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Revision of Neotropical *Eurhin* (Coleoptera, Curculionidae, Baridinae)

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CONTENTS

Abstract	1
Introduction	2
Acknowledgments	2
Checklist of Species of <i>Eurhin</i>	3
History	3
Corrections for Catalogues	4
Biology	4
Distribution and Sympatry	5
Sexual Dimorphism	5
Discussion of Characters	6
Systematics	8
Key to the Species of <i>Eurhin</i>	10
Descriptions of the Species	12
Appendix: Specimens Examined	39
Literature Cited	42

ABSTRACT

The original name *Eurhin* Illiger is reinstated because the name *Eurhinus* is preoccupied by the same name in the Apioninae. The 23 species recognized as valid include species formerly in *Eurhinopsis* Champion which is here considered a synonym. The 24 names that follow are new synonyms: *cyaneus* (Gyllenhal), *callichloris* (Lucas), *viridipes* (Champion), *heringeri* (Bondar), *violaceus*, *humeralis*, *cobaltinus* (Casey) of *festivus*

(Fabricius); *cavilobus*, *prominens*, *binarius*, *minuens*, *gemmaulus* (Casey) of *magnificus* (Gyllenhal); *willinki* (Bondar) of *purpureus* (Hustache); *cavicornis* (Casey), *splendidus* (Bondar), *lobicornis* (Hustache) of *cupratus* Illiger; *laetus* (Casey) of *atritarsis* (Chevrolat); *puncticollis*, *gramineus* (Casey) of *flaturarius* Germar; *obliqua*, *angulata*, *incerta* (Casey) of *recticollis* (Casey); *malachiticus* (Kirsch) of *aeneus* (Fabricius); *convexa* (Casey) of

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viridicolor (Champion). Many of these species were based on color alone. *Eurhin magnificus*, however, is not a color variety of *festivus*, but a valid species. Three new species are described: *carinatus* and

dissimilis, Brazil, and *mathani*, Peru. Secondary sexual characters of pronotum, rostrum, and femora not previously noted are described for males of three species.

INTRODUCTION

The weevils of the genus *Eurhin* differ from other members of the subfamily in the combined presence of bright metallic colors, glabrous dorsal surface, and exposed pygidium (not covered by the elytra). In addition the mesepimeron is barely visible from above except as a tiny angle. In shape they are generally short and wide rather than elongate, with the rostrum in repose hidden between the front legs. Some species are not more than 3 or 4 mm. in length; the largest measure 9 mm. The geographic range is chiefly South America, with a few species occurring in Central America, Mexico, and the Greater Antilles. Adults of several species have been collected in the galls of *Cissus* species (family Vitaceae) in the stems of which the larvae bore.

These small weevils of the New World tropics are jewels of the insect fauna, resembling some Chrysomelidae in their brilliant blue, green, and red colors. A remark by Champion ("1906-1909" [1908], p. 393) that "The species of this genus seem to require a thorough revision, as they have been mainly based on colour, and no allowance appears to have been made for any variation in this respect . . ." intrigued me to inquire further about them. I found first, that 14 of the 30 species listed for "*Eurhinus*" by Blackwelder (1947) were described by one man, Casey, and that second, a study of Casey's types of the Baridinae was in progress at the National Museum of Natural History, Smithsonian Institution, Washington, D.C. A study of this group of the Baridinae could therefore serve two purposes: to find specific characters other than color and to evaluate Casey's species for the Smithsonian.

Thomas L. Casey lived from 1857 to 1925 and published on many families of Coleoptera, his collected works numbering 12 volumes. His description of species based on minute individual variations has resulted in the synonymizing of many of his names. For

many species he had only one or two specimens or specimens without locality information. For his long work on the subfamily Baridinae (1922), he had at hand a large collection made some years previously by Herbert H. Smith in Brazil, chiefly in Mato Grosso and Pará, and a collection of Desbrochers des Loges "in rather poor state of preservation and deficient in records of locality." Casey emphasized that he had only this material, that he found it impossible to identify older species from the works of Schoenherr, and that he had no access to any type material of previously published species. Naturally, these conditions would lead to a proliferation of names in synonymy, which is exactly what happened in the present instance, as I find only two valid species among those described by Casey. It is true that he utilized characters other than color in his descriptions, but in these characters, as in the color, he did not allow for the considerable individual variation that exists.

Except for the works of Champion and Casey, there is no detailed study of this genus. Hustache (1924, 1926, 1949) published several isolated descriptions, and Bondar (1948) reviewed four species, including three new ones, but he was more interested in the biology. He described and illustrated the new species, but, as was true of Casey, Bondar evidently did not know previously described species and his names are synonyms.

Of the 50 described forms, I recognize 23 species as valid. I have examined approximately 1450 specimens, including the types of 35 forms, and have designated lectotypes for seven species of Champion, Casey, and Bondar.

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CHECKLIST OF SPECIES OF *EURHIN*

(In the order in which they appear in the text.)

1. *festivus* (Fabricius)
cyaneus (Gyllenhal), new synonymy
suturalis (Chevrolat)
callichloris (Lucas), new synonymy
viridipes (Champion), new synonymy
violaceus (Casey), new synonymy
humeralis (Casey), new synonymy
cobaltinus (Casey), new synonymy
heringeri (Bondar), new synonymy
2. *magnificus* (Gyllenhal)
cavilobus (Casey), new synonymy
prominens (Casey), new synonymy
binarius (Casey), new synonymy
minuens (Casey), new synonymy
gemmulus (Casey), new synonymy
3. *cupripes* (Pascoe)
4. *yucatecus* (Champion)
5. *purpureus* (Hustache)
willinki (Bondar), new synonymy
6. *cupratus* Illiger
corruscans (Kirby)
rubinus (Perty)
cavicornis (Casey), new synonymy
splendidus (Bondar), new synonymy
lobicornis (Hustache), new synonymy
7. *atritarsis* (Chevrolat)
laetus (Casey), new synonymy
8. *argentinensis* (Hustache)
9. *azureatus* (Casey)
10. *viridis* (Boheman)
suffusus (Casey)
11. *ascensionensis* (Hustache)
12. *chevrolati* (Champion)
13. *dissimilis*, new species
14. *flaturarius* Germar
puncticollis (Casey), new synonymy
gramineus (Casey), new synonymy
15. *thalassinus* (Gyllenhal)
16. *recticollis* (Casey)
obliqua (Casey), new synonymy
angulata (Casey), new synonymy
incerta (Casey), new synonymy
17. *aureus* (Hustache)
18. *carinatus*, new species
19. *mathani*, new species
20. *aeneus* (Fabricius)
auritus (Gyllenhal)
malachiticus (Kirsch), new synonymy
21. *adonis* (Hustache)
22. *viridicolor* (Champion)
convexa (Casey), new synonymy
23. *aeruginosus* (Champion)

HISTORY

Illiger (1807a, 1807b) used the non-Latin name *Eurhin* for his new genus of Baridinae on pages 302 and 326, with *E. cupratus* as the only species (in a reprint of his 1856 work on page 326 the spelling was changed to *Eurhinus*). Germar (1824) in describing *Eurhin flaturarius* mentioned the Latin form *Eurhinus*, but he used *Eurhin* for his species. Kirby (1819) had already described *Eurhinus* for two species of weevils of the oriental region in the subfamily Apioninae. Schoenherr (1825) emended the baridine *Eurhin* to *Eurhinus* with *E. cupratus* again as the type species, and in 1833 he emended the apionine *Eurhinus* Kirby to *Eurhynchus*, but Kirby (1828, p. 324, fn.) had already changed his apionine name of *Eurhinus* to *Eurhynchus* "to avoid confusion" he said, with the baridine *Eurhin* Illiger. The confusion was compounded, however, when it was found but not until Marshall (1952) that the name *Eur-*

rhynchus was preoccupied in birds (Berthold, 1827). Thus for over 100 years there remained *Eurhinus* for the Baridinae and *Eurhynchus* for the Apioninae until Marshall (*loc. cit.*) pointed out the priority of Kirby's name and suggested *Eurrhinus* (an extra r) for the Baridinae. Recently it has been stated (personal commun.) by G. Kuschel, R. T. Thompson, D. R. Whitehead, and E. C. Zimmerman that, according to the International Code, the name *Eurhin* must be used for the Baridinae. Kissinger (1968) reinstated *Eurhinus* for the Apioninae; he also gave a new tribal name of Eurhinini which is a homonym of Eurhinini Casey. A proposal to resolve this nomenclatural morass has been submitted to the International Commission for Zoological Nomenclature (R. T. Thompson, personal commun.).

Between 1830 and 1886 from one to three species each were described by Boheman, Gyllenhal, Chevrolat, Lucas, Kirsch, and Pascoe. In 1836 Gyllenhal transferred *festivus* (Fabricius) from *Curculio* to *Eurhinus*. In 1908 Champion revised the five species from Mexico and Central America, including two new species; he also proposed a new genus, *Eurhinopsis*, for two new species from Mexico and Costa Rica. Casey (1922) added 14 species to *Eurhinus* and five to *Eurhinopsis*; Hustache (1924, 1926, 1949) added five new species to *Eurhinus* and three to *Eurhinopsis*; Bondar (1948) described three species in *Eurhinus*. Finally, Hustache (1938) transferred *aeneus* (Fabricius) and *malachiticus* (Kirsch) from *Eurhinus* to *Eurhinopsis*. In the present paper I synonymize *Eurhinopsis* with *Eurhin* and describe three new species.

CORRECTIONS FOR CATALOGUES

The names that follow are listed in the catalogues of Hustache (1938) and/or Blackwelder (1947) under *Eurhinus*, but they do not belong there: *laevipennis* Champion "1902-1906" [1905] was described in the genus *Eurhoptus*, and *squamiger* Broun (1880) in *Euthyrhinus*, both in the Cryptorhynchinae; *longiclavus* Hustache (1924), appearing in Blackwelder (1947) under *Eurhinus*, had been transferred by Hustache (1938) to *Diastethus* Pascoe and *eximius* Pas-

coe (type examined by me) is probably also in *Diastethus*; *subcylindricus* Champion "1906-1909" [1908] is a *nomen nudum*.

In the catalogues one of the synonyms of *cupratus* is given as *rubricus*, whereas it should be *rubinus*, and *laetus* and *suffusus* of Casey are listed twice in Blackwelder (1947) as species and as synonyms. Guérin's *flatuarius* (misspelling) was not a description, but evidently an error for *flaturarius* Germar (1824).

Five barid names were omitted from the catalogues as they were described too late for inclusion: *ascensionensis* and *lobicornis* of Hustache (1949) and *heringeri*, *splendidus*, and *willinki* of Bondar (1948).

BIOLOGY

Nothing was known about the food preferences or breeding places of the *Eurhin* weevils until Bondar (1948) discovered information concerning some of them. He found that at least three species—*festivus* (his "*heringeri*"), *cupratus* (his "*splendidus*"), and *azureatus* Casey—were taken from galls in the stems of *Cissus*, a large genus of tropical woody vines allied to *Vitis*, the grape vines of the same family Vitaceae. The specimens of *azureatus* were collected on the leaves of *C. salutaris* in southern Minas Gerais, Brazil; those of the two other species issued from the galls of *C. cicyoides*, also collected in Minas Gerais by Heringer. Bondar stated that each species makes its own gall and that in galls of the same plant one could encounter one or another species but not both together. According to Bondar, the presence of eggs or larvae within the stem evidently provokes an irritation of the fibers which then become atrophied. The larvae feed on the sap or juice ("seiva") without chewing on the fibers except to enlarge the holes where they lodge. In one gall Bondar found more than a dozen adults in cells measuring from 7 mm. or more in diameter and from one to 12 mm. in length. There was no trace of gnawed fibers or of canals opened by larvae because the larvae do not eat the trunk of the stem but feed only on the juice. Bondar (1948, p. 15) illustrated two sides of a gall showing the holes of the merging adults as well as the adults and larvae in their cells.

According to Bondar, the Vitaceae are represented in Brazil by *Cissus* and farther north by *Vitis*. Araujo (1968) reported *E. magnificus* in the Vitaceae and also in *Andira* and *Vernonia* of the Carduaceae. A specimen of *E. flaturarius* is noted as having been collected on *Mikania* of the Carduaceae, and *E. viridis* on *Cissus*. No information is available on the remaining species.

DISTRIBUTION AND SYMPATRY

Nineteen of the 23 *Eurhin* weevils occur in South America where 14 are endemic. Not occurring in South America are *magnificus* and *aeruginosus* (Mexico and Central America) and two species endemic to Mexico (*cupripes*, *yucatecus*). Four species from South America (*aeneus*, *atratarsis*, *festivus*, *viridicolor*) are found also in Central America or Mexico, and one (*cupratus*) also in three of the Greater Antilles (Cuba, Dominican Republic, Jamaica). The widespread *festivus* inhabits the first two of the islands mentioned, also Haiti. There are no records from farther east in Puerto Rico.

The most widespread species and the most numerous in collections is *festivus* which extends from Argentina north through Central America to Durango in northern Mexico (I have seen more than 400 specimens); *cupratus* occurs in nine countries of South America. More species (17) are found in Brazil than elsewhere, from six to nine species in Argentina, Paraguay, Bolivia, Peru, Colombia, and Venezuela, and 10 in the Guianas. Ecuador and Uruguay have only three species represented, and Chile none. There are only six species known from Central America (four, Costa Rica; four, Panama; one or two from remaining countries), and seven from Mexico. The number of individuals from Central America is also low, except for 38 *magnificus* from Costa Rica. Bondar (1948) considered this group quite rare; he said that in more than 30 years of practicing entomology he had collected only two examples. However, his friend Heringer sent him good series of two of his new species, taken from their host plants (see Biology above).

There are many sympatric species. In Misiones, Argentina, five species occur (*ado-*

nis, *argentinensis*, *cupratus*, *festivus*, *thalassinus*); in Santa Cruz, Bolivia, six (*adonis*, *aeneus*, *azureatus*, *cupratus*, *festivus*, *viridis*); in the state of Santa Catarina, Brazil, seven species of which six are in Nova Teutonia alone; Cayenne, French Guiana, has five species. Sympatry is present in other regions of Brazil: Bahia, Minas Gerais, Mato Grosso, Pará, São Paulo, Rio de Janeiro, Amazonas; in Mexico: the states of Oaxaca, Chiapas, Veracruz, Puebla; in Alta and Baja Verapaz, Guatemala; Cartago and San Jose, Costa Rica; and the Canal Zone, Panama. (See figs. 51–55).

SEXUAL DIMORPHISM

The sexes are not so readily differentiated as they are in many of the Baridinae, and in the smaller species some of the differences are only feebly evident. One can say, however, that a specimen is a male if the first segment of the abdomen is concave; if the last segment has a small apical median angle; if the front legs are longer than the other legs and if their third tarsal segments are enlarged, wider than those on other tarsi; if the apex of the antennal scape is distant from the base of the rostrum by the length of two or more antennal segments; if the segments of the antennal funicle are very wide, notably wider than long, and strongly compressed, with deep depressions on their lower face. A given male does not necessarily show all the traits noted above. The apical angle of the last segment of the abdomen is lacking (or it is too small to be visible) in *atratarsis*, *cupripes*, *festivus*, *magnificus*, *thalassinus*, and *yucatecus*.

In females the first segment of the abdomen is flat or feebly convex and the last segment lacks a median angle; the front legs are not lengthened or the tarsal segments enlarged; the apex of the antennal scape is either approximate to the base of the rostrum or is at least closer to it than that of a male of the same species; the funicle is less wide, the segments are more elongate, and the depressions of the lower face, if present, are shallower. In several species the mentum of females under the apex of the rostrum shows an angle or tubercle not generally present in males. The apex of the abdomen is smooth and glabrous

except for some species (*adonis*, *aeneus*, *ascensionensis*, *viridis*) in which there are two setose foveae as in males, but smaller, and for *yucatecus* which has a single setose fovea, and for *magnificus* which has a nude fovea.

Specific secondary sexual characters have been discovered for males of three species: *thalassinus* in which the sides of the apex of the rostrum are angulate, causing the area of the mentum between the angles to be concave; *recticollis* in which the inner apex of the front femora is prolonged as a small angle or spur; *mathani* in which the front of the pronotum on each side has a cuplike area surmounted by elevated crests.

DISCUSSION OF CHARACTERS

Some of the characters above are obscured due to the pinned or papered preparation of the majority of specimens in collections. With care, however, the legs can be pushed away with a pin so that the underside and most of the rostrum and antennae are exposed; or the specimen can be relaxed.

COLOR: The brilliant metallic colors of species of *Eurhin* are apparently structural, of a physical, not of a chemical or pigmentary, nature. They are caused by interference and diffraction of the laminae in the cuticle, and change according to the angle from which they are seen or change from a view in daylight to a view under a lighted microscope. In Shelford (1917) on tiger beetles one reads that "bright metallic and spectrum colors in various insects . . . are due to very thin surface films, metallic in character" and that "a change in color with a change in the angle of incidence indicates the presence of metallic film." Nelson (1980, p. 87) said that "the occurrence of dark or cupreous color phases of green forms is not rare among Buprestidae," and he found *Buprestis*, for example, that dark green to purplish specimens were not specifically distinct from ones with cupreous margins. In both these families of Coleoptera some color phases have been considered subspecies and some individual variants. In *Eurhin* I have not found any geographical separation by color; different color forms occur together or the same specimen can be one color above or on the side and another color elsewhere.

In *Eurhin festivus* the color ranges from green to blue to reddish to purple; in *cupratus* from red or gold (cupreous) to green; in *adonis* from green to greenish blue to purple; in *viridis* from green to green suffused with gold; in *magnificus* from green to green with red spottings to mostly red; in *atritarsis* from red to red with green reflections; in *yucatecus* from brown to red; in *purpureus* from dark purplish or vinaceous to red. Red-gold or green individuals occur also in *aeneus*, *aureus*, *carinatus*, *chevrolati*, *dissimilis*, *flaturarius*, *recticollis*, and *thalassinus*. The only species which according to present material seem constant in their coloration are *argentinensis*, *ascensionensis*, *azureatus*, and *mathani*. But even in the purple *argentinensis* and *azureatus* a bluish tint is observable in some specimens.

The legs of some species differ from the color of the dorsum or venter or rostrum. The bluish purple legs in *cupratus* and *thalassinus* and the gold legs in *cupripes* and *magnificus* are fairly constant and they stand out in contrast with the body. In *festivus*, on the other hand, the legs are blue, purplish, green, or gold; in *aeneus* they are green or gold.

ROSTRUM: The punctate rostrum in repose reaches between the front coxae and almost or entirely covers the prosternal lobe and the mesosternum. It is generally about as wide as the front femora, is straight or feebly to strongly arcuate, and about as long as the pronotum. The sides in their basal half are longitudinally sulcate in some species, flat in others. In species with the sides sulcate the rostrum is vaguely quadrangular instead of cylindrical. Additional characters not necessarily used in the descriptions are the blackening or darkening of the apical portion, the presence of a ventroapical tubercle (actually on the mentum), and a fovea or impression on the head between the eyes.

Two interesting modifications of the rostrum occur: in males of *thalassinus* the sides of the apex of the rostrum form a pendant angle (figs. 41, 42) and in males of *mathani* and to some extent in males of *argentinensis* and *flaturarius* (fig. 43), the rostrum is distinctly sinuous or angulate ventrally under the antennal insertion.

ANTENNAE: The elbowed antennae are inserted in front of or close to the middle of

the rostrum in a deep, oblique groove or scrobe in which reposes a flattened, short apically widened scape furnished with a sharp, inward-turned angle (angle not visible unless scape is pulled away from its groove). The seven segments of the funicle are either tightly compressed, transverse, and flattened, also indented or sulcate on the lower face, or they are about as wide as long, transverse at apex only, and not indented. The flattening and the indentations are typical of males of some species, whereas in other species both males and females have the same kind of subcylindrical funicle. In males of several species (*cupratus*, *argentinensis*, *flaturarius*) the apex of the funicle is almost as wide as the apex of the rostrum or as the base of the front femora. In males with the compressed, wide antennae, the first segment of the funicle is scarcely longer than wide and is subtriangular; in females and in males of other species the first segment is elongate, two or more times longer than each of the remaining segments.

The four-segmented, setose antennal club is generally sharply acuminate and as long as the last three or four segments of the funicle, even longer in *mathani*. The club is closely appressed to the last segment of the funicle and not or scarcely wider.

Unfortunately, the antennae are usually aligned under the rostrum and the rostrum is held against the prosternum, making observation difficult.

PRONOTUM: The pronotum is convex and bulbous with a rounded basal lobe. Even including the basal lobe, it measures always wider than long. The punctation of more than half the species is fine and sparse, in some scarcely visible; in other species it is uniformly dense and deep; it varies individually to some extent.

An apical collar or tubulation with a sinuation or feeble lobe under the eye is generally visible on the sides, but dorsally the collar can be either distinct with straight sides and a row of punctures, or it can be obsolete with the sides sloping into the sides of the pronotum. In some species the distinctness of the collar and the thoracic lobe varies individually.

In four species (*recticollis*, *carinatus*, *aureus*, *mathani*) the sides, when viewed from

above, are "angulate antero-laterally" (Casey, 1922) instead of rounded as in other species; when viewed in profile (fig. 38) they are briefly margined or carinate in front, actually cristate in *mathani*. Carination is present in both sexes but it is highly exaggerated in males of *recticollis* and *mathani*, which have the pronotum distinctly squared off in front.

ELYTRA: Dorsally the elytra are longer across the humeri than they are on the midline from the base to the apex and they are slightly longer and wider than the pronotum. In *chevrolati* they are somewhat oblong in shape but in other species they are rounded-triangular, with or without dilated humeri. The humeral dilation, if present, is either subconical, as in *festivus*, *magnificus*, *viridis*, *azureatus*, or rounded as in *cupripes* and *yucatecus* (figs. 1, 3, 9); in many species the humeri are gently rounded, but not at all dilated. There is much individual variation and a single specimen of a species can be difficult to assess.

The 10 punctate striae vary in the size and depth of the punctures. The punctation of the intervals is more constant within the species, being fine or scarcely visible, or coarse and dense. The length of the tenth or outermost stria (from base to apex of the elytra or only to the base of the meta-epimeron) seemed to be a good character until I found both long and short tenth striae in individuals of the same species.

The sculpture of the extreme base of the elytra is significant for a good many of the species. The base is feebly or strongly sulcate, or its inner striae have one or two impressions or foveae, or it is flat; in some species, however, the base is either flat or feebly sulcate, varying among individuals.

LEGS: There are many characters on the legs, but most of them break down when many specimens are examined. Thus the apical spurs of the tibiae are larger, sharper, or farther apart in some species than in others, but with considerable individual variation. The middle and hind tibiae are generally shorter than the front tibiae, especially in males. An apical spur is present on the outer side of the tibiae but is generally obscured or worn. In *flaturarius* Germar the middle tibiae are angulate on the outer side near the base. In *festivus* (Fabricius) and related species the

front and occasionally the middle tibiae are minutely crenulate or corniculate on the inner side.

The femora are more or less linear, much longer in males than in females. In *recticollis* (Casey) males have a tiny spur or angle at the apex of the front femora (fig. 24). The femora and tibiae tend to be finely punctate in those species which are otherwise (on pronotum, elytral intervals, ventral sides) finely punctate, and coarse and dense in those that are in great part well punctate.

In males of some species the front tarsi are as long as the tibiae and are greatly enlarged, with the third bilobed segment often wider than the rostrum. The lobes of the third segment are stout or they are elongate, the claw segment issuing from them is long or short. Some tarsi appear more hairy than others. All segments are spongy-hairy below. The legs can be the same color as the remainder of the body or they can be a contrasting purple, red, green, blue, or gold.

PROSTERNUM: The shape of the prosternal lobe or process (figs. 46, 47) is a good specific and group character in spite of some individual variation. In some species the lobe is roundish and flattish, in others it is much wider than long, with or without a deep or shallow, median longitudinal impression between bulbous sides. The front of the lobe can be level with the rostral canal or it can be advanced beyond the canal, but this variation seems not very important. Viewed laterally, the prosternum of *festivus* (fig. 2) and allied species is more strongly curved from the front coxa to the apex, and is longer than that of the majority of species.

ABDOMEN: The five segments of the abdomen are of unequal length, the first segment being the longest, the third and fourth segments the shortest; the second, third, and fourth, are arcuate toward the sides where also angulate; the sides are margined. As discussed above (Sexual Dimorphism), the fifth segment of the abdomen provides one of the clues to the sex of specimens and it is signif-

icant also in the separation of the species. It can be smooth and glabrous, uni- or bifoveate and setose, or setose, or fringed apically with tiny setae.

GENITALIA: The median lobe of the aedeagus is quite simple and it differs only slightly among species in the shape of the apex, in the length of the sclerotized apical border, and in the length of the apodemes. As the median lobe is curved, its dorsal apical aspect is slightly different according to the direction from which the lobe is viewed. The apex is either rounded, rounded-truncate, truncate, narrowly rounded-acuminate, feebly sinuate or emarginate. In the majority of species the apical border is much longer than the width of the lateral borders, but in *atritarsis*, *cupripes*, *festivus*, and *yucatecus* all borders are equally narrow. In *azureatus*, *chevrolati*, *dissimilis*, and *viridis* the apical border is feebly emarginate, but it varies in depth individually. In the smallest species and in *cupratus* the apex medially has a short dark line or slit. The apical area is either feebly convex or concave.

Although *cupripes*, *festivus*, *magnificus*, and *yucatecus* are distinguished from other species by a number of common morphological characters, *magnificus* differs from the other three in having the apex of the lobe elongate, much longer than the width of the lateral borders, not all the same widths, and in having very long apodemes, three or more times the length of the median lobe.

The two species in which the aedeagus is most distinctive are *flaturarius* and *thalassinus*, species which have other morphological characters that separate them from other species. In *flaturarius* the sides of the median lobe are constricted before the apex and the apex is emarginate with a tiny semicircular incision. In *thalassinus* the apex is narrowed and is furnished medially with a feeble knob or protuberance not present in other species.

All species examined for the character, have an arcuate, threadlike flagellum.

SYSTEMATICS

GENUS *EURHIN* ILLIGER

Eurhin Illiger, 1807a, 1807b, pp. 309, 326 (type, by monotypy, *Eurhin cupratus* Illiger).

Eurhinus Germar, 1824, p. 216 (actual but unintended emendation of *Eurhin* Illiger).

Eurhinus Schoenherr, 1825, p. 586; 1826, p. 312

(direct and intended emendation of *Eurhin*; preoccupied by *Eurhinus* Kirby, 1819.

Macrorrhine [vernacular], Latreille, 1825, p. 395 (synonymized by Lacordaire, 1866, footnote, as *Macrorhinus*).

Macrorhinus Berthold, 1827, p. 390 (replacement name for "Eurhin oder Eurhinus Germar")

Camptorhynchus Latreille, 1829, p. 86 (replacement name for *Eurhinus* Schoenherr, not Kirby).

Eurhinopsis Champion, "1906-1909" [1908], p. 397 (type, by original designation, *Eurhinopsis aeruginosus* (Champion). New synonymy.

DIAGNOSIS: Differs from most genera of the Baridinae in lacking dorsal scales and setae, in being glabrous and highly colorful (metallic greens, blues, red, golds, purples), and in having pygidium exposed beyond elytra.

DESCRIPTION OF GENUS: Body glabrous with metallic luster, brilliant colors. Rostrum long or short, robust, arcuate or straight, quadrangular or subcylindrical; scrobe or groove in front of middle. Antennae seven-segmented, elbowed, wide or narrow, flat and compressed or subcylindrical, generally sulcate on lower face; basal segment subconical or elongate, longer than each of remaining segments; seventh segment pressed close to club; scape gradually widened, compressed, not attaining eye (generally farther from eye in male); club cone-shaped, compact, setose, composed of four segments. Head with impression or fovea between eyes. Eyes oblong-oval. Pronotum subtransverse, convex; sides subparallel from base to about middle, thence either rounded to apical collar (collar obsolete in some species), or squared anterolaterally where briefly carinate; base with large round lobe abutting on scutellum. Scutellum subtriangular. Elytra narrowing to rounded apex, longer than pronotum, with subangular, obtuse, or rounded humeral dilations.

Prosternum with rostral canal feebly or strongly sulcate, reaching between front coxae in roundish or rectangular, flattish or bulbous basal lobe that covers most of mesosternum. Metasternum short, with portion that projects over hind coxae sinuate or angulate; metepisternum at middle as wide as base of hind femur. Mesepimeron visible from above only as tiny angle. Coxae well separated. Femora unarmed, sublinear, front femora of males generally distinctly longer than other femora; tibiae compressed, in great part

straight, mucronate and uncinat apically; tarsi spongy-hairy beneath; third segments deeply bilobed, those of front legs of males enlarged; claws connate. Pygidium exposed vertically beyond elytra in form of apically curved triangle. Abdomen with five segments, three intermediate ones arcuate and angulate on sides. Length 3 to 9 mm.

DISCUSSION: Champion ("1906-1909" [1908]) described *Eurhinopsis* based on two species (*aeruginosus*, *viridicolor*) to which Casey (1922) added five species, and Hustache (1924, 1926, 1938) four additional (his own *adonis* and *aureus*, and *aeneus* (Fabricius) and *malachiticus* (Kirsch)). According to Champion the species of his new genus differed from *Eurhin* "in their very short rostrum, prosternum, and legs, more slender antennae, non-prominent humeri, smaller tarsal claws, etc." These differences are relative ones with the possible exception of the non-prominent humeri of the elytra and that character is found also in several species of *Eurhin*. Therefore, I consider these species congeneric with *Eurhin*. The slight differences that exist between the two groups are of a lesser degree than are the differences among some of the species and the remainder (see below).

As there are only 23 species there is no need for formal species groups, but the species can be arranged in a number of categories. There are the generally larger, finely punctate or impunctate species (*festivus*, *magnificus*, *cupripes*, *yucatecus*) with widened antennae sulcate on one side; dilated, prominent elytral humeri; foveate base of the elytra; long rostrum; roundish and flattish prosternal lobe; more narrowly separated coxae; and only one setose fovea at the apex of the abdomen of males. Some of these characters are found in *purpureus*, *flaturarius*, and *thalassinus* but the last-mentioned species are distinguished from all species by additional characters.

The species from *cupratus* through *ascensionensis* (see Checklist above) agree with the *festivus*-like species in the antennae and rostrum, but they differ in having the elytra at base sulcate, not foveate, the prosternal lobe wider than long and medially deeply sulcate, the coxae more widely separated, the funicle of males wider, more compressed, and the apex of the abdomen of the male with two setose foveae. Two species (*chevrolati*, *dis-*

similis) with the prosternal lobe and the coxae as just stated have the base of the elytra flat, the elytral humeri not prominent, and the apex of the abdomen of the male flat and glabrous.

The last eight species of the Checklist (*reticollis* through *aeruginosus*) would formerly have been considered as belonging in *Eurhinopsis*. The first four (two of them new) of these eight species are characterized by having a short margin, carina, or crest on the front of the pronotum which gives a squared-off appearance to the pronotum dorsally. The last four species on the Checklist are among the smallest and most densely punctate; two of them (*aeneus*, *viridicolor*) show a trace in some individuals of the pronotal margin.

The chief characters I have used for species' discrimination are as follows: the degree of dilation of the elytral humeri, the sculpture of the extreme base of the elytra (flat, sulcate, or foveate), the shape and punctuation of the pronotum, the shape of the prosternal lobe or process between the front coxae, the intercoxal distance, the length of the antennal scape, the width of the antennal funicle, the contours of the aedeagus, the secondary sexual characters, and the general coloration.

A fossil, *Eurhinus occultus* Scudder (1876), from the tertiaries of Colorado (mentioned by Champion, "1906-1909" [1908]) apparently does not belong in the genus as some of the traits noted by the author do not agree with *Eurhin*; also the author wrote that his fossil might well belong in the *Cryptorhynchinae*.

KEY TO THE SPECIES OF *EURHIN*²

1. Pronotum either anterolaterally marginate, carinate, cristate (figs. 8, 38) or rounded but with characters that follow: size small (3 to 4 mm.); legs and sides of venter densely, coarsely, deeply punctate (fig. 40); rostrum cylindrical, stout, generally shorter than pronotum, its sides at base flat, not sulcate; antennal funicle or both sexes very narrow, cylindrical, not flattened, without ventral depressions; antennal scape with

- apex separated from eye by less than length of antennal segment 19
- Pronotum anterolaterally rounded and not agreeing in all other characters stated above 2
2. Rostrum with sides behind ventral apex angulate (figs. 41, 42); mentum between angles concave male of *thalassinus* (Gyllenhal) (part)
- Rostrum with sides behind ventral apex straight; mentum angulate, flat, or convex 3
3. Antennal funicle with first segment as long as one-half funicle; pronotum dorsally with sides parallel to beyond middle where obtusely angulate before attaining apex; prosternal lobe between coxae uniformly convex; Peru only female of *mathani*, new species (part)
- Antennal funicle with first segment shorter than stated above; pronotum dorsally with sides arcuate to apex; prosternal lobe various; Peru or elsewhere . . . 4
4. Small (3.5 to 4.5 mm.); dorsally green or red gold, scarcely punctate; rostrum strongly, evenly arcuate (fig. 43), its apex attaining base of prosternal lobe; sides in basal half sulcate; pronotum with apical collar obsolete and margin under eye not sinuous; elytra with humeri not dilated; prosternal lobe flat or convex; middle tibiae at base on outer side angulate; male with apex of abdomen with single, large, median setose patch *flaturarius* Germar
- Not agreeing with all characters given above 5
5. Elytra with base and area behind it level, flat, without trace of sulcus; male with apex of abdomen smooth, glabrous 6
- Elytra with base either feebly or strongly sulcate from third or fourth striae outward, or foveate within humerus or on inner striae (fig. 1); male with apex of abdomen setose or foveate or both 8
6. Aspect elongate, oblong; elytra, measured across humeri and down midline from front of scutellum to apex, actually as wide as long, but appearing longer than wide and almost twice length of pronotum *chevrolati* (Champion)
- Aspect stout, short; elytra (measured as above) slightly wider than long and appearing scarcely longer than pronotum (fig. 10) 7

² For differentiation of the sexes, see Sexual Dimorphism above.

- 7(6). Legs red or green; elytra with tenth (outermost) stria long, attaining apex; antennal club not longer than last three segments of funicle; ventral sides strongly punctate (fig. 40)
 *dissimilis*, new species
 Legs purple; elytra with tenth stria short, attaining only first segment of abdomen; antennal club as long as last five segments of funicle; ventral sides with punctures fine or scarcely visible (fig. 39)
 female of *thalassinus* (Gyllenhal) (part)
- 8(5). Elytra with base of second, third, or fourth striae unifoate or with round depressions; prosternal lobe or process about as wide as long, flattish (fig. 46) ... 9
 Elytra with base not foveate but transversely depressed or sulcate from third striae outward or with slight flattening within humerus; prosternal lobe transverse, wider than long, medially deeply sulcate, laterally convex (fig. 47) .. 12
9. Dark brown or dull bronzy; humerus feebly dilated (fig. 3); abdomen with apex unifoate and setose in both sexes; small (4 to 5 mm.)
 *yucatecus* (Champion)
 Shining metallic green, blue, purple, red; humerus distinctly dilated, either rounded or subconical; abdomen with apex of male unifoate and setose; of female not foveate (except for *magnificus*) 10
10. Abdomen with apical segment of female furnished medially with round, shallow, nude fovea; of male with roundish setose fovea; color green or green with spots or suffusions of red gold; aedeagus (fig. 29) with apical margin longer than width of lateral margins
 *magnificus* (Gyllenhal)
 Abdomen with apical segment of female glabrous, flat, or with fringe of setae; of male with setose fovea transversely oval, often divided at middle; color green, blue, purplish, rarely with red areas; aedeagus (fig. 28) with apical and lateral margins equally narrow 11
11. Elytra with humeral dilation subangulate or subconical (fig. 1); rostrum and legs green, blue, gold, or purplish; abdomen of female with apex glabrous
 *festivus* (Fabricius)
 Elytra with humeral dilation broadly rounded (fig. 9); rostrum and legs red or gold; abdomen of female with apex setose *cupripes* (Pascoe)
- 12(8). Purple or deep blue to naked eye ... 13
 Red, dark brown, gold, green, or green with golden tints 14
13. Elytra with humeri gently rounded; male: front tarsi as long as tibiae, front third tarsal segment longer than wide (fig. 48); rostrum in profile thicker at middle under antennal insertion, and apex of fifth segment of abdomen scarcely angulate; female: antennae inserted closer to middle of rostrum and abdomen with rim of setae at apex medially
 *argentinensis* (Hustache)
 Elytra with humeri subangulately dilated; male: front tarsi shorter than tibiae, front third tarsal segment about as wide as long (fig. 49); rostrum in profile of same thickness throughout, and fifth segment of abdomen with strong apical angle; female: antennae inserted in apical third of rostrum and abdomen not setose
 *azureatus* (Casey)
14. Legs purple or deep blue
 *cupratus* Illiger (part)
 Legs green, gold, or red 15
15. Legs and dorsum red (dorsum can be brownish or vinaceous) 16
 Legs and dorsum green (can be mixed with gold tints) 17
16. Smaller (4.5 to 5.5 mm.); elytra subtriangular, narrowing to apex; tarsi red; pronotum viewed laterally, exceedingly bulbous; male with apex of abdomen with single setose fovea, and front third tarsal segments elongate, their bilobed pads narrow (fig. 50)
 *purpureus* (Hustache)
 Larger (6.5 to 7 mm.); elytra narrowing only slightly to apex; tarsi black; pronotum, viewed laterally, arcuate; male with apex of abdomen with two large setose foveae so close together as to seem like one patch and front third tarsal segments as wide as long, their bilobed pads robust *atritarsis* (Chevrolat)
- 17(15). Female³ with last segment of abdomen flat, glabrous; male³ with antennae at widest part as wide as base of front femur
 *cupratus* Illiger (part)
 Female³ with last segment of abdomen with two setose foveae; male³ with

³ Female: abdomen with first segment flattish and last segment with apical margin not angulate at middle. Male: abdomen with apical margin angulate between setose foveae.

- antennae at widest part narrower than base of front femur 18
18. Male³ with third segment of front tarsi almost twice width of other tarsi and distinctly wider than apex of rostrum; elytra with humeri dilated, subangulate *viridis* (Boheman)
- Male³ with third segment of front tarsi only slightly wider than that of other tarsi and scarcely if at all wider than apex of rostrum; elytra with humeri rounded, scarcely dilated, generally flattened within *ascensionensis* (Hustache)
- 19(1). Pronotum anterolaterally with elevated right-angled crests that are deeply sulcate, almost cup shaped within (fig. 8) male of *mathani*, new species
- Pronotum not as stated above 20
20. Pronotum anterolaterally margined or carinate, carinae generally outlined behind by series of minute dense punctures (fig. 38) 21
- Pronotum anterolaterally rounded (in some examples faint trace of margin present, but no minute punctures) ... 23
21. Male with inner apex of front femur prolonged to small acute or rounded tooth (fig. 24); pronotum extremely transverse, rectangular; sides parallel to near front; almost as long as elytra; elytra strongly tapering from base to apex ... *recticollis* (Casey)
- Male with apex of front femur rounded normally; pronotum less sharp at front angles; sides subparallel; elytra less tapering 22
22. Elytra with base feebly sulcate; larger (4.5 to 8 mm.); rostrum nearly straight; sides of body ventrally in great part feebly, sparsely punctate; prosternal lobe flat *carinatus*, new species
- Elytra with base flat; smaller (3.5 to 4.5 mm.); rostrum arcuate; sides of body ventrally densely, coarsely punctate; prosternal lobe sulcate between bulbous sides *aureus* (Hustache)
- 23(20). Elytra with base distinctly sulcate from second striae outward to humeri; intervals with punctuation scarcely visible; antennal funicle with first segment as long as next four segments and as long as club; rostrum narrow, almost straight, longer than pronotum; pronotum in profile only feebly convex; 5.5 to 6 mm. female of *mathani*, new species
- Not agreeing with all statements above 24
24. Dorsum purple *adonis* (Hustache) (part)
- Dorsum not purple 25
25. Pronotum so densely punctate that interspaces among punctures scarcely visible (fig. 26) *aeruginosus* (Champion)
- Pronotum densely or sparsely punctate, but punctures separated by at least their diameters (fig. 25) 26
26. Rostrum arcuate 27
- Rostrum straight 28
27. Smaller (3 to 4 mm.); green; rostrum arcuate in both sexes; male with apex of abdomen medially vaguely bifoveate and setose, and aedeagus more or less acuminate to apex; Venezuela, Panama, and northward *viridicolor* (Champion)
- Larger (3.5 to 4.5 mm.); green with legs or other parts generally gold; rostrum arcuate in male only; male with apical segment of abdomen medially foveate from base to apex, fovea entirely setose (setae often worn off apically, leaving setose semicircle at base) and aedeagus with apex rounded-truncate; Venezuela, Panama, and southward *aeneus* (Fabricius) (part)
28. Color in daylight dark green, legs often gold; rostrum straight (almost) in female only; male with apex of abdomen unifoveate and setose *aeneus* (Fabricius) (part)
- Color in daylight bright green or bluish green; legs green; rostrum straight in both sexes; male with apex of abdomen bifoveate (but foveae almost contiguous) and abundantly setose *adonis* (Hustache) (part)

DESCRIPTIONS OF THE SPECIES

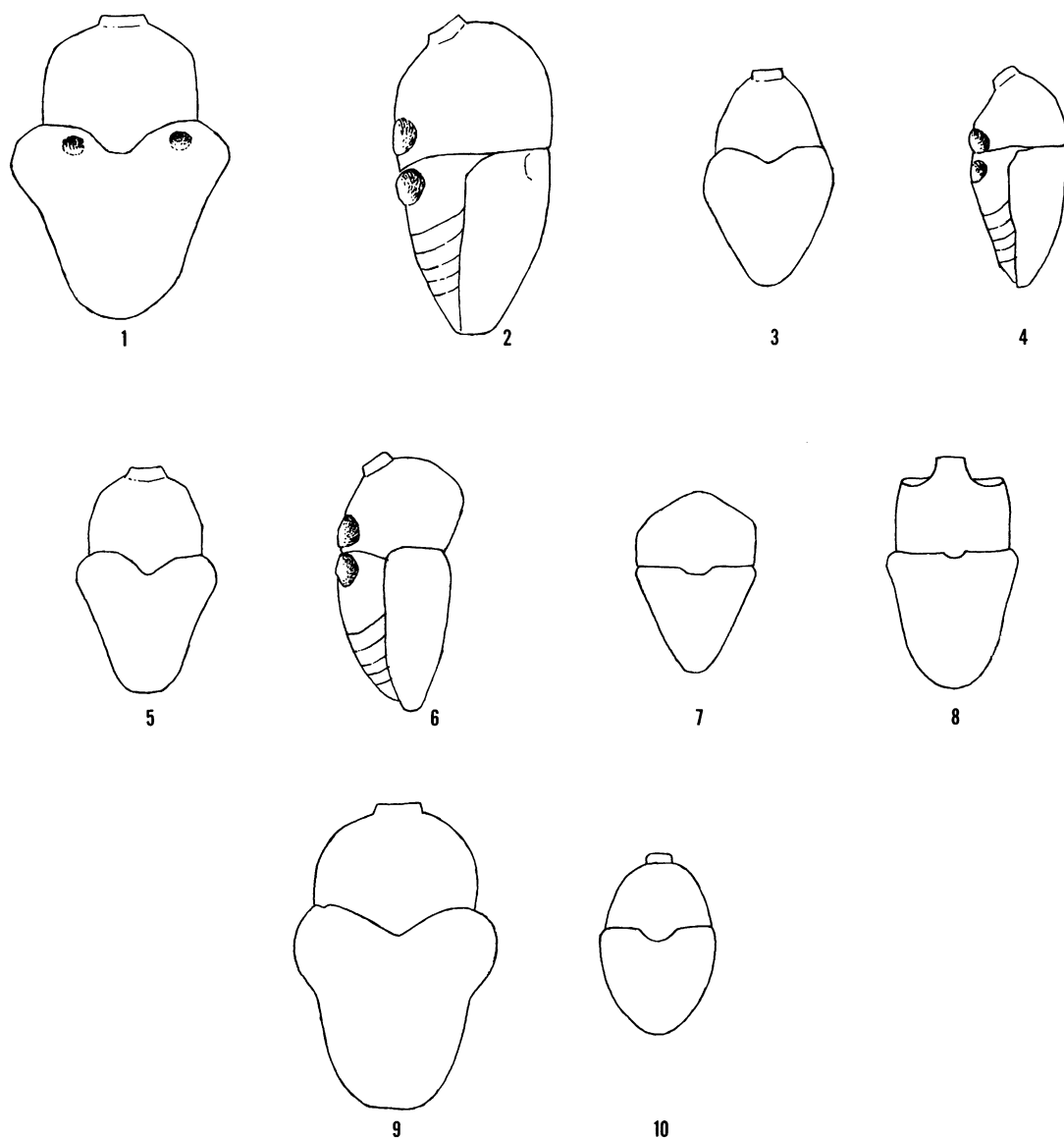
Eurhin festivus (Fabricius)

Figures 1, 2, 11, 12, 17, 28, 44, 51

Curculio festivus Fabricius, 1792, p. 404 (Surinam; type not in Fabricius' collection in Copenhagen). Champion, "1906-1909" [1908], pl. 19, fig. 33.

Eurhinus cyaneus Gyllenhal, 1836, p. 813 (Brazil; type probably in Naturhistoriska Riksmuseum). New synonymy.

Eurhinus suturalis Chevrolat, 1844, p. 160 (Tampico, Veracruz, Mexico; type probably in Naturhistoriska Riksmuseum; synonymized by



FIGS. 1–10. Dorsal and lateral aspects of *Eurhin*. 1–2. *E. festivus*. 1. Dorsal view showing basal elytral foveae. 2. Lateral view. 3–4. *E. yucatecus*. 3. Dorsal view. 4. Lateral view. 5–6. *E. purpureus*. 5. Dorsal view. 6. Lateral view. 7. *E. reticulatus*, male. 8. *E. mathani*, male. 9. *E. cupripes*. 10. *E. dissimilis*.

Champion). Champion, "1906–1909" [1908], pl. 19, fig. 35.

Eurhinus callichloris Lucas, 1859, p. 170 (Brazil; type, female, in Paris Museum, examined). New synonymy.

Eurhinus viridipes Champion, "1906–1909"

[1908], p. 395, pl. 19, figs. 32, 32a, 32b (Mexico; lectotype, male, Cuernavaca, Mexico, here designated from five of nine original specimens in British Museum, examined). New synonymy.

Eurhinus violaceus Casey, 1922, p. 419 (Brazil; type, male, in National Museum of Natural His-

tory, Smithsonian Institution, examined). New synonymy.

Eurhinus humeralis Casey, 1922, p. 419 (Brazil; type, male, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinus cobaltinus Casey, 1922, p. 420 (Chapada, Brazil; type, male, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinus heringeri Bondar, 1948, p. 18, fig. 16 (Minas Gerais, Brazil; lectotype, male, in the American Museum of Natural History, New York, examined). New synonymy.

DIAGNOSIS: Agrees with *magnificus* in having dilated, subconical elytral humeri, base of elytra foveate, and prosternal lobe flattish, as wide as long, but differs in having apex of abdomen of female flat, not foveate, and of male with elongate not roundish setose fovea. Aedeagus differs also. Ventral sides scarcely punctate or impunctate.

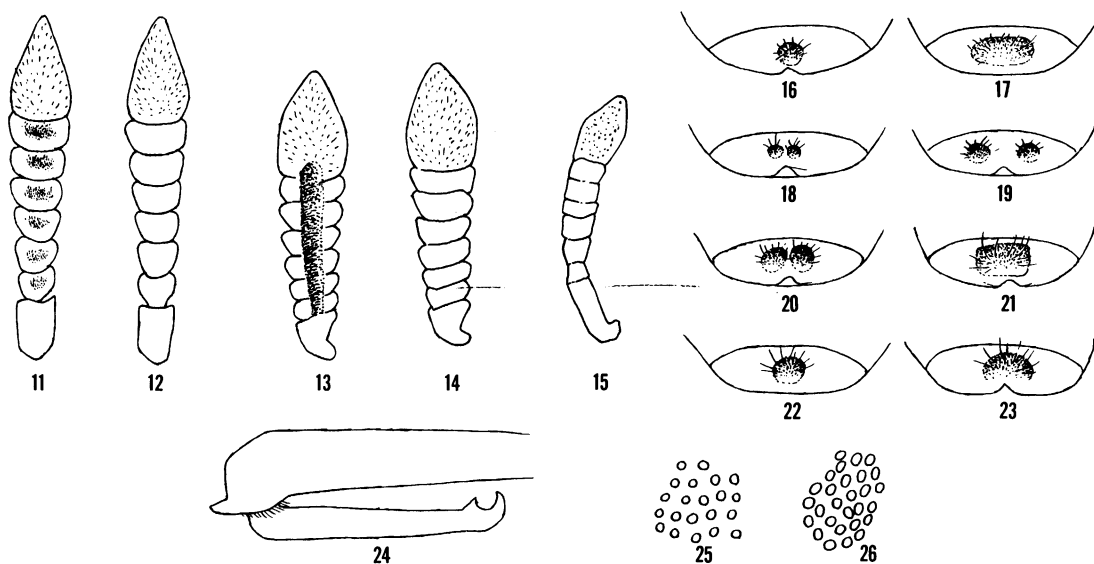
RANGE: South America except for Uruguay and Chile; Central America except for Nicaragua; Mexico; Antilles: Trinidad, Cuba, Dominican Republic, Haiti. (For 428 specimens examined, see Appendix.) (See map, fig. 51.)

DESCRIPTION: Color green, blue, greenish blue, bluish green, greenish gold, purple, purplish blue, red-gold; legs green, blue, purple, gold. Length 5 to 9 mm. Rostrum feebly arcuate and slightly longer than pronotum, or almost straight to insertion of antennae where bent down; of male, in lateral view, feebly thicker and sinuous under antennal groove; sides at base longitudinally sulcate; in some examples apical third or fourth black, in some tubercle of mentum visible ventroapically. Antennae (figs. 11, 12) with segments sulcate on lower face (more deeply in male), widening toward apex where wider than long and flattened; first segment elongate; club as long as last three segments; scape of male with apex distant from base of rostrum by length of from two to four or five segments of funicle; of female, apex distant by only length of one segment. Pronotum with sides arcuate to distinct apical collar or tubulation, punctuation fine or not visible. Elytra with humeri strongly dilated, subangulate; bases of second and third striae foveate; remainder of base in many specimens feebly

sulcate outward; striae finely, shallowly punctate except for sutural striae which have deeper, larger punctures; intervals impunctate or finely punctate.

Prosternum with basal lobe about as wide as long, flat or feebly concave transversely; canal narrowly depressed; from front of coxae to apex of prosternum equal to twice or more diameter of coxa. Front coxae narrowly separated by two-thirds or one-half diameter of coxa; middle coxae by diameter only; in some examples space between coxae narrower than rostrum. Front tibiae with inner edge corniculate; ante-apical spur tiny, in some specimens scarcely visible; front femora of male long, linear, only feebly wider at apex; front tarsi of male enlarged, third segment longer than wide. Abdomen with apical segment of male with single large setose fovea that is wider than long, shaped like a kidney bean (in worn specimens where setae are partially lacking at base, fovea appears divided into two foveae); apex of male without noticeable median angle; of female, no angle. Aedeagus (fig. 28) with all sclerotized margins equally narrow; apex more or less rounded; apodemes two or two and one-half times length of median lobe.

DISCUSSION: *Eurhinus festivus* is the most abundant and widespread species of the genus, having been taken in almost every country south of the United States. Large, entirely purplish specimens have long been considered as *cyaneus* (Gyllenhal); entirely green or blue specimens as *festivus*; bluish green or purplish specimens with bright green legs and rostrum as *viridipes* (Champion); and red with green elytral suture as *suturalis* (Chevrolat). These color phases, however, are far from constant and all sorts of combinations occur. Some green examples have purple or gold legs, some purple ones have bluish legs, greens and blues and purples can change and commingle under reflected light. Of 15 specimens from the Dominican Republic (in the British Museum), 11 appear purple and four green when viewed by daylight, but under the lighted microscope three of the purple ones are green. Many blue specimens have purple reflections. Among the 428 specimens examined, there are, to be sure, many individuals that are distinctly one or the other color but even these specimens show no observable dif-



FIGS. 11-26. Body parts of *Eurhin*. 11-15. Antennal funicle and club. 11. *E. festivus*, ventral view. 12. Same, dorsal. 13. *E. cupratus*, ventral view, showing sulcus. 14. Same, dorsal. 15. *E. recticollis*, dorsal view. 16-23. Apical segments of abdomen of males (for correct apical margin, see species in text). 16. *E. yucatecus*. 17. *E. festivus* and others. 18. *E. recticollis*, *aureus*, *carinatus*. 19. *E. argentinensis*, *azureatus*. 20. *E. atritarsis*, *adonis*. 21. *E. thalassinus*. 22. *E. magnificus*. 23. *E. aeneus*. 24. Front femur of *recticollis*, showing apical projection. 25-26. Punctures of pronotum. 25. Separated by their diameter. 26. Dense.

ferences other than color and as they occur in some of the same localities, I consider them as one species. Thus, in all females of the four color phases mentioned above, the antennae are inserted near the middle of the rostrum, the apical half of the rostrum is generally darkened, and the apex of the abdomen is furnished with a narrow gold rim. In the males there is a single transverse setose fovea apically on the abdomen; the aedeagus, with slight variations in blue green or purple males, is essentially the same in all. In both sexes the sutural punctures of the elytra are evanescent at the base, the tibiae are corniculate on their inner margins, the middle tibiae are often sinuous on the inner margin.

Of the synonyms not yet discussed, the type of *callichloris* and the lectotype of *heringeri* are bluish green, the types of *cobaltinus*, *humeralis*, and *violaceus* are purplish and in *humeralis* the humeri are more strongly angulate. As for *suturalis* (I have not seen the type), the 10 specimens I have examined are colored as described by Chevrolat (1844) and

Champion ("1906-1909" [1908]), that is, the dorsum red except for the green elytral suture. They include eight males (five dissected) and two females from the states of Durango (Ventanas), Oaxaca (Tepanzacualco), Puebla (Almolonga), Veracruz (Cordoba, Jalapa), and several additional specimens from Mexico without further locality. Ventrally the specimens are green, the legs and rostrum are gold or coppery. They agree in the secondary sexual characters with other *festivus*, although the red dorsum and the gold legs and rostrum are more characteristic of *magnificus*. In Brazil there are more purple than green or blue specimens, but from Central America and Mexico I have seen no purple ones except for those with bright green legs, and those occur also in South America. Purples and greens occur together in South America and in the Antilles.

Twenty males and one female were dissected.

BIOLOGY: According to Bondar (1948), the five males and nine females of his type series

of "*heringeri*" were captured in Minas Gerais, Brazil, in the flowers of the vine, *Cissua cicyoides*. The larvae, and also the larvae of *cupratus* Illiger, breed in the galls found in the stems of this plant. A female from the Dominican Republic has the notation "on corn" by G. Russo.

Eurhin magnificus (Gyllenhal)

Figures 22, 29, 52

Eurhinus magnificus Gyllenhal, 1836, p. 814 (Mexico; type, male, in Naturhistoriska Riksmuseum, examined). Champion, "1906-1909" [1908], pl. 19, fig. 34.

Eurhinus cavilobus Casey, 1922, p. 420 (Tabasco, Mexico; type, male, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinus prominens Casey, 1922, p. 421 (Costa Rica; type, male, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinus binarius Casey, 1922, p. 421 (Guatemala; type, male, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinus minuens Casey, 1922, p. 422 (Panama; type, female, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinus gemmulus Casey, 1922, p. 422 (Nicaragua; type, female, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

DIAGNOSIS: Color extremely variable; differs from allied *festivus*, *cupripes*, and *yucatecus* as follows: male in having setose fovea of abdomen round, not transverse, and aedeagus with front border longer than, not same width as, lateral borders; female in presence of nude, shallow fovea at apex of abdomen. Ventral sides scarcely punctate.

RANGE: Mexico, Guatemala, British Honduras, Honduras, Nicaragua, Costa Rica, Panama. (See Appendix for 143 specimens examined.) (See map, fig. 52.)

DESCRIPTION: Color entirely green or (typically) green with reddish gold or cupreous rostrum, legs, and/or parts of dorsal surface (pronotum, humeri, sides and apex of elytra), or dorsum red except for green suture of elytra. Length 4.5 to 7 mm. Rostrum evenly arcuate, that of male distinctly, and of female scarcely longer than pronotum; in lateral view

not thicker at middle; sides at base feebly sulcate.

Antennae, pronotum, elytra, prosternum, coxae, and legs, as described for *festivus*. Abdomen with apical segment of male with single setose, roundish fovea as wide as long; no median angle; that of female shallowly foveate, but not setose. Aedeagus (fig. 29) with sclerotized front margin much longer than width of lateral margins; apex narrowly rounded-acuminate; apodemes very long, five or six times length of median lobe.

DISCUSSION: Schoenherr (1836, 1844) and Casey (1922) considered *magnificus* as valid species. Champion ("1906-1909" [1908]), who had access to many specimens, was the first to call it a color variety of *festivus*, and he was followed by Hustache (1938) and Blackwelder (1947) in their catalogues. However, as shown for *festivus*, *cupratus*, and other species the color alone is not conclusive; in this instance the sexual characters given in the diagnosis clearly separate *magnificus* from *festivus*. Also, the apodemes on the male genitalia are much longer in *magnificus* and the apex of the aedeagus has a longer margin.

As Casey (1922) noted, there is a nude fovea or impression at the apex of the abdomen of the female of *magnificus*; this is the only species in which the female is so characterized. Typical specimens of *magnificus* are green with large diffuse red spots on the humeri and apex of the elytra and on the pronotum, and gold or coppery or red rostrum and legs; other specimens, which are entirely green or almost entirely red could be either *magnificus* or *festivus* and need to be examined for the abdominal character. Although a few *magnificus* are fairly large and some *festivus* very small, in sufficient numbers the difference in size is noticeable. In addition, *magnificus* has not been recorded from South America, whereas *festivus* occurs throughout most of that continent as well as north to Durango, Mexico. The geographic ranges of *magnificus* and *festivus* are paralleled by those of two other closely allied weevils of the Rhynchophorinae, *Rhodoabaenus quinquepunctatus* (Say) and *R. tredecimpunctatus* (Illiger): of these *quinquepunctatus* is confined to the eastern United States (as is *magnificus* to Mexico and Central America) and *tredecimpunctatus* occurs throughout the

eastern and western United States (as does *festivus* throughout tropical America). In the more restricted areas these species occur sympatrically in some localities. (See maps, figs. 51, 52).

The margins of the pronotum of *magnificus*, viewed from above, are generally strongly arcuate, but in some specimens, chiefly green ones from Costa Rica, they are more oblique. Gilbert (1964) in his study of the genus *Baris* found that the margins of the pronotum were highly variable in the same species, and this seems to be the case here.

The type of *magnificus* is 5.5 in length. It is a male with the front of the pronotum, the humeri and part of the elytra red, and the rostrum, head, and legs reddish gold or coppery; the setose abdominal fovea is round. The unique types of Casey's *cavilobus*, *binarius*, and *prominens* are also males, being mostly green with the legs, rostrum, and venter red-gold; the types of his *minuens* and *gemmulus* are females with the same coloration and the characteristic abdominal foveae of each sex. In *minuens* and *binarius*, which are very small (4.5 and 5.5 mm.), the humerus is less angularly dilated, but they agree in other characters with other specimens. A dissected male from San Blas on the Pacific coast of Nayarit and a male and female from "Mexico" are colored as in "*suturalis*" which I have synonymized with *festivus*, although this color form is not typical of *festivus*. (For discussion, see *festivus*.)

Eight males were dissected.

BIOLOGY: Two specimens from Guanaacaste Province, Costa Rica, are labeled "Vitaceae," and *Andira inermis* (the "Cabbage tree" of the Pea Family). Five additional specimens from Guanacaste (San Pedro de Montes de Oca) were collected by Ballou in 1935 "en *Veronina* [*Vernonia*] *brachiata*," Ironweed, a plant of the Carduaceae or Compositae.

Eurhin cupripes (Pascoe)

Figure 9

Eurhinus cupripes Pascoe, 1886, p. 426 (Mexico; type, male, in British Museum (Natural History). Champion, "1906-1909" [1908], pl. 19, figs. 31, 31a, 31b).

DIAGNOSIS: Similar in most characters to *festivus* and *magnificus*, but differing in hav-

ing humeral dilation of elytra broadly rounded (fig. 9), not subangulate or subconical and extending farther toward apex of elytra, and pronotum less bulbous.

RANGE: Mexico: states of Morelos, Puebla, Guerrero, Oaxaca. (See Appendix for 24 specimens examined.)

DESCRIPTION: Color green, purplish, or bluish green with head, rostrum, and legs coppery red or gold, or green with gold reflections. Length 6 to 7 mm. Rostrum and antennae as described for *festivus*, but apex of rostrum not black. Elytra with humeri dilated and prominent, broadly rounded; striae 2 and 3 foveate at base; base deeply sulcate outward to near humeri; striae and intervals punctate as described for *festivus*. Pronotum, prosternum, coxae, and legs as described for *festivus*, but pronotum, viewed laterally, flat, not bulbous. Abdomen with apical patch of setae wider than long, that of male set in fovea, of female apparently without fovea and setae less abundant; no median apical angle in either sex. Aedeagus as described for *festivus*.

DISCUSSION: This one of the seven species occurring in Mexico; it is also, along with *yucatecus*, endemic to Mexico. The large, rounded humeral dilations and copper legs make it readily recognizable; it varies little. Small specimens viewed in profile could be confused, however, with some *magnificus* which also have copper legs, but in *cupripes* there are no dorsal red patches or suffusions and it differs further in having the setose fovea of the fifth segment of the abdomen wider than long in the male, not round, and the female has the apex setose, not bare.

I have not examined the type of *cupripes*, but I have examined two of the four "Biologia" specimens of Champion.

One male was dissected.

Eurhin yucatecus (Champion)

Figures 3, 4, 16

Eurhinus yucatecus Champion, "1906-1909" [1908], p. 397, pl. 19, figs. 36, 36a (Temex, Yucatan, Mexico; lectotype, male, here designated from three male and eight female syntypes in the British Museum (Natural History), examined).

DIAGNOSIS: Resembles *festivus* in a number of characters, but differs in dark brown or red

coloration, smaller size, in having scarcely dilated, rounded elytral humeri, and apex of abdomen foveate-setose in both sexes, not merely in male. Ventral sides sparsely punctate.

RANGE: Mexico, apparently restricted to the Yucatan peninsula. (See Appendix for 16 specimens examined.)

DESCRIPTION: Color dark brown with green reflections, or red. Length 4 to 5 mm. Rostrum arcuate; that of male longer than pronotum, of female shorter; in lateral view rostrum not thickened at middle; sides at base sulcate. Antennae and pronotum as described for *festivus*. Elytra with humeri feebly dilated (more dilated in some examples than in others), but obtuse or rounded, not subangulate; striae 2 and 3 at base feebly foveate or simply impressed; striae and intervals as described for *festivus*. Prosternum, coxae, and legs as described for *festivus*. Abdomen with apical segment of both sexes with single setose fovea, fovea of male slightly wider than long, of female more round; no median apical angle. Aedeagus with all sclerotized margins of about same width (narrow); aedeagus narrowing to rounded apex where suggestion of small median angle; apodemes long, almost four times length of median lobe.

DISCUSSION: Another small, superficially similar dark species is *purpureus* (Hustache) from which *yucatecus* differs chiefly in having the prosternal lobe behind the coxae flat, not deeply sulcate, the sides of the pronotum viewed from above, oblique, not bulbously rounded, the coxae more narrowly separated, the female with an abdominal fovea, and the aedeagus with all the borders narrow. In both species a few bright red individuals occur.

The specimen chosen as lectotype is the "sp. figured" by Champion. About one-half the specimens of the type series are dull and brownish, even black, instead of glossy and/or reddish. In a footnote Champion explained that some of the darker specimens had been "baked to prevent mould" (carbonized?).

The apodemes of the aedeagus are almost as long as those of *magnificus*, not short as those of *festivus* and *cupripes*. This is the only species I have seen from Yucatan; it and *cupripes* are endemic to Mexico.

One male was dissected.

Eurhin purpureus (Hustache)

Figures 5, 6

Eurhinus purpureus Hustache, 1926, p. 258 and 1949, p. 51 (Jatahy, Goyaz, Brazil; type in Paris Museum, examined).

Eurhinus willinki Bondar, 1948, p. 20 (Tucuman, Argentina; lectotype, male, in the American Museum of Natural History, examined). New synonymy.

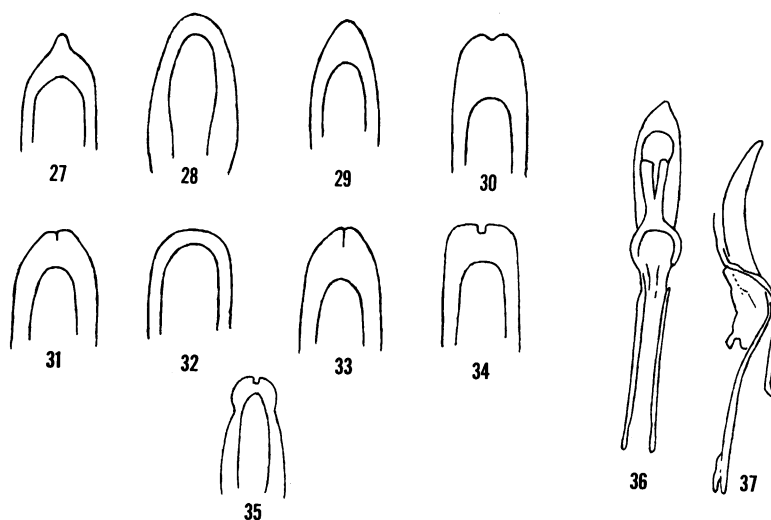
DIAGNOSIS: Dark red-brown, vinaceous, occasionally brighter red, with third tarsal segments elongate, narrow; antennal club as long as last four segments of funicle; elytra subtriangular, narrowing noticeably from dilated humeri to apex.

RANGE: Argentina, Paraguay, Brazil. (See Appendix for 51 specimens examined.)

DESCRIPTION: Color dark vinaceous, reddish brown, or red. Length 4.5 to 5.5 mm. Rostrum of both sexes feebly arcuate, not longer than pronotum; sides at base flat; that of male feebly thicker at middle. Antennae and pronotum as described for *festivus* but antennae of female inserted almost at middle of rostrum, and club a little longer; scape of male with apex distant from base of rostrum by length of one antennal segment, of female by half that length. Elytra with humeri dilated, large, rounded; base deeply sulcate outward to humeri; bases of second and third striae depressed forming fovea in some specimens; striae finely, shallowly punctate; intervals impunctate.

Prosternum with lobe wider than long, medially sulcate, laterally bulbous; canal shallowly depressed; prosternum from front coxae to apex longer than diameter of coxa. Front coxae separated by diameter of coxa; middle coxae by twice diameter. Front tibia with inner edge corniculate; inner spur large, distant from apical spur; front femora of male not markedly long; front tarsi of male as long as front tibiae, only slightly larger than other tarsi; third tarsal longer than wide. Abdomen of male with apical segment with single roundish setose fovea and angular median projection; of female smooth, glabrous. Aedeagus behind apex broadly sulcate; apical border twice longer than width of lateral borders; apex narrowly rounded; apodemes short.

DISCUSSION: The pronotum is more bul-



FIGS. 27-37. Male genitalia of *Eurhin*. 27-35. Dorsal apex. 27. *E. thalassinus*. 28. *E. festivus*. 29. *E. magnificus*. 30. *E. viridis* (but apical emargination is variable in depth). 31. *E. cupratus*. 32. *E. atritarsis*. 33. *E. carinatus*. 34. *E. chevrolati* (but apical margin variable). 35. *E. flaturarius*. 36-37. Aedeagus with parameres and apodemes. 36. Dorsal view. 37. Lateral view.

bous and convex than that of most other species (fig. 6); the lateral margins in some specimens are subparallel from the base to the middle; the claw segments are quite longer than the lobes of the third tarsal segment; the venter and legs are in great part strongly and densely punctate (the mesepimeron is sparsely punctate). The size is about that of *yucatecus* and some specimens have the same darkish coloration, but *purpureus* differs in having the prosternal lobe and the base of the elytra deeply sulcate, the humeri more dilated, the coxae more separated, and the rostrum shorter and thicker. The smaller size and subtriangular elytra of *purpureus* distinguish red specimens from *atritarsis*.

Hustache may have forgotten in 1949 that he had already described *Eurhinus purpureus* in 1926, or he may have had some of the same trouble he encountered earlier when his manuscript of the Baridinae of Neotropical America became lost and he had to redescribe many species (Hustache, 1949). At any rate, the descriptions are essentially similar, the type locality is the same, and there is only one type in the Paris Museum. Bondar (1948) was apparently unaware of Hustache's name of which his *willinki* is a synonym. The lec-

totype of *willinki* is almost black, but it agrees otherwise with *purpureus*.

Other species in which the male has only a single setose fovea or patch on the abdomen are *flaturarius*, *thalassinus*, and the species near *festivus*.

One male was dissected.

Eurhin cupratus Illiger

Figures 13, 14, 31, 53

Eurhin cupratus Illiger, 1807a, p. 309 (Rio de Janeiro, Brazil; type probably in Germany).

Cryptorhynchus corruscans Kirby, 1819, p. 432 (Brazil; type probably in British Museum; synonymized by Germar, 1824).

Baridius rubinus Perty, 1830, p. 77, pl. 15, fig. 16 (Province Minarum [=Minas Gerais], Brazil; type not found; synonymized by Schoenherr, 1844, as "*Baridius rubridus*").

Eurhinus cavicornis Casey, 1922, p. 424 (Brazil; type, male, but labeled as female, National Museum Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinus splendidus Bondar, 1948, p. 19, figs. 17-20 (Minas Gerais, Brazil; lectotype, male, in the American Museum of Natural History, examined). New synonymy.

Eurhinus lobicornis Hustache, 1949, p. 52 (Val do

Rio Pardo, São Paulo, Brazil; type, male, in Paris Museum, examined). New synonymy.

DIAGNOSIS: Antennae of male wider than those of *festivus* and preceding species, segments strongly compressed (figs. 13, 14, about like those of *argentinensis* and *azureatus* which follow, and from which species *cupratus* differ in color and in having aedeagus rounded-acuminate, not apically truncate. Ventral sides in great part faintly punctate or impunctate.

RANGE: Venezuela, Colombia, Brazil, Peru, Ecuador, Bolivia, Paraguay, Argentina. Antilles: Cuba, Jamaica, Dominican Republic. (For 156 specimens examined, see Appendix.) (See map, fig. 53.)

DESCRIPTION: Color red or gold or green; red specimens with green parts; legs generally purple or dark blue. Length 6 to 8.5 mm. Rostrum with sides at base feebly sulcate; of male as long as or shorter than pronotum, feebly arcuate; in lateral view thicker at middle under antennal insertion; of female as long as or longer than pronotum, nearly straight or bent before apex; in many females apical half black. Antennae with segments of male wider than long, flattened, compressed, widening toward apex where as wide as base of front femur; on lower face deeply sulcate even on to base of club; first segment stout, scarcely longer than wide; of female inserted just in front of middle of rostrum, less deeply sulcate on lower face, widened and compressed toward apex only and first segment elongate; club abruptly acuminate, longer than or as long as last three segments of funicle; scape of male distant from base of rostrum by about length of two segments of funicle, of female half that. Pronotum finely punctate; sides arcuate to distinct apical collar. Elytra with humeri distinct but rounded, not subangulate; base sulcate from third interval outward; striae impressed, finely punctate; intervals scarcely visibly punctate.

Prosternum with lobe wider than long, medially deeply sulcate, laterally bulbous; canal shallow; from front of coxa to apex of prosternum longer than diameter of coxa. Front coxae separated by diameter of coxa; middle coxae by twice diameter. Front tibiae with inner spur small or large, far from apical

spur. Front femora of male long, and front third tarsal segment enlarged, about as wide as long, as wide as or wider than dorsal apex of rostrum. Abdomen with apical segment of male with two setose foveae separated by their diameter or more, and feeble median apical angle; of female smooth (some specimens with apical margin feebly setose). Aedeagus with apical sclerotized margin longer than width of lateral margins, rounded-acuminate, feebly if at all concave; apodemes short, about one and one-half times length of median lobe.

DISCUSSION: *Eurhin cupratus* is the type of the genus *Eurhin* and of the genus *Eurhinus* (see History above). Although *cupratus* has long been known for its red or red-gold dorsal color and its purple legs, it is now evident that this characterization is not unique for the species and that it is also not complete. The species *thalassinus*, of which I have seen the type, has also red (and green) examples with purple legs, and *cupratus* includes also entirely green examples (formerly called *lobicornis*). In both species red individuals (all with purple legs) generally have green parts (head, rostrum, or venter), whereas green individuals show no red, but some have purple legs and some show gold reflections. Red and green examples agree in the aedeagus, the apically widened deeply indented antennal scape of the male, the unequal lobes of the third tarsal segments of the male, the two setose foveae on the apical segment of the male abdomen, the straight or apically bent rostrum of the female, and the sulcate base of the elytra. The two color phases have been collected at Cantareira, São Paulo, Brazil (a dissected male of each phase) and in Paraná in southern Brazil (one red and five green, of which two have purple legs). From the Antilles I have seen a red example from Cuba, a greenish gold with purple legs from the Dominican Republic, and seven green ones from Jamaica, one with purple legs.

Other species having green as well as red or gold phases are *aureus*, *carinatus*, *chevrolati*, *dissimilis*, *festivus*, *flaturarius*, *magnificus*, and *recticollis*. Specimens that appear truly red when viewed under daylight are generally reddish or gold with greenish reflections under a lighted microscope, and the color of the dorsum is not necessarily the

same as that of the venter. About two-thirds of the *cupratus* I have examined are reddish.

Green individuals of *cupratus* might be confused with *viridus* but these *cupratus* differ in having the humeri of the elytra rounded, not so prominent or angular, the last segment of the abdomen of the female flat, not bifoveate, and the antennal funicle of the male wider.

Of the new synonyms listed above, Hustache's *lobicornis* was described on three entirely green specimens, Casey's *cavicornis* on a red, very small (6.4 mm.) specimen, and Bondar's *splendidus* on a series of 24 metallic red and red-gold specimens with greenish edgings ventrally. Bondar described and illustrated the wide, compressed antennae of the male.

The only other species known from the Antilles is the wide-ranging *festivus* (Cuba, Haiti, Dominican Republic).

Nine males were dissected.

BIOLOGY: The 13 males and 11 females of Bondar's type series of *spendidus* were collected by Heringer in 1946 from a gall of the vine, *Cissus cicyoides* in which larvae of *festivus* also breed. The label on a green female from San Bernardino, Paraguay, reads "*Yaracatia* [= *Jaracatia*] *dodecaphylla*."

Eurhin atritarsis (Chevrolat)

Figures 20, 32

Eurhinus atritarsis Chevrolat, 1844, p. 161 (Vera-cruz, Mexico; type, female, in Naturhistoriska Riksmuseum, examined). Champion, "1906-1909" [1908], pl. 19, figs. 30, 30a.

Eurhinus laetus Casey, 1922, p. 423 (Santarem [Pará], Brazil; lectotype, female, here designated from four original specimens in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

DIAGNOSIS: Size and coloration of red *chevrolati*, but base of elytra sulcate in *atritarsis*, not flat; smaller; less brilliant, less shining than red *cupratus* and with setose foveae of apex of abdomen of male close together (fig. 20), not separated by their diameters. All borders of aedeagus equally narrow. Ventral sides well punctate.

RANGE: Northern Brazil; southern Mexico. (For 13 specimens examined, see Appendix.)

DESCRIPTION: Red with green reflections

ventrally or with some green punctures. Length 6.5 to 7 mm. Rostrum of male feebly arcuate, of female almost straight; about same length as pronotum; sides at base flat; ventral apex (mentum) of male sharply angulate, of female obtuse. Antennae and pronotum as described for *cupratus*, but antennae of male less wide and scape of antennae of male and female closer to base of rostrum. Elytra with humeri dilated, distinctly rounded; base sulcate from third or fourth striae outward to humerus; striae distinctly punctate; intervals finely, sparsely punctate.

Prosternum as described for *cupratus*, but canal flat, obsolete; front of prosternum to front coxae short, equal to diameter of coxa. Front coxae separated by more than width of coxa; middle by twice width. Front tibiae with ante-apical spur larger than apical spur and not close to it. Front femora of male longer than other femora; front tarsi of male enlarged. Abdomen with apical segment of male with two large, round, bushy setose patches very close together; median apical angle absent; of female with small median apical patch of setae. Aedeagus (fig. 32) with apex rounded, all sclerotized margins of same narrow width; apodemes one or one and one-half times length of median lobe.

DISCUSSION: The black tarsi that give the specific name are not exclusive to this species; they are present in the lectotype of *laetus* Casey and in several other species.

Casey evidently did not know *atritarsis* when he described *laetus*. I have compared his type series with the type of *atritarsis* and find them conspecific. The lectotype of *laetus* is the specimen with Casey's handwritten label. For some reason Hustache (1938) in the Junk catalogue, listed *laetus* as a variety of *chevrolati* and it appears twice in Blackwelder (1947), once as a variety of *chevrolati* (Champion) and once as a valid species.

In *atritarsis* all the sclerotized margins of the aedeagus are narrow, as they are also in *festivus* and allied species, and in *flaturarius*. The male lacks the median apical angle of the abdomen, as is true also of *festivus* and its allies. An undescribed species of "Sturm, in litt." has been omitted from the synonymy.

Two males were dissected, one from Brazil (syntype of *laetus*), and one from Mexico.

Eurhin argentinensis (Hustache)

Figure 19

Eurhinus argentinensis Hustache, 1926, p. 258 (Misiones, Argentina; type, female, in Paris Museum, examined).

DIAGNOSIS: Purplish blue species with, in male, flat, wide, compressed deeply sulcate antennal funicle as wide as base of front femur. Differs from similarly colored *azureatus* in having humeri of elytra more rounded, not subangulate, third front tarsal segment of male elongate, not squarish, rostrum of male thicker and shorter, and antennae of female inserted nearer middle of rostrum. Ventral sides sparsely, finely punctate.

RANGE: Argentina, Brazil. (For 39 specimens examined, see Appendix.)

DESCRIPTION: Color purplish blue; occasional specimens greenish under lighted microscope. Length 5.5 to 7 mm. Rostrum feebly arcuate, shorter than pronotum; sides at base generally feebly sulcate; rostrum of male thicker at middle under antennal insertion. Antennae and pronotum as described for *cupratus*. Elytra with humeri feebly dilated, rounded; base sulcate from about third to seventh striae; striae punctate distinctly; intervals impunctate or finely, sparsely punctate.

Prosternum and coxae as described for *cupratus*. Front tibiae with ante-apical spur small, widely separated from apical spur; front femora of male not markedly long; front tarsi of male nearly as long as front tibiae, third segment greatly enlarged, elongate, longer than wide. Abdomen with apical segment of male with two setose foveae separated by their diameter and apical margin with tiny median projection; of female with line of tiny setae on apical margin (often worn). Aedeagus with apex rounded-acuminate; sclerotized apical border about three times longer than width of lateral borders, feebly concave; apodemes about one and one-half times length of median lobe.

DISCUSSION: Hustache (1926) compared his *argentinensis* with *chevrolati* (Champion) from which it differs in having the base of the elytra sulcate, not flat, the elytra wider, not elongate, and the color purplish. In the description of *argentinensis* the antennae are said to be "normal," but Hustache did not

have the male in which the antennae are as wide as those of *cupratus*. Both *argentinensis* and *azureatus* differ from the smaller *adonis*, which is also purple, in having the dorsal and ventral punctation fine and shallow, not coarse.

Six males and two females were dissected.

Eurhin azureatus (Casey)

Figure 19

Eurhinus azureatus Casey, 1922, p. 423 (Chapada, Brazil; type, female, in National Museum of Natural History, Smithsonian Institution, examined).

DIAGNOSIS: Resembles *argentinensis* in size and purplish coloration, but differs in having more prominent elytral humeri, less wide antennal funicle of male, narrower, longer, almost straight rostrum, and wider third tarsal segments of male. Ventral sides in great part finely punctate.

RANGE: Bolivia, Brazil. (For 34 specimens examined, see Appendix.)

DESCRIPTION: Color purple, purplish blue, or (rarely) greenish blue. Length 5 to 7 mm. Rostrum straight, almost as long as pronotum; sides at base smooth; of male, viewed laterally, scarcely thicker at middle. Antennae and pronotum as described for *cupratus*, but segments of antennal funicle of male less wide. Elytra as described for *argentinensis* except for humeri which are dilated and subangulate, much as in *viridis*.

Prosternum and coxae as described for *cupratus*. Front tibiae with ante-apical spur well separated from apical spur; front femora of male not especially long; front tarsi of male shorter than front tibiae; front third tarsal segment as wide as long, as wide as apex of rostrum. Abdomen of both sexes as described for *argentinensis*. Aedeagus with apical sclerotized border about four times longer than width of lateral borders, medially concave; apex truncate with scarcely perceptible median emargination.

DISCUSSION: Although *azureatus* and *argentinensis* are readily confused they can be distinguished by the characters given in the Key (couplet 13) and in the diagnosis above. From present knowledge of their distribution, *azureatus* is more northern and *argentinensis* more southern.

In the female type of *azureatus* the apical setae of the abdomen are not visible, but they are present in the female paratype. A black example from Chapada, Brazil, turned bluish purple when wetted. In a series of seven specimens from Sara Province, Bolivia, two are greenish blue, not purple. A specimen from north of São Paulo, Brazil, was brownish red under the microscope. In a male from Barra do Tapirape, Mato Grosso, Brazil, the aedeagus is truncate without emargination.

Six males were dissected.

BIOLOGY: Bondar (1948) received specimens of *azureatus* from southern Minas Gerais, Brazil, that were feeding on the leaves of *Cissus salutaris* in the stem of which he said it probably breeds, forming galls. Araujo (1968) reported that adults roll leaves of *Vitis* [= *Cissus*] *salutaris*. Other species (*cupratus*, *festivus*) breed also in plants of Vitaceae. Specimens from Mato Grosso, Brazil, are marked "campo," gallery forest," and "road-side."

Eurhin viridis (Boheman)

Figures 30, 45, 54

Eurhinus viridis Boheman, 1844, p. 289 (Brazil; type, male, in Naturhistoriska Riksmuseum, examined). Champion, "1906-1909" [1908], pl. 19, figs. 32, 32a, 32b.

Eurhinus suffusus Casey, 1922, p. 425 (Chapada, Brazil; lectotype, female, here designated from eight original specimens in National Museum of Natural History, Smithsonian Institution, examined; synonymized by Hustache, 1938).

DIAGNOSIS: Resembles *festivus* in having elytral humerus subangulately dilated (though angle smaller), but differs in having base of elytra sulcate, but not foveate, and antennae of male with segments more transverse, as are those of *cupratus*. Female differs from other females except for those of *ascensionensis*, *adonis* and *aeneus* in having two setose foveae at apex of abdomen as do males. Ventral sides sparsely, finely punctate.

RANGE: Venezuela, Colombia, Brazil, Bolivia, Paraguay. (For 159 specimens examined, see Appendix.) (See map, fig. 54.)

DESCRIPTION: Color green, yellow-green, green with gold reflections or suffusions. Length 5.5 to 8 mm. Rostrum straight to feebly arcuate, shorter or longer than pronotum;

sides at base flat; of male widest at middle under insertion of antennae where also slightly sinuate. Antennae and pronotum as described for *cupratus*, but antennae of male narrower than base of front femur. Elytra with humeri dilated, subangulate; base sulcate from about third striae outward; intervals with punctures smaller than those of striae.

Prosternum, coxae, and legs as described for *cupratus*. Abdomen with apical segment of both sexes with two setose foveae; of male also with distinct angular projection between foveae. Aedeagus with apical sclerotized border four times longer than width of lateral borders (fig. 30), medially concave; apex in some shallowly emarginate, in some rounded-truncate; apodemes scarcely longer than median lobe.

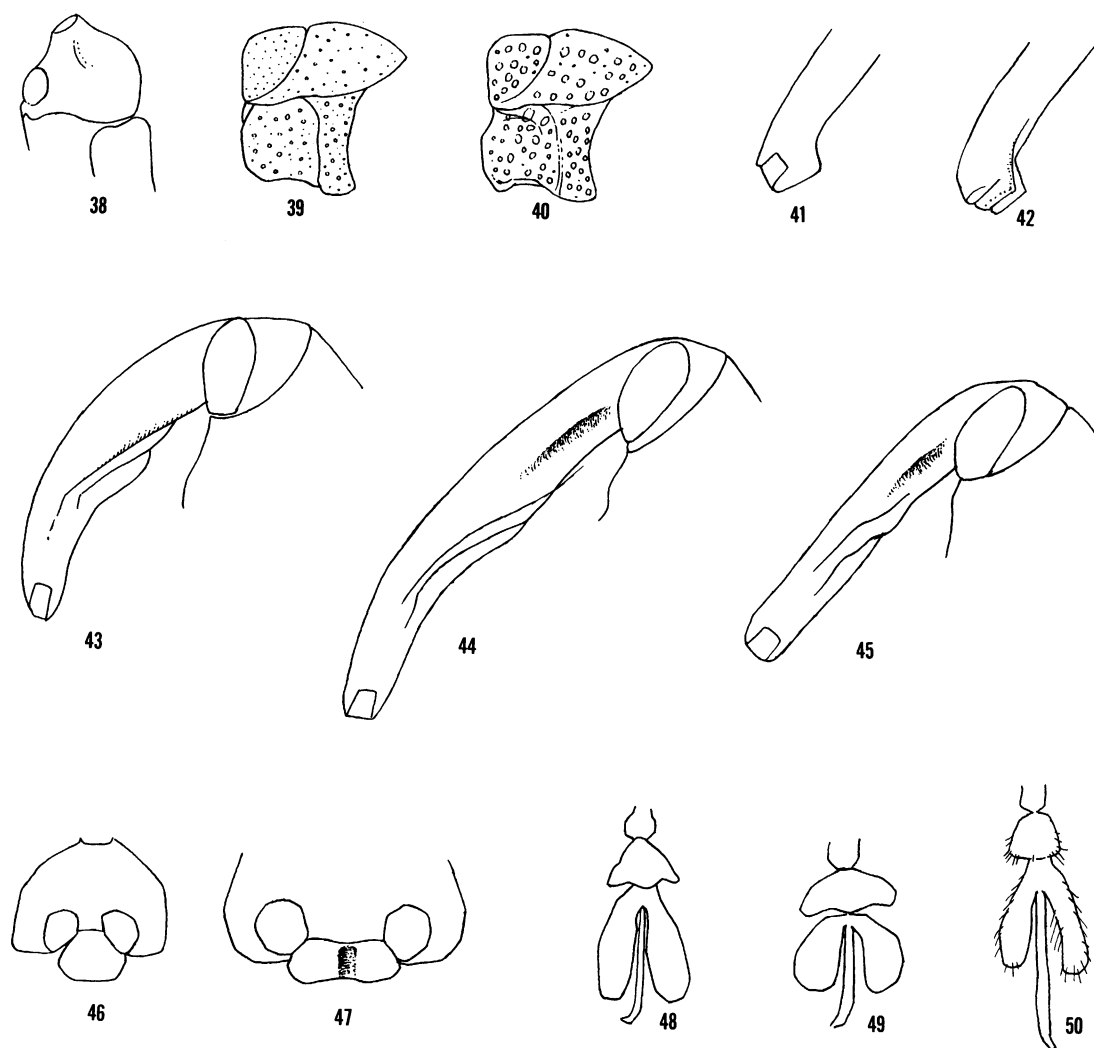
DISCUSSION: This species is very similar to *ascensionensis*, both of which have two setose foveae at the apex of the abdomen in the female; in *cupripes*, *magnificus*, and *yucatecus* a single fovea is present in the female; in the majority of species the apex of the abdomen of the female lacks foveae and setae. In *viridis* the base of the elytron is distinctly sulcate and the humeri are generally subangulate, whereas in *ascensionensis* the base is only feebly impressed near the humeri which are less conspicuous. In addition the front third tarsal segments of the male of *viridis* are very large, as wide as the apex of the rostrum, as in *cupratus*, but those of *ascensionensis* are smaller.

The type of *viridis* lacks the coppery or golden tint present in many specimens, and the humeri of the elytra are less dilated than in some. The *viridis* that are mostly gold (with some green reflections below) were named *suffusus* by Casey, but they differ in color only, as recognized by Hustache (1938).⁴ In general *viridis* is less glossy, more "mat" than other species, especially on the pronotum between the minute sparse punctures.

Six males were dissected.

BIOLOGY: A specimen without locality is labeled "*Cissus* sp.," a genus of vinelike plants

⁴ In Blackwelder's catalogue (1947), *suffusus* appears twice, once as a synonym of *viridis*, and once as a valid species.



FIGS. 38–50. Body parts of *Eurhin*. 38. Pronotum anterolaterally margined or carinate. 39–40. Ventral sides (meso- and meta-sternum and epimeron). 39. Finely punctate. 40. Densely, coarsely punctate. 41–42. Apex of rostrum, *E. thalassinus*. 41. Lateral view. 42. Three-quarter view from below. 43–45. Rostrum. 43. *E. flaturarius*, male. 44. *E. festivus*, male. 45. *E. viridis*, female. 46–47. Prosternal lobe between front coxae. 46. Roundish, flattish. 47. Wider than long, medially sulcate. 48–50. Third front tarsal segments of males. 48. Elongate. 49. As wide as long. 50. Elongate, with longer claw segment.

in which a number of species of the genus breed.

Eurhin ascensionensis (Hustache)

Eurhinus ascensionensis Hustache, 1949, p. 52 (Asuncion, Paraguay; type, male, in Paris Museum, examined).

DIAGNOSIS: Scarcely separable from *viridis*

as shown in description below, but male differs distinctly from male of *viridis* in having smaller front tarsi. Ventral sides finely, sparsely punctate.

RANGE: Brazil, Paraguay, Uruguay, Argentina. (For 13 specimens examined, see Appendix.)

DESCRIPTION: Color green with gold reflections or with gold pronotum. Length 6.5 to

7 mm. Rostrum, antennae, and pronotum as described for *viridis*, but rostrum of male not thicker at middle, antennal segments of male not so wide or compressed, and rostrum of female bent down before apex. Elytra with humeri rounded, scarcely dilated; base mostly flat but with feeble impression within humerus; intervals with punctures smaller than those of pronotum; striae with much larger punctures. Prosternum, coxae, legs, and apex of abdomen as described for *viridis* except for front tarsi of male in which third segment is scarcely larger than that of other tarsi. Aedeagus with apical sclerotized border concave, long, three times longer than width of lateral borders; apex rounded-truncate.

DISCUSSION: This species as well as *lobicornis* (Hustache) were described too late for appearance in the catalogues. The specific name is not an error, as Asuncion in French is Ascension, thus *ascensionensis*.

The elytra in general are more elongate than those of *viridis*, more as in *chevrolati*, and in *ascensionensis* there is a flattened area within the humerus that is lacking in *chevrolati*. The last segment of the abdomen of *chevrolati* is smooth and glabrous in both sexes whereas in the other two species it is furnished with two setose foveae in both sexes. In addition to the smaller front third tarsal segment of *ascensionensis*, the front border of the aedeagus is not as long as it is in *viridis*, and in some *viridis* the apex is feebly emarginate.

Two males and one female were dissected.

Eurhin chevrolati (Champion)

Figure 34

Eurhinus chevrolati Champion, "1906-1909" [1908], p. 393, footnote; pl. 19, figs. 29, 29a, 29b (lectotype, male, Venezuela, here designated from 16 specimens in the British Museum, examined).

DIAGNOSIS: Differs from most species in having elytra more elongate (measured from side almost twice length of pronotum), base flat, humeri not dilated, and apex of abdomen of male without foveae or setae. Ventral sides finely punctate.

RANGE: French Guiana, Venezuela, Colombia, Ecuador, Peru, Brazil. (For 98 specimens examined, see Appendix.)

DESCRIPTION: Green, bluish green, greenish

gold, red. Length 5 to 7 mm. Rostrum straight to near apex where feebly arcuate, that of male nearly as long as pronotum, of female slightly longer; in lateral view not thickened at middle; sides at base flat or feebly sulcate. Antennae with segments of funicle sulcate on lower face, those of male flattened, wider than long, scarcely widening to apex where narrower than base of front femur; club about as long as last three segments of funicle, wider than last segment; scape of both sexes with apex close to base of rostrum. Pronotum finely punctate or impunctate; sides arcuate to distinct apical collar. Elytra longer but scarcely wider than pronotum; humeri feebly rounded; base flat; intervals and striae, including suture, finely punctate or impunctate.

Prosternum with lobe wider than long, medially feebly sulcate, laterally scarcely convex to bulbous; canal shallow; from coxae to front of prosternum about one and one-half times coxal diameter. Front coxae separated by coxal diameter or more; middle coxae by twice diameter. Front tibiae with inner spur larger than and well separated from apical spur, in some males very large; male with front femora long, front tarsi as long as front tibiae; third tarsal segment as wide as long, as wide as or wider than apex of rostrum. Abdomen with apical segment smooth, glabrous in both sexes; that of male with median angle. Aedeagus (fig. 34) with apical sclerotized border longer than width of lateral borders, concave, either with minute semicircular emargination, or more or less truncate with shallow sinuosity; apodemes longer than median lobe.

DISCUSSION: The only other species in which males lack abdominal foveae or setae is *dis-similis* from which *chevrolati* differs in being longer, and narrower, not short and stout, and finely, not coarsely or densely punctate on ventral sides. In these two species as also in *aureus*, *carinatus*, *cupratus*, and others, both red (or gold) and green individuals occur, the green ones being entirely green and the red ones showing green on the head or rostrum, legs or venter, or being green when viewed in daylight at an angle. About one-half the specimens of *chevrolati* from Venezuela are red (or gold).

Six red *chevrolati*, however, (four from Ecuador and two from Peru) do not show any



FIG. 51. Distribution of *Eurhin festivus* in Mexico. (*E. festivus* occurs also throughout South America.)

green and I considered them at first as a distinct species. In three of the four males the large front third tarsal segments are extra large and wide, and the apex of the aedeagus is subtruncate, not emarginate. In the three males mentioned and in the two females, a distinct puncture is present at the base of the rostrum in front of the normal basal foveae, but the fourth male lacks the puncture and a similar puncture was found in a green male from Colombia. In other specimens examined, the size of the tarsal segments of the males varies individually. In *chevrolati*, *dissimilis*, and *viridis*, the contour of the apex of the aedeagus varies also; it can be truncate to vaguely sinuous, to feebly or distinctly, narrowly or broadly emarginate.

The specimen of *chevrolati* chosen for lec-

totype is the "sp. figured" by Champion who probably gave the species Chevrolat's name because of three specimens from Venezuela in the British Museum with an unpublished name of Chevrolat. A specimen from "Mexico" is probably labeled in error.

Eighteen males were dissected.

***Eurhin dissimilis*, new species**

Figures 10, 54

TYPE MATERIAL: Holotype, male, and one female paratype, Tefé (Ega), Amazonas, Brazil, 1879, M. de Mathan, collector, in Paris Museum. Twelve additional paratypes: Brazil: Ega, Amazonas, one female; Bates, collector, one female; Rio de Jurua, Amazonas, November 1874, one male, all in British

Museum (Natural History). Bolivia: Salinas, Beni, July 1895, M. Stuart, collector, one female in Paris Museum. Colombia: Micro ("Monkey") Island, Rio Amazonas, Amazonas, ca. 3°56'S, 70°8'W, July 4, 1978, H. Hespenheide, one female in his collection. Peru: December 28, 1902, W. Schnuse, collector, one female, and Chanchamayo, one male, two females in Dresden Museum; Upper Rio Marañon, September 9, 1924, Bassler, collector, one male, and Mishquiyacu, Moyobamba, San Martín, 1200 m., August 18, 1946, Woytkowski, collector, one male in the American Museum of Natural History; Tocache, Huallaga, 1900, Baer, collector, one male in Paris Museum. Most of these localities are on or near rivers.

DIAGNOSIS: Resembles *flaturarius* in size, shape, and color (red-gold, red, green), but differs in being more punctate above and below, in having rostrum of female very long and straight, not arcuate, last segment of the abdomen of male glabrous, not setose, and aedeagus of different shape.

RANGE: Brazil, Colombia, Bolivia, Peru. (See Map, fig. 54.)

DESCRIPTION OF HOLOTYPE: Red-gold with green reflections and some green ventrally. Length 5 mm. Rostrum arcuate, shorter than pronotum, in lateral view narrower in front of antennal insertion; sides at base sulcate. Antennae with segments flat, compressed, wider than long, gradually widening to apex where narrower than base of front femora; sulcate on lower face; club as long as last three segments of funicle; scape with apex close to base of rostrum from which separated by length of antennal segment. Pronotum finely, sparsely but distinctly punctate; sides arcuate to apical collar. Elytra with humeri rounded, scarcely wider than pronotum; base flat; striae distinctly punctate; intervals sparsely, finely punctate as on pronotum.

Prosternum with lobe wider than long, flat-tish but with shallow median longitudinal sulcus; canal scarcely concave; from front of coxae to apex slightly more than coxal width. Front coxae separated by more than diameter of coxa; middle coxae by about twice diameter. Front tibiae with ante-apical spur wider than apical; front femora elongate; front tarsi as long as tibiae; front third tarsal segment about as wide as long, wider than apex of

rostrum. Abdomen with apical segment flat, glabrous, with small median projection. Aedeagus with apical sclerotized margin longer than width of lateral margins, concave and shallowly emarginate; apodemes slightly longer than median lobe.

VARIATION FROM HOLOTYPE: In females the rostrum is straight, longer than the pronotum, and its apex, which is often darkened, reaches well beyond the prosternal lobe; the antennal segments are longer, less flattened. The majority of the paratypes are green, not red-gold as are the holotype and five other specimens. In several paratypes the sides of the rostrum at the base are not or only indistinctly sulcate, and in two from Peru the apex of the aedeagus is more deeply emarginate. The size range is from 5 to 5.5 mm.

ETYMOLOGY: The species name is from the Latin *dissimilis*, meaning unlike or different.

DISCUSSION: *Eurhin dissimilis* agrees with *chevrolati* in having the base of the elytra flat and the apex of the abdomen of both sexes glabrous and flat; it differs in being generally smaller, more robust, in having shorter, wider elytra, more widely spaced coxae, the tenth elytral stria attaining the apex, and the ventral punctation coarser and denser. The antennal segments of the male are wide, flat, and deeply sulcate like those of *cupratus*, *argentinensis*, and others. The third tarsal segments on the front legs of males are as wide and large as those of most *chevrolati*. In green specimens the tarsi also are green. Another species in which the female could be mistaken for *dissimilis* is *thalassinus* (see couplet 7 of the Key to the species).

Two red females without locality data are not included in the paratype series.

Three males, including the holotype, were dissected.

Eurhin flaturarius Germar
Figures 35, 43

Eurhin flaturarius Germar, 1824, p. 216 (Brazil; type, male in Martin-Luther-Universität, Halle, Germany, examined).

Eurhinus puncticollis Casey, 1922, p. 424 (Rio de Janeiro, Brazil; type, male, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinus gramineus Casey, 1922, p. 424 (Brazil;

type, male, in National Museum of Natural History, examined). New synonymy.

DIAGNOSIS: Specific characters are given in Key (couplet 4). Differs from *thalassinus* in having no apical collar on pronotum and from *dissimilis* in having terminal segment of abdomen of male setose, not glabrous; differs from both species in having coxae closer together, and different aedeagus (fig. 35). Ventral sides in great part finely, sparsely punctate.

RANGE: Brazil, French Guiana. (For 67 specimens examined, see Appendix.)

DESCRIPTION: Color green with gold tints, or red or gold with green tints. Length 3.5 to 4.5 mm. Rostrum strongly arcuate, about same length as pronotum, attaining base of prosternal lobe; that of male in lateral view thicker at middle, of most females black or darkened in apical half; sides at base and in front of antennal insertion sulcate, especially marked in male. Antennae inserted closer than normal to middle of rostrum; funicle of male about one-third width of rostrum, flattened, transverse, compressed, deeply sulcate on lower face; of female narrow, subcylindrical; club not longer than last three segments of funicle, sharply pointed; scape of male distant from base of rostrum by about width of club, of female by width of antennal segment. Pronotum with sides arcuate to obsolete apical collar; punctation fine and sparse. Elytra scarcely wider than pronotum; humeri feebly rounded; base flat but in some examples and in type, bases of third or fourth striae impressed; striae distinctly densely punctate; intervals finely punctate.

Prosternal lobe wider than long, flat to feebly convex, uniformly punctate; prosternal canal sulcate; front of coxae to front of prosternum from one to one and one-half times coxal diameter. Front coxae separated by diameter or less than diameter of coxa; middle coxae by one and one-half or twice diameter. Front tibiae with ante-apical spur small, close to apical spur; front femora of male not markedly elongate; front tarsi of male only slightly larger than other tarsi; third front tarsal segment elongate. Abdomen of male with round, setose median fovea extending length of apical segment and with feeble apical angle; of female with apical segment fringed at mid-

dle with setae, no apical angle. Aedeagus with sclerotized front margin not longer than width of lateral margins; sides constricted before apex; apex with deep narrow incision or emargination (fig. 35).

DISCUSSION: Although Germar's species was described as *flaturarius*, the name has generally been written without the extra "r" as "*flatuarius*." Hustache (1938) listed it twice in the Junk catalogue, once as a synonym of *cupratus* with Guérin-Méneville mistakenly as author,⁵ and once as a valid species. The type specimen of *flaturarius*, kindly sent to me by the museum in Halle, lacks four of its legs, but the chief characters (the arcuate rostrum, transverse, non-sulcate prosternal lobe, male's abdominal setose patch, lack of apical constriction of the pronotum) are present. It is reddish with green reflections.

The tarsi of males of *flaturarius*, other than the type, are narrower and more hairy than those of most species, and the pads of the bilobed third segments are scarcely wider than the claw segment that protrudes between them (fig. 50). The apex of the aedeagus differs from that of other species, but the margins are narrow as in *atritarsis*, *cupripes*, *festivus*, and *yucatecus*.

Another difference between *flaturarius* and other species is that there is a bend or angulation at the outer base of the middle and hind tibiae, but the tibiae must be bent inward toward the femora for the angulation to be visible. In addition, the normal sinuous lobe at the apex of the pronotum behind the eye is lacking, as it is also in *thalassinus*.

Dorsally, there are resemblances among *flaturarius*, *thalassinus*, and *dissimilis*. They look like tiny seeds with non-dilated humeri and mostly flat base of the elytra, and are reddish gold or green or a combination of both; at first glance they could be mistaken for the "*Eurhinopsis*" group of Champion and Casey.

Hustache (1938) synonymized Casey's *gramineus* (the type is green) with *thalassinus*, but it is a synonym rather of *flaturarius*,

⁵ Guérin-Méneville ("1829-1838" [1844]) did not describe *flaturarius*, but his colored illustration (red with greenish borders) resembles *cupratus* which may have influenced Hustache to synonymize it.

as is also Casey's *puncticollis* (the type is red with green tints). In the types of both forms the males have the large characteristic patch of setae at the apex of the abdomen.

Two males were dissected.

BIOLOGY: A female from Paranapiacaba, São Paulo, Brazil, was collected "sobre *Mikania*," a large genus of mostly tropical American herbaceous or woody vines of the thistle family (Carduaceae).

Eurhin thalassinus (Gyllenhal)

Figures 21, 27, 41, 42

Eurhinus thalassinus Gyllenhal, 1836, p. 816 (America meridionalis; type, male, in Zoological Museum, Helsinki, examined).

DIAGNOSIS: Males differ from males of other species in having apex of aedeagus with median apical projection, and sides of rostrum before apex obtusely or acutely angulate (figs. 41, 42). Antennal club very long, sides of venter scarcely punctate. For females see below.

RANGE: Brazil, northern Argentina. (For nine specimens examined, see Appendix.)

DESCRIPTION: Red-gold with some green, or entirely green; legs purple or green. Length 5 to 6.5 mm. Rostrum of male feebly arcuate, of female straight or bent slightly down apically and with apical third often black; about same length as pronotum; sides at base sulcate; male with sides ventrally before apex obtusely or acutely angulate. Antennae of male with segments of funicle flat, compressed, wider than long, almost as wide as front tibiae, scarcely sulcate on lower face; of female with segments not sulcate, not compressed, transverse toward apex only; club as long as last four segments (last five in female) of funicle; scape of male distant from base of rostrum by length of basal funicular segment, of female by half segment. Pronotum scarcely punctate; sides arcuate to distinct apical collar or constriction. Elytra with humeri rounded, scarcely dilated; base flat or vaguely sulcate; striae sparsely, finely punctate; intervals even more finely, as on pronotum.

Prosternum with lobe wider than long, flat or feebly concave; canal feebly concave; from front of coxae to front of prosternum about one and one-half times coxal width. Front

coxae separated by diameter of coxa; middle by about twice diameter. Front tibiae with inner spur scarcely visible in some males and as far from apical spur as length of spur. Front femora of male elongate; front tarsi of male larger than other tarsi and almost as long as front tibiae; third front tarsal segments elongate. Abdomen of male (fig. 21) with rectangular patch of setae extending from base to apex of middle of apical segment; no visible median apical angle, but apex strongly margined; of female with apex inconspicuously setose. Aedeagus (fig. 27) with sclerotized front margin only slightly longer than width of lateral margins, its apex with small blunt projection at middle; apodemes long, twice length of median lobe.

DISCUSSION: In the male type of *thalassinus*, which is entirely green (*thalassinus*, "sea green") and small (5 mm.), the angulation of the sides behind the apex of the rostrum is more feeble, less obvious than that of other males examined. This angulation seems to be a unique secondary sexual character in the genus; it was not noted by Gyllenhal or by any subsequent authors.

In collections *thalassinus* is often misidentified as *flaturarius* Germar, there being no characters reported in the original descriptions that would separate them, but *thalassinus* differs in being larger, in having the apical constriction of the pronotum long and distinct, not obsolete, the antennal club longer, and the male abdomen, rostrum and aedeagus different.

The species differs further from *cupratus* which can also be red or green dorsally and has the same kind of wide, compressed antennae, and purple legs, in having the base of the elytra flat and the prosternal lobe at most scarcely, not strongly sulcate. I found a number of specimens in collections misidentified as *cupratus* or *lobicornis*.

Two males and one female were dissected.

Eurhin recticollis (Casey)

Figures 7, 15, 18, 24

Eurhinopsis recticollis Casey, 1922, p. 427 (Santarem [Pará?], Brazil; type, male, in the National Museum of Natural History, Smithsonian Institution, examined).

Eurhinopsis obliqua Casey, 1922, p. 427 (Chapada

[Mato Grosso], Brazil; type, male, in the National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinopsis angulata Casey, 1922, p. 426 (Santarem, Brazil; type, male, in the National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

Eurhinopsis incerta Casey, 1922, p. 427 (Santarem, Brazil; type, female, in the National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

DIAGNOSIS: Pronotum in front right angled and carinate, almost rectangular, in some cases wider in front and wider than elytra which taper to apex. Male differs from males of all species in having small spurlike extension of inner apex of front femur (fig. 24). Ventral sides coarsely, densely punctate.

RANGE: Brazil, central and northern parts. (For 33 specimens examined, see Appendix.)

DESCRIPTION: Green with gold reflections or red-gold with green reflections; one specimen purple. Length 3.5 to 4 mm. Rostrum straight except for feeble arcuation apically in some females, shorter than pronotum; sides at base flat; that of male very stout, wider than front femur; viewed laterally, sinuous or arcuate under antennal insertion. Antennae with segments about as long as wide, subcylindrical, very narrow, not sulcate on lower face; club feebly wider than funicle; scape nearly attaining eye. Pronotum distinctly wider than long; punctures on disc shallow, separated by twice their diameter; sides parallel in more than basal half, whence turning at right angles to apical collar; shoulders in front arcuately carinate or margined and with minute, dense punctures behind margin. Elytra with humeri feebly rounded, scarcely wider than pronotum; base flat or feebly sulcate; striae distinctly punctate; intervals finely, sparsely punctate.

Prosternum with lobe wider than long, flat, or feebly longitudinally sulcate at middle; canal feebly sulcate; from front of coxae to front of prosternum slightly longer than coxal diameter. Front coxae separated by more than diameter of coxae; middle coxae by almost twice diameter. Front tibiae with inner spur as large as apical spur and close to it. Front third tarsal segment of male twice as large as that of other tarsi. Front femora of male on inner side apically prolonged as small tubercle or acute angle. Abdomen of male (fig. 18)

with two tiny, almost approximate setose foveae at middle of apical segment and strong median angle at apex; that of female with inconspicuous fringe of setae, no median angle. Aedeagus with apex narrowly rounded and incised or slit at middle; sclerotized front margin partially concave, about twice longer than width of lateral margins.

DISCUSSION: Although *Eurhinopsis angulata* is described on the page preceding *recticollis*, I have chosen *recticollis* for the species' name as there are three males in the type series. Champion ("1906-1909" [1908]) considered his genus *Eurhinopsis* as masculine, but Casey (1922) rendered the names as feminine. It is surprising that Casey, who was a keen observer of minutiae, did not remark on the tooth or acute angles on the front femora of his three males of *recticollis*, or on his male types of *obliqua* and *angulata*. (The tooth of *angulata* is evident only on the left femur; on the right it is scarcely visible.)

The type and paratype of *angulata* are red in daylight, greenish in transmitted light; the series of *recticollis* and the type of *obliqua* are mostly green; the type of *incerta*, which Casey calls "deep black with only very feeble violaceous lustre," turned opaque greenish when wetted. I consider these three names synonyms of *recticollis*. Although Casey mentions for *angulata* the "rather sharply angulate and carinate . . ." sides of the pronotum, he does not mention any carinae for his three other forms in which, however, carinae are also present.

In green examples of *recticollis* the scutellum and generally the basal margin of the pronotum are like burnished gold, as are also the venter and legs in great part. The two apical abdominal foveae of males are scarcely larger than a large puncture of the pronotum. Three males were dissected.

A dissected green male in the Santarem series in the Carnegie Museum which agrees in all other characters with other males lacks the tooth of the front femora. A female from Chapada in the same collection is purple above and bluish green below.

Eurhin aureus (Hustache)

Figure 18

Eurhinopsis aureus Hustache, 1926, p. 259 (Roches de Kourou, French Guiana; type, male, in Paris Museum, examined).

DIAGNOSIS: Small size and carinate pronotum as in *recticollis*, but male with inner apex of front femora rounded, not acute. Similar to *carinatus* but differs in having base of elytra flat, not sulcate; rostrum arcuate; aedeagus with front margin convex, not concave; ventral sides coarsely, densely punctate.

RANGE: Colombia, Guyana, French Guiana, Brazil. (For 22 specimens examined, see Appendix.)

DESCRIPTION: Red-gold with green ventrally, or green. Length 3 to 4.5 mm. Rostrum arcuate in both sexes, shorter than pronotum, robust, wider than front femur; sides at base flat. Antennae and pronotum as described for *recticollis*, but pronotum not so distinctly wider than long and punctuation fine, shallow. Elytra with humeri feebly rounded; base flat; striae punctate; intervals scarcely visibly punctate (two or three rows of irregular punctures).

Prosternum with lobe wider than long, longitudinally sulcate in front, bulbous at sides; canal feebly sulcate; from front of coxae to front of prosternum equal to diameter of coxa. Coxae as described for *recticollis*. Front tibiae with ante-apical spur shorter than apical and not close to it; male with front femur apically rounded and front third tarsal segment larger than that of other legs. Abdomen of male as described for *recticollis*; of female glabrous. Aedeagus as described for *recticollis*, but front margin convex, not concave.

DISCUSSION: This species differs from *aeneus*, *adonis*, and *viridicolor*, which are about the same small size, in having the pronotum carinate in front, not rounded, and the color more often red-gold instead of green.

One male was dissected.

***Eurhin carinatus*, new species**

Figures 18, 33, 53

TYPE MATERIAL: Holotype, male, São Paulo de Olivença, Amazonas, Brazil, December 1921, J. F. Zikan, collector, in the American Museum of Natural History, two male paratypes, São Paulo [de Olivença?], in British Museum. Forty-four paratypes as follows: Brazil: from type locality, Waehner, collector, one male in Dresden Museum; May 1883, de Mathan, collector, six males, two females in Paris Museum; three males in British Museum; no exact locality, two males, four females in British Museum, Paris Museum,

National Museum of Natural History, Smithsonian Institution; Amazonas: Teffe, 1879, de Mathan, collector, three females; Fonteboa, Hahnel, collector, one female in Paris Museum; Peru: Yurimaguas, Hahnel, collector, one male; Iquitos, one male; Chimbireyacu, near Yurimaguas, Huallaga, June to August 1885, four males, two females; Pebas, Amazonas, October to January 1880, one male, two females; Tarapoto, May to August 1886, one female, all collected by de Mathan, in Paris Museum; Upper Rio Marañon, September 25, 1924, Bassler, collector, one male in the American Museum of Natural History; Ucayali River, Yarina Cocha, Loreto, April 18, 1954, Hocking, collector, one male in Field Museum; Pucallpa, one male, one sex not determined; Tingo Maria, Rio Huallaga, 1940, one male; Tingo Maria, Weyrauch, collector, one female, all in Kuschel collection. Bolivia: Salinas, Beni River, July 1895, Stuart, collector, one female in Paris Museum; Cosincha region, Beni, Harrington, collector, one male in National Museum of Natural History, Smithsonian Institution; Chapare, Zischka, collector, one male, two females in Kuschel collection. Colombia: Leticia, Amazonas, July 11, 1970, Howden, collector, one female in Howden collection; Caqueta: Rio Orteguzaza, tributary of Rio Caqueta, south of Florencia, August 17, 1947, Richter, collector, one female in the American Museum of Natural History.

DIAGNOSIS: Generally larger than *aureus* which also has pronotum carinate in front and is similar in shape, but *carinatus* differs in having base of elytra sulcate, not flat, rostrum longer, straight, not arcuate, and aedeagus with front margin concave, not convex. Ventral sides of body finely punctate.

RANGE: Colombia, Peru, Bolivia, Brazil. (See map, fig. 53.)

DESCRIPTION OF HOLOTYPE: Red-gold with green reflections, and green ventrally. Length 6.5 mm. Rostrum straight, shorter than pronotum, not attaining base of prosternal lobe; sides at base flat. Antennae as described for *recticollis*. Pronotum strongly convex, finely, scarcely visibly punctate at low magnification; sides subparallel in more than basal half where acutely angulate thence oblique to apical collar; shoulders in front arcuately carinate or margined with minute, dense punctures behind carina. Elytra with humeri fee-

FIG. 52. Distribution of *Eurhin magnificus*.

bly rounded; base feebly sulcate; striae with punctures minute, well separated; intervals finely, inconspicuously punctate.

Prosternum, tibiae, coxae, and front third tarsal segment as described for *recticollis*, but lobe of prosternum flat. Abdomen with two nearly approximate setose foveae at base of apical segment, and median angle at apex. Aedeagus as described for *recticollis*, but front margin longer, and at middle triangularly sulcate (fig. 33).

VARIATION FROM HOLOTYPE: Some specimens are green, red, or greenish gold. The length varies from 4.5 in one to 8 mm. In females the rostrum is longer, attaining the base of the prosternal lobe, and the ventral apex is generally angulate; the apex of the

abdomen is glabrous and lacks the median angle. In some males the foveae of the apical segment of the abdomen are at the middle of the segment.

ETYMOLOGY: The species name is from the Latin *carinatus*, referring to the carination of the pronotum.

DISCUSSION: At first I thought this species might be a larger, finely punctate *recticollis* until I saw Casey's type of *recticollis* in which the male has a projection at the apex of the front femur; otherwise there are many similarities as shown in the description above but *carinatus* is consistently larger.

Although the majority of specimens are red in daylight, or greenish gold with some green below, there are also entirely green examples

(two from Brazil, five from Bolivia, two from Peru). Of the series of four from Chimbireyacu, Peru, three are red-gold and one green. The paratype from Tarapoto, Peru, has the same data as the type and paratypes of another new species, *mathani*. The male of *carinatus* does not have an elevated crest on the pronotum as in *mathani*; the female differs from the female of *mathani* in having the antennal club and the first segment of the funicle much shorter and the apex of the abdomen glabrous. In *carinatus* the club is scarcely longer than the seventh antennal segment.

A small and a larger female (both red) were captured by L. Richter along the Rio Ortega, Colombia, in August–September 1947; the smaller is *aureus* (Hustache) and the larger is *carinatus*.

Four males, including the type, were dissected.

Eurhin mathani, new species

Figure 8

TYPE MATERIAL: Holotype, male, and male and female paratype, Tarapoto [San Martin], Peru, May to August 1886, M. de Mathan, collector, in Paris Museum (male paratype to be deposited in the American Museum of Natural History).

DIAGNOSIS: Male differs from other species in having sharp, elevated carina or crest on front corners of pronotum (fig. 8) with cuplike area within, and rostrum ventrally angulate under antennal groove. Ventrally sides of body finely punctate. For female see below.

RANGE: Known only from type locality.

DESCRIPTION OF HOLOTYPE: Bright green. Length 5.5 mm. Rostrum straight except for feeble arcuation before apex, long, reaching beyond prosternal lobe on to mesosternum; in profile narrowing to apex but lower edge sinuate-angulate behind middle; sides at base only feebly sulcate. Antennae with first segment as long as elongate club which is about three times length of seventh segment; segments of funicle about as long as wide, cylindrical, narrow, not sulcate on lower face; scape nearly attaining eye. Pronotum feebly convex, more or less rectangular, finely, shallowly punctate; sides parallel from base to where front corners turn sharply at right angles

to attain base of apical collar; corners elevated, carinate, sulcate within. Elytra with humeri feebly rounded, scarcely wider than pronotum; base sulcate from second striae outward; striae with minute, well-separated punctures; intervals scarcely punctate.

Prosternal lobe convex, wider than long; canal sulcate; from front coxae to front of prosternum slightly more than diameter of coxae. Coxae and legs as described for *recticollis*. Abdomen at apex with large patch of setae in oval depression and strong median angle. Aedeagus narrowing to truncate apex; sclerotized front margin at least twice longer than width of lateral margins, its surface shallowly concave; dorsal median incision obsolete.

VARIATION FROM HOLOTYPE: The female measures 6 mm. and lacks both the angulation under the rostrum and the crested shoulders of the pronotum; the rostrum is black in apical half and the sides of the base are not sulcate; the pronotal shoulders are not margined or carinate but there is a slight swelling where the carina should be. A rim of setae is present at the middle of the apex of the abdomen.

ETYMOLOGY: The species is named for the collector, M. de Mathan, who was responsible at the end of the nineteenth century for the collection of a great many beetles from Peru and Ecuador in the Oberthur collection in Paris.

DISCUSSION: This is the only instance in which the pronotum differs sexually. The male of *mathani* with its pronotal crests is unmistakable. The female could be confused with green specimens of *carinatus*, some of which were collected at the same time and place in Peru, but in females of *carinatus* the pronotum in front is distinctly carinate. The female of *mathani* resembles *dissimilis*, but differs in having the base of the elytra and the sides of the rostrum at base flat, not sulcate, the first antennal segment longer, and the sides of the pronotum angulate before the apex, not merely arcuate. Possibly additional females of *mathani* will be found with the pronotum anterolaterally distinctly margined or carinate. Viewed in profile the pronotum of both sexes of *mathani* is scarcely convex

whereas that of most species is bulbously convex.

The male paratype was dissected.

Eurhin aeneus (Fabricius)

Figures 23, 55

Rhynchaenus aeneus Fabricius, 1801, p. 440 (America meridionali; type not found).

Eurhinus auritus Gyllenhal, 1836, p. 816 (Cayenne; type, male, in Naturhistoriska Riksmuseum, Stockholm; examined; synonymized by Gyllenhal, 1845).

Eurhinus malachiticus Kirsch, 1869, p. 208 (Bogota; type, male, in Dresden Museum für Tierkunde, examined). New synonymy.

DIAGNOSIS: Similar to *viridicolor* and *adonis*, differing from *adonis* as stated in last couplet of Key to species and from *viridicolor* in having front coxae more widely separated, rostrum shorter and thicker, and front third tarsal segments of male twice larger than those on other legs.

RANGE: Colombia, Venezuela, the Guianas, Brazil, Panama. (For 70 specimens examined, see Appendix.) (See map, fig. 55.)

DESCRIPTION: Green or green with gold tints especially on venter and legs. Length 3.5 to 4.5 mm. Rostrum shorter than pronotum; sides at base flat; that of male feebly arcuate on upper border, generally thicker than front femora; of female almost straight and longer than that of male, generally with mentum at ventral apex angulate. Antennae as described for *recticollis*. Pronotum feebly wider than long, punctures of disc separated by about twice their diameter; sides subparallel in more than basal half, thence oblique or arcuate to feeble apical collar; in some specimens, trace of anterior carina. Elytra slightly wider than pronotum; humeri feebly rounded; base feebly sulcate; striae distinctly punctate; intervals finely or deeply punctate.

Prosternum, coxae, and tibiae as described for *recticollis*; front third tarsal segment of male about twice size of that of other legs. Abdomen with apical segment of male with large round median depression (or dimple) filled with setae which in many specimens are worn off apically (fig. 23), and median angle; of female with two approximate setose foveae close to apex, in some specimens appearing as fringe of setae. Aedeagus with apex rounded-truncate, with dorsal median

incision; sclerotized front margin two and one-half times longer than width of lateral margins.

DISCUSSION: Fabricius's type is not in his collection (Zimsen, 1964), but I have examined the type of Gyllenhal's *auritus*, which Gyllenhal synonymized some years later with *aeneus*. It is a male, well punctate above, coarsely and densely below with gold legs and gold reflections ventrally, and with the male's abdominal "dimple." The type of the conspecific *malachiticus* (Kirsch) is also a male, green with scarcely any gold tints, but with the apical "dimple" of the abdomen. Both *aeneus* and *malachiticus* were transferred to "*Eurhinopsis*" by Hustache (1938).

In series a size difference is noticeable among three extremely similar species: *viridicolor* which is the smallest, then *aeneus*, and the largest is *adonis*. As to sympatry and geographic distribution, all three have been taken in Panama; but only *viridicolor* in Guatemala and Mexico; *viridicolor* and *aeneus* are both from Venezuela and *aeneus* and *adonis* are both from Bolivia and Brazil.

Three males were dissected.

Eurhin adonis (Hustache)

Figures 20, 55

Eurhinopsis adonis Hustache, 1924, p. 113 (Santa Cruz, Bolivia; type, male, in Muséum d'Histoire Naturelle, Paris, examined).

DIAGNOSIS: Similar to *aeneus* but more robust, larger, and more southern in distribution; differs further in having rostrum longer and narrower, and last segment of abdomen of male with two setose foveae. Many specimens purple or purple with green legs. Dorsal and ventral sides strongly, coarsely punctate.

RANGE: Argentina, Paraguay, Bolivia, Brazil. (For 48 specimens examined, see Appendix.) (See map, fig. 55.)

DESCRIPTION: Green or purple. Length 4 to 5 mm. Rostrum shorter than pronotum, that of male almost straight, as thick as front femora; of female straight, longer, attaining base of prosternal lobe, in some specimens apex bent feebly downward, in some ventral apex shows angle of mentum; sides at base flat in both sexes. Antennae as described for *aeneus* and *recticollis*, but those of female inserted



FIG. 53. Distribution of *Eurhin carinatus* and *E. cupratus*. (*E. cupratus* occurs also in the Greater Antilles.) S = State locality only. C = Country only.

nearer middle of rostrum. Pronotum and elytra as described for *aeneus* but pronotum without trace of anterior carina.

Prosternum with lobe wider than long, feebly convex, canal rather flat; from front of coxae to front of prosternum equal to coxal



FIG. 54. Distribution of *Eurhin dissimilis* and *E. viridis*. S = State locality only. C = Country only.

diameter. Coxae, tibiae, as described for *aeneus* and *recticollis*; male with front third tarsal segment larger than that of other legs.

Abdomen of female as described for *aeneus*; that of male with two large approximate setose foveae at middle of apical segment, setae in



FIG. 55. Distribution of *Eurhin aeneus* and *E. adonis*. S = State locality only. C = Country only.

some specimens seemingly run together, and strong median angle. Aedeagus as described for *aeneus*.

DISCUSSION: In the collection in the Paris

museum, Hustache had set aside three purple specimens from Paraguay which he evidently intended to describe as new and to name for the collector, H. Jacob. These specimens,

however, and about two dozen others of the same dorsal color appear to be conspecific with Hustache's *adonis*, described from eight green specimens from Bolivia. Of 48 *adonis* viewed in daylight, about one-half are green, several of these being greenish blue, and the remaining are purple. Many purple examples have green or bluish legs or rostrum and in several green examples the basal margin of the elytra is purplish. The colors are not geographically oriented.

The relative differences between *adonis* and *aeneus* given in the Diagnosis are not sufficient for identification if one has for instance, a small green female. If it is from southern Brazil, Paraguay, or Argentina it is probably *adonis*; if from Venezuela, the Guianas, Colombia, or Panama it is probably *aeneus*. Both species occur in Bolivia; in fact two of the paratypes of *adonis* (a male, Santa Cruz; a female, Trinidad, Santa Cruz, Bolivia) I have identified as *aeneus*. I have not seen any purple *aeneus* nor any *adonis* with gold tints or gold legs. Even the apex of the last abdominal segment of the male can be uncertain for identification if the setae are worn off in places. In the type of *adonis* the abdominal foveae are not visible, only the shaggy setae. The abdominal foveae of females are much smaller and less setose than those of the males.

Five males were dissected.

Eurhin viridicolor (Champion)

Eurhinopsis viridicolor Champion, "1906-1909" [1908], p. 398, pl. 20, figs. 2, 2a, 2b (Pancina, Verapaz, Guatemala; lectotype, female, here designated from two original specimens in British Museum, examined).

Eurhinopsis convexa Casey, 1922, p. 428 (Mexico; type, female, in National Museum of Natural History, Smithsonian Institution, examined). New synonymy.

DIAGNOSIS: Similar to *aeneus* and *adonis*, but female differs from females of those species in having rostrum very short and distinctly arcuate, as in male, not nearly straight. Male differs from males of those species in having aedeagus pointed, not truncate.

RANGE: Venezuela, Brazil; Panama, Guatemala, Mexico. (For nine specimens examined, see Appendix.)

DESCRIPTION: Green with some gold tints. Length 2.5 to 4 mm. Rostrum shorter than pronotum, shorter and wider in lateral view than front femora; arcuate; sides at base flat. Antennae, pronotum, and elytra as described for *aeneus* but pronotum of lectotype very finely, sparsely punctate and intervals of elytra scarcely or shallowly punctate. Prosternum with lobe wider than long, feebly longitudinally sulcate at middle; canal strongly sulcate; from front of coxae to front of prosternum longer than coxal diameter. Front coxae separated by diameter of coxa; middle coxae by less than twice diameter. Front tibiae with inner spur about same size as apical spur. Front third tarsal segment of male slightly larger than that of other legs. Abdomen with apical segment of male with two large, closely placed setose foveae; of female appearing glabrous in some, but apical fringe of setae visible in lectotype and several other females. Aedeagus with apex feebly pointed; front sclerotized margin slightly longer than width of lateral margins; dorsal median incision present.

DISCUSSION: The rostrum is similar in the sexes, being very short and distinctly arcuate, especially so on the outer (upper) edge. In *adonis* and *aeneus*, on the other hand, the rostrum of the female is longer than that of the male and is almost straight. The apex of the aedeagus of *viridicolor* is narrowly rounded to pointed, not broadly rounded-truncate as in the other two species. In *aeneus* and *viridicolor* the front border of the pronotum is in some specimens faintly carinate. The last segment of the abdomen of *viridicolor* is like that of *adonis* (two setose foveae), but the effect of the light striking it can make it resemble the single depression or "dimple" characteristic of the last segment of *aeneus*. Therefore dissection is necessary in many instances.

The lectotype is the "sp. fig." by Champion; it is much more sparsely punctate than the syntype and other specimens and has more definite although still faint pronotal carinae.

The only other species of Mexico that occur as far south as South America are *atritarsis* and the wide-ranging *festivus*.

Three males (from Mexico, Venezuela, and Brazil) were dissected.

Eurhin aeruginosus (Champion)

Eurhinopsis aeruginosus Champion. "1906-1909" [1908], p. 398, pl. 20, figs. 1, 1a (Oaxaca, Mexico; type, female, in the British Museum (Natural History), examined).

DIAGNOSIS: Bright yellow- or blue-green with gold legs; surface so densely, deeply punctate that spaces between punctures scarcely evident. Rostrum of female as arcuate as that of *viridicolor*.

RANGE: Known only from Pacific coast in Mexico (Oaxaca) and in Costa Rica (Alajuela province). (For two specimens examined, see Appendix.)

DESCRIPTION (female only): Green with gold legs. Length 3.5. mm. Rostrum arcuate, shorter than pronotum, in lateral view as wide as front femora; sides at base flat; Antennae as described for *aeneus* and *recticollis*. Pronotum as described for *aeneus* except for punctation which is closely reticulate, punctures dense, deep. Elytra as described for *recticollis* but all punctures denser, deeper, those of

striae cutting into intervals, those of discal intervals longitudinally dense and almost as wide as intervals.

Prosternum, coxae, and tibiae as described for *viridicolor*. Abdomen with apical segment either fringed with tiny setae (Costa Rica) or medially with setose patch (type).

DISCUSSION: Although a number of species are said to be dorsally densely punctate, none has punctures as dense or as large as those of *aeruginosus*. Once seen, the species is readily remembered. Champion described *aeruginosus* as "subopaque" and rather "alutaceous," but I find the elytra, at least, bright, shining, and metallic. The type is yellowish green and the second specimen bluish green (or greenish blue). Champion's name for the species seems appropriate—it is Latin, meaning covered with verdigris, like that found on old insect pins. The color of *aeneus* and *viridicolor* is generally a darker green; in many *aeneus* the legs are gold as are those of *aeruginosus*.

APPENDIX: SPECIMENS EXAMINED

For convenience, the species and the countries under each species, are listed alphabetically. The individuals or institutions to which the specimens belong are indicated by letter symbols in parentheses as follows:

AMNH, American Museum of Natural History, New York

BM, British Museum (Natural History), London

CB, Carlos Bordon, Maracay

CM, Carnegie Museum of Natural History, Pittsburgh

DM, Staatliches Museum für Tierkunde, Dresden

FM, Field Museum of Natural History, Chicago

HH, Henry Hespenheide collection, Los Angeles

HM, University Zoological Museum, Helsinki

HO, Henry and Anne Howden collection, Ottawa

KU, Guillermo Kuschel collection, Auckland

MEX, Museo de Historia Natural, Chapultepec, Mexico

ML, Martin-Luther-Universität, Halle

MN, Muséum National d'Histoire Naturelle, Paris

NR, Naturhistoriska Riksmuseum, Stockholm

OB, Charles W. O'Brien collection, Tallahassee

SP, Museu de Zoologia, São Paulo

UR, Universidad de la Republica, Montevideo

USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

ZM, Zoologisches Museum der Humboldt Universität, Berlin

For two abundant species I have omitted data on their disposition.

Eurhin adonis (Hustache)

ARGENTINA: *Misiones*: 1 (CB); Bemberg, 1 (AMNH); Eldorado, 2 (AMNH); Iguazu, 1 (AMNH); Londero, 2 (CB); Tiju Cuare, near San Ignacio, 1 (MN); Alto Parana, 1 (BM).

BOLIVIA: *Santa Cruz*: 5 (including type, MN); Langunilla, 1 (MN); Loma Alta, 1 (USNM); Quatro Ojos, 1 (MN). *Sara*: Nueva Maka, 1 (SP).

BRAZIL: "Ilha Trinidad," 1 (SP). *Goiás*: Trindade, 1 (MN). *Minas Gerais*: Campo Grande, 1 (SP). *Parana*: Caviuna, 2 (AMNH); Rolandia, 1 (AMNH). *Rio Grande do Sul*: Santo Augusto, 1 (USNM). *Santa Catarina*: Nova Teutonia, 18 (HH, HO, SP). *São Paulo*: Indiana, 2 (BM).

PARAGUAY: Hohenau, Alto Parana, 2; Sierra Trinidad, 1 (both MN).

NO LOCALITY: 1 (ZM).

Eurhin aeneus (Fabricius)

BOLIVIA: 1 (ZM). *Santa Cruz*: 1 (MN); Trinidad, 1 (MN).

BRAZIL: 1 (ZM). *Santa Catarina*: Nova Teutonia, 1 (SP).

COLOMBIA: Bogota, 4 (including type *mala-chiticus*, DM; MN).

FRENCH GUIANA: Cayenne, 34 (including type *auritus*, NR; BM, CM, MN, ZM).

GUYANA: 6 (USNM).

PANAMA: 3 (CM, USNM).

SURINAM: 2 (DM).

VENEZUELA: Yacua, 2 (USNM). *Distrito Federal*: Chichiriviche, 1 (CB). *Merida*: Chiruri, 1 (CB).

NO LOCALITY: 13 (BM, MN, ZM).

Eurhin aeruginosus (Champion)

COSTA RICA: *Alajuela*: Surrubres [Surubres], 1 (DM).

MEXICO: *Oaxaca*: 1 (lectotype, BM).

Eurhin argentinensis (Hustache)

ARGENTINA: *Misiones*: 2 (including type, MN); El Soberbio, 1 (CB); Londero, 2 (CB).

BRAZIL: 4 (MN, USNM). *Bahia*: 2 (ZM). *Para*: Caninde (Rio Gurupi), 1 (SP). *Santa Catarina*: 1 (AMNH); Cauna, 2 (AMNH); Nova Teutonia, 25 (AMNH, HH, SP).

Eurhin ascensionensis (Hustache)

ARGENTINA: Chaco, Puerto Bermejo, 2 (ZM). *Corrientes*: 1 (DM). *Santa Fe*: Chaco, Las Garzas, 1 (MN); Estancia La Noria, Rio San Javier [Xavier], 5 (BM, MN); Helvecia, 1 (USNM).

BRAZIL: 1 (DM).

PARAGUAY: Asuncion, 1 (type, MN).

URUGUAY: Canelones, Parque del Plata, 1 (UR).

Eurhin atritarsis (Chevrolat)

BRAZIL: 4 (including lectotype *laetus*, USNM; MN). Santarem [Para?], 2 (CM, USNM).

COSTA RICA: 1 (BM).

MEXICO: 3 (BM, DM). *Veracruz*: 1 (type, NR); 12 mi. south of Alvarado, 1 (OB).

Eurhin aureus (Hustache)

BRAZIL: 2 (MN). *Rio de Janeiro*: Mangaratiba (Muriqui), 1 (SP).

COLOMBIA: Rio Orteguaza, Rastrojo, 1 (AMNH).

FRENCH GUIANA: 1 (MN); Cayenne, 5 (BM, MN); Kourou, 1; Nouveau Chantier, 1; Roches de

Kourou, 2 (including type); St. Laurent du Maroni, 3 (all MN).

GUYANA: 1 (USNM).

NO LOCALITY: 4 (BM, MN).

Eurhin azureatus (Casey)

BOLIVIA: Chiquitos, 2 (MN). *Sara*: 7 (CM). *Nuflo de Chavez*: Ascension, 1 (OB).

BRAZIL: 3 (MN); "Faz. Ric., Franco," 1 (USNM). *Mato Grosso*: 7 (BM); Barra do Tapi-rap, 1 (SP); Chapada, 4 (including type, USNM; CM, USNM); Corumne, 1 (MN); Cuijaba [Cuiaba?], 1 (MN); Miranda to Cuijaba, 1 (MN); Murtinho, 1 (SP). *São Paulo*: 1 (MN).

NO LOCALITY: 3 (AMNH, SP).

Eurhin carinatus, new species

BOLIVIA, BRAZIL, COLOMBIA, PERU: (see under the species in the text).

Eurhin chevrolati (Champion)

BRAZIL: 5 (DM, HM, MN); Rio Negro, 1 (BM). COLOMBIA: 19 (BM, DM, MN, USNM, ZM). ECUADOR: Loja, 3 (MN); Otavela/Apuela, Imbabura, 1 (HO).

FRENCH GUIANA: Cayenne, 1 (DM).

PERU: 1 (BM); Huascary [Huascar], Loreto, 1 (USNM).

VENEZUELA: 39 (BM, DM, HM, MN, USNM); Caracas, 17 (BM, MN); Merida, 1 (MN).

NO LOCALITY: 8 (BM, MN, ZM).

Eurhin cupratus Illiger

ARGENTINA: *Misiones*: Londero, 2 (CB).

BOLIVIA: Santa Helena, 1 (USNM), Trinidad, 1 (KU).

BRAZIL: 51 (including lectotype of *splendidus*, AMNH and type *cavicornis*, USNM; AMNH, BM, DM, OB, UR, USNM); Santos, 1 (DM). *Bahia*: 3 (BM, ZM). *Espirito Santo*: 2 (BM). *Goiás*: 3 (USNM). *Minas Gerais*: 6 (AMNH, OB); Serra Caraça, 4 (MN, SP). *Parana*: 2 (BM); Caviuna, 2 (AMNH), Rolandia, 2 (AMNH, KU). *Rio Grande do Sul*: 4 (BM, ZM). *Rio de Janeiro*: 12 (BM, MN, SP, ZM); Duque de Caxias, 1 (SP); Laguna de Sacuaresma, 3 (MN); Petropolis, 1 (MN). *Santa Catarina*: 1 (AMNH); Nova Teutonia, 1 (HH). *São Paulo*: 1 (BM); Cantareira, 2 (USNM); Indiana, 1 (BM); Fazenda Pau d'Alho, Itu, 1 (SP); Val do Rio Pardo, 1 (type of *lobicornis*, MN).

COLOMBIA: 1 (MN).

CUBA: 1 (MN).

DOMINICAN REPUBLIC: Santo Domingo, 1 (BM).

ECUADOR: 1 (BM).

JAMAICA: 7 (AMNH, BM, CM, MN); Baron Hill, Trelawny, 2 (CM); Port Antonio, 1 (USNM); St. Ann's, 2 (BM).

PARAGUAY: 1 (ZM); San Bernardino, 1 (USNM).

PERU: Tingo Maria, Rio Huallaga, 1 (KU); Vilcanota, Cuzco, 1 (MN).

VENEZUELA: 1 (MN); Caracas, 1 (MN).

NO LOCALITY: 9 (BM, FM).

Eurhin cupripes (Pascoe)

MEXICO: 17 (MN, ZM). *Guerrero*: Balsas, 1 (MN). *Morelos*: Temixco, 3 (Mex). *Oaxaca*: Oaxaca, 1 (USNM). *Puebla*: 1 (BM).

NO LOCALITY: 1 (BM).

Eurhin dissimilis, new species

BOLIVIA, BRAZIL, COLOMBIA, PERU: (see under the species in the text).

Eurhin festivus (Fabricius)

Note: Data on disposition of specimens omitted except for type material.

ARGENTINA: *Misiones*: El Soberbio, 1; Londero, 1.

BOLIVIA: Chiquitos, 1; Ichilo, Buenavista, 1; Rivière Songo, 1; Rurrenabaque, Rio Beni, 2; Santa Cruz, 3.

BRAZIL: 46 (including types of *humeralis* and *violaceus*, USNM). *Amazonas*: São Paulo de Olivença, 1. *Bahia*: 1. *Espirito Santo*: 7. *Mato Grosso*: Chapada, 3 (including type of *cobaltinus*, USNM); Xingu, 1. *Minas Gerais*: 5 (including lectotype *heringeri*, AMNH). *Rio de Janeiro*: 3 (including type *callichloris*, MN); Guanabara, 2; Corcovado, 1; Mt. Corcovado, 2. *Santa Catarina*: 1; Nova Teutonia, 2.

BRITISH HONDURAS: Belize, 1; Rio Hondo, 2.

COLOMBIA: 16; Bogota, 5; Cacagualito, 1; Fusgusaga [Fusagasuga], 1; Ibague, 3; Lake Sapatosa region, Chiriguana, 1; Muzo, 1; Rio Jamundi, 10 mi. S Cali, Valle, 1; Umbria, 1; Valle de Cauca, 1.

COSTA RICA: 1; Bebedero, 1; San Jose, 1.

CUBA: 18; Cayamas, 1; Estacion Central Agricultura, 2; Guantanamo, 1; Havana, 2; Marianao, 1; Santa Clara, 1; Sierra Madre, 1; Soledad near Cienfuegos, 2; Yateras Distrito, Oriente, 1.

DOMINICAN REPUBLIC: Boca Chica, Distrito National, 2; 18 km. NW Boca da Yuma, 1; 9 km. SW Campo Nuevo, 1; Guaimari, 2; Moca, 1; Sanchez, 2; San Lorenzo, 2; 21 km. W San Pedro de Macoris, 2; Santo Domingo, 18.

ECUADOR: 1; Archidona, 1; Balzapamba,

Bolivar, 1; Loja, 1; Macas, 4; Paramba, 1; Zaraku, 2.

EL SALVADOR: Quezaltepeque, 1.

FRENCH GUIANA: Cayenne, 3.

GUATEMALA: Panzos, 1; San Sebastian, Retalhuleu, 1; Tamahu, 1.

GUYANA: 1; Kartabo, Bartica District, 1.

HAITI: 3; near Etang Sumaire, 1; Port au Prince, 24.

HONDURAS: 1

MEXICO: 31. *Chiapas*: Tapachula, 1. *Durango*: Ventanas, 1. *Guerrero*: Acapulco, 1; Balsas, 2. *Morelos*: Cuernavaca, 3 (including lectotype *viridipes*, BM), *Nayarit*: Tepic, 1. *Oaxaca*: Panistlahuaca, 1; Tepanzacualco [Tepamacualco], 1. *Puebla*: Almolonga, *San Luis Potosi*: Sotano de Potrerillos, Ahuacatlan, 1. *Veracruz*: Cordoba, 1; Jalapa, 2.

PANAMA: 4. *Canal Zone*: Cerro Galera, 1; Gatun Dam area, 1; Matachin, WNW Paraiso, 1. PARAGUAY: 1; San Salvador, 1.

PERU: 2; Urubamba, 1; Upper Rio Marañon, 1. *Amazonas*: Tarapoto, 1. *Jauja*: Satipo, 1. *La Merced*: Chanchamayo 5; Rio Tora, Chanchamayo, 4.

SURINAM: 1.

TRINIDAD: Caparo, 2; Maracas Valley, 1.

VENEZUELA: 51; Bocono, Trujillo, 1; Caracas, 22; Caracas Valley, 26; Caripito, 2; El Valle, 3; Las Trincheras, 2; Rancho Grande near Maracay, 1; Reserva Forestal Ticoporo, Barinas, 1; Tocata, Miranda, 1.

AMERICA MERIDIONAL: 2

NO LOCALITY: 6.

Eurhin flaturarius Germar

BRAZIL: 25 (including types of *gramineus*, USNM and *flaturarius*, ML; BM, MN, NR, USNM, ZM). *Amazonas*: Ega, 1 (BM). *Bahia*: 1 (MN); Eucruilhada, 1 (OB). *Rio de Janeiro*: 14 (BM, CM, MN, USNM); Corcovado, Guanabara, 4 (USNM); Mt. Corcovado, Guanabara, 5 (USNM); Montagnes des Orgues, 1 (MN). *São Paulo*: Cantareira, 1 (KU); Paranapiacaba, Santo Andre, 1 (SP).

FRENCH GUIANA: Cayenne, 2 (DM, MN).

NO LOCALITY: 3 (BM, DM, ZM).

Eurhin magnificus (Gyllenhal)

BRITISH HONDURAS: Belize, 1; Rio Hondo, 1; Rio Sarstoon, 2.

COSTA RICA: 7 (including type *prominens*, USNM); San Pedro de Montes de Oca, 5. *Alahuela*: San Carlos, 1. *Cartago*: 8; Cache [Cachi], 1; Navarro, 2; Turrialba, 6. *Guancaste*: Arenal, 1; Palo Verde Station, 29 km. WSW Cañas, 1; 6 mi.

W Cañas, Taboga, 1. *Heredia*: La Selva, SE Puerto Viejo, 1. *Puntarenas*: Monteverde, 2; 6 km. S Santa Elena, 1. *San Jose*: 1.

GUATEMALA: 1 (type *binarius*, USNM). *Alta Verapaz*: Cacao, Trece Aguas, 1; Panzos, 2; Tel-eman, 1. *Baja Verapaz*: San Geronimo, 4. *Quezaltenango*: El Reposo, 1.

HONDURAS: Carmelina, 1. *Comayagua*: Lago Yojoa, 1. *El Paraíso*: Zamorano, 2.

MEXICO: 50 (including type *magnificus*, NR). *Chiapas*: Tapachula, 2. *Colima*: 1. *Morelos*: Cuernavaca, 1. *Nayarit*: San Blas, 1. *Oaxaca*: Panistlahuaca, 1; Tehuantepec, 1. *Puebla*: Almolonga, 2. *Tabasco*: 1 (type *cavilobus*, USNM); Cardenas, 1; La Choultapec, 1; Teapa, 1. *San Luis Potosí*: Tamazunchale, 1. *Veracruz*: 1; Cordoba, 3; Francisita, 1; Jalapa, 7; Nacimiento de Rio Atojal, 1. Palasola, 1; Palma Sola, 2; Paso de Telega, Jicaltepec, 1; San Rafael Jicaltepec, 1; Tuxpam, 1.

NICARUGUA: 1 (type *gemmulus*, USNM). *Chontales*: 3.

PANAMA: 1 (type *minuens*, USNM).

NO LOCALITY: 1.

Eurhin mathani, new species

PERU: (see under the species in the text).

Eurhin purpureus (Hustache)

ARGENTINA: Tucuman, 1 (lectotype *willinki*, AMNH).

BRAZIL: 4 (BM, DM, USNM); Petropolis, 1 (DM). *Goiás*: Caraça, 3; Jatahy, 6 (including type *purpureus*, MN; OB, MN). *Minas Gerais*: Caixa de Areia, Belo Horizonte, 1 (SP). *Parana*: 4 (MN); Caviuna, 1 (AMNH); Rolandia, 2 (AMNH). *Rio de Janeiro*: 1 (BM); Itatiaya, 1 (AMNH). *Santa Catarina*: 1 (AMNH); Joinville, 1 (BM); Mafra, 2 (MN); Nova Teutonia, 9 (HH, SP); Rio Vermelho, 1 (AMNH); San Leopoldo, 1 (MN). *São Paulo*: 1 (MN); Barueri, 1 (SP); Indiana, 1 (BM); Ypiranga, 1 (SP).

PARAGUAY: Hohenau, 3 (MN).

NO LOCALITY: 2 (ZM).

Eurhin recticollis (Casey)

BRAZIL: 3 (including type *incerta*, USNM; BM, USNM). *Amazonas*: 2 (DM, MN). *Mato Grosso*: Barra do Tapirape, 1 (SP); Chapada, 2 (including type *obliqua*, USNM; CM); Xingu, 1 (SP). *Para*: Belem (Utinga), 2 (SP); Cameta, 2 (ZM); Mosqueira, Rio de Para, 1 (BM); Santarem, 17 (including types of *angulata* and *recticollis*, USNM; CM, USNM); Villa Nova, 1 (BM).

Eurhin thalassinus (Gyllenhal)

ARGENTINA: Misiones: Iguazu, 1 (AMNH).

BRAZIL: *Bahia*: 2 (ZM). *Minas Gerais*: Lam-

bary, 1 (USNM). *Rio de Janeiro*: 2 (BM, ZM); Guanabara, 1 (USNM). *Santa Catarina*: 1 (DM); Nova Teutonia, 1 (SP). *São Paulo*: Cantareira, 1 (USNM); Ypiranga, 1 (SP).

AMERICA MERIDIONAL: 1 (type, HM).

Eurhin viridicolor (Champion)

GUATEMALA: *Baja Verapaz*: Pancina [Panimá], 1 (lectotype *viridicolor*, BM).

MEXICO: 2 (BM, DM). *Veracruz*: Cordoba, 1 (BM). *Tabasco*: Frontera, 1 (type *convexa*, USNM).

PANAMA: 1 (BM). *Canal Zone*: Paraíso, 1 (USNM).

VENEZUELA: *Aragua*: Puerto de Cata, 1 (USNM).

NO LOCALITY: 1 (BM).

Eurhin viridis (Boheman)

BOLIVIA: Chiquitos, 1 (MN). *Santa Cruz*: Guatro Ojos, 2 (MN). *Sara*: 1 (CM).

BRAZIL: 16 (including type *viridis*, NR; MN, ZM). *Goiás*: 2 (USNM); Bananeira, 3 (AMNH, SP); Jatahy, 60 (BM, MN, OB, USNM); Leopoldo Bulhões, 1 (SP); Trindade, 5 (MN). *Mato Grosso*: 1 (MN); Chapada, 37 (including lectotype *suffusus*, USNM; CM, USNM); Chapada dos Guimarães, 5 (OB, USNM). *Minas Gerais*: 5 (BM, MN, USNM); Barro Preto, 1 (MN); Pa..z (?), 2 (BM); Pirapora, 1 (OB); Pocinhos, 3 (USNM); Sete Lagoas, 1 (DM). *Parana*: 1 (BM). *São Paulo*: George Oeterer, 1 (SP); Jundiaí, 1 (SP); Val do Rio Pardo, 1 (MN).

COLOMBIA: 1 (MN).

PARAGUAY: 1 (MN).

VENEZUELA: 1, (MN).

NO LOCALITY: 5 (AMNH, BM, SP).

Eurhin yucatecus (Champion)

MEXICO: 1 (MN). *Yucatan*: 1 (OB); Temax, 14 (BM, DM, MN, USNM).

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