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A MONOGRAPHIC REVISION OF THE AMERICAN GALERITINI (COLEOPTERA, CARABIDAE)

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ABSTRACT

The first part of this monograph treats the New World species of the tribe Galeritini (Carabidae), taxonomically. After this taxonomic treatment, some other problems, such as geographic variation, reduction of wings, zoogeography, evolution and phylogeny, are discussed. In the genus *Progaleritina*, it was noted that some (three) species show a clinal variation of size. This variation was studied statistically, having been found that there is straight correlation between variation in size and latitude. Such variation in size is discussed in relation to Bergmann's principle. The study of the reduction of functional (flying) wings of the members of the tribe brought several interesting data to light; some interesting cases in which wing-dimorphism or wing-polymorphism occur, are discussed. Based on the relations of the species and genera, a probable route of dispersion of the tribe in the World, has been constructed, having the author reached the conclusion that the group is of Neotropical origin.

INTRODUCTION

The present revision of the American species of Galeritini is the fruit of two years of work at the Museum of Comparative Zoology, Harvard University (Cambridge, Mass., U.S.A.), under the sponsorship of Professor P. J. Darlington, Jr.. It has been slightly changed from a manuscript thesis of same title, presented in December 1965 to the Department of Biology of Harvard University, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

The taxonomy of the genera included in this tribe, especially that of the large, tropicopolitan genus *Galerita*, was extremely confused when this work was started. Only the Ethiopian fauna had previously been revised (Basilewsky, 1963), and is fairly well understood now. Of the Oriental species, only *Galerita* has been revised (Reichardt, 1965); *Planetes*, the second genus present in that part of the world, is still badly in need of revision.

The New World species of Galeritini have never been revised in their entirety. Liebke (1932) revised only a few species within *Gale-*

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rita ("die Arten des Rio de La Plata Stromtales"), however, his key includes only some 10 species, of which some are misidentified, as will be seen later. The most recent list of species of *Galerita* (Blackwelder, 1944) catalogues 54 species (including three presently segregated in *Progaleritina*). In the following pages 13 species of *Galerita* are being described as new and in spite of this the total number drops to 51, due to extensive synonymy of old species. The majority of old species was described by Chaudoir (from 1843 to 1877), however, he never tried to give a general picture of the group. A large percentage of species was described in recent years by Liebke (from 1932 to 1939), however, he did not know well the old species and consequently misidentified many species.

The picture is not too different with the few North American species. They had formerly been included in *Galerita*, but have recently been separated in a genus of their own, namely *Progaleritina* (following Jeannel, 1949). In 1879 Leconte had the North American species fairly well defined. Subsequently Casey described several other forms, which had not been revised up to date. All of his forms proved to be synonyms of older species, and I am giving the species back Leconte's concept!

A total of 66 species included in 4 genera are revised in this monograph. Of this number, seventeen (or slightly over 25%) are recognized as new to science. Considering that species of the genus *Galerita* are usually well represented in collections, this fact is surprising and shows very clearly the sad state of our knowledge of Neotropical Carabidae.

ACKNOWLEDGEMENTS AND SOURCES OF MATERIAL

Throughout the preparation of this monograph I became indebted to a large number of persons and institutions, which were helpful with material for study, advice on scientific problems, as well as in obtaining the necessary financial support.

Dr. P. E. Vanzolini, Director of the Departamento de Zoologia and the Government of the State of São Paulo, made my stay at Harvard possible. Professors P. J. Darlington, Jr. and F. M. Carpenter of Harvard University, were close to my work throughout its development, having given freely of their time and advice. Professor E. Mayr, Drs. J. F. Lawrence, E. G. MacLeod and R. W. Taylor, also of Harvard University, also gave freely of their time to discuss problems related to my work. Drs. E. G. MacLeod and R. W. Taylor were immensely helpful in editing this manuscript. The critiques, comments and help of these friends are greatly acknowledged.

The Organization of American States and Harvard University provided scholarships which made my studies possible. The Evolutionary Biology Committee at Harvard provided the necessary funds for the study of types at the British Museum (Natural History) in London

and the Muséum National d'Histoire Naturelle in Paris, during the month of July 1964. It is a great pleasure to acknowledge the help of the persons involved.

The material which made this revision possible, has been loaned by several Institutions and private collections in Europe, North America and South America. These collections are listed below, with the abbreviations used throughout the text, in brackets. I gratefully acknowledge the cooperation of the authorities of these Institutions for having made their precious material, sometimes including types, available for this study. Without this scientific cooperation it would have been impossible to undertake the revision of a group as large and confused as the one presently revised.

The Institutions involved are the following:

- AMNH, American Museum of Natural History, New York, N. Y., United States, Mrs. P. Vaurie;
- ANSP, Academy of Natural Sciences, Philadelphia, Pa., United States, Dr. H. J. Grant, Jr.;
- BM, British Museum (Natural History), London, England, Drs. J. Balfour-Browne and E. B. Britton;
- CAS, California Academy of Sciences, San Francisco, Cal., United States, Mr. H. B. Leech;
- CB, Collection of Mr. Carlos Bordon, Caracas, Venezuela;
- CDZ, Departamento de Zoologia, Secretaria da Agricultura, São Paulo, Brazil, Mr. U. R. Martins;
- CEO, Collection of Mr. E. Ogueta, Buenos Aires, Argentina;
- CKC, Collection of Prof. K. W. Cooper, Dartmouth Medical School, Hanover, N. H., United States;
- CL, Collection of Dr. J. F. Lawrence, Cambridge, Mass., United States;
- CN, Collection of Mr. J. Nègre, Versailles, France;
- CNC, Canada Department of Agriculture, Ottawa, Canada, Dr. H. F. Howden;
- CNHM, Chicago Natural History Museum, Chicago, Ill., United States, Dr. H. Dybas;
- CPB, Collection of Father P. Buck, Pôrto Alegre, Rio Grande do Sul, Brazil;
- CU, Department of Entomology, Cornell University, Ithaca, N. Y., United States, Drs. L. L. Pechuman and W. L. Brown, Jr.;
- CUA, Catholic University of America, Washington, D.C., United States, Dr. R. T. Arnett, Jr.;
- FHCM, Facultad de Humanidades y Ciencias, Montevideo, Uruguay, Messrs. P. San Martin and M. A. Monné;
- FW, University of Arizona, Tucson, Ariz., United States, Dr. F. G. Werner;

- IB, Instituto Biológico, São Paulo, Brazil, Mr. E. Amante;
IEEA, Instituto de Ecologia e Experimentação Agrícolas, Rio de Janeiro, Brazil, Mr. A. L. Peracchi;
IOC, Instituto Oswaldo Cruz, Rio de Janeiro, Brazil, Mr. M. Kogan;
IRSNB, Institut Royal des Sciences Naturelles, Brussels, Belgium, Dr. A. Collard;
IZ, Institute of Zoology, Polish Academy of Sciences, Warsaw, Poland, Dr. M. Mroczkowski;
MAC, Muséum Royal de l'Afrique Centrale, Tervuren, Belgium, Dr. P. Basilewsky;
MBA, Museu Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires, Argentina, Messrs. E. Ogueta, M. J. Viana and A. Martinez;
MCZ, Museum of Comparative Zoology, Cambridge, Mass., United States;
MF, Museum G. Frey, Tutzing, Germany, Dr. G. Scherer;
ML, Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands, Dr. J. T. Wiebes;
MLP, Museum de la Universidad Nacional de La Plata, La Plata, Argentina, Dr. B. Torres;
MNHN, Muséum National d'Histoire Naturelle, Paris, France, Drs. A. Villiers, G. Colas and J. Mateu;
NHMW, Naturhistorisches Museum, Viena, Austria, Dr. F. Janczyk;
PSU, Pennsylvania State University, University Park, Pa., United States, Dr. M. Goodrich;
SMF, Natur-Museum und Forschungs-Institut Senckenberg, Frankfurt a. Main, Germany, Dr. R. zur Strassen;
UA, University of Alberta, Edmonton, Canada, Dr. G. E. Ball and Mr. D. Whitehead;
UMO, University Museum, Oxford, England, Mr. E. Taylor;
USNM, United States National Museum, Washington, D. C., United States, Dr. O. L. Cartwright;
UV, University of Vermont, Burlington, Vt., United States, Dr. R. T. Bell;
ZMB, Zoologisches Museum der Universitaet, Berlin, Germany, Dr. F. Hieke;
ZMH, Zoological Museum of the University, Helsinki, Finland, Dr. W. Hackman;
ZSM, Zoologische Staatssammlung, Muenchen, Germany, Dr. H. Freude.

METHODS AND MEASUREMENTS

The present revision is based on the study of a total of 4551 specimens (averaging about 69 specimens/species).

The measurements of the specimens have been made with a micrometer in the microscope ocular. Comparison is made between measurements of parts of the beetles (expressed in the descriptions by their ratios) as follows: Head — width/length (width taken at the widest point, including the eyes; length taken from the apex of the clypeus to constriction behind the eyes, not including the neck); length of eyes/length of occiput (the measurement of the occiput is made parallel to the longitudinal axis of the body, from the posterior margin of eye to beginning of neck). Pronotum — width/length (width taken at widest point; length along the median line). Elytra — width/length (width at widest point; length from base to apex, along suture). Total length of specimens has been measured from the tip of mandibles to apex of elytra, excluding the pygidium. About 10 specimens (when available) have been measured for each species; mean values have been used for the calculation of the ratios. On figure 35 I have indicated how some of the measurements have been taken; the same illustration also shows the structures called carinae and carinulae throughout the text.

The illustrations have been made with the aid of a squared ocular; the detail of elytral structure represented for many of the species, is not drawn to scale.

The male genitalia of all species in which males are known and were available for dissection, has been studied. The aedeagus of each specimen was dissected and later placed in glycerin in a shell vial which was pinned beneath the specimen. No attempt was made to study the internal structure of the aedeagus. Whenever possible, more than one specimen was studied, to make sure that the characters are constant. The specimens from which aedeagi were dissected, are marked throughout the text with an asterisk (*). The shape of the aedeagus, which had not been used before in Neotropical Galeritini, proved to be a good distinctive character in many species, especially in closely related forms. Genital characters have, however, been utilized in the keys only where really necessary. It should be possible to make preliminary identifications of new material without recourse to dissection.

The female genital apparatus was dissected in several species, but no good characters were discovered, and therefore I have not studied it further.

Most of the localities from which specimens were examined, have been placed on the distributional maps (a few localities could not be located, and were therefore not included). The maps (Goode Base Map Series) were obtained from the Department of Geography, The University of Chicago ("Copyright by the University of Chicago"). Special thanks are due for the permission of using them in this publication. In the taxonomic part, for the distribution of all species I have first listed the country, followed by the state (= departamento or provincia in some countries), and finally by the locality itself. When available, elevation is given (in meters); date of collection and collector are given only for types.

NOTES ON SOME OF THE TYPES

With the exception of one species described by Linnaeus, one by Mannerheim, and a few others of which the types have not been located (either because the specimens cannot be recognized as types in the collections they are supposedly in, or because the collections have not been studied), type-specimens of most of the species treated in this monograph have been examined, partly in the Museums where they are preserved (during a trip to Europe, Brazil and Argentina in June-September 1964, and Washington, D.C., in December 1964), partly in the Museum of Comparative Zoology, where they were sent for study.

Most data on the location of types has been taken from Horn & Kahle (1935-1937), however, it seems necessary to make a few general remarks on some of the types preserved in European collections. These notes are given below, authors listed in alphabetic order.

In all cases in which designation of lectotypes was required, they have been designated. All these specimens have been labeled with my own labels, recording the status of the specimen as a type. Even holotypes of old authors have been labeled as such, since most do not bear any label. For the designation of lectotype, I have when possible used the specimen which has been illustrated (following recommendation 74B of the "Rules"), however, usually I had to select the least damaged specimen of the series, and where possible, deliberately chose a male.

Bates, H. W., collection partly in the British Museum (Natural History), London, and partly incorporated into Chaudoir's collection (see below). The specimens in Chaudoir's collection represent duplicates which Bates sold to Chaudoir. London, having the main collection, retains the lectotypes presently designated.

Brullé, G. A., collection in the Muséum National d'Histoire Naturelle, Paris, as part of the general collection. The specimens bear Brullé's original label (see Horn & Kahle, pl. XXI, fig. 14).

Castelnau, Comte de, types not located.

Chaudoir, M., collection in the Muséum National d'Histoire Naturelle, in R. Oberthuer's collection, recently acquired by the Museum, and maintained in separate (original) boxes. Chaudoir's specimens usually bear only a small, red-printed label reading "Ex Musaeo Chaudoir"; the series (or unique specimen) is headed by a handwritten label (see Horn & Kahle, pl. XXXIII, fig. 29), giving the name of the species and the (type-) locality. The absence of individual labels makes it very difficult to determine the type, especially in larger series.

Chevrolat, L. A. A., collection of Carabidae kept in the Hope Department of Entomology, University Museum, Oxford, England. Usually only the first specimen bears the locality label.

Dejean, P.F.M.A., collection incorporated into Chaudoir's collection (see above). Only the first specimen bears Dejean's green, handwritten label (see Horn & Kahle, pl. XXIV, fig. 45); the following

specimens do not bear any label. In a few cases, Dejean's label was not present, but specimens were recognizable by special characters of the specimen.

Guérin-Méneville, F. E., collection incorporated into Chaudoir's collection (see above).

Liebke, M., collection presently at the Institute of Zoology, Polish Academy of Sciences, Warsaw. The collection was lost during and after World War II; it has probably been found recently, and the remains (in some cases of *Galerita* very poorly preserved) have been deposited in Warsaw.

Lucas, P. H., collection in the Muséum National d'Histoire Naturelle, Paris, in the general collection. First specimen with Lucas' label (see Horn & Kahle, pl. XIV, fig. 13).

Olivier, A. G., types not located in Paris.

Reiche, L., collection incorporated into Chaudoir's collection (see above).

TRIBE GALERITINI

Galéritides Lacordaire, 1854:79 (part); Péringuey, 1896:155 (part).

Galericidae Desbrochers des Loges, 1904:137 (part).

Galeritina Jakobson, 1908:408 (part).

Planetini Jedlicka, 1941:24; Basilewsky, 1963:8; Jedlicka, 1963:464.

Galeritini Jedlicka, 1941:25.

Galeritinini Jeannel, 1949:1057; Basilewsky, 1963:23.

Galeritulini Jedlicka, 1963:474.

DESCRIPTION

Head large, with large and usually prominent eyes; occiput usually well developed behind the eyes, gradually narrowed posteriorly to form a well defined neck; two supra-orbital setae. Mouthparts as in figures 1-5. Antennae long, pubescent from base; first segment scapiform, shorter than the two following ones together (except in *Trichognathus*, where the scape can be slightly longer than the two following segments together). Pronotum usually flat, with basal constriction; widest in front of the middle; with two pairs of marginal setae. Elytra wide and long, striate or carinate, truncate apically. Anterior tarsi of males with basal segments asymmetrically dilated (figs. 11, 147); fourth tarsal segment only very slightly emarginate; tarsal claws simple. Wings normally well developed, reduced in some species of *Galerita* and *Progaleritina*.

NOMENCLATORIAL NOTES

The nomenclature of this tribe is rather confusing, as can be seen from the synonymy. It is confused because of the nomenclatorial problems concerning the name *Galerita* Fabricius (see p. 43), which was discovered to be a junior homonym of *Galerita* Gouan (Pisces).

Galerita Gouan is a *nomen nudum* (described in synonymy), and has never been used as a senior synonym for fishes. Even though a *nomen nudum*, *Galerita* Gouan was listed in several nomenclators (Schulze, Neave, etc.) as if it were an available name. As a result, it was incorrectly treated as a senior homonym by several subsequent authors.

An application has been made to the International Commission on Zoological Nomenclature, for suppression of *Galerita* Gouan and the reva-
loration of the well known name *Galerita* Fabricius (Reichardt, 1966).

In anticipation to the decision of the Commission, the generic name *Galerita* Fabricius is used in this monograph, and its replacement names are considered synonyms; for the same reason the tribe is called Gale-
ritini and the other names which have been proposed are considered synonyms.

LIMITS OF THE TRIBE AND ITS RELATIONSHIPS

The Galeritini have been segregated from the Dryptini by Jeannel (1949). The separate status of the two taxa has been maintained by Basilewsky (1963) for the Ethiopian fauna, and seems to be worth being maintained for the Neotropical fauna too.

The present state of the higher categories of Carabidae, and especially that of the Truncatipennae (Carabidae with truncate elytra — an artificial but nevertheless useful group), is somewhat chaotic. Revision of most groups is needed before a system can be elaborated. Many of the genera included in some tribes, have been arbitrarily placed there by Csiki when the Catalogue was elaborated. Reexamination of such genera is necessary to permit their proper placement in the system.

As presently considered, the tribes of the closest vicinity of the Galeritini, can be separated as follows:

1. Antennal scape longer than head, thin; second antennal segment very small, at least four times shorter than the third; mandibles elongate; fourth tarsal segment bilobed ... Dryptini
 Antennal scape shorter than head, thick; second antennal segment varying in size from half to one times the length of the third; fourth tarsal segment bilobed or not; mandibles not elongate 2
- 2 (1). Fourth tarsal segment only very slightly emarginated; tarsal claws simple 3
 Fourth tarsal segment deeply bilobed; claws pectinate ... Agrini
- 3 (2). Scape longer than segments two and three together; anterior tarsi of males with basal segments normal or slightly dilated, always symmetric Zuphiini

Scape shorter than segments two and three together; anterior tarsi of males with basal segments more or less well dilated, always asymmetric Galeritini

Thus defined, some of the genera included in the Dryptini by Csiki (1932), have to be removed. The true Dryptini are an Old World group, which is represented in the New World by a single, monotypic genus in the Amazonian Basin (*Neodrypta* Basilewsky).

The genus *Dicrodontus* Chaudoir (monotypic genus from the Canary Islands) is closely allied to *Polystichus* Bonelli, and both are true Zuphiini. *Pseudaptinus* Castelnau (a large Neotropical genus with a single, certainly congeneric, Australian species) and *Mischocephalus* Chaudoir (monotypic Neotropical genus) are also better placed among the true Zuphiini.

The genus *Ancystroglossus* Chaudoir, included by Csiki among the Dryptini, is here included in the Galeritini with some doubts, even though it shares the characters of the tribe and seems to be related to *Planetes* MacLeay. The genus has a superficial resemblance to some Physocrotaphini (e.g. *Pogonoglossus* Chaudoir), a tribe which is restricted to the Oriental and Australian Regions.

Basilewsky considers the taxon at subfamilial level (1963: 7, 8, 23) and as formed by two tribes, the Planetini (including only *Planetes* MacLeay) and the Galeritinini (including the remaining genera). I am considering the taxon at tribal level, and consider a subdivision unnecessary. It may, however, be worth mentioning that the only New World genus which represents Basilewsky's Planetini, is *Ancystroglossus* Chaudoir.

In the New World the Galeritini are, therefore, represented by the following 4 genera: *Ancystroglossus* Chaudoir (6 species), *Progaleritina* Jeannel (8 species), *Galerita* Fabricius (51 species) and *Trichognathus* Latreille (1 species).

BIOLOGY

Very little biological information has been published on American Galeritini. The immature stages are known only for very few species: *Galerita nigra* Chevrolat and *simplex* Chaudoir (Candèze, 1861:327-329, figs.), *Progaleritina lecontei* (Dejean) (Sallé, 1849:298-300, figs.) and *janus* (Fabricius) (Schaupp, 1882). Almost nothing is known about the habits of the American Galeritini. Adults of *Galerita* and *Progaleritina* are usually found under stones; however, most specimens in collections have been taken at light. Habits of the adult and the larvae of *P. janus* were described by Riley (1880). King (1919) described mud-cells built by *P. bicolor* (Drury) on the lower side of leaves, for the deposition of eggs. Leconte (1848:147) and Schmitt (1904) record the habit of "bombarding" in *Progaleritina* sp. and *janus* (Fabricius). This habit seems, however, not to be very typical for species of *Progaleritina*, and must wait for confirmation; the habit has not been observ-

ed by several persons who have collected them very often. Some species have a very strong acrid smell: a series of *P. mexicana* (Chaudoir) collected by F. G. Werner in Guadalajara, Jalisco, Mexico, bears the label: "at light, most acrid smell of any sp. I've encountered — like strong acetic acid".

FOSSILS

The only fossil which has been described as belonging to a genus of Galeritini is *Galerita marshi* Scudder (1900:31, pl. 3, fig. 5), from the Eocene of Green River, Wyoming, United States. Jeannel (1961:58) cites *Galerita* (as well as *Helluo* Bonelli and *Helluomorpha* Castelnau) as present in the Baltic Amber. To my knowledge, no species of the genera mentioned has been described.

Of *Galerita marshi* only the elytra of one specimen were preserved, and according to their striate structure, they could represent several genera of Carabidae (or even other families) which have similar structure. The size of *marshi* is much smaller than that of any species of *Progaleritina* (elytral length is 7 mm in *marshi*, 10 mm in the smallest specimen of *Progaleritina*). The type specimen of *marshi* Scudder was not found on the piece of rock bearing the type label (MCZ n. 1856, and Scudder's original number 92), and therefore any further decision on the position of *Galerita marshi* must await more material.

KEY TO GENERA OF GALERITINI OF THE WORLD

1. Elytra each with a basal seta-bearing puncture near scutellum; margin of elytra with sparse, very long setose punctures 2
 - Elytra lacking both a basal seta-bearing puncture and setose marginal punctures 3
- 2 (1). Antennal scape long, as long or slightly longer than the following two segments together; ligula plurisetose, much shorter than the paraglossae; maxillary palpiger with two tuberculate regions bearing long bristles; head very transverse; (Africa and Madagascar) *Eunostus* Castelnau
 - Antennal scape shorter than the following two segments together; ligula bisetose (in some species ending in a hook); only slightly shorter than paraglossae; maxillary palpiger without tuberculate regions or bristles; head about as long as wide; (South and Central America). *Ancystroglossus* Chaudoir (p. 11).
- 3 (1). Head with very distinct neck, formed by postocular strangulation of occiput; occiput, although in some cases reduced.

always at least half as long as the diameter of one eye;
antennal scape always well developed; antennae long 4

Head with thick, not well defined neck; occiput shorter than half diameter of one eye; antennae short and stout, scape less well developed; ligula bisetose (*Heteroglossa* Nietner, considered a valid genus, and not a synonym, by Habu, 1964) or plurisetose (*Planetes* MacLeay) (Ethiopian, Oriental and Australian Regions) *Planetes* MacLeay

- 4 (3). Antennal scape with normally developed pubescence; ligula bisetose (setae apical), longer than or as long as paraglossae; maxillary palpiger simple 5

Antennal scape with two parallel rows of bristles on ventral face; ligula bisetose (setae not apical, but inserted in the middle); paraglossae as long as ligula; maxillary palpi with large, lobate projection, with long bristles; (South America) *Trichognathus* Latreille (p. 146)

- 5 (4). Elytra striate-punctate, with flat interstices; these with 6 to 8 irregular rows of rufous hairs; head with a large, red, often triangular spot between the eyes; (North and Central America, Greater Antilles). *Progaleritina* Jeannel (p. 20)

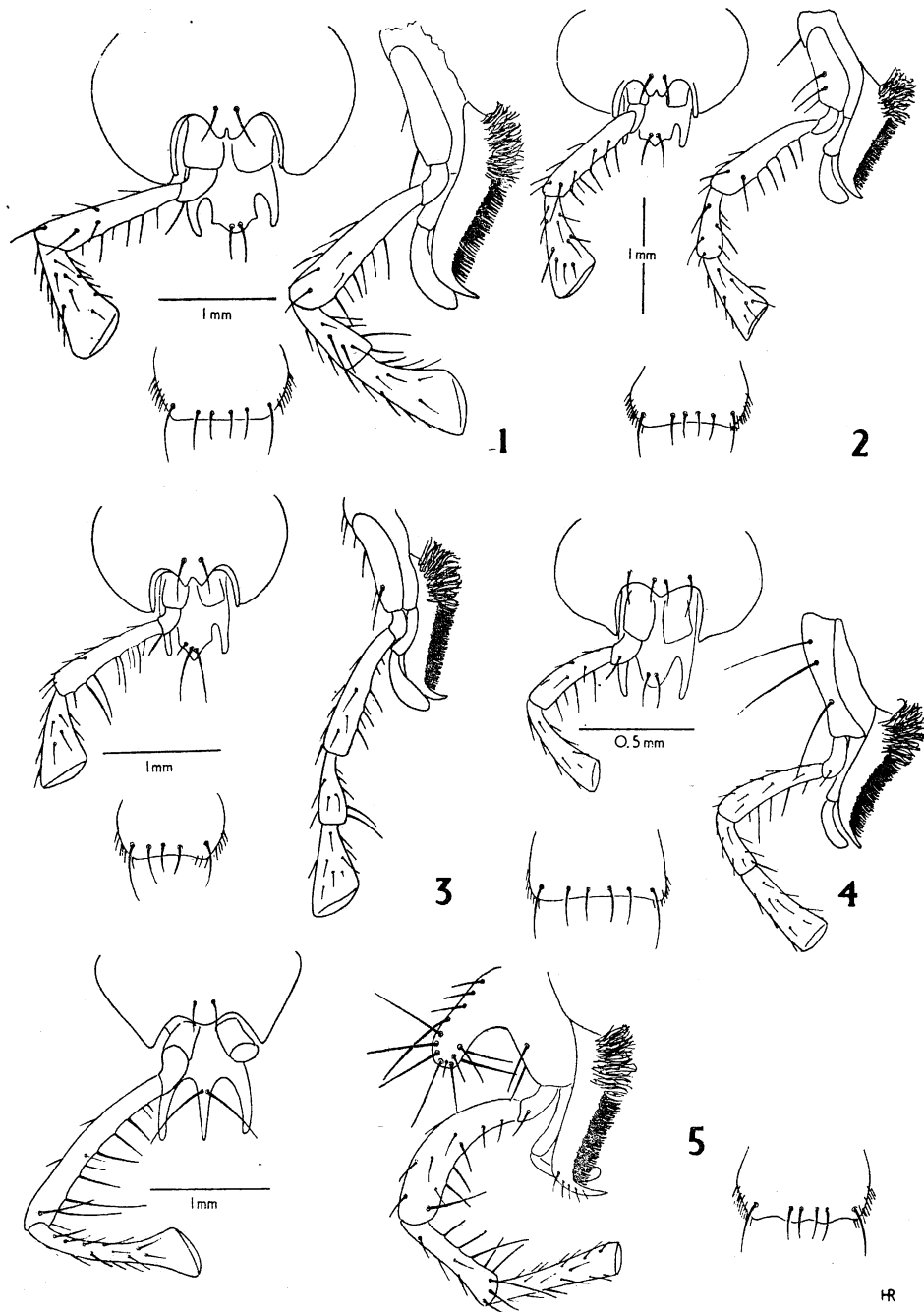
Elytra carinate; carinae rarely reduced, but always visible as vestiges; carinae interstices usually, but not always, with two rows of rufous hairs (occasionally with 4), one in each carinae-carinulae interstice; head, when with red spots, always with two between the eyes; (Neotropical, Ethiopian and Oriental Regions) *Galerita* Fabricius (p. 43)

Ancystroglossus Chaudoir, 1863

Ancystroglossus Chaudoir, 1863:307-308 (1862) (type-species, by original designation, *Ancystroglossus strangulatus* Chaudoir, 1863); Bates, 1883:167 (*Ancistroglossus*, sic).

DESCRIPTION

Small sized species (around 10 mm long), uniformly brown (except *dimidiaticornis*). Mouthparts sometimes with labium ending in an inwardly turned hook. Antennae with relatively large, pubescent scape, with a single long seta on external side, near apex; scape shorter than segments 2 - 3 together; usually uniformly brown, however, in *strangulatus* and *dimidiaticornis* with the four basal segments dark, apical segments white or cream colored. Head — with large, very prominent



Mouthparts of: fig. 1, *Galerita africana* Dejean (Senegal, MCZ); fig. 2, *G. americana* (Linnaeus) (Trinidad, MCZ); fig. 3, *Progaleritina janus* (Fabricius) (Abilene, Ks, MCZ); fig. 4, *Ancystroglossus strangulatus* Chaudoir (Nova Teutônia, Brazil, MCZ); fig. 5, *Trichognathus marginipennis* Latreille (Nova Teutônia, Brazil, MCZ).

eyes; two supra-orbital setae; usually swollen (globose) in posterior half between eyes; narrowed posteriorly; occiput very short (shorter than half the diameter of one eye). Pronotum — wider than long, widest in anterior third; constricted posteriorly; disc convex, flattened near borders (mainly the lateral ones), these usually turned upwards; surface usually very finely transversely rugose (punctate *inpunctatus* and *deplanatus*), covered with yellow hairs; two pairs of marginal setae, one at the widest point, the second at basal angles. Elytra — of normal shape, parallel sided (somewhat ovate in *ovalipennis* and *deplanatus*); surface either carinate (in *strangulatus* and *dimidiaticornis*), or non-carinate (in the remaining species), with slight indication of convex interstices in the latter; surface with very fine, more or less transverse granulation; covered with dense, yellow pubescence; margins flattened, with 6 - 8 long setae, 3 - 4 in humeral space, 3 - 4 in apical space, and others along the lateral margin; apex truncate, outer angle rounded as well as sutural angle; posterior margin membranous; all species fully winged.

MALE GENITALIA

The aedeagus was studied in only one species, *strangulatus*, of which enough material was available to allow dissection (fig. 7). The right paramere is well developed, as in *Galerita* and the other genera; the left one is reduced, but still easily recognizable, and somewhat better developed than in the other genera.

SEXUAL DIMORPHISM

In the males, segments 1 - 3 of the anterior tarsi are very slightly dilated and asymmetric (fig. 11), not, however, as clearly asymmetric as in the other genera; these dilated segments are biserially squamulose beneath.

DISTRIBUTION OF THE GENUS

Ancystroglossus is Neotropical, occurring all over tropical and subtropical South America, and in Central America from Panama to Mexico (Sinaloa). As to presently known material, all species but *dimidiaticornis*, have a very restricted area of distribution. It is, however, very likely, that this is due to lack of material in the collections which have been studied.

RELATIONSHIPS OF *Ancystroglossus*

Chaudoir described the genus among the "Polystichides" (which presently are included in the Zuphiini). Csiki (1932:1560) lists the genus among the Dryptini. Although it is quite distinct from the other genera included in the Galeritini, it seems that *Ancystroglossus* must be considered, for the time being, a relative of *Galerita* and related genera, since the more important characters point to that group.

Ancystroglossus seems to be closest to the Indo-Australian and Ethiopian genus *Planetes* MacLeay. If a subdivision of the tribe, as proposed by Basilewsky (1963:7, 8) should be followed, *Ancystroglossus* would have to be included in Basilewsky's tribe Planetini. As noted above, this subdivision is not followed here, being considered superfluous.

NOTES

The main character on which Chaudoir based *Ancystroglossus* is the labial hook, which is present only in some of the included species, and which is, oddly enough, absent in the type of the genus, *strangulatus* (and also in *dimidiaticornis*). Besides differing from the other species by the lack of this labial hook, these two species seem to form a rather well defined group within the genus, characterized also by the white or cream-colored apical antennal segments, and especially the carinate elytra. The other four species are characterized by the presence of the labial hook, the uniformly brown antennae and the non-carinate elytra. The possible splitting of *Ancystroglossus* into two groups seems to be clearcut, at least as far as the known species are concerned. For the time being, however, it would be unwise to split the genus, even though more material may in the future necessitate this procedure.

KEY TO SPECIES OF *ANCYSTROGLOSSUS*

1. Elytra carinate (7 carinae on each elytron); antennal segments 5 - 11 white (or cream), basal segments black or brown; labial hook not present 2
 - Elytra non-carinate; antennae uniformly brown; labial hook well developed 3
- 2 (1). Completely brown species; length 8,8 - 9,6 mm (Southern Brazil and Paraguay) *strangulatus* Chaudoir (p. 15)
 - Head and pronotum black, elytra blue, femora *yellow* with black apices; length 9,6 mm (Amazonian Basin, Panama and Costa Rica) *dimidiaticornis* Chaudoir (p. 17)
- 3 (1). Base of elytra projected anteriorly, angulate 4
 - Base of elytra regularly curved, not angulate 5
- 4 (3). Elytra more or less parallel sided; pronotum wider than head; length 9,8 mm (Mexico and British Honduras)
 - *gracilis* Chaudoir (p. 18)
 - Elytra ovate; pronotum as wide as head; length 6,8 mm (Southern Brazil) *deplanatus*, sp. n. (p. 18)

- 5 (3). Pronotum very much narrowed posteriorly, with very divergent basal angles, punctate; elytra more slender, parallel; length 7,8 - 9,55 mm (Southern Brasil). *punctatus*, sp. n. (p. 19)

Pronotum only slightly narrowed posteriorly, sides more or less parallel behind the constriction; rugose; elytra wider, more or less ovate; length 9,8 mm (Mexico).....
 *ovalipennis*, sp. n. (p. 19).

***Ancystroglossus strangulatus* Chaudoir, 1863**

(Figs. 4, 6, 7)

Ancystroglossus strangulatus Chaudoir, 1863:309 (1862) (holotype ♀, Cayenne, French Guiana, MNHN; examined).

DESCRIPTION

Dark brown, mouthparts, 4 basal antennal segments, tibiae and tarsi lighter brown; antennal segments 5 - 11 white. Head — wider than long (1,2), shiny, with very sparse punctures, mainly in the posterior part; this very globose; front with two longitudinal depressions, parallel anteriorly, diverging towards the eyes. Pronotum — wider than head (1,33), with transversely rugose surface, covered with yellowish hairs; wider than long (1,23); widest in anterior third, angulate at this point; narrowed posteriorly and anteriorly; margins parallel behind posterior constriction; posterior angles square; sides of pronotum deplanate, turned upwards. Elytra — 1,7 times as wide as pronotum, 1,51 times as long as wide; with 7 well developed carinae (8th carina indicated in posterior half), interstices very finely granulate, transversely rugose; covered with dense interstitial pubescence; lateral borders flattened, slightly turned upwards; apex truncate. Measurements — length, 8,8 - 9,6 mm; width, 3,4 - 3,7 mm. Genitalia — figure 7.

SPECIMENS EXAMINED (5)

PARAGUAY. Vicinity of Horqueta (3 exx., BM).

BRAZIL. *Santa Catarina*: Nova Teutônia (2 exx.*, MCZ, BM).

NOTES

The type specimen is labeled "Cayenne", which is well outside the range above. The specimens studied here and referred to this species, have been compared to the type, and agree with it. Mislabeling of the type is not impossible, however, it may be that the species occurs all over South America, from Paraguay to Guiana. More material will eventually solve this problem.

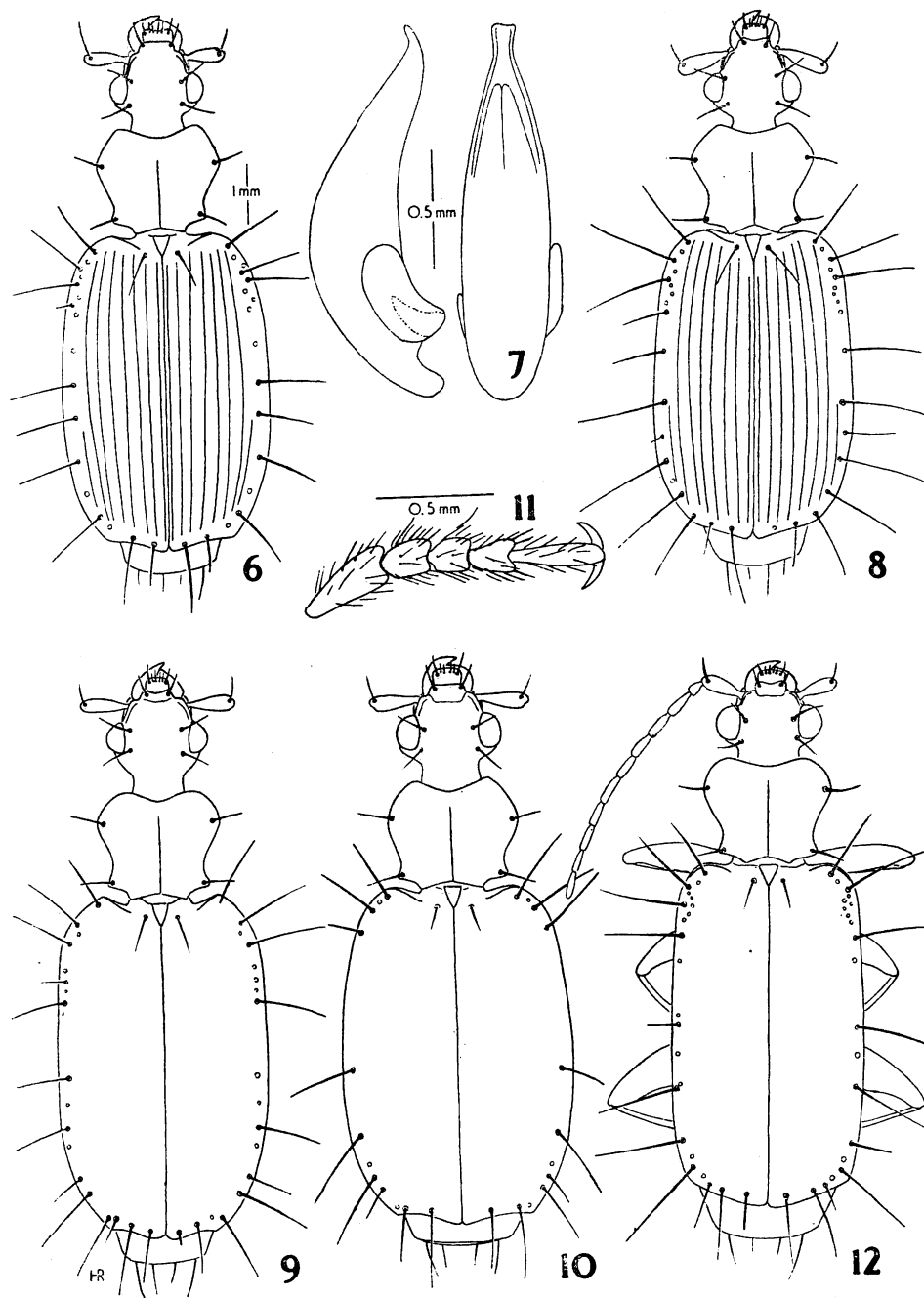


Fig. 6, *Ancystroglossus strangulatus* Chaudoir (♂ from Nova Teutônia, Brazil, MCZ);
 fig. 7, aedeagus of same specimen; fig. 8, *A. dimidiaticornis* Chaudoir (Avispas,
 Peru, MCZ); fig. 9, *A. gracilis* Chaudoir (Belize, British Honduras, MCZ); fig. 10,
A. ovalivennis, sp. n. (holotype ♂, USNM); fig. 11, front tarsus of same specimen;
 fig. 12, *A. punctatus*, sp. n. (holotype, CDZ).

A. strangulatus is the type-species of its genus; it is very similar to *dimidiaticornis*, but readily distinguished by its completely different color. From the other species of the genus, it differs mainly in having the carinate elytra.

***Ancystroglossus dimidiaticornis* Chaudoir, 1863**

(Fig. 8)

Ancystroglossus dimidiaticornis Chaudoir, 1863:310 (1862) (holotype ♂, Ega, Brazil, MNHN; examined); Bates, 1883:167, pl. 7, fig. 1 (*Ancystroglossus, sic*; Bugaba, Panama); Liebke, 1929:297 (*Ancystroglossus, sic*; Costa Rica).

DESCRIPTION

Head, prothorax, mouthparts, 4 basal antennal segments and inferior side, black; elytra bluish-greenish, metallic; legs black, except for trochantères and femora, which are yellow; apical antennal segments white or cream. Head — wider than long (1,07), almost impunctate, frontal depressions more pronounced than in *strangulatus*, parallel in all their extension. Pronotum — as in *strangulatus*, wider than head (1,16), wider than long (1,4); with margins divergent behind the posterior constriction. Elytra — 1,57 times as wide as pronotum, 1,63 times as long as wide; as in preceding species, with 8th carina less evident. Measurements — length, 9,6 mm; maximum width, 3,3 mm.

SPECIMENS EXAMINED (8)

PERU. *Madre de Dios*: Avispas, 400 m (1 ex., MCZ); *Togache*: Tarapoto (1 ex., MNHN).

BRAZIL. *Amazonas*: Tefé (formerly Ega; 2 exx., BM); no locality (1 ex., BM).

PANAMA. Bugaba (2 exx., MNHN, BM).

COSTA RICA. Reventazon, Hamburgfarm (1 ex., USNM).

NOTES

In Csiki (1932:1560) this species is also cited from Mexico and Honduras. This information can be traced back to Liebke (1929:297), and is almost certainly incorrect. On the basis of present records *dimidiaticornis* seems to occur over the Amazonian Basin in South America, entering Central America as far as Costa Rica.

A. dimidiaticornis is easily distinguished from the other species of the genus, especially from its close relative, *strangulatus*, by its blue elytra.

Ancystroglossus gracilis Chaudoir, 1863

(Fig. 9)

Ancystroglossus gracilis Chaudoir, 1863:308 (1862) (lectotype ♂, Tuxpam, Mexico, MNHN; examined); Bates, 1883:167 (*Ancistroglossus, sic*; Belize, British Honduras).

DESCRIPTION

Pale brown, with lighter appendages. Head — wider than long (1,1), with very globose posterior part, sparsely punctate; anterior part with a shallow, triangular depression (apex pointing posteriorly). Pronotum — wider than head (1,4), wider than long (1,16), transversely rugose, widest in anterior third, not angulate at widest point; sides divergent behind constriction; lateral margins turned upwards. Elytra — 1,76 times as wide as pronotum; 1,51 times as long as wide; very finely and transversely granulate; not carinate, but with very slight indication of convex interstices, especially laterally; with dense pilosity; base of elytra projected anteriorly, angulate. Measurements — length, 9,8 mm; width, 3,7 mm.

SPECIMENS EXAMINED (4)

MEXICO. *Veracruz*: Cordoba (2 exx., BM, MNHN).

BRITISH HONDURAS. Belize (2 exx., BM, MCZ).

NOTES

A. gracilis seems to be restricted to the eastern part of Mexico (known only from Veracruz), reaching into British Honduras.

This species is easily distinguished from *ovalipennis* and *punctatus* by the sharply angulate anterior margin of the elytra; from *deplanatus*, which also has the angulate base of elytra, by the parallel sided elytra.

Ancystroglossus deplanatus, sp. n.

TYPE DATA

Holotype ♀ (?), from Brazil: *São Paulo*, Baruerí, 12.XI.1960, K. Lenko col. (CDZ).

DESCRIPTION

Pale brown, with slightly darker appendages. Head — wider than long (1,2), globose posteriorly, punctate, not depressed anteriorly. Pronotum — only very slightly wider than head (1,01), wider than long (1,3), punctate, widest anteriorly, not angulate at widest point; sides divergent after constriction. Elytra — very ovate and deplanate, espe-

cially on sides, 2,5 times as wide as pronotum, 1,3 times as long as wide; very finely and transversely granulate; non carinate (as in *gracilis*), with dense, short pilosity; base of elytra slightly, but clearly projected anteriorly. Measurements — length, 6,8 mm; width, 3,25 mm.

NOTES

A. deplanatus, a new species found in the collection of the Departamento de Zoologia after the manuscript was completed, is easily recognized by its very ovate elytra. From *ovalipennis*, the only other species with ovate elytra, *deplanatus* is distinguished by its much smaller size and the different head/pronotum proportions.

***Ancystroglossus ovalipennis*, sp. n.**

(Figs. 10, 11)

TYPE DATA

Holotype ♂, from Mexico: *Sinaloa*, Los Mochis, Zwaluwenburg col. (USNM).

DESCRIPTION

Rufous brown, with lighter appendages. Head — wider than long (1,14), punctured, mainly in the globose occiput; frontal depression present, but not well delimited, however, clearly forming a continuous depression. Pronotum — wider than head (1,33), wider than long (1,22); widest in anterior third, not angulate at widest point; not very much narrowed posteriorly; margins more or less parallel after the constriction; surface transversely rugose; marginal border turned upwards. Elytra — 1,81 times as wide as pronotum; 1,47 times as long as wide; with very similar structure as that of *gracilis*, with convexities corresponding to interstices less evident; base not projected anteriorly, as in *gracilis*; sides not parallel, ovate, with widest point near the second third. Measurements — length, 9,8 mm; width, 4,0 mm.

NOTES

A. ovalipennis (the northernmost species of the genus) and *deplanatus* are the only two species with non-carinate elytra which have the elytra ovate. Because of this character the two are easily recognizable.

***Ancystroglossus punctatus*, sp. n.**

(Fig. 12)

TYPE DATA

Holotype ♀, from Brazil: *São Paulo*, Estação Biológica de Boracéia, Salesópolis, 4.I.1962, H. Reichardt col. (CDZ); paratype ♀, from Brazil: *Santa Catarina*, Corupá (formerly Hansa Humboldt), A. Maller col. (MCZ N. 31186).

DESCRIPTION

Rufous brown, with darker and less rufous elytra and lighter appendages. Head — shorter than in any of the other species (1,43), not very globose in posterior part, punctate; frontal depression triangular, as in *gracilis*, but much deeper. Pronotum — wider than head (1,21); wider than long (1,44); widest near anterior margin, very slightly angulate at widest point; much narrowed posteriorly, margins clearly divergent after the constriction; surface sparsely punctate, covered with fine, short, yellow hairs. Elytra — 1,52 times as wide as pronotum, 1,68 times as long as wide; in general as in *gracilis*, except for the anterior margin, which is not projected anteriorly. Measurements — (length x width) — holotype, 9,35 x 3,4 mm; paratype, 7,8 x 2,75 mm.

NOTES

This new species is remarkable for its very short and wide head, and the punctate pronotum. It is easily distinguished from the other species of genus by these features. From *deplanatus*, which also has punctate pronotum, *punctatus* is distinguished by not having the anterior margin of the elytra projected anteriorly, angulate.

Progaleritina Jeannel, 1949

Galerita Fabricius, 1801:214 (type-species, by subsequent designation of Latreille, 1810:426, *Carabus americanus* Linnaeus, 1758; part); Leconte, 1861:20; Horn, 1881:149; Blatchley, 1910:139-140; Casey, 1920:225.

Galeritula Strand, 1926:168 (type-species, *Galerita americana* (Linnaeus, 1758); part); Ball, 1960:91, 163.

Progaleritina Jeannel, 1949:1058 (type-species, by original designation. *Galerita janus* (Fabricius, 1792)); Basilewsky, 1953:225; Basilewsky, 1963:5, 6, 7, 23 (characterization in key).

DESCRIPTION

Medium to large sized species (15,0 - 24,0 mm); most species with reddish head and thorax, and blue (or bluish) elytra. Head — mouthparts (fig. 3) as in *Galerita*; antennae with segments of same proportions as in *Galerita*; scape well developed, slightly shorter than segments 2 and 3 together; head with relatively small eyes which are not very prominent; two supra-orbital setae; occiput variable in length; front with large, triangular red spot, between the eyes (apex of triangle pointing to base of head); surface usually covered with rufous hairs. Pronotum — variable in size and proportions, usually longer than wide, sometimes as long as wide; widest in the middle or slightly more ante-

riorly; narrowed anteriorly and posteriorly, forming a posterior constriction; sides slightly divergent behind this constriction; surface transversely rugose-punctate, with median, longitudinal sulcus; covered with rufous hairs; two pairs of marginal setae, one at widest point, the other at constriction. Elytra — elongate-ovate, with well developed humeri; widest in posterior third; truncate at apex; each elytron with 9 punctate striae plus scutellar stria; interstices more or less flat, with 6-7 irregular rows of rufous hairs; in some species this elytral pubescence is regularly decumbent over all the elytral surface (in *forreri* Bates, *atripes* Leconte, *mexicana* Chaudoir and *janus* Fabricius), in the other species, this pubescence is erect in a triangular area with its base at basal margin of elytra, and its apex reaching almost the two thirds of elytral length (seen from above, this triangular area seems to be glabrous, in contrast to the other area), and decumbent in the remaining area (in *tenebricosa* Klug, *bicoloripes*, n. sp., *bicolor* Drury and *lecontei* Dejean); all species, except *forreri*, fully winged.

MALE GENITALIA

The aedeagus of all eight species of *Progaleritina* has been studied; it does not differ in important characters from that of *Galerita*. It seems, however, that the aedeagus of *Progaleritina* is less diverse in structure, showing good, distinctive, specific characters in only very few cases. In most species more than one specimen has been dissected, especially in *janus* Fabricius, *bicolor* Drury, *lecontei* Dejean and *forreri*

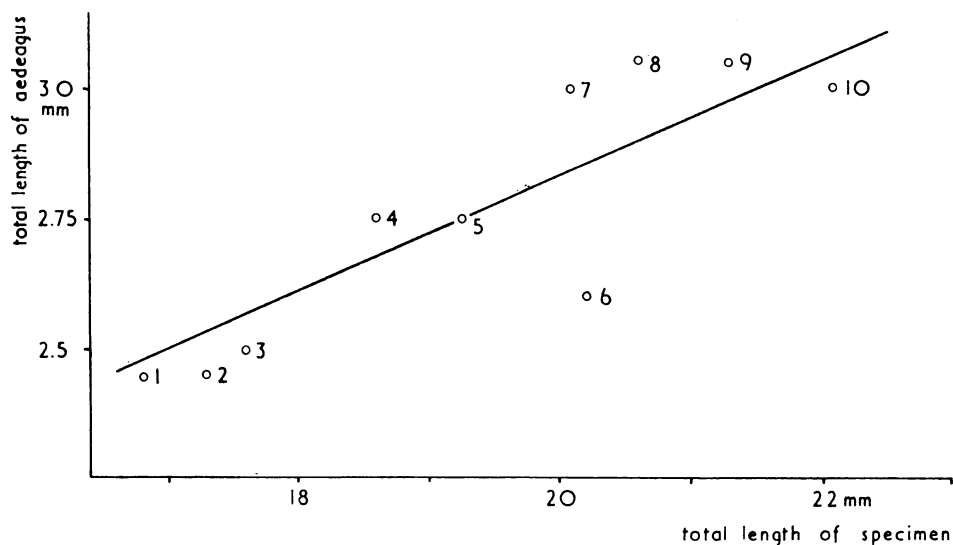


Fig. 13, *Progaleritina janus* (Fabricius): linear regression of total length of aedeagus on total length of specimen. 1. Falls Church, Va.; 2. Arlington, Mass.; 3. Ithaca, N.Y.; 4. Cambridge, Mass.; 5. Berryville, Ark.; 6. Mt. Airy, Pa.; 7. Baldwin, Ala.; 8. Hope, Ark.; 9. Winter Park, Fla.; 10. N.C..

Bates, in which geographic variation is known to occur. In all cases the shape of the aedeagus seems to be constant and its size is directly correlated to the size of the specimen. In cases where clinal variation of size has been observed, as in *janus* Fabricius, there is also a clinal variation of the size of the aedeagus, as shown in fig. 13, which represents the linear regression for length of aedeagus against length of specimen from 10 localities randomly selected (see also Reichardt, 1965:5, fig. 3 — because of an error in the calculation of the scale in figs. 3-8 of my paper on the Asian species of *Galeritula*, the scale for the aedeagus was shown at 1/2 its true measurement).

Although in a general way, as stated above, the aedeagus is not very useful as a morphological character in *Progaleritina*, it has sometimes strengthened the arguments for some relationships, e.g. in *tenebricosa* and *lecontei*, a pair of closely related species which differ mainly in coloration and have practically identical aedeagi. The same is true for the pair of species *janus* and *atripes*.

P. bicoloripes and *mexicana* seem to be related, and have similar aedeagi, as also has *bicolor*. The latter, however, is not at all related to the other two. The aedeagus of these three species is somewhat intermediate between that of *janus* and *lecontei*. *P. forreri*, which seems to be closest to *bicolor*, has aedeagal structure completely unique within the genus.

SEXUAL DIMORPHISM

As in *Galerita*.

DISTRIBUTION OF THE GENUS

The species of *Progaleritina* are mostly North American, occurring all over the United States, east and southwest of the Rocky Mountains, and entering southeastern Canada (in the provinces of Quebec and Ontario, $\pm 50^{\circ}\text{N}$). In Central America the genus is widespread from Mexico to Costa Rica ($\pm 10^{\circ}\text{N}$), some species having a very restricted distribution on the Mexican highlands (e.g. *bicoloripes*), and others (e.g. *mexicana*) ranging from southwestern United States to Costa Rica. Only one species of the genus has reached the West Indies (*tenebricosa*, on the Cayman Is., Cuba and part of Hispaniola), where it is possibly endemic. The distribution of the species in Central America and in the United States clearly indicate that the genus is of Neotropical origin.

RELATIONSHIPS OF *Progaleritina* (see also p. 163)

The genus is very closely related to *Galerita*, being, however, sufficiently distinct to be maintained as a distinct genus, unlike the other genera created by Jeannel. The main difference between the two genera is the elytral structure: in *Galerita* the elytra are carinate (with carinae rarely reduced), while they are clearly punctate-striate in

Progaleritina. In this regard the genus *Progaleritina* is similar to *Trichognathus*, which has the same kind of elytral structure. *Trichognathus* has, however, other characters which readily distinguish it from *Progaleritina* (see also characters mentioned in key to genera, p. 10).

Progaleritina is probably derived from the same original stock which gave origin to *Galerita*, however, it must have been isolated from this parental stock very early, probably before *Galerita* diversified in the presently known African, Asian and American lines of evolution.

KEY TO SPECIES OF *PROGALERITINA*

1. Pronotum black 2
 Pronotum red or orange 3
- 2 (1). Elytral pubescence erect on a triangular region around the scutellum (see p. 21) ; smaller species (15,5 - 18,0 mm) (Hispaniola, Cuba, Cayman Is. and Honduras)
 *tenebricosa* (Klug) (p. 36)
- Elytral pubescence uniformly, obliquely decumbent; larger species (21,5 - 24,0 mm) (Mexico and Arizona; also known with red pronotum) *forreri* (Bates) (p. 37)
- 3 (1). Femora and tibiae unicolor (black or reddish) 4
 Femora reddish (ferrugineous), tibiae black; elytral pubescence erect around scutellum; 17,5 - 19,0 mm (Central Mexico)
 *bicoloripes*, sp. n. (p. 34)
- 4 (3). Legs and antennae black; elytral pubescence uniformly, obliquely decumbent. 5
 Legs and antennae (at least the basal segments) ferrugineous; elytral pubescence uniformly decumbent or erect near scutellum. 7
- 5 (4). Pronotum always longer than wide (1,13) ; more visibly rugose, surface flat, with elevated margins; elytra black; 21,5 - 24,0 mm (Mexico and Arizona) *forreri* (Bates) (p. 37)
 Pronotum always as long as wide; less visibly rugose, more convex, lateral margins not elevated; elytra usually blue; smaller species (less than 21,0 mm) 6
- 6 (5). Head with longer occiput (about as long as the diameter of one eye), somewhat angulate posteriorly; elytra usually with metallic blue sheen; 17,5 - 20,75 mm (Kansas, Missouri, Texas and Arizona) *atripes* (Leconte) (p. 28)
 Head with shorter occiput; eyes more prominent; elytra usually dark blue, almost black; 15,5 - 18,0 mm (United States: Okla-

- homa, Texas, Arizona and New Mexico; Mexico to Costa Rica) *mexicana* (Chaudoir) (p. 29)
- 7 (4). Elytral pubescence uniformly, obliquely decumbent; 15,5 - 23,5 mm (southeastern Canada, United States: east of the Rocky Mts. and northern Mexico) *janus* (Fabricius) (p. 24)
Elytral pubescence erect around scutellum 8
- 8 (7). Head longer than wide, with longer occiput; eyes less prominent; 17,5 - 22,5 mm (eastern and southern United States) *bicolor* (Drury) (p. 41)
Head as long as wide, much less prolonged behind the eyes, these more prominent; 14,9 - 20,0 mm (southern United States: from North Carolina - Florida to California, and northern Mexico) *lecontei* (Dejean) (p. 31)

***Progaleritina janus* (Fabricius, 1792)**

(Figs. 3, 13-15, 18, 152)

- Carabus americanus* Fabricius, 1775 (*nec* Linnaeus, 1758) :242 (type, "America").
- Carabus janus* Fabricius, 1792:136 (type, "Carolina").
- Galerita americana* Fabricius; Dejean, 1825:187 (original specimens, ♂ and ♀, "Amérique septentrionale", MNHN; examined. Listed as synonym of *bicolor* Drury in Catalogues; see also Lindroth, 1955:23).
- Galerita cyanipennis* Dejean, 1831:293 (lectotype ♂, "Amérique boreale", MNHN; examined); Leconte, 1848:185 (proposed synonymy with *janus* Fabricius).
- Galerita borealis* Castelnau, 1840:35 (probably proposed as a new name for *americana* Dejean, 1825:187; not a synonym of *bicolor* Drury as listed in Catalogues and Leconte, 1879:61).
- Galerita cordicollis* Chaudoir, 1843:699 (lectotype ♂, "environs de Nouvelle Orleans", MNHN; examined); Chaudoir, 1861:560 (proposed synonymy with *americana* Dejean).
- Galerita janus*; Leconte, 1879:61 (characterization and key).
- Galerita intermedia* Casey, 1897:350 (*nec* Fairmaire, 1887) (holotype ♂, "Missouri", USNM; examined. Not a synonym of *bicolor* Drury as listed in Catalogues).
- Galerita thoracica* Casey, 1897:350 (*nec* Chevrolat, 1834) (holotype ♂, "Florida", USNM; examined).
- Galerita caseyi* Leng, 1918:203 (new name for *thoracica* Casey). New synonymy.
- Galerita occipitalis* Casey, 1920:228 (holotype ♀, Boston Neck, Rhode Island, USNM; examined). New synonymy.

Galerita caseyi Liebke, 1928:129 (*nec* Leng, 1918) (new name for *intermedia* Casey).

Galerita ahasverus Liebke, 1929:297 (new name for *caseyi* Liebke).

DESCRIPTION

Head black, with large, triangular red spot between the eyes; mouthparts rufous; antennae rufous too, often with segments 2-4 dark brown; legs orange. Head — longer than wide (1,1), eyes small, somewhat inconspicuous; occiput nearly as long as the diameter of one eye; brown; legs orange. Head — longer than wide (1,1), eyes small, somewhat inconspicuous; occiput nearly as long as the diameter of one eye; somewhat angulate behind the eyes; surface densely punctate-rugose,

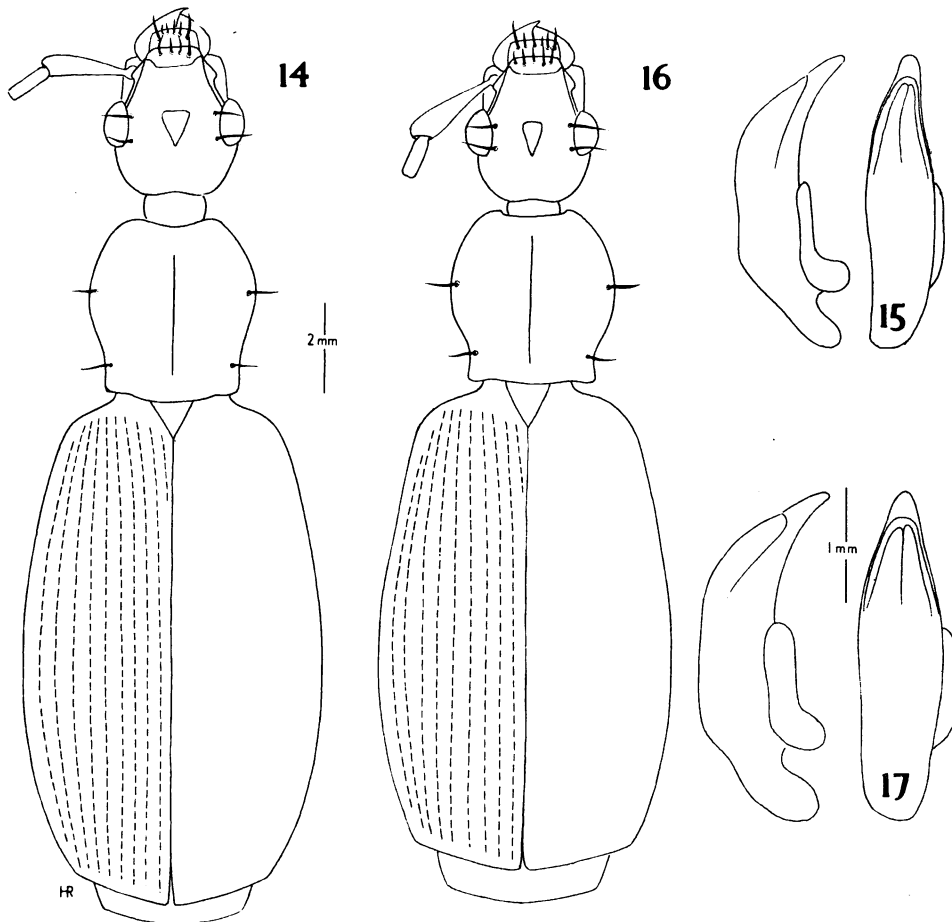


Fig. 14, *Progaleritina janus* (Fabricius), ♂ from Milton, Mass. (MCZ); fig. 15, aedeagus of same species from Ithaca, N.Y. (UA); fig. 16, *P. atripes* (Leconte), ♂ from Snow, Ks. (MCZ); fig. 17, aedeagus of same species from "Kansas" (MCZ).

covered with rufous hairs. Pronotum — much wider than head (1,24), slightly longer than wide (1,01); widest in front of the middle, not much narrowed anteriorly and posteriorly; sides very shortly divergent behind the constriction; posterior angles very rounded; surface convex, densely and transversely punctate-rugose; covered with yellow hairs. Elytra — almost twice as long as wide (1,91); 1,7 times as long as wide; covered with dense, uniformly decumbent, rufous, pilosity. Wings — fully developed. Measurements — length, 15,8 - 23,4 mm; width, 5,5 - 8,1 mm. Genitalia — figure 15.

SPECIMENS EXAMINED (671)

Extensive material of *P. janus* was available for the present study. It seems unnecessary to give detailed localities of this species. It is known from: Canada (provinces of Quebec and Ontario), United States (states of New Hampshire, Vermont, Massachusetts, Rhode Island, New York, New Jersey, Pennsylvania, Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Nebraska, Colorado (?), Kansas, Missouri, Kentucky, West Virginia, Maryland, Washington D.C., North Carolina, South Carolina, Georgia, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Texas, Arizona and Florida) and Mexico (one record from Catarinas, 1740 m, in Chihuahua, AMNH).

GEOGRAPHIC DISTRIBUTION (fig. 18)

P. janus occurs sympatrically with *bicolor* throughout the range of the latter, and extends further northwards, reaching the Canadian provinces of Quebec and Ontario; it also extends more into the west, reaching Arizona and Chihuahua (the latter in Mexico) in the southwestern corner of the range. I have also seen two specimens from Colorado (Rock Creek Canyon, CNC), however, the occurrence of the species in that state needs confirmation.

GEOGRAPHIC VARIATION (see also p. 152)

P. janus (as well as *bicolor* and *lecontei*) shows a distinct latitudinal correlated clinal variation in size: specimens from higher latitudes are, in average, much smaller than those from lower latitudes. Intermediate specimens are present in a distinct cline. This kind of geographical variation is discussed in more detail elsewhere.

As in *bicolor*, some of the intermediate or extreme forms, previously known only from isolated localities and from few specimens, have been described as varieties, subspecies or even as different species. Study of specimens from as many localities as possible, from the whole range, shows that there is extreme variation involved, mainly in size, but also in other characters. A few of these other characters, which have been used to define different forms are as variable as in the size (e.g. the shape of pronotum and color of elytra); however, the variation is random.

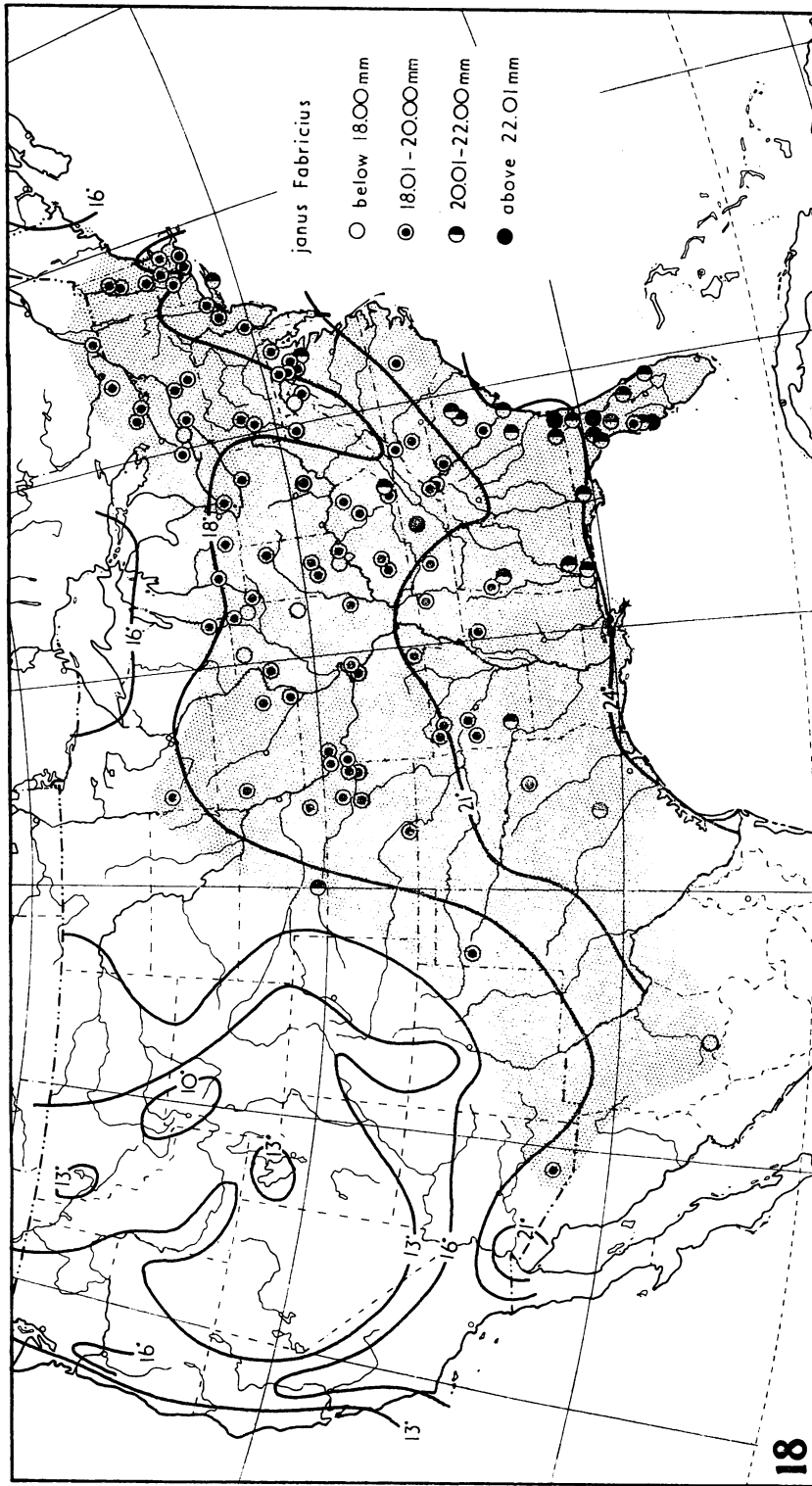


Fig. 18, Geographic distribution of *Progaletitina janus* (Fabricius), overlaid on average July wet-bulb temperatures (degrees centigrade) (adapted from the Yearbook of Agriculture, 1941).

For this reason I am considering all the different forms, which have been described in the past, especially those of Casey, as synonyms of this incredibly variable species.

NOTES

P. janus is very closely related to the sympatric *atripes*, but is easily distinguished by the differently colored appendages. The aedeagus of the two forms is very similar, indeed almost indistinguishable. More material, and especially field observations, may show that *atripes* is nothing more than a color form of *janus*.

Progaleritina atripes (Leconte, 1858)

(Figs. 16, 17, 33)

Galerita atripes Leconte, 1858:59 (lectotype ♂, Fort Riley, Kansas, MCZ n. 5793; examined).

Galerita decipiens Horn, 1885:131 (lectotype ♀, "Arizona", ANSP n.2893; examined. Not a synonym of *mexicana* Bates, as listed in Catalogues).

DESCRIPTION

Color as in *janus* (elytra never greenish), appendages black; antennae brown from 5th segment on. Head — longer than wide (1,1), with small and somewhat inconspicuous eyes; occiput as long as the diameter of one eye; occiput somewhat angulate behind the eyes (as in *janus*); surface densely punctate; covered with rufous pilosity. Pronotum — wider than head (1,27), as long as wide; shape very similar to that of *janus*; surface very slightly convex, transversely punctate-rugose; covered with rufous hairs. Elytra — 1,86 times as wide as pronotum; 1,67 times as long as wide; surface covered with regularly decumbent, rufous pubescence. Wings fully developed. Measurements — length, 17,9 - 20,6 mm, width, 5,8 - 7,3 mm. Genitalia — figure 17.

SPECIMENS EXAMINED (49)

UNITED STATES. *Missouri*: St. Louis Co. (3 ♂, 1 ♀, UA); Blue Springs (2 ♂, USNM); Manchester (1 ♀, USNM); Columbia (1 ♀, USNM); St. Joseph (3 ♂, 1 ♀, USNM); *Kansas*: Topeka (2 ♂, 1 ♀, UV, MCZ); Snow (1 ♂, 1 ♀, MCZ); Argentine (3 ♂, MCZ); Clay Co. (1 ♂, 1 ♀, ANSP); Independence (2 ♂, 1 ♀, ANSP); no locality (6 ♂*, 6 ♀, MCZ, ANSP); *Texas*: Dallas (1 ♂, USNM); New Braunfels (1 ♀, USNM); Austin (1 ♂, MCZ); San Jeronimo (1 ♀, ANSP); *Arizona*: Garden Canyon, Huachuca Mts. (1 ♀, MCZ); Ramsey Canyon, Huachuca Mts. (1 ♂, USNM); SW Research Station, near Portal (1 ♂, CUA); Canelo (1 ♀, FW); Bear Canyon, Catalina Mts. (1 ♀, FW); Chiric. Mts. (1 ♀, MCZ); Madera Canyon, Santa Rita Mts., Santa Cruz Co. (1 ♀, CU); no locality (1 ♀, ANSP).

GEOGRAPHIC DISTRIBUTION (fig. 33)

P. atripes is restricted to the United States, ranging from southeastern Arizona through Texas to eastern Kansas and western Missouri. The distribution of *atripes* widely overlaps with that of *janus*.

NOTES

In spite of the fact that *atripes* and *mexicana* have often been considered synonyms, the two species are quite distinct. Closer relations exist between *atripes* and *janus* than between the former and *mexicana*. The differences between *atripes* and *janus* are only very few, mainly the completely different color of the appendages (ferruginous in *janus*, completely black in *atripes*).

No geographic variation has been observed in this species, however. Only relatively few specimens, from very scattered localities were available for this study.

***Progaleritina mexicana* (Chaudoir, 1872)**

(Figs. 19, 20, 28)

Galerita mexicana Chaudoir, 1872:103 (lectotype ♀, "Mexico", MNHN; examined); Bates, 1883:165 (erroneously synonymized with *atripes* Leconte).

Galerita melanopus Casey, 1920:232 (holotype ♂, Amarillo, Texas, USNM; examined). New synonymy.

DESCRIPTION

Color as in *atripes*, including that of the appendages; elytra less brightly blue. Head — slightly longer than wide (1,03), with small, prominent eyes; occiput shorter than the diameter of one eye; surface densely punctate, covered with dense, rufous pubescence. Pronotum — wider than head (1,13), slightly longer than wide (1,03); posterior constriction well developed, sides slightly divergent behind constriction; surface slightly convex, finely, transversely rugose; covered with rufous pubescence. Elytra — twice as wide as pronotum (2,03), 1,72 times as long as wide; surface covered with dense, uniformly decumbent pilosity. Wings — fully developed. Measurements — length, 15,5 - 18,0 mm; width, 5,5 - 6,3 mm. Genitalia — figure 20.

SPECIMENS EXAMINED (217)

UNITED STATES, *Kansas*: no locality (1 ♀, MCZ); *Oklahoma*: Guthrie (1 ♂, 1 ♀, USNM); *Texas*: San Antonio (2 ♂, 3 ♀, CL, MCZ) Balmorhea, Reeves Co. (2 ♂, CUA, USNM); Dallas (5 ♀, MCZ, UA); Austin (22 ♂, 13 ♀, MCZ, UA); Waco (1 ♂, MCZ); Ft. Davis (1 ♀, MCZ); Brownsville (9 ♂, 4 ♀, MCZ); New Braunfels (1 ♂, 2 ♀, UA); Blackstone Ranch, near Sheffield (1 ♂, UA); near Round Mt., Blanco Co. (1 ♂, 1 ♀, ANSP, UA); near Dryden, Terrel Co. (2 ♂, 1 ♀, UA); near Boerne, Kendall Co. (1 ♂, UA); Sanderson (1 ♀, UA); Lubbock (1 ♀, ANSP); no locality (12 ♂, 5 ♀, ANSP, MCZ); *New Mexico*: Roswell (1 ♀, UA); *Arizona*: Peña Blanca, 1200 m., Sta. Cruz Co. (5 ♂, 1 ♀, UA, CUA); near Nogales, Sta. Cruz Co. (3 ♂, UA); Tucson (3 ♂, FW); Phoenix (1 ♂, FW); Patagonia (1 ♂, FW); Sta. Catalina Mts. (1 ♂, FW).

MEXICO. *Coahuila*: Saltillo, 1500 m (1 ♂, 2 ♀, ANSP, MCZ); *Nuevos Leones*: Monterrey, 520 m (1 ♂, 1 ♀, CNHM); *Tamaulipas*: Ciudad Victoria, 300 m (1 ♂, UA); *Sinaloa*: near Villa Unión (1 ♂,

CNC); Mazatlan River, Mazatlan (2 ♂, 2 ♀, MCZ); *Durango*: Nombre de Dios (1 ♂, UA); *Nayarit*: Tepic, 900 m (2 ♂, 5 ♀, MCZ, FW); *San Luis Potosí*: Tamazunchale, 210 m (1 ♂, 1 ♀, MCZ); *Jalisco*: Huejotitan, 1700 m (10 ♂, 10 ♀, MNHN); Atenquique, 2400 m (1 ♂, MNHN); Tuxpam (1 ♂, MCZ); Chapala (1 ♀, MCZ); near Chapala (1 ♀, USNM); 61 km SW of Guadalajara, 1300 m (4 ♂, 4 ♀, FW); Ajijic, 1500 m (4 ♂, 1 ♀, FW); no locality (2 ♂, MNHN); *Michoacan*: near La Piedad (3 ♂, 6 ♀, UA); near Ciudad Hidalgo, 2000 m (1 ♀, MCZ); near Morelia, 2100 m (1 ♂, UA); near Jiquilpan, 1600 m (1 ♂, FW); *Morelos*: near Cuernavaca (2 ♂, UA); Cuernavaca, 2200 m (4 ♂, 2 ♀, UV, MNHN, BM, ML, MCZ); Yautepec (1 ♂, MNHN); *Guerrero*: Chilpancingo, 1100-1400 m (2 ♀, BM); *Oaxaca*: Tehuantepec (1 ♀, BM); Oaxaca (5 ♂*, 2 ♀, IRSNB, MCZ). Not located: "Pyramids" (1 ♀, MCZ).

GUATEMALA. *Escuintla*: Escuintla, 330 m. (2 ♂, 2 ♀, MNHN); *Izabal*: Los Amates (1 ♂, MCZ).

EL SALVADOR. *Alegria*: Usulután (1 ♂, CN); San Salvador (2 ♂, ML, ZSM).

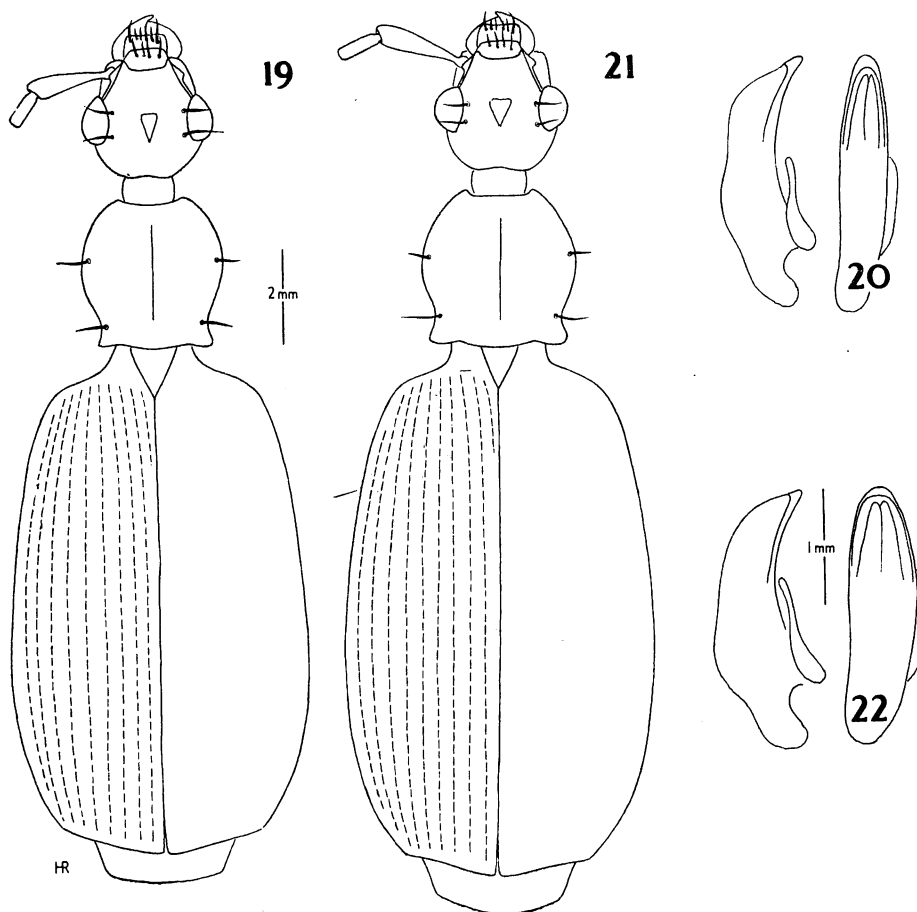


Fig. 19, *Progaleritina mexicana* (Chaudoir), ♀ from Tepic, Mexico (AMNH); fig. 20, aedeagus of same species from Austin, Tex. (UA); fig. 21, *P. lecontei* (Dejean), ♂ from Mobile, Ala. (MCZ); fig. 22, aedeagus of same species from Tuscaloosa, Ala. (UA).

HONDURAS. Copan (1 ♀, MCZ); Zamorano (1 ♂, MCZ).

COSTA RICA. Hamburgfarm, Reventazon (1 ♂, 1 ♀, BM, MCZ); Las Canas (3 ♀, USNM).

GEOGRAPHIC DISTRIBUTION (fig. 28)

P. mexicana occurs in the southwestern United States (Oklahoma, Texas, New Mexico and Arizona) and Central America (reaching as far south as about 10°N in Costa Rica, the southernmost record for any species of the genus).

NOTES

P. mexicana has for a long time been confused with *atripes* (and its synonym, *decipiens*), a completely different species, as discussed above (p. 29). *P. mexicana* is more closely related to *lecontei* (which is partly sympatric with *mexicana*, but is easily distinguished by the pale appendages) and *bicoloripes* (which is also sympatric with *mexicana*, but has bicolored legs).

No differences have been found between specimens of *mexicana* which I had compared with the type, and the type of Casey's *melanopus*. The latter has to be considered a synonym of *mexicana*.

NOTES ON THE TYPES

Four ♂ and three ♀ (cotypes) of *P. mexicana* (Chaudoir) are preserved in Paris. The first ♀ of the series, which seems to be the specimen from Dejean's collection is herewith designated lectotype, the other 4 ♂ and 2 ♀ are paralectotypes.

Progaleritina lecontei (Dejean, 1831)

(Figs. 21-23, 154)

Galerita lecontei Dejean, 1831:294 (lectotype ♂, "États Unis", MNHN; examined); Leconte, 1879:61 (characterization and key).

Galerita californica Mannerheim, 1843:183 (type, "California", ZMH; not seen); Leconte, 1879:61 (proposed synonymy with *lecontei* Dejean).

Galerita infirma Casey, 1897:350 (holotype ♀, Yuma, Arizona, USNM; examined). New synonymy.

Galerita crinicornis Casey, 1920:229 (holotype ♀, near El Paso, Texas, USNM; examined). New synonymy.

Galerita californica subsp. *arizonica* Casey, 1920:231 (holotype ♀, "Arizona", USNM; examined). New synonymy.

DESCRIPTION

Color as in *janus* and *bicolor*; antennae variable, sometimes with dark, irregular marks on scape; segments 2-4 usually dark; tibiae sometimes very slightly darker than femora (never as in *bicoloripes*). Head — as long as wide, with large, prominent eyes; occiput slightly shorter than the diameter of one eye; surface densely punctate, covered with yellow pubescence. Pronotum — wider than head (1,18), as long as wide; more narrowed anteriorly than posteriorly; constriction well developed; sides divergent behind the constriction; surface transversely rugose, covered with rufous hairs. Elytra — twice as wide as pronotum (2,0), 1,68 times as long as wide; surface covered with rufous pubescence, which is erect near the scutellar region. Wings — fully developed. Measurements — length, 15,0 - 20,1 mm; width, 5,1 - 7,3 mm. Genitalia — figure 22.

SPECIMENS EXAMINED (201)

UNITED STATES. *California*: San Diego (6 ♂, 4 ♀, FW, MCZ, IRSNB); La Puerta (1 ♀, MCZ); Colorado Desert (1 ♂, MCZ); Los Angeles (7 ♂, 7 ♀, MCZ, FW, UA); Los Angeles River (2 ♂, 4 ♀, UA); Palm Canyon (1 ♂, MCZ); San Ysidro (1 ♀, MCZ); Escondido (1 ♂, MCZ); Darwin Falls (1 ♀, FW); San Pasqual (2 ♂, 1 ♀, FW, UA); Brentwood (1 ♂, CNC); Davis (1 ♂, CNC); Clarksburg (1 ♂, UA); Alberhill, Riverside Co. (1 ♀, UA); Saragoga Springs, Death Valley (1 ♂, UA); no locality (11 ♂, 5 ♀, MCZ, ANSP); *Arizona*: Ganado, Apache Co., 1950 m (1 ♀, AMNH); Globe (2 ♂, FW); Cottonwood (1 ♀, FW); Yuma (3 ♂, ANSP, MCZ); San Pedro River, near Palominas (1 ♀, UA); Palominas (1 ♂, UV); Sabino Canyon (1 ♀, UV); no locality (2 ♂, 3 ♀, MCZ, ANSP); *Texas*: Galveston (1 ♀, IRSNB); Port Arthur, Jefferson Co. (1 ♂, AMNH); Harris Co. (1 ♂, MCZ); no locality (3 ♂, 4 ♀, MCZ, ANSP); *Louisiana*: New Orleans (1 ♀, ML); Harahan (1 ♂, 1 ♀, MCZ); Avery Is. (7 ♂, 5 ♀, ANSP); no locality (3 ♂, 3 ♀, MCZ); *Alabama*: Mobile (9 ♂ *, 9 ♀, MCZ); Creola (2 ♂, 2 ♀, UA); Evergreen (1 ♀, ANSP); Tuscaloosa (2 ♂ *, 3 ♀, UA); *Florida*: Sanford (1 ♀, MCZ); Winter Park (1 ♀, MCZ); Long Pine Key (1 ♀, MCZ); Lamont (3 ♂, 1 ♀, MCZ); Sarasota (1 ♂, 1 ♀, MCZ); Homestead (3 ♂, 7 ♀, MCZ, CNC); Brighton (1 ♂, 1 ♀, MCZ); Broward Co. (1 ♀, FW); Gainesville (1 ♂, CNC); Stone Is. (1 ♂, CNC); Punta Gorda (1 ♀, CNC); Paradise Key (1 ♂, CNC); Matheson Hammock Dade Co. (1 ♀, CNC); Lake Placid, Highlands Co. (9 ♂, 6 ♀, PSU); Miami (1 ♀, ANSP); Oneco, Manatee Co. (2 ♂, 4 ♀, UA); Cleviston. (1 ♂, UA); no locality (2 ♂, MCZ); *Georgia*: Savannah (1 ♂, 1 ♀, CNC, MCZ); *South Carolina*: Camden (1 ♀, MCZ); Florence (1 ♀, UA); no locality (1 ♂, 2 ♀, UV, MCZ); *North Carolina*: Core Point, Pamlico River (2 ♂, 1 ♀, CNC).

MEXICO. *Durango*: Villa Lerdo (1 ♂, 2 ♀; MNHN, BM); *Chihuahua*, Chihuahua (1 ♂, BM). Not located: "Pyramids" (1 ♂, MCZ).

GEOGRAPHIC DISTRIBUTION (fig. 23)

P. lecontei occurs over the southern United States (from California to Florida and North Carolina) and also in northern Mexico.

GEOGRAPHIC VARIATION (see also p. 152)

As in *janus* and *bicolor* there is clinal variation in size of this species, however, the variation goes more or less in the west-east

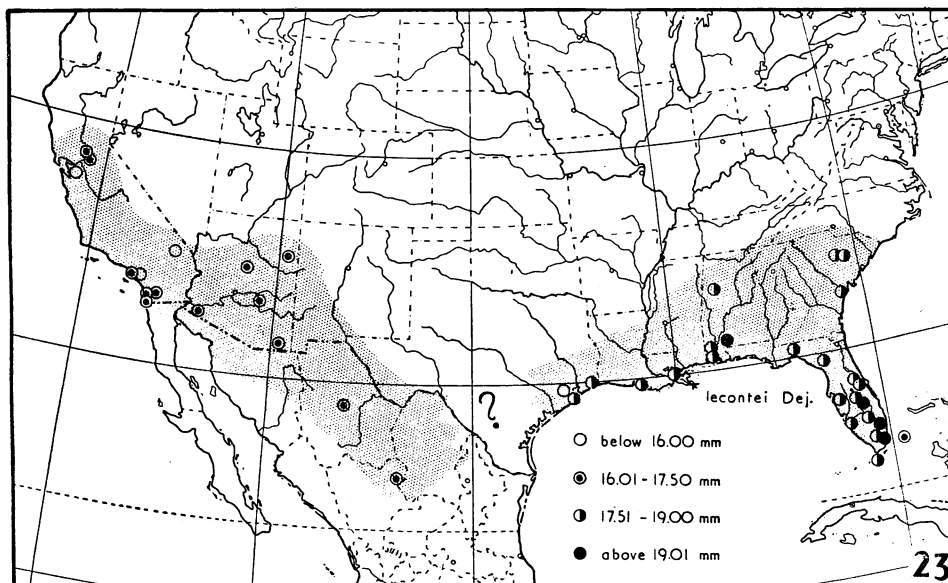


Fig. 23, Geographic distribution of *Progalertina lecontei* (Dejean).

direction, not clearly north-south as in the other two species. The smallest specimens are found in California, Arizona and northern Mexico (described as *californica*, a distinct species, and *arizonica*, a subspecies of the latter), and the largest in Florida. The known distribution of *lecontei* could indicate the existence of two allopatric populations, with a gap in western and southern Texas. More material is needed for real proof that this is the true situation. The break may well be due to poor sampling of the area. There is no clear-cut discontinuity in the size of specimens from these two areas (see fig. 154). Besides being smaller on the average, specimens from the western part of the range usually have the triangular spot between the eyes much larger than that of eastern specimens.

NOTES

P. lecontei is related to *mexicana*, *tenebricosa* and *bicoloripes*. It may be distinguished from *mexicana* and *bicoloripes* by the differently colored appendages; from *tenebricosa* by the differently colored pronotum.

NOTES ON THE TYPES

Six specimens of *P. lecontei* (Dejean) are preserved in Chaudoir's collection. The first specimen of the series, a male, is herewith designated lectotype; the other 5 specimens paralectotypes.

***Progaleritina bicoloripes*, sp. n.**

(Figs. 24-25, 28)

TYPE DATA

Holotype ♂ (*), from Mexico: *Michoacan*, Morelia, 1870 m, 5-6. VIII.1962, H. E. Evans & G. E. Ball col. (MCZ N. 31187); paratype ♀, from *Guanajuato*, Lake Yuriria, near Yuriria, 2150 m, 7. VIII.1962, H. E. Evans & G. E. Ball col. (UA); paratype ♂, from *Jalisco*, near Guadalajara, 1550 m, 1903, Diguët col. (MNHN); paratype ♀, from *Jalisco*, Huejotitan, 1700 m, VI-VII.1903, Diguët col. (MNHN); paratype ♀, from *Nayarit*, Tepic, 900 m, 20-24. VII.1952, F. G. Werner col. (FW).

DESCRIPTION

Color as in *janus*, *bicolor* and *lecontei*, except for antennae, which have the four basal segments black, and tibiae, which are also black. Head — slightly longer than wide, with large, prominent eyes; occiput slightly shorter than the diameter of one eye; surface densely punctured; covered with rufous hairs. Pronotum — wider than head (1,21), slightly wider than long (1,01); posterior constriction well pronounced, sides parallel or very slightly divergent behind the constriction; surface densely, transversely rugose; covered with rufous pilosity. Elytra — almost twice as wide as pronotum (1,96), 1,71 times as long as wide; surface covered with rufous pubescence, erect near scutellum. Wings — fully developed. Measurements — length, 17,6 - 18,8 mm; width, 6,05 - 6,7 mm. Genitalia — figure 25.

GEOGRAPHIC DISTRIBUTION (fig. 28)

P. bicoloripes has been collected only in Central Mexico, at higher altitudes, where it may well be endemic.

NOTES

P. bicoloripes is closely related to *mexicana* (with which it is sympatric and shares the same shape of head, especially the development

of eyes and occiput) and *lecontei* (an allopatric species, also with the same type of head). The three species are probably cognate. *P. bicoloripes* is easily distinguished from both by the bicolored legs, a unique character among the known species of the genus. Relations with the Antillean *tenebricosa* are also very evident. Only very slight genitalic differences are present between the four species; however, in spite of the only very slight differences, they must be considered species because of the lack of biological information.

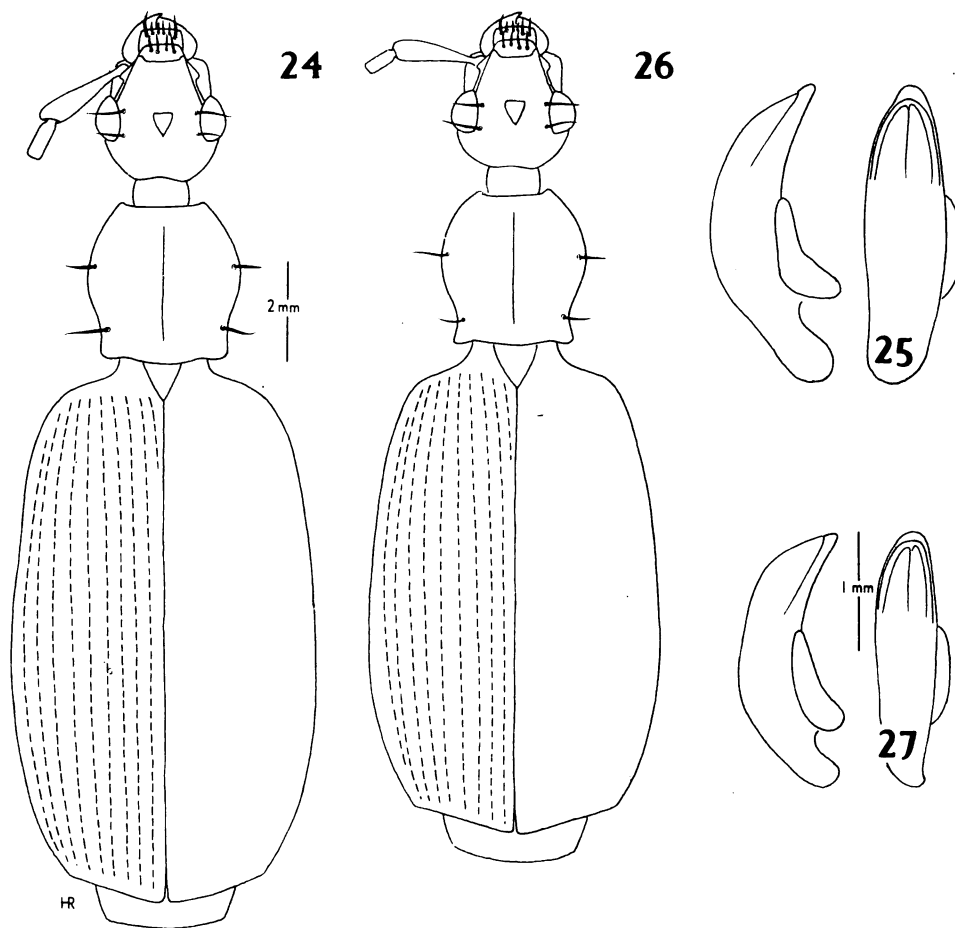


Fig. 24, *Progaleritina bicoloripes*, sp. n., holotype ♂ (MCZ); fig. 25, aedeagus of same specimen; fig. 26, *P. tenebricosa* (Klug), ♂ from Etang Lachaux, Haiti (MCZ); fig. 27, aedeagus of same specimen.

Progaleritina tenebricosa (Klug, 1834)

(Figs. 26-28)

Galerita tenebricosa Klug, 1834:65 (holotype ♂, Port-au-Prince, Haiti, ZMB; not seen).

Galerita vetula Chevrolat, 1863:186 (holotype ♀, "Cuba", UMO; examined); Darlington, 1934:124 (proposed synonymy with *tenebricosa* Klug).

DESCRIPTION

Black species; pronotum usually somewhat rufous-brownish; antennae with 4 basal segments black, others brown. Head — as long as diameter of one eye; surface densely punctured, covered with rufous pubescence. Pronotum — wider than head (1,13), as long as wide; more narrowed anteriorly than posteriorly; constriction well marked; sides divergent behind the constriction; surface finely and densely, transversely rugose; covered with rufous pubescence. Elytra — more than twice as wide as pronotum (2,07), 1,63 times as long as wide; rufous pubescence dense, erect near scutellum. Wings — fully developed. Measurements — length, 15,95 - 17,9 mm; width, 5,5 - 6,2 mm. Genitalia — figure 27.

SPECIMENS EXAMINED (22)

HISPANIOLA. *Dominican Republic*: San Lorenzo (1 ♀, MCZ); San Pedro Macoris (1 ♀, MNHN); *Haiti*: Etang Lachaux, SW Peninsula, under 300 m (1 ♂ *, 6 ♀, MCZ); swamps N of Dessalines (1 ♂, MCZ).

CUBA. Soledad, Cienfuegos (1 ♀, MCZ); Baragua (1 ♂, 1 ♀, MCZ); Central Jaronu (1 ♂, MCZ); C. Ortl. de Zapata, Aguada Las Villas (1 ♂, CN); Hoyo Colorado (1 ♂, CN); La Alianza, La Havana Prov. (1 ♂, ANSP); no locality (1 ♂, IRNSB).

GRAND CAYMAN. Georgetown (3 ♂, CNC, MCZ).

HONDURAS: Brus Lagoon (1 ♀, CAS).

GEOGRAPHIC DISTRIBUTION (fig. 28)

P. tenebricosa is known from Cuba, Hispaniola, Grand Cayman Is. (see also Darlington, 1947:211) and Honduras (the presence of the species on the mainland is somewhat questionable, since only one female is known from Honduras).

NOTES

P. tenebricosa, the only species of the genus which became established in the Antilles, is very similar to *lecontei*, differing mainly in color. The male genitalia of the two species are practically identical. The color difference and the allopatry of these two forms make me

maintain them as distinct species, although *tenebricosa* could well be an insular form of *lecontei*.

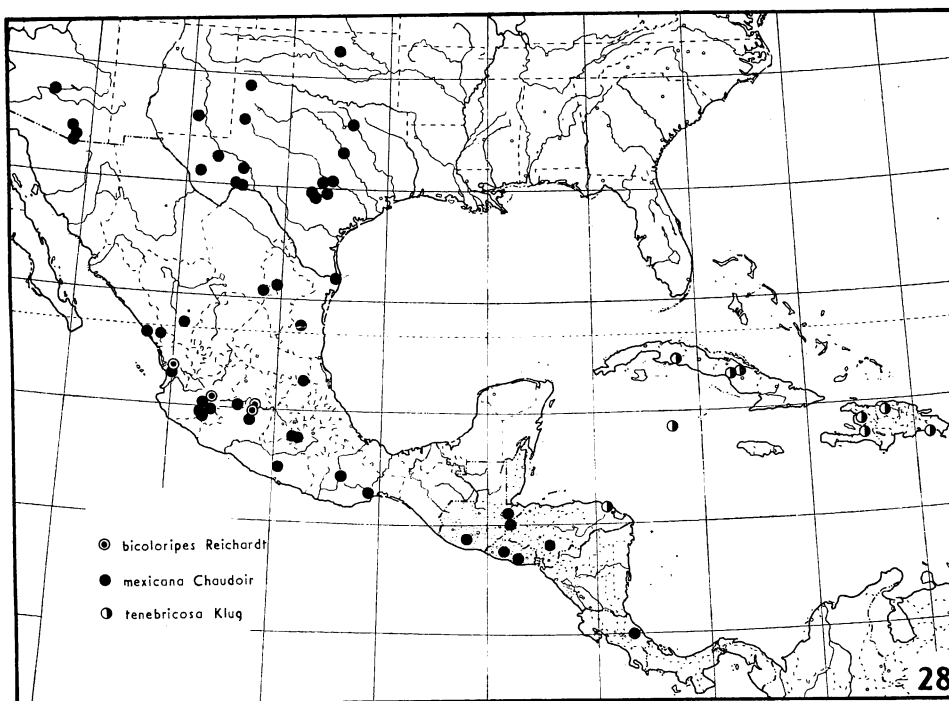


Fig. 28, Geographic distribution of *Progaleritina bicoloripes*, sp. n., *mexicana* (Chaudoir) and *tenebricosa* (Klug).

Progaleritina forreri (Bates, 1883)

(Figs. 29, 30, 33)

Galerita forreri Bates, 1883:165, 166, pl. 7, fig. 2 (lectotype ♀, Presidio, Mexico, BM; examined).

DESCRIPTION:

Black, often with red pronotum; head with red spot between the eyes; antennae of lighter color from 5th segment on. Head — large, longer than wide (1,17), with small, somewhat inconspicuous eyes; occiput long (slightly longer than the diameter of one eye); surface, especially of front, deeply punctate-rugose, covered with rufous hairs. Pronotum — wider than head (1,24), longer than wide (1,15); widest in the middle; narrowed in a regular curve anteriorly and posteriorly; constriction well defined; sides from almost parallel to clearly divergent behind the constriction; surface moderately convex, transversely punctate-rugose; covered with dense, yellow pubescence. Elytra — twice as wide as pronotum (2,01), 1,62 times as long as wide; surface covered

with dense, rufous pilosity, equally decumbent over all surface. Wings — dimorphic Measurements — length, 21,9 - 23,9 mm; width, 7,15 - 8,4 mm. Genitalia — figure 30.

SPECIMENS EXAMINED (55)

MEXICO. *Colima*: Colima, 540 m (1 ♂, 1 ♀, SMF C14017, 1 ♀, USNM); *Nayarit*: Puerta de la Lima (1 ♂, AMNH); near Compostela, 1000 m (8 ♂, 11 ♀, AMNH, MCZ); Tepic, 900 m (1 ♂, USNM); *Sinaloa*: near Arco (1 ♂, AMNH); near Villa Union (2 ♂, 5 ♀, CNC); near Mazatlan (1 ♀, CNC); Mazatlan (1 ♂ *, MCZ); no locality (2 ♂, 2 ♀, USNM); *Durango*: Sierra de Durango (1 ♂, 1 ♀, MNHN). No locality (2 ♀, SMF C14018). Not located: "Rio Mescales" (4 ♀, BM).

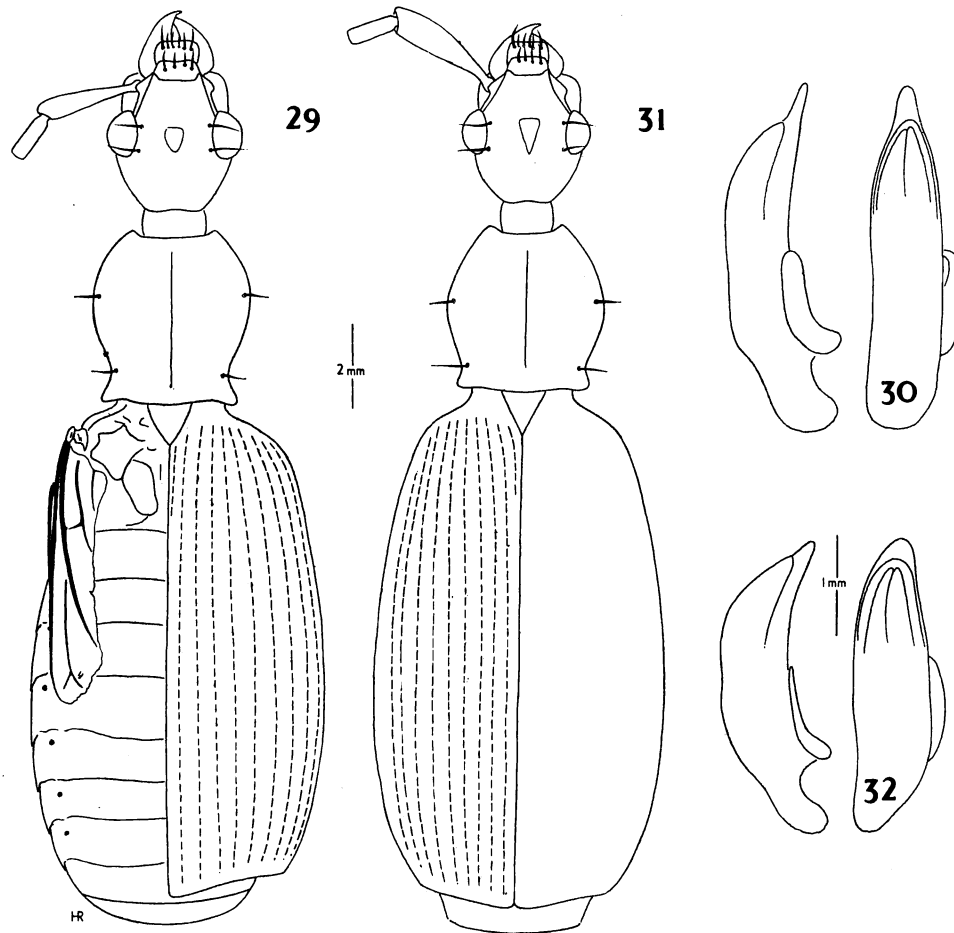


Fig. 29, *Progaleritina forreri* (Bates), ♀ from Compostela, Mexico (MCZ); fig. 30, aedeagus of ♂ from same locality; fig. 31, *P. bicolor* (Drury), ♀ from Smoky Mts., N.C. (MCZ); fig. 32, aedeagus of same species from Tuscalosa, Ala. (UA).

UNITED STATES. *Arizona*: Sycamore Canyon, near Ruby (1 ♂, FW); Madera Canyon, Santa Rita Mts., 1450 m (3 ♂, 3 ♀, CU); *California*: no locality (1 ♂, MNHN).

1 ex., MNHN with label reading "Chili"

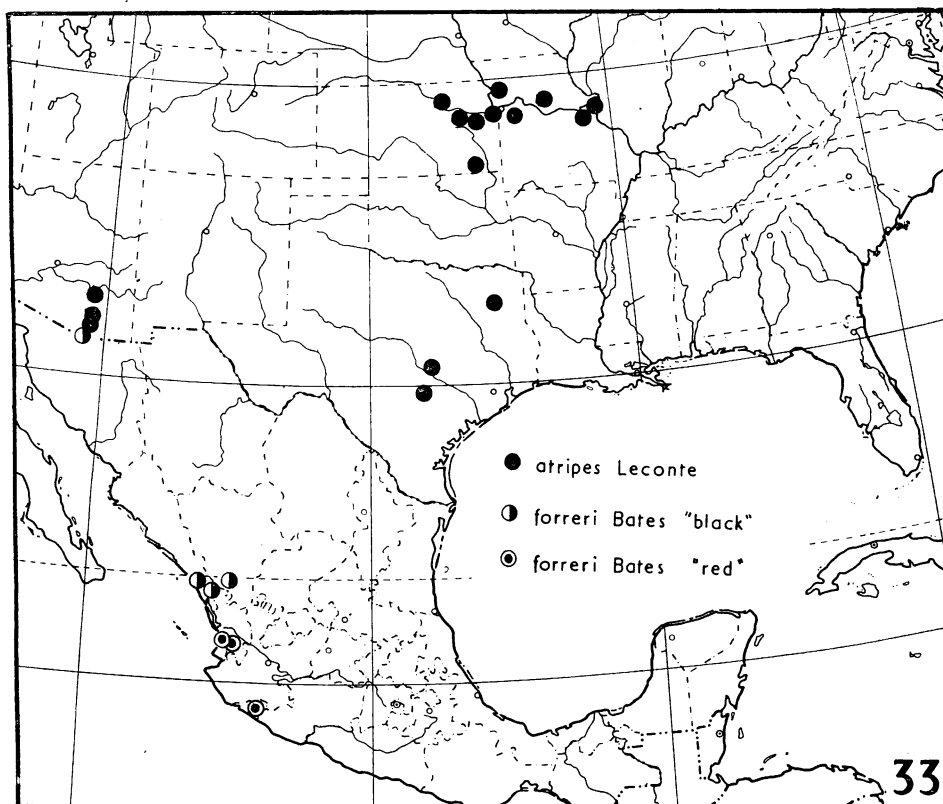


Fig. 33, Geographic distribution of *Progalteritina atripes* (Leconte) and *forreri* (Bates).

GEOGRAPHIC DISTRIBUTION (fig. 33)

P. forreri is known from the western coast of Mexico (Colima, Nayarit, Sinaloa and Durango) and Arizona (two records from near the Mexican border). One specimen in the Paris Museum is labeled "California" and a second specimen, placed with it, is labeled "Chili". The species may indeed occur in California, but more material is necessary to confirm this supposition. The "Chili" citation, if referring to the South American country, is certainly wrong. The locality "Rio Mescales" has not been located. The closest name is the Rio Mexcala (= Rio Balsas), however, the 4 ♀ from the BM are completely black specimens, while they should have red pronotum if really from the Rio Mexcala region.

GEOGRAPHIC VARIATION

Bates based his original description of *forreri* on completely black specimens. The presently described form with red pronotum was

unknown in the literature, even though it is quite common in the collection. Of the material I have studied, 11 ♂ and 15 ♀ have red pronotum, whereas 13 ♂ and 12 ♀ are completely black. It is noteworthy that red and black individuals do not occur in the same population, as a matter of fact, the color character seems to vary geographically: all specimens with red pronotum come from Nayarit and Colima, the two southern states of the range of *forreri*, while specimens from the northern part of the range (Sinaloa and Durango in Mexico, Arizona in the United States) are black. Unfortunately no material from the probable zone of overlap (northern Nayarit) or from the gap between Sinaloa - Durango and Arizona, is presently available. The last mentioned gap is larger than the whole range of the species in Mexico, and if the species really occurs in California, this gap is widened much more (see fig. 33). It seems to me that the material presently available is not representative enough for any further decision about the status of these two color forms, which very possibly are geographical variants of a single species.

WING-DIMORPHISM (see also p. 156)

The hind wings of *P. forreri* are dimorphic. I was able to examine the development of the wings in 51 of the study specimens. Forty-one of these (80,3%) have reduced wings (the wings are reduced to small buds, which reach the limit between the second and third abdominal segments, as shown in fig. 29). Only 10 specimens (19,6%) have normally developed wings. The occurrence of brachypterous (-) and winged (+) individuals seems to be completely random, and is not related to sex. Table I shows the distribution of the wing forms of *forreri*.

TABLE I
The development of wings in *Progaleritina forreri* (Bates)

Locality	wings			
	-		+	
Pronotum red				
Colima, Colima	1 ♂	2 ♀		
Nayarit, P. de la Lima				1 ♂
Compostela	7 ♂	11 ♀		1 ♂
Tepic	1 ♂			
Mexico, no locality		2 ♀		
Pronotum black				
Sinaloa, Arco				1 ♂
Villa Union		3 ♀	2 ♂	2 ♀
Mazatlan			1 ♂	1 ♀
no locality	2 ♂	1 ♀		
Durango, Sierra	1 ♂	1 ♀		
Arizona, Sycamore Canyon	1 ♂			
Madera Canyon	3 ♂	3 ♀		
"California"	1 ♂			
"Chili"	1 ♂			
Total	18 ♂	23 ♀	6 ♂	3 ♀

NOTES

P. forreri, the largest species of the genus, is very similar to *bicolor* and belongs in the vicinity of that species. It is easily distinguished by its black legs and elytra, and by having uniformly decumbent elytral pilosity. Even though closely related, the differences between these two allopatric forms, especially the elytral pubescence (uniformly decumbent in *forreri*, erect around scutellum in *bicolor*) seem to stress their separate specific status.

NOTES ON THE TYPES

One female and one male from Presídio are preserved in the BM: the ♀ is herewith designated lectotype (this was probably the specimen which has been illustrated, since the ♂, now designated paralectotype, has a defective head).

***Progaleritina bicolor* (Drury, 1770)**

(Figs. 31, 32, 34, 153)

- Carabus bicolor* Drury, 1770:94-95, pl. 42, fig. 2 (type ♀ (?), "Virginia"; destroyed); Leconte, 1879:61 (characterization and key).
Galerita longicollis Chaudoir, 1843:700 (lectotype ♂, "Louisiana", MNHN; examined); Chaudoir, 1861:560 (proposed synonymy with *bicolor* Drury).
Galerita dubia Leconte, 1844 (not 1853, as listed in Catalogues): 48 (type ♂, "Georgia", MCZ n. 5794; examined); Leconte, 1879:61 (proposed synonymy with *bicolor* Drury).
Galerita bicolor subsp. *obliqua* Casey, 1897:350 (holotype ♂, Lake Worth, Florida, USNM; examined).
Galerita obliqua; Casey, 1920:230 (in key). New synonymy.
Galerita bicolor subsp. *iowensis* Casey, 1920:230 (holotype ♂, "Iowa", USNM; examined). New synonymy.
Galerita bicolor subsp. *rhombiceps* Casey, 1920:230 (holotype ♀, "Indiana", USNM; examined). New synonymy.

DESCRIPTION

Color as in *janus*, elytra very dark blue, almost black. Head — longer than wide (1,13), with relatively small, somewhat inconspicuous eyes; occiput long (at least as long as the diameter of one eye); surface densely punctured, covered with yellow pubescence. Pronotum — wider than head (1,22), slightly longer than wide (1,08); widest in the middle, more narrowed anteriorly than posteriorly; constriction well developed, sides shortly divergent behind the constriction; surface convex, finely, transversely punctate-rugose; covered with fine, yellow pubescence. Elytra — almost twice as wide as pronotum (1,96), 1,69 times as long as wide; surface covered with rufous pubescence which

is erect around scutellum. Wings — fully developed. Measurements — length, 17,6 - 22,1 mm; 5,9 - 7,4 mm. Genitalia — figure 32.

SPECIMENS EXAMINED (158)

As in *janus* (Fabricius), extensive material of this species was available for the present revision, and it seems unnecessary to give detailed localities. *P. bicolor* is known only from the United States (states of New York, New Jersey, Pennsylvania, Ohio, Illinois, Wisconsin, Iowa, Kansas, Missouri, Kentucky, West Virginia, Virginia, Maryland, Washington D.C., North Carolina, Georgia, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Texas and Florida).

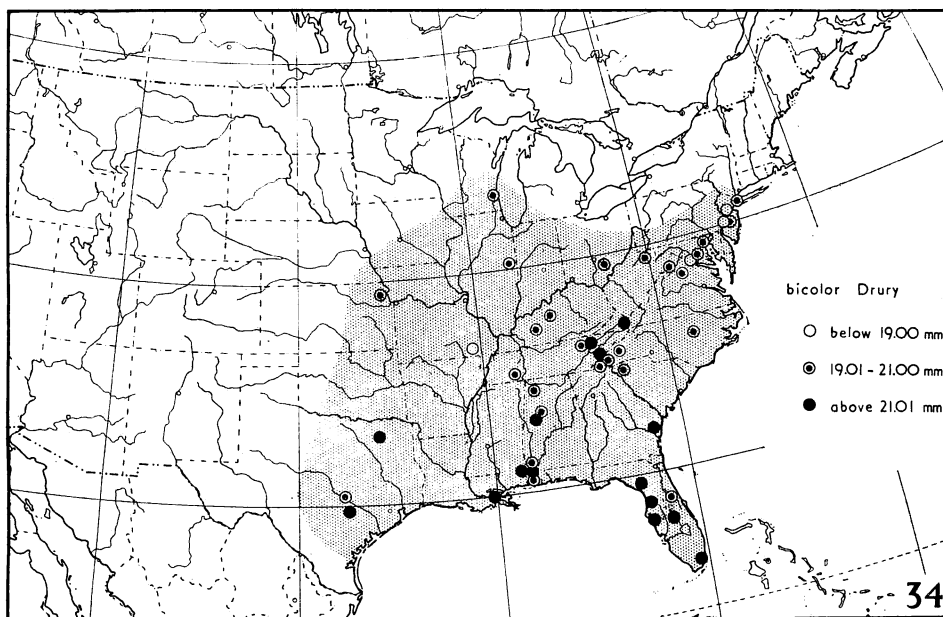


Fig. 34, Geographic distribution of *Progaleritina bicolor* (Drury).

GEOGRAPHIC DISTRIBUTION (fig. 34)

P. bicolor occurs only in the United States, over great part of the central and eastern states. Its western limits are in Iowa, Kansas, Oklahoma and Texas; in the north it does not extend beyond the Great Lakes, and does not occur north of the state of New York.

GEOGRAPHIC VARIATION (see also p. 152)

As in *janus*, there is a clear geographic variation in size from north to south of the range of the species: northern specimens are on the average small in size (typical *bicolor*, described from "Virginia"; *iowensis* from "Iowa" and *rhombiceps* from "Indiana"). On the other hand, specimens from Georgia and Florida are on the average larger

(described as *obliqua*, from Florida). As can be seen from the accompanying map and graph (figs. 34 and 153), the variation is clinal, all intermediates being present.

This continuous variation in size seems to make a division of the species, as proposed by Casey (1920:230), impossible. From the graph (fig. 153), it might seem that some populations, like the Florida - Georgia one, are somewhat isolated, and should be treated as a separate form. However, the gap can probably be easily filled with material from the southeastern part of the United States. It does not seem to me that a taxonomic separation of one or more of these populations would clarify the picture, as a matter of fact, I believe it would obscure matters.

NOTES

As seen above (p. 41), *bicolor* is closely related to *forreri*, being, however, easily distinguished by several characteres, especially the color of the appendages.

Galerita Fabricius, 1801

- Galerita* Fabricius, 1801 :214 (type-species, by subsequent designation of Latreille, 1810:426, *Carabus americanus* Linnaeus, 1758; nec Gouan, 1770:29, 123. *Galerita* Gouan, 1770 is described in the synonymy of *Blennius* Linnaeus, 1758, and therefore a *nomen nudum*. Liebke, 1932:415-420 (revision of part of South American species).
- Diabena* Fairmaire, 1901 :94 (type-species, by monotypy, *Diabena perrieri* Fairmaire, 1901); Jeannel, 1949:1058, 1060; Basilewsky, 1963:7, 24 (revision). New synonymy.
- Galeritula* Strand, 1936:168 (new name for *Galerita* Fabricius, 1801, nec Gouan, 1770); Basilewsky, 1963:5, 6, 7, 23 (genus restricted to Neotropical species); Jedlicka, 1963:474-475 (revision of continental Asian species); Reichardt, 1965:1-16 (revision of Oriental species). New synonymy.
- Galeritina* Jeannel, 1949:1057, 1058 (new name for *Galerita* Fabricius, 1801, nec Gouan, 1770).
- Galeritella* Jeannel, 1949:1058 (type-species, by original designation, *Galerita orientalis* Schmidt-Goebel, 1846, for Oriental and some Ethiopian species); Reichardt, 1965:3 (proposed synonymy with *Galeritula* Strand).
- Galericeps* Jeannel, 1949:1058, 1062 (type-species, by original designation, *Galericeps pheropsophoides* Jeannel, 1949, for Malagasy species); Basilewsky, 1963:63 (proposed synonymy with *Galeritella* Jeannel, 1949).
- Galeritiola* Jeannel, 1949:1058, 1059 (type-species, by original designation, *Galerita africana* Dejean, 1825; for Ethiopian species); Basilewsky, 1963 :7, 27 (revision). New synonymy.

DESCRIPTION

Head — mouthparts: figs. 1 and 2. Antennae relatively long (usually reaching the middle of elytra); scape large, twice as thick at apex as basally; shorter than segments 2-3 together; segment 2 shorter than 3 (slightly longer than half the length of the third segment); third segment longest; segments 4 - 11 subequal in length, slightly decreasing in thickness towards apex; apical segment thinner at apex, rounded; all segments densely pubescent; scape and segments 2 - 4 dark, 5 - 11 rufous. Size of eyes variable; two supra-orbital setae; occiput varying in development from shorter to much longer than the diameter of one eye; constricted posteriorly, forming a distinct neck; surface usually punctate-rugose and pilose. Pronotum, — very variable in size and proportions, always widest before the middle, constricted behind; surface flat or slightly convex, usually transversely punctate-rugose; with median, longitudinal sulcus; two pairs of marginal setae, one at widest point, the second at posterior constriction. Elytra — elongate-ovate, with developed or reduced humeri; widest point behind the middle, truncate at apex; each elytron with 9 strong carinae (this number reduced to only 4 in some forms of the African *Galerita procera* Gerstaecker, 1867, in which, however, intermediate forms with more-or-less reduced, even-numbered carinae are present — see Basilewsky, 1963:50; completely reduced, but still visible as vestiges in the Mexican *sulcipectennis* and the two species from Madagascar originally described in *Diabena*) plus scutellar carina (usually very short, ending in the first fifth of the elytron); carinae interstices usually with two parallel, weaker carinulae (completely absent in such groups as the African "*Galeritiola*" and many Neotropical species, the latter with intermediate forms); when elytra pubescent, pubescence placed in carinae-carinulae interstices, normally in a single row, sometimes in a double row (in *orientalis* and *ruficollis*); when carinulae erased and elytra pubescent, the pubescence is placed in two parallel rows in the carinae interstices, close to carinae; interstices transversely punctate-granulate; carinulae interstices sometimes with a row of deeper punctures. Hind wings varying from fully developed through a few exceptional dimorphic forms to completely reduced.

MALE GENITALIA

The aedeagus of all but 4 species (*hexagonica*, *jelskii*, *esmeraldina* and *simplicicarinata*) has been dissected, studied and illustrated. The aedeagus provided very good specific characters in several species; however, it has not, as a rule, been used to distinguish species in the key (except in the case of *americana*, *brachinoides* and *moritzi*, in which the only constant character to separate one from the other, apparently is the male genitalia). When possible more than one specimen has been dissected, and in all cases the aedeagus proved to have a constant shape. In a few cases the aedeagus was useful in synonymizing species based on externally aberrant specimens of a single species (see e. g. *mustelina*

and *nevermanni*). In a few groups of species the shape of the aedeagus seems to stress the relation between species; in others, each species has a very peculiar, differently shaped aedeagus, giving no clue to the relations.

SEXUAL DIMORPHISM (fig. 147)

Male with four basal segments of anterior tarsus very asymmetrically dilated, with two rows of elongate, sensorial squamulae beneath.

NOTES ON NON-NEOTROPICAL FORMS

In a recent paper (Reichardt, 1965) I have shown that the genus *Galeritella* Jeannel (7 species in the Oriental and 4 in the Ethiopiar Region) cannot be separated from Neotropical *Galerita*. The study of *Galeritiola* Jeannel (a genus with 10 species in Africa and one in Madagascar) and *Diabena* Fairmaire (with two species in Madagascar) indicates that these genera cannot be maintained either.

Galeritiola was established by Jeannel on the basis of characters similar to those used for *Galeritella* (Jeannel, 1949:1058): elytral structure and mouthparts, which are said to show important phylogenetic features. In the case of *Galeritiola* the elytra have "... pas de carenules sur l'emplacement des stries, entre les côtes et interstries; dent labiale entière, saillante et bifide" (Jeannel, 1949:1058). Comparison of the mouthparts of *africana* Dejean, 1825 (fig. 1), type-species of *Galeritiola*, and *americana* (Linnaeus, 1758) (fig. 2; compare also with mouthparts of *orientalis* Schmidt-Goebel, 1846, in Reichardt, 1965, fig. 1), type-species of *Galerita*, shows no important differences. One wonders how it is possible to state that *Galeritiola* has "dent labiale entière, saillante et bifide", while *Galeritina* (= *Galerita*) has "dent labiale double, largement bilobée" (Jeannel, 1949:1058), in a case where the basic structure of the mouthparts is the same! The same was found true for the species of *Galeritella* (Reichardt, 1965:4).

As to the elytral structure, all species included in *Galeritiola* lack carinulae; however, this character is not at all peculiar to the African species, as thought by Jeannel. Several Neotropical species either lack the carinulae completely or these are present in different stages of development (as in *occidentalis*, where some specimens have vestigial carinulae, whereas others, often from the same locality, lack them completely). As is shown below, some species without carinulae are closely related to species which still have them (see e.g. the group of "*brasiliensis*"). If the African species are separated generically from the Neotropical species on account of the absence of carinulae, half the species of the group of "*brasiliensis*" would have to be separated generically too, what seems to be absurd.

As shall be discussed elsewhere (p. 158), the absence of carinulae seems to be related to the reduction of wings.

Jeannel's splitting of *Galerita* (1949:1057) was done because the genus was supposedly a very heterogeneous assemblage of species, in

spite of the external similarities of some. Basilewsky (1953:225) stressed this heterogeneity by saying: "C'est au Dr. Jeannel que revient le mérite d'avoir, le premier, vu clair dans ce groupe et d'avoir isolé les différentes lignées dans des genres bien nets et bien caractérisés". One is therefore much surprised to find Jeannel himself stating "... il a des lignées comme celle des ... *Galerita* chez les Carabiques, où aucun caractère important ne permet de distinguer les espèces vivant des deux côtés de l'Atlantique" (Jeannel, 1961:70), when he needs examples to show the close relationship of the Neotropical and Ethiopian faunas (to support "continental drift Zoogeography").

Basilewsky (1953:225-226) used Jeannel's characters to separate the genera in his key. As is seen above, based on such characters, there are no differences between Neotropical and Ethiopian forms.

Except for the addition of "absence of transparent membrane of elytra" as a distinctive character, Basilewsky repeats the abovementioned characters in his monograph of the African Galeritinae (1963:7, 27-28). I have recently discussed this new character, the transparent apical membrane of the elytra, in regard to the Oriental species (Reichardt, 1965:4). Some African species I have examined (*africana* and *femorialis*) have a very weakly developed membrane, more or less as weak as the one observed in most Neotropical species.

I have tried to find other characters, which might be of generic value, but have failed, and, therefore, the absence of any good character to distinguish the Ethiopian forms from the Oriental or Neotropical forms leads me to consider them to be congeneric.

The genus *Diabena* was described by Fairmaire for a new species from Madagascar, a genus said to be different from *Galerita* only because of having a wider pronotum, elytra with reduced humeri and much stronger legs. Jeannel (1949:1060) has maintained the genus, of which he said: "... très voisin du précédent (*Galeritiola*), présentant les mêmes caractères généraux, mais différent seulement par la grande taille et la forme plus lourde des espèces, et par la persistance des lignes de points sur l'emplacement des stries de l'élytre.". According to Jeannel (1949:1060), who described a second species, the members of *Diabena* are wingless, whereas all species of *Galeritiola* are said to be winged. According to Basilewsky's revision (1963:27-63) and my own observations, of the 11 species included in *Galeritiola*, only 4 are winged. Basilewsky also maintained the two species in *Diabena*, as a distinct genus.

It is true that *Diabena perrieri* Fairmaire, the type-species of Fairmaire's genus (the only species I have been able to study myself), has a very peculiar elytral structure in which carinae and carinulae are almost completely erased and the interstices corresponding to those of the carinulae are more or less sulciform. *G. perrieri*, according to my own observations, is very closely related to *procera* Gerstaecker, from the African mainland: the two species are probably derived from a common ancestor. *G. procera* is brachypterous with very reduced humeri (as *perrieri*). As already mentioned above (p. 45; see also

Basilewsky, 1963:50), *procera* has a form in which only 4 carinae are preserved. It seems very logical to assume that isolation on the island of Madagascar stimulated a complete reduction of the carinae in a species derived from one which already had a reduced number of carinae (this reasoning makes *perrieri* a derived form and not "un type archaïque, conservé dans l'île de Madagascar", Jeannel, 1949:1060). I consider the loss of carinae or even carinulae as a derivative situation, probably related to the loss of wings (see p. 158), and not primitive as claimed by Jeannel.

The elytral structure of *perrieri* is not unique in the genus. Below I shall describe a similar case from Central America, where two species, *azteca* and *sulcipennis* are very closely related, the latter having the elytra with reduced carinae and carinulae, as in *perrieri*. If the two Malagasy species are considered to be generically distinct from other African or American species (which seems to be illogical, since *perrieri* and *procera* are so similar in all other characters and are certainly closely related, and belong, in the same species group), *sulcipennis* would have to be placed in a genus of its own (or even in the same genus as the two Malagasy species), separated from its close relative, *azteca*. It seems to me that such generic concepts fail to utilize the generic category most usefully, which would be to incorporate naturally related species. I therefore propose to consider *Diabena perrieri* and *D. rubripes* congeneric with the African, Asian and American species (see also p. 116).

LIMITS OF *Galerita* AND ITS DISTRIBUTION

Galerita, as understood in this revision, includes all the species which have been described in *Galerita*, the two species of *Diabena*, and excluding the species which have already been separated by Jeannel into the genus *Progaleritina*.

The genus is pantropical, occurring in the Oriental Region (7 species, revised by Reichardt, 1965), the Ethiopian Region (17 species, revised by Basilewsky, 1963), and the Neotropical Region (51 species).

In South America the genus is widespread over the tropical and subtropical parts, reaching as far south as about 37°S (*collaris* Dejean, in Tandil, provincia de Buenos Aires, Argentina). The genus is absent west of the Andes in Chile, it is, however, found west of the Andes northwards. Species of *Galerita* are known from most Antillean islands (there are some endemics in the Greater Antilles, some widespread South American species reach the Lesser Antilles, and some Central American species also reach the Greater Antilles). In Central America the genus occurs from Panama to Mexico, reaching the Mexican-Texan borderline, at about 26°N (*aequinoctialis* Chaudoir, one specimen from Brownsville, Texas).

RELATIONSHIPS OF *Galerita* (see also p. 163)

Galerita is very closely related to *Progaleritina* and I consider it as having evolved from a *Progaleritina*-like ancestor, which may have

been more widespread in the American tropics in the past, but is now restricted to more temperate latitudes.

The relation between the Asian, African and American species of *Galerita* are still obscure. All faunas now have been monographically revised; however, each fauna has been revised independently. I have tried to study the exotic species while studying the Neotropical ones; however, my lack of representatives of many species, especially the African ones, does not allow me to draw any conclusions. It seems to be very evident that the African and Asian species are closer to each other than they are to the American ones: some species groups will possibly include African and Asian species at the same time (the Asian group of "*carinifrons*" (see Reichardt, 1965:12) is very closely related or even identical to the African group which includes *procera* and *perrieri*, which, based on the elytral structure, have been artificially placed in three different genera, as already mentioned above). The American groups, on the other hand, seem to be endemic to the New World, indicating a longer separation from the Old World groups.

As I have done with the Asian species of the genus (Reichardt, 1965:6), I am assigning the American species of *Galerita* to species groups, based on similarities which seem to indicate a phylogenetic relationship. In the future, with new information, the grouping may have to be changed in a few cases, and has to be considered provisional. The groups of species are only assemblages of related forms, and are not to be confused with formal infrageneric categories. The groups are defined mainly by the shape of head (especially important is the relation between the diameter of the eye and the development of the occiput), pronotum and often by special elytral characters. In a few instances the male genitalia helps to characterize groups.

The species treated in this monograph have been placed in 10 species groups, of which only one is monotypic. *G. hexagonica*, of which only the type is known, has not been included in any of the groups, although it might be related to the species of the group of "*orbigny*". *G. hexagonica* Liebke (see p. 146) is not included in the following key to species.

Examination of the holotype ♂ (IZ) of *Galerita tremolerasi* described by Liebke (1939a :476), proved that it is a specimen of *Galerita africana* Dejean, 1825 (New synonymy) with wrong locality label.

KEY TO NEOTROPICAL SPECIES OF *GALERITA*

- | | | |
|----|---|----|
| 1. | Pronotum red or orange | 2 |
| | Pronotum black | 14 |
| 2 | (1). Head and pronotum of the same color | 3 |
| | Head black, pronotum differently colored | 7 |
| 3 | (2). Head and pronotum red or only slightly brownish ventrally;
head and pronotum much longer than wide; carinulae | |

- poorly developed, often completely vestigial; winged species; 17-21 mm (South and Central America)
 *occidentalis* (Olivier) (p. 143)
- Head and pronotum black ventrally; head and pronotum only slightly longer than wide, the latter more cordate than in the preceding species; carinulae present or absent; humeri reduced, brachypterous species 4
- 4 (3). Carinulae always present, not even partly reduced 5
 Carinulae usually absent, if present, vestigial 6
- 5 (4). Carinulae interstices with a row of very fine punctures, these punctures not touching the carinulae; carinulae almost equidistant from next carina; carinae very high; pronotal surface very convex; 23-25 mm (Brazil: Mato Grosso and Goiás; Bolívia) . . *ventricosa* Lucas (p. 140)
 Carinulae interstices with a row of very deep and thick punctures touching the carinulae; carinulae less distant from each other than from next carina; carinae not as high; pronotal surface normally convex; 20,5-23,5 mm (Brazil: Rio Grande do Norte to Minas Gerais and Espírito Santo) *pseudoventricosa*, sp. n. (p. 141)
- 6 (4). Elytral interstices with a row of very deep and large punctures; elytra slender and parallel; 21,5-24,0 mm (Brazil: Mato Grosso) *corumbana* Liebke (p. 139)
 Elytral interstices with a row of very shallow and diffuse, fine punctures; elytra more ovate; 20-23 mm (Brazil: São Paulo, Minas Gerais and Mato Grosso)
 *brasiliensis* Dejean (p. 137)
- 7 (2). Legs black (or dark brown); pronotum red 8
 Legs pale yellow, with or without darkened knees; pronotum orange 11
- 8 (7). Elytra glabrous (except for a very few, irregularly placed hairs, mainly laterally); carinae much stronger than carinulae; head without red spots; 20,0-23,5 mm (Southern Brazil, Argentina and Paraguay)
 *bruchi* Liebke (p. 132)
 Elytra with a row of hairs in carinae-carinulae interstices; carinae and carinulae more or less equally well developed; head with two red spots between the eyes; smaller species 9
- 9 (8). Pronotum much wider than head, more roughly punctured, its punctures separate and more or less distinct; carinae-carinulae interstices with two parallel rows of yellow hairs; 18,5-21,5 mm (Central America, Cuba and Jamaica) *ruficollis* Dejean (p. 61)

- Pronotum only slightly wider or as wide as head; more finely punctured, punctures overlapping, giving a rugose aspect; carinae-carinulae interstices with a single row of yellow hairs; South America 10
- 10 (9). Head shorter, ending abruptly behind the eyes (fig. 37); elytral pilosity denser; 16,5-18,5 mm (Peru and Ecuador) *affinis* Dejean (p. 58)
 Head longer, less abruptly rounded behind the eyes (fig. 39); elytral pilosity less dense and shorter; 16-20 mm (Argentina, Uruguay, Southern Brazil, Paraguay and Bolivia) *collaris* Dejean (p. 56)
- 11 (7). Carinae-carinulae interstices without punctures and hairs, especially on disc; 18-18,5 mm (Argentina: Tucuman and Jujuy; Bolivia) *tucumana* Liebke (p. 70)
 Carinae-carinulae interstices with a row of punctures and hairs; hair-bearing punctures very conspicuous, even when pilosity is missing 12
- 12 (11). Smaller species (16,4-19,0 mm); head clearly wider than long, with very short occiput; pronotum with very rounded angles, posterior constriction not well developed (Paraguay, Atlantic coast of Brazil and northern South America, Central America and Lesser Antilles)
 *americana* Linnaeus (p. 63)
 Larger species (19,4-23,0 mm); head only slightly wider than long, occiput shorter; pronotum with sharp angles well developed posterior constriction 13
- 13 (12). Prosternum often black; apex of aedeagus hooked (fig. 46) (Amazonian Basin and northeastern Brazil)
 *brachinoides* Perty (p. 66)
 Prosternum never black; apex of aedeagus stout, not hooked (fig. 44) (northern Colombia, Venezuela and Guianas) *moritzi* Mannerheim (p. 69)
- 14 (1). Head wider than long, with large and prominent eyes; occiput very short (shorter than the diameter of one eye) 15
 Head as long as or longer than wide, usually with small, somewhat inconspicuous eyes; occiput at least as long as the diameter of one eye 35
- 15 (14). Head with two red spots between the eyes 16
 Head without red spots between the eyes 19
- 16 (15). Legs black 17
 Legs pale yellow, with darkened knees 18
- 17 (16). Antennae completely pale; carinae-carinulae interstices with very few, widely separated punctures and hairs; carinulae interstices unpunctured; carinae sometimes

- slightly reduced on disc; 15,-17,0 mm (Puerto Rico)
 *microcostata* Darlington (p. 72)
- Antennae with four basal segments black; carinae-carinulae
 interstices with a row of very close punctures and
 hairs; carinulae interstices deeper, punctured; carinae
 always well developed on disc; 16,5-19,5 mm (Central
 America) *nigra* Chevrolat (part) (p. 73)
- 18 (16). Carinae-carinulae interstices with a row of very close punctures and hairs; antennae either dark brown or yellow (Central America) .. *nigra* Chevrolat (part) (p. 73)
 Carinae-carinulae interstices with a few and sparse punctures and hairs; antennae variable in color; 16,5-19,5 mm (southern Brazil) *melanarthra* Chaudoir (p. 74)
- 19 (15). Head with one median and two lateral swollen ridges usually well developed 20
 Head with only one median ridge well developed 24
- 20 (19). Carinae much stronger than carinulae, not higher or sharper than normal 21
 Carinae only slightly stronger than carinulae, sometimes high and sharp 22
- 21 (20). Antennae rufous; elytra purplish-blue: 17,5-18,0 mm (Brazil: Goiás) *amethystina*, sp. n. (p. 80)
 Antennae with four basal segments black, others brown; elytra black; 18,5-21,0 mm (Bolívia)
 *boliviana*, sp. n. (p. 79)
- 22 (20). Pronotum longer than wide; carinulae very close, with a distinct row of punctures between them; smaller species: 14-15 mm (Venezuela) ... *nana*, sp. n. (p. 81)
 Pronotum either as wide as or wider than long; carinulae not as close, with weakly indicated row of punctures in between them; larger species 23
- 23 (22). Pronotum as wide as long, transversely rugose; carinae normally developed; elytral pilosity long; elytra black; 16-18 mm (Panama) *isthmica*, sp. n. (p. 78)
 Pronotum wider than long, transversely rugose; carinae high and sharp; elytral pilosity of normal length; elytra black, sometimes slightly bluish; 16-18 mm (Amazonian Basin) *costulata* Liebke (p. 76)
- 24 (19). Front depressed in the middle, deeply punctate-rugose .. 25
 Front not depressed in the middle, usually only shallowly punctured 27
- 25 (24). Brown species with rufous appendages; pilosity of carinae-carinulae interstices very long; 12,5-14,5 mm (southern Brazil, Bolívia, Paraguay and Argentina)
 *gracilis* Brullé (p. 83)

- Black species with black appendages (except for antennal segments 5-11, which are brown); elytral pilosity of normal length 26
- 26 (25). Humeri and wings reduced; 17,0-19,5 mm (Bolívia, Peru and Ecuador) *inca*, sp. n. (p. 86)
Humeri well developed, winged species; 14,0-18,5 mm (Amazonian Basin) *amazonica* Liebke (p. 84)
- 27 (24). Pronotum much wider than head, with well pronounced posterior constriction; sides parallel behind the constriction; Central American species 28
Pronotum only slightly wider than head; constriction usually placed very close to base; mainly South American species 29
- 28 (27). Elytra black, with carinulae; carinulae interstices punctured; 14,5-18,0 mm (Mexico to Panama)
..... *aequinoctialis* Chaudoir (p. 88)
Elytra bluish, without carinulae; interstices not punctured; 14,5-16,5 mm (Mexico) *simplex* Chaudoir (p. 92)
- 29 (28). Elytra of same color as pronotum and head, usually not bluish or greenish (rarely with faint bluish sheen on elytra); carinae and carinulae thin, the latter usually difficult to see 30
Elytra greenish, bluish or purplish; carinae and carinulae thin, well developed 33
- 30 (29). Brown species with rufous legs 15-16 mm (Paraguay; Brazil: Rio Grande do Sul and Mato Grosso)
..... *palustris* Liebke (p. 101)
Darker species, usually blackish; legs always black 31
- 31 (30). Carinae usually much thicker than carinulae; dark brown or completely black species; 15,5-17,5 mm (Argentina, Uruguay, southern Brazil, Paraguay and Bolívia) ...
..... *lacordairei* Dejean (p. 102)
Carinae not much thicker than carinulae; black species (rarely with faint bluish sheen on elytra) 32
- 32 (31). Head, especially vertex, densely punctate-rugose; 15,0-15,25 mm (Ecuador) *esmeraldina*, sp. n. (p. 100)
Head only very shallowly punctured; 16,0-17,5 mm (southern Brazil, Paraguay, Argentina)
..... *costalimai*, sp. n. (p. 99)
- 33 (29). Elytra usually purplish-blue (often very dark), sometimes narrowed at humeri, widened in second third; wings polymorphic; 14-15 mm (Haiti and Costa Rica)
..... *beauvoisi* Chaudoir (p. 92)

- Elytra blue or green, only very rarely with purplish sheen, not narrow at humeri; species always fully winged, mainly South American 34
- 34 (33). Carinae thin and low; carinae-carinulae interstices with a row of dense, yellow pilosity; 14,5-17,5 mm (South and Central America, Lesser Antilles)
 *tristis* Reiche (p. 96)
 Carinae higher than in preceding species, sharper; elytra with few hairs or completely glabrous 35
- 35 (34). Pronotum short, as long as wide, very finely and regularly rugose; very convex; 14,0-16,5 mm (northern South America) *unicolor* Latreille & Dejean (p. 105)
 Pronotum elongate, longer than wide, slightly more roughly rugose, normally convex; 16-18 mm (southern Brazil and Argentina) *coeruleipennis* Chaudoir (p. 107)
- 36 (14). Head with rugose-punctate depressions on front and occiput; two red spots between the eyes; species winged or flightless 37
 Head without clear depression on occiput, and without red spots; flightless species 38
- 37 (36). Carinulae absent; pronotum with large, sparse punctures; humeri slightly reduced (flightless species); elytra abruptly widened behind the humeri; 22 mm (Peru) ..
 *simplicicarinata*, sp. n. (p. 135)
 Carinulae present; pronotum with fine punctures; humeri normally developed (winged species); elytra normally ovate; 19,5-21,5 mm (Argentina, Bolivia and Brazil: Mato Grosso) *orbigny* Brullé (p. 133)
- 38 (36). Head not globose, with small, inconspicuous eyes; pronotum longer than wide, widest anteriorly; larger species. 39
 Head usually globose, with small, somewhat prominent eyes; pronotum usually wider than long; smaller species. 41
- 39 (38). Pronotum with very sparse and irregular punctures; occiput usually with deep and rugose depression; 19,5-22,0 mm (southern Brazil: São Paulo and Rio de Janeiro)
 *carbonaria* Mannerheim (p. 127)
 Pronotum regularly and coarsely punctate-rugose; depression of occiput less deep and less rugose 40
- 40 (39). Head elongate; elytra not much widened posteriorly; 18-21 mm (southern Brazil: São Paulo, Rio de Janeiro and Minas Gerais) *stenodera* Chaudoir (p. 129)
 Head not elongate, somewhat globose posteriorly; elytra much widened posteriorly; 20-22 mm (Panama)
 *championi* Bates (p. 130)

- 41 (38). Globose species, with very ovate elytra 42
 More elongate species, with elytra narrow at base and widened posteriorly 45
- 42 (41). Carinae and carinulae vestigial; elytra punctate-sulcate; pronotum very sparsely and irregularly punctured; 17,5 mm (Mexico) *sulcipennis*, sp. n. (p. 114)
 Carinae and carinulae well developed; elytra carinate; pronotum densely punctured 43
- 43 (42). Occiput short and angulate (fig. 105); carinulae interstices not punctured, carinae-carinulae interstices glabrous and not punctured; posterior constriction of pronotum non-existent; scutellar carina usually joining the first carina; 16,6-17,3 mm (Mexico) .. *azteca*, sp. n. (p.113)
 Occiput well rounded (figs. 101, 103); carinulae interstices punctured or not, carinae-carinulae interstices pilose; posterior constriction of pronotum usually slightly indicated; scutellar carina usually not joining the first carina 44
- 44 (43). Pronotum wider than long; elytra more ovate; carinulae interstices not punctured (fig. 101); 14,5-17,0 mm (Haiti) *striata* Klug (p. 109)
 Pronotum longer than wide; elytra less ovate; carinulae interstices punctured (fig. 103); 16,9-18,8 mm (Mexico) *boucardi* Chaudoir (p. 111)
- 45 (41). Pronotum sparsely and irregularly punctured 46
 Pronotum regularly and densely punctate-rugose 48
- 46 (45). Pronotum convex on disc, deplanate marginally; much wider than head, with few, very sparse and fine punctures; carinulae very thin, almost vestigial; 17,0-18,5 mm (Guatemala and El Salvador)
 *laevithorax*, sp. n. (p. 124)
 Pronotum convex over entire surface, not deplanate marginally; as wide or barely wider than head; with slightly more and coarser punctures; carinulae normally developed; South American species 47
- 47 (46). Carinulae slightly thinner than carinae, almost as high as these; very slightly closer to each other than to next carina; smaller species: 14,5-17,0 mm (southern Brazil: São Paulo and Rio de Janeiro)
 *orobia*, sp. n. (p. 126)
 Carinulae much thinner and lower than carinae, much closer to each other than to next carina; larger species: 18,5 mm (Ecuador) *immitis* Liebke (p. 119)
- 48 (45). Elytra more ovate, not abruptly widened after humeri; basal angles of pronotum projected posteriorly; 16-18 mm

- (Guatemala and El Salvador)
 *strandii* Liebke (p. 119)
 Elytra much narrowed at humeri, then abruptly widened;
 basal angles of pronotum usually not projected pos-
 teriorly 49
- 49 (48). Pronotum much wider than head, much narrowed pos-
 teriorly; carinulae interstices shallowly punctured; 17-
 20 mm (Argentina and Bolivia)
 *convexipennis*, sp. n. (p. 123)
 Pronotum only as wide as or slightly wider than head, not
 much narrowed posteriorly; carinulae interstices not
 punctured 50
- 50 (49). Central American species (Costa Rica and Panama), 17-19
 mm *mustelina* Bates (p. 117)
 South American species (Peru), 17,5 mm
 *jelskii* Chaudoir (p. 117)

GROUP OF AMERICANA

CHARACTERISTICS

Small to large sized species (15,5-23,0 mm), characterized by the wide head, with very prominent eyes, short occiput (usually not much longer than half the diameter of one eye); two red spots between the eyes); pronotum of more or less constant form and sculpture, however, varying in color; scutellum black, triangular, punctured and covered with yellow pilosity; elytra always black or bluish-black; carinae usually not very high, not sharp; the two carinulae between the carinae closer to each other than to the next carina; carinulae interstices usually deeper than carinae-carinulae interstices; in most species, carinae-carinulae interstices with a single row of yellow hairs (double row in *ruficollis* Dejean; glabrous in *tucumana* Liebke); humeri always developed; all species fully-winged.

The ten species included in this group form two distinct evolutionary lines: one including *ruficollis* Dejean, *collaris* Dejean and *affinis* Dejean; the second one including the remaining species, *americana* (Linnaeus), *brachinoides* Perty, *moritzi* Mannerheim, *nicara* Chevrolat, *melanarthra* Chaudoir, *tucumana* Liebke and *microcostata* Darlington. In most species the distinguishing characters are very subtle, possibly indicating recent origin of the species. Some of the species are geographically isolated from their closest relatives, clearly indicating an origin by geographic speciation (as is the case of *ruficollis*, *collaris* and *affinis*); others, even though closely related and similar morphologically, overlap in part of the range. In the case of *americana*, *brachinoides* and *moritzi*, the best character found for separation of the three species was the shape of the aedeagus. Externally these species are very easily confused and their present status has to be considered as provisional. The lack of material from important parts of the range makes any further conclusions premature.

The species of the group of *americana* are widely distributed in the Neotropical Region, ranging from Mexico to Argentina, including the Antilles. The group is closely related to that of *costulata*, from which it differs mainly by the presence of the two red spots between the eyes in the former. Judging from the illustration of the Malagasy *Galerita pheropsophoides* (Jeannel, 1949 :1063, fig. 518), the species of the group of *americana* have a very similar shape of the head and pronotum. If there is any real relation, it remains to be more conclusively demonstrated.

***Galerita collaris* (Dejean, 1826)**

(Figs. 30-41)

Galerita collaris Dejean, 1826:444 (lectotype ♂, "environs de Buenos-Ayres", Argentina, MNHN; examined).

Galerita aequicollis Chaudoir, 1844:461 (type, "Bolívia", MNHN; not located); Chaudoir, 1861:554 (variety of *collaris*?).

DESCRIPTION

Completely black, with red pronotum and prothorax. Head — a little wider than long (1,05), rugose, less so on anterior half; abruptly rounded behind the eyes, occiput less than half as long as diameter of eye; inferior side black, except for the red gula. Pronotum — wider than head (1,15), very variable in size, but almost constantly little longer than wide; surface transversely rugose, covered with yellowish pubescence. Elytra — almost twice as wide as pronotum (1,85), less than twice as long as wide (0,6); scutellar carina in general (not always) joining the first carina; carinae-carinulae interstices with single row of yellow hairs. Wings — fully developed. Measurements — length, 16,25 - 19,75 mm; width, 5,3 - 7,0 mm. Genitalia — figure 40.

SPECIMENS EXAMINED (686)

Very extensive material of this species was available for the present study. As in other species in which the geographic distribution is fairly well understood presently, it seems unnecessary to give the detailed distribution of *collaris* Dejean.

GEOGRAPHIC DISTRIBUTION (fig. 41)

Galerita collaris Dejean is widespread over Argentina (reaching the southernmost record of any species of the genus in Tandil, provincia de Buenos Aires, at 37°S), Uruguay, southern Brazil (known from the states of Rio Grande do Sul and Santa Catarina and one record from São Paulo, Itú (CDZ) and one record from Uberaba, Minas Gerais (IRSNB, CN), Paraguay and Bolívia.

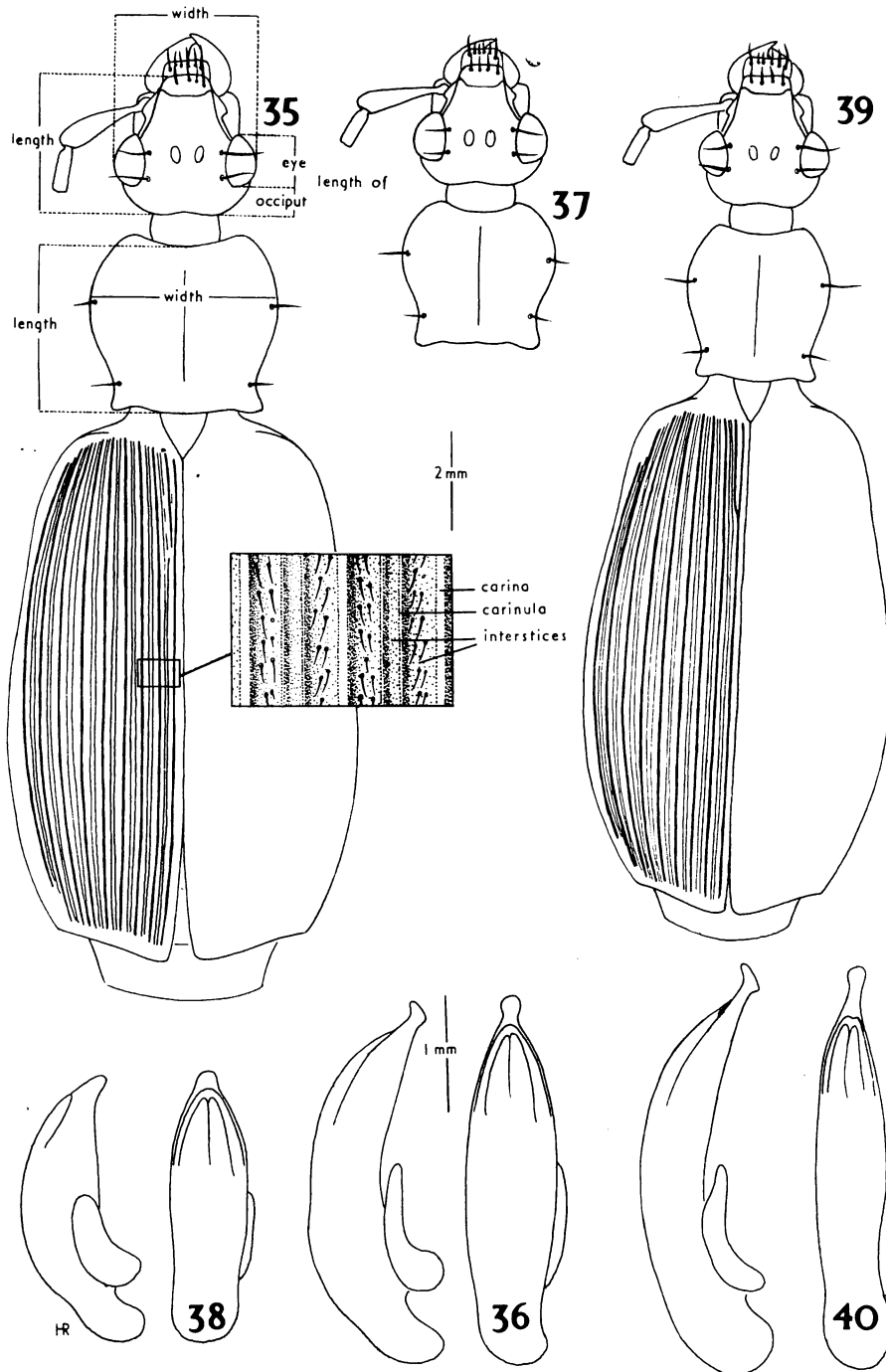


Fig. 35, *Galerita ruficollis* Dejean, ♀ from Acapulco, Mexico (MCZ); fig. 36, aedeagus of ♂ from same locality; fig. 37, head and pronotum of *G. affinis* Dejean, ♂ from Trujillo, Peru (MCZ); fig. 38, aedeagus of same specimen; fig. 39, *G. collaris* Dejean, ♂ from La Plata, Argentina (MCZ); fig. 40, aedeagus of same specimen.

NOTES

G. collaris Dejean is very closely related to *affinis* (which has been confused with *collaris* in the literature) and *ruficollis*. It is distinguished mainly by the different shape of the head and of the aedeagus. The three species are allopatric.

NOTES ON THE TYPES

Of *Galerita collaris* Dejean: 1 ♂ and 2 ♀ are preserved in Oberthuer's collection. The ♂ is herewith designated lectotype, the 2 ♀, paralectotypes. Of *Galerita aequicollis* Chaudoir: no specimen in Chaudoir's collection could be recognized as the type of this species, since the specimens bear no labels. The variability of the pronotum of *collaris* indicates that *aequicollis* is not more than an individual variant, which must be considered a synonym of *collaris*.

***Galerita affinis* (Dejean, 1831)**

(Figs. 37, 38, 41)

Galerita ruficollis Latreille, 1817:120, pl. 40, figs. 10-11 (nec Dejean, 1825; holotype ♂, "regions equatoriales de l'Amérique méridionale", MNHN; examined); Liebke, 1927:104 (erroneously synonymized with *collaris* Dejean).

Galerita affinis Dejean, 1831:296 (new name (?) for *ruficollis* Latreille, 1817).

DESCRIPTION

Very similar in form and colors to *collaris*. Head — slightly wider than long (1,15), with very prominent eyes; rugose; covered with yellowish hairs, very shortly rounded behind the eyes; inferior sides as in *collaris*; antennal scape with elongate, red marks on anterior side. Pronotum — slightly wider than head (1,06), slightly wider than long (1,05); finely rugose as in *collaris*; general shape as in *collaris*, also covered with yellowish hairs. Elytra — almost twice as wide as pronotum (1,93), less than twice as long as wide (1,65), of general shape as in *collaris*; elytral pilosity denser and longer than in *collaris*. Wings — fully developed. Measurements — length, 16,5 - 18,3 mm; width, 5,9 - 6,6 mm. Genitalia — figure 38.

SPECIMENS EXAMINED (37)

ECUADOR. Guayaquil (15 ♂, 13 ♀, CNHM, PSU, MNHN, CN, IRSNB, CDZ, USNM); Balao Chico (3 ♂, 1 ♀, MCZ); Ibaque (1 ♂, USNM).

PERU. Libertad, Trujillo (1 ♂ *, MCZ); no locality (2 ♀, AMNH). No locality (1 ♂, IZ).

GEOGRAPHIC DISTRIBUTION (fig. 41)

This species is restricted to a short coastal strip from Ecuador to Peru. It is geographically isolated from *collaris* by the Andes.

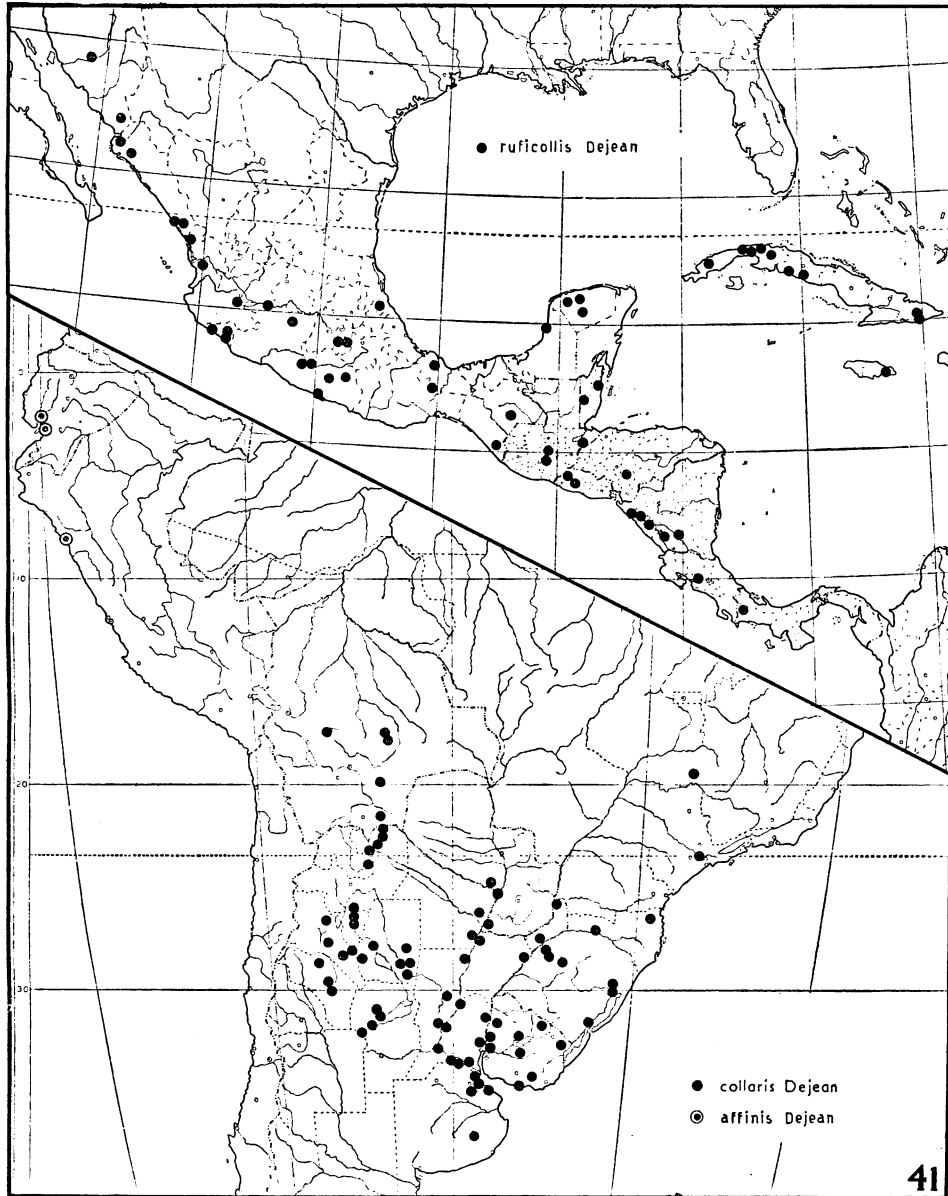


Fig. 41, Geographic distribution of *Galerita affinis* Dejean, *collaris* Dejean and *ruficollis* Dejean.

NOMENCLATORIAL NOTES

The nomenclature of this species has been very confused. In 1861 (p. 554) Chaudoir synonymized *collaris* Dejean with *ruficollis* Latreille (the latter with *affinis* Dejean as its synonym). The name *ruficollis* Latreille was used as the valid name of the South American species (which now proves to be two quite distinct species) during the last century. In 1927 (p. 104) Liebke decided that *collaris* Dejean had priority over *ruficollis* Latreille (Liebke accepted 1833, the date printed on the frontispiece of Humboldt & Bonpland's work, as being the date of publication of *ruficollis* Latreille, completely overlooking the fact that Dejean already knew Latreille's *ruficollis* in 1831, when he described his own *affinis*). As shall be seen below, Liebke's assumption is incorrect, and since that date *ruficollis* Latreille and *affinis* Dejean have been considered junior synonyms of *collaris* Dejean.

According to Sherborn's publication on the dates of publication of the fascicles of Humboldt & Bonpland's work (Sherborn, 1899:428), Latreille's *ruficollis* was published in the fascicle which appeared in 1817, and not 1833 as the frontispiece and as thought by Liebke and later cataloguers. Therefore, *ruficollis* Latreille has priority over *ruficollis* Dejean (a Central American and Antillean species see p. 62), and should be used for the Peruvian-Ecuadorian species.

The nomenclature of the present case is further confused by the recent addition of the provisions of article 23, section b to the Code of Nomenclature: ruficollis Latreille and *affinis* Dejean, the two names applicable to the Peruvian - Ecuadorian species, have remained unused as senior synonyms for more than 50 years, and should, therefore, be considered *nomina oblita*. A new name would then be required for this species. It seems that 23b was introduced in the Code to help in the stabilization of names for which application of strict priority would require replacement of well known names by obscure ones. While the application of strict priority in the present case would not require the proposal of any new name, application of article 23b would require a new name for a species incorrectly synonymized with another species. On the other hand, the use of strict priority in the present case, would require that the well-known specific name *ruficollis* be transferred from the Central American to the Peruvian-Ecuadorian species. Application of either 23b or strict priority would confuse very much the present case, and therefore, I propose to use the next available name after *ruficollis* Latreille, *affinis* Dejean, for the Peruvian-Ecuadorian species, disregarding, in the present case, the priority and the provisions of 23b, and preserving the name *ruficollis* Dejean for the Central American species.

NOTES

When I studied the type of Latreille's *ruficollis* in Paris (June, 1964), I considered Ecuadorian and Peruvian specimens as conspecific with Argentinian specimens, completely overlooking the slight, but very

evident, differences which exist. Later I examined the species more carefully and discovered the differences, which are also present in the type (as proven by reexamination of the type of it by J. Nègre). The two species, as noted above, are very similar externally, but can be easily distinguished by the differently shaped head and the completely different male genitalia, besides the other character mentioned in the key and description. Although I have seen a reasonable number of specimens of *affinis*, it seems to be quite a rare species. In the literature it has only been cited by Liebke (1941:226, as *collaris* Dejean, part: Guayaquil) after its description.

NOTES ON THE TYPES

It is not clear from Dejean's description of his *affinis* (1831:296) whether he refers to it as a new species or simply as a new name for *ruficollis* Latreille. I found only one specimen (♂) in Oberthuer's collection (Paris Museum) which could be referred to this species. In Dejean's handwriting its label reads: "affinis mihi, ruf. collis Latreille, in Pérou?, Bonpland". Since Latreille's collection was acquired by Dejean, this specimen seems to be the one collected by Humboldt and Bonpland's expedition to South America. Dejean's label on this specimen, as well as the fact that it is the a single specimen in the collection seem to indicate that *affinis* was proposed as a new name for *ruficollis* Latreille (*nec ruficollis* Dejean). It also seems safe to consider this specimen as the holotype of *ruficollis* Latreille. Latreille's description does not give any detailed locality for the species; however, Peru is probably the correct area where the type-specimen was collected, since the species has a very restricted distribution.

Galerita ruficollis Dejean, 1825

(Figs. 35, 36, 41)

- Galerita ruficollis* Dejean, 1825:191 (lectotype ♂, "Cuba", MNHN; examined).
- Galerita erythrodera* Brullé, 1834:103 (new name for *ruficollis* Dejean, 1825; published before February 1834).
- Galerita thoracica* Chevrolat, 1834:34 (lectotype ♂, Cordoba, Mexico, UMO; examined; published in March 1834); Chaudoir, 1861:555 (proposed synonymy with *insularis* Castelnau).
- Galerita humboldti* Gistel, 1838:11 (new name for *ruficollis* Dejean, 1825). New synonymy.
- Galerita insularis* Castelnau, 1840:36 (new name for *ruficollis* Dejean, 1825); Chaudoir, 1861:555 (proposed synonymy with *insularis* Castelnau).

DESCRIPTION

Head — as in *collaris*. Pronotum — wider than head (1,26), variable in size, but almost constantly as wide or wider than long; as

long as in *collaris*, but clearly wider than in that species; surface more roughly punctate, with less rugose aspect. Elytra — of the same general structure as in *collaris*; usually scutellar carina not joining the first carina; elytral color seems to be more brightly blue in Antillean specimens, but there are also many Antillean specimens with dark blue, almost black elytra as the ones of Central American specimens; carinae sometimes very weakly developed, very low; carinulae interstice deep, sulciform, carinae-carinulae interstices with two parallel rows of yellow pilosity. Wings — fully developed. Measurements — length, 18.6 - 21.2 mm; width, 6.5 - 7.8 mm. Genitalia — figure 36.

SPECIMENS EXAMINED (335)

As in the case of *collaris*, it is not necessary to give detailed distributional data of the extensive material of this species which was studied.

GEOGRAPHIC DISTRIBUTION (fig. 41)

Galerita ruficollis Dejean occurs in Central America, from northern Mexico (Sonora on the Pacific side, Veracruz on the Atlantic side) to Panama (Volcan de Chiriqui), and on Cuba and Jamaica. The distribution in the Antilles suggests an invasion of Cuba from Central America (and possibly a subsequent invasion of Jamaica; only one record is known from that island — see Darlington, 1953:4).

NOMENCLATORIAL NOTES

For discussion of the homonymy involving *ruficollis* Latreille and *ruficollis* Dejean, see p. 60. Even though the latter is a junior homonym, it is being considered here as the valid name of the species, since it is well established in the literature, and transference of the name *ruficollis* to the Peruvian-Ecuadorian species would only confuse the case more.

NOTES

Although *ruficollis* Dejean is very similar to *collaris* and *ruficollis*, it can be separated easily by several characters, such as the form of the head and the shape of the aedegus, and its distribution.

NOTES ON THE TYPES

Of *Galerita ruficollis* Dejean: 1 ♂ and 1 ♀ are preserved in Oberthuer's collection. The male is herewith designated lectotype, the female paralectotype. Of *Galerita thoracica* Chevrolat: 2 ♂ are preserved in the Hope Department of Entomology, University Museum, Oxford; one of them, the more typical male, is herewith designated lectotype, the other male paralectotype.

Galerita americana (Linnaeus, 1758)

(Figs. 48-51)

- Carabus americanus* Linnaeus, 1758:415 (holotype ♀, "America", Riksmuseum, Stockholm; not seen).
Galerita geniculata Dejean, 1831:297 (lectotype ♂, Guadeloupe, MNHN; examined); Chaudoir, 1861:555 (synonymy).
Galerita americana; Chaudoir, 1877:254 (characterization); Bates, 1884:294 (Panama); Lindroth, 1957:328 (notes on type).
Galerita nigra var. *C* Bates, 1883:165 (no types designated; original specimens from Paso Antonio, Guatemala, examined in BM, MNHN, USNM, MCZ). New synonymy.

DESCRIPTION

Black, with yellowish-orange prothorax, pronotum, antennae and legs. Head — wider than long (1,19), with very short occiput (at maximum half as long as diameter of one eye); eyes large and prominent; inferior side with reddish gula. Pronotum — wider than head (1,08), wider than long (1,05); surface rugose, covered with yellowish hairs. Elytra — 1,93 times as wide as pronotum; 1,68 times as long as wide, pilosity of carinae-carinulae interstices usually very dense, with well developed punctures at their base; scutellar carina usually joining the first carina. Inferior side — black, except for the prothorax, which is usually colored as the pronotum; prosternum very rarely darkened, prothoracic process between anterior coxae, black. Legs — yellowish-orange, rarely with darkened knees. Wings — fully developed. Measurements — length, 16,4 - 19,0 mm; width, 5,6 - 7,0 mm. Genitalia — figure 49.

SPECIMENS EXAMINED (85)

GUATEMALA. *Escuintla*: Paso Antonio (6 ♂, 1 ♀, BM, MNHN, USNM).

COSTA RICA. La Caja, San José, 900 m (1 ♂ *, 2 ♀, USNM); no locality (10 ♂, 6 ♀, BM, MNHN).

PANAMA. Volcan de Chiriqui (2 ♀, AMNH, BM); near Boquete (1 ♂, CAS); Potrerillos (2 ♂, CAS); La Chorrera (1 ♂, USNM); Sona (1 ♂, 2 ♀, USNM); Santa Rosa (1 ♀, CU); *Canal Zone*: Madden Dam (1 ♂, CAS); Chagres River (2 ♂, USNM).

VENEZUELA. *Aragua*: Cagua (2 ♂, 1 ♂, CB) *Zulia*: Maracaibo (1 ♀, IZ).

TRINIDAD. Saint Augustine (2 ♂ *, MCZ).

GADELOUPE. Gourbeyre (3 ♀, BM, MCZ); no locality (1 ♂, 1 ♀, BM).

SAINT MARTIN. (2 ♀, ML).

SURINAM. Paramaribo (2 ♂, IZ).

FRENCH GUIANA. Cayenne (1 ♀, BM).

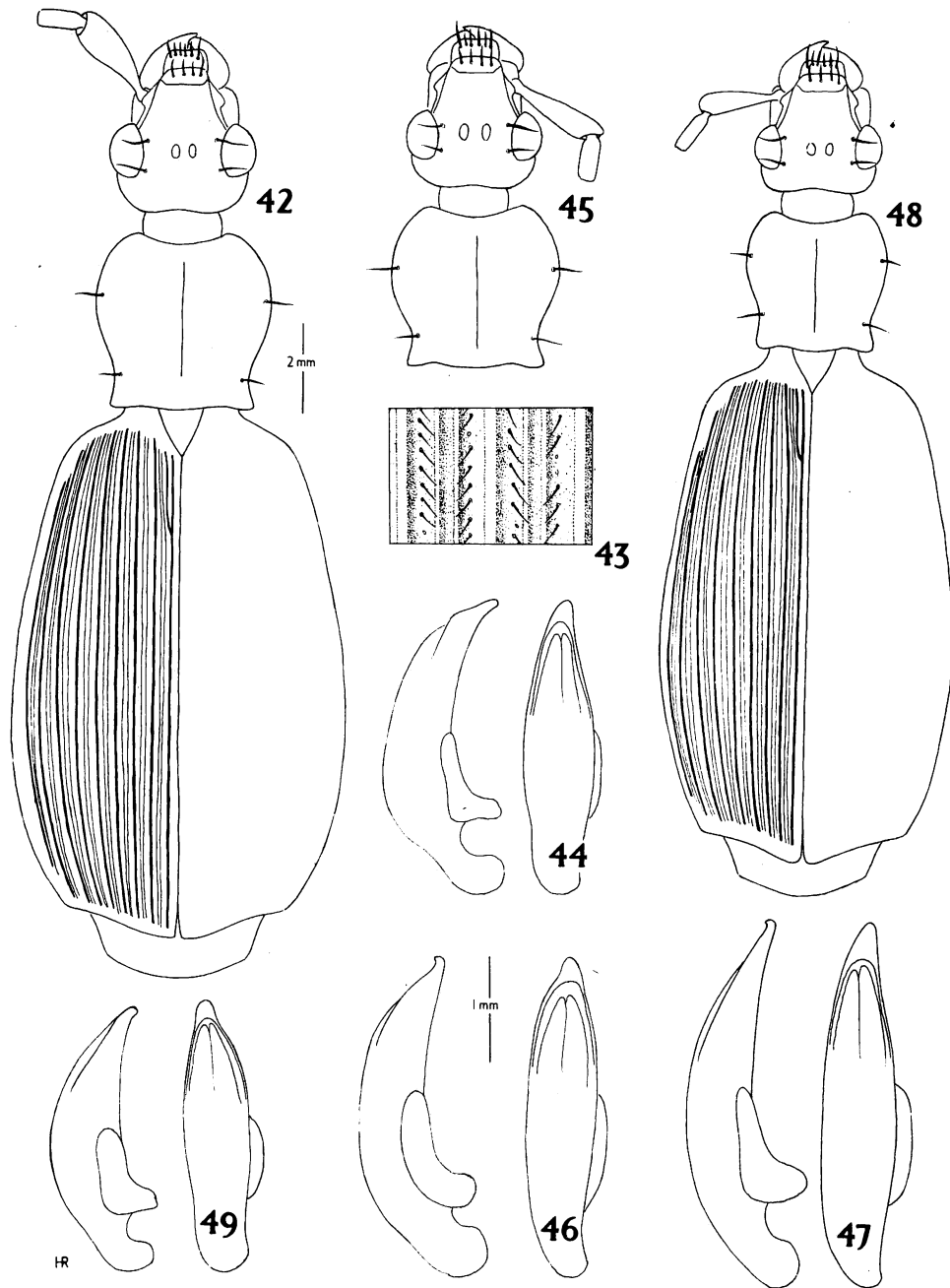


Fig. 42, *Galerita moritzi* Mannerheim, holotype ♀ (ZMH); fig. 43, detail of elytra of same species; fig. 44, aedeagus of same species from San Fernando de Apure, Venezuela (CB); fig. 45, head and pronotum of *G. brachinoides* Perty, holotype ♂ (ZSM); fig. 46, aedeagus of same specimen; fig. 47, aedeagus of same species from Tapirapé, Brazil (CDZ); fig. 48, *G. americana* (Linnaeus), ♀ from Sete Lagoas, Brazil (CDZ); fig. 49, aedeagus of same species from Barueri, Brazil (CDZ).

BRAZIL. *Rio Grande do Norte*: Natal (2 ♂ *, CDZ); *Paraíba*: Coremas (2 ♀, CDZ); *Pernambuco*: Recife (1 ♂, BM); *Bahia*: Salvador (1 ♂ *, 1 ♀, CDZ); *Terra Nova* (1 ♂, MNHN); *Condeúba* (1 ♂, 2 ♀, MNHN); *Minas Gerais*: Viçosa, 650 m (1 ♂, 1 ♀, IB); *Sete Lagoas* (♂, 1 ♀, CDZ); *Rio de Janeiro*: Escola Nacional de Agronomia, km. 47 da rodovia Rio de Janeiro - São Paulo (1 ♂, 1 ♀, IEEA); *Guanabara*: Rio de Janeiro (1 ♂, BM); *São Paulo*: São Paulo (2 ♂, 1 ♀, CDZ, IB, CKC); *Estação Biológica de Boracéia, Salesópolis* (1 ♂, IB); *Barueri* (3 ♂ *, CDZ, MCZ); *Itú, Fazenda Pau d'Alho* (1 ♀, CDZ); *São José dos Campos* (1 ♂, UA); *Santa Catarina*: Nova Teutônia (1 ♀, MCZ).
 PARAGUAY. Asunción (1 ♂, IOC).
 BOLÍVIA. *Rio Chipiriri, Chapare* (1 ♀, ZSM).

GEOGRAPHIC DISTRIBUTION (figs. 50, 51)

Galerita americana has a wide distribution, ranging from Bolívia and Paraguay along the eastern coast of Brazil (from Santa Catarina to Rio Grande do Norte; no specimen has yet been reported from the northern coast of Brazil), the Guianas, Venezuela, the Lesser Antilles, Panama, Costa Rica and Guatemala.

NOTES

Galerita americana, *brachinoides* and *moritzi* have been confused in the literature since their description. Several attempts have been made to consider them as a single species; however, no author was able to reach a final conclusion. To separate these closely related forms, I had to rest heavily on the shape of the aedeagus of the males. In *americana* the aedeagus is short, with a stout apex (fig. 49); in *brachinoides* it is much more elongate with hooked apex (figs. 46, 47); in *moritzi* the aedeagus is very similar to that of *americana* (fig. 44), and other characters have to be used for distinction. Lindroth (1957: 328-329) compared the aedeagus of 3 males of *americana* (one actually being a specimen of *nigra* var. *C* which I consider a synonym of *americana*) from three different localities. He stated that these aedeagi have different apices and different internal sacs. I have studied two of Lindroth's specimens (I have not seen the male from Guadeloupe) in the BM and the MNHN, and was unable to distinguish the specimens externally (as was Lindroth). In my opinion the differences mentioned by Lindroth should be considered as variations within the same species. I have dissected several specimens from various localities of the range of the species (as considered presently) and have studied their aedeagi, and have reached the conclusion that this character can be considered as fairly constant although there is a certain amount of variation, including all the differences mentioned by Lindroth.

Specimens of *americana* are on the average much smaller than *brachinoides* and *moritzi*, and the prothorax (except for the prothoracic process between the anterior coxae) is of the same color as the pronotum. Besides the striking aedeagal difference, *americana* has other cha-

racteres which are quite distinctive: the head is relatively wider and shorter than that of *brachinoides* and *moritzi*, the pronotal angles are usually well rounded in *americana*, while they are sharper in the two other species, and the posterior constriction is less evident in *americana*. *G. americana* and *brachinoides* are largely allopatric, except in northeastern Brazil where they occur together (the two species are known from the same locality); *americana* seems to be a coastal species, while *brachinoides* is known only from Colombia, Venezuela and French Guiana, partly overlapping with *americana*.

In the first part of the *Biologia Centrali Americana* (1883:165), Bates called Guatemalan specimens of *americana* a variety of *nigra* (var. *C*; in the supplement he listed specimens from Volcan de Chiriqui, Panama, as *americana* (1884:294). I have examined Bates' original material from Chiriqui (BM — as well as several other Panamanian specimens) and have compared them to Guatemalan specimens. No difference was found. Central American (as well as Lesser Antillean) specimens seem to represent very typical *americana*. As stated above, I am considering var. *C* of *nigra* a synonym of *americana*, and varieties *A* and *B* as varieties of *nigra* (see p. 74). Since Bates, *americana* has only been listed once from Central America (from Costa Rica by Liebke, 1941:226), but strangely enough, he listed these specimens under the name of *moritzi*.

Galerita brachinoides Perty, 1830

(Figs. 45, 46, 50)

Galerita brachinoides Perty, 1830:15, pl. 1, fig. 14 (holotype ♂, "Brasilien", ZSM; examined); Chaudoir, 1861:555 (synonym of *americana*?).

DESCRIPTION

Colored as *americana*. Head — only slightly wider than long (1,05), with short occiput (slightly longer than half the diameter of one eye); eyes large, moderately prominent. Pronotum — wider than head (1,17), slightly wider than long (1,05); surface sculptured as in *americana*. Elytra — 1,87 times as wide as pronotum, 1,7 times as long as wide; carinae thick, not high; carinulae thin and closer to each other than to next carina; carinulae interstices punctured; carinae-carinulae interstices with pilosity as in *americana* and *moritzi*; scutellar carina usually joining the first carina. Inferior side as in *americana* and *moritzi*, however, prosternum usually black (not so in the type and most specimens from the eastern part of the range). Legs — as in *americana*, with black knees more or less well developed. Wings — fully developed. Measurements — length, 19,4 - 22,8 mm; width, 6,5 - 8,25 mm. Genitalia — figure 46.

SPECIMENS EXAMINED (71)

ECUADOR. Lena, 540 m (1 ♀, CNHM).

PERU. *Pasco*: Quiroz, Rio Paucartambo (1 ♂ *, 1 ♀, MCZ); *Huanuco*: Tingo Maria, 670 m (2 ♂ *, 3 ♀, MCZ, AMNH, USNM); Monson Valley, Tingo Maria (1 ♀, CAS); Cucharas (1 ♂, 1 ♀, AMNH); *Amazonas*: Rio Santiago (1 ♀, AMNH); *Loreto*: Rio Marañón (1 ♂, AMNH); Rio Ucayali (1 ♀, AMNH).

BOLÍVIA. *Cochabamba*: Chapare, 400 m (1 ♀, MCZ); *Beni*: Rurrenabaque (1 ♀, USNM); San Fernando Rapids (1 ♂, 2 ♀, USNM); Rio Colorado (1 ♀, USNM).

BRAZIL. *Amazonas*: Tefé (1 ♀, AMNH); Rio Parauarí, near Tefé (1 ♂, 1 ♀, IB, CDZ); São Paulo de Olivença (1 ♂ *, IEEA); Uypizanga, near Manaus (2 ♂, 1 ♀, AMNH); Manicoré, Rio Madeira (1 ♂, AMNH); Rio Juruá (1 ♀, CDZ); *Pará*: Monte Cristo, near Itaituba, Rio Tapajós (1 ♂, CDZ); *Rondônia*: Pôrto Velho (1 ♂, USNM); Rio Madeira, E. F. Madeira-Mamoré, Camp 41 (2 ♀, USNM); *Mato Grosso*: Barra do Garças (1 ♂, CDZ); Barra do Tapirapé (2 ♂ *, 1 ♀, CNHM, CDZ); Pimentel Barbosa (1 ♂, CDZ); Santa Izabel, Rio Araguaia (1 ♂, CAS); *Ceará*: no locality (1 ♂ *, IOC); Serra do Baturité (1 ♀, USNM); Fortaleza (1 ♀, USNM); Russas (1 ♀, CDZ); Icó (1 ♀, CDZ); *Rio Grande do Norte*: Natal (3 ♂, 3 ♀, MCZ, USNM); Baixa Verde (4 ♂ *, 2 ♀, USNM); *Pernambuco*: Serra do Communitaty (1 ♂, MNHN); Serra da Bernarda (7 ♂, 5 ♀, MNHN); *Paraíba*: Independência (2 ♂ *, USNM).

GEOGRAPHIC DISTRIBUTION (fig. 50)

Galerita brachinoides occurs in central South America, ranging from Ecuador, Peru and Bolívia throughout the Amazonian Basin to the Rio Araguaia; an apparently allopatric population (typical *brachinoides*, including even the light-colored prosternum) occurs in northeastern Brazil, where it overlaps with typical *americana*.

NOTES

The type of *brachinoides* (collected in Brazil, no specific locality, by Spix and Martius), probably comes from northeastern Brazil, since it has the light-colored prosternum found only in specimens from that part of the range of the species. Specimens collected west of the Rio Araguaia always have a black (or very dark) prosternum, but otherwise agree completely with the type of *brachinoides* (including shape of aedeagus). A few specimens from northeastern Brazil also have a darkened prosternum and it seems safe to consider the variant with black prosternum as a form of *brachinoides* which is widespread over the Amazonian Basin, even though the two populations do not seem to overlap. More material is necessary for a final decision.

G. brachinoides is very closely related to *americana* and *moritzi*. Easily separated from *americana* by several, subtle characters: *brachi-*

noides is larger in size; the head is proportionally longer than in *americana* (with slightly longer occiput); the pronotum of *brachinoides* has a better-developed posterior constriction, with sharper angles, especially the posterior ones. The main difference, however, is the aedeagus, which has a very characteristic hooked apex in *brachinoides*. The two species seem to be largely allopatric, except for northeastern Brazil, where they occur in the same localities.

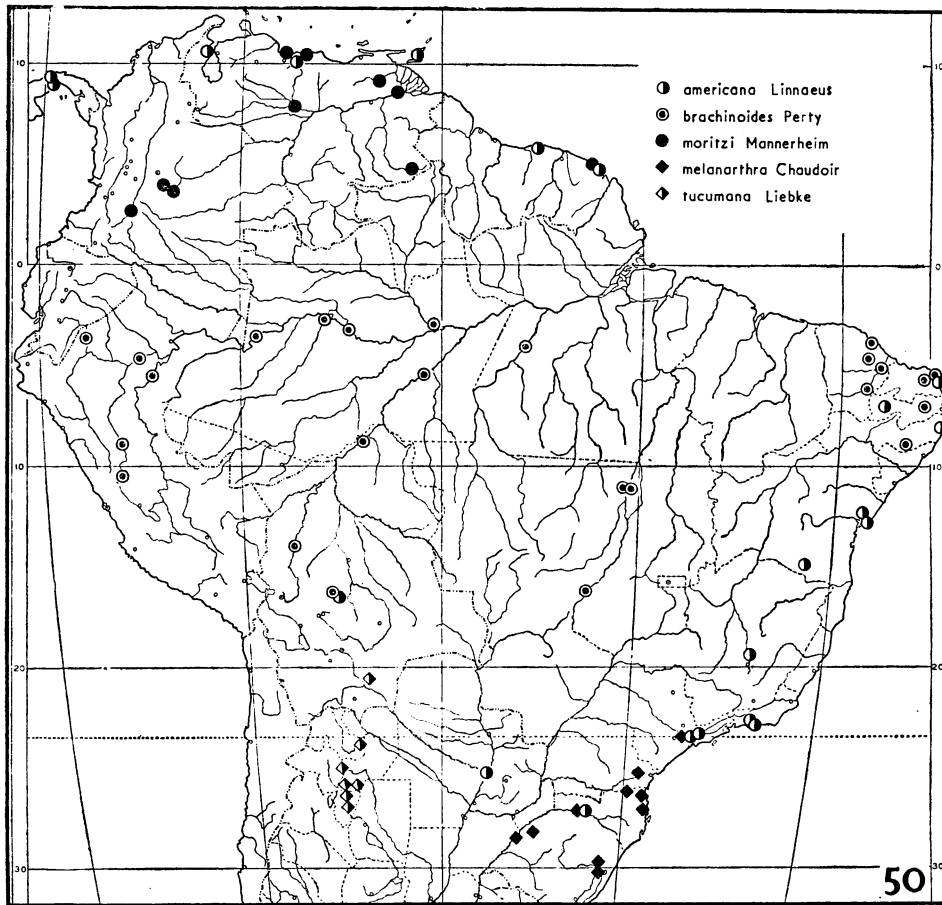


Fig. 50, Geographic distribution of *Galerita americana* (Linnaeus), *brachinoides* Perty, *moritzi* Mannerheim, *melanarthra* Chaudoir and *tucumana* Liebke.

The differences between *brachinoides* and *moritzi* are much less evident: *moritzi* has the head and pronotum built like in *brachinoides*; the prosternum, however, is never black in *moritzi*. Again, the best difference between the two is the male genitalia, which in *moritzi* is very similar to that of *americana*, and therefore quite distinct from

that of *brachinoides*. More material is necessary for a final settlement of the status of the 3 species.

Galerita moritzi Mannerheim, 1837

(Figs. 42-44, 50)

Galerita moritzi Mannerheim, 1837:22 (holotype ♀, "Columbia, Maracay" (presently in Venezuela), ZMH; examined); Chaudoir, 1844:459 (redescription).

Galerita pallidicornis Reiche, 1842:273 (type, "Venezuela", MNHN; not located); Chaudoir, 1844:459 (redescription); Chaudoir, 1861:555 (proposed synonymy with *moritzi* Mannerheim).

Galerita macrodera Chaudoir, 1844:461 (type, "Columbia", MNHN; not located); Chaudoir, 1861:555 (proposed synonymy with *moritzi* Mannerheim).

DESCRIPTION

Colored as typical *americana*. Body proportions as in *brachinoides*, as also are shape of head and pronotum; however, prosternum not darkened; elytra as in *brachinoides*. Wings fully developed. Measurements — length, 19,8 - 22,0 mm; width, 6,9 - 7,4 mm. Genitalia — figure 43.

SPECIMENS EXAMINED (38)

COLOMBIA. *Meta*: Villavicencio (2 ♂ *, CNHM); Ocoa River (1 ♂ *, AMNH); *Huila*: Villavieja (1 ♂ *, CAS).

VENEZUELA. *D. F.*: Caracas (3 ♂ *, 4 ♀, ML, CNHM; 1 ♂, SMF C13995); *Carabobo*: Puerto Cabello (1 ♂, ZSM); *Apure*: San Fernando de Apure (1 ♂ *, CB); *Bolivar*: Ciudad Bolivar (9 ♂, 9 ♀, CU); *Peraitepuy* (1 ♂ *, CNHM); *Puerto las Majadas* (3 ♀, FHCM); *Monagas*: Barrancas (1 ♀, UV); near Maturin (1 ♂ *, 1 ♀, UA); not located *Paraiso* (1 ♂, CNHM).

FRENCH GUIANA. Cayenne (1 ♂, SMF C13996).

GEOGRAPHIC DISTRIBUTION (fig. 50)

The species in question occurs in Colombia, Venezuela and the Guianas (collected only in French Guiana as yet); over a large part of the range it overlaps with *americana*.

NOTES

Galerita moritzi, as considered here, is very closely related to *americana* (distinguished by the larger size and different shape of head and pronotum) and *brachinoides* (distinguished mainly by the shape of the aedeagus). As already mentioned under *americana* and *brachinoides*, much more material is necessary for the settlement of the status of these species.

Galerita tucumana Liebke, 1932

(Figs. 50, 52)

Galerita tucumana Liebke, 1932:418 (lectotype ♂, "Prov. Tucuman", Argentina, MBA; examined).

DESCRIPTION

Black, with yellowish-brown pronotum, prothorax, antennae, palpi and legs; these sometimes with slightly darkened knees. Head—slightly wider than long (1,04), occiput more or less half as long as the diameter of one eye; rugose. Pronotum — little wider than head (1,2), slightly wider than long (1,1); yellowish hairs less conspicuous than in the other species. Elytra — more than twice as wide as pronotum (2,1), less than twice as long as wide (0,59); carinae and carinulae as in *americana*; carinae-carinulae interstices not punctured and glabrous; in some specimens the lateral interstices (especially the 8th and 9th) with a few, short hairs; scutellar carina usually joining the first carina. Wings — fully developed. Measurements — length, 18,3 - 18,4 mm; width, 6,7 - 7,0 mm. Genitalia — figure 52.

SPECIMENS EXAMINED (99)

BOLÍVIA. *Chuquisaca*: Taperilla (4 ♂, 4 ♀, USNM); not located: Guairui (1 ♂, USNM).

ARGENTINA. *Jujuy*: Aibalar (1 ♀, CN); Palma Sola (1 ♂, USNM); San Juan (1 ♂, NHMW); no locality (1 ♀, IEEA); *Salta*: Pampa Grande (1 ♀, MBA); San Lorenzo (1 ♂, 1 ♀, MBA); Candelaria (2 ♀, MLP); Tablillas (1 ♂, CAS); Laurel (2 ♂, 2 ♀, NHMW); La Merced (2 ♂, 1 ♀, NHMW); no locality (1 ♀, MLP); *Tucuman*: Tucuman (14 ♂ *, 15 ♀, IRSNB, CN, MBA, MLP, MCZ); Chicligasta (4 ♂, 1 ♀, IRSNB); Alto de Amfana (1 ♂, 2 ♀, BM); Trancas (2 ♂, 2 ♀, CN); Parque Aconquija (1 ♀, CN); Tapia, 600 m (2 ♂, 2 ♀, MNHN); Rio Chilimayo (1 ♀, MNHN); San Pedro de Colalao (6 ♂, 10 ♀, MF, MBA, MCZ, IEEA); Tafi Viejo (1 ♂, MBA); Siambon (1 ♀, MBA); Tafi Siambon (1 ♂, 1 ♀, MF); no locality (2 ♂, 2 ♀, MBA, MNHN); *Chaco*: no locality (1 ♂, MBA).

GEOGRAPHIC DISTRIBUTION (fig. 50)

Galerita tucumana has a relatively restricted distribution in South America: it ranges from southern Bolívia through Salta and Jujuy to Tucuman in Argentina, and possibly occurs in the Chaco too.

NOTES

Galerita tucumana is very closely related to *americana*, and may in the future, with better knowledge of the related forms, prove to be not more than a geographic form of *americana*. It is distinguished mainly

by the absence of pilosity in the carinae-carinulae interstices. The male genitalia of *tucumana* is very close to that of *americana* and *melanarthra*.

NOTES ON THE TYPES

Two males from the province of Tucuman are preserved in Bruch's collection (MBA), bearing Liebke's "Kotype" label. One of these males is herewith designated lectotype, the second paralectotype. The original description was based on 4 specimens; Mroczkowski (1960:384) cites 3 cotypes of this species as being preserved in the Warsaw Museum (Liebke collection); I have not seen these specimens, but probably only two of them are real cotypes and therefore paralectotypes.

Galerita microcostata Darlington, 1934

(Figs. 51, 53)

Galerita microcostata Darlington, 1934:124-125 (holotype ♂, Mayaguez, Puerto Rico, MCZ n. 19541; examined).

DESCRIPTION

Black, except for yellowish-brown antennae and palpi and the brown legs; in immature specimens, the upper surface, especially the pronotum, takes a brownish color. Head — wider than long (1,16); occiput more or less as long as half the diameter of one eye; rugose as in the other species of the group; in one of the few specimens I have examined, the two red spots are fused, forming a big, triangular spot, with its base looking forwards, like the typical spot of the species of the genus *Progaleritina*. Pronotum — as wide as head, slightly wider than long (1,1); rugose and shaped as in *americana*; covered with yellowish pubescence. Elytra — almost twice as wide as pronotum (1,93), almost twice as long as wide (0,58); carinulae interstices deep, not punctured; carinae-carinulae interstices punctured and pubescent; carinae not thick and flattened like in typical specimens of the group, but thin and sometimes sharp, almost as thin and sharp as the carinulae, often almost erased, especially on disc; scutellar carina broken, joining the first carina. Wings — fully developed. Measurements — length, 15,5-16,8 mm; width, 5,4-6,2 mm. Genitalia — figure 53.

SPECIMENS EXAMINED (6)

PUERTO RICO. Mayaguez (2 ♂ *, 2 ♀, AMNH, MCZ); Bayamon (1 ♀, AMNH); Quebradillas (1 ♀, MCZ).

GEOGRAPHIC DISTRIBUTION (fig. 51)

Galerita microcostata is the only species of the tribe on the island of Puerto Rico, where it is endemic.

NOTES

Galerita microcostata is derived from the South American *americana* (which also occurs in the Lesser Antilles, not reaching Puerto Rico however); the two species differ in only a few characters, mainly the coloration. On the average, *microcostata* is slightly smaller than *americana*, but Lesser-Antillean specimens of the latter are, in general, smaller than mainland ones. The genitalia of the two species are almost identical. Mainly because of the fact that the two forms are allopatric, and nothing is known about their habits and biology, I am presently considering them as distinct species; future studies may, however, show that *microcostata* and *americana* are not specifically distinct.

As Darlington stressed in the original description, *microcostata* has somewhat reduced carinae, especially the discal ones. This reduction is only very slight, and not present in all specimens I have seen. Without

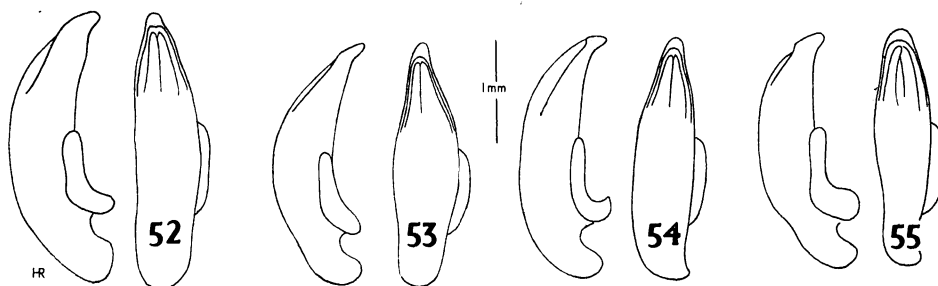
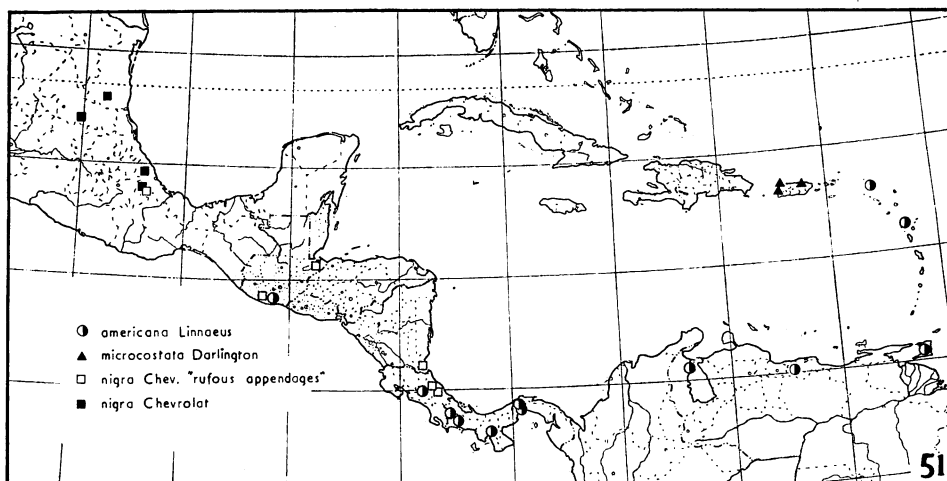


Fig. 51, Geographic distribution of *Galerita americana* (Linnaeus), *microcostata* Darlington, and *nigra* Chevrolat; fig. 52, aedeagus of *G. tucumana* Liebke, from Tucuman, Argentina (MCZ); fig. 53, aedeagus of *G. microcostata* Darlington from Mayaguez, Puerto Rico (AMNH); fig. 54, aedeagus of *G. nigra* Chevrolat from Cordoba, Mexico (MCZ); fig. 55, aedeagus of *G. melanarthra* Chaudoir from Nova Teutônia, Brazil (MCZ).

doubt, this reduction of carinae represents the first stage towards a reduction like the one found in *hexagonica* and *sulcipennis*.

In most specimens of *microcostata* I have seen, the two red spots between the eyes are fused to form a single, more-or-less triangular spot, which otherwise is found only in the species of *Progaleritina*.

Galerita nigra Chevrolat, 1835

(Figs. 51, 54)

Galerita nigra Chevrolat, 1835:181 (lectotype ♂, Veracruz, Mexico, UMO; examined).

Galerita nigra var. *A* Bates, 1883:164 (no types designated; Toxpam, Mexico; original specimens not seen).

Galerita nigra var. *B* Bates, 1883:165 (no types designated; Paso Antonio, Guatemala, BM, MNHN; original specimens examined).

DESCRIPTION

Black, with exception of antennal segments 6-11, which are usually pale; sometimes with yellowish legs (variety *A* of Bates) or with yellowish legs and antennae (variety *B* of Bates). Head—slightly wider than long (1,08), occiput more or less half as long as the diameter of one eye; strongly rugose, especially in anterior half; red spots between eyes sometimes very faint. Pronotum — slightly wider than head (1,11), slightly wider than long (1,05); very convex, transversely and finely rugose; covered with yellowish hairs. Elytra — almost twice as wide as pronotum (1,97), less than twice as long as wide (0,59); carinulae interstices deep, punctured; carinae-carinulae interstices closely punctured and pilose; scutellar carina in general joining the first carina. Wings — fully developed. Measurements — length, 16,6-19,1 mm; width, 6,2-6,8 mm. Genitalia — figure 54.

SPECIMENS EXAMINED (49)

MEXICO. *Tamaulipas*: Gomez Farias (1 ♀, CU); *San Luis Potosi*: Salto (2 ♂, 1 ♀, CN); *Veracruz*: Fortin de Las Flores (1 ♂, UA); Cordoba (3 ♂ *, 1 ♀, MCZ, BM, USNM); Jalapa (2 ♂, AMNH); *Puebla*: Necaxa (1 ♂, 1 ♀, ML); no locality (8 ♂, 6 ♀, 9 exx, IRSNB, CN, MNHN, MCZ, ML, USNM; 1 ♂, 1 ♀, SMF C13997); *Sinaloa* (?): no locality (1 ♂, AMNH).

GUATEMALA. *Escuintla*: Paso Antonio (2 ♂, 3 ♀, MNHN, BM); *Izabal*: Cayuga (2 ♀, USNM).

NICARAGUA. Grey Town (1 ♂, MNHN).

COSTA RICA. Hamburgfarm, Reventazon (1 ♂, USNM); Guapiles (1 ♀, USNM).

GEOGRAPHIC DISTRIBUTION (fig. 51)

Galerita nigra is known only from a few, very scattered localities in Mexico (mainly in Veracruz), Guatemala, Nicaragua and Costa Rica.

NOTES

Typical specimens of *nigra* (with black appendages) have only been collected in Mexico; south of Mexico (Guatemala, Nicaragua and Costa Rica), only specimens with yellow appendages (varieties *A* and *B* of Bates) have been collected, one specimen with yellow legs (var. *A*) being known from Cordoba, Veracruz (where the typical *nigra* has also been collected). The few specimens which have been available for this study are not enough for any final conclusion; however, the data indicate the possible existence of two largely allopatric (most probably geographic) forms of *nigra*: the typical black form which occurs in Mexico (southern limit possibly Veracruz), and the form with yellow appendages which occurs in southern Mexico (south of Veracruz) and the rest of Central America.

The problem of these forms is further complicated by the fact that yellow-legged *nigra* seem to form a transition between the completely black *nigra* and the yellow-legged *americana* (which in addition also has the yellowish pronotum). The yellow-legged *nigra* is sympatric with *americana* in Central America (see fig. 51). The status of the forms of *nigra*, as well as the relations between these and *americana* are far from settled, and depend on the study of material from many more localities, as well as the study of their biology.

The differences between forms *A* and *B* are not constant. I have seen specimens (from Grey Town, Nicaragua and Cayuga, Guatemala) which are clearly intermediate between the two forms, in having the basal antennal segments dark and the apical ones yellow.

The larva of *Galerita nigra* has been described by Candèze (1861: 327, pl. 1, fig. 1).

NOTES ON THE TYPES

Three males of *nigra* are preserved in the Hope Department of Entomology, University Museum, Oxford. One of these, bearing the locality label "Veracruz" and an unreadable locality, is herewith designated lectotype, the others are paralectotypes. In the future, with better knowledge of the distribution of the forms of *nigra*, a restriction of the type-locality of typical *nigra* may become possible and necessary.

***Galerita melanarthra* (Chaudoir, 1869)**

(Figs. 50, 55)

Galerita melanarthra Chaudoir, 1869:205 (holotype ♂, "Santa Catarina", Brazil, MNHN; examined).

DESCRIPTION

Black, with yellowish-orange antennae (segments 2-4 sometimes darkened), palpi and legs; these with dark knees (often the whole tibiae are darkened). Head — wider than long (1,14), very similar to the head of *americana*. Pronotum — very slightly wider than head (1,04); almost as long as wide (1,03); rugose as in *americana*; covered

with yellowish pubescence. Elytra — almost twice as wide as pronotum (1,97); almost twice as long as wide; very similar to the elytra of *nigra*, with carinulae interstices less conspicuously punctured; carinae-carinulae interstices with less dense row of punctures and hairs. Wings — fully developed. Measurements — length, 16,8 - 19,1 mm; width, 6,05-7,0 mm. Genitalia — figure 55.

SPECIMENS EXAMINED (134)

BRAZIL. No locality (1 ♂, 1 ♀, CNHM, IRSNB); *São Paulo*: São Paulo (2 ♂, 1 ♀, CN, CDZ); Columbia (1 ♀, CDZ); *Paraná*: Piraguara (2 ♀, IRSNB); Bahado (1 ♂, 1 ♀, MLP); Rio Negro (1 ♀, IEEA); Curitiba (2 ♂, 6 ♀, CDZ, IB); no locality (1 ♀, MLP); *Santa Catarina*: Nova Teutônia (41 ♂ *, 29 ♀, IRSNB, CN, IOC, IEEA, MCZ, ANSP); Rio Negrinho (1 ♂, IEEA); São Bento (1 ♀, IEEA); Corupá (12 ♂, 3 ♀, AMNH, MCZ); Cauna (1 ♂, 2 ♀, AMNH); Campo Alegre (1 ♂, AMNH); Joinville (2 ♂, 1 ♀, CDZ); Blumenau (2 ♂, 5 ♀, SMF C13994); no locality (1 ♂, 1 ♀, IZ, IRSNB); *Rio Grande do Sul*: Parecy Novo (2 ♂, IEEA, CPB); Serro Azul (1 ♂, CPB); Pôrto Alegre (1 ♂, 1 ♀, CPB, IEEA); São Leopoldo (2 ♀, IEEA, CPB); São Borja (3 ♂, MBA); no locality (1 ♀, IRSNB).

GEOGRAPHIC DISTRIBUTION (fig. 50)

Galerita melanarthra is known from southern Brazil (from São Paulo to Rio Grande do Sul); although I have seen abundant material, no specimens from Argentina are known, however, the species is likely to occur in Misiones, and possibly also in Uruguay.

In the BM I have studied one specimen from Campo, Ecuador, which F. van Emden determined as *nigra* var. *B*; according to the elytral pilosity, however, the specimen is *melanarthra*; neither of the species is known from Ecuador (and neither is likely to occur there), and I consider the specimen as mislabeled.

NOTES

As noted above, this species is very closely related to *americana* with which it is largely sympatric. It is also very similar to *nigra*, especially to Bates' variety *B* but is easily distinguished by means of the characters used in the key. The male genitalia shows some similarities to that of *tucumana*, as already mentioned.

GROUP OF *COSTULATA*

CHARACTERISTICS

Small to large sized species (14-21 mm), black, sometimes elytra with bluish sheen; antennae with segments 5-11 brownish (completely brown in *amethystina*); head always wider than long, with relatively

large and prominent eyes; occiput very short (shorter than half the diameter of one eye); front with three swollen, longitudinal ridges (sometimes less well developed); pronotum usually wider than long, wider than head; posterior constriction well developed; scutellum black, punctured, triangular, glabrous; elytra with well developed carinae and carinulae; carinae-carinulae interstices usually with a single row of yellowish hairs; humeri well developed, fully winged species.

The species included in this group (*costulata* Liebke, *boliviana*, sp. n., *isthmica*, sp. n., *amethystina*, sp. n., and *nana*, sp. n.) are very closely related. Although readily distinguished, some differ by very few characters which are usually difficult to describe. A major difficulty in the group, which applies mainly to the best represented species, *costulata*, is the degree of individual variation, especially in head and pronotal proportions. Liebke described *costulata* and *ohausi* as distinct species, but these two names doubtless refer to a single species, as shall be seen below. Indeed, they are apparently based on two extreme specimens of the same species. As far as known, the species of the group are distributed in the northern part of South America (including the Isthmus of Panama), and one reaches as far south as Bolivia. The center of dispersion seems to be the Amazonian Basin, where the group probably evolved when the continent was disconnected from Central America.

The group of *costulata* is closely related to the group of *americana*, differing mainly in the lack of the red spots between the eyes, and the different frontal and elytral sculpturation. The two groups are very likely cognate. Some morphological characters also indicate relation to the group of *gracilis*.

Galerita costulata Liebke, 1939

(Figs. 56, 57, 60)

Galerita porcata; Chaudoir, 1861:554 (*nec* Klug, 1834) (Ega, presently Tefé, Brazil; original specimens examined, MNHN).

Galerita costulata Liebke, 1939a:475 (holotype ♀, "Brasilien", IZ, not seen; paratype ♀, "Amazonas", BM, examined).

Galerita ohausi Liebke, 1939a:478 (holotype ♀, Manaus, Amazonas, IZ; examined). New synonymy.

DESCRIPTION

Black, with bluish, sometimes very slightly, elytra; five basal antennal segments and legs blackish; apical segments and mouthparts brown. Head — globose, wider than long (1,11), with large and very prominent eyes; occiput very short, more or less as long as half diameter of one eye; surface of occiput punctate-rugose; front with three longitudinal swollen ridges, the lateral ones better developed than the median one, smooth and very shiny on the surface; the median ridge less well developed, somewhat rugose on surface; posterior part of head covered with

sparse yellow pubescence. Pronotum — wider than head (1,13), slightly wider than long (1,06); little narrowed posteriorly, constriction evident, sides divergent behind it; surface convex, punctate-rugose, covered with

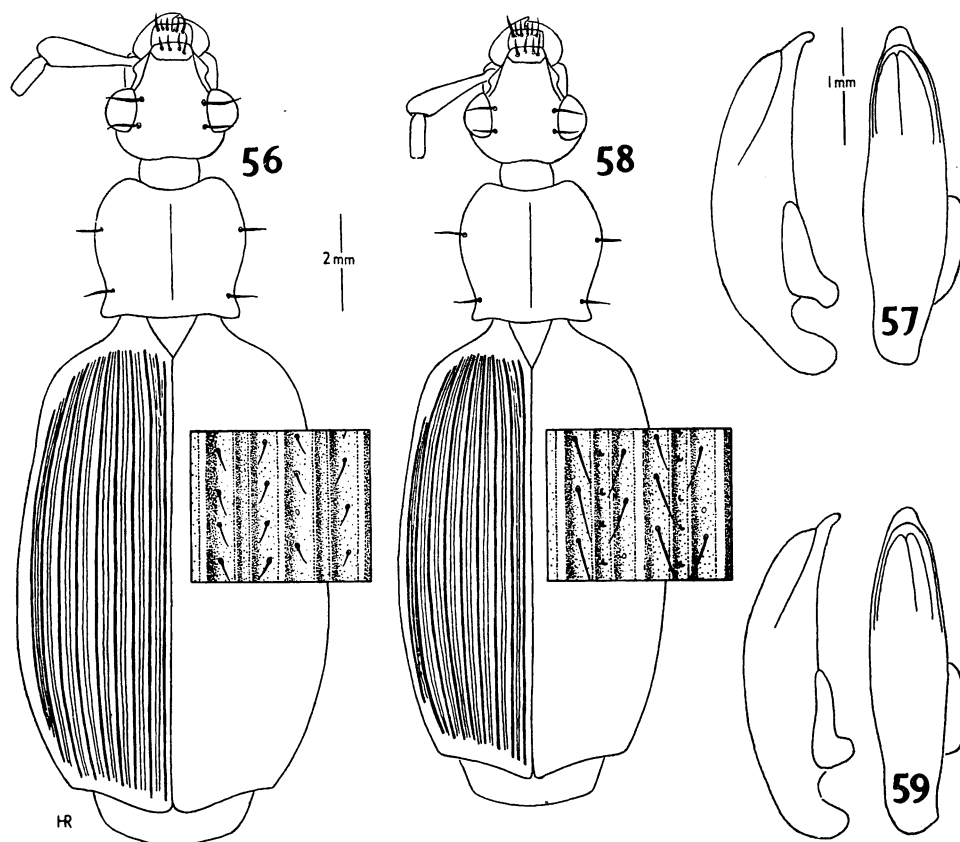


Fig. 56, *Galerita costulata* Liebke, ♀ from Uypizanga, Brazil (AMNH); fig. 57, aedeagus of same species from Yarinacocha, Peru (MCZ); fig. 58, *G. isthmica*, sp. n., holotype ♂ (USNM); fig. 59, aedeagus of same specimen.

dense, yellowish pubescence. Elytra twice as wide as pronotum, less than twice as long as wide (1,6); carinae sharp and thin, high; carinulae very thin, slightly closer to each other than to next carina; carinulae interstices very shallowly and sparsely punctured, carinae-carinulae interstices with row of sparse, yellow hairs; scutellar carina variable, either joining or not joining the first carina. Wings — fully developed; humeri normal. Measurements — length, 16,1 - 17,7 mm; width, 5,6 - 6,8 mm. Genitalia — figure 57.

SPECIMENS EXAMINED (17)

VENEZUELA.. *Bolívar*: Puerto las Majadas (3 ♂, CU).

SURINAM. Anapaike Village, Lawa River (1 ♂, 2 ♀, CDZ).

BRAZIL. *Amazonas*: Uypizanga, near Manaus (1 ♀, AMNH); Manaus (1 ♂, 2 ♀, CDZ); Tefé (3 ♀, MNHN); no locality (1 ♀, IRSNB).
PERU. *Loreto*: near Pucalpa (2 ♂ *, 1 ♀, MCZ).

GEOGRAPHIC DISTRIBUTION (fig. 60)

The few known specimens of *Galerita costulata* indicate that this species is distributed throughout the Amazonian Basin and adjacent areas.

NOTES

Galerita costulata is very variable, and herein lies the reason for Liebke's confused taxonomy of this species. From examination of the presently known material (including the study of the aedeagus and perusal of the types) it seems evident that *ohausi* is no more than a small specimen of *costulata* with somewhat slender pronotum. It is notable that in describing *costulata*, Liebke discussed relationship with *amazonica* which belongs in a completely different species-group, and did not mention *ohausi*. The latter was described as a relative of *porcata* Klug, while no mention was made of the forms to which it is truly related. The specimens which Chaudoir referred to *porcata* (1861) are actually specimens of this species.

The general aspect and shape of the aedeagus indicate that *costulata* is very closely related to *isthmica*, it is, however, easily distinguished, as seen in the key.

***Galerita isthmica*, sp. n.**

(Figs. 58-60)

TYPE DATA

Holotype ♂ (*) and paratype ♀, from Panama: Rio Trinidad, VI.1912, A. Busck col. (USNM); 1 paratype ♀, from Panama: La Joya, II.1945, K. E. Frick col. (CAS).

DESCRIPTION

Black, antennae brown from 5th segment on. Head — globose, not very large, wider than long (1,09), with large and prominent eyes; occiput less than half as long as the diameter of one eye; occiput punctate-rugose; front as in *costulata*, with less swollen, lateral ridges; covered with very fine, yellowish pubescence. Pronotum — as long as wide, wider than head (1,06); constriction well developed; sides diverging behind it; surface convex, punctate-rugose, more transversely rugose than in the other species; covered with yellowish pubescence. Elytra — more than twice as wide as pronotum (2,1), 1,66 times as long as wide; carinae strong, not high nor sharp; carinulae thin, closer to each other

than to next carina; carinulae interstices punctate; carinae-carinulae interstices with a row of long and relatively dense, yellow pubescence; scutellar carina not joining the first carina. Wings — and humeri well developed. Measurements — length, 16,1 - 17,8 mm; width, 5,75 - 6,3 mm. Genitalia — figure 59.

NOTES

This small species is readily distinguished from the other members of its group by the relatively long elytral pilosity and the more transverse rugosity of the pronotum. As stated above, it is very closely related to *costulata*.

Galerita boliviana, sp. n.

(Figs. 60-62)

TYPE DATA

Holotype ♂ (*) and paratype ♀ from Bolivia: *La Paz*, Huachi, Rio Beni, September, W. M. Mann col. (USNM); 1 paratype ♀, from Bolivia: *Cochabamba*, prov. Chapare, 400 m, 17.III.1949, Zischka col. (MCZ n. 31188); 1 paratype ♀, same locality, 28.II.1948, Zischka col. (CN).

DESCRIPTION

Black, antennae and mouthparts somewhat lighter; antennal segments 5-11 light brown. Head — large, globose, wider than long (1,13), with very large and prominent eyes; occiput very short (less than half as long as the diameter of one eye); surface of occiput slightly concave in the middle, deeply punctate-rugose; front similar to that of *costulata*, with less smooth and shiny lateral ridges; with very scattered, yellowish hairs, mainly in the posterior half. Pronotum — wider than head (1,17), slightly wider than long (1,07); constriction well developed, sides more or less parallel behind it; surface convex, punctate-rugose. Elytra — almost twice as wide as pronotum (1,98), 1,53 times as long as wide; carinae strong, not very high nor very sharp; carinulae very thin, closer to each other than to next carina; carinulae interstices very shallowly punctured; carinae-carinulae interstices with few, sparse, yellowish hairs; scutellar carina joining the first. Wings — fully developed, humeri normal. Measurements — length, 19,0 - 20,75 mm; width, 7,1 - 7,6 mm. Genitalia — figure 62.

NOTES

Galerita boliviana is readily distinguished from the other species of the group by its much larger size and the very peculiar aedeagal

apex (fig. 62). Other distinctive characters have been utilized in the key.

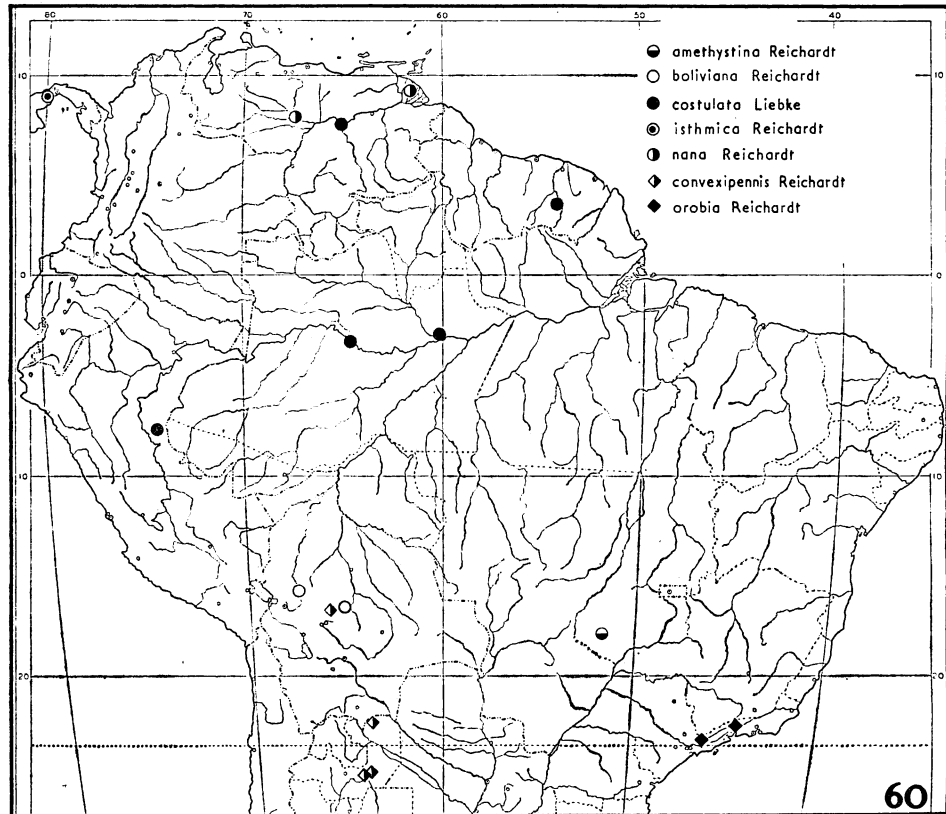


Fig. 60, Geographic distribution of *Galerita amethystina*, sp. n., *boliviana*, sp. n., *costulata* Liebke, *isthmica*, sp. n., *nana*, sp. n., *convexipennis*, sp. n. and *orobia*, sp. n..

Galerita amethystina, sp. n.

(Figs. 60, 63, 64)

TYPE DATA

Holotype ♂ (*), from Brazil: *Goiás*, *Jataí*, III.1903, Donckier col. (MNHN); paratype ♀, same data as holotype (CDZ).

DESCRIPTION

Black, with purplish-blue elytra; antennae and mouthparts dark rufous; legs very dark brown, almost black. Head — wider than long (1,1), with large, prominent eyes; occiput very short (about as long as

half diameter of one eye); surface deeply punctate-rugose; three frontal, longitudinal ridges not very high, rugose; occiput covered with very few, yellow hairs. Pronotum — wider than head (1,1), slightly longer than wide (1,04); widest in front of the middle, narrowed posteriorly; sides barely divergent behind constriction; surface convex, regularly and slightly transversely punctate-rugose; with few yellow hairs. Elytra — twice as wide as pronotum; 1,69 times as long as wide; carinae thick, not high nor sharp; carinulae thin, very close to each other, carinae-carinulae interstices with a row of yellow hairs; scutellar carina joining the first. Wings — fully developed; humeri normal. Measurements — length, 17,5 - 17,7 mm; width, 6,0 - 6,2 mm. Genitalia — figure 64.

NOTES

Galerita amethystina is easily distinguished from the other species of the group by its magnificent purplish-blue elytra. The species is also characterized by the dark rufous antennae (immature specimens?) and by the very peculiar apex of the aedeagus (fig. 64).

Galerita nana, sp. n.

(Figs. 60, 65, 66)

TYPE DATA

Holotype ♂ (*) from Venezuela: *Delta*, 140 km NE Barrancas, Caño Mariusa, 21.VII.1958, A. Menke col. (UA); 1 paratype ♀, from Venezuela: *Apure*, San Fernando de Apure, V-X.1897, L. Laglaize col. (MNHN).

DESCRIPTION

Dark brown, almost black; antennae with segments 5-11 brown. Head — small, wider than long (1,12), with large, prominent eyes; occiput half as long as the diameter of one eye; surface punctate-rugose; three frontal ridges not very high, rugose; occiput with yellow hairs. Pronotum — longer than wide (1,07); wider than head (1,13); widest in the middle, not much narrowed anteriorly nor posteriorly; sides shortly divergent behind the constriction; surface convex, densely and regularly punctate-rugose. Elytra — twice as wide as pronotum (1,98), 1,67 times as long as wide; carinae stronger than carinulae, these closer to each other than to next carina; carinulae interstices with a row of punctures; carinae-carinulae interstices with a row yellow hairs; scutellar carina not joining the first carina. Wings — and humeri fully developed. Measurements — length, 14,4 - 14,7 mm; width, 4,9 - 5,2 mm. Genitalia — fig. 66.

NOTES

Galerita nana is well characterized by its very small size (the only smaller Neotropical species of the genus is *gracilis*), which easily dis-

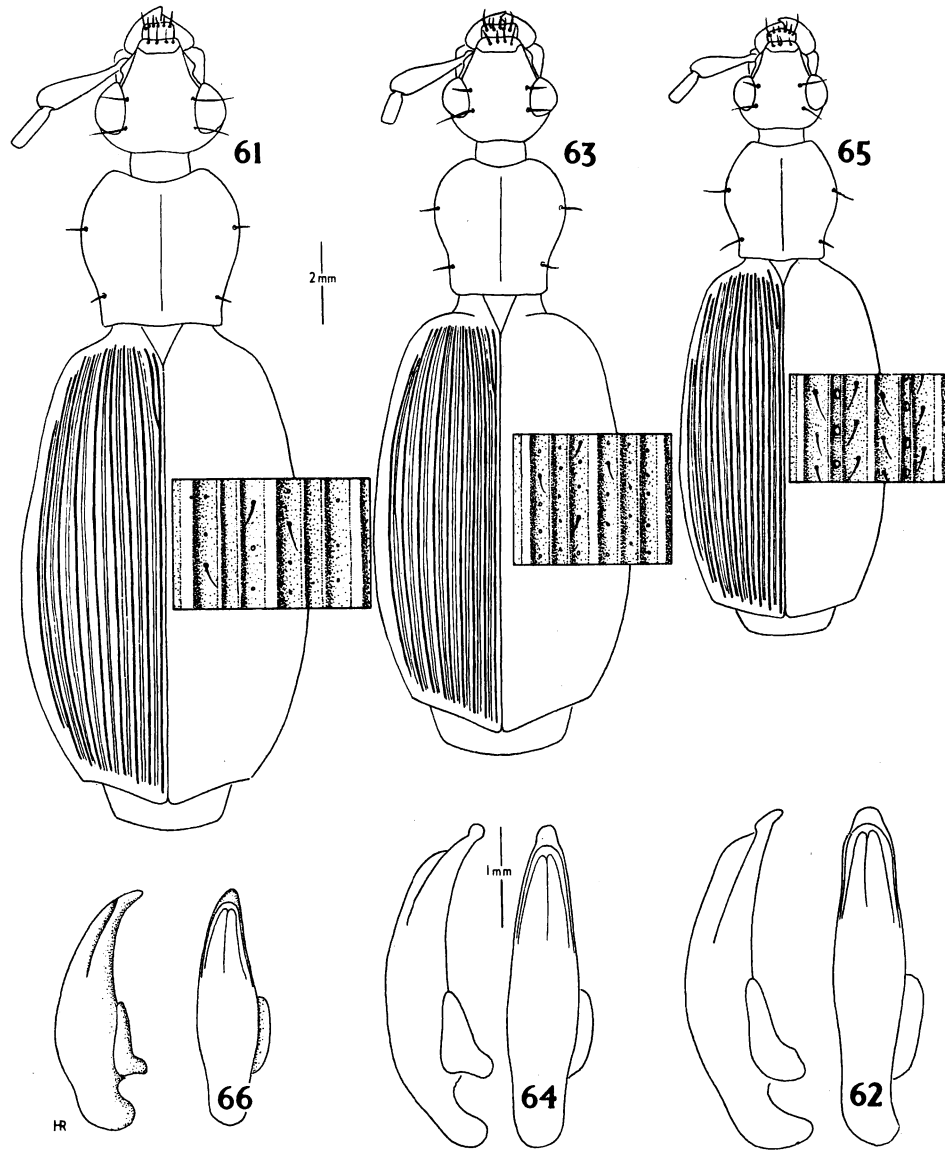


Fig. 61, *Galerita boliviana*, sp. n., holotype ♂ (MCZ); fig. 62, aedeagus of same specimen; fig. 63, *G. amethystina*, sp. n., holotype ♂ (MNHN); fig. 64, aedeagus of same specimen; fig. 65, *G. nana*, sp. n., holotype ♂ (UA); fig. 66, aedeagus of same specimen.

tinguishes it from the other species of the group of *costulata*; the shape of the aedeagus is also very typical for the species.

GROUP OF *GRACILIS*

CHARACTERISTICS

Small to medium sized species (12,5 - 20,0 mm); black (one species brown with rufous appendages). Head with large and prominent eyes; occiput shorter than the diameter of one eye; pronotum longer than wide, widest in the middle, narrowed posteriorly almost as much as anteriorly; sides divergent behind the constriction; surface densely, transversely punctate-rugose. Scutellum typical. Elytra with carinae and carinulae always present, thin; carinae-carinulae interstices pubescent; scutellar carina usually not joining the first carina; two of the three species fully winged; *inca* with reduced humeri and wings.

This group, although small (three species are presently known: *gracilis* Brullé, *amazonica* Liebke and *inca*, sp. n.) seems to be very heterogeneous. There is, however, no doubt about the relationship of the species: they share several important characters such as the shape of head, pronotal sculpture and form of the aedeagus. Of the three species, only *gracilis* is well defined, at least morphologically, since sufficient material was studied. However, even in this case the material is limited and the distribution very incomplete. *Galerita amazonica* and *inca* are much less well defined, due to lack of material.

Two interesting facts concerning this group are: 1. the brown color of *gracilis*, which is very unusual in the genus, and 2. the flightlessness of *inca*, a species which also has some similarities to some species of the group of *jelskii*, which are all flightless. It is possible that the two groups stem from a common ancestor. Relations to the groups of *unicolor* and *costulata* are less evident but very probable.

The group of *gracilis* has a typically South American distribution: two species occur in eastern South America, and one at lower elevations in the Andes.

Galerita gracilis Brullé, 1837

(Fig. 71)

Galerita gracilis Brullé, 1837:12 (holotype ♂, Corrientes, Argentina, MNHN; examined); Chaudoir, 1861:554; Liebke, 1932:419 (erroneously synonymized with *lacordairei* Dejean).

Galerita pilosa Reichardt, 1964:51, figs. 4-7 (holotype ♂, Salobra, Brazil, CDZ; examined). New synonymy.

DESCRIPTION

Dark brown, almost black, with lighter, rufous legs, antennae and mouthparts. Head — slightly wider than long (1,04), with large, pro-

minent eyes; occiput short (half as long as the diameter of one eye); surface punctate-rugose, covered with long and fine, yellow hairs. Pronotum — as wide as head, longer than wide (1,22); widest in the middle, almost as narrowed anteriorly as posteriorly; posterior constriction well marked, sides divergent after the constriction; surface convex, transversely punctate-rugose, covered with dense and long, yellowish pilosity. Elytra — twice as wide as pronotum (2,06) 1,7 times as long as wide; carinae well developed, not high; carinulae closer to each other than to next carina; carinae-interstices with a single row of large, deep punctures; carinae-carinulae interstices with a single row of long, yellow hairs; scutellar carina usually not joining the first carina. Wings — fully developed. Measurements — length, 12,6 - 14,6 mm; width, 4,2 - 4,9 mm. Genitalia — see fig. 7 in Reichardt, 1964.

SPECIMENS EXAMINED (19)

BOLÍVIA. *Santa Cruz*: Buena Vista, 400 m (1 ♀, CN).

BRAZIL. *Mato Grosso*: Salobra (6 ♂ *, 8 ♀, CDZ, MCZ); near Santa Rosa de Descalvados (1 ♀, ANSP).

PARAGUAY. *Asunción* (1 ♂, MBZ).

ARGENTINA. *Chaco*: Resistencia (1 ♀, MBA); rio de Oro (1 ♀, MBA).

GEOGRAPHIC DISTRIBUTION (fig. 71)

Galerita gracilis seems to be restricted to the Paraná - Paraguay river system and adjacent areas.

NOTES

Although *gracilis* and *lacordairei* are quite distinct species, Chaudoir (1861), probably without reference to the types, suggested that they were possible synonyms. Later, Liebke (1932), acting probably on Chaudoir's suggestion, erroneously synonymized the two. Without knowledge of this error I described a new species, *pilosa*. Comparison of the relevant types has shown that *gracilis* is perfectly distinct from *lacordairei* (which is presently included in a distinct species group), and that *pilosa* is a synonym of the former.

Galerita gracilis is somewhat similar to *amazonica* (especially to small specimens), it is, however, easily distinguished by its much smaller size and its brown color.

***Galerita amazonica* Liebke, 1939**

(Figs. 67, 68, 71)

Galerita amazonica Liebke, 1939a: 475 (holotype ♂, "Amazonas", Brazil, IZ; examined).

DESCRIPTION

Black, elytra very slightly bluish; antennae brown from 5th segment on. Head — slightly wider than long (1,02), with large, some-

what inconspicuous eyes; occiput short (slightly longer than half the diameter of one eye); occiput punctate; front depressed in the middle; head covered with few yellowish hairs. Pronotum — longer than wide (1,14), wider than head (1,13), widest in the middle, as narrowed ante-

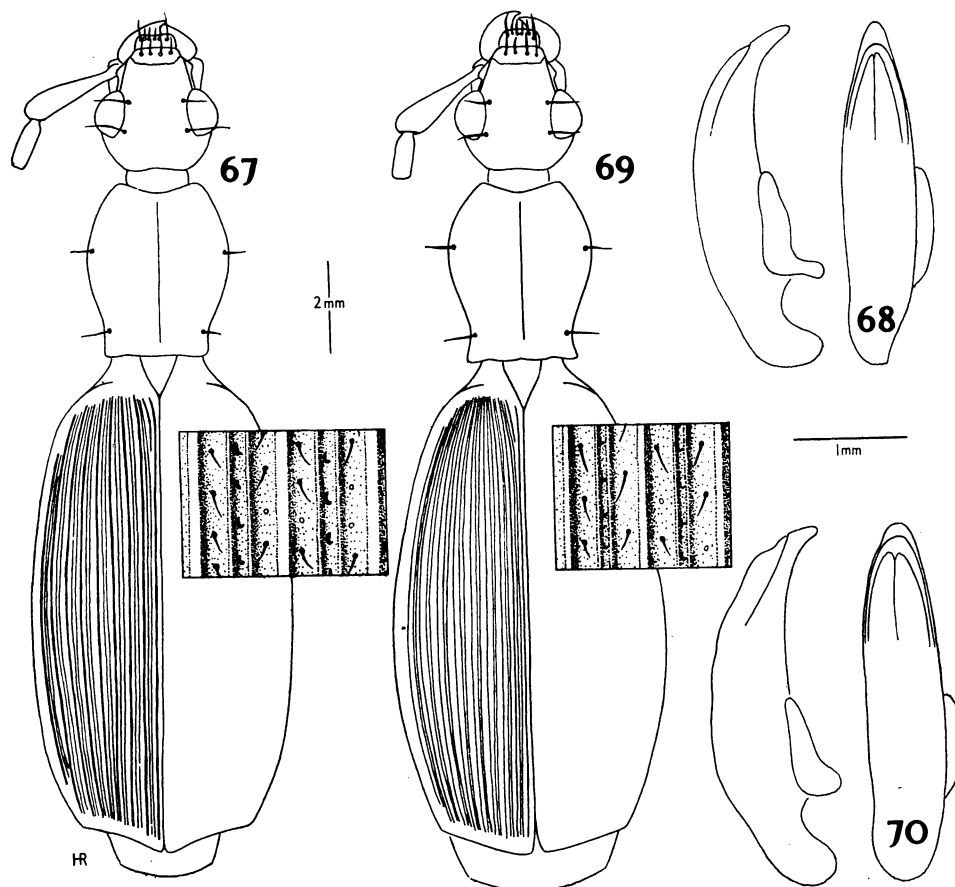


Fig. 67, *Galerita amazonica* Liebke, holotype ♂ (IZ); fig. 68, aedeagus of same specimen; fig. 69, *G. inca*, sp. n., holotype ♂ (MCZ); fig. 70, aedeagus of same specimen.

riorly as posteriorly; constriction not well marked; sides parallel behind the constriction; surface little convex, transversely rugose-punctate; covered with yellow hairs. Elytra — almost twice as wide as pronotum (1,97), 1,72 times as long as wide; carinae and carinulae thin, the latter thinner and slightly closer to each other than to next carina; carinulae interstices with very shallow row of punctures; carinae-carinulae interstices with a row of sparse, yellow hairs; scutellar carina usually not joining the first carina. Wings — fully developed. Measurements — length, 14,2 - 18,4 mm; width, 4,8 - 6,0 mm. Genitalia — figure 68.

SPECIMENS EXAMINED (8)

SURINAM. Anapaike Village, Lawa River (1 ♂, CDZ).

BRAZIL. Amazonas: Benjamin Constant (1 ♂, CDZ); Tefé (1 ♀, MNHN); São Paulo de Olivença (1 ♀, MNHN); Acre: Iquiri (1 ♀, CDZ); Pará: Canindé (2 ♂, CDZ).

BOLÍVIA. Cochabamba: Chapare, Rio Chipiriri, 400 m (1 ♂, ZSM).

GEOGRAPHIC DISTRIBUTION (fig. 71)

This species is presently known only from the Amazonian Basin and adjacent areas.

NOTES

Judging from the few specimens available, this species is very variable in size and in the shape and proportions of the head and pronotum. Indeed, it is possible that more than one species is being confused here.

As seen above, *amazonica* is close to *gracilis*, being distinguished mainly by the completely different color; it is also similar to *inca* from which it is distinguished mainly by having well developed humeri and hind wings.

In his description, Liebke stated that the species "gehört hart neben *costulata*...", a very misleading remark for proper identification of the species, which is not at all closely related to *costulata*, as seen above.

Galerita inca, sp. n.

(Figs. 69-71)

TYPE DATA

Holotype ♂ (*) from Bolívia: Cochabamba, region Chapare, 490 m, Zischka col. (MCZ n. 31189); paratype ♂, same data as holotype (CDZ); 1 ♂ and 1 ♀, paratypes, from Peru: San Martín. Tocache, 600 m, X-XI. 1900, G. A. Baer col. (MNHN); 1 ♀, paratype, from Ecuador: Río Morona (MNHN).

DESCRIPTION

Black, antennae brown from the 5th segment on. Head — large, longer than wide (1,03), with large, prominent eyes; occiput short (slightly longer than half diameter of one eye); surface punctate, depressed and somewhat longitudinally rugose in front; with few, yellow hairs. Pronotum — longer than wide (1,22), wider than head (1,08); widest in the middle, much narrowed posteriorly; sides slightly divergent behind the constriction; surface convex, densely and transversely punctate-rugose; covered with yellow hairs. Elytra — twice as wide as pronotum (2,06), 1,7 times as long as wide; narrow at base, much widened in posterior third; carinae and carinulae thin, the latter thinner and closer to each other than to next carina; carinae-carinulae interstices with a single row of yellow hairs; scutellar carina not joining the first carina.

Wings — reduced, humeri very poorly developed. Measurements — length 17,2 - 19,1 mm; width, 5,75 - 6,3 mm. Genitalia — figure 70.

NOTES

Galerita inca is the only species of this group with reduced wings and humeri. It is easily distinguished from *gracilis* and *amazonica* by these characters, besides others, mentioned in the description and key.

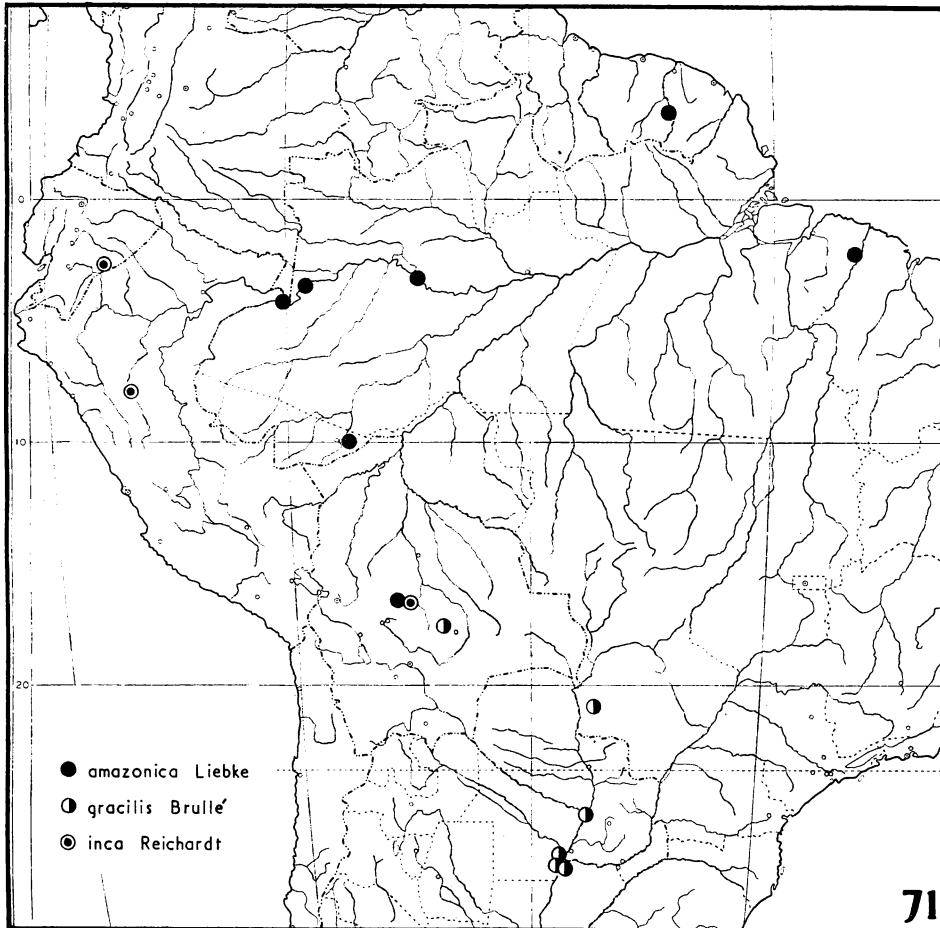


Fig. 71, Geographic distribution of *Galerita amazonica* Liebke, *gracilis* Brullé and *inca*, sp. n.

GROUP OF UNICOLOR

CHARACTERISTICS

Usually black species (*palustris* and sometimes *lacordairei*, are brown), small to medium sized (14 - 18 mm), with elytra varying from brown to brownish-blue, blue or green. Head usually longer than wide

(but also commonly as wide as long), with large, somewhat inconspicuous eyes; occiput usually short (shorter than the diameter of one eye); finely rugose all over its surface; frontal carina not well developed, but present, covered with yellow pilosity. Pronotum of variable proportions; posterior constriction usually not well pronounced, very close to posterior margin; sides very shortly parallel (at least very close to parallel) behind the constriction; surface very finely, transversely rugose, with yellow hairs. Scutellum typical. Elytra with well developed humeri; species usually fully winged (*simplex* and *beauvoisi* with reduced wings); with thin and not high carinae; carinulae very thin (absent in *simplex*); scutellar carina joining or not joining the first carina. Legs black (rufous in *palustris*).

The species included in this group, *unicolor* Latreille & Dejean, *lacordairei* Dejean, *tristis* Reiche, *aequinotialis* Chaudoir, *simplex* Chaudoir, *beauvoisi* Chaudoir, *coeruleipennis* Chaudoir, *palustris* Liebke, *esmeraldina*, sp. n., and *costalimai*, sp. n., form a very heterogenous group; as a result both species-differentiating characters and the characters which they have in common are very difficult to define, especially for use in identification keys. The differences are slight, and refer mainly to pronotal form and rugosity. Besides this difficulty, the species are very variable.

Galerita aequinotialis and *simplex*, both from Central America, are very similar species, which are also related to the Haitian *beauvoisi*, even though the latter has a completely different pronotal shape. The reduction of wings in *simplex* and *beauvoisi* is very interesting and noteworthy, especially in the case of *simplex* which seems not to be an altitude form, as it is partially sympatric with fully winged, lowland *aequinotialis* (see p. 92), its closest relative. In these two species, *simplex* and *beauvoisi*, the reduction of wings is not complete. The seven South American species are very closely related, especially *tristis*, *costalimai*, *esmeraldina* and *palustris*.

As yet, the relations of the group as a whole are obscure; although it seems to be related to the Central American species of the group of *striata* and through this group they can be linked to the group of *jelskii*.

***Galerita aequinotialis* Chaudoir, 1852**

(Figs. 72, 73, 76)

Galerita aequinotialis Chaudoir, 1852:37 (type, "Mexico", MNHN; not located).

Galerita aequinotialis var. *elegans* Chaudoir, 1861:553 holotype ♀, "Yucatan", Mexico, MNHN; examined). New synonymy.

DESCRIPTION

Black, elytra very dark, sometimes with slight blue sheen; antennae brown. Head — slightly longer than wide (1,02), with large, somewhat inconspicuous eyes; occiput shorter than the diameter of one eye; very

rugose on anterior half, punctate posteriorly; covered with yellowish pubescence. Pronotum — wider than head (1,18), slightly longer than wide (1,06); very wide in the middle, narrowed posteriorly; constriction very close to base, sides parallel behind this; rugose-punctate, flattened on disc; covered with yellowish pubescence. Elytra — deplanate, almost twice as wide as pronotum (1,8), less than twice as long as wide (1,7); carinae and carinulae well developed; carinulae interstices usually with a row of large punctures; carinae-carinulae interstices with a row of yellow hairs; scutellar carina usually not joining the first carina. Wings — and humeri normally developed. Measurements — length, 14,6-17,9 mm; width, 4,4 - 6,05 mm. Genitalia — figure 73.

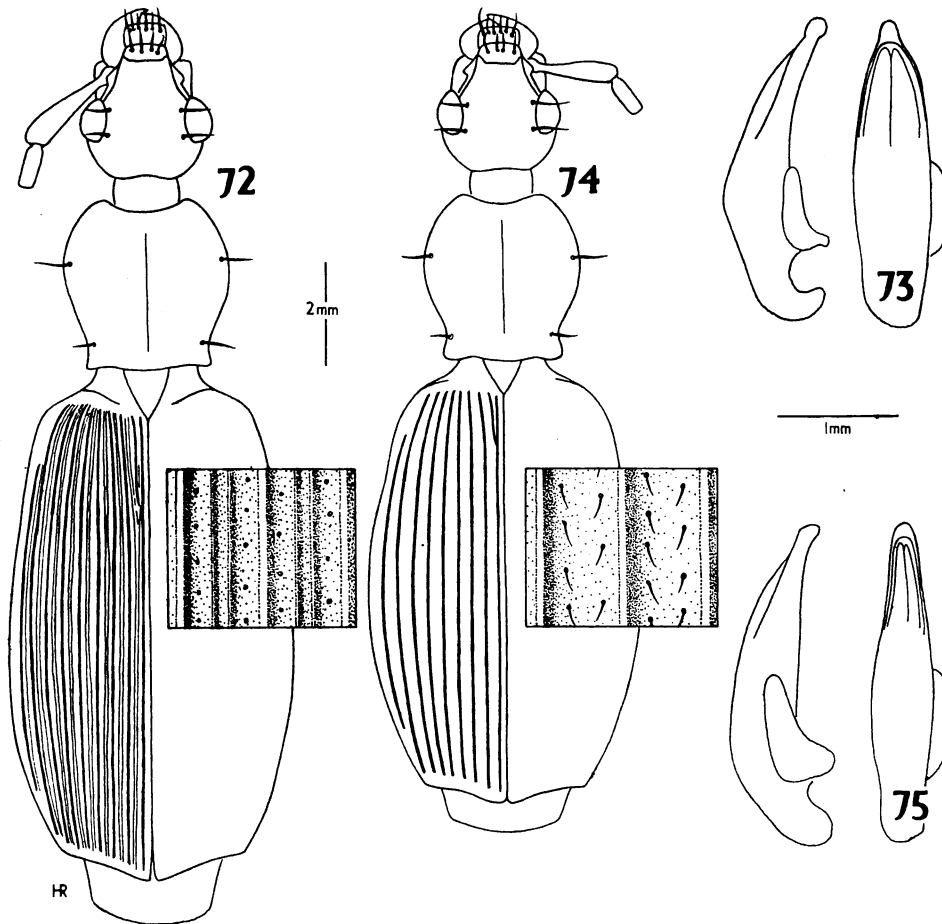


Fig. 72, *Galerita aequinoctialis* Chaudoir, ♂ from Jalapa, Mexico (MCZ); fig. 73, aedeagus of same specimen; fig. 74, *G. simplex* Chaudoir, ♀ from Pueblo Nuevo, Mexico (MCZ); fig. 75, aedeagus of same species, from "Mexico" (NHMW).

SPECIMENS EXAMINED (62)

UNITED STATES. *Texas*: Brownsville (1 ♂, UA).

MEXICO. no locality (2 ♂, 3 ♀, IRSNB, IZ); *Tamaulipas*: Tampico (1 ♂, MNHN); *Sinaloa*: Los Bejucos (1 ♂, MCZ); *Durango*: Ventanas, 600 m (1 ♀, BM); *San Luis Potosi*: Tamazunchale (3 ♀, CNHM, AMNH); *Veracruz*: Jalapa (5 ♂*, 8 ♀, MCZ, AMNH, IRSNB, USNM); *Orizaba* (1 ♂, 1 ♀, USNM, MCZ); *Huatusco* (1 ♀, CDZ); *Paso de Telaga, Jicaltepec* (1 ♀, MCZ); *Cordoba* (2 ♂, USNM); *Guer-rero*: Chilpancingo (1 ♂, BM); *Chipas*: Tuxtla Gutierrez (1 ♀, UV); *Tapachula* (1 ex., BM); *Campeche*, near Escarcega (1 ♂, CNC); *Yucatan*: Colonia Yucatan (2 ♂, AMNH); *Chichen Itza* (1 ♀, MCZ).

GUATEMALA. *Alta Verapaz*: Chiacam, 620 m (1 ♀, BM); Panzos (2 ♂*, MCZ); *Cacao, Trece Aguas* (1 ♂, USNM); *Sacatepequez*: Los Patos River (1 ♀, CAS); *El Peten*: Naranjo (1 ♀, USNM).

EL SALVADOR. San Salvador, 700 m (2 ♀, SMF C13987).

HONDURAS. Minas de Oro (1 ♂, 2 ♀, MCZ); La Ceiba (1 ♀, USNM).

NICARAGUA. Granada (1 ♀, BM); Chontales (1 ♀, BM); Ometepe, 1200 m (1 ♂, USNM).

COSTA RICA. Turrialba (2 ♂, CAS); San José, 1000-1200 m (1 ♂, USNM); Hamburgfarm, Reventazon (3 ♂, 1 ♀, USNM); Las Mercedes (1 ♂, USNM).

PANAMA. Bugaba (1 ♀, BM).

GEOGRAPHIC DISTRIBUTION (fig. 76)

Galerita aequinoctialis is a typically Central American species, reaching from the northeastern border of the United States and Mexico to Panama.

NOTES

In some specimens of *aequinoctialis* the pronotum is not as wide as in normal specimens. Chaudoir named this form *elegans*, considering it as a variety of the former. There are, however, no clear limits between *aequinoctialis* and *elegans*: all possible intermediates are present. No genitalic difference is present between typical specimens of the two forms. Until more material, especially larger series from the same locality, is available for a more careful study, it seems wise to consider the two forms as synonyms.

Galerita aequinoctialis is very close and similar to *simplex*. It is, however, readily distinguished by the fully developed wings and carinae. There are only very slight differences in the aedeagi of the two species. *G. aequinoctialis* is also closely related to *beauvoisi*, being distinguished mainly by the completely different form of the pronotum.

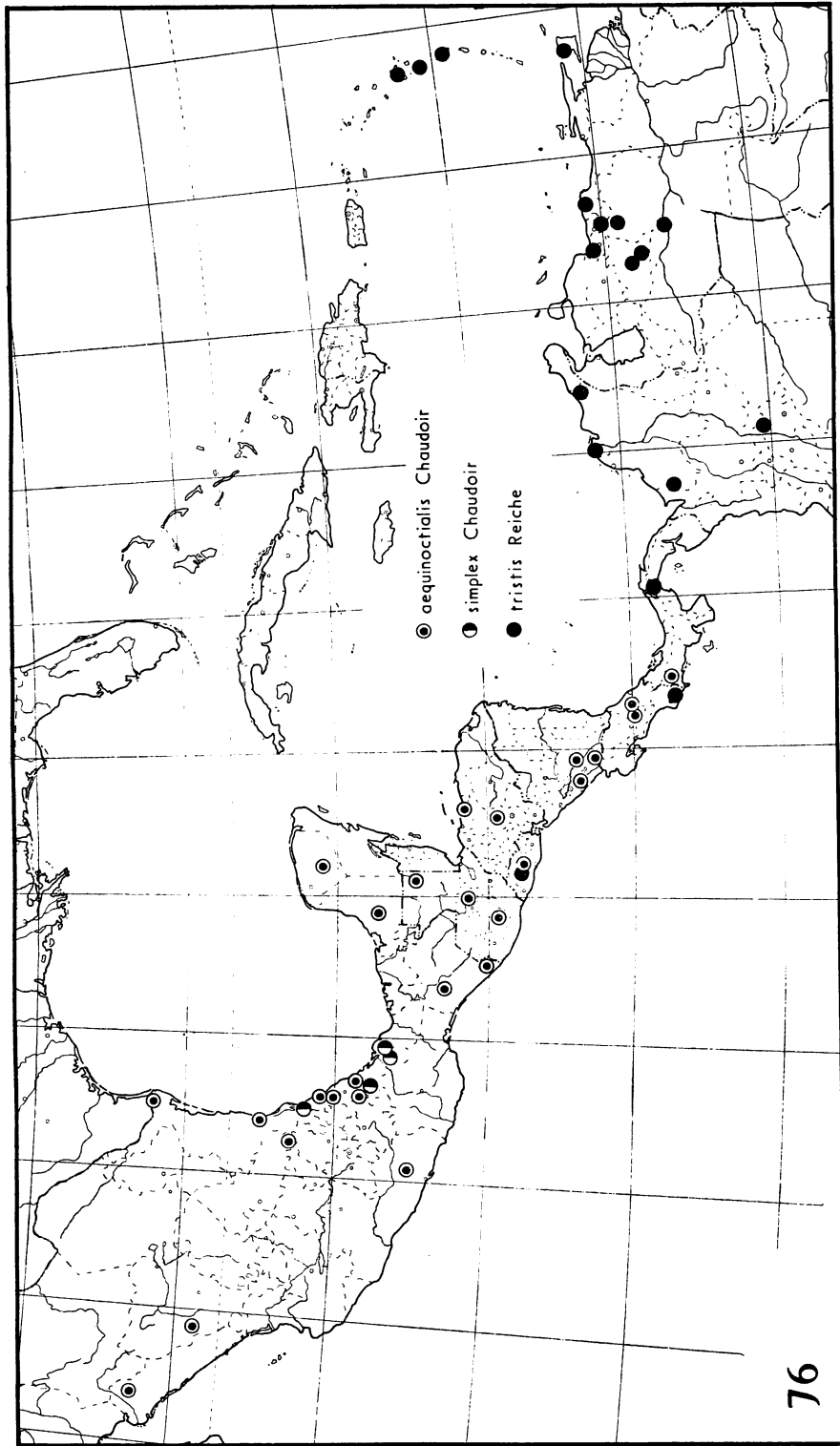


Fig. 76, Geographic distribution of *Galerita aequinoctialis* Chaudoir, *simplex* Chaudoir and *tristis* Reiche.

Galerita simplex Chaudoir, 1852
(Figs. 74-76)

Galerita simplex Chaudoir, 1852:36 (type, "Mexico", MNHN; not located).

DESCRIPTION

As *aequinoctialis*, usually with more bluish-purple elytra. Very similar to that species, with very similar body shape and proportions. The only main difference is found in the elytral structure: *simplex* lacks carinulae, and has a row of very dark hairs on each side of the carina. Scutellar carina usually joining the first carina. Humeri slightly less well developed than in *aequinoctialis*; elytra shorter and little wider posteriorly. Wings — reduced, reaching the limit between the 2nd and 3rd abdominal segments. Measurements — length, 14,4 - 16,4 mm; width, 4,1 - 5,35 mm. Genitalia — figure 75.

SPECIMENS EXAMINED (20)

MEXICO. No locality (6 ♂ *, 4 ♀, MCZ, IRSNB, MNHN, CN); Veracruz: Tuxpam (1 ♀, MNHN); near San Andrés Tuxtla (1 ♂, CN); Fortin de Las Flores (1 ♀, UA); Huatusco (3 ♀, CDZ); Cordoba (2 ♀, USNM); Pueblo Nuevo (1 ♀, MCZ); Lago de Catemaco (1 ♂ *, CNC).

GEOGRAPHIC DISTRIBUTION (fig. 76)

Only few specimens of *Galerita simplex* are presently known, and only few of them with exact locality data, all from the state of Veracruz, where the species is partly sympatric with *aequinoctialis*.

NOTES

As already pointed out, *simplex* and *aequinoctialis* are very closely related forms, differing mainly by the reduction of wings and absence of carinulae in the former. *G. simplex* has relatively shorter and wider elytra than *aequinoctialis*; only one male of *simplex* was available for dissection and its aedeagus is very similar, almost identical to that of *aequinoctialis*. More material is necessary to define the real status of *simplex* with respect to *aequinoctialis*.

The problem of winglessness of *simplex* is further discussed on p. 160. The larva this species has been described by Candèze (1861: 329).

Galerita beauvoisi Chaudoir, 1861

(Figs. 77-85)

Galerita beauvoisi Chaudoir, 1861:553 (holotype ♂, "Antilles?", MNHN: examined).

Galerita striata; Darlington, 1935:212 (*nec striata* Klug, 1834) (original specimens from Haiti, MCZ; examined).

DESCRIPTION

Black, with dark elytra, sometimes with purple or blue sheen; antennae and palpi brown, legs black. Head — very slightly longer than wide (1,01), with large, somewhat inconspicuous eyes; occiput more

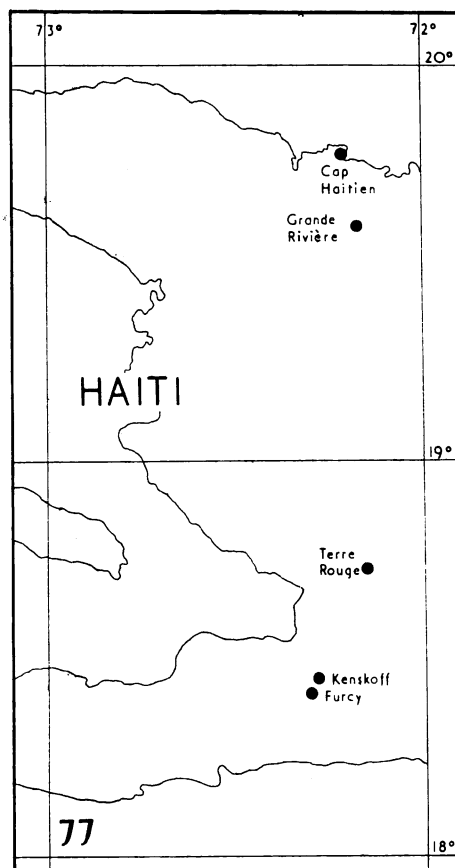


Fig. 77, Geographic distribution of *Galerita beauvoisi* Chaudoir, in Haiti.

or less as long as the diameter of one eye; rugose, especially on anterior half, on both sides of the frontal carina. Pronotum relatively very small, slightly wider than head (1,05), longer than wide (1,07); surface roughly, regularly rugose, covered with yellowish pilosity; posterior constriction very slight, close to base. Elytra — twice as wide as pronotum (2,08), less than twice as long as wide (1,66); narrow at humeri,

widened on the second third; carinae thin, not very high; carinulae very thin; carinulae interstices with very shallow, almost imperceptible row of punctures; carinae-carinulae interstices with a row of sparse, dark hairs. Wings — polytypic. Measurements — length, 14,25 - 14,85 mm; width, 4,9 - 5,3 mm. Genitalia — figures 79, 81, 83, 85.

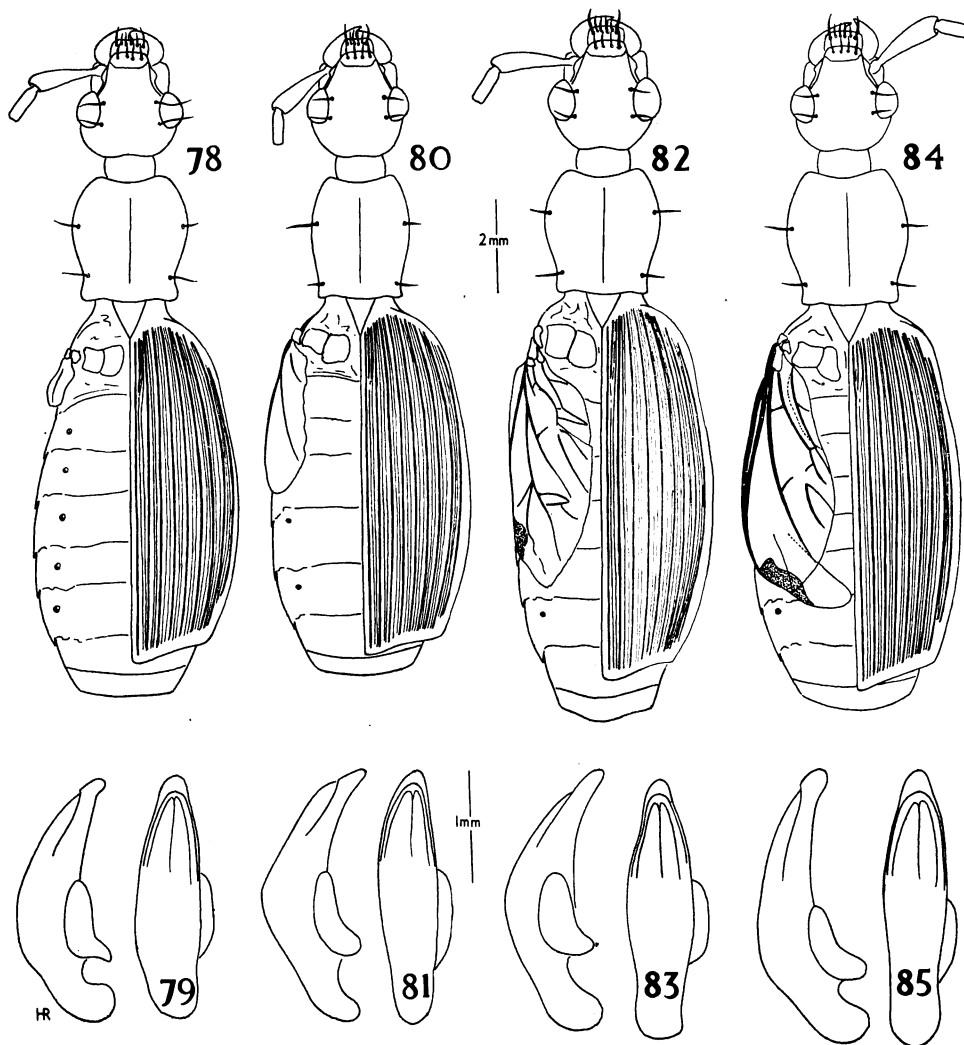


Fig. 78, *Galerita beauvoisi* Chaudoir, ♂ from Furcy, Haiti (MCZ); fig. 79, aedeagus of same specimen; fig. 80, ♂ from Terre Rouge, Haiti (MCZ); fig. 81, aedeagus of same specimen; fig. 82, ♂ from Cap Haitien, Haiti (MCZ); fig. 83, aedeagus of specimen from Grande Rivière, Haiti (MCZ); fig. 84, ♂ from San José, Costa Rica (USNM); fig. 85, aedeagus of same specimen.

SPECIMENS EXAMINED (28)

HISPANOLA. *Haiti*: Cap. Haitien (3 ♂ *, 7 ♀, MCZ, BM, MNHN, USNM); Grande Rivière (1 ♂ *, 1 ♀, MCZ); Kenskoff, 1200-1800 m (1 ♂ *, 1 ♀, MCZ); Furcy (1 ♂ *, 1 ♀, MCZ).

COSTA RICA. San José, 1000-1200 m (1 ♂ *, 1 ♀, USNM, MNHN); Tres Rios, Carpintera Mts., 1300-1600 m (2 ♀, USNM); Coyolar (1 ♀, USNM); La Palma (1 ♂, MNHN); Escazu, 1200 m (2 ♀, MNHN).

GEOGRAPHIC DISTRIBUTION (fig. 77)

Galerita beauvoisi is presently known from Haiti and Costa Rica.

NOTES

Galerita beauvoisi was described by Chaudoir from a single specimen supposedly from the Antilles (collected by Beauvois). Bates (1883: 165) recorded the species from Guatemala and said that it probably did not occur in the Antilles. I have examined the type of *beauvoisi* (which obviously had not been seen by Bates) as well as several undoubtedly authentic Haitian specimens. I have also studied Bates original specimens from Guatemala and have reached the conclusion that *beauvoisi* really occurs in the Antilles (Haiti; mentioned as *striata* by Darlington, 1935), and is also present in Costa Rica. Bates' Guatemalan record of the species actually refers to *strandii*, which was described by Liebke several years later.

The material available for study shows that this species is very variable, and it is possible that more than one form is being confused here under one name. Variation affects mainly the development of the hind wings, but also affects the shape of the head and pronotum.

All known forms of *beauvoisi* have reduced wings, and it is conceivable that they are all flightless. The reduction of wings occurs as follows: Costa-Rican specimens, which agree externally with typical *beauvoisi*, have the longest wings, however, they are reduced and folded apically (fig. 84); specimens from northern Haiti (Cap Haitien and Grande Rivière) are like the holotype of *beauvoisi* in having reduced and unfolded wings which reach the middle of the 4th visible abdominal segment (fig. 82); specimens from Poste Terre Rouge have more reduced and also unfolded wings, which reach only the middle of the 2nd abdominal segment (fig. 80), and in this form the pronotum is more slender than in the other forms. Finally specimens from Kenskoff and Furcy have completely reduced wings (fig. 78), and seem to have slightly more globose head. The aedeagus of the four forms shows only very slight differences, which can be considered as being variation within the species. This genitalic similarity confirms the close relationships of the populations.

The three Haitian forms of *beauvoisi* occur in very distinct areas, which are separated by a valley running east from Port-au-Prince, a

valley supposedly flooded by the sea in Pleistocene times (Darlington, personal communication). Cap Haitien and Grande Rivière are in the lowlands (coastal plains); Terre Rouge is situated at about 800 m; Kenskoff and Furcy are well above 1200 m. It is interesting to note that the "Terre Rouge" form is closer to typical *beauvoisi* from Cap Haitien (both localities are on the same side of the above-mentioned Pleistocene valley) than to the "high elevation" form (from Kenskoff and Furcy). The fourth, Costa-Rican form, is also found at high elevations, between 1000 and 1600 m, around San José.

The presently known material of *beauvoisi* is not representative enough for a taxonomic separation of the forms; however, it seems to be clear that they represent different stages in the process of speciation. Only more material, especially from intermediate localities, will show the real limits of each form, if distinguishable forms exist, and make possible a final decision on their status.

The species, as mentioned above, is related to *aequinotialis* (from Central America). It is very likely that *beauvoisi* descended from a winged ancestor which colonized Haiti from Central America. Isolation on the island and on higher elevations probably favored selections of stocks with reduced wings, each of the described forms representing a distinct evolutionary line towards distinct species. The presence of the species in Costa Rica and Haiti, seems to indicate a rather recent colonization of Haiti, and that the reduction of wings occurred very fast.

Galerita tristis Reiche, 1842

(Fig. 76, 86, 87, 96)

Galerita tristis Reiche, 1842:273 (holotype ♂, from "Venezuela et Provinciae Novae-Granatae", MNHN; examined).

Galerita lugens Chaudoir, 1843:65 (holotype ♀, Cayenne, French Guiana, MNHN; examined); Chaudoir, 1861:553 (proposed synonymy with *tristis* Reiche).

Galerita melanaria Erichson, 1848:555 (holotype ♂, "British Guyana". ZMB; examined). New synonymy.

Galerita unicolor; Fleutiaux & Sallé, 1889:359 (*nec unicolor* Latreille & Dejean, 1823) (Guadeloupe, original specimens not seen); Liebke, 1941:227 (part; original specimens not seen).

DESCRIPTION

Black, elytra bluish, greenish or even (although less commonly) purplish; antennae usually brown, legs black. Head — slightly longer than wide (1,06), with large, somewhat inconspicuous eyes; occiput short (shorter than the diameter of one eye); surface finely rugose on anterior half, punctate posteriorly; covered with fine, yellowish pubescence. Pronotum — wider than head (1,12), longer than wide (1,12); very

variable in proportions, especially the posterior constriction, which sometimes is almost not present; surface finely rugose, covered with yellowish pubescence. Elytra — less than twice as wide as pronotum (1,83), less than twice as long as wide (1,76); carinae and carinulae very thin, not high; carinae-carinulae interstices with a row of dense and long, yellow hairs; carinulae interstices not punctured; scutellar carina not joining the first carina. Wings — normally developed. Measurements — length, 15,0 - 17,2 mm; width, 4,8 - 6,05 mm. Genitalia — figure 87.

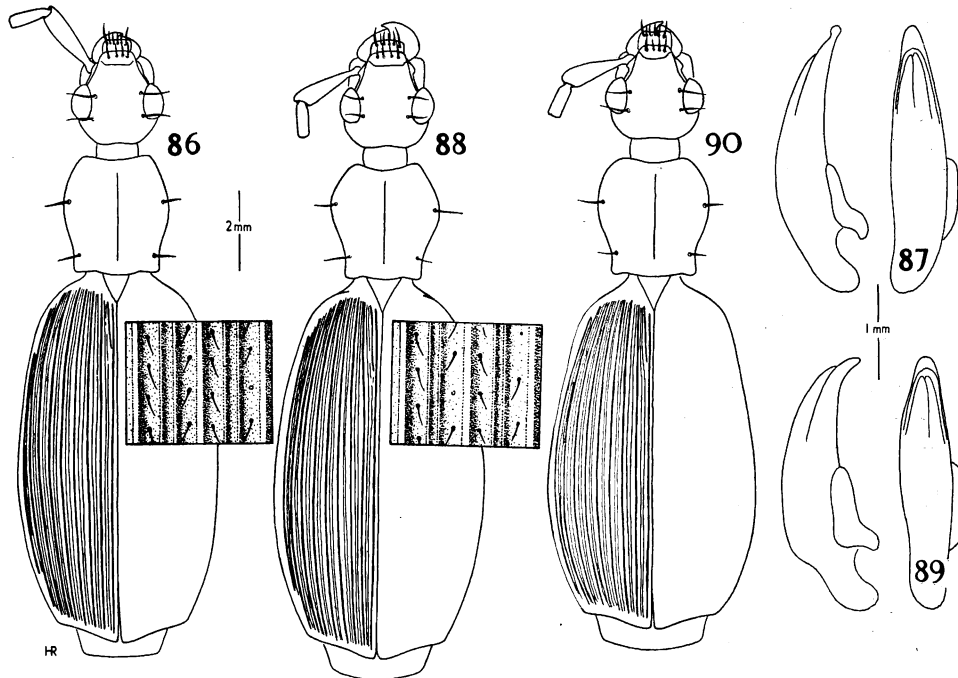


Fig. 86, *Galerita tristis* Reiche, holotype ♂ of *melanaria* Erichson; fig. 87, aedeagus of same species from Trinidad (MCZ); fig. 88, *G. costalimai*, sp. n., holotype ♂ (CDZ); fig. 89, aedeagus of same specimen; fig. 90, *G. esmeraldina*, sp. n., holotype ♀ (CN).

SPECIMENS EXAMINED (146)

EL SALVADOR. San Salvador, 700 m (1 ♀, SMF C14012).

COSTA RICA. Golfito (1 ♂, UA); Hamburgfarm, Reventazon (4 ♂, 4 ♀, USNM).

PANAMA. La Jagua (1 ♀, MCZ); Canal Zone: Barro Colorado Island (1 ♂, 2 ♀, MCZ); Ciricito (1 ♀, USNM).

COLOMBIA. Darien (1 ♂, MNHN); Barranquilla (1 ♀, CN); Coper (1 ♀, MNHN); NW Sierra Nevada de Santa Marta, 1200 m (1 ♂, MCZ).

VENEZUELA. *D. F.*: Caracas (1 ♀, ML); *Aragua*: Cagua (1 ♂, CB); Maracay (1 ♀, MCZ); *Apure*: San Fernando de Apure (1 ♂, MNHN); *Carabobo*: Puerto Cabello (1 ♀, MNHN); *Guarico*: Ortiz (1 ♂, CN); *Portuguesa*: Corozal (2 ♀, MNHN); Guanare (1 ♀, CAS); no locality (3 exx., BM, USNM).

TRINIDAD. Port of Spain (2 ♂ *, 2 ♀, MCZ).

MARTINIQUE (1 ♂, MCZ).

DOMINICA (1 ♂, UV).

GUADALOUPE (1 ♂, 1 ♀, ML, MNHN).

JAMAICA. Hindsbrary, Bridgetown Barbadoes (1 ♀, BM).

GUIANA. Rupununi River (2 ♀, AMNH).

SURINAM. Paramaribo (1 ♀, MCZ); no locality (2 ♂, IZ, ML); Moengo Boven, Cottica River (2 ♀, CU).

FRENCH GUIANA. No locality (1 ♂, CN); Cayenne (4 ♂, 8 ♀, IRSNB, MNHN, CN, ML; 1 ♀, SMF C14013); Maroni (1 ♂, IRSNB).

GUIANA. no locality (1 ♂, 2 ♀, MCZ, ML).

ECUADOR. Campo (1 ♂, MCZ); Santa Ines (1 ♀, MCZ).

BRAZIL. *Amazonas*: Benjamin Constant (1 ♀, MCZ); Manaus (1 ♂, CDZ); *Pará*: Santarém (1 ♂, 1 ♀, MNHN); no locality (1 ♀, USNM); *Maranhão*: Igarapé Gurupi-Una, 50 km E of Canindé (1 ♀, CDZ); *Ceará*: no locality (1 ♀, IOC); *Alagoas*: Maceió (1 ex., MNHN); *Bahia*: no locality (2 ♀, IRSNB, MNHN); *Minas Gerais*: Mar de Hespanha (1 ♂, 2 ♀, CN, IOC); *Guanabara*: Rio de Janeiro (1 ♂, IOC); *Mato Grosso*: Salobra (4 ♂ *, 3 ♀, IOC, CDZ); *São Paulo*: Itú, Fazenda Pau d'Alho (1 ♂, CDZ); *Paraná*: Londrina (2 ♀, IB); *Santa Catarina*: Corupá (8 ♂ *, 5 ♀, MCZ, AMNH); Joinville (1 ♂, 1 ♀, CDZ); Blumenau (4 ♂, 2 ♀, SMF C14014); no locality (1 ♀, MCZ).

PARAGUAY. Chaco (1 ♂, MCZ); Rio Confuso (3 ♂, 9 ♀, IRSNB); Asunción (1 ♀, MNHN).

ARGENTINA. *Salta*: Tartagal (1 ♂, IRSNB); *Jujuy*: no locality (1 ♂, 1 ♀, MBA); *Santiago del Estero*: near Icaño (1 ♂, MNHN); *Formosa*: Formosa (1 ♂, MBA); *Chaco*: Resistencia (2 ♂, 3 ♀, IRSNB, MLP); Saenz Peña (1 ♂, MLP); *Misiones*: Iguazu (1 ♀, MBA); San Ignacio (1 ♂, MBA); *Corrientes*: Corrientes (2 ♂, 1 ♀, MLP, MBA). No locality (2 ♀, IRSNB).

GEOGRAPHIC DISTRIBUTION (figs. 76, 96)

Galerita tristis has a wide and very interesting distribution, which seems to be somewhat similar to that of *americana*: it occurs in Central America, the Lesser Antilles, northern South America (here penetrating deeper into the Amazonian Basin than *americana* does), along the Atlantic coast of South America (as far south as southern Brazil) and reaching Argentina and Paraguay in the interior. Even though the records in northeastern and northern Brazil are very scattered, giving

the impression of two allopatric populations (one concentrated in southern Brazil and adjacent areas and the other one in northern South America), it is very probable that the species occurs continuously along the coast. No differences have been found between individuals from widely separated localities.

NOTES

Type examination showed no differences between *tristis* and *melanaria*. The type of the latter seems to be a somewhat teneral specimen, being dark brown in color (not showing any bluish sheen as described by Erichson). Material of this species has usually been misidentified, especially by Liebke, as I have discovered from my examinations of specimens determined by him in London, Paris and Buenos Aires. Liebke probably did not know the type of this species. Part of the series listed by him as *unicolor* Latreille & Dejean (1941:227) actually refers to this species, especially the specimens from Guadeloupe (Fleutiaux & Sallé, 1889:359-360, incorrectly referred Guadeloupean specimens to *unicolor*, under which they also erroneously synonymized *tristis* and *melanaria*). Liebke's record of *unicolor* from Haiti (1941:227) is very improbable. It may possibly pertain to *beauvoisi* Chaudoir.

Galerita tristis is very closely related to the sympatric *costalimai*, being easily distinguished by the differently shaped pronotum (more narrowed posteriorly in *costalimai*) and by the elytral color, which is uniform in *costalimai*. The head form and sculpture is very similar in both species. *Galerita tristis* is very variable, especially in regard to pronotal proportions and elytral color. The majority of the individuals have blue elytra, while some have green or even slightly purplish elytra. The aedeagus of *tristis* is distinctly different from that of *costalimai* especially its apex (compare figs. 87 and 89).

***Galerita costalimai*, sp. n.**

(Figs. 88, 89, 95)

TYPE DATA

Holotype ♂ (*) from Brazil: *São Paulo*, Estação Biológica de Boracéia, Salesópolis, 17.X.1960. K. Lenko col. (CDZ); 1 paratype ♀ from *São Paulo*, Itú, Fazenda Pau d'Alho, 8.X.1960, U. R. Martins col. (CDZ); 1 paratype ♀, from *Rio de Janeiro*, Campo Belo, Itatiaia, 700 m, 12.X.1942, Burchard col. (IEEA). One paratype ♀, from Paraguay (IZ). Two paratypes ♀, from Argentina: *Tucuman*, Tafi Viejo (MBA); 2 paratypes ♂ from *Tucuman*, 28.IX.1929, H. E. Box col. (CN).

DESCRIPTION

Black, with very dark, greyish-blue elytra, not brightly metallic as in *tristis*; proximal antennal segments black, apical segments brown. Head — as long as wide (1,01), with the same characteristics as the

head of *tristis*. Pronotum — very slightly wider than head (1,06); slightly longer than wide (1,08); widest anteriorly, narrowed posteriorly; constriction situated very basally, sides shortly parallel behind it; surface very finely and regularly rugose, convex on disc; covered with yellow hairs. Elytra — twice as wide as pronotum (2,05), less than twice as long as wide (1,73); carinae as in *tristis*; carinulae thinner, less well visible; carinae-carinulae interstices with a row of dense, yellow pilosity; scutellar carina not joining the first carina. Wings — normally developed. Measurements — length, 16,1 - 17,3 mm; width, 5,2 - 5,8 mm. Genitalia — figure 89.

NOTES

Galerita costalimai, although being sympatric with and very closely related to *tristis*, is readily distinguished by the more globose head, the pronotum which is much wider anteriorly (somewhat similar to that of *unicolor* as far as shape goes) and by the much less bluish elytra. The four paratypes from Tucuman seem not to be fully mature specimens: they are somewhat brownish, especially on the elytra. The shape of the aedeagus of *costalimai* is also very characteristic (fig. 89). *G. costalimai* is also very closely related to the Ecuadorian *esmeraldina*, being distinguished mainly by the smoother head and by the different proportions of the elytra.

Galerita costalimai is named in honor of my friend, the late Professor Angelo Moreira da Costa Lima, one of the pioneers of Brazilian Entomology.

Galerita esmeraldina, sp. n.

(Figs. 90, 96)

TYPE DATA

Holotype ♀, from Ecuador: Esmeraldas, 29.IX.1956 (CN); paratype ♀, from Ecuador: Guayaquil, F. Campos col. (USNM).

DESCRIPTION

Black, elytra with very slight bluish sheen; antennae brown from 5th segment on. Head — slightly longer than wide (1,08), with large, somewhat inconspicuous eyes; occiput shorter than the diameter of one eye; front and vertex densely and coarsely rugose-punctate; frontal depression very slightly indicated; head covered with yellow hairs. Pronotum — longer than wide (1,05), wider than head (1,19); constriction well marked, sides parallel behind it; surface densely and coarsely punctate-rugose; covered with yellow hairs. Elytra almost twice as wide as pronotum (1,94), 1,68 times as long as wide; carinae and carinulae thin; carinulae interstices with indication of shallow punctures; carinae-carinulae interstices with a row of yellow hairs; scutellar carina not joining the first. Wings — fully developed. Measurements — length, 15,0 - 15,25 mm; width, 5,2 - 5,5 mm.

NOTES

G. esmeraldina is very similar, and possibly very closely related to *costalimai* from southeastern and southcentral South America. As seen above in the key (p. 52), it is distinguished by very few characters. Unfortunately the male is still unknown, and nothing can be said about the genitalia.

***Galerita palustris* Liebke, 1939**

(Figs. 91, 92, 95)

Galerita palustris Liebke, 1939b:123 (holotype ♂, "Paraguai", IZ; examined).

Galeritula palustris; Reichardt, 1964:51.

DESCRIPTION

Opaque brown with rufous appendages. Head — as long as wide; eyes large, somewhat inconspicuous; rugose, especially on anterior half;

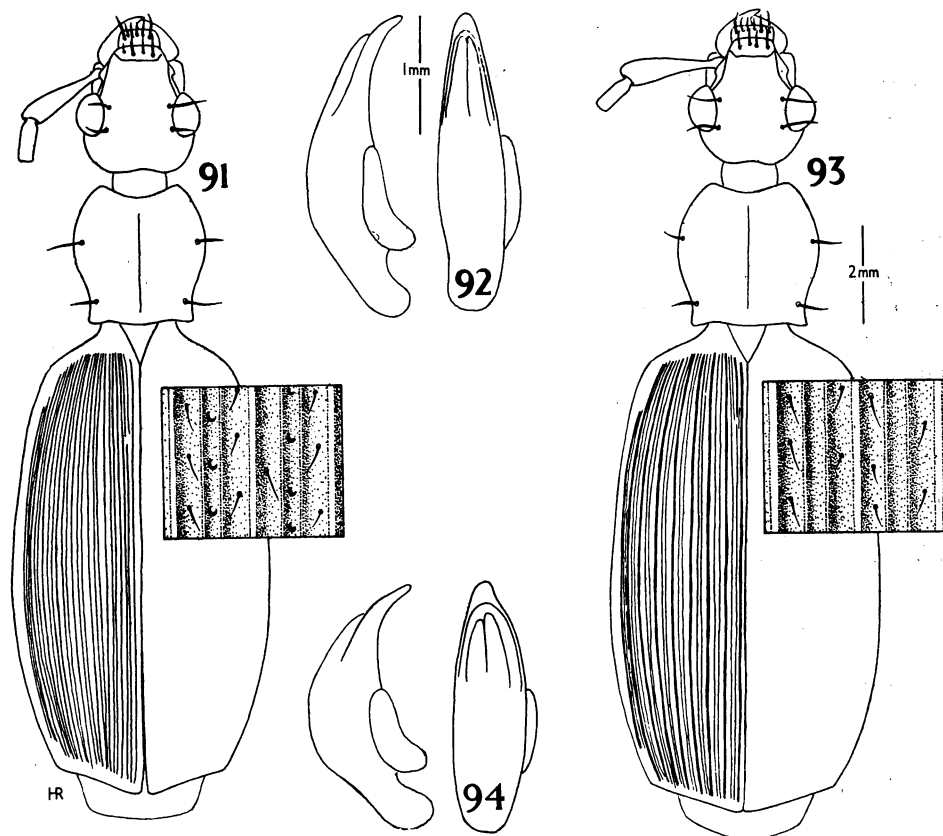


Fig. 91, *Galerita palustris* Liebke, ♀ from Salobra, Brazil (CDZ); fig. 92, aedeagus of ♂ from same locality; fig. 93, *G. lacordairei* Dejean, ♂ from La Plata, Argentina (MCZ); fig. 94, aedeagus of same species from Palermo, Argentina (MCZ).

occiput shorter than the diameter of one eye; covered with yellow hairs. Pronotum — slightly wider than head (1,1); slightly longer than wide (1,05), widest in anterior third, not much narrowed posteriorly; sides shortly divergent behind the constriction; surface very convex, transversely rugose, covered with yellow hairs. Elytra — twice as wide as pronotum; less than twice as long as wide (1,73); carinae and carinulae very thin, almost equally developed; carinulae closer to each other than to next carina; carinulae interstices deeper, with row of shallow punctures; carinae-carinulae interstices with a row of rufous hairs; scutellar carina usually not joining the first carina. Wings — normally developed. Measurements — length, 15,1 - 15,95 mm; width, 5,0 - 5,5 mm. Genitalia — figure 92.

SPECIMENS EXAMINED (8)

BRAZIL. *Mato Grosso*: Salobra (2 ♂ *, 3 ♀, CDZ); *Rio Grande do Sul*: São João do Monte Negro (1 ♀, AMNH).

PARAGUAY. Paso Yobay (1 ♀, MCZ).

ARGENTINA. *Salta*: Pampa Grande (1 ♀, MBA).

GEOGRAPHIC DISTRIBUTION (fig. 95)

Only few specimens of *Galerita palustris*, from very scattered localities, are presently known, suggesting a distribution in the Paraná-Paraguay river system.

NOTES

Galerita palustris is very closely related to *costalimai* (the two have similar aedeagus) and *tristis*, occurring sympatrically with the two. It is easily distinguished by its brown color and especially by the rufous legs.

***Galerita lacordairei* Dejean, 1826**

(Figs. 93-95)

Galerita lacordairei Dejean, 1826:443 (lectotype ♂, Buenos Aires, Argentina, MNHN; examined).

Galerita magellanica Guérin-Méneville, 1839:296 (holotype ♀, "détroit de Magellan", MNHN; examined); Chaudoir, 1861:554 (proposed synonymy with *lacordairei* Dejean).

DESCRIPTION

Very dark brown, almost black (teneral specimens, which are rufous-brown, especially on the elytra, are very common in the collections); mouthparts and antennae brown, legs black. Head — slightly wider than long (1,02), with large, somewhat inconspicuous eyes; occiput short, barely longer than half the diameter of one eye; surface punctate-rugose, covered with very fine, yellow hairs. Pronotum — slightly wider than head (1,08), slightly longer than wide (1,08); widest in front of

the middle, not much narrowed posteriorly; sides clearly divergent after the constrictions; surface rugose-punctate, usually convex, sometimes with more flattened borders; covered with dense, yellow pilosity. Elytra — more than twice as wide as pronotum (2,17), less than twice as long as wide (1,65); carinae and carinulae thin, the latter however, much thinner; carinulae closer to each other than to next carina; carinulae interstices with very shallow, almost imperceptible punctures; carinae-carinulae interstices with a row of yellow pilosity; scutellar carina not joining the first. Wings — normally developed. Measurements — length, 15,8 - 17,5 mm; width, 5,2 - 6,3 mm. Genitalia — figure 94.

SPECIMENS EXAMINED (174)

BOLÍVIA. *Cochabamba*: Chapare (1 ♀, CN).

PARAGUAY. Asunción (1 ♀, IRSNB).

BRAZIL. *Santa Catarina*: Nova Teutônia (1 ♂, 4 ♀, IRSNB, MCZ); *Rio Grande do Sul*: Pôrto Alegre (1 ♀, IEEA); Pelotas (2 ♂, 1 ♀, MCZ, USNM); no locality (1 ♀, MCZ).

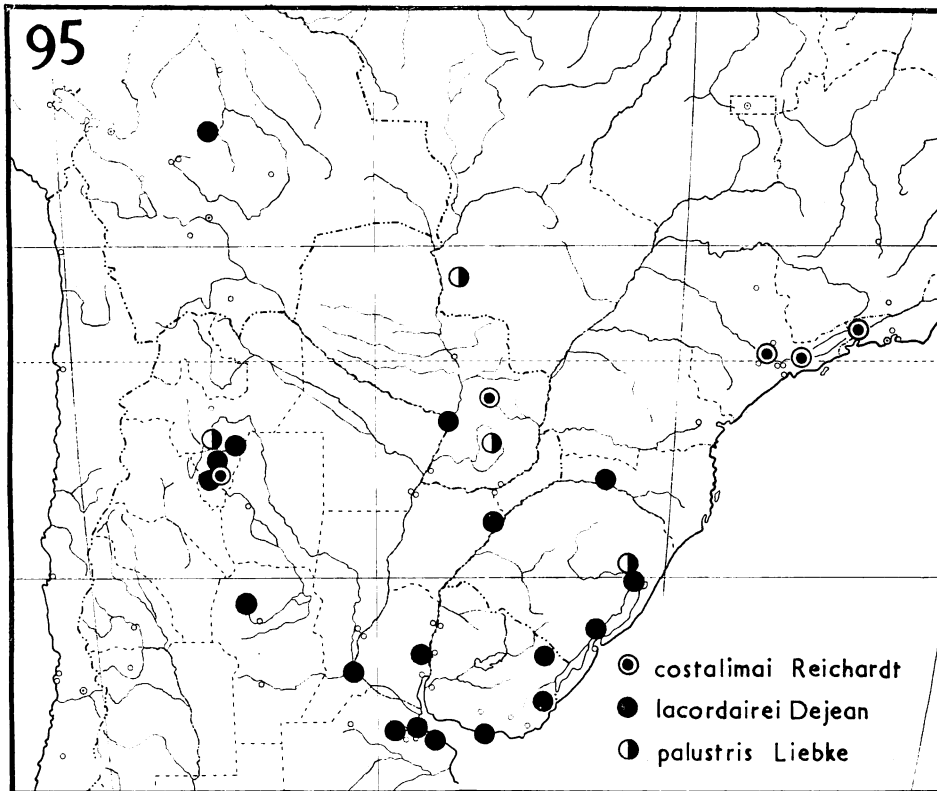


Fig. 95, Geographic distribution of *Galerita costalimai*, sp. n., *lacordairei* Dejean and *palustris* Liebke.

URUGUAY. Montevideo (5 ♂, 3 ♀, MLP, IRSNB, MNHN, FHCM); *Canelones*: Lag. del Cisne (1 ♂, FHCM); Carrasco (2 ♂, 1 ♀, FHCM); Las Toscas (1 ♂, 1 ♀, FHCM); *Cerro Largo*: Fraile Muerto (1 ♂, 1 ♀, MLP); Caña de los Burros (2 ♀, MLP); *Rocha*: Corralitos (1 ♀, FHCM).

ARGENTINA. *Salta*: Los Andes (1 ♂, CN); Quebr. San Lorenzo (1 ♀, MBA); Cerro San Bernardo (3 ♂, 1 ♀, MBA); *Tucuman*: Parque Aconquija (1 ♂, CN); Tafi Viejo (3 ♂, MBA); Tucuman (4 ♂, 1 ♀, USNM, CAS, MCZ, MLP); Cerro San Javier (1 ♂, CAS); Anfiama (1 ♂, 2 ♀, MLP, IEAA); Siambon (12 ♂, 1 ♀, MBA); San Pedro de Colalao (1 ♂, CN); Alpachiri (4 ♂, CN); Quebr. Cainzo (1 ♂, CN); Tafi del Valle (3 ♂, 1 ♀, CN); Santa Rosa (4 ♂, 2 ♀, CN); Tapia, 600 m (1 ♀, MNHN); Quebr. de Lules (1 ♀, CN); *Cordoba*: Huerta Grande (1 ♂, ZSM); *Corrientes*: San Tomé (2 ♂, 1 ♀, 1 ex, MBA); *Santa Fé*: Rosario (11 ♂, 3 ♀, IZ, CDZ, CNHM, MNHN, CN); no locality (1 ♀, MLP); *Entre Rios*: Pronunciamento (1 ♂, 4 ♀, CN); *Buenos Aires*: Buenos Aires (12 ♂*, 12 ♀, IRSNB, CN, MBA, MCZ, CKC); Tigre (2 ♂, 4 ♀, CN, MLP); La Plata (3 ♂, 8 ♀, IRSNB, MBA, MCZ, CNHM); Llavallol (1 ♂, 2 ♀, MCZ); Zelaya (3 ♂, MBA); Zarate (1 ♂, MBA); Punta Lara (1 ♀, IRSNB); no locality (9 ♂, 5 ♀, MBA, MLP). No locality (2 ♂, 2 ♀, IRSNB, IZ, MBA).

GEOGRAPHIC DISTRIBUTION (fig. 95)

Galerita lacordairei is widespread and very common in Argentina and Uruguay, but is also found, less commonly, in Bolivia, Paraguay and southern Brazil.

NOTES

Galerita lacordairei is extremely variable. More material, especially from the peripheral areas, may eventually lead to the conclusion that two different forms are involved here: one, the typical *lacordairei*, common in eastern Argentina, Uruguay and Rio Grande do Sul, characterized by the normal, convex pronotum; and a second form, with more deplanate pronotum, known from western Argentina (Tucuman and Salta), Bolivia, Paraguay and Santa Catarina. The limits, however, are not clear and intermediates are present. For the moment, the material does not allow any further conclusions.

G. lacordairei is most closely related to *tristis*. It is easily distinguished by the characters used in the key and by the characteristic aedagus (fig. 94).

G. gracilis has been considered a synonym of this species since Liebke (1932:419), who, obviously without having seen the types, synonymized the two species. Examination of the type of *gracilis* proved it to be a good species, not at all related to *lacordairei*.

NOTES ON THE TYPES

Four males and one female are preserved in Chaudoir's collection as the type-series of *lacordairei*. The first specimen, a male, which bears Dejean's handwritten label, is herewith designated lectotype, the three males and one female from the same collection, are paralectotypes.

***Galerita unicolor* Latreille & Dejean, 1823**

(Figs. 96-98)

Galerita unicolor Latreille & Dejean, 1823:117, pl. 6, fig. 6 (holotype ♀, Cayenne, French Guiana, MNHN; examined; the species is only named and illustrated in this paper); Dejean, 1825:189 (descriptions).

Galerita porcata Klug, 1834:66 (holotype ♀, Cametá, Brazil, ZMB; examined). New synonymy.

Galerita bahiana Liebke, 1939a:477 (holotype ♂, "Bahia", Brazil, IZ; examined). New synonymy.

DESCRIPTION

Black, elytra dark metallic, greenish or bluish. Head slightly longer than wide (1,04); very similar to that of *tristis*, with very slightly smaller eyes. Pronotum — slightly wider than head (1,08), imperceptively longer than wide (1,04); very convex, finely and regularly rugose-punctate; very much narrowed posteriorly, constriction very basally situated; sides shortly parallel behind it; covered with yellowish hairs. Elytra — almost twice as wide as pronotum (1,9), less than twice as long as wide (1,77); carinae high, sharp and thin, especially the discal ones; carinulae as in *tristis*; no hairs in carinae-carinulae interstices. Wings — normally developed. Measurements — length, 14,3 - 16,5 mm; width, 4,7 - 5,35 mm. Genitalia — figure 98.

SPECIMENS EXAMINED (31)

FRENCH GUIANA. Cayenne (1 ♂, 1 ♀, CN. ML).

PERU. *Junin*: Satipo (2 ♂ *, 5 ♀., MCZ, AMNH).

BRAZIL. No locality (1 ♂, 1 ♀, CNHM, IZ); *Amazonas*: Tefé (1 ♂, 1 ♀, BM, MNHN); Maués (1 ♂, MNHN); Rio Juruá (1 ♂, MNHN); no locality (1 ♀, BM); *Rondonia*: Rio Urupa, Gy-Paraná (1 ♀, IOC); *Pará*: no locality (1 ♂, 1 ♀, BM, IEEA); Óbidos (1 ♂, 2 ♀, IZ); Santarém (1 ♂, 1 ♀, BM, CDZ); *Bahia*: no locality (1 ♂, 2 ♀, MNHN, BM); Vila Nova (1 ♀, BM); *Goiás*: Jataí (2 ♀, MNHN).

CUBA: (1 ♂, MNHN).

GEOGRAPHIC DISTRIBUTION (fig. 96)

Galerita unicolor is restricted to northern South America, mainly in the Amazonian Basin, but is also found in the south, in Goiás, and in the east, in Bahia. The localities in Goiás and Bahia are isolated from

the general area of distribution; however, since the areas in between have only been poorly collected, it is very probable that the species occurs throughout northern Brazil. The distribution given by Liebke (1941:227) does not apply to the true *unicolor*, since, as I have noted

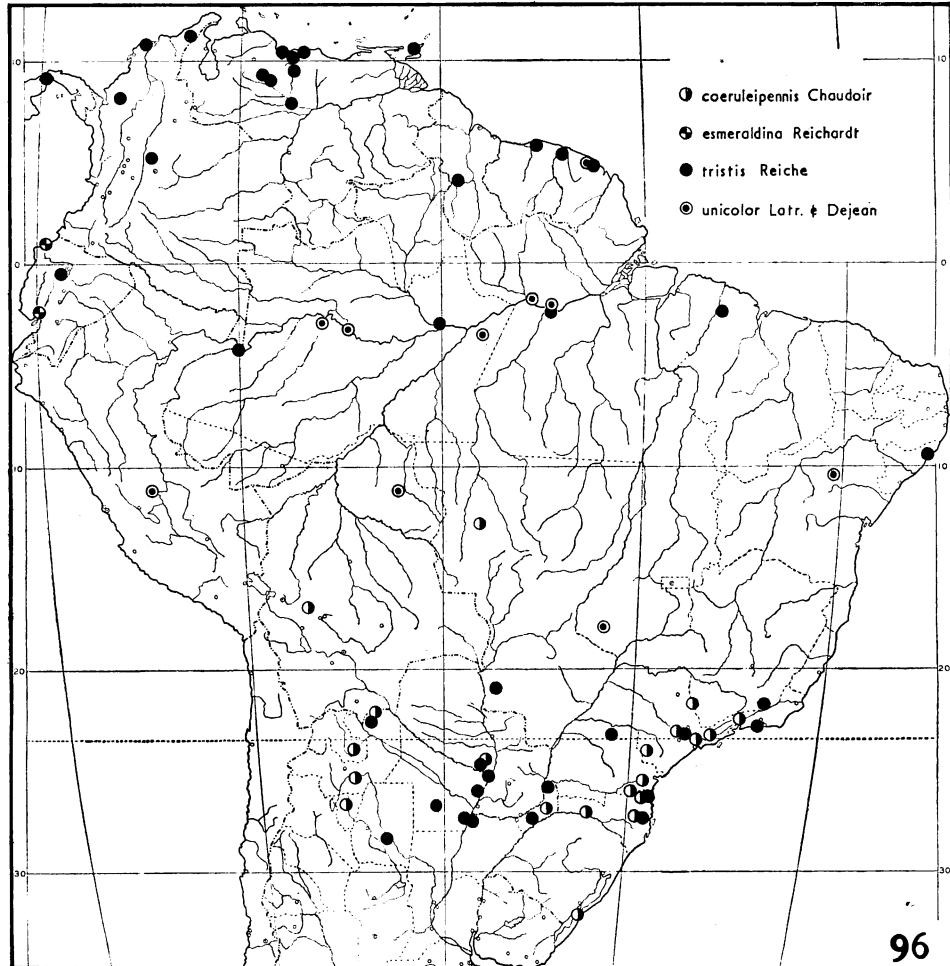


Fig. 96, Geographic distribution of *Galerita coeruleipennis* Chaudoir, *esmeraldina*, sp. n., *tristis* Reiche and *unicolor* Latreille & Dejean.

above (p. 99), Liebke confused this species in part with *tristis* and in part with *coeruleipennis*. The Cuban specimen (MNHN) which I have studied, is probably mislabeled.

NOTES

Examination of the types of *unicolor* and *porcata* showed no differences between the two and they have to be considered synonyms. G

bahiana, described from Bahia, agrees in all respects with typical *unicolor* and must also be considered a synonym. The type, badly preserved, is an immature specimen.

G. unicolor is closely related to *tristis* and *costalimai*; similar to the latter because of the form of the pronotum. It is readily distinguished from this species by the differently built elytral carinae.

***Galerita coeruleipennis* Chaudoir, 1861**

(Figs. 96, 99, 100)

Galerita coeruleipennis Chaudoir, 1861:552 (lectotype ♂, "Brésil septentrional", MNHN; examined).

Galerita unicolor (nec Letreille & Dejean, 1823); Brullé, 1837:12 (Yungas, Bolívia, MNHN; original specimen examined); Liebke, 1941:227 (part, original specimens not seen).

DESCRIPTION

Black, with dark, blue elytra, with metallic sheen. Head — longer than wide (1,13), with large, somewhat inconspicuous eyes; occiput more or less as long as the diameter of one eye; surface rugose on anterior half, punctate posteriorly; covered with few and scarce, yellowish hairs. Pronotum — longer than wide (1,24), wider than head (1,11); much narrowed posteriorly; constriction less basally than in the other species, sides usually parallel behind the constriction, sometimes, however, divergent; surface convex, regularly rugose, covered with few, yellowish hairs. Elytra — twice as wide as pronotum (2,03), less than twice as long as wide (1,74); carinae high and sharp; carinulae thin, sometimes erased; scutellar carina not joining the first carina; interstices practically glabrous; carinulae interstices not punctured. Wings — normally developed. Measurements — length, 16,1 - 17,9 mm; width, 4,8 - 6,05 mm. Genitalia — figure 100.

SPECIMENS EXAMINED (110)

BOLÍVIA. *Yungas* (1 ♀, MNHN); *La Paz*: Canamina (1 ♀, USNM).

PARAGUAY. Hohenau (1 ♀, BM).

BRAZIL. *Mato Grosso*: Utiariti (1 ♂, 1 ♀, CDZ); *Minas Gerais*: Unaí, Fazenda Bolívia (1 ♀, CDZ); Caeté (2 ♂, CDZ); *Rio de Janeiro*: Itatiaia, 700 m (1 ♀, BM); *São Paulo*: São Paulo (2 ♂, 4 ♀, IRSNB, MNHN, CNHM, CDZ); São João (2 ♂, IB); Itararé (1 ♂, 1 ♀, IB); Itú, Fazenda Pau d'Alho (1 ♂, 1 ♀, CDZ); Casa Grande (1 ♀, IB); Itapouso (1 ♀, CDZ); *Paraná*: Curitiba (1 ♂, CDZ); Cachoeira (1 ♂, CDZ); *Rio Negro* (1 ♀, IEEA); *Banhado*, Piraquara (1 ♂, MLP); *Santa Catarina*: Nova Teutônia (26 ♂ *, 30 ♀, IRSNB, CN, CAS, MCZ, IEEA); *Corupá* (3 ♂, 2 ♀, MCZ, AMNH, SMF); *R'io Natal* (1 ♂).

AMNH); Rio Vermelho (1 ♀, AMNH); Rio Negrinho (1 ♂, IEEA); Blumenau (1 ♀, IEEA); São Bento (1 ♀, IEEA); Joinville (1 ♀, IEEA); *Rio Grande do Sul*: Rio Grande (1 ♀, BM); Nonoai (1 ♀, FHCM); Barro Vermelho (1 ♂, FHCM).

ARGENTINA. *Salta*: Pocitos (2 ♀, CN, IRSNB); Metan, 850 m (1 ♂, MBA); Cerro San Bernardo (1 ♂, MBA); *Jujuy*: El Quemado (2 ♂, 1 ♀, USNM); *Tucuman*: Tucuman (1 ♂, MNHN); Tapia, 600 m (1 ♂, MNHN); Santa Rosa (1 ♀, CN); *Misiones*: no locality (1 ♀, MLP). Not located: Desecho Chico (1 ♂, USNM).

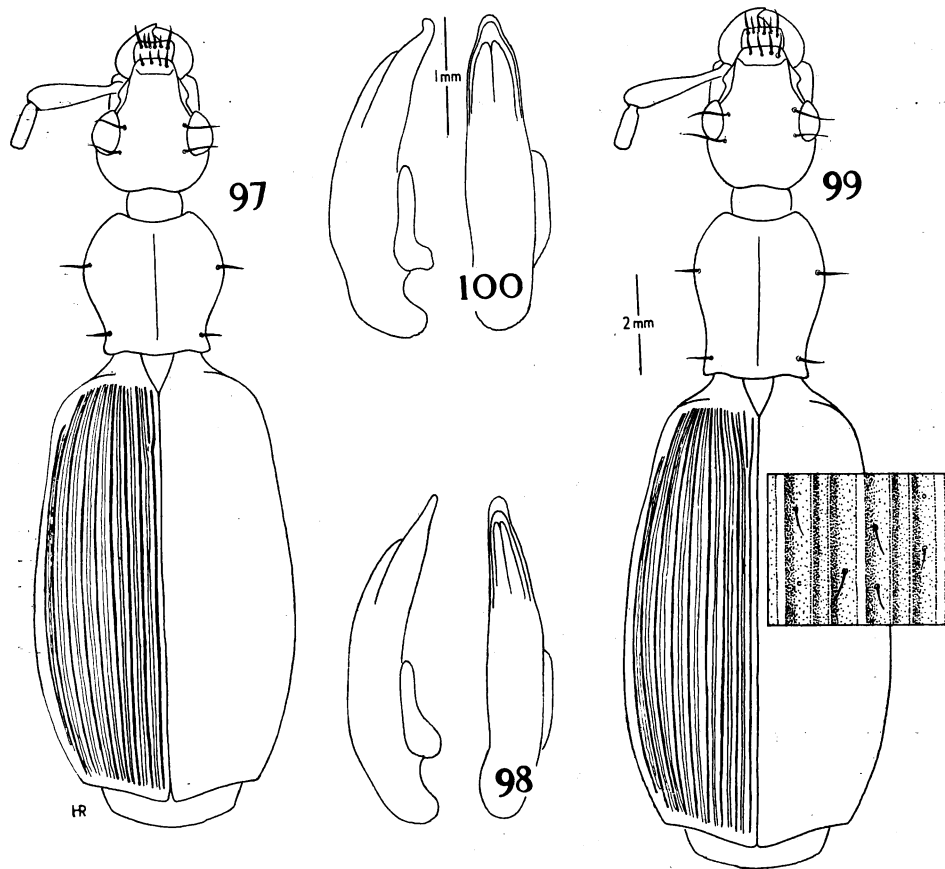


Fig. 97, *Galerita unicolor* Latreille & Dejean, ♀ from Satipo, Peru (MCZ); fig. 98, aedeagus of ♂ from same locality; fig. 99, *G. coeruleipennis* Chaudoir, ♀ from Nova Teutônia, Brazil (MCZ); fig. 100, aedeagus of ♂ from same locality.

GEOGRAPHIC DISTRIBUTION (fig. 96)

G. coeruleipennis is restricted to the southern part of South America, occurring in Bolívia, Paraguay, northern Argentina and southern Brazil.

NOTES

G. coeruleipennis has always been misidentified in the literature; it is very characteristically distinct from the other species of the group by its elongate form, especially that of the pronotum.

NOTES ON THE TYPES

The specimen preserved in Oberthuer's collection, which is the only type I have seen, is the cotype which Chaudoir kept for his collection when describing the species. The remaining cotypes (number?) should be preserved in the ZMB. The male in the MNHN is herewith designated lectotype.

GROUP OF *STRIATA*

CHARACTERISTICS

Black, medium sized (14,5 - 20,0 mm) species; head very globose, especially in the posterior half, behind the eyes; as wide or slightly wider than long; eyes medium sized, inconspicuous; occiput as long or slightly longer than the diameter of one eye, rugose punctate; pronotum wider (sometimes very much wider) than head, widest in the anterior third; wider than long; well narrowed posteriorly, constriction usually not evident as such; sides convergent (or nearly so) before the posterior angles; these usually very much projected behind the posterior margin; surface flattened, with deep and well individualized punctures; anterior margin strongly concave; scutellum normal; elytra very ovate, convex; with feebly pronounced humeri; wings vestigial; carinae and carinulae well developed, vestigial in *sulcipennis*.

The four species included in the group of *striata* (*striata* Klug, *boucardi* Chaudoir, *azteca*, sp. n., and *sulcipennis*, sp. n.) are very closely related. The group is well characterized by the very wide pronotum (much wider than the globose head), with virtually no posterior constriction; by its very ovate and convex elytra, and by the complete reduction of the hind wings to small buds (1-2 mm long). The species seem to have a very restricted distribution, a fact probably related to their flightlessness. The restricted area in which the group itself is found (Mexico, Guatemala and Haiti) indicates a rather recent dispersal.

One of the species, *sulcipennis*, has a completely different elytral structure, which is otherwise found only in two Malagasy species. *G. sulcipennis* is derived from the same ancestral stock which gave origin to *boucardi* and *azteca* and, in spite of the reduced carinae and carinulae, has to be considered as belonging in *Galerita*.

This Central American-Antillean group of species is related to the group of *jelskii*, which is also mostly Central American.

***Galerita striata* Klug, 1834**

(Figs. 101, 102, 109)

Galerita striata Klug, 1834:66 (holotype ♂, Port-au-Prince, Haiti, ZMB: examined).

Galerita montana Darlington, 1935:211 (holotype ♂, La Selle Range, Haiti, MCZ n. 22037; examined). New synonymy.

DESCRIPTION

Black, antennae brown from the 5th segment on; immature specimens, dark reddish-brown in color (quite common in collections). Head

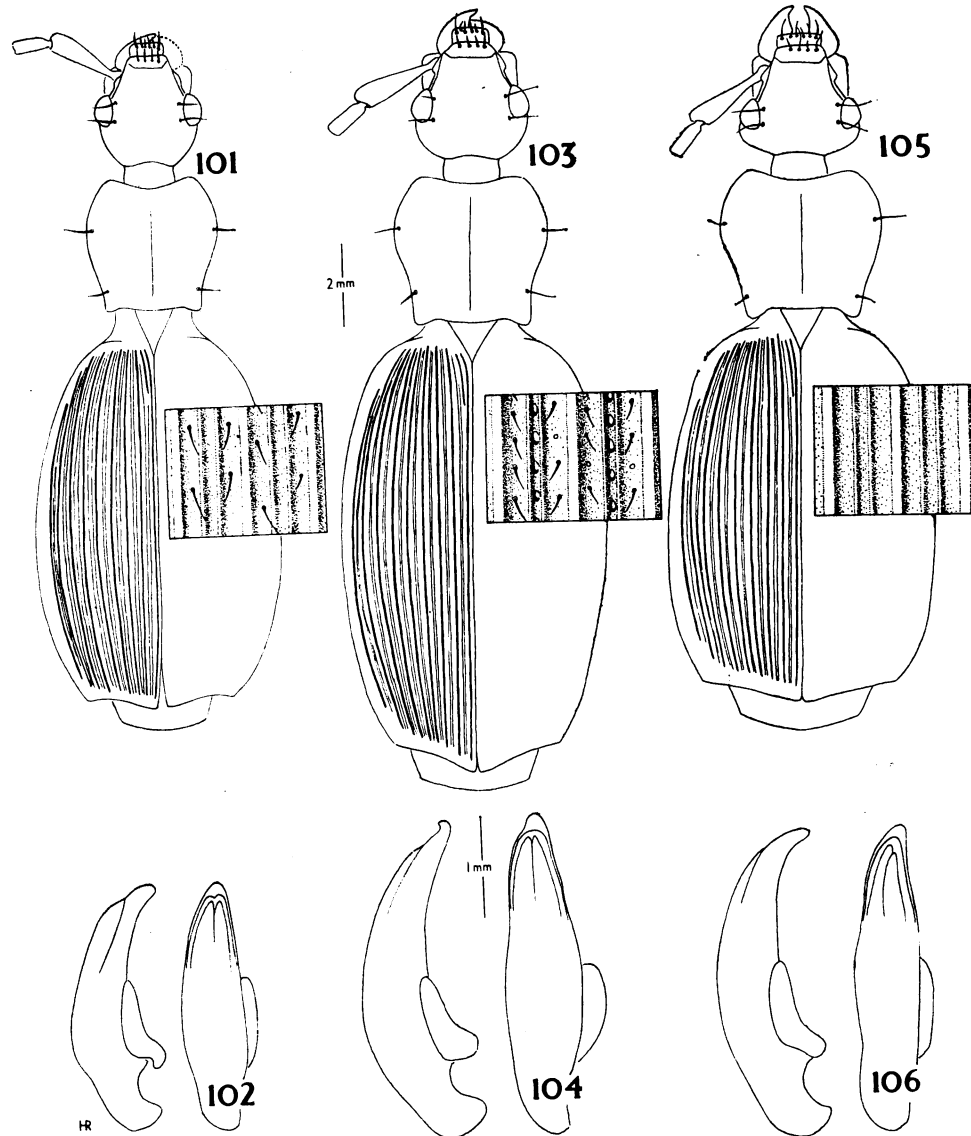


Fig. 101, *Galerita striata* Klug, holotype ♂ (ZMB); fig. 102, aedeagus of paratype of *montana* Darlington (MCZ); fig. 103, *G. boucardi* Chaudoir, ♀ from Cuernavaca, Mexico (MCZ); fig. 104, aedeagus of same species from Guadalajara, Mexico (MCZ); fig. 105, *G. azteca*, sp. n., paratype ♀ (MCZ); fig. 106, aedeagus of holotype ♂ (MCZ).

— globose, slightly longer than wide (1,01), with regularly curved occiput; eyes somewhat inconspicuous; surface punctate-rugose, with few yellowish hairs; frontal ridge broad and smooth. Pronotum much wider than head (1,22), slightly wider than long (1,09); posterior constriction slightly indicated (somewhat variable, however), sides convergent or nearly parallel behind this; posterior angles very slightly projected behind posterior margin; surface slightly convex on disc, densely, transversely punctate-rugose; with very few, yellowish hairs. Elytra — large, ovate: almost twice as wide as pronotum (1,92), less than twice as long as wide (1,46); carinae and carinulae well developed; carinulae interstices with a row of very shallow punctures; carinae-carinulae interstices with a row of sparse and irregular hairs. Wings — and humeri reduced. Measurements — length, 14,6 - 16,6 mm; width, 5,5 - 6,3 mm. Genitalia — figure 102.

SPECIMENS EXAMINED

Only the holotype (δ) of *striata* Klug and the type-series (holotype δ and 14 paratypes) of *montana* Darlington, have been examined.

GEOGRAPHIC DISTRIBUTION (fig. 109)

G. striata is known only from Haiti, where it seems to occur at higher elevations (1500-2100 m) in the La Selle Range, SE of Port-au-Prince. The type of *striata* is labeled Port-au-Prince. Considering the inaccuracy of localities on older specimens, this name may well have been used for any locality in this general area.

NOTES

G. striata is very closely related to *boucardi* and *azteca*, being distinguished mainly by its smaller size and the narrower pronotum. The elytra have the same, very ovate form; carinae and carinulae are equally well developed; and in the carinae-carinulae interstices the pilosity is better developed in *boucardi*.

***Galerita boucardi* Chaudoir, 1869**

(Figs. 103, 104, 109)

Galerita boucardi Chaudoir, 1869:204 (lectotype ♀, Cuernavaca, Mexico. MNHN; examined).

Galerita ovalipennis Bates, 1891:266, pl. 14, fig. 9 (lectotype ♀, Soledad, Mexico, BN; examined). New synonymy.

Galerita convexa Liebke, 1939a:476 (holotype ♂, "Mexico". Liebke collection; not located). New synonymy.

DESCRIPTION

Black, antennae brown from 5th segment on; sometimes legs, mouthparts and antennae (which normally are black), yellow (*ovalipennis*)

Head — slightly longer than wide (1,03), with medium sized, inconspicuous eyes; occiput slightly longer than the diameter of one eye; punctate-rugose, covered with yellowish hairs. Pronotum — wider than head (1,38), slightly wider than long (1,05), widest anteriorly, narrowed posteriorly; constriction only very slightly indicated; sides convergent behind; posterior angles projected behind the basal line; convex on disc, punctate-rugose, with well defined punctures; covered with yellowish hairs. Elytra — wider than pronotum (1,68), 1,61 times as long as wide, ovate and convex (not as ovate as in *azteca*), carinulae much closer to each other than in *azteca*, carinulae interstices punctured; pilosity in carinae-carinulae interstices well developed, when lost, a row of punctures well visible; scutellar carina usually not joining the first carina. Wings — and humeri reduced. Measurements — length, 16,9 - 18,8 mm; width, 5,9 - 6,8 mm. Genitalia — figure 104.

SPECIMENS EXAMINED (36)

MEXICO. No locality (1 ♂, SMF C13988); *Durango*: El Salto, 2250 m (1 ♂, 1 ♀, AMNH); *Nayarit*: Tepic, 900 m (1 ♂, USNM); Jalisco (1 ♂, AMNH); *Michoacan*: Morelia, 1870 m (1 ♂ *, ML); Lomas de Chapultepec, 2400 m (3 ♂, MCZ); near Tzintzuntzan, 2100 m (1 ♂ *, 1 ♀, UA); Lago de Pazuaro, 2150 m (1 ♀, CDZ); Tancitaro, 1980 m (1 ♀, USNM); Cheran, 2250 m (1 ♀, FW); *Jalisco*: Ajijic, 1560 m (2 ♂, 2 ♀, FW); Mts. N of Ajijic, 1650-1800 m (1 ♂ *, FW); Guadalajara, 1550 m (3 ♂ *, 3 ♀, MNHN, MCZ); *Mexico*: Lago Valle del Bravo, 1800 m (1 ♀, UA); *D.F.*: Guadeloupe (1 ♀, MCZ); near Mexico City (1 ♀, SMF C13989); no locality (1 ♂, MCZ); *Morelos*: Cuernavaca, 2200 m (1 ♂, 5 ♀, MNHN, UA, MCZ); *Oaxaca*: Oaxaca (1 ♀, MNHN).

GEOGRAPHIC DISTRIBUTION (fig. 109)

G. boucardi is a relatively common species: it occurs in western Mexico, from Durango to Oaxaca, apparently being restricted to the highlands (known from between 900 and 2550 m).

NOTES

Comparison of *boucardi* and *ovalipennis* (only 3 specimens of the latter are known, all from Guerrero and Oaxaca, in the southern part of the range of the species), showed no differences besides the color of the appendages. *G. ovalipennis* is most probably no more than a color variant of *boucardi*, and is therefore considered a synonym here.

The type of *convexa* seems to be lost (see below); however, its description indicates that it is a synonym of *boucardi* too. Liebke probably based his comparison of *convexa* with *boucardi* on specimens from Omiteme, determined as such by Bates. These specimens do not agree with the type of *boucardi*, and actually represent a new species, *azteca*, described below. Consequently, Liebke was actually comparing his *convexa* (the true *boucardi*) with an undescribed species.

G. boucardi is well characterized by its elytral structure: the carinulae interstices are much narrower than in *azteca*, and are punctured; in *boucardi* the carinae-carinulae interstices are punctured and pilose; and in *azteca* they are glabrous and show no punctures; *boucardi* has relatively much longer elytra than *azteca* does. The aedeagus of the two species is also a very good distinguishing character.

NOTES ON THE TYPES

Of *boucardi* Chaudoir: in the original description Chaudoir mentions two specimens, one female in his own collection (presently in the MNHN) and one male in Boucard's collection (not located). Chaudoir's specimen is herewith designated lectotype.

Of *ovalipennis* Bates: the specimen in the BM (from Soledad, Guerrero, the specimen which Bates illustrated on pl. 14, fig. 9), is herewith designated lectotype. One male from Xautipa, Guerrero (MNHN), is designated paralectotype.

Of *convexa* Liebke: the holotype of this species has probably been lost with part of Liebke's collection. It is not located in the IZ, Warsaw, where the remaining types of Liebke's species are presently located.

***Galerita azteca*, sp. n.**

(Figs. 105, 106, 109)

TYPE DATA

Holotype ♂ (*) and 2 paratypes ♀, from Mexico: Guerrero, Omilteme, 2640 m, July & August, H. H. Smith col. (MCZ n. 31190): 2 paratypes ♂ and 2 paratypes ♀, same data as holotype (AMNH); 1 paratype ♀, same locality, 2400 m, 30. VIII. 1965, H. Reichardt col., under stone (CDZ); 1 paratype ♂, same locality, 25. VII. 1965, G. Halffter col. (CDZ); 1 paratype ♀, same locality, VIII. 1965, P. Reyes col. (CDZ); 1 paratype ♀, 11 miles on road from Chilpancingo to Omilteme, ca. 2000 m, 29. VII. 1965, R. G. Beard & H. Reichardt col., under stone (CDZ)

DESCRIPTION

Black, antennae brown from 5th segment on; very similar to *boucardi*. Head — globose, wider than long (1,08), similar to that of *striata*, with much shorter and more angulate occiput; surface slightly more rugose than in *striata*. Pronotum — much wider than head (1,36), wider than long (1,24); posterior constriction very slightly indicated; posterior angles usually well projected behind the posterior margin; surface flat (less convex than in *boucardi* and *striata*), densely punctate with well defined punctures; covered with short, yellow hairs. Elytra — ovate, less than twice as wide as pronotum (1,65), 1,44 times as long as wide; carinae as in *striata*; carinulae slightly thinner; carinulae interstices not punctured; carinae-carinulae interstices not punctured nor

pilose. Wings — and humeri as in *striata* and *boucardi*. Measurements — length, 16,6 - 17,3 mm; width, 6,2 - 6,6 mm. Genitalia — figure 106

GEOGRAPHIC DISTRIBUTION (fig. 109)

Galerita azteca is presently known only from high elevations in an around Omilteme.

NOTES

The description of this new species is based upon a series of specimens collected in Omilteme, which was misidentified by Bates as *boucardi*. As noted above, this misidentification may be responsible for Liebke's redescription of *boucardi* as a new species (*convexa*). *G. azteca* is very closely related to *sulcipennis*, which, however, has a differently built head and a different elytral structure.

***Galerita sulcipennis*, sp. n.**

(Figs. 107-109)

TYPE DATA

Holotype ♂ (*), from Mexico: *Chiapas*, Pine Forest, 8.5 mi. SE San Cristobal de las Casas, 2100 m, 23.VII.1956, R. T. Bell & van Horn col. (UV); 1 paratype ♀, same data as holotype (CDZ); 1 paratype ♂, same data as holotype (MCZ n. 31191); 1 paratype ♂, from San Cristobal de las Casas, 2480 m, 28.IV.1959, H. E. Evans col. (CU); 1 paratype ♀, from El Sumidero, Tuxtla Gutierrez, 13.VII.1956, R. T. Bell & van Horn col. (UV); 1 paratype ♀, Teopisca, 1500 m (MNHN).

DESCRIPTION

Black, antennae brown from 5th segment on. Head — very globose, wider than long (1,03), very similar to that of *boucardi*, less roughly punctate; anterior part almost smooth; with very thin hairs, mainly behind the eyes. Pronotum — much wider than head (1,44), wider than long (1,22); much narrowed posteriorly; posterior constriction very slightly developed, sides almost parallel behind it; posterior angles projected behind the posterior margin (like in *boucardi*); surface flattened along margins, very convex on disc, sparsely and irregularly punctured over its surface; with few and sparse, reddish hairs. Elytra — ovate as in *boucardi*, wider than pronotum (1,63), less than twice as long as wide (1,49); carinae and carinulae vestigial, indicated by broken and very weak lines; interstices corresponding to carinulae interstices, deep, with a row of very deep and large punctures; scutellar carina punctate, not joining the first carina; with very fine, irregularly spaced hairs in the interstices corresponding to the carinae-carinulae interstices. Wings — and humeri reduced. Measurements — length, 17,3 - 19,8 mm; width, 6,05 - 7,7 mm. Genitalia — figure 108.

GEOGRAPHIC DISTRIBUTION (fig. 109)

G. sulcipennis is only known from the Mexican state of Chiapas, where it has been collected at higher elevations (1500-2100 m) to which it probably is restricted.

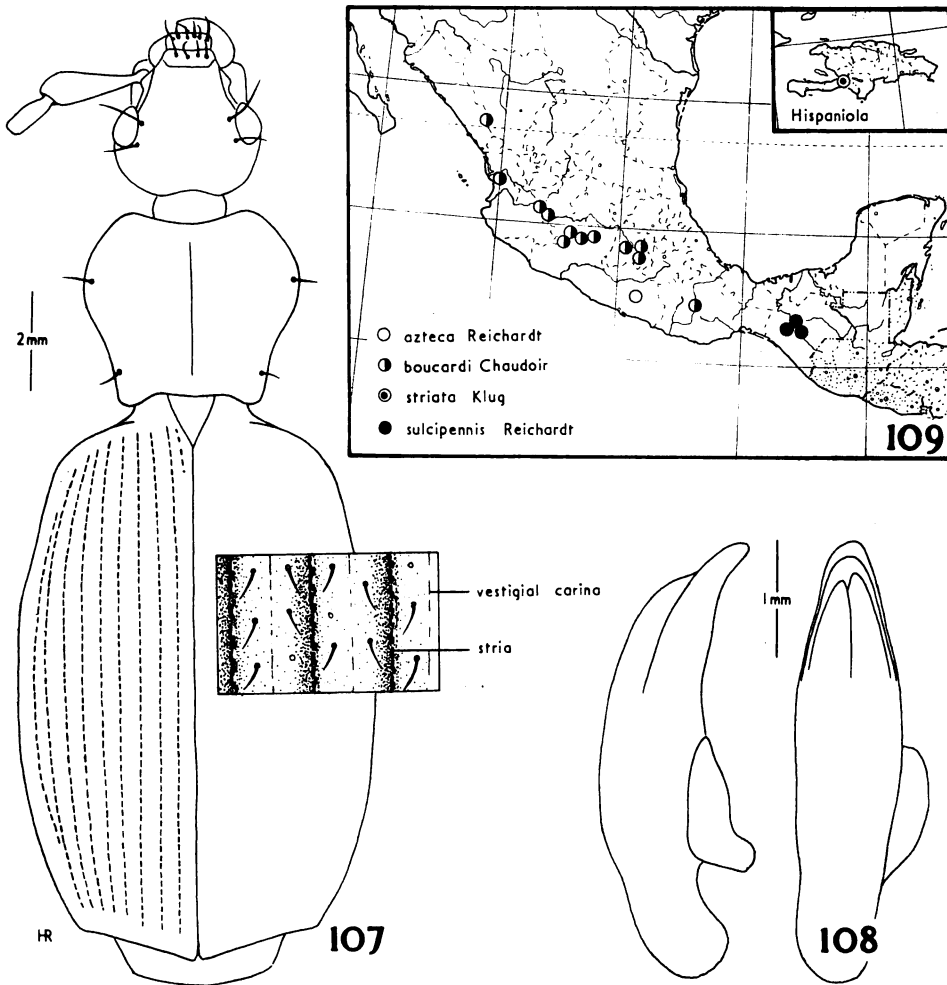


Fig. 107, *Galerita sulcipennis*, sp. n., holotype ♂ (UV); fig. 108, aedeagus of same specimen; fig. 109, Geographic distribution of *Galerita azteca*, sp. n., *boucardi* Chaudoir, *striata* Klug and *sulcipennis*, sp. n.

NOTES

This remarkable species is very similar to *azteca*: the two are most probably derived from a common ancestor. One interesting feature of *sulcipennis* is the almost complete disappearance of elytral carinae and

carinulae, with the development of a punctate sulcus in the carinulae interstices. This pattern of elytral structure is unique among Neotropical species known thus far. It is, however, also found in two species endemic to Madagascar: *perrieri* Fairmaire and *rubripes* Jeannel. Comparison with related species makes it obvious that the elytral pattern of these three species is derived from a typical *Galerita* structure by reduction. *G. sulcipennis*, *perrieri* and *rubripes* are wingless species, and it is very likely that the reduction of carinae and carinulae is somehow related to this winglessness (see more detailed discussion on p. 159).

In describing *hexagonica*, Liebke points out the fact that this species has the elytral structure clearly intermediate between what he calls "gerippte und ungerippte Arten". As will be seen below (p. 146). Liebke's species has reduced carinae, and deep, almost sulcate carinulae interstices; however, the reduction has not been as extreme as in the 3 species mentioned above. In regard to the elytral structure, *hexagonica* is intermediate between *Galerita* with normally developed carinae and *sulcipennis*, *perrieri* and *rubripes*. The elytral structure of these three species is not, as suggested by Liebke, intermediate between "gerippte Arten" (typical *Galerita*) and "ungerippte Arten" (presently separated as *Progaleritina*). The elytral structure of *Progaleritina* is punctate-striate, without any vestiges of carinae or carinulae, and is here considered as being of a more primitive type, from which *Galerita* evolved. The reduction of carinae and carinulae in *hexagonica*, *sulcipennis*, *perrieri* and *rubripes* represents the evolution of a completely different set of structures and, interestingly enough, seems to have been achieved independently in 3 different species-groups: *sulcipennis* and *hexagonica* (from two distinct groups in the New World), and *perrieri* and *rubripes* (representing a single species-group in Madagascar).

GROUP OF *JELSKII*

CHARACTERISTICS

Small to medium sized species (14,8 - 20,0 mm), black, with lighter mouthparts and antennae; segments 5-11 of latter brown; head very globose, especially the occiput; with small, somewhat inconspicuous eyes: occiput as long as the diameter of one eye; punctate-rugose on surface; pronotum variable in size, proportions and shape, usually longer than wide, always widest in anterior third; scutellum normal; elytra always with carinae and carinulae present, the latter usually thinner and less well developed; scutellar carina not joining the first; elytra very narrow at humeri, widened in posterior half; all species with completely reduced wings.

The group of *jelskii*, which comprises seven species (*jelskii* Chaudoir, *mustelina* Bates, *immitis* Liebke, *strandii* Liebke, *laevithorax*, sp. n., *orobia*, sp. n., and *convexipennis*, sp. n.) is very heterogeneous. It is possible that many more species are still undescribed, and this may change the picture of the group. At present, with the relatively small

number of specimens studied, it seems impossible to proceed any further. Most of the species are very variable, especially in head and pronotal form and proportions.

The group is widespread throughout Central and South America, always at higher elevations. Except for one species, *orobia*, which occurs in southern Brazil (states of Rio de Janeiro and São Paulo) at higher elevations, all the other species which occur in South America are Andean species. The known range of most species is quite restricted and is probably related to their flightlessness.

The group of *jelskii* is related to some species included in the group of *carbonaria* (*stenodera* and *championi*).

Galerita jelskii Chaudoir, 1877

Galeria jelskii Chaudoir, 1877:253-254 (holotype ♂, "Peru", MNHN; examined).

Only the holotype of this species has been studied. Its relations are uncertain and more material is necessary for a settlement of its status. Since no important notes have been made on the type, there will be no further mention of this species. I hope that more material will turn up in the future so that the species can be studied in relation to the other species of the group.

Liebke (1937:10) discussed the close relations of his new species *immitis* with *jelskii*. I doubt very much that this identification of *jelskii* was correct. What Liebke called *jelskii* seems to be very close, if not identical to my own *inca*.

Galerita mustelina Bates, 1884

(Figs. 110, 111, 123)

Galerita mustelina Bates, 1884:294 (holotype ♂, "Costa Rica", MNHN; examined).

Galerita panamensis Casey, 1920:233 (holotype ♂, Nata, Panama. USNM; examined). New synonymy.

Galerita nevermanni Liebke, 1939a:477 (holotype ♂, "Westabhang des Vulkan Irazu, 1500-2000 m, Costa Rica", IZ, examined). New synonymy.

DESCRIPTION

Black, antennae brown from 5th segment on; appendages dark rufous. Head — large, globose, slightly longer than wide (1.06); eyes small, somewhat inconspicuous; occiput globose, as long or slightly longer than the diameter of one eye; surface almost impunctate or slightly rugose on occiput, somewhat rugose on front; covered with few, yellow-

ish hairs. Pronotum — slightly wider than head (1,06), longer than wide (1,18); widest in anterior third; not much narrowed posteriorly; posterior constriction very slight; sides divergent after the constriction; posterior angles slightly projected behind basal line; surface convex.

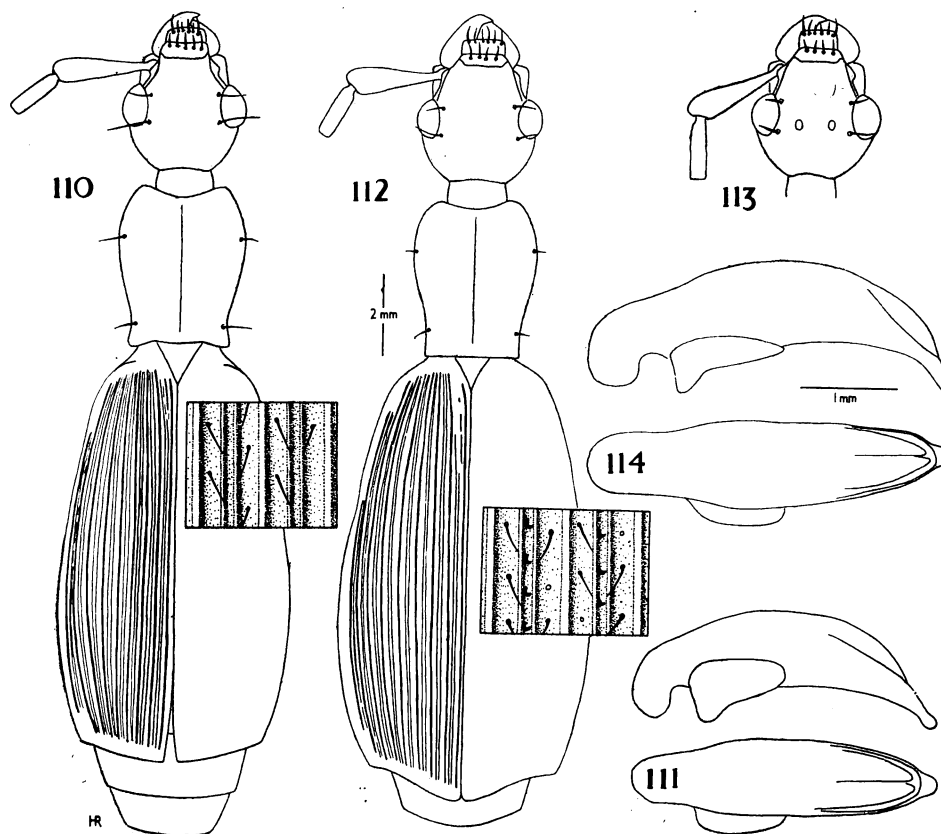


Fig. 110, *Galerita mustelina* Bates, ♂ from Vara Blanca, Costa Rica (USNM); fig. 111, aedeagus of same species from Coronado, Costa Rica (USNM); fig. 112, *G. immitis* Liebke, ♀ from Ecuador (BM); fig. 113, head of holotype of same species (IZ); fig. 114, aedeagus of holotype.

finely rugose-punctate, with few, scattered yellow hairs. Elytra — very slender, widened posteriorly; wider than pronotum (1,92), less than twice as long as wide (1,67); carinae and carinulae well developed, thin and not high; carinulae thinner, slightly closer to each other than to next carina; carinulae interestices impunctate; carinae-carinulae interstices with a row of scattered hairs; scutellar carina not joining the first. Wings — completely reduced; humeri very weakly developed. Measurements — length, 17,5 - 18,0 mm; width, 5,2 - 6,3 mm. Genitalia — figure 111.

SPECIMENS EXAMINED (21)

COSTA RICA. No locality (2 ♀, BM); Coronado, 1400-1500 m (12 ♂, 1 ♀, USNM); Vulcan Irazu, western slopes (3 ♂, 1 ♀, USNM, BM); Vara Blanca, 1700 m (2 ♂, 1 ♀, MCZ, USNM); Tablazo, 1600 m (1 ♂, 1 ♀, USNM, MNHN; ♀ collected in epiphytic Bromelia); Cervantes, Cartago, 1450 m (1 ♂, USNM); Pavas (1 ♀, USNM); San José (2 ♂, 1 ♀, MCZ, IEEA, MNHN); La Uruca, 110 m (1 ♂, MNHN).

COLOMBIA. *Cauca*: Pereira (1 ♂, USNM).

GEOGRAPHIC DISTRIBUTION (fig. 123)

Galerita mustelina is known from a few localities in Costa Rica, Panama and Colombia, all at elevations above 1200 m.

NOTES

Galerita panamensis, although having less globose head and more slender pronotum, seems to fall into the range of variation of *mustelina* and must be considered a synonym. The two types of Casey's species are the only known Panamanian specimens of *mustelina*.

The holotype of *G. nevermanni* is a teneral specimen, completely reddish-brown, with equally reddish-brown appendages (and not "...schwarzbraun, Fuehler und Beine roetlich gelbbraun...", as stated by Liebke in his description). As compared to normal *mustelina*, it is a very small specimen (length, 15,81 mm, width, 4,95 mm). The form of the pronotum, sculpture of the head and pronotum, and the more slender shoulders fit easily into the range of variation of *mustelina*. No significant difference in the shape of the aedeagus is present. Subsequent specimens collected at the type-locality are typical *mustelina*. Therefore, *nevermanni* is here considered a synonym of *mustelina*.

G. mustelina is very closely related to *G. strandi* and *jelskii*; however, it is easily distinguished from the former by the more slender elytra and the differences in the aedeagus (fig. 111).

***Galerita immitis* Liebke, 1937**

(Figs. 112-114)

Galerita immitis Liebke, 1937:9 (holotype ♂, Guayaquil, Ecuador, IZ; examined).

DESCRIPTION

Black, antennae and mouthparts somewhat lighter; antennal segments 5-11 brown. Head — slightly longer than wide (1,03); very globose, with small, inconspicuous eyes; occiput long (as long as the diameter of one eye); surface, especially of occiput, very deeply puncta-

te-rugose; covered with rufous pubescence. Pronotum — only very slightly wider than head (1,03), longer than wide (1,17); widest in anterior third; not much narrowed posteriorly; sides slightly divergent behind constriction; surface convex on disc, flattened laterally; with very sparse and irregular rugose punctuation; covered with rufous pubescence. Elytra — 1,79 times as wide as pronotum; 1,65 times as long as wide; very much narrowed basally, widened in posterior half; carinae well developed, not high or sharp; carinulae very thin, closer to each other than to next carina; carinulae interstices with a row of each other than to next carina; carinulae interstices with a row of sparse punctures; carinae-carinulae interstices with a row of irregular and sparse, rufous hairs; scutellar carina not joining the first carina. Wings — and humeri reduced. Measurements — length, 19,25 - 19,4 mm; width, 6,5 - 6,6 mm. Genitalia — figure 114.

SPECIMENS EXAMINED (2)

ECUADOR. No locality (2 ♀, BM, MNHN).

NOTES

G. immitis is very close to *mustelina* and probably also to *jelskii*; it differs from the former mainly by the very globose head (especially the posterior part, behind the eyes) and by the very irregular and sparse pronotal punctures.

NOTES ON THE TYPES

The holotype of *Galerita immitis* does not have its original head. The specimen is very badly preserved and is glued on a rectangle of cardboard (as all other Liebke types I have been able to examine). From the description it is not possible to reach a final decision as to whether the exchange was done before or after Liebke described the species. Most certainly it happened after the description, during the time that the collection was lost during and after World War II (see p. 7). The head glued on this holotype (fig. 113) probably belongs to a species of the group of "*orbigny*", which is characterized by the red spots between the eyes, as well as by the occipital depression. However, this head seems to be slightly different from that of the species known to me. As noted elsewhere (p. 145), it is possible that the head of the holotype of another of Liebke's species, *hexagonica*, has also been exchanged, and that the one glued on the holotype of *immitis* belongs to *hexagonica*.

The specimen of *immitis* in the BM (from Ecuador) was labeled "Kotype" by Liebke; however, he mentions only the holotype (labeled "Type") in his description and therefore the BM-specimen is not to be considered a type. The head of this specimen agrees with that of the second specimen I have studied (MNHN), and both are different from the head on the holotype, indicating that this is not the original head.

Galerita strandi Liebke, 1939

(Figs. 115, 116, 123)

Galerita beauvoisi (nec *beauvoisi* Chaudoir, 1861); Bates, 1883:165 (Guatemala, Capetillo, San Geronimo and San Joaquin; original specimens examined).

Galerita strandi Liebke, 1939b:122 (holotype ♀, "Guatemala", IZ; examined).

DESCRIPTION

Black, antennae brown from 5th segment on. Head — globose, slightly longer than wide (1,05); eyes large, inconspicuous; occiput as long as the diameter of one eye; surface rugose, especially in anterior

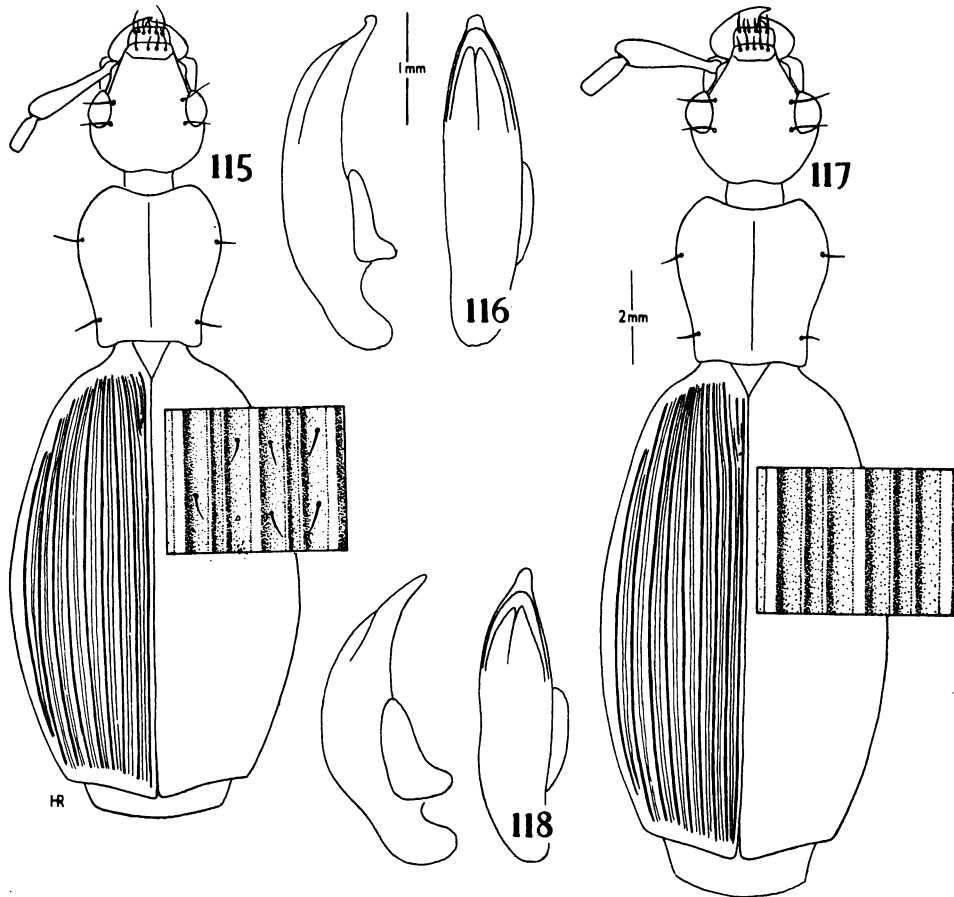


Fig. 115, *Galerita strandi* Liebke, holotype ♀ (IZ); fig. 116, aedeagus of same species from Antigua, Guatemala (MCZ); fig. 117, *G. convexipennis*, sp. n., holotype ♂ (MBA); fig. 118, aedeagus of same specimen.

part; covered with very thin, brown hairs. Pronotum — wider than head (1,11); longer than wide (1,15), widest in anterior third, not much narrowed posteriorly; constriction not well developed; sides parallel after the constriction; posterior angles usually slightly projected behind the basal line; surface flat, covered with dense punctures, forming a transverse rugosity. Elytra — globose, very convex; twice as wide as pronotum (2,06), 1,57 times as long as wide; carinae well developed, not very high; carinulae thin and weak, closer to each other than to next carina; carinulae interstices with indication of a row of shallow punctures; carinae-carinulae interstices with a row of sparse, yellow hairs; scutellar carina not joining the first carina. Wings — and humeri reduced. Measurements — length, 16,1 - 17,9 mm; width, 5,6 - 6,6 mm. Genitalia — figure 116.

SPECIMENS EXAMINED (58)

No locality (1 ♂, MCZ).

MEXICO. No locality (2 ♀, MNHN).

GUATEMALA. *Chimaltenango*: S. P. Yepocapa, 1400 m (2 ♂, CNHM); Chocoyos, 1900 m (1 ♀, CNHM); *Sacatepequez*: Capetillo (1 ♂, 3 ♀, 1 ex., MNHN, BM); Antigua, 1400 m (7 ♂ *, 3 ♀, MNHN); Finca el Cipres (1 ♂, 2 ♀, CAS); *Guatemala*: Guatemala, 1450 m (2 ♂, 6 ♀, MNHN, CN, IRSNB); *Escuintla*: Escuintla (1 ♂, MNHN); *Alta Verapaz*: San Joaquin, 960 m (2 exx., BM); *Baja Verapaz*: San Geronimo (1 ex., BM); not located: El Naranjo (1 ♂, IRSNB).

EL SALVADOR. San Salvador, 700 m (3 ♀, SMF C14007); Finca El Carmen, Vulcan San Vicente, 1300 m (7 ♂, 5 ♀, SMF C14008, MCZ, CDZ); Finca San Jorge, near Santa Ana, 1000 m (3 ♀, SMF C14009); Hacienda Buena Vista, Vulcan Izalco, 1200 m (1 ♂, SMF C14010); km 48 of road to Sonsonate, 600 m (1 ♂, 1 ♀, SMF C14011).

GEOGRAPHIC DISTRIBUTION (fig. 123)

G. strandi is known only from Guatemala, El Salvador and from a single specimen from Mexico without locality (most probably from the south), at elevations ranging from 700 to 1500 m.

NOTES

The Guatemalan specimens referred by Bates to *beauvoisi* (a Haitian and Costa-Rican species) are actually *strandii*. This species is very close to *mustelina*, being distinguished only by very few characters. *G. mustelina* has a more globose head, which is almost as wide as the pronotum; the elytra are less globose in *mustelina*; the humeri are better developed in *strandii*; the aedeagus of the two species is strikingly different (compare figs. 111 and 116). The aedeagus of *strandii* is very similar to that of *laevithorax*, a species, which even though being related, is readily distinguished by the weakly punctured pronotum. *G. strandii*

is very variable, especially in the form and sculpture of the pronotum. In some cases the pronotum has rather individualized punctures, being similar to *boucardi* in this feature; in others the punctures are fused, forming a kind of transverse rugosity.

***Galerita convexipennis*, sp. n.**

(Figs. 60, 117, 118)

TYPE DATA

Holotype ♂ (*) and 2 paratypes ♀, from Argentina: *Salta*, Abra de Minas, 14.VII.1933, P. Denier col. (MBA); 1 ♂ and 1 ♀, paratypes, from *Salta*, no locality (MLP); 1 ♂ and 1 ♀, paratypes, same data as preceding (CDZ); 1 ♂ and 1 ♀, paratypes, from *Salta*, Piquete, V. 1934 (MLP); 1 ♂, paratype, from *Salta*, Macueta, X-XI.1933, W. C. Harrington col. (CAS); 1 ♀, paratype, from *Salta*, Ramos, VII-VIII. 1933, W. C. Harrington col. (CAS). One ♂ (*) and 1 ♀, paratypes, from Bolívia: *Cochabamba*, Carrasco-Sihuenka, 2400 m, XI.1962 (CN).

DESCRIPTION

Black, antennae brown from 5th segment on. Head — globose, with small, inconspicuous eyes; slightly longer than wide (1,06), with occiput as long as the diameter of one eye; surface punctate-rugose, almost glabrous. Pronotum — slightly longer than wide (1,05), wider than head (1,13); widest anteriorly, narrowed posteriorly; sides parallel behind the constriction; anterior margin very concave; surface normally convex, transversely punctate-rugose, covered with short, yellow hairs. Elytra — globose, twice as wide as pronotum (2,04), 1,6 times as long as wide; carinae well developed, not high or sharp; carinulae thinner, closer to each other than to next carina; carinulae interstices shallowly punctured; elytra glabrous; scutellar carina not joining the first carina. Wings — and humeri reduced. Measurements — length, 17,5-19,8 mm; width, 5,8-7,3 mm. Genitalia — figure 118.

NOTES

This new species is very closely related to the Central-American *laevithorax*, especially because of the form of the head and pronotum. It is readily distinguished by its more punctate-rugose pronotum and by the more slender elytra. The proportions and form of the head are very variable in the series I have been able to study. In some specimens the pronotum is barely wider than the head, and barely longer than wide. The male from Bolívia is a very small and slender specimen (15,6 mm x 5,2 mm). Both paratypes from Bolívia seem to be slightly different from Salta-specimens, but they agree with the basic specific characters, including the shape of the aedeagus. Only more material will show if the specimens are really conspecific.

Bruch recognized that this species was undescribed and I am preserving for it the manuscript name under which I found it in his collection in Buenos Aires.

Galerita laevithorax, sp. n.

(Figs. 119, 120, 123)

TYPE DATA

Holotype ♂ (*), from Guatemala: *Sacatepequez*, Finca San Rafael, 2350 m, 25.VI.1948, R. D. Mitchell col. (CNHM); 1 paratype ♀, same locality, 2450 m, 27.VI.1948, (CNHM); 1 paratype ♀, from *Chimalte-nango*, Chocoyos, 6.XI.1934, F. J. W. Schmitd col. (CNHM). One paratype ♀, from El Salvador: Frifinio, St. Ana, 8.III.1960, J. Bechyné col. (CN); 1 ♂, 1 ♀, paratypes, from El Salvador: Hacienda Monte Cristo, 2200 m, 4-8.VI., 26-27.VIII.1951, A. Zilch col. (SMF C13993); 1 paratype ♂, same data (CDZ).

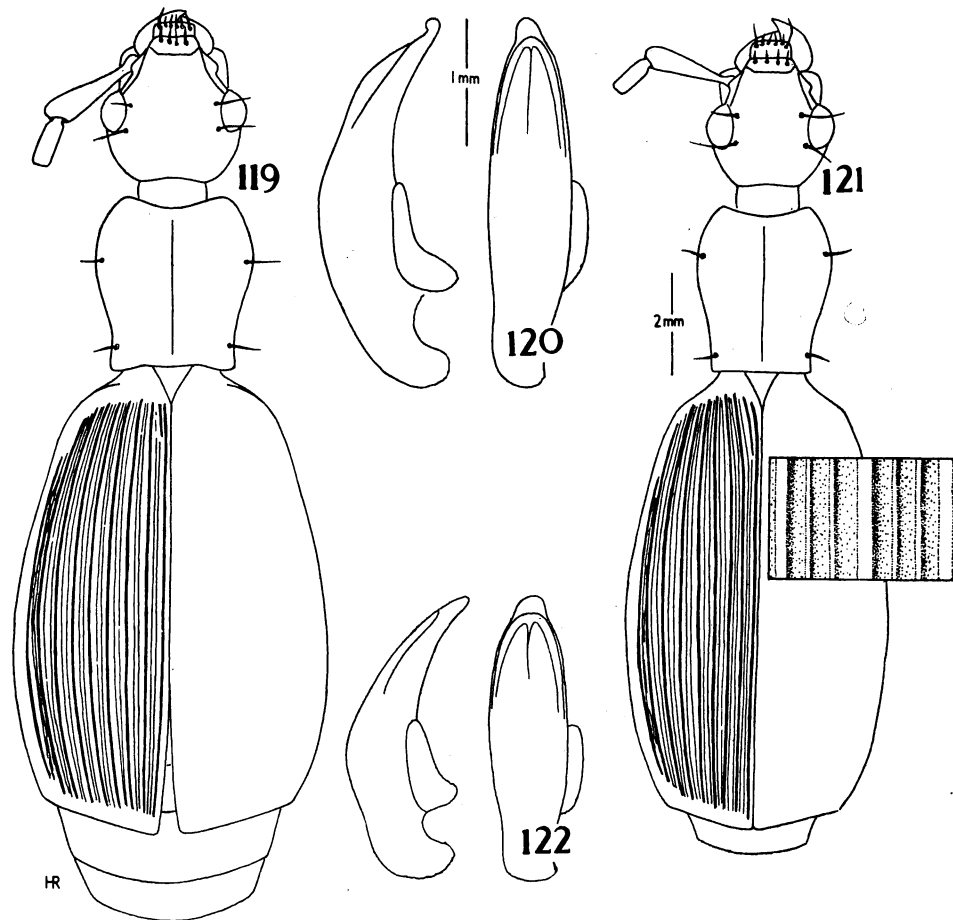


Fig. 119, *Galerita laevithorax*, sp. n., holotype ♂ (CNHM); fig. 120, aedeagus of same specimen; fig. 121, *G. orobia*, sp. n., holotype ♂ (IEEA); fig. 122, aedeagus of same specimen.

DESCRIPTION

Completely black, antennal segments 5-11, palpi and tarsi brown. Head — slightly longer than wide (1,07); eyes small, inconspicuous; occiput very globose, about as long as the diameter of one eye; surface very shallowly punctured posteriorly; rugose anteriorly; covered with very thin, yellow hairs. Pronotum — wider than head (1,14), longer than wide (1,07), widest in anterior third, narrowed towards posterior constriction which is only feebly developed; margins more or less parallel after constriction; posterior angles very slightly projected behind basal line; surface deplanate, especially near borders; very sparsely and shallowly punctured, with almost smooth appearance; with very few and short, yellow hairs. Elytra — very globose, twice as wide as pronotum (2,01); 1,51 times as long as wide; carinae thin, but well developed; carinulae very low and thin, sometimes almost erased with slight indication of a row of shallow punctures in carinulae interstices; carinae-carinulae interstices with a row of yellow hairs; scutellar carina broken, partly erased, not joining the first carina. Wings — and humeri reduced. Measurements — length, 17,2-18,2 mm; width, 5,75-7,0 mm. Genitalia — fig. 120.



Fig. 123, Geographic distribution of *Galerita laevithorax*, sp. n., *mustelina* Bates and *strandii* Liebke.

GEOGRAPHIC DISTRIBUTION (fig. 123)

The few specimens of this species which are known, come from a few localities in Guatemala and El Salvador, at high elevations (above 2000 m), to which they may well be restricted. Their flightless condition supports this supposition.

NOTES

Galerita laevithorax is very closely related to *convexipennis* and *mustelina*. It is easily distinguished from the latter by the characters given in the key, especially by the very characteristic, almost smooth pronotum, which also distinguishes it easily from *convexipennis*.

Galerita orobia, sp. n.

(Figs. 60, 121, 122)

TYPE DATA

Holotype ♂ (*) and 1 ♀ paratype, from Brazil: *São Paulo*, Campos do Jordão, 1600 m, III.1954, P. Wygodzinsky col. (IEEA); 2 paratypes ♀, from *Rio de Janeiro*, Itatiaia, IV.1906, H. Luederwaldt col. (CDZ); 1 ♂, 1 ♀, paratypes, from the same locality, 2400 m, II.1899, E. Gounelle col. (MNHN); 1 paratype ♀, from the same locality, XI.1903, C. Moreira col. (IEEA); 1 ♂, 1 ♀, paratypes, from the same locality, 2000 m, 16.III.1926, J. F. Zikan col. (IOC); 1 ♂ paratype, same data as preceding (BM); 1 ♀ paratype, same locality, 2200 m. 1.VII.1933 (MCZ n. 31192).

DESCRIPTION

Black, antennae with segments 5-11 brown. Head — slightly wider than long (1,03), globose, with small, inconspicuous eyes; occiput slightly longer than the diameter of one eye; surface very rugose, with very fine, yellowish hairs. Pronotum — slightly wider than head (1,01), longer than wide (1,15); widest in anterior third, little narrowed posteriorly; constriction only slightly indicated; sides parallel behind it; surface convex, with median sulcus well marked; with sparse and irregular, not fused, punctures; covered with sparse, pale hairs, mainly in posterior half. Elytra — twice as wide as pronotum (2,05), less than twice as long as wide (1,56); carinae thick, not sharp nor high; carinulae thinner, as distant from each other as from next carina; carinulae interstices not punctured; elytral pilosity very sparse and irregular; scutellar carina not joining the first carina. Wings — and humeri reduced. Measurements — length, 14,85 - 16,60 mm; width, 5,2 - 5,75 mm. Genitalia — figure 122.

GEOGRAPHIC DISTRIBUTION (fig. 60)

Galerita orobia is known only from two close localities in the states of São Paulo and Rio de Janeiro in Brazil, at elevations ranging from

1600 to 2400 m. This species may have a wider distribution, but it is probably restricted to the higher elevations of the Serra da Mantiqueira

NOTES

This species, already recognized as new by the late J. F. Zikan, is related to *mustelina*. It is easily distinguished by its smaller size and particularly by the pronotum, which is differently shaped and is very sparsely punctured. From *laevithorax*, *orobia* is distinguished by the smaller body-size and by the more densely punctured pronotum.

GROUP OF *CARBONARIA*

CHARACTERISTICS

Large (18-22 mm), black species; head with small (sometimes very small), inconspicuous eyes; occiput long (usually longer than the diameter of one eye); pronotum longer than wide, widest in anterior third; constriction well marked, sides very shortly parallel (or very slightly divergent) behind the constriction; surface sculpture variable; scutellum normal; elytra with well developed carinae, however, these not high or sharp; carinulae very thin, sometimes completely erased (in *carbonaria* and *stenodera*); carinulae interstices not punctured; carinae-carinulae interstices usually glabrous; scutellar carina not joining the first carina; humeri not well pronounced, elytra abruptly widened behind shoulders; wings completely vestigial (flightless species).

The three species included in this group (*carbonaria* Mannerheim, *stenodera* Chaudoir and *championi* Bates) are very closely related. *G. carbonaria* is more easily distinguished from the other two species, which are less easily separated from each other. *G. stenodera* is, however, much more slender than *championi*.

The distribution of these species is very restricted, probably because they are brachypterous (however, this may, in part, also be due to poor collecting in certain areas). All three species seem to be rare, since only a very few specimens are known as yet. The aedeagus of each species is very characteristic.

Through *carbonaria*, the group is related to the group of *orbigny*; the other two species link the group to the group of *jelskii*.

***Galerita carbonaria* Mannerheim, 1837**

(Figs. 124, 125, 128)

Galerita carbonaria Mannerheim, 1837:24 (type, "Brasilia interiore", ZMH; not seen).

DESCRIPTION

Head — large, with comparatively small and inconspicuous eyes; occiput as long as the diameter of one eye; longer than wide (1,36); occiput with deep and rugose depression, front also somewhat depressed

with prominent frontal carina; covered with few yellowish hairs. Pronotum — longer than wide (1,2), wider than head (1,49), not much narrowed posteriorly, with parallel or slightly divergent sides behind the constriction; surface convex, with few and irregular punctures,

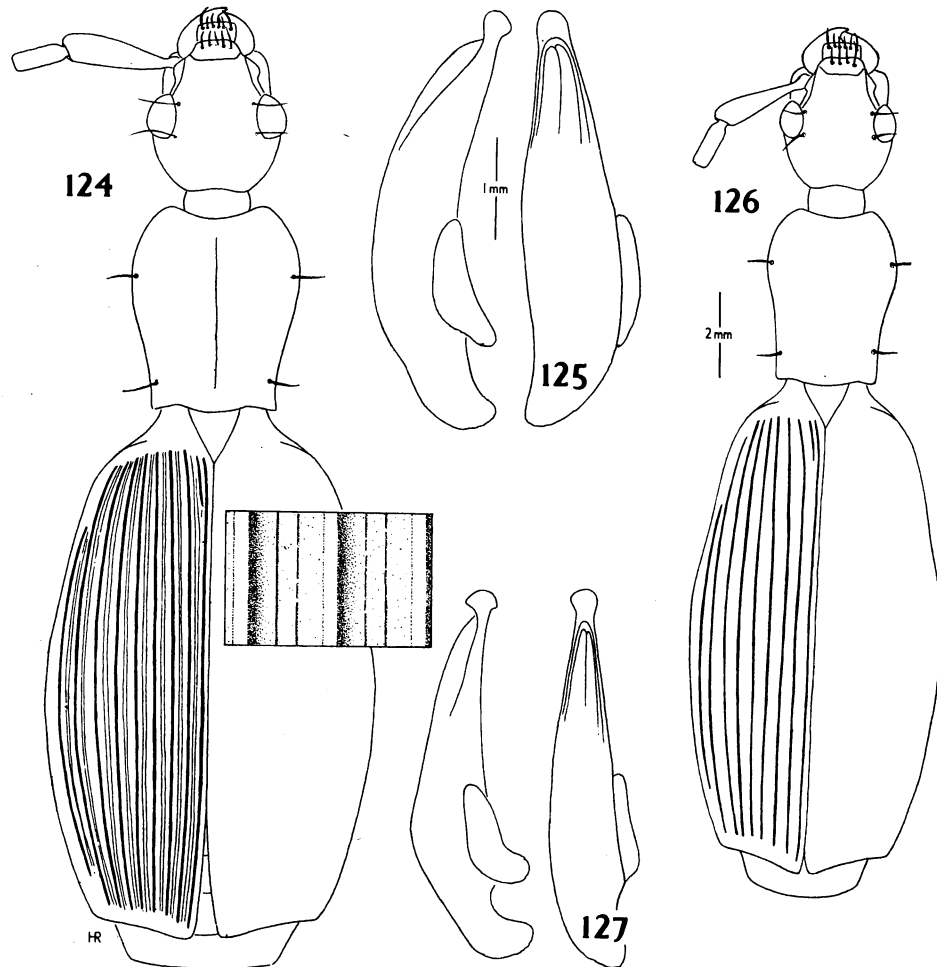


Fig. 124, *Galerita carbonaria* Mannerheim, ♂ from Eugênio Lefèvre, Brazil (CDZ); fig. 125, aedeagus of same specimen; fig. 126, *G. stenodera* Chaudoir, ♂ from "Brazil" (CDZ); fig. 127, aedeagus of same specimen.

somewhat rugose near the constriction; practically glabrous. Elytra — wider than pronotum (1,68), less than twice as long as wide (1,63); carinae very strongly developed, not very high; carinulae thin, sometimes completely vestigial; interstices impunctate and glabrous; scutellar carina not joining the first carina. Wings — and humeri reduced. Measure-

ments — length, 19,8 - 21,8 mm; width, 7,0 - 7,4 mm. Genitalia — figure 125.

SPECIMENS EXAMINED (15)

BRAZIL. No locality (3 ♂, 6 ♀, MNHN, BM, MCZ); *Rio de Janeiro*: Nova Friburgo (1 ♀, IRSNB); *São Paulo*: São Paulo (1 ♀, IRSNB); Eugênio Lefèvre, 1200 m (1 ♂, CDZ); Estação Biológica de Boracéia, Salesópolis (1 ♂, CDZ); Casa Grande (2 ♂*, IB).

GEOGRAPHIC DISTRIBUTION (fig. 128)

Galerita carbonaria is known from a few localities in the states of Rio de Janeiro and São Paulo, in southeastern Brazil.

NOTES

Galerita carbonaria is easily distinguished from the other species of the group by the very characteristic occipital depression of the head and by the scarce pronotal punctures. It links the group to *orbigny*, mainly because of the depressed occiput, a character which is present in all of the species of the group of *orbigny*.

***Galerita stenodera* Chaudoir, 1854**

(Figs. 126-128)

Galerita stenodera Chaudoir, 1854:127 (holotype ♀, Nova Friburgo, Brazil, MNHN; examined).

DESCRIPTION

Head — elongate (1,13), with small, inconspicuous eyes; occiput long, variable, sometimes longer than the diameter of one eye, normally, however, only as long as; rugose, not depressed on occiput, but simply flattened; covered with few, yellowish hairs. Pronotum — longer than wide (1,25), slightly wider than head (1,17), not much narrowed behind; sides slightly divergent behind the constriction; surface regularly and closely punctate-rugose; convex, with few, yellowish hairs. Elytra — slender, less than twice as long as wide (1,67), wider than pronotum (1,6); carinae as in *carbonaria*; carinulae very thin, often vestigial (when present, closer to each other than to next carina); interstices glabrous; scutellar carina not joining the first carina. Wings — and humeri reduced. Measurements — length, 18,0 - 20,75 mm; width, 5,8 - 7,4 mm. Genitalia — figure 127.

SPECIMENS EXAMINED (11)

BRAZIL. No locality (2 ♂, 1 ♀, IRSNB, MNHN, IOC); *Rio de Janeiro*: Itatiaia. 700-1100 m (1 ♂*, 3 ♀, IOC); *Minas Gerais*: Serra do Caraca (1 ♀, MNHN); Viçosa, 650 m (1 ♂, CDZ); *São Paulo*: São Paulo (2 ♂, IEEA), IOC).

GEOGRAPHIC DISTRIBUTION (fig. 128)

Galerita stenoder is partially sympatric with *carbonaria*, but also occurs in the state of Minas Gerais, where the latter has not yet been collected.

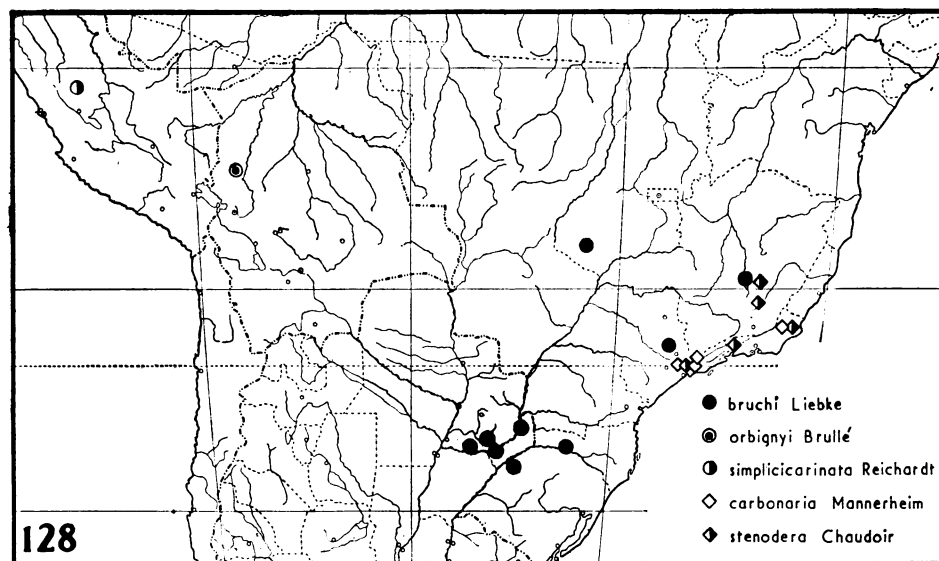


Fig. 128, Geographic distribution of *Galerita bruchi* Liebke, *orbigny* Brullé, *simplicarinata*, sp. n., *carbonaria* Mannerheim and *stenoder* Chaudoir.

NOTES

This species is very variable, especially in regard to the length of the occiput; however, this variation is not correlated with either sex or geographic distribution. It is easily distinguished from *carbonaria* by its general slenderness and the regularly and closely punctured pronotum. One specimen in the MNHN, collected by Saint-Hilaire (probably in Minas Gerais in the beginning of the 19th century), is labeled "*G. stricta* Aud. (oin) & Bl. (anchard)", which is most certainly a manuscript name of the species.

***Galerita championi* Bates, 1884**

(Figs. 128-130)

Galerita championi Bates, 1884:294 (holotype ♂, Volcan de Chiriqui, Panama, BM; examined).

DESCRIPTION

Head — large, globose, with very small, inconspicuous eyes; longer than wide (1,14); very slightly rugose, somewhat depressed on anterior half; covered with yellowish hairs; occiput longer than the diameter

of one eye. Pronotum — slightly wider than head (1,14), longer than wide (1,2), very slightly narrowed posteriorly, with parallel or divergent sides behind the constriction; surface convex, regularly and densely

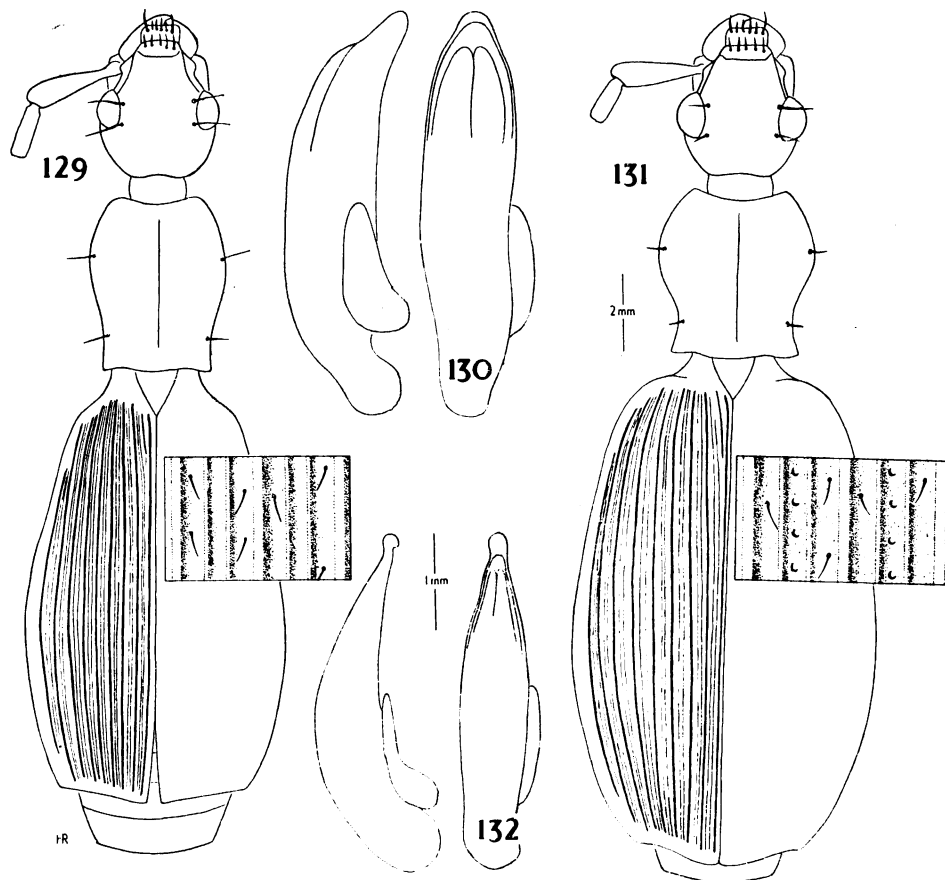


Fig. 129, *Galerita championi* Bates, ♂ from Chiriqui, Panama (CDZ); fig. 130, aedeagus of same specimen; fig. 131, *G. bruchi* Liebke, holotype of *knorri* Liebke (IZ); fig. 132, aedeagus of same species from Misiones, Paraguay (MCZ).

punctate-rugose, as in *stenodera*; covered with fine yellow hairs. Elytra — almost twice as wide as pronotum (1,97), less than twice as long as wide (1,6); carinae and carinulae thin, almost equally well developed; carinae-carinulae interstices with a row of sparse, brownish hairs; scutellar carina not joining the first carina; elytra narrowed at base, widened posteriorly. Wings — and humeri reduced. Measurements — length, 20.35 - 21.6 mm; width, 6.4 - 7.3 mm. Genitalia — figure 130.

SPECIMENS EXAMINED (6)

PANAMA. No locality (1 ♀, IRSNB); Volcan de Chiriqui (2 ♂ *, 3 ♀, MNHN, CN).

NOTES

Galerita championi, the only species of the group which gets into Central America, links the group to the species of the group of *jelskii*, of which it is a very close relative. It is easily distinguished from *stenodera* by the globose head and less slender body.

GROUP OF *ORBIGNYI*

CHARACTERISTICS

Large species (19,5-23,5 mm), with large head, well developed and prominent eyes; occiput more or less as long as the diameter of one eye; very rugose, with a depression on occiput, prolonged anteriorly along each side of the median, frontal carina; two red spots between the eye in two of the three species; pronotum variable in shape, color and sculpture; posterior constriction present, well developed, sides divergent behind the constriction; scutellum normal, black; carinae always well developed, carinulae completely erased in one species; scutellar carina usually not joining the first carina; humeri and wings well developed in two of the species, reduced in *simplicicarinata*.

Galerita orbignyi Brullé, *bruchi* Liebke and *simplicicarinata*, sp. n., the three species which are included in this group (see also notes under *hexagonica* Liebke, a species of uncertain position, which may belong here), are very closely related. It is rather remarkable that one of the species, *simplicicarinata*, has lost its carinulae and wings. The only slight reduction of the humeri in this species may indicate a recent acquisition of the flightlessness. The presence of the red spots between the eyes in two of the species (this character is also present in all species of the group of *americana*) is also noteworthy.

The group in general, and the species in particular, have a very restricted area of distribution in South America. However, only few specimens of each species are presently known and this picture may well be changed with better representation in collections.

***Galerita bruchi* Liebke, 1932**

(Figs. 128, 131, 132)

Galerita bruchi Liebke, 1932:415, 417 (holotype ♂, "Misiones", Argentina, MBA; examined).

Galerita knorri Liebke, 1932:416, 417 (holotype ♀, "Paraguay", IZ: examined). New synonymy.

DESCRIPTION

Black with dark red prothorax. Head — very rugose, especially on the posterior depression; without red spots; as long as wide, with very prominent eyes; occiput slightly shorter than the diameter of one eye; with very few, yellowish hairs. Pronotum — slightly longer than wide (1,07), wider than head (1,12); rugose, with some individualized punctures; glabrous on surface. Elytra — twice as wide as pronotum; less than twice as long as wide (1,66); carinae not very sharp, carinulae well developed, slightly closer to each other than to next carina; carinulae interstices with a row of very fine punctures; carinae-carinulae interstices with a row of sparse hairs. Wings — normally developed. Measurements — length, 20,35 - 23,4 mm; width, 7,1 - 8,1 mm. Genitalia — figure 132.

SPECIMENS EXAMINED (24)

BRAZIL. *Goiás*: Jataí (1 ♀, MNHN); *Minas Gerais*: Pedro Leopoldo (1 ♀, IOC); *São Paulo*: Rio Claro (1 ♀, CDZ); Ibití (1 ♂, CDZ); *Santa Catarina*: Nova Teutônia (1 ♀, coll. Plaumann); *Rio Grande do Sul*: Serro Azul (1 ♂, 2 ♀, MF, CPB).

PARAGUAY. Alto Parana, Misiones (2 ♂ *, 2 ♀, MCZ); Colonia Fram (1 ♂, IRSNB); Central Paraguay (1 ♀, MNHN); no locality (1 ♂, 1 ♀, MBA).

ARGENTINA. *Misiones*; near San Ignacio (1 ♀, MNHN); San Ignacio (1 ♂, MBA); Santa Maria (1 ♀, MLP); Eldorado (1 ♂, MLP); no locality (3 exx., MLP, MBA). Rio Pilcomayo (1 ♀, MBA).

GEOGRAPHIC DISTRIBUTION (fig. 128)

G. bruchi is known from Brazil (from the states of Goiás and Minas Gerais south to Rio Grande do Sul), Argentina (Misiones) and Paraguay. It is the species with the widest distribution in the group.

NOTES

As seen above, *bruchi* is easily distinguished from the other species of the group by its red pronotum. *G. knorri*, described by Liebke in the same paper as *bruchi*, must be considered a synonym of the latter. Its holotype is a rather slender specimen, with specially narrow elytra; but the material I have seen, including specimens from Paraguay (type-area of *knorri*), shows much variation, and specimens like the type of *knorri* fall into the range of variation of *bruchi*.

***Galerita orbignyi* Brullé, 1837**

(Figs. 128, 133, 134)

Galerita orbignyi Brullé, 1837:11 (holotype ♂, Corrientes. Argentina, MNHN; examined).

Galerita interpunctata Lucas, 1857:42, pl. 2, fig. 3a (lectotype ♂, "sur les bords du Paraguay", MNHN; examined); Liebke, 1932:419 (proposed synonymy with *orbigny* Brullé).

DESCRIPTION

Completely black, with two red spots between the eyes. Head — as in *bruchi*, with depression less deep; slightly longer than wide (1,06), with very few hairs. Pronotum — longer than wide (1,11), wider than head (1,11); less narrowed posteriorly than in *bruchi*; surface very irregularly punctured and rugose, with most punctures well indi-

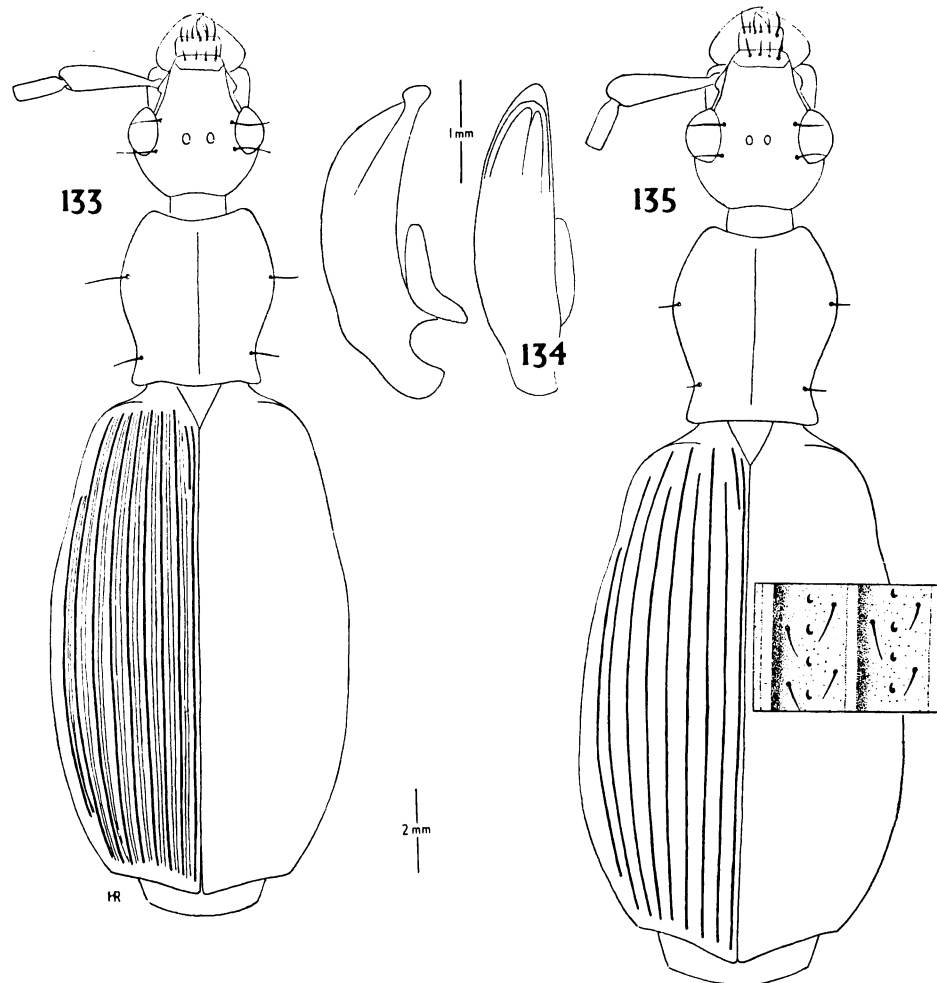


Fig. 133, *Galerita orbigny* Brullé, ♂ from Rio Salado, Argentina (CDZ); fig. 134, aedeagus of same specimen; fig. 135, *G. simplicicarinata*, sp. n., holotype ♀ (MNHN).

vidualized; glabrous. Elytra — almost twice as wide as pronotum (1,92), less than twice as long as wide (1,76); carinae and carinulae as in *bruchii*, carinulae interstices with slightly larger punctures; pilosity as in *bruchii*. Wings — normally developed. Measurements — length, 19,5 - 21,3 mm; width, 6,05 - 7,1 mm. Genitalia — figure 134.

SPECIMENS EXAMINED (23)

BRAZIL. *Mato Grosso*: no locality (2 ♂ *, 4 ♀, MNHN).

BOLÍVIA. *La Paz*: Tumupasa region (1 ♂, USNM); no locality (1 ♂, 6 ♀, IRSNB, MNHN).

ARGENTINA. *Salta*: no locality (1 ♀, CN); *Misiones*: Estacion Experimental de Loreto (1 ♂, MBA); *Corrientes*: no locality (1 ♀, MBA). Rio Salado (5 ♂, IRSNB). No locality (1 ♀, MBA).

GEOGRAPHIC DISTRIBUTION (fig. 128)

Galerita orbignyi is known from a few localities in northeastern Argentina, Bolívia and Brazil (Mato Grosso). The species probably occurs throughout the Paraguay river Basin.

NOTES

This species is very distinctive, being easily distinguished from *bruchii* by its color, and from *simplicicarinata* by the well-developed carinulae.

Liebke (1932:419) correctly synonymized *interpunctata* with *orbignyi*, as could be proven by the examination of the types. Nevertheless, Liebke did not know the species very well as I have seen several specimens of *lacordairei*, a completely distinct species, identified by Liebke as *orbignyi*, and none of the specimens of *orbignyi* I have seen bear Liebke's identification label.

NOTES ON THE TYPES

Of *interpunctata* Lucas, 2 males and 1 female and one specimen of undetermined sex are preserved in the MNHN. The first male of the series is herewith designated lectotype, the other specimens becoming paralectotypes.

***Galerita simplicicarinata*, sp. n.**

(Figs. 128, 135)

TYPE DATA

Holotype ♀, from Peru: Chanchamayo, 800 m, Dr. O. Schuncke col. (MNHN).

DESCRIPTION

Completely black species, with two red spots between the eyes. Head — as in *bruchi* and *orbigny*, with larger punctures in the occipital depression; longer than wide (1,09); occiput as long as the diameter of one eye. Pronotum — longer than wide (1,15), wider than head (1,11); very irregularly and sparsely punctured on surface, not rugose; two regions, parallel to median sulcus, and other, less well delimited, unpunctured; surface depressed along median sulcus; with very few yellow hairs; shape similar to that of *orbigny*. Elytra — more than twice as long as wide (1,57); carinae normal, not high; carinulae absent, indicated by very weak lines in a few places; with a row of large punctures along the middle of the interstice; elytra narrowed at base, with feebly developed humeri; widened shortly behind these. Wings — reduced. Measurements — length, 22,0 mm; width, 7,8 mm.

NOTES

Galerita simplicicarinata is easily distinguished from the other species of the group by the absence of carinulae, wings, and especially by the elytra which are narrowed at the base and are widened shortly after the humeri. Although not very much can be said about its distribution, *simplicicarinata* seems to be a mountain form, possibly with very restricted area of distribution.

GROUP OF *BRASILIENSIS*

CHARACTERISTICS

Large species (20-25 mm), very similar to each other externally; upper side of head, pronotum and scutellum dark red; elytra varying from dark blue (almost black) to greenish; inferior side, antennae, palpi and legs black. Eyes usually small, somewhat inconspicuous; occiput longer than the diameter of one eye; pronotum of variable form, usually longer than wide with postero-lateral angles sharp; sides divergent behind the posterior constriction; lateral edges sharp, turned upwards, black; scutellum deeply and roughly punctured, with short reddish hairs; elytra large, very convex, ovate; carinae always well developed, high and often sharp; carinulae sometimes erased; carinulae-interstices punctured in different fashions: scutellar carina never joining the first carina; humeri reduced; hind wings vestigial.

The four species included in this group (*brasiliensis* Dejean, *ventricosa* Lucas, *corumbana* Liebke, and *pseudoventricosa*, sp. n.) are very similar in general shape and coloration. It is interesting to note the flightlessness of all species of the group: they have only very short wing-buds left (reaching only to the end of the first visible abdominal segment in one specimen of *brasiliensis* which I measured). The humeri are very poorly developed in all species. This, as well as other characters which the species have in common, point to a single common ancestor for the group.

The geographic distribution of the four species is not too restricted (*corumbana*, however, is only known from the type-area), as is otherwise the rule for brachypterous species. They occur in eastern South America, mainly in Brazil, along the Atlantic coast from Rio Grande do Norte to São Paulo, but are also present in central Brazil (Goiás and Mato Grosso) and in Bolivia. It seems that the general distribution is on the Brazilian Plateau, at elevations of around 700 m. The flightlessness of the species seems not to have affected their ability to disperse (see notes on "elevations" and further discussion on p. 160).

The group is closely related to the group of *occidentalis* and also to the group of *orbigny*.

Galerita brasiliensis Dejean, 1826

(Figs. 136, 137, 144)

Galerita brasiliensis Dejean, 1826:442 (holotype of undetermined sex, "Brésil", MNHN; examined).

Galerita simplicicostata Lucas, 1857:41, pl. 2, fig. 1a-e (lectotype ♀, "Minas Gerais", Brazil, MNHN; examined). New synonymy.

DESCRIPTION

Head — very rugose, covered with short, black hairs; longer than wide (1,16), with small, inconspicuous eyes; occiput more or less one and half times as long as the diameter of one eye. Pronotum — longer than wide (1,21), slightly wider than head (1,19); surface finely rugose, normally convex, covered with short, red hairs. Elytra — more than twice as wide as pronotum (2,12), less than twice as wide as long (1,59); oval, convex; carinae well developed, not high nor sharp, black; carinulae erased (only indicated by very weak vestiges in some specimens); with a row of sparse punctures in the middle of the interstice, and a row of sparse, yellow hairs on each side of these; color varying from very dark blue (almost black) to green, always with metallic sheen, however, not too shiny. Wings — reduced. Measurements — length, 20,2-22,6 mm; width, 6,7-8,2 mm. Genitalia — figure 137.

SPECIMENS EXAMINED (63)

BRAZIL. *Mato Grosso*: Rio das Mortes (4 ♀, CDZ); *Minas Gerais*: Ouro Preto (2 ♂, 3 ♀, CDZ); Serra do Caraça, 1380 m (1 ♂, 1 ♀, CDZ); Cabo Verde (1 ♂, CDZ); Rio das Pedras, Passa Quatro, 1000 m (1 ♂, 1 ♀, MNHN); Virgínia, Fazenda Campos, 1500 m (5 ♂, 5 ♀, BM, IOC, IEEA); *São Paulo*: São Paulo (3 ♂ *, 5 ♀, CDZ, IB, MF); Barueri (1 ♂, (♀ CDZ); Judiaí (1 ♂, 1 ♀ (CDZ); Embu (2 ♂, 1 ♀, CDZ); Mogi das Cruzes (1 ♂, 2 ♀, CDZ, IB); Estação Biológica de Boracéia, Saleópolis (2 ♂, 2 ♀, CDZ); Mairinque (1 ♂, CDZ); Campos do Jordão

(2 ♂, 2 ♀, CDZ); Eugênio Lefèvre, 1200 m (1 ♂, 1 ♀, CDZ); Guarulhos (2 ♀, CDZ); São João da Boa Vista (2 ♂, IB) Itú, Fazenda Pau d'Alho (2 ♀, CDZ). Brazil, no locality (2 ♂, IRSNB, MNHN).

GEOGRAPHIC DISTRIBUTION (fig. 144)

Galerita brasiliensis is known from the states of São Paulo, Minas Gerais and Mato Grosso. The species probably also occurs in southern Goiás.

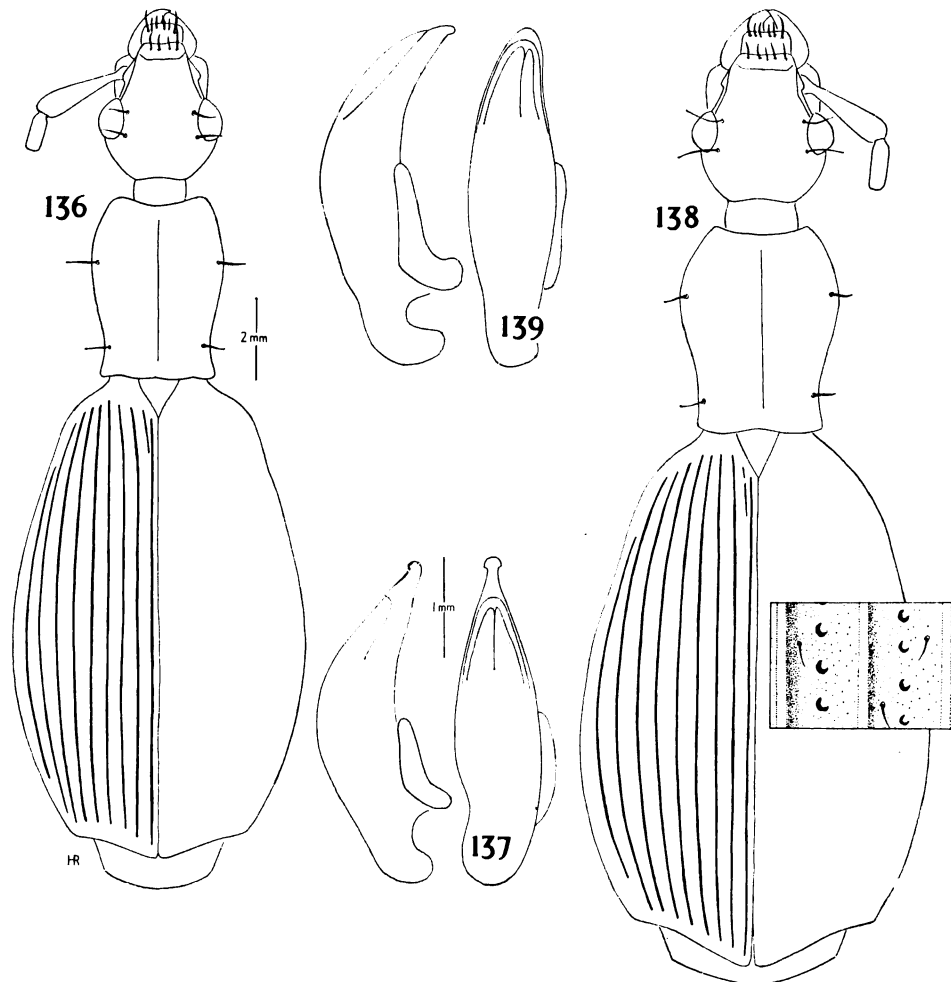


Fig. 136, *Galerita brasiliensis* Dejean, ♂ from Boracéia, Brazil (CDZ); fig. 137, aedeagus of same species from São Paulo, Brazil (CDZ); fig. 138, *G. corumbana* Liebke, holotype ♀ (IZ); fig. 139, aedeagus of same species from "Brazil" (IEEA).

NOTES

G. brasiliensis is easily distinguished from *ventricosa* and *pseudo-ventricosa* by the absence of carinulae, and from *corumbana* by the completely different punctuation of the elytral interstices. As remarked above, in some specimens there are vestiges of carinulae, which are, however, never complete. The male genitalia of *brasiliensis* is very characteristic and is completely different from that of the other species.

NOTES ON THE TYPES

Of *simplicicostata* Lucas: two females are preserved in the MNHN. The first of the two is herewith designated lectotype. Comparison of the type of this species with that of *brasiliensis*, proved my suspicion that they were synonyms.

Galerita corumbana Liebke, 1932

(Figs. 138, 139, 144)

Galerita corumbana Liebke, 1932:417, 418 (holotype ♀, "Flussgebiet des Corumbá", Brazil, IZ; examined).

DESCRIPTION

Head — very similar to that of *brasiliensis*, slightly more roughly rugose; longer than wide (1,13); eyes as in *brasiliensis*. Pronotum — longer than wide (1,21), wider than head (1,25), very similar in shape and rugosity to that of *pseudoventricosa*, normally convex. Elytra — almost twice as wide as pronotum (1,9), less than twice as long as wide (1,67); carinae high, not very sharp, black; carinulae completely erased; interstices with a row of large and deep punctures in the middle and a row of very sparse, hair-bearing punctures on each side of the median line of punctures; very dark blue, with purple sheen, very convex. Wings — reduced. Measurements — length, 21,2-23,9 mm; width, 7,3-8,3 mm. Genitalia — figure 139.

SPECIMENS EXAMINED (4)

BRAZIL. *Mato Grosso*: Corumbá (2 ♂, ML); no locality (2 ♂ *, IEEA).

GEOGRAPHIC DISTRIBUTION (fig. 144)

G. corumbana is known only from its type-area.

NOTES

The holotype of *corumbana*, the only female I have seen, is much larger than the males which have been studied. It has dark blue elytra, and not black as states by Liebke in the original description.

The carinulae of *corumbana*, normally completely absent, are sometimes indicated by very weak and broken lines. The species is well

characterized by the row of deep and large punctures in the interstices (see fig. 138).

Galerita ventricosa Lucas, 1857

(Figs, 140, 141, 144)

Galerita ventricosa Lucas, 1857:41, pl. 2, fig. 2a (lectotype ♂, "de Goyaz à Cuyabá", Brazil, MNHN; examined).

DESCRIPTION

Head — very similar to that of *brasiliensis* and *corumbana*; longer than wide (1,15); eyes as in *brasiliensis*. Pronotum — longer than wide (1,14); wider than head (1,3); anterior and posterior angles sharper

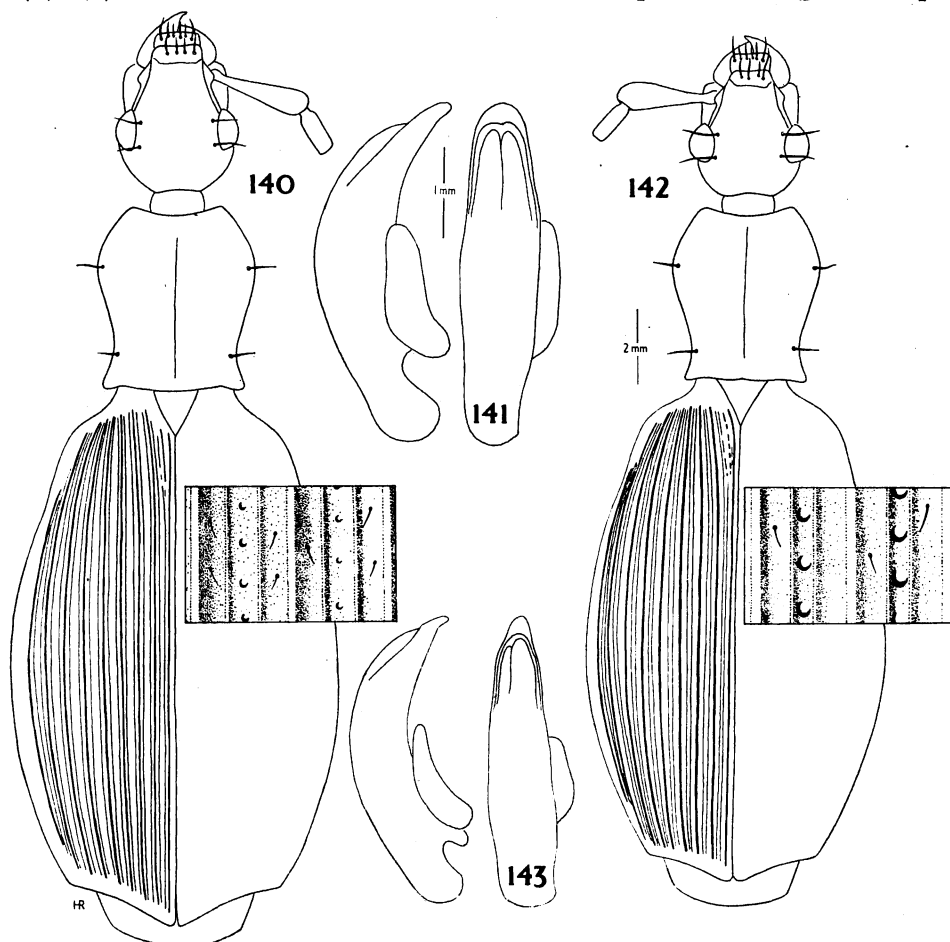


Fig. 140, *Galerita ventricosa* Lucas, ♀ from Rio das Mortes, Brazil (CDZ); fig. 141, aedeagus of same species from Chiquitos, Bolívia (CN); fig. 142, *G. pseudoventricosa*, sp. n., holotype ♂ (CDZ); fig. 143, aedeagus of paratype, from Januária, Brazil (MCZ).

than in the other species; more roughly rugose than in *brasiliensis*, less than in *corumbana* and *pseudoventricosa*; very convex. Elytra — almost twice as wide as pronotum (1,9), less than twice as long as wide (1,6); carinae very high and sharp, black, carinulae thin, closer to carinae than to each other; carinulae interstices with a row of very thin punctures, which do not touch the carinulae; carinae-carinulae interstices with a row of very scarce and short, hair-bearing punctures; dark blue, metallic, not shiny, very convex and globose. Wings — reduced. Measurements — length 23,4 - 24,8 mm; width, 8,2 - 8,5 mm. Genitalia — figure 141

SPECIMENS EXAMINED (6)

BRAZIL. *Goiás*: Goiânia (1 ♀, CDZ); *Mato Grosso*: Rio des Mortes (2 ♀, CDZ).

BOLÍVIA. *Santa Cruz*: Chiquitos (1 ♀, MNHN); Chiquitos, Santiago, 700 m (1 ♂ *, 1 ♀, CN).

GEOGRAPHIC DISTRIBUTION (fig. 144)

Only a very few specimens of *G. ventricosa* are presently known, having been collected in *Goiás* and *Mato Grosso* (Brazil) and in eastern *Bolívia*.

NOTES

G. ventricosa is the largest species of the genus in the New World. It is characterized by its very globose and convex elytra, with very high and sharp carinae, and by the very characteristic carinae interstices.

NOTES ON THE TYPES

One male and one female are preserved in the MNHN; the male is herewith designated lectotype, the female paralectotype.

***Galerita pseudoventricosa*, sp. n.**

(Figs. 142-144)

Galerita ventricosa (*nec* Lucas, 1857); Liebke, 1932:416.

TYPE DATA

Holotype ♂, 2 ♂ and 3 ♀ paratypes, from Brazil: *Bahia*, Bonfim (formerly Villa Nova), II.-VII.1908, E. Garbe col. (CDZ); 3 ♂ and 3 ♀ paratypes, from *Bahia*, Salvador, 1918, E. Garbe col. (IEEA); 1 ♂ paratype, from *Bahia* (Salvador?), 8.VIII.1896, Bicego col. (CDZ); 1 ♀ paratype, from *Bahia*, no locality (IEEA); 3 ♂ (*) and 2 ♀ paratypes, from *Minas Gerais*, Januária, 1933, Blaeser col. (MCZ n. 31193); 2 ♀ paratypes from *Espírito Santo*, no locality (IEEA); 6 ♂ and 7 ♀ paratypes, from *Pernambuco*, Serra do Communitaty, I.-III.1893, E. Gounelle col. (MNHN); 1 ♀ paratype, same data as preceeding (BM); 1 ♀ paratype, from *Pernambuco*, no locality (CN); 1 ♂ paratype, from *Paraíba*,

Independência (= Guarabira), Mann & Heath col. (AMNH); 1 ♀ paratype, same data as preceding (USNM); 1 ♀ paratype, from *Rio Grande do Norte*, Baixa Verde, Mann col. (MCZ n. 31193); 1 ♂ and 1 ♀ paratypes, same data as preceding (USNM); 1 ♀ paratype, from *Rio Grande do Norte*, Ceará-Mirim, Mann col. (USNM).

DESCRIPTION

Head — very rugose, slightly wider than long (1,06), with slightly more prominent eyes than the other species; occiput as long as the diameter of one eye. Pronotum — longer than wide (1,1), wider than head (1,23); surface more roughly rugose, with well individualized punctures; covered with short, red hairs. Elytra — more than twice as wide as pronotum (2,07), less than twice as long as wide (1,58);

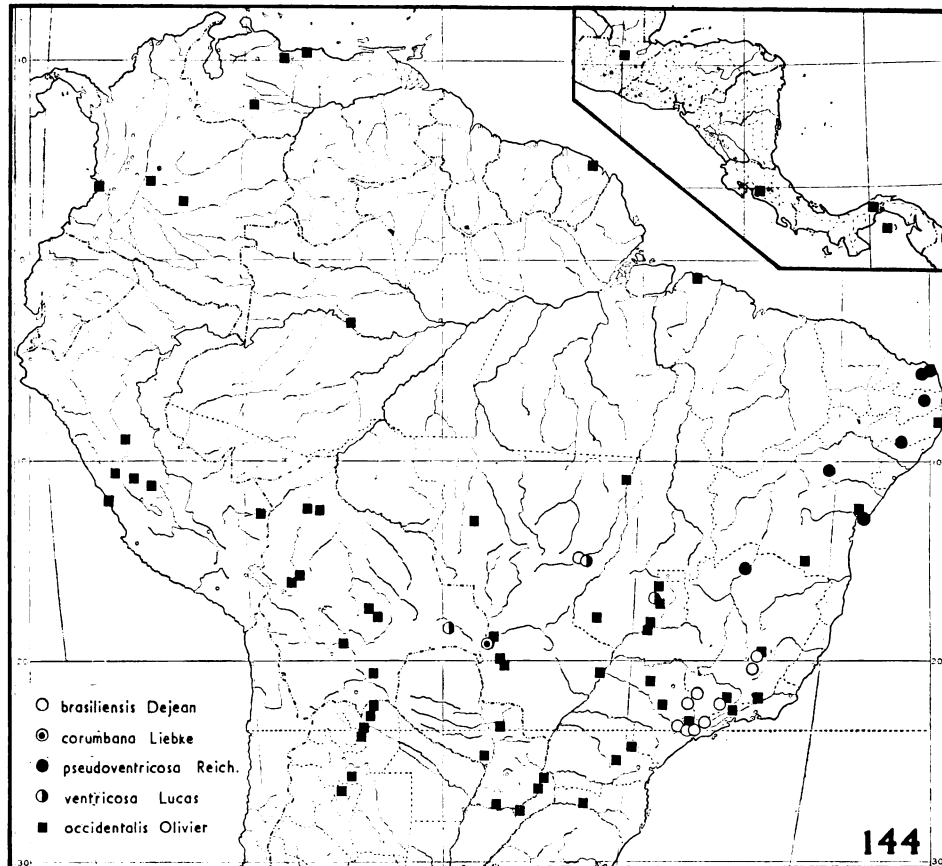


Fig. 144, Geographic distribution of *Galerita brasiliensis* Dejean, *corumbana* Liebke, *pseudoventricosa*, sp. n., and *occidentalis* (Olivier).

convex; carinae not too high and sharp, black; carinulae present, closer to each other than to next carina; carinulae interstices punctured; punctures touching carinulae; carinae-carinulae interstices with very sparse and not regular punctures and hairs; metallic, not very shiny, dark blue, almost black, sometimes with purple sheen. Wings — reduced. Measurements — length, 20,5 - 23,4 mm; width, 7,0 - 8,9 mm. Genitalia — figure 143.

GEOGRAPHIC DISTRIBUTION (fig. 144)

G. pseudoventricosa is restricted to eastern and northeastern Brazil, ranging from Espírito Santo and Minas Gerais to Rio Grande do Norte.

NOTES

Liebke (1932:416) cited *ventricosa* in his key to the species of *Galerita* of the "La Plata Stromgebiet". There is no doubt that Liebke did not know the true *ventricosa*. The new species described above, *pseudoventricosa*, exactly fits the characteristics he mentions and I have no doubt that this is the species which he actually had before him. It is somewhat strange, however, that he mentions the species from Cuiabá, where *pseudoventricosa* does not occur. It is possible that Liebke's specimen was without locality data and that he cited the type-locality for his specimen. The female paratype of *pseudoventricosa* from Serra do Communaty (BM) was determined by Liebke as *ventricosa*.

GROUP OF *OCCIDENTALIS*

A single species, *occidentalis* (Olivier), is included in this group, which is very closely related to that of *brasiliensis*, but shows some very striking differences: *occidentalis* is a fully winged species, with well developed humeri; the color is very similar to that of *brasiliensis*, differing only in having the inferior side of the head and prothorax red (this character is, however, not very constant as it is commonly darkened on the inferior side; the head is more often red ventrally, but is darkened or even black in all the Central American specimens I have been able to study). The slenderness of this species, especially that of the pronotum, is rather unique in the genus. The elytra usually lack the carinulae completely, but very often vestiges are present.

Galerita occidentalis (Olivier, 1795)

(Figs. 144-147)

Carabus occidentalis Olivier, 1795:64, pl. 8, fig. 94 (type ♀ (?), Cayenne, French Guiana, MNHN; not located).

Galerita angusticollis Dejean, 1831:295 (holotype ♀, "Minas Gerais", Brazil, MNHN; not located); Liebke, 1932:419 (proposed synonymy with *occidentalis* Olivier).

DESCRIPTION

Very elongate species, head, pronotum, prothorax and scutellum, red; antennae, palpi, legs and abdomen black (the latter sometimes brownish); elytra metallic blue, sometimes very dark or even greenish. Head — longer than wide (1,19), with small but prominent eyes; occiput slightly longer than the diameter of one eye; very rugose,

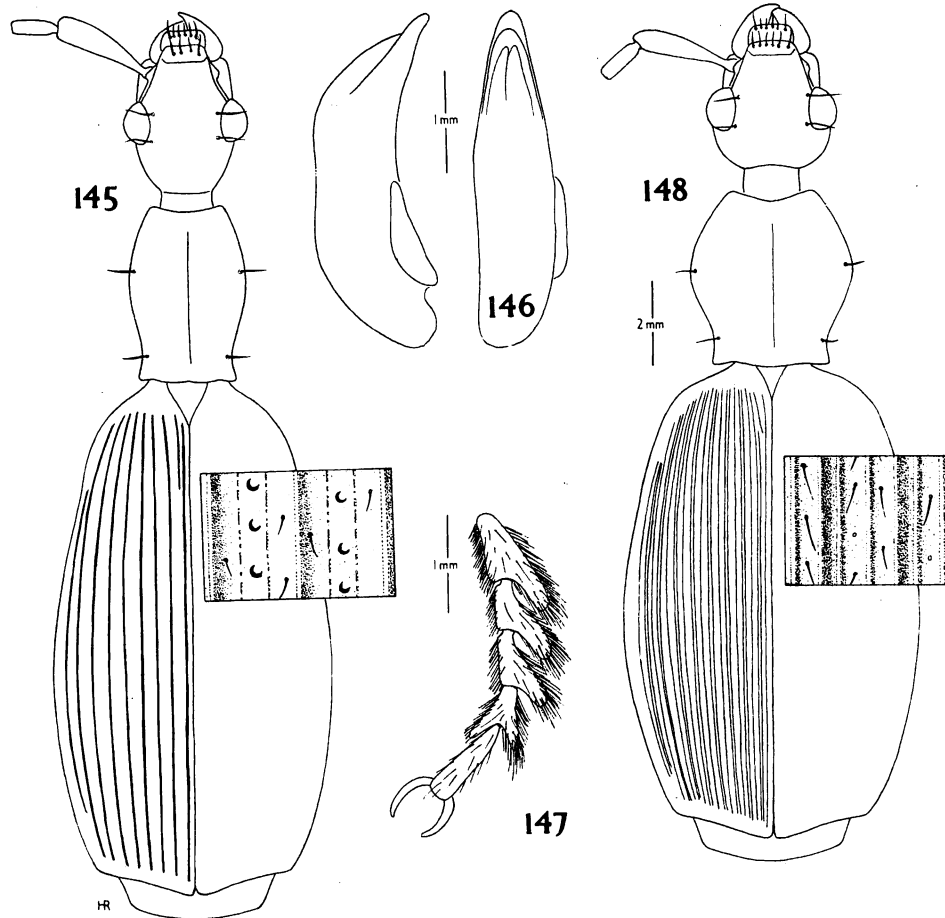


Fig. 145, *Galerita occidentalis* (Olivier), ♀ from São Paulo, Brazil (CDZ); fig. 146, aedeagus of ♂ from Nova Teufônia, Brazil (MCZ); fig. 147, front tarsus of ♂ from Aimorés, Brazil (IB); fig. 148, *G. hexagonica* Liebke, holotype ♀ (IZ).

almost hairless. Pronotum — longer than wide (1,4), slightly narrower than head (1,01); finely rugose, not very much narrowed posteriorly; covered with very fine and short hairs. Elytra — more than twice as wide as pronotum (2,3), less than twice as long as wide (1,7); carinae normally high, not sharp, black; carinulae, except for vestiges, absent; interstices with a row of sparse, median punctures, and a row of irre-

gularly spaced hair-bearing punctures on each side; scutellar carina not joining the first. Wings — fully developed. Measurements — length, 17,0 - 20,6 mm; width, 5,5 - 6,8 mm. Genitalia — figure 146.

SPECIMENS EXAMINED (362)

Very extensive material of *G. occidentalis* was available for the present revision. It seems unnecessary to give detailed distribution of the specimens examined.

GEOGRAPHIC DISTRIBUTION (fig. 144)

Galerita occidentalis is widespread over South America, penetrating into Argentina (Salta, Jujuy, Tucuman and Misiones), and also invading Central America (known from Panama, Costa Rica and Guatemala). The species is absent from the Antilles, and seems to be rare in the Amazonian Basin.

SPECIES INCERTAE SEDIS

I have been unable to place *Galerita hexagonica* Liebke, 1939, in the system proposed above. Only the holotype of this species is known to me and it seems to have been damaged (probably after the description) while Liebke's collection was lost during and after World War II. It seems that head of this holotype (the specimen is glued on a rectangular cardboard) is not its original head. As noted above (p. 120), the same is true for the holotype of *immitis*, but the head on the type of *hexagonica* is not that of *immitis* (of which more material is known), although the head of the holotype of *immitis* may belong to *hexagonica*. The head on the type of *immitis* has two, very faint, red spots between the eyes and is slightly depressed on the occiput (characteristics of the group of *orbigny*). It is, however, slightly different from that of the three known species of the group. If this supposition can be confirmed, *hexagonica* can most probably be included in the group of *orbigny*.

Below I give a redescription of the holotype, giving (in parenthesis) the description of the head of the type of *immitis*, which, as stated above, I suppose to be the head of *hexagonica*. The species has not been included in the key.

***Galerita hexagonica* Liebke, 1939**

(Fig. 148)

Galerita hexagonica Liebke, 1939a:478 (holotype ♀, "Guatemala", IZ: examined).

DESCRIPTION

Completely black (with two faint red spots between the eyes. Head — large, globose with large and somewhat prominent eyes, as long as

wide, occiput short, slightly shorter than the diameter of one eye; depression of occiput not well developed, deeply rugose; separated from frontal depression, which is also deeply rugose; two red spots very faint, right at the separation of anterior and posterior depressions; covered with few, yellowish hairs). Pronotum — wider than head (1,19), slightly longer than wide (1,05), widest in the middle, much narrowed anteriorly, less so posteriorly; constriction well marked, sides divergent behind it; surface slightly convex and transversely rugose on disc, very shallowly and slightly punctured laterally; glabrous on surface. Elytra — large, very globose, almost twice as wide as pronotum (1,89); 1,56 times as long as wide; carinae and carinulae almost equally well developed, thin; carinulae interstices very deep, sulcate; carinae-carinulae interstices with very sparse row of long, brown hairs; scutellar carina not joining the first carina; humeri well developed. Wings — reduced. Measurements — length, 19,5 mm; width, 7,0 mm.

NOTES

Galerita hexagonica is a very interesting species, characterized by the very, deep, almost sulcate carinulae interstices and the reduced (but nevertheless present) carinae. The only other New World species to have sulcate carinulae interstices is *sulcipennis*, in which the sulci are much better developed than in *hexagonica* (see also p. 116).

The type-locality of *hexagonica* should be taken with some reservations. The type bears only a handwritten label (probably Liebke's own handwriting) which says "Guatemala", without any other data. Another species from Liebke's collection, bearing a similarly handwritten label reading "Brasilien", turned out to be a synonym of the African species *africana*, as seen above (p. 49). However, *hexagonica* does not fit the description of any of the exotic species of the genus and is presumably Neotropical.

Trichognathus Latreille, 1829

Trichognathus Latreille, 1829:374 (type-species, by monotypy, *Trichognathus marginipennis* Latreille, 1829); Basilewsky, 1963:8, 24 (characterization in key).

DESCRIPTION

Large species (16 - 19 mm), with brownish head, pronotum and appendages; elytra bluish-green, sometimes with more or less well developed yellow, lateral and apical, margins. Head — mouthparts very peculiar, especially palpiger of maxillae, which has a well developed tubercle with long and strong bristles on apex (fig. 5); maxillary and labial palpi very long, with strong setae irregularly placed. Antennae with very large, clubbed scape, longer than segments 2 and 3 together, with two parallel rows of spiny setae on ventral side; other segments normal, as in *Galerita*. Head large, globose, very wide, especially in

posterior third; eyes relatively small, very prominent; occiput very short (slightly longer than half the diameter of one eye); two supra-orbital setae, placed as in *Galerita*. Pronotum — wider than long, widest at anterior angles; constricted behind; surface convex; two pairs of marginal setae, one in anterior third of pronotum, second pair at constriction. Elytra — oval, widened posteriorly, with truncate apex, surface with nine striae on each elytron; scutellar stria only slightly indicated near scutellum; interstices with 5 - 6 more or less parallel rows of semidecumbent, yellow hairs; humeri well developed; wings fully developed.

MALE GENITALIA

The aedeagus of *Trichognathus marginipennis* does not show any peculiar features (fig. 150) and agrees in general with that of *Galerita*. The aedeagus of the differently colored forms (see below) is not different from that of typical specimens.

SEXUAL DIMORPHISM

As in *Galerita* and *Progaleritina*.

DISTRIBUTION OF THE GENUS

Trichognathus is a strictly Neotropical genus, being restricted to part of the South-American Continent (fig. 151), and is not known to occur in Central America or in the Antilles.

RELATIONSHIPS OF *Trichognathus* (see also p. 162)

Trichognathus is closest to *Eunostus* Castelnau (from Africa and Madagascar): in spite of the difference in size, the general shape is very similar in the two genera and both have the very characteristic tuberculate-setose regions of the maxillary palpiger (Fig. 5), a character absent in the other genera of the tribe. The genitalia of the species of *Eunostus* (see Basilewsky, 1963, figs. 33, 37) is quite distinct from that of the species of *Trichognathus*.

Trichognathus has the same elytral structure as *Progaleritina*; it has, however, a completely different head, with very characteristic rows of setae on the large antennal scape, a character which also distinguishes it easily from *Galerita*.

The genus is monotypic:

***Trichognathus marginipennis* Latreille, 1829**

(Figs. 5, 149-151)

Trichognathus marginipennis Latreille, 1829:375 (type, "Brésil", not located); van Emden, 1935:314; Reichardt, 1964:52 (synonymy).

Trichognathus cinctus Chaudoir, 1848:68 (lectotype ♂, "Colombia", MNHN; examined); Reichardt, 1964:52 (proposed synonymy with *marginipennis*).

Trichognathus immarginipennis Steinheil, 1875:96 (lectotype ♂, Muzo, Colombia, MNHN; examined); Reichardt, 1964:52 (proposed synonymy with *marginipennis*).

DESCRIPTION

Head and pronotum light reddish-brown; antennae, mouthparts and legs, pale, sometimes antennal scape and femora darker; elytra dark bluish-green, sometimes with yellow, lateral and apical margins; head and prothorax ventrally of the same color as dorsally; meso-, metathorax and abdomen dark brown or even blackish. Head — very globose, wider than long (1,29), with relatively small but prominent eyes; occiput shorter than the diameter of one eye, very angulate; surface smooth, with slight median depression behind the eyes; surface covered with very fine and sparse pubescence. Pronotum — wider than head (1,04); wider than long (1,18); widest at anterior angles, narrowed posteriorly; sides divergent behind the constriction; surface convex, very weakly and sparsely punctured; covered with very fine, rufous hairs. Elytra — 1,87 times as wide as pronotum; 1,63 times as long as wide; widest in posterior third; very convex, 9-striate; scutellar stria only slightly indicated near scutellum; interstices with 5 - 6 more or less parallel rows of rufous pubescence; humeri well developed. Wings — normally developed. Measurements — length, 16,1 - 18,4 mm; width, 5,9 - 7,15 mm. Genitalia — figure 150.

SPECIMENS EXAMINED (243)

Extensive material, from various localities, was available for the present revision. Detailed localities where the species occurs, are not given here.

GEOGRAPHIC DISTRIBUTION (fig. 151)

Trichognathus marginipennis is restricted to continental South America, where it is widely distributed from Venezuela to northern Argentina. Apparently the species is absent from northern and northeastern South America, where it has not yet been collected.

NOTES

Trichognathus marginipennis is a very variable species, especially in coloration. Specimens with completely greenish-blue elytra were described (from Colombia) as *immarginipennis*; typical *marginipennis* have a narrow yellow margin, which does not completely reach the 8th stria laterally, and an equally narrow, apical margin. In typical *cinctus*, the apical margin is much wider and the humeri have a yellow spot,

the lateral margin here being as in typical *marginipennis*. As I have recently pointed out (Reichardt, 1964:52), this variation is random and intermediate forms exist so that all forms have to be considered as representing a single, very variable species. No aedeagal difference is present in males of the different forms.

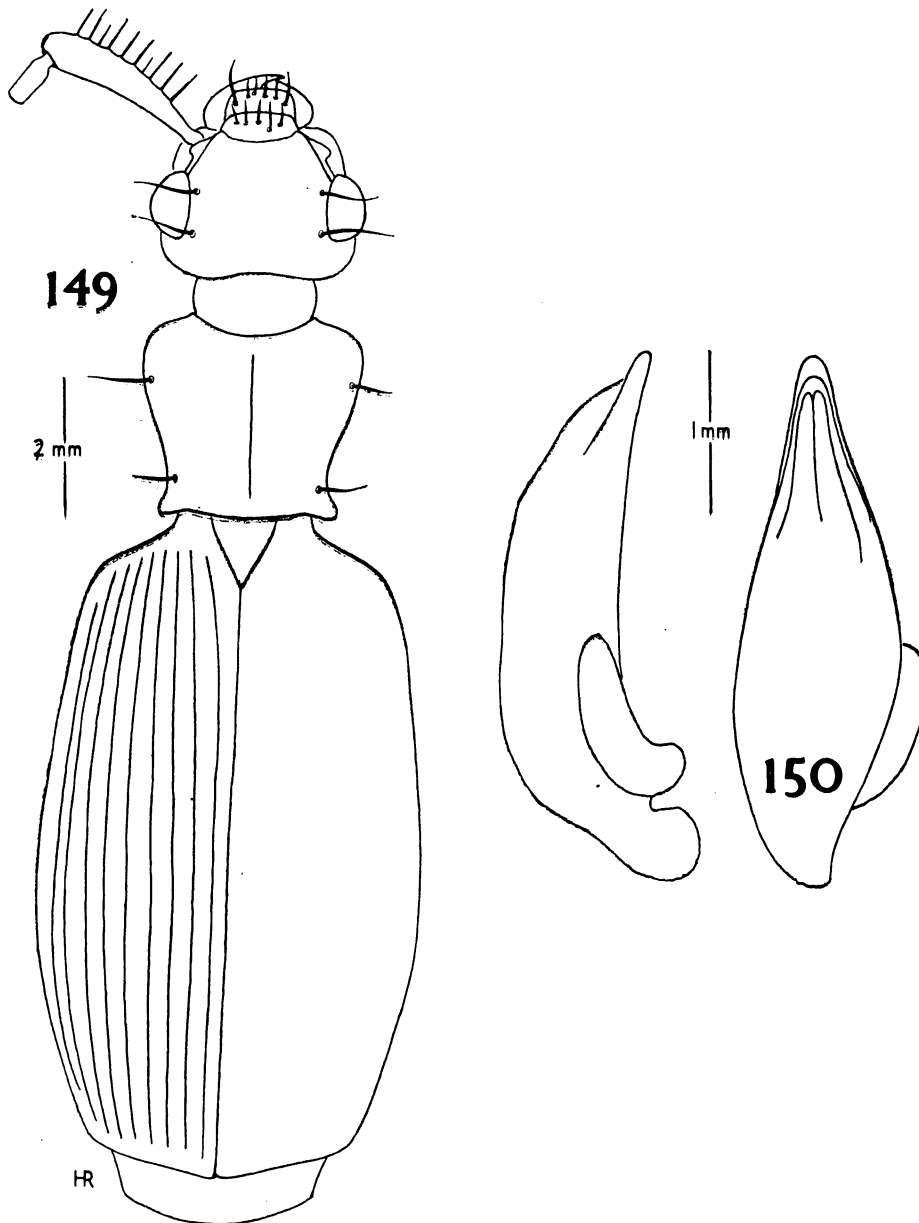


Fig. 149, *Trichognathus marginipennis* Latreille, ♂ from Nova Teutônia, Brazil (MCZ);
fig. 150, aedeagus of same specimen.

NOTES ON THE TYPES

Of *marginipennis* Latreille: no specimen was located in the MNHN which could be Latreille's type; it has probably been lost.

Of *cinctus* Chaudoir: 1 ♂, from "Colombia", originally from Guérin-Méneville's collection, is preserved in Chaudoir's collection, and there is no doubt that this is one of the original specimens (the number of specimens on which the description was based is not stated). Although more cotypes may exist elsewhere, I designate the MNHN-specimen as the lectotype of the species.

Of *immarginipennis* Steinheil: 3 ♂ and 1 ♀, from Muzo, Colombia, originally from Steinheil's collection, are presently in Chaudoir's collection. The first ♂ of the series is herewith designated lectotype, the other specimens paralectotypes.

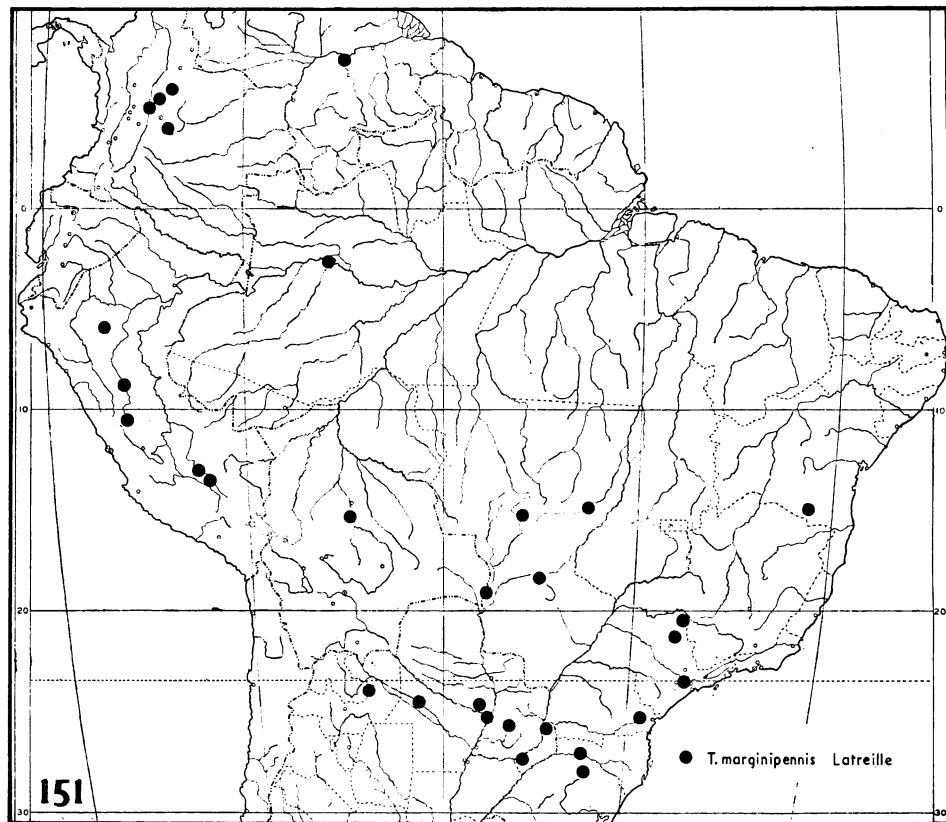


Fig. 151, Geographic distribution of *Trichognathus marginipennis* Latreille,

GEOGRAPHIC VARIATION IN THE GALERITINI AND THE SPECIES CONCEPT

As in many other groups, the present revision reveals that geographic variation is a relatively common phenomenon among the Galeritini; however, several interesting facts should be noted here: geographic variation within populations of the same species has been observed almost exclusively in the mainly Nearctic genus *Progaleritina* (this geographic variation will be discussed in detail below); while in the tropics several cases have come to my attention, in which there are two or more allopatric forms which are very closely related.

The problem of allopatric populations of closely related, but nevertheless taxonomically distinct forms, is very difficult to deal with. Here I include several cases discussed in the systematic part, especially well exemplified by several closely related forms of the group of *americana*, including *collaris* - *affinis* - *ruficollis* (p. 56) and *tucumana* - *americana* - *microcostata* - *nigra* - *melanarthra* (p. 63). Wilson and Brown (1953:99) say "...these (allopatric) populations must be dealt with arbitrarily...". Neither behavioral studies nor laboratory breeding experiments with closely related, allopatric forms, are available for the Galeritini; therefore, in absence of decisive information, and because the differences are comparable to differences in other, sympatric species, I have chosen to consider these allopatric forms as full species.

In a few cases, namely *Progaleritina forreri* (p. 37), *Galerita nigra* (p. 73) and *G. beauvoisi* (p. 92), geographical variation of certain characters, usually in peripheral areas, has been observed. It seems to me that these geographic variants are true geographic races; however, because of the lack of knowledge in important areas of the distribution of the species, I have decided not to get involved with a trinomial nomenclature at this stage. It is my opinion that a trinomial treatment of these forms, besides being very premature, because of being based on very incomplete data, would not clarify the picture.

In only few cases have trinomens been used for American Galeritini (*Progaleritina californica* subsp. *arizonica* Casey, p. 31; *P. bicolor* subsp. *obliqua* Casey, subsp. *iowensis* Casey and subsp. *rhombiceps* Casey, p. 41; *Galerita aequinoctialis* var. *elegans* Chaudoir, p. 88). The subspecies described by Casey in *Progaleritina* turned out to be extreme specimens in a geographic cline; the variety *elegans* of *Galerita aequinoctialis* proved to be an extreme individual variant, and not a geographic form.

It is possible that in treating all taxonomically distinct forms as species, as is done in this revision, the number of biological species is being arbitrarily increased; however, it would be equally arbitrary to treat some of these forms as subspecific taxa, since no biological data are known, and even morphological data are scarce because of lack of good material.

CLINAL SIZE VARIATION IN *Progaleritina*.

Progaleritina janus (Fabricius) and *bicolor* (Drury), two species with a relatively ample distribution in North America, are very variable species, this variation mainly affecting size. A careful study which analyzed the measurements of hundreds of specimens from different localities, shows that the variation in size is clinal: *there is a gradual increase in mean size of specimens as latitude decreases*. The distribution maps of these two species (figs. 18 and 34) represent this clinal variation: the different symbols representing the mean length of specimens for each locality from which material was available. These maps, besides showing the gradual clinal increase in size southwards, show that there is also a certain amount of random variation.

Figures 152 and 153 represent the linear regression for total length against maximum (elytral) width of specimens in *janus* and *bicolor*. 322 specimens of *janus* and 127 of *bicolor* have been measured for this purpose. The linear regressions indicate very clearly that the variation in size is continuous, and that there is no place to objectively draw lines to separate forms.

Unfortunately only very rarely were large series (more than 10 specimens) from the same locality available, so that it was not possible to use other statistical techniques. A statistical analysis of extremes shows that these are significantly distinct; however, when intermediates are considered in the same analysis, there is no significant difference between specimens from distinct localities.

A third species of the genus, *lecontei* (Dejean), presents a similar clinal variation, as can be seen on fig. 23. There is, however, one striking difference: while in *janus* and *bicolor* the direction of the increase in size is roughly north-south, in *lecontei* it is roughly east-west. I have analyzed *lecontei* in the same way as the two preceding species, having measured 161 specimens. The linear regression for this species (fig. 154) shows again that the clinal increase in size is continuous. However, one more problem occurs in *lecontei*: this species seems to be formed by two allopatric populations (see p. 33). No specimens have yet been collected in southwestern Texas which, of course, can easily be due to inadequate collecting in that area. West of Texas, specimens vary in length between 15,0 and 17,5 mm, showing no clear cline (as mentioned in the taxonomic part, this form had been separated specifically as *californica* Mannerheim, the only difference from *lecontei* being its smaller size); eastwards *lecontei* varies practically in the same pattern as *janus* and *bicolor* do in the same area. Variation here goes from 17,5 to 20,0 mm. In spite of the apparent gap in Texas, the linear regression shows that there is no place to objectively subdivide the species.

A search of the literature brought only very few other cases to light in which any kind of clinal variation in size has been studied in beetles. Mayr (1963:326) mentions two cases which deal with Carabidae, discussing in some detail one of them (variation in European

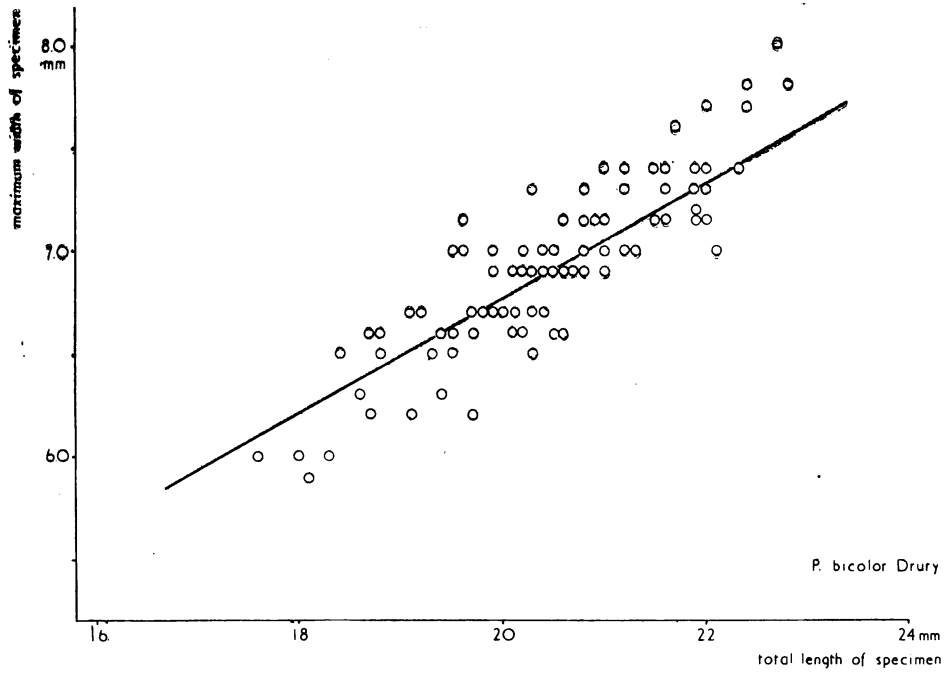
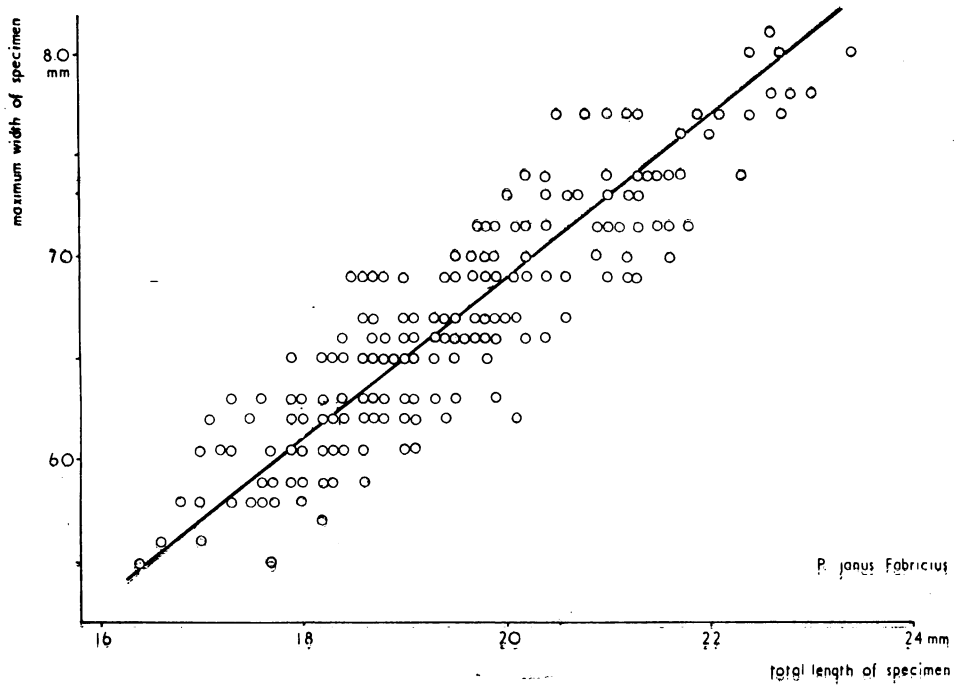


Fig. 152, *Progaleritina janus* (Fabricius), linear regression for maximum width of specimen against total length of specimen; fig. 153, same linear regression for *P. bicolor* (Drury).

Carabus, by Rensch, 1943). The second case is a detailed study of the clinal variation in *Dicaelus purpuratus* Bonelli, (Licinini) of the United States, by Park (1949). In the latter case, a careful study showed that there is a clinal increase in size as latitude decreases (as it occurs in *janus* and *bicolor*). Park discusses the case as representing the "converse Bergmann principle" that has to do with poikilothermal animals". Park, 1949:371. Park concludes that this phenomenon can be explained by the influence of temperature on the pre-imaginal stages of the beetle.

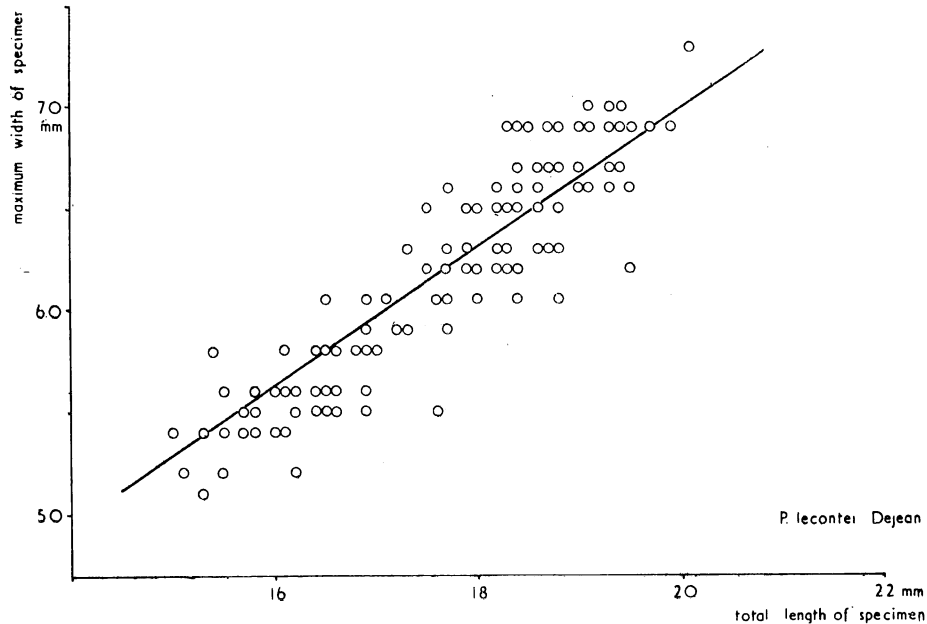


Fig. 154, *Progalteritina lecontei* Dejean, linear regression for maximum width of specimen against total length of specimen.

In Ball's revision of the North American Licinini (1959) we find that the kind of clinal variation observed by Park in *Dicaelus purpuratus*, occurs not only in this species, but in most species of the subgenus *Paradicaelus* Ball. Lindroth studying the Carabidae of Newfoundland noted that "dwarf forms or 'subspecies' are often confined to high altitude or marginal northern occurrences of the species — the opposite of the famous 'Bergmann rule', in homoiothermous animals" (Lindroth, 1963a:89). In the same paper we find the careful study of similar clinal variation in *Calathus ingratus* Dejean (p. 89-90, fig. 83). The same kind of clinal variation was found in *Cryobius* (Pterostichini) of North America (Ball, personal communication, 1965), however, in at least one of the species studied the increase in size is directed northwards. A recent study of *Cicindela oregona* Leconte and related forms (Freitag, 1965:120) shows that in these species there is an increase of length

of elytra with the increase of latitude. The same seems to be true for the above mentioned *Carabus* studied by Rensch (*apud* Mayr, 1963).

In *Dicaelus* and other cases, besides variation in size, there is variation in other characters (see Ball, 1959:117). In the species of *Progaleritina* I have only observed variation in size, although, as mentioned in the taxonomic part, there are random, non-geographic and unrelated variations.

The fact that the variation in *P. janus* and *bicolor* is roughly in a north-south direction, while it is west in *lecontei*, seemed, at first, contradictory. If temperature alone, as suggested by Park, is responsible for this kind of variation, why should there be such a difference?

A study of average wet-bulb temperature charts showed that there might be a relation between humidity and clinal increase of size. Temperature (dry-bulb) charts from the area where *janus* and *bicolor* occur, show that in fact the increase in size towards the south, roughly agrees with the isotherms, and the presence of a small specimen of *P. janus* (17,87 mm) in the southernmost locality for the species (Catarinas, Chihuahua, Mexico, at 1750 m) strengthens the idea of the influence of temperature. The same is true for isohyets. However, as said above, *lecontei* does not follow this pattern. Comparing its distribution with wet-bulb isotherms (see fig. 18, isotherms taken from the Yearbook of Agriculture, 1941:710), one sees a great similarity. A possible explanation for this relationship between size and humidity is that the western (smaller) populations of *lecontei* occur in a much drier area, which in its effects on the larvae, can probably be compared to the effects of a cold region. It is very possible that this kind of geographic variation is not affected by one climatological factor alone, but by several factors interacting, one being more important in one area than in another.

As we have seen, there is not very much known about clinal size variation in beetles (and in insects in general), even though it is most probably a common phenomenon, which has usually been overlooked by taxonomists. Only recently cases have been described carefully, and it is very probable that careful studies will show that the phenomenon is widespread among insects.

REDUCTION OF FUNCTIONAL WINGS IN THE GALERITINI

In only two of the genera of Galeritini (as understood in this revision) has any kind of reduction of the wings occurred: in *Progaleritina*, one species has dimorphic wings; in *Galerita* about half of the known species have reduced wings.

DIMORPHISM OR POLYMORPHISM OF WINGS

Wing-dimorphism (or wing-polymorphism) is comparatively rare among the Galeritini: it is found only in one species of *Progaleritina* and in three of *Galerita* (about 3% of the known Galeritini).

The problem of wing-dimorphism has been well studied in the Carabidae. Cross-breeding with the European *Pterostichus anthracinus* Illiger "...has demonstrated that the condition of wings has a hereditary base: 'short wing' (brachypterous) is dominant, behaving in the simple Mendelian fashion. Therefore, long-winged (macropterous) individuals are homozygotes" (Lindroth, 1963a:97). Lindroth has discussed the problems related to wing-dimorphism at length (1949:335-416; 1963a:96 ff). His study of wing-dimorphic species of Newfoundland (11% of the whole fauna) is very interesting, showing cases of species which are dimorphic on the mainland, but always brachypterous on that island.

Progaleritina forreri from Mexico is known from fully winged specimens (+), which are most probably capable of normal flight (about 19,6% of the examined specimens), and from flightless specimens (—) (about 80,3%), in which the wings are reduced to small stumps (see fig. 29). As already discussed earlier (p. 40), the wing-dimorphism of *forreri* occurs randomly (see Table I, p. 40), and is not related to other characters.

It is worth mentioning here that *forreri* is the only one of the eight species of *Progaleritina* in which any kind of wing reduction has occurred.

In *Galerita*, three species (4%) have either wing-dimorphism or polymorphism.

One of these is the Asian species *batesi* (see Reichardt, 1965:12). but actually it is a doubtful case. My notes on the two cotypes kept in the BM (notes taken in June, 1964) mention that the specimens have reduced wings. The four other specimens I have seen have fully developed wings. It is very possible that I was mistaken when I examined the types. The examination was more or less superficial, so as not to damage the specimens. These two cotypes should be reexamined before one can be sure that there is variation in wing length in the species.

Of the 17 African species of *Galerita*, only one has wing-dimorphism: *africana*. Basilewsky (1963:40-41) has discussed this case in some detail. He showed that the variation is partly geographic: in western and central Africa about 90% of the specimens he examined are fully winged, whereas "la grande majorité" of specimens (unfortunately no exact data are given) from eastern Africa are brachypterous.

The only case in which I have found more than one type of wings in Neotropical *Galerita*, is the Haitian - Costa Rican species *beauvoisi*, which I presently consider a single species with variable development of wings (see p. 95 for detailed discussion). I am sure *beauvoisi* is not typically wing-polymorphic, since material from each of the few localities (or from close localities) represents one of the four stages in reduction of the wings (in typical polymorphism of wings, the distribution is random). I am presently considering the wing-forms as

representing a single species because the known specimens are not representative enough for a taxonomic separation of the four very closely related forms.

TABLE II

Development of wings (W) and carinulae (C) in Neotropical *Galerita*.

	W	C		W	C
<i>collaris</i>	+	+	<i>striata</i>	-	+
<i>affinis</i>	+	+	<i>boucardi</i>	-	+
<i>ruficollis</i>	+	+	<i>azteca</i>	-	+
<i>americana</i>	+	+	<i>sulcipennis</i>	-	+
<i>brachinoides</i>	+	+			
<i>moritzi</i>	+	+	<i>jelskii</i>	-	+
<i>tucumana</i>	+	+	<i>mustelina</i>	-	+
<i>microcostata</i>	+	+	<i>immitis</i>	-	+
<i>nigra</i>	+	+	<i>strandii</i>	-	+
<i>meianarthra</i>	+	+	<i>convexipennis</i>	-	+
			<i>laevithorax</i>	-	+
<i>costulata</i>	+	+	<i>orobia</i>	-	+
<i>isthmica</i>	+	+			
<i>boliviana</i>	+	+	<i>carbonaria</i>	-	-
<i>amethystina</i>	+	+	<i>stenodera</i>	-	-
<i>nana</i>	+	+	<i>championi</i>	-	+
<i>gracilis</i>	+	+	<i>bruchii</i>	+	+
<i>amazonica</i>	+	+	<i>orbignyi</i>	+	+
<i>inca</i>	-	+	<i>simplicicarinata</i>	-	-
<i>aequinoctialis</i>	+	+	<i>brasiliensis</i>	-	-
<i>simplex</i>	-	-	<i>corumbana</i>	-	-
<i>beauvoisi</i>	+ -	+	<i>ventricosa</i>	-	+
<i>tristis</i>	+	+	<i>pseudoventricosa</i>	-	+
<i>costalimai</i>	+	+			
<i>esmeraldina</i>	+	+			
<i>palustris</i>	+	+			
<i>lacordairei</i>	+	+			
<i>unicolor</i>	+	+	<i>occidentalis</i>	+	+ -
<i>coeruleipennis</i>	+	+ -	<i>hexagonica</i>	-	+

BRACHYPTERY

Among the Galeritini brachyptery is found in the genus *Galerita* only, as far as known. In all cases I have been able to study myself (the Neotropical, Asian and a few of the African species), brachypterous species have the flying wings reduced to small (about 1-3 mm long), scale-like, vestigial wings (as the one in fig. 78), except in *simplex*, which has reduced, but longer wings (see p. 92).

The brachypterous species of *Galerita* usually have very reduced and rounded humeri, one of the several other characters connected to

TABLE III
Development of wings (W) and carinulae (C) in Ethiopian and Oriental species of *Galerita*.

Ethiopian species (from Basilewsky, 1963)		Oriental species (from Reichardt, 1965)			
	W	C		W	C
<i>rubens</i>	—	—	<i>orientalis</i>	+	+
<i>femorals</i>	+	—	<i>indica</i>	—	+
<i>attelabooides</i>	+	—	<i>ruficeps</i>	—	+
<i>africana</i>	+—	—			
<i>madecassa</i>	+	—			
<i>procera</i>	—	—	<i>batesi</i>	+—	+
<i>inversa</i>	—	—	<i>carinifrons</i>	—	+
<i>angustipennis</i>	—	—	<i>feae</i>	—	+
<i>lunai</i>	—	—	<i>toreuta</i>	—	+
<i>aptinoides</i>	—	—			
<i>attenuata</i>	—	—			
<i>interstitialis</i>	+	+			
<i>pheropsophoides</i>	+	+			
<i>marginicollis</i>	+	+			
<i>seminigra</i>	—	+			
<i>perrieri</i>	—	—			
<i>rubripes</i>	—	—			

TABLE IV
Number of species of *Galerita* according to the development of wings.

	+	—	+—
Neotropical Region	28 (54,9%)	22 (43,1%)	1 (1,9%)
Ethiopian Region	6 (35,3%)	10 (58,8%)	1 (5,8%)
Oriental Region	1 (14,2%)	5 (71,4%)	1 (14,2%)
Total	35 (46,6%)	37 (49,3%)	3 (4,0%)

the reduction of wings (see Darlington, 1936:152, 153; Lindroth, 1949: 347-349). The present study brought to my attention one other character which I am inclined to connect with the reduction of wings: *the reduction of elytral carinulae (and more rarely carinae)*. One tentative explanation for the relation between winglessness and the reduction of carinulae (or carinae) could be as follows: carinulae (and carinae) strengthen the whole elytral structure, which may be of importance during flight; when the species becomes flightless, the elytra are not lifted and used anymore, and a reduction of carinulae (and carinae) would not interfere with any function.

Among the Neotropical species, only 6 lack carinulae, and these 6 species are always brachypterous, while two other winged species (*coeruleipennis* and *occidentalis*) have variation in the development of

carinulae. Among the 17 African species, 13 do not have carinulae (this lack of carinulae having been used as main character for the genus *Galeritiola* Jeannel), 9 being brachypterous and 1 dimorphic. None of the Asian species has developed reduction of carinulae. In only very few species have the carinulae been reduced: some individuals of the brachypterous species *procera* have the carinae reduced to four (see p. 44); the Neotropical *sulcipennis* and the Malagasy *perrieri* and *rubripes* have them vestigial, all three being brachypterous; as pointed out elsewhere (p. 72, 146), there are intermediate species as to reduction of carinae, namely *microcostata* (winged) and *hexagonica* (brachypterous).

Tables II (p. 157), III (p. 158) and IV (p. 158) summarize the species of *Galerita* (separated by species groups and by regions) and indicate the development of wings and carinulae.

The discussion of brachyptery which follows is restricted to the Neotropical species, since I have not had the opportunity of studying the representatives of the other faunas in detail.

Table II shows that in the following four species groups brachyptery is characteristic of all species: "*striata*", "*jelskii*", "*carbonaria*" and "*brasiliensis*". Two different interpretations seem possible here: 1, each group evolved from a brachypterous ancestor; 2, brachyptery occurred independently in the different species of the same group. Against the first hypothesis we have the fact that dispersal of *Galerita* occurs most probably by flight (e.g., *striata* is most probably derived from a Central American form related to *boucardi*, and must almost certainly have reached Haiti by flying). The fact that in a few other groups there are species with normally developed wings and species with short wings, as in the groups of "*gracilis*", "*aequinoctialis*" and "*orbigny*", suggests that the second hypothesis is more probable; however, it is also conceivable that in some cases one of the possibilities has occurred; while in others the second one has taken place.

As Darlington's research on the problem of reduction of wings has shown, there is a very strong correlation between isolation on higher elevations and brachyptery. Parenthetically I should comment here on the term "higher elevations". It seems to me that the biologically important factor is not the elevation but the mountain. Plateaus are often situated at elevations higher than some mountains; however, only in the latter is there any real "higher elevation" effect on the frequency of winglessness. Most species of the group of "*jelskii*", "*striata*" and "*carbonaria*" are found at high elevations (between 1000-2500 m), only a few occurring at lower elevations (always above 600 m). Some species, like *azteca* and *striata* apparently have a very restricted distribution, at elevations above 1500 m. As a rule, brachypterous species have very restricted distributions, a fact that is evidently related to the process of dispersal by flight (see e.g. the distributions of *azteca*, *sulcipennis*, *carbonaria* and *stenodera*).

The group of "*brasiliensis*", as mentioned above, includes only brachypterous species, which are, however, not restricted to higher ele-

vations (even though some localities where the species occur, like São Paulo, are situated at about 800 m) and do not have a restricted distribution. *Galerita corumbana* is only known from the type-area; *brasiliensis*, *ventricosa* and *pseudoventricosa* are widely distributed throughout eastern South America. I have examined relatively large series of *brasiliensis* and *pseudoventricosa* and have found no variation in wing size, so that I can, almost with certainty, say that the species is brachypterous, and that no winged individuals (which could disperse by flight) occur. Therefore, one may conclude that their dispersal is not being affected by their winglessness.

In the groups of species where brachyptery occurs in some, but not all species ("*gracilis*", "*aequinoctialis*" and "*orbignyi*" groups) the reduction of wings of such species as *inca*, *beauvoisi*, *simplicicarinata* and probably *hexagonica*, is most probably also related to isolation on higher elevations (note, however, that *simplicicarinata* and *hexagonica* are known only from the type-locality). The special case of *beauvoisi* has been discussed earlier, since this species has wing-polymorphism.

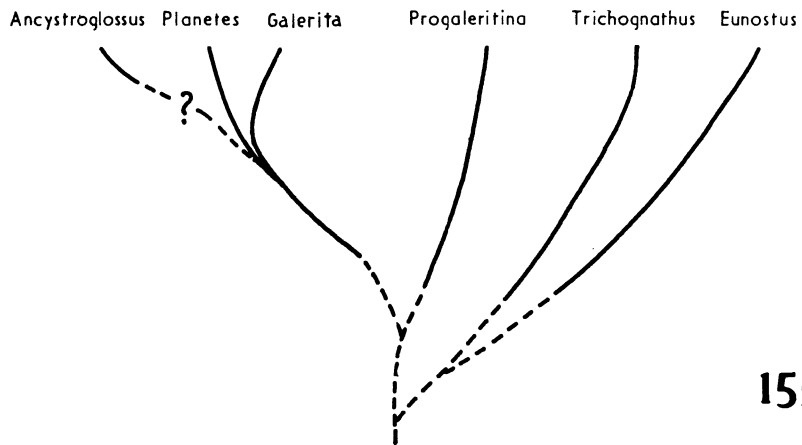
The case of the brachypterous *simplex* seems not to follow any of the rules about wing reduction. As discussed in the taxonomic part, *simplex* is very closely related to *aequinoctialis*, a species with normally developed wings. *G. simplex* has a somewhat restricted distribution in the state of Veracruz, Mexico, where it is sympatric with *aequinoctialis*. The two species are not restricted to higher elevations.

The results of the study of the reduction of wings in the American Galeritini confirm the findings of Darlington for the Carabidae of the eastern United States (1936), the Carabidae of Cuban mountains (1937) and the Jamaican Carabidae (1941). Generalization of the results of these special faunas has been presented by Darlington (1943). Interesting results were also presented by Lindroth for the Carabidae of Scandinavia (1949:335-416) and Newfoundland (1963a:96 ff).

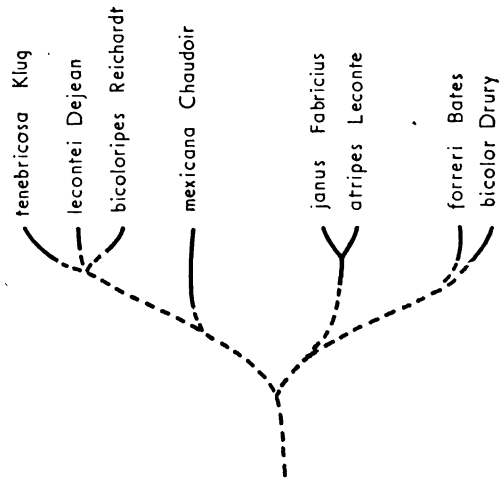
The results of Darlington and Lindroth cannot be compared with mine, especially the percentages of wingless or wing-dimorphic species, since my studies were restricted to the Carabidae of one tribe, while their studies were regional, including all the known species of certain areas.

ZOOGEOGRAPHY, PHYLOGENY AND EVOLUTION OF THE GALERITINI.

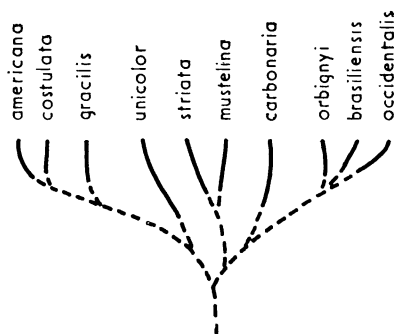
As a conclusion to the present study of the American Galeritini, I shall try to discuss where the tribe originated, how it evolved, and how the different groups are related. This kind of study is always very theoretical and is usually based on data which can be interpreted in different ways by different authors. The scheme I am presenting is the result of my own observations on the group, as well as the result of a critical analysis of other author's views, and comparison with what happens in another group of insects (see figs. 155-158).



155



156



157

Fig. 155, Phylogeny of the Galeritini; fig. 156, Phylogeny within *Progaleritina*; fig. 157, Phylogeny within the New World *Galerita*.

Since I have studied the American fauna of Galeritini more deeply, the exotic species are only included where necessary. The evolution within the exotic groups has not been looked into as they are beyond the scope of the present revision.

The Galeritini, according to Jeannel's ideas, typically represent a "lignée de l'Inabrésie" (see Jeannel, 1942:248). These Indian - African - Brazilian lines are considered to have evolved in the part of Gondwana called "Inabrésie", during the Cretaceous, and from there to have colonized the areas which became Africa, America and Asia after the separation of the continents. Thus, the group would have been essentially of African origin, having migrated from there westwards (to America) and eastwards (to Asia). Jeannel does not use the Galeritini as an actual example; however, the tribe follows exactly the described pattern.

If one looks for facts that support Jeannel's theory of the African origin of the group, very few, if any, are found. Jeannel's whole theory of evolution and zoogeography is based on Wegener's hypothesis of Continental Drift. There seems to be enough evidence today that Continental Drift has really occurred sometime in the past; however, it seems to have occurred in the late Paleozoic and could, therefore, not have any influence on the distribution of groups like the present insects which were probably only beginning their evolution at that time (see Darlington, 1964).

The primitive Galeritini could have differentiated in either the Old World (as proposed by Jeannel, but, not with the type of dispersal he suggested), or in the New World (my own suggestion). Both hypotheses will be discussed below.

DISTRIBUTION OF GENERA AND SPECIES OF GALERITINI, AND THEIR PHYLOGENY (figs. 155-158)

As considered in this revision, the Galeritini are distributed among 6 genera, totaling 122 known species. Four genera, with 66 species, are found in America (of these, over 50 are in tropical South and Central America); 2 genera with 18 species are known from the area between southeast Asia and Australia (several species of *Galerita* and *Planetes* occur in Wallacea; however, *Galerita* reaches only as far as Celebes while *Planetes* extends from continental southeast Asia to New Guinea and Queensland); 3 genera with 38 species are known to occur in Africa (only two of which have reached Madagascar, where there are 9 endemic species).

About 54% of the presently known species of Galeritini are in the New World, where 3 of the 4 American genera are endemic (of which only *Trichognathus* is monotypic). In addition, the largest and most diversified number of species of the tropicopolitan genus *Galerita* is reached in the Americas. *Progalaritina* (with striate-punctate elytra) and *Trichognathus* (with the same type of elytral structure, and very

peculiar mouthparts) seem to be primitive genera (see pp. 22 and 147), within the tribe. The same is true for the Ethiopian genus *Eunostus* (with characters similar to those of *Trichognathus*) which is widespread in Africa and Madagascar and is probably derived from the same common ancestor as *Trichognathus*.

Progaleritina seems to be related to *Galerita*, the two genera probably having been derived from a common ancestor. *Planetes* is very closely related to *Galerita*. The relations between these last two and *Ancystrogloussus* are obscure (see discussion on the status of *Ancystrogloussus* on pp. 9 and 13).

The phylogeny of the genera of Galeritini (as proposed here) is tentatively summarized in fig. 155.

The relationships within the genus *Progaleritina* have already been discussed under each species. In fig. 156 I have represented my conception of the phylogeny of these species, which, as already mentioned, are very closely related, and represent a single evolutionary lineage.

The phylogeny of the 51 American species of *Galerita* is very complicated and obscured by the large number of species. It has been possible to divide the American species of the genus into 10 (phylogenetic) groups, each comprising a certain number of closely related species. The relations between the species within each group have been discussed under each species. Their relationships are much more evident, most probably because of the small number of species involved in each group. Figure 157 represents the probable phylogeny of the American groups (this phylogeny is the basis of the sequence in the taxonomic part).

ZOOGEOGRAPHY OF THE GALERITINI (fig. 158)

The present distribution of the genera of the genera of Galeritini, especially that of the tropicopolitan genus *Galerita*, suggests a very high capacity of dispersal. The pattern of distribution suggests that the Galeritini disperse by flight and have been able to cross several water barriers (e.g. the water barriers between the southeast Asian islands and between Central America and the Greater Antilles). In consequence, one has to assume that the loss of wings in *Galerita* has probably occurred several times independently in both the New and the Old World. The ability of *Galerita* to cross other kinds of barriers, physical, seems to be well-developed: species of the genus have e.g. not been stopped by the Mexican mountains, where some have even become adapted to very special ecological conditions.

As stated above, the tribe could have evolved in the Old or in the New World. Let us discuss the two possibilities:

1. ORIGIN IN THE OLD WORLD:

The group could have originated either in Asia or in Africa. If one takes Asia as the center of origin and dispersal, then a *Trichognathus* - *Eunostus* ancestor must have dispersed to Africa where it

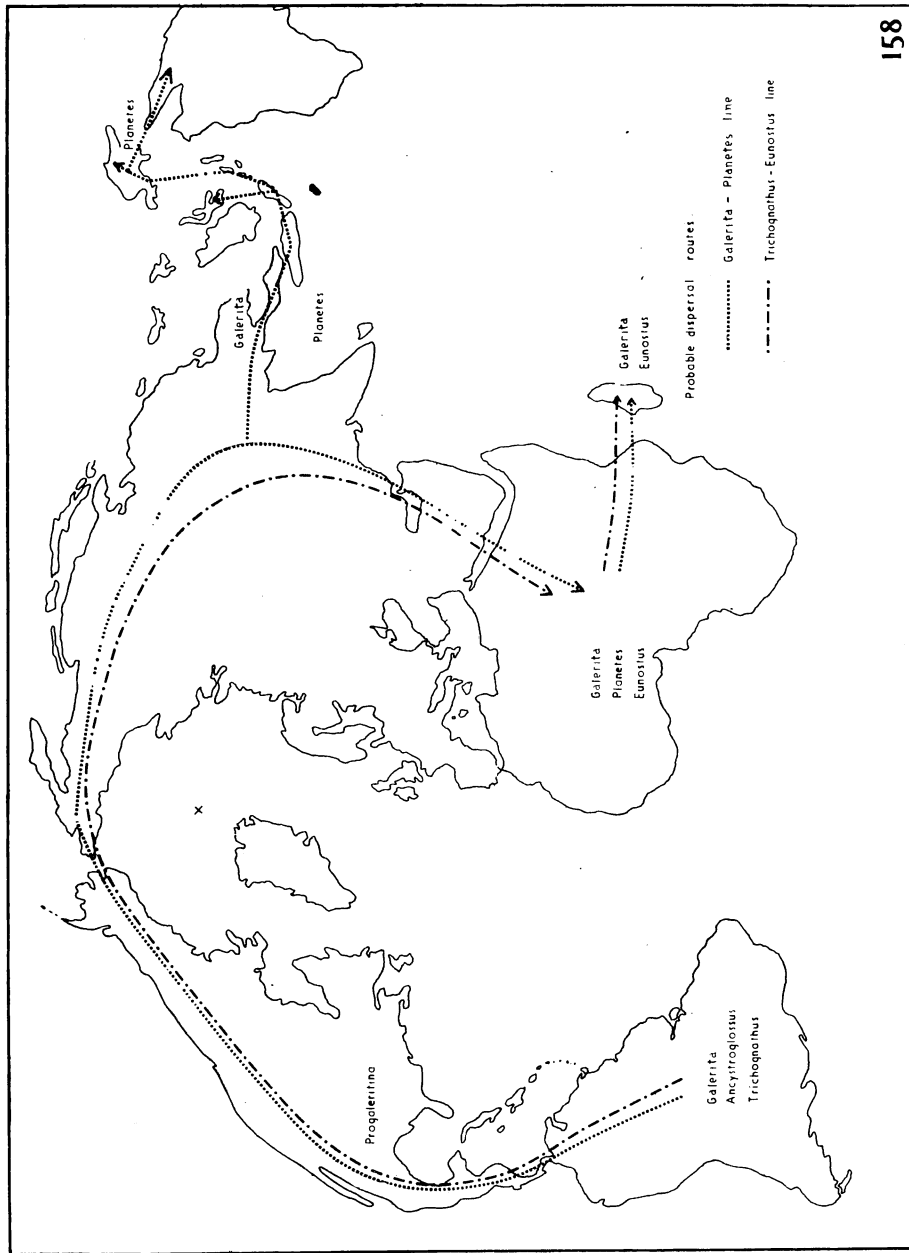


Fig. 158, Dispersal routes of the Galeritini.

would have produced *Eunostus*; the same ancestor, migrating to America across Beringia, must have given rise to *Trichognathus* in the New World. One would have to assume that the *Trichognathus* - *Eunostus* line has become extinct in Asia, after having migrated to Africa and America. A second ancestral form must have diversified earlier from the first line, and must have produced *Galerita* and *Planetes* in Asia. Both genera must then have migrated to Africa, and only one of them, *Galerita*, in the opposite direction, to America. *Progaleritina* must have originated in Asia from the same stock, and would have had to cross Beringia independently, subsequently becoming extinct in the Old World. *Ancystroglossus* (if really related to *Galerita*), must have diverged from *Galerita* when that genus reached South America.

Origin in Africa would have followed the same general patterns.

2. ORIGIN IN THE NEW WORLD:

Assuming that the Galeritini originated in the New World, we would have the following picture (see fig. 158): an ancestor of *Galerita* (which at that time had already diverged very much from the ancestral *Progaleritina*) would have to migrate from America to Asia across Beringia, and must have later reached Africa. This same ancestral form probably gave rise to *Planetes* in the Old World. *Trichognathus*, which probably diversified early from the ancestral *Progaleritina* (before the latter diversified into *Galerita* and *Progaleritina*) possibly reached Africa independently, through Asia (where it disappeared later), to produce *Eunostus*, which has been isolated from *Trichognathus* long enough to explain the differences present. Thus, there need have been only two main migrations of Galeritini from America to Asia, one of the *Galerita* - *Planetes* line, and one the *Trichognathus* - *Eunostus* line.

The invasion of Madagascar, the southeast Asian island and Australia follows the same pattern in both hypotheses.

DISCUSSION

There is no evidence to prove or to disprove conclusively either of the two hypotheses. As observed earlier, fossils, which could be of value for this study, are not known in the Galeritini (see p. 10).

The large number of species in the New World, their diversification, the number of endemic genera, and, especially, the presence of two primitive genera strongly suggest to me that the group evolved in that part of the World. Against this view, however, is the presence of the primitive, endemic genus *Eunostus* in Africa, which has radiated intensely there.

Origin in the New World would require only two migrations across Beringia, and extinction only of the *Trichognathus* - *Eunostus* line in Asia, while origin in the Old World would require three migrations across that bridge, plus extinction of both the *Progaleritina* ancestor and the *Trichognathus* - *Eunostus* line in Asia.

It may seem strange to propose that this tribe of Carabidae evolved in the New World, having from there colonized the Old World, particularly because it has been widely accepted that major groups have originated in the Old World. However, recent works in some groups of insects, tend to accept a New World origin. E.g., a very similar pattern of origin and dispersal has been described for the stingless bees (Hymenoptera, Apidae; Kerr & Maule, 1964). These authors think that it is most likely that the stingless bees originated in the New World, and from there spread to the rest of the World, in the same pattern described for the Galeritini.

As already mentioned, we lack any kind of direct evidence at present to prove or disprove the New World or Old World origin of the Galeritini. Once the facts of distribution have been provided and hypotheses proposed to explain these facts, it seems useless to make any further statements on the subject.

ZOOGEOGRAPHY OF SOME SPECIES (OR SPECIES-GROUPS)

Among the American species of Galeritini there are a few interesting zoogeographic details, which seem to be worthwhile mentioning here.

Only very few species of Galeritini have reached the Greater Antilles (*Galerita ruficollis* in Cuba, also known from Central America; *beauvoisi* and *striata* on Hispaniola, apparently only the latter endemic). The closest relatives (or the same species) are found in Central America, strongly supporting the idea of colonization of the Greater Antilles from Central America, as suggested by Darlington (1938). As noted above, *beauvoisi* and *striata* probably lost their wings after having reached the island by flight.

On the Lesser Antilles, only 3 species have been found as yet, two of them widespread in South and Central America (*americana* and *tristi*), and only one species, obviously derived from *americana* being endemic to Puerto Rico (*microcostata*). This pattern of distribution supports the hypothesis of the Lesser Antilles as being a route of migration from South America to Puerto Rico.

Also very interesting zoogeographically are some of the Mexican species, which are usually restricted either to the tropical lowlands (e.g. *G. ruficollis* and *aequinotialis*), or to the highlands (e.g. *azteca*, *boucardi* and *sulcipennis*). In Mexico the genus *Galerita* represents a very typical Neotropical element of the complex fauna, the lowland species representing Halffter's elements of "dispersion neotropical", while the highland species represent the elements of "dispersion en el Altiplano" (see Halffter, 1964:46-47). *Progaleritina*, which is widespread in the United States, is also a Neotropical element which spread into the United States and southeastern Canada much more effectively than the other genera. *P. mexicana*, which occurs from Costa Rica to the United States (see fig. 28), is one of the species which occurs both in the Mexican highlands and the tropical lowlands, not at all following Halffter's pattern mentioned above.

TRIBAL PHYLOGENY

As seen earlier, in the introductory discussion on related tribes, the Galeritini were included in the Dryptini for a very long time. The latter have been a somewhat heterogeneous group, including even some true Zuphiini, like *Pseudaption* and *Mischocephalus*. The Galeritini are very closely related to the true Dryptini; however, the latter are a predominantly Old World group (presently at least with a single species known in the New World). It seems plausible (if the origin of the tribe in the New World is accepted) to take this South American Dryptini, as being a relict of the American lineage of Dryptini which produced the Galeritini, and possibly also the Agrini, a strictly Neotropical tribe of Carabidae.

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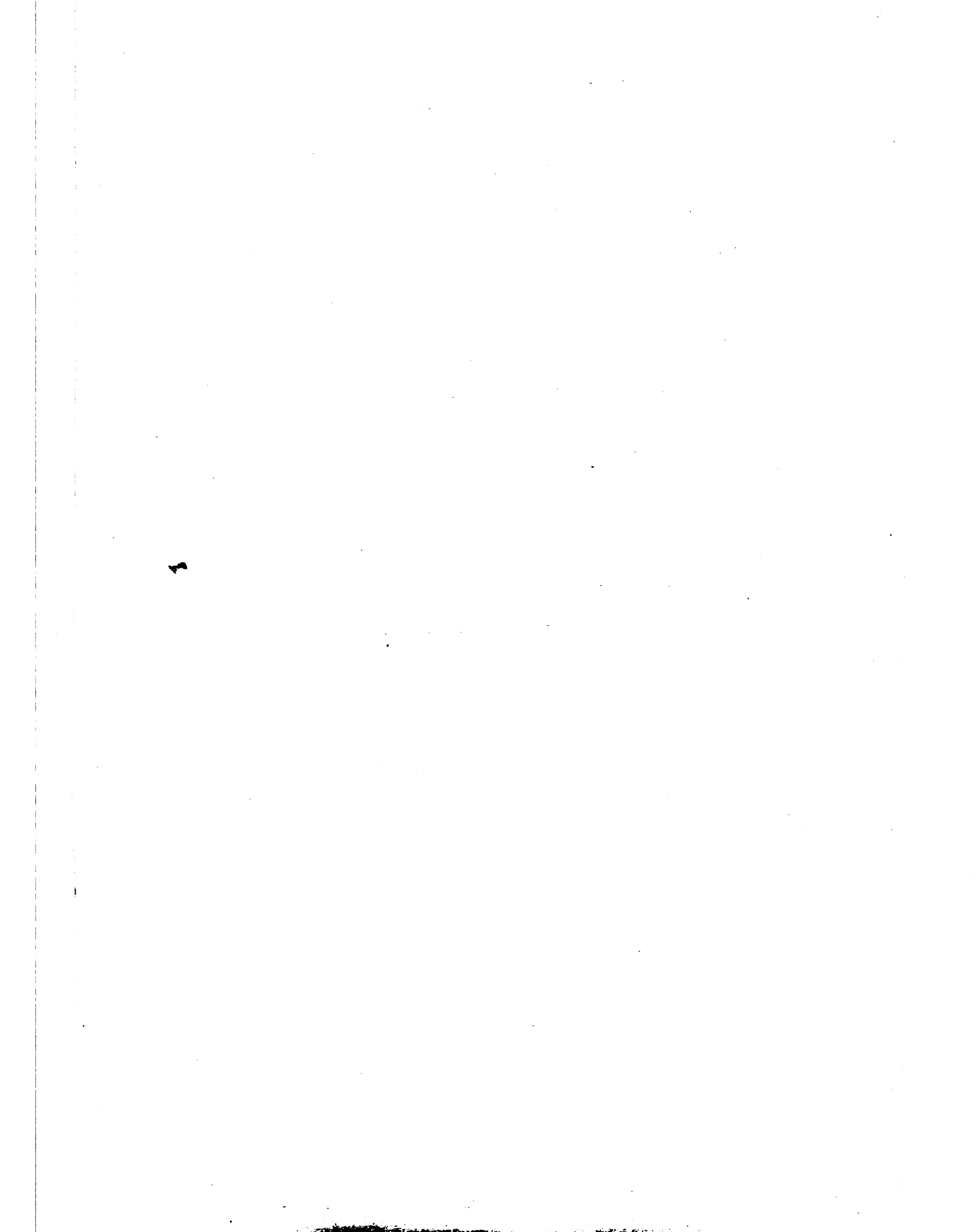
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