount of variation in this species; in the type of *alticola* it is unusually long, as illustrated by Kieffer. However, this specimen stands very close to the type of *varidens* in all other respects, including the genitalia, and I cannot believe that it is specifically distinct. In the Tuxpan specimen the claws are identical to those of the type of *alticola*.

Female. — Unknown.

16. PRISTOCERA (ACREPYRIS) CHIHUAHUA new species

Holotype. — ♂, MEXICO: CHIHUAHUA: Catarinas, 5800 feet, 26 July 1947 (D. Rockefeller Exp.; W. Gertsch) [AMNH].

Description of type. — Length 12 mm.; LFW 8.1 mm. Black, first abdominal segment suffused with light brown laterally and apically; flagellum dark brown; wings wholly fuliginous except apex of fore wing somewhat paler; head, thorax, legs, and apical parts of abdomen densely clothed with pale setae. Mandibles with four teeth (Fig. 35). Clypeus with a broadly V-shaped emargination, median carina arched in profile. Antennae very long, first four segments in a ratio of about 30:5:28:26, segment three 2.3 X as long as its greatest width, segment eleven 4 X as long as wide; flagellar segments (except apical two) slightly depressed, very slightly widened apically, such that the profile is very weakly serrate (Fig. 49); pubescence very short, setulae of segment eleven about .15 X as long as width of segment. Eyes with several long hairs in a band on the upper part. Head strongly shining, punctures relatively shallow and weak but quite numerous, subcontiguous except more widely spaced on vertex; front with a median impression in front of anterior ocellus. Head about as wide as high, vertex broadly rounded off far above eye tops; front broad, WF .60 X WH, 1.42 X HE; ocelli in a rather flat triangle, front angle greater than a right angle, WOT and OOL subequal. Pronotal disc short, with even contours except for posterior transverse depression, densely punctate. Mesoscutum and scutellum wholly covered with small punctures.

Propodeum with basal triangle defined by a shallow depression; median carina complete to upper part of declivity, transverse carina not distinguishable from the transverse striations. Mesopleura wholly covered with small punctures. Claws dentate, tooth short and suberect. Wings with discoidal cell fully outlined by pigmented lines; radial, cubital, and subdiscoidal veins nearly reaching wing margin as pigmented streaks; first recurrent vein evident as a pigmented streak; pale streaks on outer part of wing (following courses of obsolete veins) unusually conspicuous because of the dark wing membrane. Subgenital plate truncate apically. Genitalia (Fig. 20) with the lateral elements about as in the preceding several species, but with the tip of the aedoeagus conspicuously bulbous, with a small dorsal tubular element between the lateral lobes and extending beyond the apices of the middle valves.

Paratypes. — CHIHUAHUA: 2 ♂♂, same data as type except one taken by M. A. Cazier [AMNH, MCZ]; 1 ♂, Santa Barbara, 6200 feet, 17 Aug. 1947 (G. M. Bradt) [AMNH]; 1 ♂, 63 mi. W. Santa Barbara, 5500 feet, 20 July 1947 (W. J. Gertsch); 2 ♂♂, Valle de Olivos, 5500 feet, 20 July 1947 (C.D. Michener) [AMNH]. ZACATECAS: 1 ♂, 2 mi. S. Fresnillo, 16 July 1954 (MacSwain and Schlinger) [CIS]. ARIZONA: 1 ♂, Mustang Mts., Santa Cruz Co., 30 July 1941 (R. H. Beamer) [KU]; 1 ♂, Douglas, Cochise Co., 15 Aug. 1936 (W. W. Jones) [USNM].

Variation. — The largest paratypes, those from 63 mi. W. of Santa Barbara, and one of those from Valle de Olivos, Chihuahua (LFW about 8.5 mm.), have the wings slightly paler than in the type. The second Valle de Olivos specimen is striking in that the wings are subhyaline and the mandibles have a small fifth tooth (about as in Fig. 33), even though in all other paratypes the mandibles are 4-toothed (Fig. 35). The smallest specimen, that from Douglas, Ariz. (LFW 6.6 mm.) has the punctures of the head and thorax slightly weaker than in the type. The specimen from the Mustang Mts., Ariz., although a large one (LFW 8.2 mm.), has the punctures very small and shallow, particularly on the vertex and upper part of the front; the latter are strongly polished and almost impunctate. This specimen and three of those from Chihuahua lack hairs on the eyes, presumably because they have been rubbed off.

Female — Unknown.

17. PRISTOCERA (ACREPYRIS) RUGIFRONS (Cameron)

Epyris rugifrons Cameron, 1888, Biol. Centr.-Amer., Hymen. I, p. 449, pl. 19, fig. 12. [Type: ♂, GUATEMALA: Las Mercedes, 3000 feet (G. C. Champion) (BMNH)].

Pristocera rugifrons Kieffer, 1908, Genera Insect., 76: 22. —Kieffer, 1914, Das Tierreich, 41: 467-468.

Description of type.—Length 9 mm.; LFW 6.3 mm. Head and thorax black; abdomen, legs, and antennae very dark brown; wings lightly infuscated, veins and stigma brown. Body hairs whitish. Mandibles with four teeth, with a wide gap between the basal two teeth (as in Fig. 35). Clypeus with a broadly V-shaped apical emargination; median carina strong. First four antennal segments in a ratio of about 26:5:20:18, segment three 2.5 X as long as thick, segment eleven 4 X as long as thick; pubescence whitish, semi-erect, setulae of segment eleven .25 X as long as width of segment; basal flagellar segments somewhat flattened, obscurely serrate in profile. Eyes with a few short hairs above. Front with a median groove in front of anterior ocellus, with coarse, contiguous punctures on sides and below, impunctate just in front of and behind ocellar triangle. WH 1.08 X LH; inner orbits converging below, WF .56 X WH, 1.25 X HE. Ocelli in a compact triangle, the front angle very slightly less than a right angle; WOT .75 X OOL. Vertex broadly rounded off a distance above eye tops equal to about .7 X HE. Pronotum very short, depressed along posterior margin, coarsely punctate. Mesoscutum polished, almost impunctate between notauli; scutellar disc covered with small punctures. Propodeal disc with the basal triangle limited by a shallow depression, filled with irregular carinae; median carina incomplete on basal half, then continuing irregularly to lower portion of declivity; postero-lateral portions of disc with weak, irregular transverse striae. Mesopleura polished, weakly punctate. Claws bifid, inner ray broad, truncate, subparallel to outer ray (Fig. 58). Fore wing with discoidal cell closed, first recurrent vein distinct, radial and subdiscoidal veins continued to outer wing margin as faint pigmented streaks. Subgenital plate weakly emarginate medially. Genitalia (Fig. 19) resembling closely those of *varidens* and *tenochca*, differing chiefly in minor details of the middle and dorsal valves of the aedoeagus.

Remarks.—Cameron's statement that the body hairs of this species are fuscous is incorrect; they are whitish as in other species of the genus. Nor are the wings fuscous, as he describes and figures them, but merely lightly tinged with fuscous. Also

the apex of the abdomen is not "red," but simply weakly suffused with brownish.

Female. — Unknown.

18. *PRISTOCERA* (*ACREPYRIS*) *PALLIDITARSIS* (Cameron) new combination

Epyris palliditarsis Cameron, 1897, Ann. Mag. Nat. Hist., (6)19: 274.

[Type: ♂, MEXICO: TABASCO: Teapa, March (H. H. Smith) (BMNH)]. —Cameron, 1899, Biol. Centr.-Amer., Hymen. I, Suppl., p. 473.

Description of type. — Length 10 mm.; LFW 7.5 mm. Body entirely black; mandibles black, dark rufous apically; antennae black; legs black except basal two segments of middle and hind tarsi conspicuously whitish; fore wing hyaline on basal half except somewhat infuscated along veins, apical half distinctly tinged with brown, especially strongly so just below and beyond stigma; hind wings hyaline, weakly infuscated apically. Body hairs whitish. Mandibles with five teeth, the fourth tooth very much smaller than the others. Clypeus with its apical margin weakly concave, median carina weakly arched in profile. First four antennal segments in a ratio of about 30:6:19:18, segment three 2.5 X as long as thick, segment eleven 3.8 X as long as thick; pubescence pale, suberect, setulae of segment eleven .4 as long as width of segment. Front polished, coarsely punctate, the punctures subcontiguous in longitudinal series, the interspaces forming irregular round-topped ridges; vertex and temples with the punctures well separated. Eyes with sparse, short setae on upper part. Head very broad, WH 1.10 X LH; inner orbits strongly convergent below, WF .53 X WH, 1.10 X HE. Ocelli in a compact triangle, front angle less than a right angle; WOT .77 X OOL. Vertex rather narrowly rounded off a distance above eye tops equal to about .6 X HE. Pronotum short, coarsely punctate, with some irregular transverse rugae just before the subapical depression. Mesoscutum polished, covered with strong punctures which are more widely spaced medially than on the sides; notauli not quite attaining posterior margin; scutellar disc strongly punctate. Propodeal disc with basal triangle large, coarsely reticulate, bordered by carinae flanking a shallow depression; median carina attaining the relatively strong transverse carina; postero-lateral portions of disc with moderately strong, rather irregular sculpturing. Mesopleurum covered with large punctures except callus weakly punctured. Claws

bifid, inner ray broader than outer ray and of about the same length (as in Fig. 56). Fore wing with the discoidal cell strongly outlined, subdiscoidal vein strong all the way to outer wing margin, first recurrent vein weakly indicated. Subgenital plate truncate apically. Genitalia (Fig. 27) of striking form, particularly the aedoeagus, which has both ventral and middle valves very short and not overlapping, the dorsal valves broadly expanded apically, with thin, unpigmented flanges which extend laterad and are surpassed by the pigmented median lobes.²

Other males examined. — One, PANAMA: Bugaba (G. C. Champion) [BMNH].

Variation. — The Panama specimen is smaller (LFW 5.8 mm.) and has less white on the tarsi: only the basal segments of the middle and hind tarsi are whitish, and these only on the basal three-fourths. In this specimen the antennae are longer and have slightly longer setulae; segment eleven measures nearly 5 X as long as thick, and bears setulae which are about half as long as the width of the segment. In other respects the resemblance to the type is very close.

Female. — Unknown.

19. PRISTOCERA (ACREPYRIS) SINALOA new species

Holotype. — ♂, MEXICO: SINALOA: Venedio, 17 June 1918 (E. C. VanDyke) [CAS].

Description of type. — Length 9.5 mm., LFW 6.7 mm. Head and thorax black, abdomen dark reddish-brown; mandibles dark reddish-brown apically; flagellum brown; legs dark brown except tarsi light yellowish-brown; wings subhyaline except fore wing distinctly clouded on apical third, more intensely so anteriorly, in and just below radial cell. Erect hairs of head and thorax whitish, moderately dense. Mandibles with five teeth, fourth tooth smaller than the others, lower mandibular margin arched (much as figured for *cockerelli*, Fig. 32). Clypeus with a broadly V-shaped apical emargination; median carina not arched in profile. Antennae with first four segments in a ratio of about 30:5:19:18, segment three 2.2 X as long as thick, segment eleven 3.2 X as long as thick; flagellar segments not at all thickened apically; pubescence light brown, suberect, setulae of segment eleven about one-fourth as long as thickness of segment, each

² The description and figure of the genitalia are based on the specimen from Panama, the genitalia of the type not having been extracted.

flagellar segment (but especially more basal segments) also with a few erect setulae which are about twice as long as pubescence. Eyes with some weak, short hairs on upper part. Head polished, strongly punctate; punctures of front and to some extent of temples subcontiguous in irregular longitudinal rows, those of vertex well separated. Front relatively narrow, WF .56 X WH, 1.2 X HE; ocelli in a small triangle, front angle less than a right angle, WOT .72 X OOL and considerably less than distance from hind ocelli to vertex crest. Pronotum with sides and anterior face strongly polished, disc strongly punctate, without rugae but with a strong transverse apical depression. Mesoscutum with notauli strong and complete, space between notauli with only a few punctures but sides strongly punctured; scutellum sparsely punctured. Propodeal disc with basal triangle set off by a shallow depression bordered by weak carinae; median carina moderately well developed, reaching the rather strong transverse carina bordering the declivity; sculpturing of disc rather irregularly reticulate. Mesopleurum with strong, close punctures. Claws with the middle tooth long, actually thicker than the outer tooth (Fig. 56). Fore wing with the discoidal cell closed by weak veins, radial, cubital, and subdiscoidal veins extending nearly to wing margin as weakly pigmented streaks. Abdomen stout, shining. Subgenital plate weakly emarginate, about as figured for *armifera* (Fig. 5). Genitalia (Fig. 28) much like those of *palliditarsis* but parameres somewhat more slender and more curved apically, aedoeagus with lateral apical flanges complex and extending beyond median lobes.

Female. — Unknown.

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