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A Revision of the Tribe Amblyopinini: Staphylinid Beetles Parasitic on Mammals

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INTRODUCTION

This paper¹ is concerned with a group of staphylinid beetles that live as ectoparasites on rodents and marsupials. These staphylinids are of unusual interest inasmuch as obligate ectoparasitism is a very rare trait among beetles.

In an earlier paper (Seevers, 1944) I proposed that these ectoparasitic genera be placed in a new subfamily, Amblyopininae, as their former position in the Habrocerinae was not a natural one. Since that paper was published I have been able to study much more material, including specimens of the Tasmanian genus *Myotyphlus*. It is now evident that the group is morphologically linked to the tribe Quediini of the Staphylininae. The genus *Myotyphlus*, in particular, is very close to the Quediini and is doubtfully separable on structural grounds. In this revision the group is placed in the subfamily Staphylininae as the tribe Amblyopinini. The Neotropical species of Amblyopinini are morphologically specialized to the degree that separation from the Quediini is not difficult to justify. The tribe as a whole may well be justified on the basis of the distinctive ecology and behavior of its members. The evolution of obligate ectoparasitism in the Staphylinidae must have required genetic changes comparable to, if not greater than, those necessary to bring about morphological characters generally recognized as separating higher categories of Staphylinidae. To group these genera with the Quediini obscures their distinctive ecological and physiological adaptations; yet to separate them need not obscure their probable origin from quediine stock.

¹ This project was completed during the tenure of a grant in aid from the National Science Foundation.

A revision of the tribe has been made necessary by the large number of new species that have been collected in recent years. The size of the group is more than doubled by the addition of twenty-three new species. One of the surprising revelations of my recent studies is the high degree of host specificity shown by these species. While it is true that many of the host records reflect only a single capture, there are enough records based on more than one to indicate that these beetles have narrowly limited host preferences. The idea that the tribe Amblyopinini contains a few, widely distributed species must be dismissed.

It is desirable at this time to revise our concepts of some Neotropical genera. The limits of *Amblyopinus* are herein restricted somewhat by the separation of two distinctive species groups as new genera, *Megamblyopinus* and *Amblyopinodes*.

The distribution records of the genera and species of Amblyopinini clearly reveal that the group occurs almost exclusively in the subtropical and temperate zones of the Neotropical region (see distribution map, fig. 28). Mr. Philip Hershkovitz was impressed by the fact that these beetles were not present on mammals collected by him in the lowlands of Colombia (see notes from his records elsewhere in the paper). The records indicate the occurrence of Amblyopinini in the Andes of Colombia, Ecuador, and Peru (doubtless in Venezuela, Bolivia and Chile as well); the mountains of Guatemala (and almost certainly in other Central American countries and Mexico); Mount Roraima in British Guiana; the subtropical zones of Rio de Janeiro, São Paulo, and Santa Catharina of Brazil; northern Argentina and Chile; and the south temperate region of Chile.

ECOLOGICAL CONSIDERATIONS

There is no doubt that the Amblyopinini are obligatory ectoparasites. From the time of the first report (Solsky, 1875) the records are consistent with regard to this point. Jelski, the first collector, observed that *Amblyopinus jelskii* was firmly attached to the skin of living mice just in front of the bases of their tails; as a result the hair was eroded in this area and the swollen skin exuded a serous secretion. Fauvel (1900) reported the observations of Philippi relating to the habits of *Edrabijs philippianus* in Chile. The adults and larvae lived exclusively around the anus of *Ctenomys* and caused the same condition of the skin that Jelski had noted. More recently, Zikán (1939) concluded that *Amblyopinus henseli* Kolbe is a blood-sucking parasite. He noted that the beetles imbedded their

FIG. 28. Map showing the distribution of the Amblyopinini in South America.

mandibles so deeply into the skin that they were difficult to remove and that they probably fed on body fluids. Zikán presented no direct evidence that *Amblyopinus* is a blood-sucking parasite, so the question is still open.

With regard to the habits of the species reported in this paper, there are interesting field notes made by Philip Hershkovitz while on the Chicago Natural History Museum Colombian Zoological Expedition (1948-52). The following account is from Mr. Hershkovitz' field notes: "Ectoparasitic staphylinids were first encountered by me in the Valdivia region of Antioquia in the subtropical zone of the central Andes of Colombia at altitudes between 4,550 and 6,500 feet. Beetles found on or near the dead bodies of trapped mice gave the impression of being merely free-living scavengers or carrion feeders. However, two live individuals of the white-throated mouse, *Oryzomys albigularis* Tomes, with associated beetles were kept in a small wire cage and two beetles on one and three on the other were observed at intervals during the course of a few days. When feeding or at rest, the beetles 'attached' themselves, seemingly by hooking their mandibles onto the fur or skin in the angle between the ear and the head. Their bodies were maintained fairly motionless or with intermittent, slow undulatory motions, with the long axis at right angles to the point of 'attachment.' At times all the beetles would congregate behind one of the mouse's ears and at other times they could be found behind both ears. No interchange of beetles from one mouse to another was observed, although this probably took place. When the mice were especially active or were disturbed by prodding or handling, the beetles 'detached' themselves and scurried or wriggled with remarkable agility through the fur. Surprisingly, the hosts appeared to be insensible to the movements of the beetles over their bodies and across such sensitive parts of the face as the eyeballs and bases of the vibrissae. When the hosts relaxed, the beetles returned to their position of attachment behind the ears.

"I was not able to determine the substance of the host that was consumed by the parasites. No marks attributable to the beetles could be detected. My impression is that the staphylinids may seek certain epidermal secretions or incrustations. Like fleas, they leave the dead host when the body begins to cool but do not wander far. I have found the beetles on the under side of traps that held dead mice and under the surrounding vegetation. The beetles are comparatively sluggish when detached from their hosts and are easily captured by hand. As they seek to avoid light their greatest move-

ments are made when they are exposed to view. On the warm host they are remarkably swift and adroit in slipping between one's fingers.

"The beetles were observed on specimens of several small rodent species captured in the subtropical zone of the Valdivia region. The same species occur in the tropical lowlands of Colombia but I have never found these parasites associated with them. Indeed, the staphylinids were not found with any mammals captured by me in the lowlands. The black-eared opossum (*Didelphis marsupialis* Linnaeus) of the lowland tropics did not have any of the parasites, but they were quite abundant on the white-eared opossum (*Didelphis albiventris* Lund) of the subtropical and temperate zones of the Andes. Specimens of the common paca (*Agouti paca* Linnaeus) collected by me in the tropical zone did not have any beetles, but a few were found on the mountain paca (*Cuniculus taczanowskii* Stolzmann). The greatest number of beetles, from twelve to twenty, were observed behind the ears of the white-eared opossum."

Dr. Oliver Pearson had no opportunity to observe the behavior of the beetles that he collected; the specimens of *Edrabius* were captured from *Ctenomys* that had been shot, and the specimens of *Megamblyopinus* were taken from *Ctenomys* nests that had been dug out. The Amblyopinini have never before been observed in the nests of their hosts doubtless because the nests have not been examined in the past.

Observations pertaining to the life-histories of the Amblyopinini have apparently not been made. Fauvel noted that the larvae of *Edrabius philippianus* had been observed on *Ctenomys* with the adults but he received no specimens. The Amblyopinini are flightless, having no vestiges of wings, so are evidently closely associated with their hosts at almost all times.

Host Relationships

The species of Amblyopinini have been recorded only from rodents and marsupials (with the exception of one questionable bat association; Seevers, 1944), and it is doubtful that other mammalian groups harbor these parasites. The available evidence, discussed in more detail later, is herein interpreted as indicating that the rodents were the original hosts of these beetles and that their association with marsupials is secondary.

The most generalized member of the group, *Myotyphlus* of Tasmania, is recorded as a parasite of "rats," probably of the house

rat, as there are no native Tasmanian rodents. The four genera of the Neotropical region, occurring in subtropical and temperate zones, are associated with three groups of mammals: cricetine rodents, hystricomorph rodents, and marsupials. *Edrabi*, the South American genus with the most generalized morphological features, occurs in a limited area of Chile, western Argentina, and southern Peru on the burrowing hystricomorph rodent, *Ctenomys*. The genus *Amblyopinus* probably occurs in most subtropical and temperate areas of South and Central America, with the greatest number of its species living on cricetine rodents. *Amblyopinus* may be subdivided into several moderately well-defined species groups. The *jelskii* and *sanborni* groups, with the exception of one species on *Ctenomys*, are associated with cricetine rodents; these groups are most abundant in the Andes of Colombia, Ecuador, and Peru, and occur less frequently in Central America and southern South America. *Amblyopinus fuegensis* of Tierra del Fuego, a rather distinctive species, is a parasite of *Ctenomys*. Two species of the *waterhousei* group occur on marsupials in the Andean region and one species, which I tentatively include in this group, occurs on the mountain paca, a hystricomorph rodent. Three species of the *henseli* group, among the most specialized members of the genus, are found on Brazilian marsupials. The genus *Amblyopinodes*, erected for the *gahani* group of species, is a highly specialized group associated with cricetine rodents in eastern Argentina, eastern Brazil, and southern Peru. The host relationships of the two species of *Megamblyopinus* are incompletely known and it is probable that *M. mniszechi*, at least, may have different hosts in different parts of its range. Both species of *Megamblyopinus* were collected from nests of *Ctenomys* in southern Peru, but inasmuch as *Ctenomys* does not occur at the type locality of *M. mniszechi* in central Peru some other rodent must serve as host in that area.

EVOLUTIONARY CONSIDERATIONS

There is probably too little known about the phylogenetic and host relationships of the Amblyopinini for us to reconstruct their evolutionary history, but a discussion of the topic may be profitable. As suggested in the previous section, the available data do not suggest a close parallel between the phylogeny of the beetles and the phyletic history of mammals. Inasmuch as only highly specialized species of *Amblyopinus* are known to occur on present-day marsupials, it seems unlikely that the Amblyopinini began their

parasitic life in association with marsupials. At some stage in the evolution of *Amblyopinus* a change in host affinities involving the marsupials probably occurred.

It is difficult to reconstruct the biogeographic and phyletic histories of the group from known distributional and morphological data. The fact that the most generalized member of the tribe, *Myotyphlus*, occurs in Tasmania in association with a species of "rat," is in some respects confusing rather than illuminating. Perhaps other Old World Amblyopinini will be discovered in the future to throw some light on the group's history in the Old World.

There appear to be few alternatives at present to the hypothesis that the Amblyopinini originated in association with primitive rodents, probably during the early part of the Tertiary period. In view of this, a brief discussion of some of the current views on rodent evolution is pertinent at this point. The following account reflects the views of Simpson (1945), Wood (1947, 1950), and Wilson (1951):

The rodents arose in the Holarctic region during early Tertiary or very late Cretaceous times. The early rodents are generally placed in the suborder Sciuromorpha, a group from which the Myomorpha and Hystricomorpha later developed. The Hystricomorpha present a number of interesting problems of evolution and zoogeography. This suborder has generally included a number of peculiar South American rodents (porcupines, guinea pigs, chinchillas, pacas, agoutis, tucos, capybaras, etc.); the North American porcupine; the Old World porcupines of Africa, southern Europe, and southern Asia; and two other African families. Many attempts have been made to account for this zoogeographic pattern but without much success. Wood (1950) recently presented an interesting analysis of these problems and outlined his own view that the suborder Hystricomorpha is polyphyletic and that the South American genera evolved independently of the Old World forms. The parallelism between the Old and New World porcupines is very striking, and they are extremely difficult to separate on morphological grounds. Nevertheless, Wood presents a good case for the working hypothesis that the South American hystricomorphs evolved independently. Wood believed it probable that the South American hystricomorphs evolved from North American Paramyidae, a group that apparently had a Holarctic distribution in the early Tertiary. There is no fossil evidence whatsoever to place the hystricomorphs in North America so it is likely that the group differentiated in South America from stock that entered from the north, probably

in late Eocene times. There is sufficient structural unity among the fossil hystricomorphs of the Early Oligocene to indicate that a single rodent type gave rise to the group. As South America was isolated from North America during much of the Tertiary there were apparently no additional rodent invasions of South America until the elevation of the Panamanian isthmus in Pliocene times. The hystricomorphs flourished during this period of isolation. The second migration of rodents into South America followed the elevation of the isthmus; this movement involved myomorph rodents of the subfamily Cricetinae. The family Cricetidae appear as fossils in the Oligocene of North America, Europe, and Asia; these species were probably the most primitive of the superfamily Muroidea. The Cricetinae are represented at present by the Old World hamsters and many New World genera that are especially prevalent in South America. The cricetine stock that entered South America rapidly became the dominant ground rodents as they were able to occupy ecological niches in which there was little competition. Mr. Hershkovitz informs me that a third rodent invasion has occurred in recent times, involving the entrance into northwestern South America of the sciuromorph genus *Heteromys* (spiny pocket-mice) of the family Geomyidae.

While it is not possible to draw definite conclusions about the evolution of the Amblyopinini, several hypotheses may be discussed. There appear to be two phyletic lines within the tribe, the result of an early divergence. One line contains two present-day genera, *Myotyphlus* of Tasmania and *Edrabijs* of southern South America; the other is comprised of *Megamblyopinus*, *Amblyopinus*, and *Amblyopinodes*. *Myotyphlus* and *Edrabijs* retain more morphological features of their quediine ancestors as evidenced by the structure of their head capsules and hind coxae. They share at least one specialized feature, the reduction of the eyes to one facet located immediately behind the antennal fossae. The Quediini have very large eyes that occupy much of the side of the head. The second phyletic line departed more from the quediine pattern and their head capsules, elytra, and hind coxae are more specialized; *Megamblyopinus* shows fewer special features than *Amblyopinus* and *Amblyopinodes* is the most highly specialized genus of the tribe.

It is probable that the Amblyopinini became associated with rodents early in the evolutionary history of that group, perhaps in early Tertiary. The *Myotyphlus-Edrabijs* stock seemingly had a Holarctic distribution; one may account for the occurrence of *Edrabijs* on hystricomorph rodents in South America and *Myotyphlus*

FIG. 29. a. *Megamblyopinus mnischechi* Solsky. b. *Edrabijs pearsoni* sp. nov. c. *Amblyopinus waterhousei* Fauvel. d. *Myotyphlus jansoni* Matthews.

in the Old World by postulating an early ancestral stock with such a distribution. It might seem reasonable to expect that if the pre-hystricomorph rodents carried these parasites into South America there would be more associations with present-day hystricomorphs than there apparently are. *Edrabi* may conceivably be a relict genus of a line of ancestral Amblyopinini that did enter South America with pre-hystricomorph stock; its survival may possibly be linked with its association with a favorable host genus, *Ctenomys*. The alternative, that *Edrabi* stemmed from amblyopinine stock that reached South America in Pliocene with the cricetine rodents, does not appear to be very attractive. *Edrabi* hardly could have evolved from *Amblyopinus*-like stock, so that it would be necessary to postulate two stocks of amblyopines on cricetine rodents and a subsequent transfer of one of these to the hystricomorph genus *Ctenomys*.

The second phyletic line—that which gave rise to *Amblyopinus* and related genera—may well have reached South America with the Pliocene penetration by the cricetine rodents, although there is the alternative that they are derived from stock living on the native hystricomorphs. The first explanation requires, of course, that the Amblyopinini had been associated with North American rodents and had evolved a line somewhat different from that which gave rise to *Edrabi*. If this line was derived from stock on the hystricomorphs, the ancestral type did not resemble *Edrabi* very closely in several respects. Whether the cricetine rodents took these parasites to South America with them or received them from the hystricomorphs, the differentiation of *Amblyopinus* and *Amblyopinodes* was followed by considerable speciation accompanying that of their rapidly speciating hosts. There are inconsistencies in the host pattern, as a glance at the host list given elsewhere will show, and I have no explanation of these other than to postulate host transfers. It hardly seems plausible that ectoparasites of the nature of these staphylinid beetles would have adhered rigidly to host patterns without at times taking up new associations. Some of the species of *Amblyopinus* do not occur on cricetine rodents; several have been collected on *Ctenomys*, several on pacas, and a moderate number on opossums. Possibly a more complete host picture at some later date may provide clues to these associations.

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I am very much indebted to Dr. Oliver P. Pearson, Museum of Vertebrate Zoology, University of California, for the gift of an excellent collection of Amblyopinini from southern Peru. Dr. Pearson provided determinations of the mammalian hosts involved. The loan or gift of specimens by the following persons is gratefully acknowledged: Dr. Elli Franz, Senckenberg Museum, Frankfurt a. M., Germany; Mr. O. W. Steel, Maidenhead, Berkshire, England; and Dr. Victor van Straelen, Directeur de L'Institut Royal des Sciences Naturelles de Belgique.

Subfamily Staphylininae: Tribe Amblyopinini

Related to the tribe Quediini from which the species are separated on the basis of their obligate ectoparasitism.

KEY TO GENERA OF AMBLYOPININI

1. Eyes minute, one-faceted, located behind antennal fossae (fig. 31, *a, b*); gula and submentum as in fig. 32, *a, c*; hind coxae as in fig. 33, *a, b*.....2
 Eyes multifaceted, usually large, located near posterior margin of head (fig. 31, *c, j*); gula and submentum as in fig. 32, *b, d, e*; hind coxae as in fig. 33, *c, d, e*.....3
2. Lateral plates of ninth abdominal segment with extremely long, aciculate setae (fig. 44, *g*); South America.....*Edrabi* Fauvel
 Lateral plates of ninth abdominal segment with short setae; Tasmania.....*Myotyphlus* Fauvel
3. Sternites 3-5 (or 6) with rows of black, clavate setae (fig. 40, *b*); head capsule distinctive (figs. 30, *e*; 31, *h*); clypeus strongly deflexed in front, labrum not visible from above.....*Amblyopinodes* gen. nov.
 Sternites without clavate setae; head capsule otherwise, labrum visible from above.....4
4. Species more than 15 mm. in length; elytra longer than broad; head capsule relatively generalized (figs. 30, *g*; 31, *j*).....*Megamblyopinus* gen. nov.
 Species less than 11 mm. in length; elytra broader than long; head capsule relatively specialized (figs. 30, *c, d, f*; 31, *c, d, i*).....*Amblyopinus* Solsky

Genus AMBLYOPINUS Solsky

Amblyopinus Solsky, 1875, Hor. Soc. Ent. Ross., 11: 8.

Omaloxenus Notman, 1923, Amer. Mus. Nov., 68: 1; Costa Lima, 1936, Mem. Inst. Oswaldo Cruz, 31: 57 (= *Amblyopinus* Solsky).

Genotype.—*Amblyopinus jelskii* Solsky.

Head capsule specialized (figs. 30, *c*, *d*, *f*; 31, *c-e*, *i*); not quediine in form. Eyes multifaceted, variable in size, always near posterior margin of head (figs. 30, *c*; 31, *c-e*). Ventral surface of head distinctive (fig. 32, *d*); gula relatively short and broad; submentum relatively long; posterior tentorial pits more caudad in position than in the other genera (except *Amblyopinodes*); gular sutures arcuate. Labrum small, inconspicuous (fig. 30, *c*, *d*, *f*). Elytra broader than long (fig. 33, *h-j*). Middle tarsi expanded and densely pilose, usually in both sexes but sometimes only in the male. Legs spinose. Hind coxae broad (fig. 33, *d*); not quediine in form. Lateral plates of ninth abdominal segment with numerous strong bristles (fig. 37, *a-o*).

Remarks.—This is evidently a large genus if we may judge by the number of new species that have been collected in recent years. An attempt has been made to organize species groups but this may be premature in view of the size of the task. Some of the heterogeneity has been eliminated by the removal of two very distinctive species groups to new genera, *Amblyopinodes* and *Megamblyopinus*.

Little effort has been made to construct a key to the species of *Amblyopinus*. Considerable reliance must be placed on the aedeagus and the terminal segments of the male abdomen for distinguishing closely allied species. The lateral lobes of the aedeagus are fused to form a single structure as in the Quediini. The fused lateral lobes vary considerably and are thus useful for species diagnosis. As the lateral lobes are difficult to illustrate from other viewpoints, only lateral views are given. Some of the figures show the eversible sac of the median lobe with its interesting structures, but this is not used here for taxonomic purposes because of the difficulty of obtaining uniform preparations for study. In some cases the eversible sac is not extruded.

The species groups as presently organized may perhaps be separated by the following characteristics. The *henseli* group of species, known at present only from Brazil, is readily distinguished by the distinctive head capsule (figs. 30, *d*; 31, *i*) with its small, indistinctly faceted eyes. The other groups seem to be separable on the basis of the number of long setae on each half of the pronotal base:

FIG. 30. Dorsal view of head. *a*. *Myotyphlus jansonii* Matthews. *b*. *Edrabius philippianus* Fauvel. *c*. *Amblyopinus punae* sp. nov. *d*. *A. bequaerti* Notman. *e*. *Amblyopinodes gahani* Fauvel. *f*. *Amblyopinus waterhousei* Fauvel. *g*. *Megamblyopinus mniszewski* Solsky.

- One long black seta near each basal angle.....*jelskii* group
(*A. colombiae* and *A. spinipennis* have four additional setigerous punctures and short, fine hairs).
- Two long black setae present.....*A. fuegensis* Arrow
and *A. hershkovitzi* (this species has four setigerous punctures, but only the middle two have long setae).
- Three long black setae (rarely four) present.....*A. pacae*
(one additional setigerous puncture with a fine seta is present).
- Four long black setae present.....*A. waterhousei*
and *A. kalinowskii* (one, or rarely more, setigerous punctures with fine setae are present).
- Five or six long black setae and one or more additional setigerous punctures with fine setae present.....*sanborni* group

JELSKII Group

A group of species that occur on rodents in the Andes and the mountains of Central America. Distinguished from the other species of the genus by the presence of only one macroseta on each half of the pronotal base. The supraocular and infraocular setae are arranged as in figure 31, *d*, except that *A. schmidtii*, *colombiae*, and *spinipennis* have the arrangement (fig. 31, *e*) characteristic of the *sanborni* group.

Amblyopinus jelskii Solsky

Amblyopinus jelskii Solsky, 1875, Hor. Soc. Ent. Ross., 11: 11, pl. 1, fig. 3—
Hacienda Amable Maria, near La Merced, Junín Prov., Peru; Matthews,
1884, Cist. Ent., 3: 96, pl. 5, figs. 1-9; Franz, 1927, Abh. Senckenb. Nat.
Ges., 40: 406; Costa Lima, 1936, Mem. Inst. Oswaldo Cruz, 31: 62;
Seevers, 1944, Field Mus. Nat. Hist., Zool. Ser., 28: 161.

Although in my earlier paper I gave a description of a species that I believed to be *A. jelskii*, I now consider it improbable that any of the available specimens of *Amblyopinus* belong to that species. All of the species that I consider to belong to this complex conform to Solsky's description but none is from a locality close to that from which Jelski collected the type series. I have examined one female specimen from the Fauvel collection determined as *A. jelskii* but it is from Callanga, Peru, the type locality of *A. brandesi* Kraatz, and is probably the specimen that Fauvel examined before synonymizing *brandesi*. There is no evidence that *brandesi* is conspecific with *jelskii*, and I am restoring it to the status of a valid species until there is evidence to the contrary.

It is not at all unlikely that Solsky's series represented more than one species of *Amblyopinus* as several mice were involved as

FIG. 31. Lateral view of head. *a. Myotyphlus jansoni* Matthews. *b. Edrabijs philippianus* Fauvel. *c. Amblyopinus waterhousei* Fauvel. *d. A. punae* sp. nov. *e. A. sanborni* Seevers. *f. A. fuegensis* Arrow. *g. A. pacae* sp. nov. *h. Amblyopinodes gahani* Fauvel. *i. Amblyopinus bequaerti* Notman. *j. Megamblyopinus mniszewski* Solsky.

FIG. 32. Ventral view of head. *a. Myotyphlus jansoni* Matthews. *b. Megamblyopinus mniszewski* Solsky. *c. Edrabius philippianus* Fauvel. *d. Amblyopinus waterhousei* Fauvel. *e. Amblyopinodes gahani* Fauvel.

hosts. Jelski reported that he first encountered these beetles on mice that he kept in a cage at Amable Maria—a species that he provisionally called "*Mus insectivora*." He also found the beetles in a mouse nest under a stone and on a dead mouse ("*Mus lobiceps*") in a trap. Mr. Philip Hershkovitz suggests that *Oryzomys laticeps* Lund may be one of the mice referred to by Jelski. (This species was reported to be one of the rodents collected by Jelski at Amable Maria.)¹

Amblyopinus brandesi Kraatz. Figure 36, *d, i*.

Amblyopinus brandesi Kraatz, 1900, Deuts. ent. Zeitschr., 1900:212—Callanga, near Cuzco, Peru; Fauvel, 1900, Revue d'Ent., 19: 64 (= *jelskii* Solsky).

This species has been regarded as a synonym of *A. jelskii* upon the authority of Fauvel (1900), but there is no evidence that it is. The type localities of the two species are approximately three hundred miles apart. No host record is available for *A. brandesi*. The specimen that I presume to be Kraatz' *brandesi* is not conspecific with any of the species that I have studied. With only the female specimen it is difficult to characterize the species very accurately.

Length, 8 mm. Head and pronotum reddish-brown, elytra brownish; abdomen reddish-brown. Head and pronotum moderately densely and coarsely punctate and coarsely and closely reticulated (fig. 36, *d*). Eighth female sternite with setae as in figure 36, *i*.

Material examined.—One female, Callanga, Peru, from the Fauvel collection, Brussels Museum; determined as *A. jelskii* Solsky.

Amblyopinus punae sp. nov. Figures 30, *c*; 31, *d*; 33, *d*; 34, *a, b*; 35, *e*; 36, *a*; 37, *b*.

Length, 8 mm. Head dark reddish-brown; pronotum and abdomen paler reddish-brown; elytra testaceous. Head and pronotum with medium-coarse, relatively dense punctation. Sculpture of pronotum as in figure 36, *a*. Elytra with a dense covering of fine, flavate, recumbent setae; the apical margins with a few longer setae but none spinose. Eighth male sternite as in figure 35, *e*. Chaetotaxy of lateral plates of ninth male abdominal segment as in figure 37, *b*. Aedeagus distinctive (fig. 34, *a, b*).

Holotype.—A male from Cailloma, Arequipa, Peru; collected August 25, 1939, by John M. Schmidt. Host: *Akodon jelskii pulcherrimus* Thomas. In collection of Chicago Natural History Museum.

¹ Oldfield Thomas, 1884. On a collection of Muridae from Central Peru. Proc. Zool. Soc. London, 1884: 447–458, 3 pls.

Remarks.—The specimen on which this species is based was determined as *A. jelskii* in my 1944 paper.

Amblyopinus monticolus sp. nov. Figures 34, *d*; 36, *g, j*; 37, *c*.

Distinguished from *A. punae* by its smaller size, paler coloration, pronotal sculpture, chaetotaxy of lateral plates of ninth abdominal segment, and aedeagus.

Length, 5.5–6.5 mm. Coloration light-brown, with a faint reddish tinge; coloration uniform except that the head is a little darker in some specimens. Head and pronotum with fine and moderately dense punctation. Head and pronotum finely strigulate (fig. 36, *g*). Elytral setae as in *A. punae*. Eighth male sternite as in *A. punae*. Chaetotaxy of lateral plates of ninth male abdominal segment as in figure 37, *c*. Aedeagus as in figure 34, *d*. Eighth female sternite as in figure 36, *j*.

Holotype.—A male from Lago Suche, Moquegua, Peru; 14,600 feet elevation; collected January 12, 1952, by Oliver P. Pearson. Host: From burrow of *Ctenomys opimus nigriceps* Thomas. In collection of Chicago Natural History Museum.

Paratypes.—Two specimens, same data as type. One male, Pampa de Titire, 29 km. northeast of Tarata, Tacna, Peru; 14,600 feet elevation; collected April 13, 1952, by Oliver P. Pearson. Host: *Ctenomys fulvus* Philippi. In collection of Chicago Natural History Museum.

Remarks.—Inasmuch as the other species of the *jelskii* group are parasites of cricetine rodents, it is surprising to note that this species seems to be associated with *Ctenomys*. It is possible that the beetles live on rodents that inhabit *Ctenomys* burrows.

Amblyopinus akodoni sp. nov. Figures 34, *h*; 36, *b*; 37, *f*.

Distinguished from *A. punae* chiefly by its distinctive aedeagus; there are additional differences in sculpture of head and pronotum, and in the presence of semi-erect aciculate setae on the elytra.

Length, 7 mm. Head and pronotum dark reddish-brown, abdomen lighter reddish-brown, elytra testaceous. Head and pronotum finely punctate. Sculpture of head and pronotum as in figure 36, *b*. Elytra rather densely clothed with flavate, recumbent, aciculate setae; in addition with numerous semi-erect, slightly stouter, aciculate setae. Tergites with a vestiture similar to that of elytra; their apical setae aciculate, variable in length, and not closely arranged. Lateral plates of ninth male abdominal segment as in figure 37, *f*. Aedeagus as in figure 34, *h*.

Holotype.—A male from San Miguel, Tambo, Polanco, Ayacucho, Peru; collected November 26, 1953, by Celestino Kalinowski. Host: *Akodon (Chroeomys) jelskii pyrrhotis* Thomas (CNHM no. 75573). In collection of Chicago Natural History Museum.

FIG. 33. *Myotyphlus jansoni* Matthews: a, hind coxa; f, elytron; k, eighth male sternite; l, aedeagus. *Edrabijs philippianus* Fauvel: b, hind coxa. *Megamblyopinus mniszewski* Solsky: c, hind coxa. *Amblyopinus punae* sp. nov.: d, hind coxa. *Amblyopinodes gahani* Fauvel: e, hind coxa; g, pronotum, lateral view. *Amblyopinus kofordi* sp. nov.: h, elytron. *A. spinipennis* sp. nov.: i, elytron. *A. chilomysi* sp. nov.: j, elytron.

FIG. 34. Aedeagi and enlarged apices of aedeagi; lateral view. *a, b. Amblyopinus punae* sp. nov. *c. A. colombiae* sp. nov. *d. A. monticolus* sp. nov. *e, g. A. schmidtii* Seevers. *f. A. kofordi* sp. nov. *h. A. akodoni* sp. nov.

Amblyopinus kofordi sp. nov. Figures 33, *h*; 34, *f*; 36, *c*; 37, *a*.

Distinguished from the other species of the *jelskii* group by the presence of semi-erect spinose setae on the elytra in addition to the recumbent aciculate setae, and by the distinctive aedeagus.

Length, 7 mm. Head and pronotum light reddish-brown; elytra and abdomen a little paler; elytra slightly flavate. Head and pronotum with moderately dense, fine punctation. Sculpture of head and pronotum as in figure 36, *c*. Elytra (fig. 33, *h*) with a dense clothing of fine, flavate, recumbent setae and four or five very irregular rows of stronger, light-brown, semi-erect, spinose setae. Tergites with a dense clothing of moderately long, fine, recumbent hairs. Lateral plates of male ninth abdominal segment as in figure 37, *a*. Aedeagus as in figure 34, *f*.

Holotype.—A male from 17 miles south of Masacruz, Puno, Peru; 13,500 feet elevation; collected May 1, 1951, by C. B. Koford. Host: *Akodon (Bolomys) berlepschii* Thomas. In collection of Chicago Natural History Museum.

Paratype.—A male from Pampa de Capazo, 123 km. south of Llave, Puno, Peru; 14,300 feet elevation; collected February 2, 1952, by Oliver P. Pearson. Host: *Akodon (Bolomys) berlepschii* Thomas. In collection of Chicago Natural History Museum.

Amblyopinus schmidtii Seevers. Figures 34, *e*, *g*; 35, *f*; 36, *l*; 37, *d*.

Amblyopinus schmidtii Seevers, 1944, Field Mus. Nat. Hist., Zool. Ser., 28: 164; pl. 10, fig. 1; pl. 11, figs. 8–14; pl. 12, figs. 15–19, 22–23—Santa Elena, Chimal., Guatemala (Chicago Nat. Hist. Mus.; host, *Peromyscus guatemalensis* Merriam).

Length, 7–8 mm. Head and pronotum reddish-brown; abdomen brownish; elytra light-brown. Clypeal seta absent. Head and pronotum moderately coarsely and densely punctate; reticulation fine-meshed but not as fine as in *A. colombiae* sp. nov. Elytra with a covering of fine, flavate, recumbent setae. Tergites with relatively sparse covering of short, recumbent, aciculate setae. Eighth male sternite with three setae on each half (fig. 35, *f*). Female eighth sternite with three (or two) setae on each half (fig. 36, *l*). Chaetotaxy of lateral plates of male ninth abdominal segment as in figure 37, *d*. Aedeagus as in figure 34, *e*, *g*.

Material examined.—The type series. Seven additional specimens, Finca San Rafael, 6 km. west of Mixca, Sacatepequez, Guatemala, 6,900 feet elevation; collected June 28–July 1, 1948, by Rodger Mitchell and Luis de la Torre; from *Peromyscus guatemalensis* Merriam.

Amblyopinus colombiae sp. nov. Figures 34, *c*; 36, *e*, *m*; 37, *e*.

Closely related to *A. schmidtii* but distinguished by having only two bristles on each half of eighth male sternite, by the arrangement

of the setae on the female eighth sternite, and by the distinctive aedeagus. Both *A. schmidtii* and *A. colombiae* lack the clypeal seta present in the other species of the *jelskii* group.

Length, 8 mm. Coloration uniformly reddish-brown except for the light brown elytra. Clypeal seta absent. Punctuation of head and pronotum fine; each puncture at the base of a shallow depression so that the punctures appear coarse. The depressions of the pronotal surface tend to be confluent so that the surface has numerous shallow valleys and low elevations. Sculpture of head and pronotum distinctive (fig. 36, *e*). Elytra with vestiture as in *A. schmidtii* except that some setae are at posterior angles and along apical margin are longer and stronger. Vestiture of tergites as in *A. schmidtii*. Chaetotaxy of lateral plates of ninth male abdominal segment as in figure 37, *e*. Eighth female sternite as in figure 36, *m*. Aedeagus as in figure 34, *c*.

Holotype.—A male from Las Frias, 10 km. east of Sonsón, Antioquia, Colombia; 2,400 meters elevation; collected October 17, 1950, by Philip Hershkovitz. Host: *Thomasomys aureus nicefori* Thomas (CNHM no. 70318). In collection of Chicago Natural History Museum.

Paratypes.—One male and one female, same data as type.

Amblyopinus piurae sp. nov. Figure 35, *g*.

Most closely allied to *A. colombiae*; distinguished by its more slender build, paler coloration, more coarsely meshed reticulation of pronotum and minor differences in aedeagus.

Length, 5.5–6 mm.; pronotal width, 2 mm. Coloration pale rufo-flavate. Clypeal seta, if present, very minute. Pronotal punctuation moderately coarse and dense; reticulation medium-meshed. Elytra and tergites with fine, moderately dense, aciculate, recumbent setae. Eighth male sternite with two dark setae on each side of emargination. Aedeagus as in figure 35, *g*.

Holotype.—A male from Tambo, Huancabamba, Piura, Peru; 2,880 meters elevation; collected May 8, 1954, by Celestino Kalinowski. Host: *Thomasomys* sp. (CNHM no. 81334). In collection of Chicago Natural History Museum.

Paratype.—One male, same data as type.

Amblyopinus ancashi sp. nov. Figure 35, *h*.

Distinguished from the other species of the *jelskii* group by its distinctive aedeagus.

Length, 6.5–7 mm. Coloration of head and pronotum reddish-brown; abdomen pale brown; elytra flavo-testaceous. Head and pronotum with a medium-meshed reticulation. Elytra with a relatively dense vestiture of coarsely aciculate, recumbent setae; many of the setae with the same color as the elytra but some light brown. Tergites with a medium-dense covering of recumbent aciculate

FIG. 35. Aedeagi, enlarged apices of aedeagi, and eighth male sternites. a, b. *Amblyopinus herskovitzi* sp. nov. c. *A. fuegensis* Arrow. d. *A. spinipennis* sp. nov. e. *A. punae* sp. nov. f. *A. schmidtii* Seevers. g. *A. piurae* sp. nov. h. *A. ancashi* sp. nov.

setae, most of which are a little paler than the tergites. Apical setae of elytra and tergites longer than diskal setae for the most part. Eighth male sternite with one dark seta on each side of emargination. Aedeagus as in figure 35, *h*.

Holotype.—A male from Quilcayhanca, Huaras, Ancash, Peru; 4,000 meters elevation; collected February 20, 1954, by Celestino Kalinowski. Host: *Phyllotis darwini* Waterhouse (CNHM no. 81219). In collection of Chicago Natural History Museum.

Paratypes.—Two specimens, same data as type.

Amblyopinus sp.

A female specimen of the *jelskii* group, related to the foregoing species but distinct from it, was collected near Puno, Puno, Peru, by Oliver P. Pearson, December 19, 1951, from *Phyllotis (Auliscomys) sublimis* Thomas.

Amblyopinus spinipennis sp. nov. Figures 33, *i*; 35, *d*; 37, *g*.

Distinguished from the other species by a row of semi-erect spinose setae on the apical margins of the elytra and by its aedeagus.

Length, 7 mm. Head, pronotum, and abdomen reddish-brown; elytra testaceous. Pronotum with the usual black seta of the *jelskii* group near each basal angle but with four additional setigerous punctures along basal margin, each bearing a short fine seta. Elytra clothed with fine, flavate, recumbent setae and with an apical row of moderately strong, semi-erect, spinose setae (fig. 33, *i*). Tergites with recumbent aciculate setae that are more dense laterally; apical margins of tergites with moderately stout, aciculate setae. Chaetotaxy of lateral plates of ninth male abdominal segment as in figure 37, *g*. Aedeagus as in figure 35, *d*.

Holotype.—A male from Marcapata, Limapunco, Cuzco, Peru; 2,400 meters elevation; collected July 1, 1953, by Celestino Kalinowski. Host: *Akodon aerosus* Thomas (CNHM no. 75470).

Amblyopinus longus Franz

Amblyopinus longus Franz, 1930, Senckenbergiana, 12: 74, figs. 6, 7—Hansa, Santa Catharina, Brazil (Senckenberg Mus.; from *Oxymycterus rufus* Desmaret); Fonseca, 1939, Mem. Inst. Butantan, 12: 191.

This species, which evidently belongs to the *jelskii* group, is distinguished by the chaetotaxy of the tergites and the eighth male sternite. Most of the tergites have four dark setae on each half of their apical margins; the other species of the group have at most two such setae and the outer one is frequently fine and inconspicuous. The eighth male sternite has seven or eight dark setae on each half; the other species have one or two as a rule, except that *A. schmidtii* has three. The aedeagus is probably distinctive but I have had no opportunity to study it.

FIG. 36. Pronotal sculpture (a-h); eighth female sternites (i-m). a. *Amblyopinus punae* sp. nov. b. *A. akodoni* sp. nov. c. *A. kofordi* sp. nov. d, i. *A. brandesi* Kraatz. e, m. *A. colombiae* sp. nov. f. *A. fuegensis* Arrow. g, j. *A. monticolus* sp. nov. h, k. *A. herskovitzi* sp. nov. l. *A. schmidti* Seevers.

FIG. 37. Ventral views of lateral plates of ninth male abdominal segments. a. *Amblyopinus kofordi* sp. nov. b. *A. punae* sp. nov. c. *A. monticolus* sp. nov. d. *A. schmidtii* Seevers. e. *A. colombiae* sp. nov. f. *A. akodoni* sp. nov. g. *A. spinipennis* sp. nov. h. *A. hershkovitzi* sp. nov. i. *A. waterhousei* Fauvel. j. *A. montivagans* sp. nov. k. *A. sanborni* Seevers. l. *A. chilomysi* sp. nov. m. *A. emarginatus* sp. nov. n. *A. huilae* sp. nov. o. *A. oryzomysi* sp. nov.

Length, 6 mm. Coloration rufo-flavate; a relatively pale species. Clypeal seta present. Setae in vicinity of eyes as in *A. punae*. Head and pronotum with fine medium-meshed reticulation. Pronotal base with one black seta near basal angle and a much finer seta more medially placed. Elytra and tergites with pale, recumbent, aciculate setae. Tergites with dark setae on each half of apical margins as follows: tergite 2 with one; tergites 3-7 with four; tergite 8 with two on apical margin and three along lateral margin. Eighth male sternite with three black setae near apical margin and four or five near lateral margin.

Material examined.—One male paratype, Hansa, Santa Catharina, Brazil.

Remarks.—Fonseca (1939) recorded this species from São Paulo, Brazil, with *Akodon (Thaptomys) nigrita* Lichtenstein. It is possible that this is a record of a species closely related to *A. longus*.

FUEGENSIS Group

Amblyopinus fuegensis Arrow occupies a somewhat isolated position in the genus and is probably not very closely linked to the foregoing group. The locations of the eyes and the two near-by setae are different (fig. 31, *f*); the pronotal base has two black setae on each half; the elytra are relatively long for the genus; the eighth male sternite has a number of long dark setae on each half instead of the usual one to three setae.

At present only one species is placed in this group but there may well be others in southern South America.

Amblyopinus fuegensis Arrow. Figures 31, *f*; 35, *c*; 36, *f*.

Amblyopinus fuegensis Arrow, 1907, Ann. Mag. Nat. Hist., (7), 19: 126—Useless Bay, Tierra del Fuego, Chile; SeEVERS, 1944, Field Mus. Nat. Hist., Zool. Ser., 28: 163, pl. 12, fig. 21.

Length, 9 mm. Light-brown throughout, with only a faint reddish tinge. Head with relatively coarse and dense punctation; pronotum with finer and sparser punctures. Head and pronotal reticulation obsolescent (fig. 36, *f*). Elytra with a clothing of fine, flavate, aciculate setae. Tergites relatively sparsely clothed with medium-long, recumbent, aciculate setae. Aedeagus distinctive (fig. 35, *c*).

Material examined.—One male, Riesco Island, Magallanes, Chile. Host: *Ctenomys magellanicus dicki* Osgood.

HERSHKOVITZI Group

A. herskovitzi is such a distinctive species that it is placed in a separate group. The characteristics as given in the description below should serve to identify this species.

Amblyopinus hershkovitzi sp. nov. Figures 35, *a*, *b*; 36, *h*, *k*; 37, *h*.

Length, 7.5–9 mm. Head and pronotum light-brown, with only a slight reddish tinge; abdomen medium reddish-brown; elytra brown, only slightly paler than the other parts. Punctuation of head and pronotum fine and relatively sparse. Sculpture of head and pronotum fine and close (fig. 36, *h*). Pronotal base with four setigerous punctures on each half; the middle two punctures bear long black setae, the others have short, fine hairs. Eyes relatively small, reduced to six or seven indistinct facets. Occipital line absent.

Elytra clothed with recumbent, yellowish-brown hairs (stiffer than in most species), and stouter brown, weakly spinose setae. Tergites clothed with moderately long, aciculate setae, more dense laterally than in the middle; tergites without semi-erect setae. Apical margins of tergites with relatively sparse aciculate setae of two lengths. Eighth male sternite with two setae (sometimes only one) on each half. Chaetotaxy of lateral plates of ninth male segment as in figure 37, *h*. Aedeagus as in figure 35, *a*, *b*. Female eighth sternite with only one seta on each half (fig. 36, *k*).

Holotype.—A male from Valdivia, Antioquia, Colombia; 1,400 meters elevation; collected June 14, 1950, by Philip Hershkovitz. Host: *Heteromys anomalus* Thompson (CNHM nos. 70474–76). In collection of Chicago Natural History Museum.

Paratypes.—Two specimens, same data as type.

SANBORNI Group

A group of species that occur on cricetine rodents in the Andes. The species are probably most easily distinguished by the presence of five or six long black setae on each half of the pronotal base. In the species of the *sanborni* group the posterior surface of the head is more deeply concave than in the species of the *jelskii* group, but this is not an easy character to use for diagnostic purposes. The infraocular seta of the head (fig. 31, *e*) is located in an angulate projection of the head but this condition occurs in several species of the *jelskii* group (*schmidtii*, *colombiae*, and *spinipennis*) as well as in *A. hershkovitzi*.

Amblyopinus sanborni Seevers. Figures 31, *e*; 37, *k*; 38, *c*, *h*.

Amblyopinus sanborni Seevers, 1944, Field Mus. Nat. Hist., Zool. Ser., 28: 166—Segrario, Puno, Peru (Chicago Nat. Hist. Mus.; from a bat, *Carollia perspicillata* Linnaeus).

Length, 5.5–7 mm. Head and pronotum moderately reddish-brown; elytra and abdomen paler brown. Head and pronotum with coarse, "crateriform" punctures and a close-meshed reticulation. Pronotal base with six or seven setigerous punctures on each half and with five or six long black setae and one

or more short fine hairs. Elytra with fine to moderately coarse aciculate setae. Tergites with a moderately uniform clothing of fine aciculate setae (semi-recumbent), short to medium long. Pronotal base shallowly emarginate; surface feebly depressed in front of emargination. Eighth male sternite with two black setae on each half (fig. 38, *h*). Lateral plates of ninth male abdominal segment as in figure 37, *k*. Aedeagus as in figure 38, *c*.

Material examined.—The type. Four specimens from Marcapata, Limapunco, Cuzco, Peru; 2,400 meters elevation; collected July 13, 1953, by Celestino Kalinowski; from *Thomasomys* sp. (CNHM no. 75369). Seven specimens, Hacienda Cadena, Marcapata, Cuzco, Peru; collected September 1, 1950, by Celestino Kalinowski; from *Oryzomys keaysi* Allen (CNHM no. 68628).

Remarks.—This species was originally based on one female specimen collected from a bat, *Carollia perspicillata*. This host record was so unusual that it was suspected of being a chance association. The suspicion seems to have been justified, for this species has since been taken from species of two genera of mice, *Thomasomys* and *Oryzomys*. The specimens on the latter mouse are smaller (5.5–6.5 mm.) than those from *Thomasomys* (7 mm.), but I can note no other basis for separating the specimens.

Amblyopinus emarginatus sp. nov. Figures 37, *m*; 38, *f*.

Distinguished from *A. sanborni* by having the pronotal base emarginate and by its distinctive aedeagus.

Length, 7–7.7 mm. Head and pronotum moderately dark reddish-brown; the elytra and abdomen light brown. Head and pronotum with dense, irregularly arranged, crateriform punctation; surface reticulated. Chaetotaxy of pronotal base as in *A. sanborni*. Elytra with a uniform covering of fine flavate setae, longer on sides and near posterior angles. Tergites with vestiture similar to that of elytra; apical row of setae not distinctive. Pronotal base broadly and moderately deeply emarginate; surface in front of emargination broadly depressed. Eighth male sternite with two setae. Lateral plates of ninth male segment as in figure 37, *m*. Aedeagus as in figure 38, *f*.

Holotype.—A male from San Antonio, San Agustin, Huila, Colombia; collected during August–October, 1951, by Philip Hershkovitz. Host: *Thomasomys laniger* Thomas. In collection of Chicago Natural History Museum.

Paratype.—One male, same data as type.

Amblyopinus chilomysi sp. nov. Figures 33, *j*; 37, *l*; 38, *a*, *b*.

This and the three following species are distinguished from *A. sanborni* and *A. emarginatus* by the presence of semi-erect spinose setae on the elytra in addition to the usual recumbent, aciculate

type. *A. chilomysi* is also distinguished from the two preceding species by the non-crateriform punctures and the strigulate sculpture of the head. The aedeagus and the chaetotaxy of the ninth lateral plates of the male are distinctive.

Length, 7 mm. Coloration light brown, with a faint reddish tinge. Head with coarse, moderately dense punctation. Sculpture of head consisting of wavy lines with few cross connections. Pronotum with moderately coarse punctures accompanied by confluent depressions; the surface thus with alternating valleys and ridges. Elytra with fine, flavate, aciculate setae and scattered, pale brown, weakly spinose setae, semi-erect but not conspicuously different from the recumbent setae (fig. 33, *j*). Tergites with recumbent, aciculate setae; their apical margins with a row of relatively long, aciculate setae some of which are long, others intermediate in length. Chaetotaxy of lateral plates of ninth male abdominal segment as in figure 37, *l*. Aedeagus distinctive (fig. 38, *a*, *b*).

Holotype.—A male from Río Balcones, Guasca, Cundinamarca, Colombia; 2,750 meters elevation; collected June 4, 1952, by Philip Hershkovitz. Host *Chilomys* sp. (CNHM no. 71636).

***Amblyopinus montivagans* sp. nov.** Figures 37, *j*; 38, *e*.

Close to *A. chilomysi*; distinguished by its aedeagus as well as by several minor differences.

Length, 7.5 mm. Coloration light brown; head and pronotum with slight reddish tinge. Head with coarse, moderately dense, non-crateriform punctation. Pronotum finely and moderately densely punctate; surface without depressions so it is not undulating as in *A. chilomysi*. Head and pronotum with fine, wavy lines having few cross connections. Elytra with aciculate setae and semi-erect, spinose setae as in *A. chilomysi*. Tergites with small and rather fine, aciculate setae and stouter, darker, longer setae. Pronotal base with five, long, black setae and one, short, fine seta on each half. Pronotal base scarcely emarginate. Form of elytra more as in figure 33, *h* than as in *A. chilomysi* (fig. 33, *j*). Chaetotaxy of lateral plates of ninth male abdominal segment as in figure 37, *j*. Aedeagus as in figure 38, *e*.

Holotype.—A male from San Cristobal, Bogotá, Cundinamarca, Colombia; 2,800 meters elevation; collected July 5, 1952, by Philip Hershkovitz. Host: *Chilomys* sp. (CNHM no. 71630).

***Amblyopinus oryzomysi* sp. nov.** Figures 37, *o*; 38, *g*, *i*.

Distinguished from the two preceding species by the reticulate sculpture of head and pronotum, by the row of spinose setae on the apical margin of the tergites, and by the aedeagus.

Length, 7–8 mm. Head, pronotum, and abdomen reddish-brown; elytra brown. Head and pronotum densely punctate; the punctures coarse and crateriform. Head and pronotum with a medium-coarse reticulation. Elytra densely

FIG. 38. Aedeagi, enlarged apices of aedeagi, and eighth male sternites. a, b. *Amblyopinus chilomysi* sp. nov. c, h. *A. sanborni* Seevers. d. *A. huilae* sp. nov. e. *A. montivagans* sp. nov. f. *A. emarginatus* sp. nov. g, i. *A. oryzomysi* sp. nov.

clothed with unusually short, aciculate setae and with moderately numerous short, light-brown, semi-erect, spinose setae. Tergites with a sparse covering of relatively short, recumbent, aciculate setae; their apical margins with a continuous row of short spinose setae (comb-like, but scarcely a ctenidium). Chaetotaxy of the lateral plates of ninth male abdominal segment as in figure 37, *o*. Aedeagus as in figure 38, *g*, *i*.

Holotype.—A male from Las Frias, 10 km. east of Sonsón, Antioquia, Colombia; 2,400 meters elevation; collected October 17, 1950, by Philip Herskovitz. Host: *Oryzomys albigularis* Tomes (CNHM no. 70456). In collection of Chicago Natural History Museum.

Paratypes.—Two specimens, same data as type. Two specimens from Guapantal, Urrao, Antioquia, Colombia; 2,200 meters elevation; collected April 13, 1951, by Philip Herskovitz; from *Oryzomys albigularis* Tomes. One specimen from San Antonio, San Agustín, Huila, Colombia; 2,200 meters elevation; collected August 27, 1951, by Philip Herskovitz; from *Oryzomys albigularis* Tomes.

Amblyopinus huilae sp. nov. Figures 37, *n*; 38, *d*.

Distinguished from the other species of the *sanborni* group by its distinctive aedeagus and by having two or three long setae (four setigerous punctures) on each half of the pronotal base.

Length, 6.3 mm. Head, pronotum, and elytra testaceous; abdomen slightly rufo-testaceous. Head with dense, coarse, non-crateriform punctation, and with a coarse-meshed reticulation. Pronotum with medium-coarse, medium-dense punctures, and with fine, inconspicuous reticulation. Pronotal base with four setigerous punctures on each half and only two or three long black setae. Elytral setae as in *A. montivagans*. Tergites with rather uniform covering of moderately long, fine, aciculate setae, their apical rows of spinose setae nearly as in *A. oryzomysi*. Chaetotaxy of the lateral plates of ninth male segment as in figure 37, *n*. Aedeagus as in figure 38, *d*.

Holotype.—A male from San Antonio, San Agustín, Huila, Colombia; 2,250 meters elevation; collected September 4, 1951, by Philip Herskovitz. Host: *Chilomys* sp. (CNHM no. 71494). In collection of Chicago Natural History Museum.

WATERHOUSEI Group

The species of this group are not markedly different from those of the *sanborni* group but do exhibit some distinctive qualities: the posterior surface of the head is deeply concave lateral to the neck; the eyes and the two closely associated setae are arranged as in figure 31, *c*; the pronotal base has three or four long black setae

on each half; the elytra and tergites are very sparsely setose; the species are the largest of the genus.

The three species assigned to this group occur in the Andes. *A. waterhousei* and *A. kalinowskii* are associated with the white-eared opossum, while *A. pacae* occurs on the mountain paca. *A. pacae* may be incorrectly placed but this cannot be decided until more material of this genus is available.

Amblyopinus waterhousei Fauvel. Figures 29, *c*; 30, *f*; 31, *c*; 32, *d*; 37, *i*; 39, *a-c*.

Amblyopinus waterhousei Fauvel, 1900, Revue d'Ent., 19: 64—Riobamba, Chimborazo, and Cuenca, Azuay, Ecuador (Brit. Mus.; no host given); Costa Lima, 1936, Mem. Inst. Oswaldo Cruz, 31: 63; Seevers, 1944, Field Mus. Nat. Hist., Zool. Ser., 28: 165, pl. 10, figs. 4, 5.

Length, 8.2–10.5 mm. Head reddish-brown; remainder of body light brown with a slight rufous or flavous tinge. Head punctures relatively coarse and dense; those of pronotum appreciably finer and a little sparser. Sculpture of head and pronotum a very fine, parallel strigulation with few cross-connections (similar to that of *A. herskovitzi*, fig. 36, *h*). Pronotal base with four long, black setae on each half and one, or rarely more, setigerous punctures bearing fine setae; one or more of the long setae may be reduced. Elytral punctation unusually coarse. Elytra with fine, relatively sparse, aciculate setae arising from tubercles; the surface as a result is unusually rough. Tergites with a sparse vestiture of short, fine hairs. Eighth male sternite with one seta on each half (fig. 39, *c*). Lateral plates of ninth male abdominal segment as in figure 37, *i*. Aedeagus as in figure 39, *a, b*.

Material examined.—One female from the Fauvel collection, Brussels Museum, labeled "Cuenca, Equateur." Seventeen specimens, San Antonio, San Agustin, Huila, Colombia; 2,200 meters elevation; collected September 10, 1951, by Philip Hershkovitz. Five specimens, El Calvario, Meta, Colombia; collected November 20, 1939, by Ernesto Osorno (Mus. Comp. Zool. and Chicago Nat. Hist. Mus. collections). Two specimens, Bogotá, Colombia; collected by Philip Hershkovitz. Host: *Didelphis albiventris* Lund, the white-eared opossum (*Didelphis paraguayensis* "Oken" and *D. azarae* of authors, not Temminck).

Amblyopinus kalinowskii sp. nov. Figure 39, *d*.

Closely related to *A. waterhousei*; distinguished by the structure of its aedeagus (fig. 39, *d*).

Length, 9–10 mm. Coloration reddish-brown throughout; head a little darker.

Holotype.—A male from Marcapata, Limapunco, Cuzco, Peru; 2,400 meters elevation; collected July 15, 1953, by Celestino Kali-

nowski. Host: *Didelphis albiventris* Lund (CNHM no. 75103). In collection of Chicago Natural History Museum.

Paratypes.—Six specimens, same data as type, except that one specimen was taken from a second opossum on July 16, 1953.

Amblyopinus pacae sp. nov. Figures 31, *g*; 39, *e*, *f*.

Tentatively assigned to the *waterhousei* group, this species is distinguished by its aedeagus, the chaetotaxy of the eighth male sternite, and the presence of only three, long, black setae on each half of the pronotal base.

Length, 9 mm. Coloration reddish-brown throughout. Arrangement of the setae on the side of the head as in figure 31, *g*; the structure of the head capsule very much like that of *A. waterhousei*. Pronotal base with three long setae (rarely four) and one short seta on each half. Elytra sparsely clothed with fine, flavate, aciculate setae, longer near outer posterior angles and on lateral margins. Tergites with an unusually sparse vestiture of short, fine hairs. Eighth male sternite as in figure 39, *e*. Aedeagus as in figure 39, *f*.

Holotype.—A male from Marcapata, Cuzco, Peru; 3,100 meters elevation; collected August 2, 1953, by Celestino Kalinowski. Host: *Cuniculus taczanowskii* Stolzmann, the mountain paca (CNHM no. 75125). In collection of Chicago Natural History Museum.

Paratypes.—Four specimens, same data as type.

Amblyopinus sp.

A female specimen from Río Balcones, Guasca, Colombia, collected on June 16, 1952, by Philip HersHKovitz from *Cuniculus taczanowskii*, is closely related to the preceding species.

HENSELI Group

The three species of this group occur on Brazilian marsupials. It is difficult to decide whether or not these species arose from the same stock within *Amblyopinus* as the species of the *waterhousei* group did. The head capsule of *henseli* and related species has undergone greater specialization in some respects (fig. 30, *d*; 31, *i*). The eyes are quite small and indistinctly faceted.

For descriptions of *bequaerti* and *marmosae* see Seevers (1944).

FIG. 39. Aedeagi, enlarged apices of aedeagi, and eighth male sternite. *a-c.* *Amblyopinus waterhousei* Fauvel. *d.* *A. kalinowskii* sp. nov. *e, f.* *A. pacae* sp. nov.

FIG. 40. *Amblyopinodes claviger* Franz: a, sternites 3-7; d, second and third tergites; i, eighth male sternite; l, basal angle of pronotum. *A. gahani* Fauvel: c, second and third tergites; e, sternites 5-7; h, eighth male sternite; k, basal angle of pronotum. *A. piceus* Brèthes: b, sternites 3-6; f, eighth male sternite; m, basal angle of pronotum. *A. peruvianus* sp. nov.: g, eighth male sternite. *A. similis* sp. nov.: j, eighth male sternite.

Amblyopinus henseli Kolbe

Amblyopinus henseli Kolbe, 1911, Deuts. ent. Nat. Bibl., 2: 117—Rio Grande do Sul or Rio de Janeiro, Brazil (Berlin Mus.; no host); Franz, 1927, Abh. Senckenb. Naturf. Ges., 40: 405, 4 figs.; Costa Lima, 1936, Mem. Inst. Oswaldo Cruz, 31: 64; Zikán, 1939, Rev. Ent., 10: 222, 8 figs.; Fonseca, 1939, Mem. Inst. Butantan, 12: 191; Seevers, 1944, Field Mus. Nat. Hist., Zool. Ser., 28: 167.

Records.—Serra dos Orgãos, Brazil (Franz); Angra dos Reis, Brazil, and Tijuca, Rio de Janeiro, Brazil (Costa Lima); São Paulo, Brazil (Fonseca).

Host records.—*Metachirus opossum* Linnaeus (Franz, Zikán).
Didelphis marsupialis Linnaeus (Costa Lima, Fonseca).

Amblyopinus bequaerti Notman. Figures 30, *d*; 31, *i*.

Omaloxenus bequaerti Notman, 1923, Amer. Mus. Nov., no. 68—Itatiaya, Rio de Janeiro, Brazil (Amer. Mus. Nat. Hist.; *Monodelphis* sp.).

Amblyopinus bequaerti Notman; Costa Lima, 1936, Mem. Inst. Oswaldo Cruz, 31: 64 (= *henseli* Kolbe); Seevers, 1944, Field Mus. Nat. Hist., Zool. Ser., 28: 168, pl. 10, fig. 6, pl. 12, fig. 24 (*A. bequaerti* a valid species).

Material examined.—A male paratype.

Amblyopinus marmosae Seevers

Amblyopinus marmosae Seevers, 1944, Field Mus. Nat. Hist., Zool. Ser., 28: 169, pl. 12, figs. 25, 26—Apiahy, São Paulo, Brazil (Mus. Comp. Zool.; *Marmosa incana paulensis* Tate).

Specimens of the following species have not been available for study and I have not been able to determine its position from the original description.

Amblyopinus angustus Arrow

Amblyopinus angustus Arrow, 1907, Ann. Mag. Nat. Hist., (7), 19: 125—Monte Roraima, British Guiana (Brit. Mus.; host not recorded).

Genus AMBLYOPINODES gen. nov.

Genotype.—*Amblyopinodes gahani* Fauvel.

Distinguished from the other genera by its distinctive head capsule (figs. 30, *e*; 31, *h*; 32, *e*) and by the presence of rows of black, claviform setae on three or four sternites (fig. 40, *a*, *b*). The clypeus is strongly deflexed and the labrum invisible from above.

Amblyopinodes evidently had its origin in common with *Amblyopinus*. During its evolution the head capsule acquired a form surprisingly like that of certain other parasitic beetles, the beaver parasite (*Platypsyllus castoris* Ritsema) in particular. The presence of black, clavate "setae" on the under side of the abdomen is a very interesting feature of this genus. These structures are evidently movable at the base and they can scarcely be called a ctenidium. Their function is unknown.

Species of the genus are now known to occur in eastern Argentina, southern Brazil, and southern Peru, in all cases on cricetine rodents.

***Amblyopinodes gahani* Fauvel comb. nov.** Figures 30, *e*; 31, *h*; 32, *e*; 40, *c, e, h, k*; 41, *a*.

Amblyopinus gahani Fauvel, 1901, *Revue d'Ent.*, 20: 6—La Plata, Argentina (Brit. Mus.).

This species probably has a narrower range than students of the group believed. It is almost certain that few of the specimens identified as *A. gahani* in the past have actually belonged to that species. Costa Lima (1936) placed *A. claviger* Franz and *A. piceus* Brèthes in synonymy with *A. gahani* but I do not believe that he was justified in doing so. I have studied series of specimens from the type localities of both *claviger* and *piceus* and have compared them with a syntype of *gahani*. There is little doubt that three species are present and I am reasonably certain that the three named species are valid.

A. gahani is distinguished from *claviger*, to which it seems to be most closely related, by its aedeagus (fig. 41, *a*) and by certain features of the abdominal chaetotaxy (fig. 40, *c, e, h*).

Material examined.—One male syntype from the Fauvel collection, Brussels Museum.

***Amblyopinodes piceus* Brèthes comb. nov.** Figures 40, *b, f, m*; 41, *c*.

Omaloxenus piceus Brèthes, 1926, *An. Mus. Nac. Hist. Nat. Bernardino Rivadavia*, 34: 17—Misiones, Argentina ("sur des rats").

Amblyopinus piceus Brèthes, Costa Lima, 1936, *Mem. Inst. Oswaldo Cruz*, 31: 59 (= *gahani* Fauvel); Fonseca, 1939, *Mem. Inst. Butantan*, 12: 191 (det. as *gahani* Fauvel).

This species has generally been confused with *A. gahani*, although there are several good distinguishing features. The number and arrangement of the black clavate setae on the sternites are

distinctive features (fig. 40, *b*). The aedeagus (fig. 41, *c*) is distinctive, and the base of the pronotum has four long setae (fig. 40, *m*) as contrasted with three in *gahani* and *claviger*.

This species is a parasite on the water rat, *Nectomys squamipes*.

Records.—Therezopolis, Brazil, from *Nectomys squamipes* Brants (Costa Lima). São Paulo, Brazil, from *Nectomys squamipes* Brants (Fonseca).

Material examined.—Seven specimens, Caraguatay, Misiones, Argentina, collected September 10, 1926, by Marshall Field Brazilian Expedition of Chicago Natural History Museum; from *Nectomys squamipes* Brants.

Amblyopinodes travassosi Costa Lima comb. nov.

Amblyopinus travassosi Costa Lima, 1927, C. R. soc. Biol., 79: 842—Japuhya, Rio Janeiro, Brazil (Inst. Oswaldo Cruz; "rato do matto"); Costa Lima, 1936, Mem. Inst. Oswaldo Cruz, 31: 61, text fig. 2; Fonseca, 1939, Mem. Inst. Butantan, 12: 191.

Costa Lima distinguished this species from *gahani* (actually in all probability from *claviger* and *piceus*) by its smaller size (4–5.5 mm. in length) and the structure of its aedeagus. I have not seen specimens of this species.

Records.—Costa Lima recorded this species from Santa Catharina, Brazil, from a "rato grande castanho," and from São Paulo, Brazil, from a "rato selvagem." Fonseca recorded *A. travassosi* from the state of São Paulo from *Thaptomys nigrita* Lichtenstein, and from *Oxymycterus judex* Thomas.

Amblyopinodes claviger Franz comb. nov. Figures 40, *a*, *d*, *i*, *l*; 41, *b*.

Amblyopinus claviger Franz, 1930, Senckenbergiana, 12: 71, text figs. 1–5—Hansa, Santa Catharina, Brazil (Senckenberg Mus.; from *Oxymycterus rufus* Desmaret); Costa Lima, 1936, Mem. Inst. Oswaldo Cruz, 31: 59 (= *gahani* Fauvel).

Although this species is doubtless close to *A. gahani* I believe that the differences justify recognizing it as a distinct species. There are differences in chaetotaxy (compare fig. 40, *c* and *d*, the second and third tergites; and fig. 40, *a* and *e*, the fifth to seventh sternites), and in the structure of the aedeagus (compare fig. 41, *a* and *b*).

Material examined.—Two paratypes, Hansa, Santa Catharina, Brazil. Seven specimens, Nova Teutonia, Santa Catharina, Brazil, collected by Fritz Plaumann, no host given.

FIG. 41. Aedeagi and apices of aedeagi. *a. Amblyopinodes gahani* Fauvel. *b. A. claviger* Franz. *c. A. piceus* Brèthes. *d. A. peruvianus* sp. nov. *e, f. A. similis* sp. nov.

Amblyopinodes peruvianus sp. nov. Figures 40, *g*; 41, *d*.

Distinguished from the foregoing species of the genus by having a lesser number of black clavate setae on the sternites and by the structure of its aedeagus.

Length, 5.25-6 mm. Pronotal punctation medium coarse and moderately dense. Pronotal reticulation obsolescent. Pronotal base with four long setae on each half (the third in the series is occasionally reduced in length). Second

tergite with three or four long setae on each half of its apical margin; tergites 3-8 with three setae on each half; tergites 6 and 7 with one seta near each lateral margin; tergite 8 with a pair of setae near lateral margin about midway back and one sub-basal seta. Third sternite with six or eight black clavate setae, fourth sternite with four or five, and fifth sternite with one such seta. Aedeagus as in figure 41, *d*. Eighth male sternite as in figure 40, *g*.

Holotype.—A male from Quince Mil, Cuzco, Peru; 680 meters elevation; collected August 10, 1953, by Celestino Kalinowski. Host: *Oryzomys* sp. (CNHM no. 75272). In collection of Chicago Natural History Museum.

Paratypes.—Six specimens, same data as type, and one specimen from the same locality, collected on August 8, 1953, on another of *Oryzomys* sp. (CNHM no. 75270).

Amblyopinodes similis sp. nov. Figures 40, *j*; 41, *e, f*.

Very similar to *A. peruvianus*; distinguished from it by the structure of its aedeagus (fig. 41, *e, f*) and the eighth male sternite (fig. 40, *j*).

Holotype.—A male from Hacienda Cadena, Marcapata, Cuzco, Peru; 1,000 meters elevation; collected January 12, 1949, by Celestino Kalinowski, from *Oxymycterus juliacae* Allen (CNHM no. 65704). In collection of Chicago Natural History Museum.

Paratype.—One specimen, same data as type.

Genus **MEGAMBLYOPINUS** gen. nov.

Genotype.—*Megamblyopinus mniszechi* Solsky.

Megamblyopinus evidently stemmed from the same evolutionary line that gave rise to *Amblyopinus* and is closer to that genus than to the others of the tribe. Nevertheless, it is more generalized in some respects than *Amblyopinus*; the gula and submentum are more like those of *Edrabi* and *Myotyphlus*; the labrum is large and bilobed; the head capsule is more quediine in form; the elytra are longer than broad; the middle tarsi are not spongy beneath.

Large species; 15 mm. or more in length. Head capsule relatively generalized (figs. 30, *g*; 31, *j*); almost quediine in form. Eyes large; located near posterior margin of head. Head with a very broad neck (fig. 30, *g*). Labrum large, bilobed (fig. 30, *g*). Gula relatively long and moderately broad (fig. 32, *b*); gular sutures subparallel in part. Elytra longer than broad. Pronotum very large. Hind coxae (fig. 33, *c*) nearly as in *Amblyopinus*. Legs very strongly spinose. Anterior tarsi dilated and spongy beneath; middle tarsi unmodified.

Megamblyopinus mniszechi Solsky comb. nov. Figures 29, *a*; 30, *g*; 31, *j*; 32, *b*; 33, *c*; 42, *a*.

Amblyopinus mniszechi Solsky, 1875, Hor. Soc. Ent. Ross., 11: 13, pl. 1, fig. 4—Hacienda Amable Maria, near La Merced, Junín, Peru. Host unknown, suspected of living on "cochins d'Inde (cavias)."

Length, 17 mm.; maximum width 4.4 mm. Coloration dark reddish-brown.

Material examined.—A female syntype from Fauvel collection, Brussels Museum, labeled "Junín, Perou, September, tous un coffre." Three specimens, Lago Suche, Moquegua, Peru; 14,600 feet elevation; collected January 12, 1952, by Oliver P. Pearson; in the burrow of *Ctenomys opimus nigriceps* Thomas.

Remarks.—*M. mniszechi* and the following species, *M. germaini* Fauvel, are very closely related. The pronotal character used by Fauvel to separate the species is of doubtful value, but there are diagnostic features. I have examined the specimens that Fauvel studied: the type of *germaini* and a syntype of Solsky's *mniszechi*. In addition, I have studied series of each species that I have compared with the types.

M. mniszechi differs from *germaini* in the structure of the aedeagus (fig. 42, a), the sculpture of the head and pronotum, and the darker coloration. The lines on the pronotum of *M. mniszechi* are finer and closer than in *M. germaini*; there are about five lines between the punctures of the former species and only about three lines as a rule between the punctures of *M. germaini*. The pronota of the two species have the same form.

The host relationships of *Megamblyopinus* have some puzzling features that need clarification. Jelski first collected *M. mniszechi* under debris in a dwelling and its courtyard and surmised that the beetles were associated with domestic guinea pigs. In southern Peru Dr. Pearson collected both species of *Megamblyopinus* in nests of tucu-tucus (*Ctenomys*) and there can be no doubt of their intimate association with those rodents. Inasmuch as the *Ctenomys* of the southern provinces of Tacna and Moquegua, Peru, are at the northern limit of the range of this genus, there can be no doubt that *M. mniszechi* has different host relationships in central Peru.

Concerning the circumstances under which *M. mniszechi* was collected, Dr. Pearson notes: "*Ctenomys opimus* was abundant in the almost barren, sandy-gravelly desert at Lago Suche. We wounded one at a burrow and tried to dig it out; then followed a tunnel for about twenty feet to a big stone slab under which a nest was located. No guinea pigs and few other mammals occupied abandoned *Ctenomys* burrows in this locality. Because mammal associates were so scarce and because the two nests (one at Pichupichuni

FIG. 42. Aedeagi and apices of aedeagi. a. *Megamblyopinus mnischechi* Solsky
b, c. *M. germaini* Fauvel.

containing *M. germaini*) were practically the only ones we investigated and yet both had these parasites, I am convinced that the beetles were really associated with *Ctenomys*."

Megamblyopinus germaini Fauvel comb. nov. Figure 42, *b, c*.

Amblyopinus germaini Fauvel, 1900, Revue d'Ent., 19: 63—Peru (Fauvel collection, Brussels Museum; no host given).

Length, 16 mm. Color rufous throughout. Distinguished by the characters discussed under *M. mniszewski*.

Material examined.—The type, a female, labeled "Perou." Three specimens, Pichupichuni, Puno, Peru; 8 km. northwest of Huacullani; 12,600 feet elevation; collected April, 1952, by Oliver P. Pearson, from a nest of *Ctenomys peruanus* Sanborn and Pearson.

Remarks.—Dr. Pearson has provided the following notes relating to the capture of this species: "*Ctenomys peruanus* was living in a closely cropped grass pampa, heavily grazed by llamas and alpacas. We dug out a single *Ctenomys* nest and found the *Megamblyopinus* specimens there. We found two chambers, one mostly full of droppings, the other containing a nest about six inches below the surface of the ground. Several mammals made use of old *Ctenomys* burrows, using them after they were abandoned. By far the most important of these mammals was a guinea pig, *Galea musteloides*; the others were *Galenomys garleppi* (an extremely rare mouse at the northern limit of its range), *Akodon jelskii*, and *Phyllotis (Auliscomys) boliviensis*."

Genus EDRABIUS Fauvel

Edrabijs Fauvel, 1900, Revue d'Ent., 19: 63.

Genotype.—*Edrabijs philippianus* Fauvel.

Edrabijs differs in a number of important respects from the three foregoing genera and was apparently derived from stock that diverged from the *Amblyopinus* line early in tribal evolution. *Edrabijs* has retained more of the features of the ancestral quediine stock; in this respect it resembles the Tasmanian *Myotyphlus*.

Head capsule distinctive (figs. 30, *b*; 31, *b*); broadly expanded at base so that neck is relatively narrow in proportion to head width. Posterior surface of head, lateral to neck, concave. Eyes similar to those of *Myotyphlus*; very small, composed of one facet, and located just behind antennal fossae (figs. 30, *b*; 31, *b*). Labrum large, bilobed (fig. 30, *b*). Gula and submentum very similar to those of *Myotyphlus*; gular sutures subparallel, submentum relatively short. Elytra subequal in length and width. Hind coxae (fig. 33, *b*) similar to those of *Myo-*

typhlus; quediine in form. Middle tarsi of male feebly expanded and spongy; without ctenidia. Eighth male sternite emarginate. Lateral plates of ninth abdominal segment (fig. 44, *g*) with a distinctive cluster of extremely long, aciculate setae.

***Edrabijs philippianus* Fauvel.** Figures 30, *b*; 31, *b*; 32, *c*; 33, *b*; 44, *a*.

Edrabijs philippianus Fauvel, 1900, *Revue d'Ent.*, 19: 65—Antofagasta, Chile, in desert of Atacama (Brussels Museum; host, *Ctenomys* sp.); Costa Lima, 1936, *Mem. Inst. Oswaldo Cruz*, 31: 65.

It is necessary at present to rely on the female type for our concept of *E. philippianus* inasmuch as none of the Peruvian or Argentine specimens that I have examined are conspecific with it. It is unfortunate that the aedeagus of this species could not be compared with those of the new species herein described.

The following notes are based on the type female:

Length, 6 mm.; width of abdomen, 2.5 mm. Coloration reddish-brown. Head and pronotum with fine, medium-dense punctation and with fine, very small-meshed reticulation. Pronotum with only extremely sparse pubescence on humeri and a few hairs close to lateral margins as far back as marginal seta. Elytra with sparse clothing of fine, short hairs. Tergites similarly clothed, the hairs longer near paratergites. Lateral margin of pronotum as in figure 44, *a*; the sides converging strongly from about the middle so that the apex of the pronotum is only seven-tenths as broad as the base.

Material examined.—The type, a female, from Antofagasta, Chile.

***Edrabijs weiseri* sp. nov.** Figures 43, *d*; 44, *b*.

The largest known species of the genus. *E. weiseri* differs from *E. philippianus* in the relatively coarse punctation and the obsolescent reticulation of head and pronotum, the vestiture of elytra and abdomen, and the form of the pronotum.

Length, 9 mm.; width of abdomen, 2.3 mm. Head and pronotum with medium-coarse, comparatively dense punctation. Reticulation of head and pronotum obsolescent; in those areas where it is evident the lines form a more coarse-meshed reticulation than in *E. philippianus*. Pronotum with a cluster of moderately dense, golden pubescence near humeri and along lateral margins nearly to base. Elytra with moderately dense vestiture of golden yellow, semi-recumbent hairs. Tergites with a similar vestiture except that the hairs of a medium strip are finer and less conspicuous. Lateral margin of pronotum as in figure 44, *b*; evenly arcuate so that apex of pronotum is about nine-tenths as broad as base. Aedeagus as in figure 43, *d*.

Holotype.—A male from Troquero, Jujuy, Argentina; collected April 1, 1920, by Weiser. Host: no record, almost certainly a

FIG. 43. Apices of aedeagi. a. *Edrabioides alticolus* sp. nov. b. *E. peruanus* sp. nov. c. *E. argentinus* sp. nov. d. *E. weiseri* sp. nov. e. *E. pearsoni* sp. nov.

FIG. 44. Lateral margins of pronota, lateral plates of ninth abdominal segment, and eighth male sternites. *a*. *Edrabioides philippianus* Fauvel. *b*. *E. weiseri* sp. nov. *c*, *j*. *E. argentinus* sp. nov. *d*, *i*. *E. pearsoni* sp. nov. *e*. *E. alticolus* sp. nov. *f*–*h*. *E. peruanus* sp. nov.

species of *Ctenomys*. In collection of Chicago Natural History Museum.

Remarks.—The type of this species was in the Max Bernhauer collection with the manuscript name, *E. weiseri* n. sp., when the collection reached Chicago Natural History Museum. The specimen had been sent to Bernhauer by Carlos Bruch and it is very likely that other specimens bearing this manuscript name are in the Bruch collection in Argentina.

Edrabijs argentinus sp. nov. Figures 43, *c*; 44, *c*, *j*.

Distinguished from *E. philippianus* by pronotal form and sculpture of head and pronotum; from the other new species by its distinctive aedeagus.

Length, 6–7.7 mm.; width of abdomen, 1.7–2.1 mm. Coloration reddish-brown. Head and pronotum with fine, relatively sparse punctation; reticulation weak to obsolescent, and the fine wavy lines with relatively few cross-connections. Pronotum with moderately dense golden pubescence near humeri and along sides. Elytra with inconspicuous vestiture of fine, short, recumbent hairs. Tergites similarly clothed except that hairs become longer near side margins; the last few tergites entirely clothed with yellow hairs.

Holotype.—A male from Hualfin, Catamarca, Argentina (near Tucumán); collected December, 1921, by Weiser; “ex nido de *Ctenomys*.” In collection of Chicago Natural History Museum. The type series is from the Bernhauer collection (ex Carlos Bruch).

Paratypes.—Two specimens, same data as type.

Edrabijs pearsoni sp. nov. Figures 29, *b*; 43, *e*; 44, *d*, *i*.

Distinguished from *E. philippianus* by the form of the pronotum, from *E. weiseri* and *E. argentinus* by the reticulation of the head and pronotum and the form of the aedeagus, and from the other Peruvian species by the form of the aedeagus and the eighth male sternite.

Length, 6–6.5 mm.; width of abdomen, 1.7–2.2 mm. Head and pronotum with fine, medium-dense punctation and with fine, very small-meshed, sub-hexagonal reticulation. Pronotal pubescence very short and sparse near humeri and along lateral margins. Elytra and tergites with relatively uniform clothing of fine, moderately long hairs. Lateral margin of pronotum as in figure 44, *d*. Eighth male sternite as in figure 44, *i*; aedeagus as in figure 43, *e*.

Holotype.—A male from Río Santa Rosa, Puno, Peru; 13,300 feet elevation; collected December 15, 1951, by Oliver P. Pearson. Host: *Ctenomys opimus nigriceps* Thomas. In collection of Chicago Natural History Museum.

Paratypes.—Eighteen specimens, same data as type.

Edrabius peruanus sp. nov. Figures 43, *b*; 44, *f-h*.

Most closely allied to *E. pearsoni*; distinguished by form of aedeagus, surface contours of pronotum, and minor differences in vestiture of elytra and tergites.

Length, 6.3–7 mm. Color reddish-brown. Head and pronotum with fine, medium-dense punctation and with fine, very small-meshed reticulation that becomes obsolescent in some areas of pronotal disk. Pronotal pubescence very short and sparse in humeral region. Elytra and tergites sparsely and inconspicuously clothed with fine, recumbent hairs. Pronotum (fig. 44, *f*) with form of that of *E. pearsoni* but with surface depressed medial to humeri. Eighth male sternite as in figure 44, *h*. Aedeagus as in figure 43, *b*.

Holotype.—A male from Pichupichuni, 8 km. north of Huacullani, Puno, Peru; 12,600 feet elevation; collected April, 1952, by Oliver P. Pearson. Host: From nest of *Ctenomys peruanus* Sanborn and Pearson. In collection of Chicago Natural History Museum.

Paratypes.—Three specimens, same data as type. Two specimens, Pampa Queullecota, 60 km. south of Llave, Puno, Peru; 13,200 feet elevation; collected February 5, 1952, by Oliver P. Pearson; from *Ctenomys peruanus*.

Edrabius alticolus sp. nov. Figures 43, *a*; 44, *e*.

Distinguished from the two Peruvian species by the form of the pronotum and by the aedeagus.

Length, 5.6–7 mm. Color light reddish-brown. Head and pronotum with fine, medium-dense punctation and with fine, very small-meshed, sub-hexagonal reticulation. Pronotum with a small patch of yellow pubescence near humeri and a few hairs along margin. Elytra and tergites with a uniform vestiture of fine yellow hairs. Pronotal form as in figure 44, *e*. Aedeagus as in figure 43, *a*.

Holotype.—A male from Pampa de Titire, 29 km. northeast of Tarata, Tacna, Peru; 14,600 feet elevation; collected April 13, 1952, by Oliver P. Pearson. Host: *Ctenomys fulvus* Philippi. In collection of Chicago Natural History Museum.

Paratypes.—Seven specimens, same data as type.

Genus MYOTYPHLUS Fauvel

Myotyphlus Fauvel, 1883, Revue d'Ent., 2: 37; 1900, Revue d'Ent., 19: 61.

Cryptommatus Matthews, 1884, Cist. Ent., 3: 88.

Genotype.—*Myotyphlus jansonii* Matthews.

Myotyphlus jansoni Matthews. Figures 29, *d*; 30, *a*; 31, *a*; 32, *a*; 33, *a*, *f*, *k*, *l*.

Amblyopinus jansoni Matthews, 1878, Cist. Ent., 2: 275, pl. 6, figs. 1-8—Gould's Country, Tasmania (Brit. Mus.; host: "from the fur of a living rat").

Myotyphlus jansoni Matthews; Fauvel, 1883, Revue d'Ent., 2: 37.

Cryptommatus jansoni Matthews, 1884, Cist. Ent., 3: 88.

Myotyphlus jansoni of Tasmania is without doubt the most generalized species of Amblyopinini and serves to link the Neotropical genera with the Quediini (for a discussion of this matter see p. 218).

Head capsule generalized (figs. 30, *a*; 31, *a*); quediine in form. Head with a medium broad neck inserted in pronotum (fig. 30, *a*). Gula very long and relatively narrow (fig. 32, *a*), the gular sutures parallel; submentum relatively short. Labrum large (fig. 30, *a*). Eyes very small (fig. 31, *a*) and composed of one facet; eyes located just behind antennal fossae. Pronotum quediine in form. Elytra longer than broad (fig. 33, *f*). Hind coxae typically quediine in form (fig. 33, *a*). Anterior tarsi dilated and densely pilose beneath; middle tarsi not dilated and pilose but their basal segment with a row of black teeth (ctenidium) along the inner margin of the plantar surface. Eighth male sternite feebly emarginate (fig. 33, *k*). Aedeagus with relatively simple lateral lobes (fig. 33, *l*).

LIST OF MAMMALIAN HOSTS

A. Classification of Host Genera

RODENTIA

Suborder Myomorpha, Family Cricetidae, Subfamily Cricetinae

Genera: *Oryzomys* Baird, *Nectomys* Peters, *Thomasomys* Coues,
Chilomys Thomas, *Peromyscus* Gloger, *Akodon* Meyen,
Oxymycterus Waterhouse, *Phyllotis* Waterhouse,
Chinchillula Thomas

Suborder Hystricomorpha, Family Dasyproctidae, Subfamily Cuniculinae

Genus *Cuniculus* Brisson

Suborder Hystricomorpha, Family Ctenomyidae

Genus *Ctenomys* De Blainville

Suborder Sciuromorpha, Family Heteromyidae

Genus *Heteromys* Desmaret

MARSUPALIA

Family Didelphidae

Genera: *Didelphis* Linnaeus, *Metachirus* Burmeister, *Monodelphis*
Burnett, *Marmosa* Gray

B. Host Records

AMBLYOPINUS Solsky

jelskii group

<i>jelskii</i> Solsky	Peru	(?) <i>Oryzomys laticeps</i> Lund
<i>brandesi</i> Kraatz	Peru	No record
<i>punae</i> sp. nov.	Peru	<i>Akodon jelskii pulcherrimus</i> Thomas
<i>monticolus</i> sp. nov.	Peru	<i>Ctenomys opimus nigriceps</i> Thomas
<i>akodoni</i> sp. nov.	Peru	<i>Akodon jelskii pyrrhotis</i> Thomas
<i>kofordi</i> sp. nov.	Peru	<i>Akodon berlepschii</i> Thomas
<i>schmidtii</i> SeEVERS	Guatemala	<i>Peromyscus guatemalensis</i> Merriam
<i>colombiae</i> sp. nov.	Colombia	<i>Thomasomys aureus nicefori</i> Thomas
<i>piurae</i> sp. nov.	Peru	<i>Thomasomys</i> sp.
<i>ancashi</i> sp. nov.	Peru	<i>Phyllotis darwini</i> Waterhouse
sp.	Peru	<i>Phyllotis sublimis</i> Thomas
<i>spinipennis</i> sp. nov.	Peru	<i>Akodon aerosus</i> Thomas
sp.	Peru	<i>Chinchillula sahamae</i> Thomas
<i>longus</i> Franz	Brazil	<i>Oxymycterus rufus</i> Desmaret
		<i>Akodon (Thaptomys) nigrila</i> Licht.

fuegensis group

<i>fuegensis</i> Arrow	Chile	<i>Ctenomys magellanicus dicki</i> Osgood
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hershkovitzi group

<i>hershkovitzi</i> sp. nov.	Colombia	<i>Heteromys anomalus</i> Thompson
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sanborni group

<i>sanborni</i> Seevers	Peru	<i>Thomasomys</i> sp. (?) <i>Carollia perspicillata</i> L. <i>Oryzomys keaysi</i> Allen <i>Thomasomys laniger</i> Thomas
<i>emarginatus</i> sp. nov.	Colombia	<i>Chilomys</i> sp.
<i>chilomysi</i> sp. nov.	Colombia	<i>Chilomys</i> sp.
<i>montivagans</i> sp. nov.	Colombia	<i>Oryzomys albigularis</i> Tomes
<i>oryzomysi</i> sp. nov.	Colombia	<i>Chilomys</i> sp.
<i>huilae</i> sp. nov.	Colombia	

waterhousei group

<i>waterhousei</i> Fauvel	Ecuador, Colombia	<i>Didelphis albiventris</i> Lund
<i>kalinowskii</i> sp. nov.	Peru	<i>Didelphis albiventris</i> Lund
<i>pacae</i> sp. nov.	Peru	<i>Cuniculus taczanowskii</i> Stolzmann
sp.	Peru	<i>Cuniculus taczanowskii</i> Stolzmann

henseli group

<i>henseli</i> Kolbe	Brazil	<i>Metachirus opossum</i> Linnaeus <i>Didelphis marsupialis</i> Linnaeus
<i>bequaerti</i> Notman	Brazil	<i>Monodelphis</i> sp.
<i>marmosae</i> Seevers	Brazil	<i>Marmosa incana paulensis</i> Tate

Incertae sedis

<i>angustus</i> Arrow	British Guiana	No record
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AMBLYOPINODES gen. nov.

<i>gahani</i> Fauvel	Argentina	No record
<i>piceus</i> Brèthes	Argentina, Brazil	<i>Nectomys squamipes</i> Brants
<i>claviger</i> Franz	Brazil	<i>Oxymycterus rufus</i> Desmaret
<i>travassosi</i> Costa Lima	Brazil	<i>Thaptomys nigrata</i> Lichtenstein <i>Oxymycterus judex</i> Thomas
<i>peruvianus</i> sp. nov.	Peru	<i>Oryzomys</i> sp.
<i>similis</i> sp. nov.	Peru	<i>Oxymycterus juliacae</i> Allen

MEGAMBLYOPINUS gen. nov.

<i>mniszewski</i> Solsky	Peru (Junín) Peru (Moquegua)	No record <i>Ctenomys opimus nigriceps</i> Thomas
<i>germaini</i> Fauvel	Peru	<i>Ctenomys peruanus</i> Sanborn and Pearson

EDRABIUS Fauvel

<i>philippianus</i> Fauvel	Chile	<i>Ctenomys</i> sp.
<i>weiseri</i> sp. nov.	Argentina	(?) <i>Ctenomys</i> sp.
<i>argentinus</i> sp. nov.	Argentina	<i>Ctenomys</i> sp.
<i>pearsoni</i> sp. nov.	Peru	<i>Ctenomys opimus nigriceps</i> Thomas
<i>peruanus</i> sp. nov.	Peru	<i>Ctenomys peruanus</i> Sanborn and Pearson
<i>alticola</i> sp. nov.	Peru	<i>Ctenomys fulvus</i> Philippi

MYOTYPHUS Fauvel

<i>jansoni</i> Matthews	Tasmania	A "rat"
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