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RHYSODINI OF THE WORLD
PART IV. REVISIONS OF RHYZODIASTES FAIRMAIRE AND CLINIDIUM KIRBY,
WITH NEW SPECIES IN OTHER GENERA (COLEOPTERA: CARABIDAE OR
RHYSODIDAE)

Ross T. Bell
Department of Zoology
Marsh Life Science Building
University of Vermont
Burlington, VT, 05405-0086, U. S. A.

Joyce R. Bell
24 East Terrace
South Burlington, VT, 05401
U. S. A

Quaestiones Entomologicae
21: 1-172 1985

ABSTRACT

This paper is fourth of a series which will constitute a revision of Rhysodini of the world. Rhyzodiastes Fairmaire and Clinidium Kirby are revised. New subgenera of Rhyzodiastes are: Rhyzotetrops NEW SUBGENUS, type-Rhyzodiastes janus, n. sp., one sp., Fiji; Rhyzoarca NEW SUBGENUS, type-Rhyzodiastes montrouzieri (Chevrolat), three spp. Australia, New Zealand, New Caledonia; Temoana NEW SUBGENUS, type-Rhyzodiastes spissicornis (Fairmaire), 25 spp. Southeast Asia, Southwest Pacific; Rhyzostrix NEW SUBGENUS, type-Rhyzodiastes maderiensis (Chevrolat), five spp. S. America. Five species from South America remain in Rhyzodiastes s. str.

The following new species are described (type localities indicated): Rhyzodiastes (Rhyzotetrops) janus (FIJI, Viti Levu); Rhyzodiastes (Temoana) bipunctatus (SOLOMON ISLANDS, Guadalcanal, Mt. Austen); Rhyzodiastes (Temoana) indigens (SUMATRA, Si Rambê); Rhyzodiastes (Temoana) convergens (NEW BRITAIN, Gsiluve); Rhyzodiastes (Temoana) preorbitalis (THAILAND, Doi Sutep); Rhyzodiastes (Temoana) vadiceps (BORNEO?); Rhyzodiastes (Temoana) patruus (MALAYA, Johor, Sedili Kechil); Rhyzodiastes (Temoana) denticauda (SARAWAK, Mt. Murud); Rhyzodiastes (Temoana) propinquus (NICOBAR IS.); Rhyzodiastes (Temoana) bonxae (SUMATRA, Mt. Tenggamoes); Rhyzodiastes (Temoana) alveus (VIET NAM, Hoa Binh); Rhyzodiastes (Temoana) fossatus (VIET NAM, hills sw. of Kui Chau); Rhyzodiastes (Rhyzostrix) davidsoni (BRAZIL, Amazonas, Taruma Falls); Rhyzodiastes (Rhyzostrix) nitidus (BRAZIL, Santarem); Rhyzodiastes (Rhyzostrix) menieri (FRENCH GUIANA, Haut-Carsevenne); Rhyzodiastes (s. str.) pentacyclus (BRAZIL, Alto da Serra); Rhyzodiastes (s. str.) suturalis (BRAZIL, Espiritu Santo, Sooretama); Clinidium (Mexiclinidium) championi (GUATEMALA, Quiche Mtns.); Clinidium (Mexiclinidium) newtoni (MEXICO, Chiapas, Pueblo Nuevo); Clinidium (Mexiclinidium) halffteri (MEXICO, Vera Cruz, Amates); Clinidium (Mexiclinidium) balli (MEXICO, Hidalgo, 25.6 km n. of Zimapan); Clinidium (Mexiclinidium) triplehorni (MEXICO, 11.3 km n.e. of Jacala); Clinidium (Mexiclinidium) iviei (MEXICO, Oaxaca, 3.2 km s. of Cerra Pelon); Clinidium (s. str.) impressum (FRENCH GUIANA, Saint Laurent du

Maroni); Clinidium (s. str.) hammondi (COLOMBIA, Bogota); Clinidium (s. str.) howdenorum (TRINIDAD, Morne Bleu); Clinidium (s. str.) jolyi (VENEZUELA, Merida, La Azulita); Clinidium (s. str.) alleni (PANAMA, Cerro Jefe); Clinidium (s. str.) whiteheadi (PANAMA, Cerro Campana); Clinidium (s. str.) trionyx (DOMINICAN REP., Cazabita); Clinidium (s. str.) dormans (PANAMA, Chiriqui, Finca Lerida, near Boquete); Clinidium (s. str.) penicillatum (COLOMBIA, Dept. Valle, Represa Calima); Clinidium (s. str.) segne (VENEZUELA, Aragua, Rancho Grande); Clinidium (s. str.) kochalkai (COLOMBIA, Casa Antonio, Loma, Cebolleta, Sierra Nevada de Santa Marta); Clinidium (s. str.) microfossatum (MARTINIQUE); Clinidium (s. str.) smithsonianum (DOMINICA); Clinidium (s. str.) bechyneorum (VENEZUELA, Carabobo, Hac. Montero, Montalban); Clinidium (s. str.) excavatum (VENEZUELA, Carabobo, Montalban Oeste); Clinidium (s. str.) pala (VENEZUELA, Miranda, Guatopo Nat. Pk., 50 km se Caracas); Clinidium (s. str.) humile (NEW GRANADA (Colombia or Panama)); Clinidium (s. str.) curvatum (COLOMBIA, Santander del Norte, Oroque); Clinidium (s. str.) crater (PANAMA, Cerro Jefe, Azul Ridge); Clinidium (s. str.) spatulatum (PANAMA, Colon, Sta. Rita ridge); Clinidium (s. str.) moldenkei (COSTA RICA, Rincon de Osa); Clinidium (s. str.) argus (PHILIPPINES (?) Horns of Negros); Dhysores biimpressus (TANZANIA, Usumbura, Neu Bethel); Kaveinga (s. str.) poggii (D'ENTRECASTEAUX ISLANDS, Goodenough Is.); Grouvellina hexadon (COMORO IS., Mayotte, Mamouzou); Yamatosa kryzhanovskiy (VIET NAM, mts. n.e. of Thai Nguen); Yamatosa Kabakovi (VIET NAM, mountains of Sha-Pa Province); Omoglymmius (Pyxiglymmius) opacus (SUMATRA, Padang); Omoglymmius (s. str.) gressitti (NEW GUINEA, Wau, Mt. Missim.); Omoglymmius (s. str.) craticulus (NEW GUINEA, Moroka); Omoglymmius (s. str.) largus (NEW GUINEA, Fly R.); Omoglymmius (s. str.) tolai (NEW BRITAIN, Rabaul); Omoglymmius (Laminoglymmius) perplexus (SUMATRA); Omoglymmius (Navitia) peckorum (FIJI, Viti Levu, Nandarivatu).

Clinidium beccarii Grouvelle is removed from Rhyzodiastes and returned to Clinidium (s. str.). Rhyzodes punctatolineatus Grouvelle is assigned to Arrowina.

RÉSUMÉ

Cet article est la quatrième d'une série qui constitueront une revue taxonomique des Rhyzodini du monde. On revisite les genres Rhyzodiastes Fairmaire et Clinidium Kirby. Les sous-genres nouveaux de Rhyzodiastes sont: Rhyzotetrops NOUVEAU SOUS-GENRE, type-Rhyzodiastes janus, n. sp., un sp., Fiji; Rhyzoarca NOUVEAU SOUS-GENRE, type-Rhyzodiastes montrouzieri (Chevrolat), trois sp. Australia, Nouvelle Zélande, Nouvelle Calédonie; Temoana NOUVELLE SOUS-GENRE, type-Rhyzodiastes spissicornis (Fairmaire), 25 spp. Asie de sud-est, Pacifique de sud-ouest; Rhyzostrix NOUVEAU SOUS-GENRE, type-Rhyzodiastes maderiensis (Chevrolat), cinq spp., Amérique du Sud. Cinq espèces de l'Amérique du Sud restaient en Rhyzodiastes s. str.

On décrit les espèces nouvelles que voici (en indiquant pour chacune la localité du spécimen type): Rhyzodiastes (Rhyzotetrops) janus (FIJI, Viti Levu); Rhyzodiastes (Temoana) bipunctatus (ÎLES DE SOLOMON, Guadalcanal, Mt. Austen); Rhyzodiastes (Temoana) indigenus (SUMATRA, Si Rambé); Rhyzodiastes (Temoana) convergens (NOUVELLE BRETAGNE, Gisiluve); Rhyzodiastes (Temoana) preorbitalis (THAÏLANDE, Doi Sutep); Rhyzodiastes (Temoana) vadiceps (BORNEO?); Rhyzodiastes (Temoana) patruus (MALAYE, Johor, Sedili Kechil); Rhyzodiastes (Temoana) denticauda (SARAWAK, Mt. Murud); Rhyzodiastes (Temoana) propinquus (ÎLES DE NICOBAR); Rhyzodiastes (Temoana) bonsae (SUMATRA, Mt. Tenggamoes); Rhyzodiastes (Temoana) alveus (VIET NAM, Hoa Binh); Rhyzodiastes (Temoana) fossatus (VIET NAM, sur les collines au sud-ouest de Kui Chau); Rhyzodiastes (Rhyzostrix) davidsoni (BRÉSIL, Amazonas, Sault de Taruma); Rhyzodiastes (Rhyzostrix) nitidus (BRÉSIL, Santarem); Rhyzodiastes (Rhyzostrix) menieri (GUYANE FRANÇAISE, Haut-Carsevenne); Rhyzodiastes (s. str.) pentacyclus (BRÉSIL, Alto da Serra); Rhyzodiastes (s. str.) suturalis (BRÉSIL, Espiritu Santo, Sooretama); Clinidium (Mexiclinidium) championi (GAUTÉMALA, Quiche Mtns.); Clinidium (Mexiclinidium) newtoni (MEXIQUE, Chiapas, Pueblo Nuevo); Clinidium (Mexiclinidium) halfteri (MEXIQUE, Vera Cruz, Amates); Clinidium (Mexiclinidium) balli (MEXIQUE, Hidalgo, 25.6 km n. de Zimapan); Clinidium (Mexiclinidium) triplehorni (MEXIQUE, 11.3 km n.e. de Jacala); Clinidium (Mexiclinidium) iviei (MEXIQUE, Oaxaca, 3.2 km s. de Cerra Pelon); Clinidium (s. str.) impressum

(GUYANE FRANÇAISE, Saint Laurent du Maroni); *Clinidium* (s. str.) *hammondi* (COLOMBIE, Bogota); *Clinidium* (s. str.) *howdenorum* (TRINITÉ, Morne Bleu); *Clinidium* (s. str.) *jolyi* (VENEZUELA, Merida, La Azulita); *Clinidium* (s. str.) *alleni* (PANAMA, Cerro Jefe); *Clinidium* (s. str.) *whiteheadi* (PANAMA, Cerro Campana); *Clinidium* (s. str.) *trionyx* (REP. DOMINICAINE, Cazabita); *Clinidium* (s. str.) *dormans* (PANAMA, Chiriqui, Finca Lerida, près de Boquete); *Clinidium* (s. str.) *penicillatum* (COLOMBIE, Dept. Valle, Represa Calima); *Clinidium* (s. str.) *segne* (VENEZUELA, Aragua, Rancho Grande); *Clinidium* (s. str.) *kochalkai* (COLOMBIE, Casa Antonio, Loma Cebolleta, Sierra Nevada de Santa Marta); *Clinidium* (s. str.) *microfossatum* (MARTINIQUE); *Clinidium* (s. str.) *smithsonianum* (DOMINICA); *Clinidium* (s. str.) *bechyneorum* (VENEZUELA, Carabobo, Hac. Montero, Montalban); *Clinidium* (s. str.) *excavatum* (VENEZUELA, Carabobo, Montalban Oeste); *Clinidium* (s. str.) *pala* (VENEZUELA, Miranda, Guatopo Nat. pk., 50 km se Caracas); *Clinidium* (s. str.) *humile* (NEW GRANADA (Colombie ou Panama)); *Clinidium* (s. str.) *curvatum* (COLOMBIE, Santander del Norte, Oroque); *Clinidium* (s. str.) *crater* (PANAMA, Cerro Jefe, Azul Ridge); *Clinidium* (s. str.) *spatulatum* (PANAMA, Colon, Sta. Rita ridge); *Clinidium* (s. str.) *moldenkei* (COSTA RICA, Rincon de Osa); *Clinidium* (s. str.) *argus* (PHILIPPINES (?) Horns of Negros); *Dhysores* *biimpressus* (TANZANIA, Usumbura, Neu Bethel); *Kaveinga* (s. str.) *poggii* (ÎLES D'ENTRECASTEAUX, Goodenough Is.); *Grouvellina* *hexadon* (ÎLES COMORES, Mayotte, Mamouzou); *Yamatosa* *kryzhanovskiyi* (VIET NAM, Monts du nord est de Thai Nguen); *Yamatosa* *kabakovi* (VIET NAM, Monts de la province de Sha-Pa); *Omoglymmius* (*Pyxiglymmius*) *opacus* (SUMATRA, Padang); *Omoglymmius* (s. str.) *gressitti* (NOUVELLE GUINÉE, Wau, Mt. Missim.); *Omoglymmius* (s. str.) *craticulus* (NOUVELLE GUINÉE, Moroka); *Omoglymmius* (s. str.) *largus* (NOUVELLE GUINÉE, Fly R.); *Omoglymmius* (s. str.) *tolai* (NOUVELLE BRETAGNE, Rabaul); *Omoglymmius* (*Laminoglymmius*) *perplexus* (SUMATRA); *Omoglymmius* (*Navitia*) *peckorum* (FIJI, Viti Levu, Nandarivatu).

On deplacet *Clinidium beccarii* *Grouvelle* de *Rhyzodiastes* et le retourne a *Clinidium* (s. str.). *On attribuet* *Rhysodes punctatolineatus* *Grouvelle* a *Arrowina*.

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INTRODUCTION

This paper, the fourth in a series of five, consists of revisions of the genera *Rhyzodiastes* Fairmaire and *Clinidium* Kirby, together with descriptions of new species in several of the genera treated in earlier parts of the series. The subgenera of *Rhyzodiastes* are named and defined.

SOURCES OF MATERIAL

The following abbreviations designate collections cited in this paper. The names in parentheses are the curators of the respective institutions.

AIM	Auckland Institute and Museum, New Zealand (K.A.J. Wise)
ALB	University of Alberta, Edmonton, Canada (G. E. Ball)
AMNH	American Museum of Natural History, New York (L. Herman)
AMS	Instituut voor Taxonomische Zoologie, Amsterdam, Netherlands (J. Duffels)
AP	U.S. Dept. of Agriculture, Harrisburg, PA (K. Valley)
ARK	University of Arkansas, Fayetteville (E. P. Rouse)
AU	S.F. Austin State University, Nacogdoches, Texas (W. W. Gibson)
BMNH	British Museum, Natural History, London (R. Pope)
BMS	Buffalo Museum of Science, NY (H. W. Charnley)
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii (G. Samuelson)
BPM	Barry P. Moore, Canberra City, Australia
BSL	Naturhistorisches Museum, Basel, Switzerland (W. Wittmer)
BSRI	Biosystematics Research Institute, Ottawa, Canada (A. Smetana)
CAG	U.S. Dept. of Agriculture, Sacramento, CA (F. G. Andrews)
CAS	California Academy of Sciences, San Francisco, CA (D. Kavanaugh)
CMP	Carnegie Museum of Natural History, Pittsburgh, PA (G. Wallace)
CNHM	Field Museum of Natural History, Chicago, IL (H. Dybas)
CU	Cornell University, Ithaca, NY (L. L. Pechuman)
DM	Dayton Museum, Ohio (A. J. Koestner)
DSIR	Department of Scientific and Industrial Research, Auckland, N.Z. (J. Watt)
DY	Daniel K. Young, E. Lansing, MI
FLA	U.S. Dept. of Agriculture, Gainesville, FL (R. Woodruff)
GA	University of Georgia, Athens, GA (C. L. Smith)
GEN	Museo Civico di Storia Naturale "G. Doria", Genoa (R. Poggi)
GVA	Muséum d'Histoire Naturelle, Geneva, Switzerland (I. Löbl)
GLP	Gary L. Peters, Corvallis, OR
HL	Harry J. Lee, Fairview Park, OH
IO	Iowa State University, Ames IA (R. Miller)
INPA	Instituto Nacional de Pesquisas de Amazônia, Manaus, Brazil (N. D. Penny)
ISNHS	Illinois State Natural History Survey, Urbana IL (M. Sanderson)
IU	Indiana University, Bloomington IN
KS	Karl Stephan, Tucson, AZ
KU	Kagoshima University, Japan
LA	Los Angeles County Natural History Museum, CA (C. L. Hogue)
LCC	Lincoln College, Canterbury, N.Z., (R.M. Emberson)
LEI	Rijksmuseum von Natuurlijke, Historie, Leiden, Netherlands (J. Krikken)
LEN	Academy of Sciences, Leningrad USSR (O. Kryzhanovskij)
LS	Louisiana State University, Baton Rouge LA (J. B. Chapin)

LUN	Zoological Institute, Lund, Sweden (R. Danielsson)
MAI	Michael A. Ivie, Columbus, OH
MAY	University of Puerto Rico, Mayaguez (J. Ramos)
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, MA (J. Lawrence)
MN	University of Minnesota, St. Paul MN (P. J. Clausen)
MNHB	Museum für Naturkunde der Humboldt-Universität, Berlin, DDR (F. Hieke)
MNHN	Muséum National d'Histoire Naturelle, Paris, France (A. Descarpentries)
MO	University of Missouri, Columbia MO (W. R. Enns)
MRAC	Musée Royal de l'Afrique Centrale, Tervuren, Belgium (P. Basilewsky)
MSU	Michigan State University, E. Lansing MI
MZSP	Museu de Zoologia da Universidade de São Paulo, Brazil (U.R. Martins)
NC	North Carolina State University, Raleigh NC (D. A. Young)
NMNH	U.S. National Museum of Natural History, Washington, D. C. (T. Erwin)
NMNZ	National Museum of New Zealand, Wellington (R. G. Ordish)
NMW	Naturhistorisches Museum Wien, Austria (F. Janczyk)
OK	Oklahoma State University, Stillwater OK (W. A. Drew)
OS	Oregon State University, Corvallis OR (G. L. Peters)
OSFS	Oregon State Forest Sciences Collection, Corvallis OR
OSU	Ohio State University, Columbus OH (C. A. Triplehorn)
OUA	Ohio University, Athens, OH (H. Seibert)
PA	Academy of Sciences, Philadelphia, PA (D. C. Rentz)
PK	Paul Kittle, Southeast Missouri State University, Cape Girardeau
PU	Purdue University, Lafayette, IN
QW	Quentin Wheeler, Columbus, OH
RCG	R. C. Graves, Bowling Green, OH
SATO	Masataka Sato, Nagoya, Japan
SDA	U.S. Dept. of Agriculture, Brookings, SD (V. M. Kirk)
SI	Southern Illinois University, Carbondale, IL (J. E. McPherson)
TB	Thomas Barr, University of Kentucky, Lexington KY
UCB	University of California, Berkeley CA (J. A. Chemsak)
UCD	University of California, Davis CA
UD	University of Delaware, Newark DE (P. P. Burbutis)
UI	University of Illinois, Urbana IL (R. Selander)
UK	University of Kansas, Lawrence KS (G. W. Byers)
UL	University of Louisville, KY (C. V. Covell)
UM	University of Michigan, Ann Arbor, MI (I. J. Cantrall)
UN	University of Nebraska, Lincoln NB (B. C. Ratcliffe)
UNH	University of New Hampshire, Durham NH (D. Chandler)
UT	Utah State University, Logan, UT (W. J. Hanson)
UVM	University of Vermont, Zoology Department, Burlington, VT
UW	University of Wisconsin, Madison WI (J. R. Baker)
VEN	Universidad Central de Venezuela, Maracay (L. J. Joly)
VP	Virginia Polytechnic Institute, Blacksburg, VA (M. Kosztarab)
WR	William Rosenberg

WRS Walter R. Suter, Carthage College, Kenosha, WI
 WS Washington State University, Pullman WA (W. J. Turner)

GENUS *RHYZODIASTES* FAIRMAIRE 1895

Type species.— *Rhyzodiastes parumcostatus* Fairmaire 1868

Description.— Part I: 61-62. Most species have two spurs on each of the middle and hind tibiae, as stated in the definition in Part I, but two species from Borneo each have only a single tibial spur.

This genus and *Clinidium* both have the striation strongly reduced and heterogeneous. The striae differ strongly in depth, width, degree of punctation and pollinosity. Since striae disappear from both the disc and the margin of the elytron, it would be quite confusing to refer to them by numbers, as we have in other genera. Accordingly, we designate each stria with a name, and define it in terms of its spatial relationship with other parts of the elytron. The *sutural stria* is the most medial one, closely paralleling the suture. The *parasutural stria* is the next one laterally. The *intercalary stria* is lateral to the parasutural and medial to the sub-apical tubercle. In *Rhyzodiastes* it occurs only in Subgenus *Rhyzotetrops*. The *intratubercular stria* is lateral to the parasutural and to the intercalary, if present. It can be identified by the fact that its apex passes between the subapical and apical tubercles. The *supramarginal stria* is absent from *Rhyzodiastes*, but is present in some subgenera of *Clinidium*. It is lateral to the intratubercular and dorsal to the marginal stria. The *marginal stria* is the outermost stria visible in a dorsolateral view. It can be identified by the fact that its apex passes ventrad to the apical tubercle, where it attains the suture in most species. The *submarginal stria* lies on the elytral epipleura, between the *marginal stria* and the edge of the elytron. Posteriorly, it ends near the fifth or sixth abdominal sternum.

KEY TO SUBGENERA

- | | | |
|--------|---|---|
| 1 | Each compound eye divided into two ocelliform structures; elytron with intercalary stria present | <i>Rhyzotetrops</i> new subgenus, p. 6 |
| 1' | Compound eye entire, crescentic or hemispherical; elytron with intercalary stria absent | 2 |
| 2 (1') | Paramedian grooves much closer together at middle of length than at base or apex; outer carina much wider at middle of length than at either end; tufts of minor setae present on antennal Segments VII-X | <i>Rhyzoarca</i> new subgenus, p. 8 |
| 2' | Paramedian grooves not closer together at middle than at either end; outer carina not much wider at middle than at either end; tufts of minor setae present on Segments IV-X, V-X, or VI-X | 3 |
| 3 (2') | Inner carina of pronotum with lateral margin as distinct as medial margin; inner carina abruptly separated from paramedian groove which is entirely pollinose | <i>Rhyzodiastes sensu stricto</i> , p. 54 |
| 3' | Inner carina of pronotum with lateral margin sloped gradually into paramedian groove; paramedian groove with pollinosity in most species limited to its border with outer carina (<i>R. pollinosus</i> an exception) | 4 |
| 4 (3') | Eye enlarged, hemispheric; gena below eye with curved band of pollinosity; basal margin of pronotum with narrow strip of pollinosity | <i>Rhyzostrix</i> new subgenus, p. 48 |
| 4' | Eye narrow, crescentic; gena below eye glabrous; basal margin of pronotum not pollinose | <i>Temoana</i> new subgenus, p. 11 |

SUBGENUS *RHYZOTETROPS* NEW SUBGENUS

Type species.— *Rhyzodiastes (Rhyzotetrops) janus* new species.

Description.— Apical stylet of antenna acuminate; tufts of minor setae present on Antennal Segments VII-X; compound eye divided into two ocellus-like structures, one directed anteriolaterally, the other postero-laterally; clypeal setae present; pronotum with median groove strongly dilated; inner carinae sloped gradually into paramedian grooves; latter glabrous except for pollinose strip along medial margin of outer carina; latter with row of setae; outer carina curved, rather narrow, of even width; elytron with intercalary stria present; intratubercular stria obsolete except for apex, which is impressed; all femora with many long setae. This subgenus is restricted to Fiji.

Only one species is known.

Rhyzodiastes (Rhyzotetrops) janus new species

(Figs. 1, 5, 9, 10)

Type Material.— HOLOTYPE male, labelled: "Vitlevu, Fiji, 6 M.W. Nandarivatu, Mba, IX-16-38, Coll. Y. Kondo" (BPBM). PARATYPES one male, same data as holotype (BPBM); one female, labelled: "Nandarivatu, Viti Levu, Fiji, IX-10-38, 3700', rotten log, coll. E. G. Zimmerman" (BPBM); one female, same locality and collector but dated "IX-6-38, 3600', beating shrubbery" (BPBM); one female, labelled: "Navai, Fiji Isl. Mann" (MCZ); one female, labelled: "Viti Levu, Fiji, Nandarivatu, W. M. Mann" (MCZ); one female, labelled: "Fiji, Viti Levu, Nandarivatu, 13-xi-74, coll. B. P. Moore" (BPBM).

Description.— 5.9–6.3 mm. Tuft of minor setae very small on Segment VII of antenna; those of VIII-X larger; basal setae of antennae on Segments VII-X; Segments I-IV with subapical pollinose bands; outer antennal segments nearly spherical; Segment XI wider than Segment X, and over twice as long as latter.

Head slightly longer than wide; median lobe very short, transverse, its tip obtuse, far anterior to eyes; antennal lobe glabrous, but divided by anterior pollinose extension of postantennal groove; temporal lobe 1.5 longer than wide, broadly rounded medially, with broad pilose fringe across basal margin; orbital groove broad, distinct, but incomplete posteriorly, its base just posterior to posterior eye; gena with vertical bar of pollinosity ending ventrad to space separating anterior and posterior eyes (Fig. 10); one temporal seta.

Pronotum with length/greatest width 1.5, unusually large compared to elytra, more than 0.55 as long and nearly as wide as elytra; widest near middle, sides rather weakly curved; apex truncate; base rounded; median groove broadly dilated, forming about 0.2 of pronotal width; median groove entirely glabrous; anterior median pit near to anterior margin; posterior median pit at basal 0.25 of length; both median pits pollinose, conspicuous; median groove posterior to posterior median pit rather deep, but clearly shallower than remainder of pit; inner carinae rather narrow, sloped gradually into paramedian groove except in basal 0.25, where separated from paramedian groove by vertical scarp; paramedian grooves broad, glabrous except for narrow pollinose scarp bounding outer carina; basal impression conspicuous, glabrous except for small circular pollinose impression at middle; basal impression bounded posteriorly by glabrous ridge which is continuation of outer carina; outer carina curved, convex, narrow, of nearly even width, row of nine to 12 setae present in pollinose median scarp of outer carina; marginal groove entirely absent; notopleural suture entirely pollinose; sternopleural groove entirely absent.

Elytra rather short, sides nearly parallel; parascutellar pits large but widely separated from one another; base of elytra without transverse pollinose band; Interval I flat; sutural stria fine, scarcely pollinose, with fine, widely separated punctures; Interval II somewhat convex, sloped laterally; parasutural stria finely punctate, narrowly pollinose, slightly deeper than sutural stria, curved medially at base, meeting sutural stria at apex; apical depression largely glabrous but with posteriolateral pollinose strip; Interval III convex, its base bent medially, forming prominent angle; intercalary or third stria deeper than parasutural stria, with moderately broad strip of pollinosity; Interval IV with medial margin distinct but lateral one obsolete, continuous posteriorly with subapical tubercle; intratubercular stria incomplete, entirely effaced in basal 0.33, for most of remainder represented by row of minute, widely spaced punctures, its apex impressed, pollinose; apical tubercles swollen, broadly in contact at suture; marginal stria complete, pollinose, linear, becoming dilated below apical tubercle; submarginal stria entire, extending to middle of Sternum V; intercalary stria with about 10 setae; impressed apex of intercalary stria with two or three setae; medial face of apical tubercle with one or two setae; marginal stria with continuous row of about 15 setae, these more closely spaced near apex. (Fig. 5)

Metasternum not sulcate; abdominal sterna with transverse sulci narrowly interrupted at midline; slight development of lateral pit on Sternum IV in both sexes (Fig. 9); tibia slender, posterior spurs slightly smaller than anterior ones; male with anterior tibia not dentate nor tuberculate; male trochanters not modified; calcaria small, acutely pointed.

The presence of an intercalary stria is unique within the genus, as is the strange divided eye. A similar eye has evolved independently in *Clinidium* (*s. str.*) *beccarii* and its relatives.

SUBGENUS *RHYZOARCA* NEW SUBGENUS

Type species.— *Rhyzodes montrouzieri* Chevrolat 1875

Description.— Tufts of minor setae present on antennal Segments VII-X; clypeal setae absent; eyes entire, narrowly crescentic; temporal, pronotal, elytral setae entirely absent; pronotum relatively broad, subquadrate, with lateral margins slightly curved; base, apex truncate; median groove linear or absent; anterior median pit absent; posterior median pit small, shallow or absent; paramedian grooves closest together at middle of length, strongly curved; each paramedian groove with large pilose pit at anterior and posterior end; disc of pronotum depressed between anterior lateral pits; outer carina oval, broad at middle, tapered both anteriorly and posteriorly; marginal, submarginal grooves absent; intercalary stria absent; metasternal sulcus absent in *R. montrouzieri*, *R. proprius*, ventral surface of *R. burnsi* not studied; female with shallow, lateral pits on abdominal Sternum IV; male front femur with ventral tooth; calcar small, acutely pointed.

This subgenus occurs in Australia, New Zealand, and New Caledonia.

Phylogeny.— Of the three species, *R. proprius* and *R. burnsi*, of New Zealand and Australia, respectively, are clearly more closely related than either is to *R. montrouzieri* of New Caledonia.

KEY TO SPECIES

- | | | |
|--------|--|--|
| 1 | Apex of intratubercular stria impressed; median groove of pronotum absent; median lobe of head very short | <i>R. montrouzieri</i> (Chevrolat), p. 8 |
| 1' | Apex of intratubercular stria obsolete, subapical and apical tubercles thus not separated; median groove of pronotum linear but distinct; median lobe of head longer | 2 |
| 2 (1') | Sutural stria absent except for extreme base; parasutural stria impressed, impunctate; posterior median pit absent | <i>R. proprius</i> (Broun), p. 9 |
| 2' | Sutural stria entire, impressed, coarsely punctate; parasutural stria coarsely punctate; posterior median pit small but distinct | <i>R. burnsi</i> (Oke), p. 9 |

Rhyzodiastes (Rhyzoarca) montrouzieri (Chevrolat 1875) NEW COMBINATION
(Figs. 2, 8)

Rhyzodes montrouzieri Chevrolat 1875: 182.

Rhyzodiastes montrouzieri (Chevrolat) Bell and Bell 1978

Type Material.— We have not located type material for this species. It is easily recognized from the description and the type locality.

Description.— Length 5.0-7.5 mm. Median lobe of head short, its tip opposite anterior margin of eye; length of eye about 0.8 of length of temporal lobe.

Pronotum relatively short, length/greatest width 1.35; anterior angles acute, slightly prominent; lateral margin not sinuate anterior to hind angle; base of pronotum relatively narrow, its width about 0.8 of greatest width of pronotum; median groove entirely absent; posterior median pit represented by shallow pit.

Elytron without basal pollinosity; sutural stria fine, linear, pollinose, impunctate, its base dilated, (Fig. 8); its apical 0.66 entirely effaced; parasutural stria entire, deep, impressed, pollinose; intratubercular stria complete, impressed, impunctate, pollinose, its apex separating apical and subapical tubercles; marginal stria represented by row of minute punctures, its apex not impressed; hind calcar of male acute, its dorsal margin straight.

This species is easily recognized by the short median lobe of the head, the impressed apex of the intratubercular stria, and the absence of the median groove of the pronotum.

Distribution.— Confined to New Caledonia. We have seen the following specimens: 13 males, five females, Col des Roussettes, 450-550 m., 4-6-II-63, G. Kuschel, C. Yoshimoto, J. L. Gressitt (BPBM); one female, Hanna, Foret de Thi, VII-16-1958, B. Malkin (CNHM); six males, three females, Mt. Koghi, Foret de Thi, 530 m., 8-III-1961, J. Sedlacek (BPBM); five males, four females, Noumea, Aug. 27-1944, Wilfred Crabb (NMNH); one male,

Mt. Chapeau, Gendarme rain forest, 13-VIII-1944, J. C. Herron (OUA)

Rhyzodiastes (Rhyzoarca) proprius (Broun 1880) NEW COMBINATION

(Figs. 3, 6)

Rhysodes proprius Broun 1880: 216.

Rhysodes probius Lewis 1888 (error).

Clinidium (Rhyzodiastes) proprium (Broun) Grouvelle 1903.

Rhyzodiastes proprius (Broun) Bell and Bell 1978.

Type Material.— Not studied. According to the original description, the type locality is Parua, New Zealand, and there were three syntypes.

Description.— Length 6.0-8.0 mm. Median lobe of head elongate, its tip posterior to eye; eye small, about 0.5 of length of temporal lobe.

Pronotum moderately long, length/greatest width 1.45; anterior angles obtuse; lateral margin shallowly sinuate anterior to hind angles; base of pronotum very broad, scarcely narrower than greatest width; median groove fine, inconspicuous, slightly abbreviated at base; posterior median pit absent.

Elytron without basal pollinosity; sutural interval of most specimens with elongate, very finely pollinose depression just posterior to middle of elytron, in some of the smallest specimens this depression entirely absent; sutural stria represented only by scarp-like basal portion, remainder entirely absent; parasutural stria pollinose, impunctate, deep, entire, its middle 0.33 slightly dilated; intratubercular stria impressed, impunctate for most of its length, its apex obsolete, not separating apical and subapical tubercle; marginal stria absent except for short impressed apical portion which is ventrad to apical tubercle (Fig. 6); hind calcar of male with its dorsal side convex, its apex a small but sharp point.

This species is similar to the next, but is easily separated by the absence of the sutural stria.

Distribution.— Confined to the North Island of New Zealand. We have studied the following specimens: one female, Auckland, coll. E. S. Gourley, 1970 (DSIR); one female, Auckland, Orere Bush, rotten log, 10-1-1957 (DSIR); one female, Bayswater, 9-13, #381, T. Broun colln. (DSIR); one female, Clevedon, under log, 2-4-1956, coll. J. C. Watt (DSIR); one male, one female, Huia, Auckland, ex rotten kauuka stump, 4-2-66, coll. J. C. Watt (DSIR); two females, Little Barrier, 1913, 117, coll. H. Swale (BMNH); one male, one female, Pollok, Auckland, coll. P. & M. Johns, 7-1-1964 (LCC); one male, one female, Rawhiti, forest remnant, Bay of Islands, 4-1-1969, coll. K. A. J. Wise (AIM); one female, Spirits Bay, Waipuna Stream, 9-XI-67, coll. J. I. T. and J. McB., litter (DSIR); one male, Tiki-Tiki, 18-1-63 (NMNZ); one female, Waitakere, Waitemata Co., C. E. Clarke colln. (AIM); one female, Whangarei, 18-20-3-31, coll. E. S. Gourley (DSIR); one male, one female, Whangarei Heads, colln. C. E. Clarke (AIM); four males, Whangarei, Pukerui Hills, 21-11-44, coll. B. Given (DSIR); one male, Whangarei, Three Mile Bush, 24-11-44, coll. B. Given (DSIR); one male, Whangarei, Western Hills, 13-IX-1956, coll. R. A. Crowson (CAS); one male, two females, Whangarei, Whau Valley, 11-8-28, coll. Fairburn (DSIR).

Rhyzodiastes (Rhyzoarca) burnsi (Oke 1932) NEW COMBINATION

(Figs. 4, 7)

Rhysodes burnsi Oke 1932: 148-149.

Rhyzodiastes burnsi (Oke) Bell and Bell 1978.

Type Material.— HOLOTYPE, female, from AUSTRALIA: New South Wales, Mt. Wilson, in log with ants, coll. C. Oke. We have not studied the type, but have seen a good enlarged photograph of it, kindly sent by B. Moore.

Description.— (Based on the original description and the photograph.) Length 7 mm. (Chaetotaxy not studied.) Median lobe of head elongate, its tip opposite posterior margin of eye; eye larger than in *R. proprius*; temporal lobes more rounded posteriorly than in latter species; pronotum moderately long, length/greatest width about 1.4; front angles obtuse; lateral margin shallowly sinuate anterior to hind angles; base of pronotum very broad, only slightly narrower than greatest width; median groove distinctly impressed; posterior median pit distinct.

Sutural interval without pollinosity but second interval with small pollinose spot at apical fourth (Fig. 7); sutural stria and parasutural striae both distinctly impressed, coarsely punctate; intratubercular stria shallowly impressed, coarsely punctate; its apex obsolete, not separating subapical and apical tubercles; marginal stria absent; according to original description, metasternum is sulcate.

The well-developed sutural striae and the coarse punctures of the sutural and parasutural striae separate this species from *R. proprius*. Oke suggested that the enlarged anterior lateral pits of the pronotum are trichomes and that the species might be myrmecophilous. This has neither been confirmed nor disproven. If true of this species, it is probably true of the entire

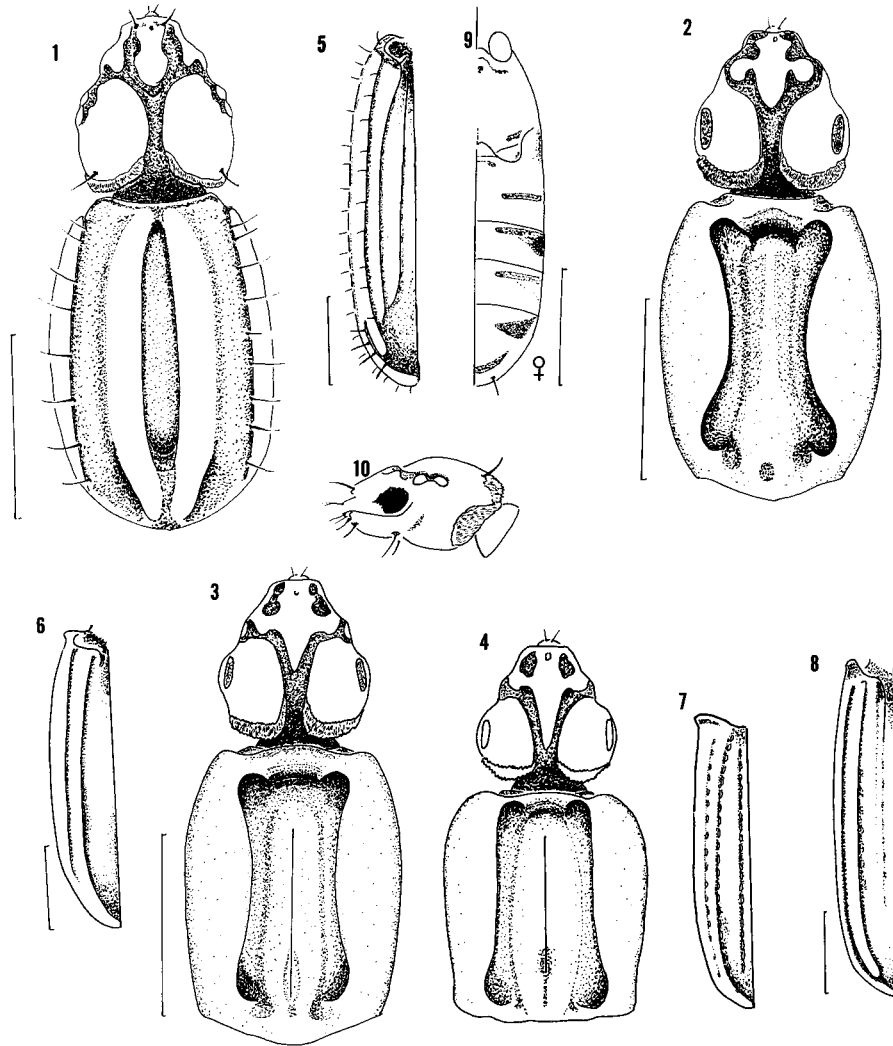


Plate 1. Figs. 1, 5, 9, 10. Genus *Rhyzodiastes*, new Subgenus *Rhyzotetrops* *R. (R.) janus* new species. Fig. 1, Head and pronotum, dorsal aspect; Fig. 5, Left elytron, dorsal aspect; Fig. 9, Metasternum and abdomen, left half; Fig. 10, Head, lateral aspect. Figs. 2-4, 6-8. Genus *Rhyzodiastes*, new Subgenus *Rhyzoarca*. Figs. 2-4, Head and pronotum, dorsal aspect; Fig. 2, *R. (R.) montrouzieri* (Chevrolat); Fig. 3, *R. (R.) proprius* (Broun) (drawn from photograph); Fig. 4, *R. (R.) burnsi* (Oke); Figs. 6-8, Left elytron, dorsal aspect; Fig. 6, *R. (R.) proprius* (Broun); Fig. 7, *R. (R.) burnsi* (Oke); Fig. 8, *R. (R.) montrouzieri* (Chevrolat).

subgenus.

SUBGENUS *TEMOANA* NEW SUBGENUS

Type species.— *Clinidium spissicorne* Fairmaire 1895.

Description.— Apical stylet of antenna present, though minute in some species; tufts of minor setae present on antennal Segments IV-X or V-X; clypeal setae present; compound eye narrow, crescentic; genae glabrous ventrad to eye; inner carinae of pronotum sloping gradually to paramedian groove; pollinosity on most species limited to border between paramedian groove and outer carina (more extensive in *R. pollinosus*); paramedian grooves straight or slightly curved; outer carina not greatly broadened at middle; elytron with intercalary stria absent.

This very large subgenus is most similar to *Rhyzostrix*, but lacks the enlarged eyes, the basal pollinosity of the pronotum and the genal pollinosity of the latter subgenus. In addition, all species of *Rhyzostrix* have coarsely punctate elytral striae. In *Temoana*, most species have the striae impunctate or nearly so, but *R. sulcicollis* is an exception, having striae punctures as coarse as those of *Rhyzostrix*.

Temoana ranges from the Caroline Islands, the Solomon Islands, and Australia westward to the Andaman Islands, eastern India, and Formosa.

Phylogeny.— We divide this large and complex subgenus into seven species groups as follows:

- I. *singularis* group - antennal tufts commence on Segment V; temporal setae present; orbital groove complete. Seven species, Australia, Solomon Islands, New Guinea, New Britain, Celebes, Formosa, Sumatra.
- II. *mishmicus* group - antennal tufts commence on Segment V; temporal setae absent; orbital groove reduced or absent. Three species, southeast Asia.
- III. *sulcicollis* group - antennal tufts commence on Segment V; marginal stria not impressed. Three species, Carolina and Molucca Islands.
- IV. *pollinosus* group - antennal tufts commence on Segment V; elytra extensively pollinose, with narrow raised carinae; three or more temporal setae. One species, Caroline Islands.
- V. *myopicus* group - antennal tufts begin on Segment IV; median groove of pronotum linear. Five species, Malay Peninsula, Borneo.
- VI. *gestroi* group - antennal tufts commence on Segment IV; median groove of pronotum moderately dilated. Three species, Sumatra, Andaman Islands.
- VII. *fairmairei* group - antennal tufts begin on Segment IV; median groove very strongly dilated. Three species, southeast Asia.

The interrelationships among these groups are not clear. The absence of an antennal tuft from Segment IV appears to us to be a plesiomorphic (primitive) character in the *singularis* and *sulcicollis* groups, since a low number of tufts (Segments VII-X) marks Subgenus *Rhyzotetrops*, which is the only Subgenus of *Rhyzodiastes* to retain the intercalary stria, and hence can be viewed as the most primitive *Rhyzodiastes*. In the related genus *Clinidium*, the least modified subgenera, *Arctoclinidium* and *Mexiclinidium* also have antennal tufts only on Segments VII-X, while in the most advanced Subgenus, *Clinidium s. str.*, most species have an increased number of tufts. It cannot be guaranteed, however, that the number of tufts has never decreased. In particular, the *mishmicus* group, without a tuft on Segment IV, shows close resemblances with the *myopicus* group which has such a tuft. The two groups are sympatric, and it is entirely possible that they are related, the tuft having secondarily been lost in the

former group. If this is true, then the *mishmicus*, *myopicus*, *gestroi*, and *fairmairei* groups might represent a single phyletic line, embracing all the species west of Wallace's Line. The *singularis* group is bound together mainly by characters which could be considered to be plesiomorphic, and perhaps it is not a true phyletic unit. *R. indigens*, which we provisionally place in the *singularis* group, is really very similar to *R. bonsae* of the *gestroi* group, and is perhaps an additional species which has secondarily lost the tuft from Segment IV. The monotypic *pollinosus* group is enigmatic. The pollinose surface and carinate intervals set it apart from all other *Temoana*. It appears superficially to be isolated, but it might be an offshoot of the *sulcicollis* group which has undergone extensive modification.

KEY TO SPECIES

1	Antennal tufts present on Segments V-X (absent from Segment IV)	2
1'	Antennal tufts present on Segments IV-X	15
2 (1)	Elytral intervals narrowly carinate; areas between carinae entirely pollinose; orbital groove with one to three setae (<i>pollinosus</i> group)	
	. . . . . <i>R. pollinosus</i> Bell and Bell, p. 14	
2'	Elytral intervals not narrowly carinate; pollinosity limited to narrow striae; orbital groove with one seta or without (in one species, with one additional temporal seta remote from orbital groove)	3
3 (2')	Marginal stria of elytron not impressed (<i>sulcicollis</i> group)	4
3'	Marginal stria impressed throughout its length	6
4 (3)	Sutural stria of elytron impressed for basal 0.66 of its length; parasutural stria with several setae	<i>R. raffrayi</i> (Grouvelle), p. 15
4'	Sutural stria not impressed, represented by row of coarse punctures or entirely absent; parasutural stria without setae	5
5 (4')	Sutural and marginal striae each represented by row of coarse punctures; marginal groove of pronotum present	<i>R. sulcicollis</i> (Grouvelle), p. 24
5'	Sutural, marginal striae absent; marginal groove of pronotum absent	<i>R. maritimus</i> Bell and Bell, p. 25
6 (3')	Orbital groove incomplete or absent; temporal seta absent (<i>mishmicus</i> group)	7
6'	Orbital groove complete; one or two temporal setae (<i>singularis</i> group)	9
7 (6)	Orbital groove present, abbreviated at middle of eye	<i>R. mishmicus</i> (Arrow), p. 32
7'	Orbital groove absent	8
8 (7')	Metasternum sulcate	<i>R. waterhousei</i> (Grouvelle), p. 33
8'	Metasternum not sulcate	<i>R. preorbitalis</i> new species, p. 34
9 (6')	Sutural stria absent or represented only by a few punctures	10
9'	Sutural stria impressed	11
10 (9)	Median groove of pronotum obsolete; parasutural stria setose	<i>R. singularis</i> (Heller), p. 27
10'	Median groove impressed; parasutural stria without setae	<i>R. guineensis</i> (Grouvelle), p. 26
11 (9')	Two temporal setae present; one in center of lobe, one on orbital groove	<i>R. bipunctatus</i> new species, p. 28

11'	One temporal seta in orbital groove	12
12 (11')	Temporal lobes convergent posteriorly	
	..... <i>R. convergens</i> new species, p. 31	
12'	Temporal lobes not convergent posteriorly	13
13 (12')	Outer carina of pronotum strongly narrowed anteriorly, pronotum without distinct front angles; outer antennal segments twice as wide as long, cylindrical	
	..... <i>R. indigena</i> new species, p. 31	
13'	Outer carina only slightly narrowed anteriorly, truncate at apex; pronotum with distinct front angles; outer segments sphaeroid, about 1.5 wider than long	14
14 (13')	Apex of pronotum slightly narrower than base; median groove dilated, as wide as anterior median pit; antennal Segments VIII-X with basal setae	
	..... <i>R. rimoganensis</i> (Miwa), p. 28	
14'	Apex of pronotum broader than base; median groove nearly linear, much narrower than anterior median pit; antenna without basal setae	
	..... <i>R. mirabilis</i> (Lea), p. 30	
15 (1')	Median groove linear between median pits (<i>myopicus</i> group)	16
15'	Median groove dilated between median pits	21
16 (15)	Parasutural stria straight to base; outer carina broad, truncate anteriorly	
	..... <i>R. myopicus</i> (Arrow), p. 37	
16'	Parasutural stria bent medially, crossing base of Interval II; outer carina narrow, not truncate anteriorly	17
17 (16')	Preapical tubercles not prominent, widely separated from one another; apical tubercle in lateral view not separated from preapical by deep notch	18
17'	Preapical tubercles prominent, tooth-like, separated from one another by width of sutural interval or less; apical tubercle in lateral view separated from preapical tubercle by deep notch	20
18 (17)	Pronotum without marginal groove; middle, hind tibiae each with two equal spurs, without curved apical process	
	..... <i>R. vadiceps</i> new species, p. 38	
18'	Pronotum with complete, pollinose marginal groove; middle, hind tibiae each with one spur, plus curved apical process laterad to spur	19
19 (18')	Temporal seta present; basal setae of antenna absent; ventral surfaces of femora of male tuberculate	
	..... <i>R. patruus</i> new species, p. 39	
19'	Temporal seta absent; basal setae of antenna present; ventral surface of femora of male not tuberculate	
	..... <i>R. frater</i> (Grouvelle), p. 38	
20 (17')	Apical tubercles contiguous; head as broad as long	
	..... <i>R. bifossulatus</i> (Grouvelle), p. 40	
20'	Apical tubercles widely separated from one another; head 1.5 longer than broad	
	..... <i>R. denticauda</i> new species, p. 41	
21 (15')	Median groove only moderately dilated, narrower than anterior median pit (<i>gestroi</i> group)	22
21'	Median groove very broadly dilated (<i>fairmairei</i> group)	24
22 (21)	Outer carina of pronotum broad, flat, sloped laterally; temporal lobes strongly convergent posteriorly	
	..... <i>R. gestroi</i> (Grouvelle), p. 42	
22'	Outer carina very narrow, strongly cariniform; temporal lobes not	

- convergent posteriorly 23
- 23 (22') Temporal lobes divergent posteriorly; cauda of elytra absent
 *R. propinquus* new species, p. 43
- 23' Temporal lobes evenly rounded medially; cauda of elytra distinct
 *R. bonsae* new species, p. 43
- 24 (21') Median groove of pronotum dilated at middle, resembling keyhole;
 temporal seta absent *R. fairmairei* (Grouvelle), p. 44
- 24' Median groove of pronotum long-oval; temporal seta present 25
- 25 (24') Metasternum sulcate; spurs of middle and hind tibiae equal; sutural,
 parasutural striae, Interval IV, apical tubercle setose
 *R. spissicornis* (Fairmaire), p. 45
- 25' Metasternum not sulcate; tibial spurs very unequal; elytral setae limited to
 parasutural stria or absent 26
- 26 (25') Parasutural stria setose; deep portion of median groove six times longer
 than wide *R. fossatus* new species, p. 47
- 26' Parasutural stria not setose; deep portion of median groove five times
 longer than wide *R. alveus* new species, p. 46

THE POLLINOSUS GROUP

The single species in this group differs from all other species of *Temoana* in having the elytron almost entirely pollinose except for three narrow glabrous carinae, and in having in most specimens more than one seta in the orbital groove.

Rhyzodiastes (Temoana) pollinosus Bell and Bell 1981 NEW COMBINATION (Figs. 11, 19)

Rhyzodiastes pollinosus Bell and Bell 1981: 61-63.

Type Material.— HOLOTYPE male (CAROLINE ISLANDS), labelled: "Yap Group; Yap Island, Jul-Au 50, R. J. Goss" (BPBM). PARATYPES one male, same data as holotype; two females, one male, Yap Group, Gagil District; one male, Yap Group, Map I; two males, one female (on same point mount), Yap Group, Ruming I. All paratypes labelled: "July-Au 50, R. J. Goss" (BPBM).

Description.— Length 5.1-7.8 mm. Tufts of minor setae present on Segments V-X; median lobe of head short, broad, its tip anterior to eye; medial margin of temporal lobe curved; orbital groove very broad, pollinose, one to three temporal setae present in orbital groove.

Pronotum elongate, oval; length/greatest width 1.45; widest at basal 0.33; sides oblique anteriorly, evenly narrowed to apex, distinctly narrowed to base; hind angles very obtuse; base strongly oblique, forming obtuse angle at midline; pronotal setae absent; median groove relatively broad, closed anteriorly, open posteriorly; pollinose; paramedian groove very broad, sloped gradually to inner carina medially; outer carina curved, narrow, of even width; marginal groove not visible in dorsal view, not impressed, but represented by complete strip of pollinosity.

Elytron without distinct striae except for traces of sutural stria; each elytron with three narrow raised glabrous carinae, separated by broad pollinose areas (evidently representing dilated striae); elytron with many setae, about five medial to inner carinae; 10-12 between inner and second carinae; 12-14 between second and third carinae, and 15-20 between third carina and margin (Fig. 19); metasternum without median sulcus; Sterna III-V each with pair of broad pollinose transverse grooves; lateral pit in Sternum IV, slight in male, greatly enlarged in female; male with front and hind trochanters pointed; male anterior femur without ventral tooth; calcars of male pointed at apex, with dorsal margin sinuate or notched.

The narrow glabrous carinae on an otherwise pollinose elytron separate this species from all other members of the subgenus. The elytral carinae suggest *Rhyzodiastes s. str.* of South America, but the gradual lateral slope of the inner carina contrasts with the sharply defined lateral margin of the latter subgenus.

Distribution.— Caroline Islands. Recorded from Yap, Palau, and Ulithi. Detailed records are in Bell and Bell, 1981.

THE *SULCICOLLIS* GROUP

This group is characterized by the reduction of the marginal stria of the elytron, which is represented by a row of punctures or is entirely absent. The tufts of minor setae occur on antennal Segments V-X. The group is known from the Moluccas and the Caroline Islands. *R. sulcicollis* and *R. maritimus* appear closely related. Shared characters include: the outer carina of the pronotum is broad; the median groove is narrow and is abbreviated both anteriorly and posteriorly; the sutural stria is not impressed; the parasutural stria lacks setae. *R. raffrayi* is much more distantly related; as the outer carina of the pronotum is narrow and curved, the median groove is broader and is not abbreviated; the sutural stria is impressed for 0.67 of its length, and the parasutural stria has setae. All these characters are probably plesiomorphic, and *R. raffrayi* may be little modified from the common ancestor of the group. The two remaining species may have evolved from beetles similar to *R. raffrayi* which rafted to the Caroline Islands in the Equatorial Countercurrent. *R. maritimus* appears to have derived from populations from the central Carolines, which subsequently became *R. sulcicollis*, rather than representing a separate invasion from the Moluccas. In *R. pollinosus*, the form of the pronotum strongly suggests that of *R. raffrayi*, suggesting that the former species might be a highly modified offshoot of the latter species, and representing an independent invasion of the western Carolines.

Rhyzodiastes (Temoana) raffrayi Grouvelle 1895a NEW COMBINATION (Fig. 12)

Rhyzodiastes raffrayi Grouvelle 1895a: 158.

Clinidium raffrayi (Grouvelle) Grouvelle 1903.

Rhyzodiastes raffrayi (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "MOLUQUES: Gilolo, Raffray & Maindron, 78" (MNHN). This island is now known as Halmahera.

Description.— Length 5.3 mm. Antennal stylet short, pointed; tufts of minor setae present on Segments V-X; basal setae of antennal segments absent; Segment I with distinct apical pollinose band; Segments II-X without pollinosity; head longer than wide; median lobe pointed, its tip opposite anterior third of eye; postclypeal groove connected to frontal groove; medial margin of temporal lobe rather evenly curved; temporal lobes well separated from one another, coming closest together opposite posterior margin of eye; orbital groove entirely absent; one temporal seta present.

Pronotum only moderately elongate; length/greatest width 1.45; sides strongly curved, widest near middle; narrowed at base, apex; apex truncate; base rounded; hind angles very obtuse; median groove deep, moderately narrow, anterior median pit more dilated than posterior median pit; median groove deeply impressed to base; paramedian groove rather broad, its base dilated into large basal impression; basal impression closed posteriorly by raised glabrous carina which is continuous with outer carina; latter forms narrow, raised margin of uniform width, less than 0.2 of distance from paramedian groove to midline at middle of pronotal length; pronotal setae absent; marginal groove shallow, complete, visible only in lateral view.

Elytra elongate, slightly narrowed anteriorly; sutural stria fine, shallow, punctate; its apical third effaced; parasutural stria deep, complete, impunctate, its base bent medially to medial angle of scarp; intratubercular stria deep, impunctate, complete; marginal stria not impressed, represented by row of punctures, effaced in basal and apical thirds; apical portion of marginal stria impressed below apical tubercle; subapical and apical tubercles elevated; latter contacting one another at midline; parasutural stria with three setae in apical half; intratubercular stria with one or two setae near apex; apex of marginal stria with several setae; hind trochanter of male pointed; hind calcar of male bluntly pointed.

The above description is incomplete because the holotype is damaged, with the front legs missing. The female is unknown. The form of the pronotum is distinctive in this species, as is the combination of a reduced marginal stria with an impressed sutural stria which is 0.66

Plate 2. Figs. 11–21. Genus *Rhyzodiastes*, new Subgenus *Temoana*. Figs. 11–18. Head and pronotum, dorsal aspect; Fig. 11, *R. (T.) pollinosus* Bell and Bell; Fig. 12, *R. (T.) raffrayi* (Grouvelle); Fig. 13, *R. (T.) sulcicollis* (Grouvelle); Fig. 14, *R. (T.) maritimus* Bell and Bell; Fig. 15, *R. (T.) guineensis* (Grouvelle); Fig. 16, *R. (T.) singularis* (Heller); Fig. 17, *R. (T.) bipunctatus* new species; Fig. 18, *R. (T.) rimoganensis* (Miwa); Fig. 19, Left elytron, dorsal aspect, *R. (T.) pollinosus* Bell and Bell. Fig. 20, Hind tibia, male *R. (T.) guineensis* (Grouvelle). Fig. 21, Sternum VI, *R. (T.) bipunctatus* new species.

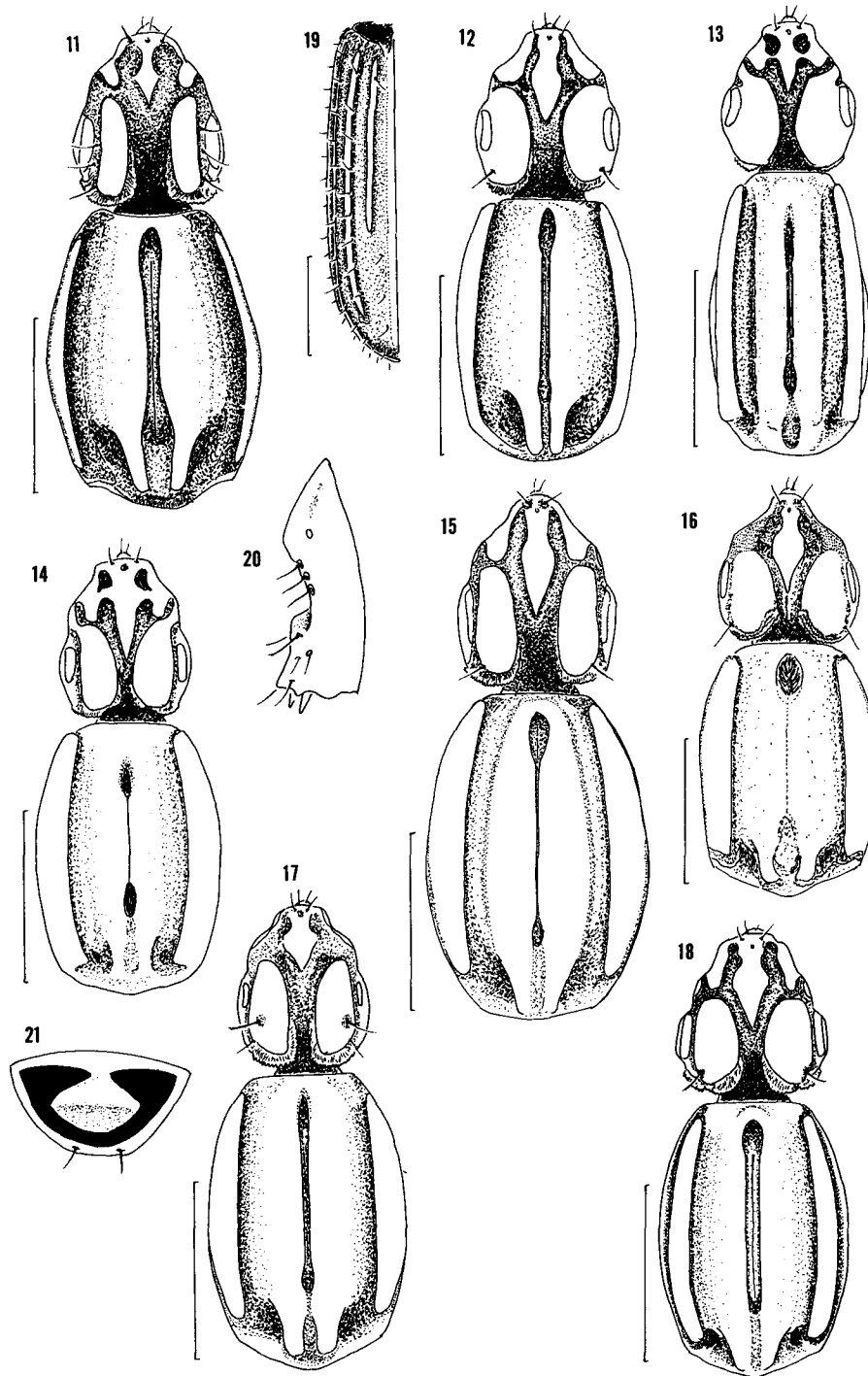


Plate 3. Figs. 22–33. Genus *Rhyzodiastes*, new Subgenus *Temoana*. Figs. 22–29, Head and pronotum, dorsal aspect; Fig. 22, *R. (T.) mirabilis* (Lea); Fig. 23, *R. (T.) indigenus* new species; Fig. 24, *R. (T.) convergens* new species; Fig. 25, *R. (T.) waterhousei* (Grouvelle); Fig. 26, *R. (T.) mishmicus* (Arrow); Fig. 27, *R. (T.) myopicus* (Arrow); Fig. 28, *R. (T.) vadiceps* new species; Fig. 29, *R. (T.) preorbitalis* new species; Fig. 30, Sternum VI, *R. (T.) convergens* new species; Figs. 31–33, Sterna IV–VI, right half; Fig. 31, *R. (T.) preorbitalis* new species, female; Fig. 32, *R. (T.) myopicus* (Arrow), female; Fig. 33, *R. (T.) vadiceps* new species, male.

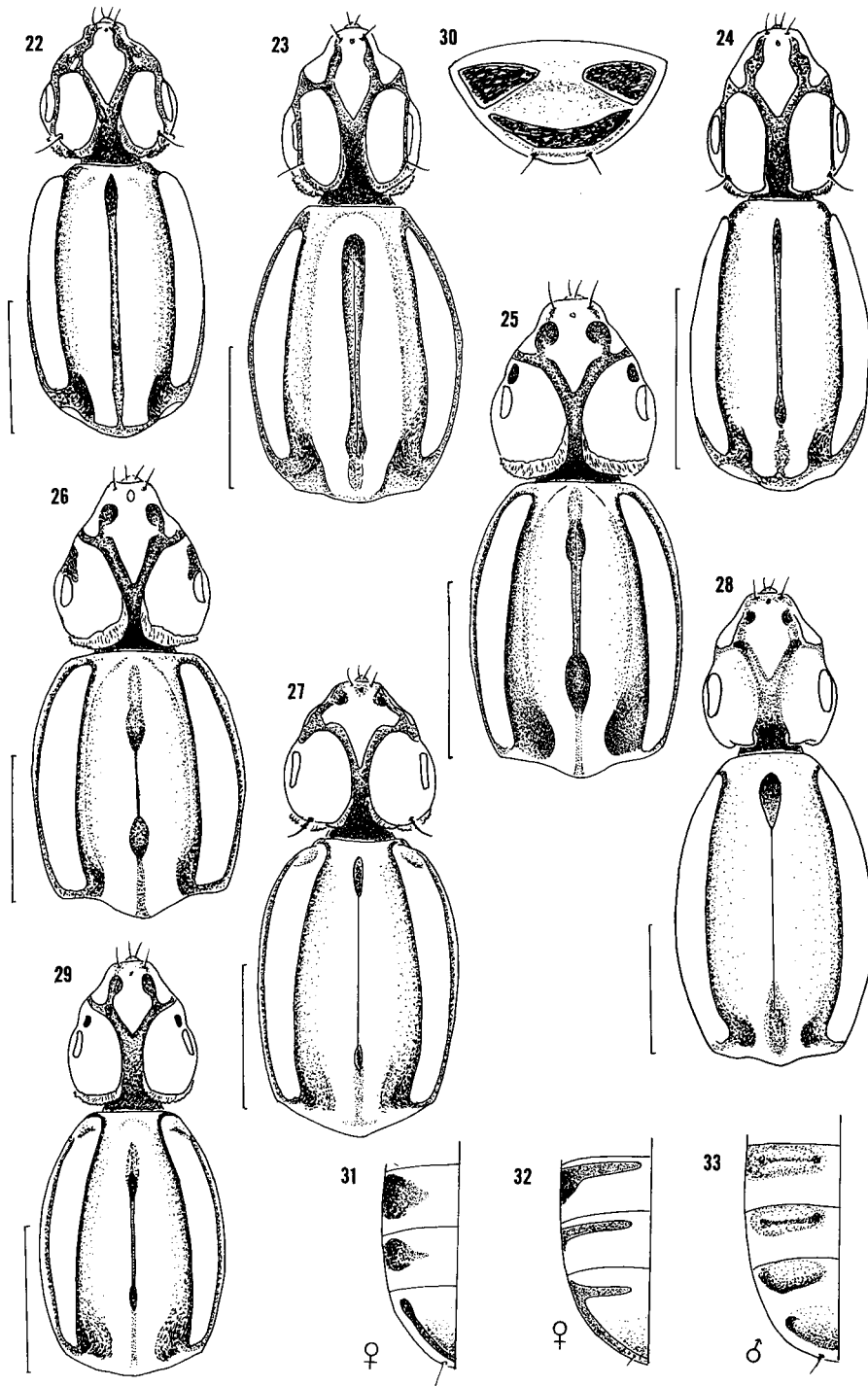


Plate 4. Figs. 34–45. Genus *Rhyzodiastes*, new Subgenus *Temoana*. Figs. 34–39, Head and pronotum, dorsal aspect; Fig. 34, *R. (T.) frater* (Grouvelle); Fig. 35, *R. (T.) patruus* new species; Fig. 36, *R. (T.) bifossulatus* (Grouvelle); Fig. 37, *R. (T.) denticauda* new species; Fig. 38, *R. (T.) gestroi* (Grouvelle); Fig. 39, *R. (T.) propinquus* new species; Figs. 40–41, Hind tibia, male; Fig. 40, *R. (T.) frater* (Grouvelle); Fig. 41, *R. (T.) patruus* new species; Figs. 42–43, Left elytron, apex, dorsal aspect; Fig. 42, *R. (T.) frater* (Grouvelle); Fig. 43, *R. (T.) patruus* new species; Figs. 44–45, Elytra, posterior aspect; Fig. 44, *R. (T.) bifossulatus* (Grouvelle); Fig. 45, *R. (T.) denticauda* new species.

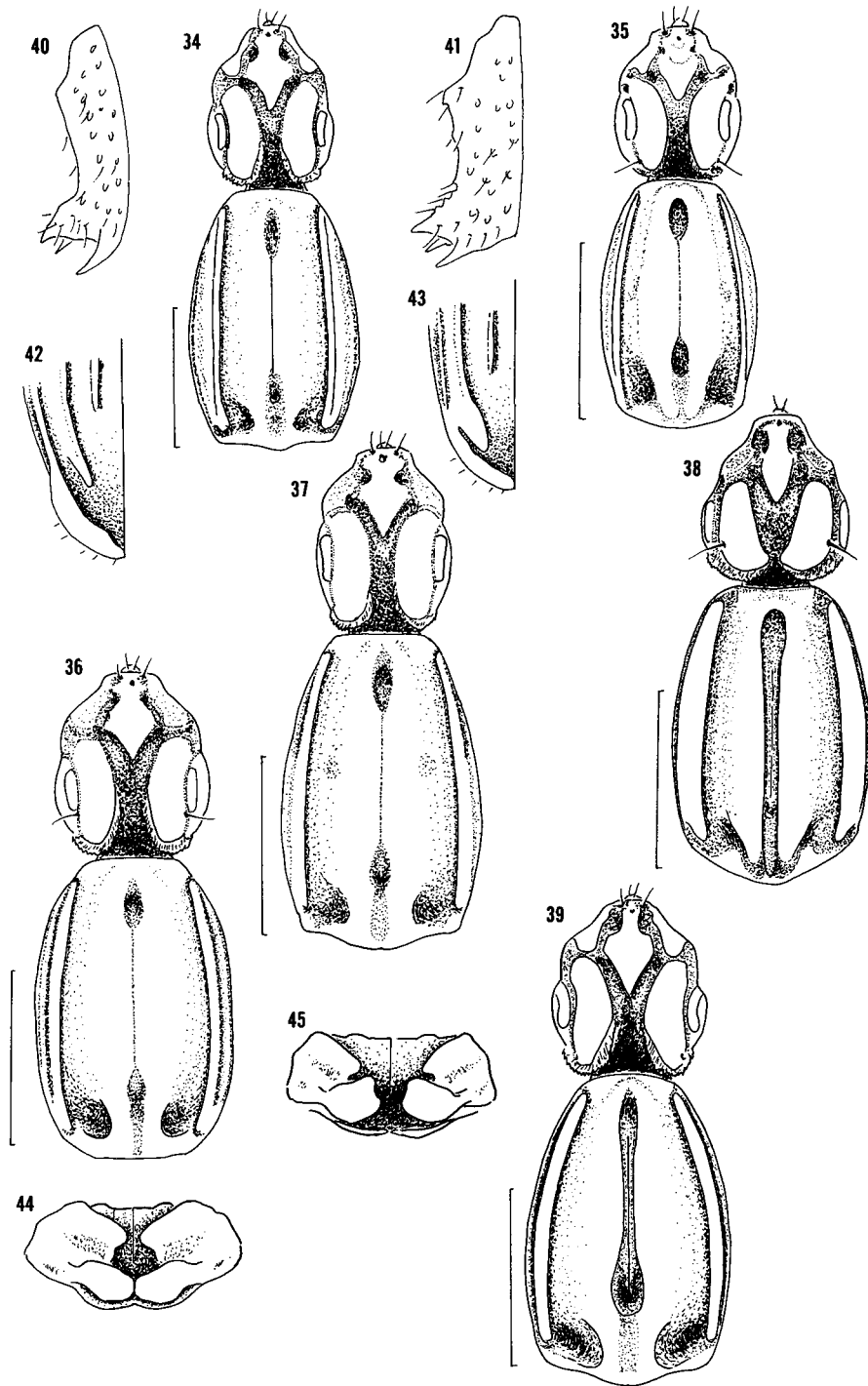
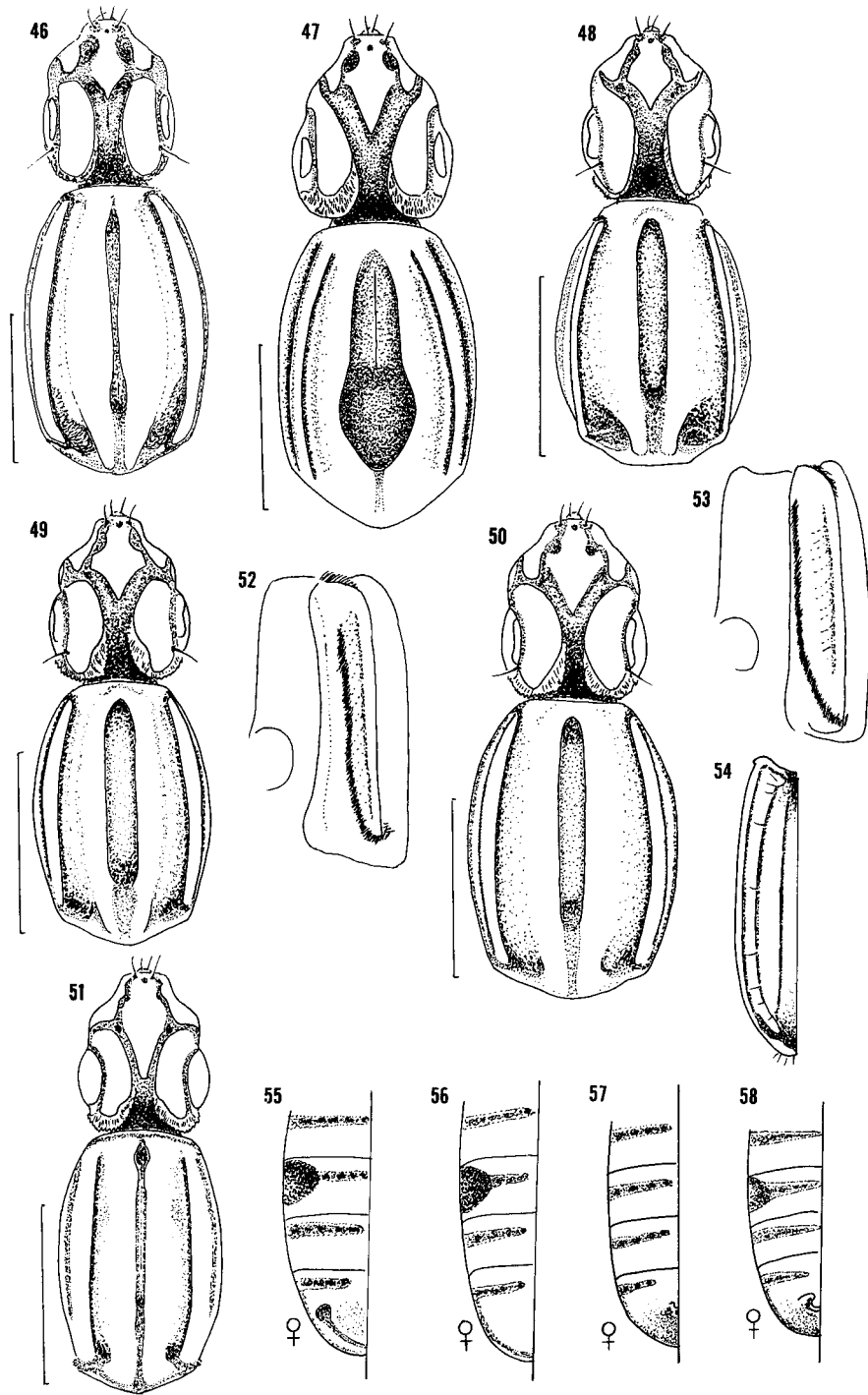


Plate 5. Figs. 46–50, 52–54. Genus *Rhyzodiastes*, new Subgenus *Temoana*. Figs. 46–51, Head and pronotum, dorsal aspect; Fig. 46, *R. (T.) bonsae* new species; Fig. 47, *R. (T.) fairmairei* (Grouvelle); Fig. 48, *R. (T.) spissicornis* (Fairmaire); Fig. 49, *R. (T.) alveus* new species; Fig. 50, *R. (T.) fossatus* new species; Figs. 52–53, Prothorax, left lateral aspect; Fig. 52, *R. (T.) alveus* new species; Fig. 53, *R. (T.) fossatus* new species; Fig. 54, Left elytron, dorsal aspect, *R. (T.) fossatus* new species. Figs. 51, 55–58. Genus *Rhyzodiastes*, new Subgenus *Rhyzostrix*. Fig. 51, *R. (R.) davidsoni* new species; Figs. 55–58, Sterna III–VI, right half, female; Fig. 55, *R. (R.) davidsoni* new species; Fig. 56, *R. (R.) nitidus* new species; Fig. 57, *R. (R.) menieri* new species; Fig. 58, *R. (R.) maderiensis* (Chevrolat).



complete.

Rhyzodiastes (Temoana) sulcicollis (Grouvelle 1903) NEW COMBINATION
(Fig. 13)

Clinidium sulcicolle Grouvelle 1903: 137-138.

Rhyzodiastes sulcicollis (Grouvelle) Bell and Bell 1981.

Type Material.— According to Grouvelle (1903), in the Oberthür collection. We did not find it in our visits to the MNHN, but it may be in recently discovered Oberthür material which we have not yet studied. Grouvelle gave the locality as "Isles Carolines: Hogolu" an obsolete name for Truk.

Description (abridged from Bell and Bell 1981).— Length 4.0-6.5 mm. Tufts of minor setae on Segments V-X; basal setae present on Segments V-X; Segment I with apical pollinose band; Segment II with trace of one; remaining segments without pollinosity; head slightly longer than wide; median lobe short, its tip acute, entirely anterior to eyes; median lobe narrowly connected laterally to antennal lobe, separating frontal groove from post-clypeal groove; latter forming isolated oval impression; temporal lobes rather narrowly separated at middle, forming obtuse median angles just posterior to posterior margin of eye; orbital groove entirely absent; small pollinose preorbital pit present; temporal setae absent; mentum with four prelabial and two labial setae.

Pronotum elongate, narrow, length/greatest width 1.65; widest near middle; lateral margin feebly curved, narrowed at apex, base; apex truncate, base rounded; hind angles very obtuse; pronotal setae absent; median groove very narrow, linear, its margins finely pollinose; groove closed at both ends, both median pits distinctly wider than groove, both removed from ends of groove, groove represented by shallow impressions anterior to anterior median pit and posterior to posterior median pit; posterior median pit equidistant from middle of pronotum and pronotal base (shallow median depression posterior to it looking like a second pit); paramedian groove narrow, posterior end with small, deep, punctiform basal impression; pollinosity of paramedian groove restricted to very narrow strip along lateral margin; inner carina with well-defined lateral margin, nearly straight, wider than paramedian groove; outer carina 0.66 as broad as inner carina at middle, curved, slightly tapered anteriorly; marginal groove entire, finely pilose, shallow except at posterior end.

Elytron slightly narrowed anteriorly; sutural stria not impressed, represented by row of very coarse punctures; parasutural and intratubercular striae deeply impressed; lateral margin of each higher than medial margin, suggesting a carina; parasutural and intratubercular striae uniting posteriorly; marginal striae not impressed except near apex; represented by row of very coarse punctures in middle of elytron, entirely effaced anteriorly and posteriorly; apex of marginal stria with four to six setae; elytron otherwise without setae; abdominal Sterna III-V each with pair of pollinose transverse sulci which are narrowly separated in midline, each with conspicuous puncture at medial end; a similar pair of pits but no transverse sulci on Sternum II; lateral ends of sulci of Sterna IV and V forming enlarged pits in both sexes, larger in female than in male; Sternum VI with submarginal groove and two pairs of anteriolateral pits; male without ventral tooth on anterior femur; trochanters of both sexes rounded; calcars small, pointed. The male genitalia of this species have been illustrated by Bell and Bell (1978).

The coarse punctures of the sutural stria, which is not impressed, separate this species from all other members of the subgenus.

Bell and Bell (1981) discussed a form from the Islands of Param, Tol, and Dublon, which might be a separate species. In this form, the female is 4.0-5.0 mm. long, and lacks a tubercle of the sixth abdominal sternum. Females of the nominate form are 5.0-6.5 mm. long, and have a tubercle on the sixth sternum. This larger form coexists with the small one on the three islands named above, and is found in many additional islands. There is a male specimen, from Tol, which might belong to the dwarf form. It is only 4.0 mm. long, and has a pollinose spot near the center of the sixth sternum. All other males are larger, and have at least a trace of a tubercle at the middle of the sixth sternum. More collections are necessary to establish that the small male is correctly associated with the small female, and that the small form is a distinct species.

Distribution.— Central Carolines, on the high islands of Truk (Dublon, Moen, Tol, Param), also on the low island of Pis, in the barrier reef of Truk, and on the atolls of Satawal, Nama, and Woleai (Utagal Island). Bell and Bell (1981) consider it likely that the records from barrier islands and atolls result from accidental introduction by man. Bell and Bell (1981) give detailed locality records.

Rhizodiastes (Temoana) maritimus Bell and Bell 1981 NEW COMBINATION
(Fig. 14)

Rhizodiastes maritimus Bell and Bell 1981: 66-67.

Type Material.— HOLOTYPE female, labelled: KUSIAE, Mutunlik, 22 m. I-31-53, J.F.G. Clarke (BPBM). PARATYPES one female, same locality and collector as holotype; one female, KUSIAE: Mt. Matanta, 180 m., II-12-53, J.F.G. Clarke, "decaying *Hibiscus tiliaceus*" (BPBM).

Description (abridged from Bell and Bell 1981).— Length 4.3-6.2 mm. Tufts of minor setae present on Segments V-X; basal setae present on Antennal Segments V-X; Segment I with apical pollinose band which is interrupted ventrally; Segment II with trace of pollinosity dorsally; pollinosity otherwise absent from antenna; head distinctly longer than wide; median lobe rather long, ending in acute point opposite middle of eye; median lobe connected laterally to antennal lobe, separating postclypeal groove from frontal groove; postclypeal groove forming oval depression; temporal lobes converging posteriorly, closest together posterior to eyes, where they form rounded medial angles; orbital groove fine, linear, complete, extending to occiput; temporal seta absent; eye very narrow, crescentic, smaller than in related species; mentum with four prelabial and two postlabial setae.

Pronotum elongate, oval; length/greatest width 1.48, widest near middle, lateral margins distinctly curved, base slightly wider than apex; apex truncate, base rounded; hind angles very obtuse; pronotal setae absent; median groove very fine, linear, abbreviated both anteriorly and posteriorly, ending anteriorly at anterior median pit which is separated from anterior margin by more than its own length; median groove ending posteriorly at posterior median pit, which is closer to middle of pronotum than to base of pronotum; paramedian groove linear, curved, pollinose, ending posteriorly at basal impression, which is closed posteriorly; inner carina broad, flat, scarcely cariniform; outer carina about 0.5 as broad as inner one, of equal width throughout, curved; marginal groove entirely absent.

Elytron slightly narrowed anteriorly; sutural stria entirely absent; parasutural and intratubercular striae complete, impressed, finely punctate, pollinose; lateral margin of each stria much higher than medial margin, suggesting a carina; parasutural and intratubercular striae uniting posteriorly; marginal stria entirely absent except for a short impressed part near apex, which contains four to six setae; elytral setae otherwise absent; abdominal Sterna III-V each with transverse pollinose band which is narrowly interrupted at midline; Sternum II with pair of pollinose spots; Sternum VI with pair of transverse pollinose bands anteriorly, and an entire submarginal pollinose band posteriorly; female with lateral pit in Sternum IV (male unknown); midline of abdomen slightly carinate; femora entirely devoid of pollinosity and setae; trochanters and coxae glabrous.

This species is similar to *R. sulcicollis*, but is easily separated by the presence of the orbital groove, and the absence of the marginal groove of the pronotum and of the sutural and marginal striae.

Distribution.— Known only from Kusiae, in the eastern Caroline Islands.

THE SINGULARIS GROUP

In this group, the tufts commence on Antennal Segment V, the orbital groove and marginal striae are complete, and temporal setae are present. Six species are known, from Australia and the Solomon Islands, west to Celebes, Formosa, and Sumatra. In all species in which the male is known, the anterior and posterior trochanters are pointed in the male.

Phylogeny.— *R. guineensis* of New Guinea and *R. singularis* of Celebes appear to form a line apart from the other species. Among the characters shared by the two species are an obsolete median groove, an obsolete sutural stria and a last visible abdominal sternum with a narrow sub-marginal groove which is well separated from the transverse grooves. The male of *R. guineensis* differs from other known males in the form of the middle and hind tibiae, and in the presence of a tooth on the ventral margin of the anterior femur. The male of *R. singularis* is unknown, so it is uncertain whether or not these characters occurred in the common ancestor of it and *R. guineensis*.

In the remaining five species, the median prothoracic groove is deeply impressed, as is the sutural stria. In the male, the middle and hind tibiae are not thickened above the calcars, and the anterior femur of the male is not toothed ventrally but is tuberculate in most species. The submarginal groove of Sternum VI is expanded and joined to the transverse groove, nearly

completely enclosing a diamond-shaped central glabrous area.

R. indigenus of Sumatra is a puzzling species. On one hand, it resembles *R. bonsae* of the *gestroi* group, also from Sumatra. It might be a relative of the latter species which has secondarily lost the tuft of minor setae on Segment IV. On the other hand, it is close to *R. mirabilis* of Australia (*singularis* group) except for the shape of the pronotum.

The four remaining species can be grouped in two pairs: *R. bipunctatus* of Guadalcanal and *R. rimoganensis* of Taiwan have many setae in the parasutural stria, and well developed basal setae on some of the outer antennal segments, and have at least some of the transverse sulci of the abdomen continuous across the midline; *R. mirabilis* of Australia and *R. convergens* of New Britain, have the parasutural stria with at most one seta, and lack basal setae on the antennal segments, while the transverse grooves are broadly separated at the midline.

Rhizodiastes (Temoana) guineensis (Grouvelle 1903) NEW COMBINATION
(Figs. 15, 20)

Clinidium guineense Grouvelle 1903: 138-139.

Rhizodiastes guineensis (Grouvelle) Bell and Bell 1978

Type Material.—LECTOTYPE (here designated) male, labelled: "Nuova Guinea, Fly River, L. M. D'Albertis, 1876-77" (GEN). PARALECTOTYPES 11 males, 11 females, same data as lectotype (GEN). In the original description, mention is also made of a specimen collected at Sattelberg by Biró, located in the Budapest Museum. We have not studied this specimen and cannot testify it is identical to the series from the Fly River. A male specimen in the BMNH is labelled "co-type, New Guinea 1901.267, N.J. Gella or Golla". This specimen is not listed in the original description and is probably incorrectly labelled as a co-type.

Description.—Length 6.3-8.0 mm. Antennal stylet small, acute, tufts of minor setae present on Segments V-X; Antennal Segments IX and X with basal setae; Segment I pollinose dorsally; Segment II with broken pollinose ring; Segment III with traces of pollinosity; head almost twice as long as wide; median lobe rhomboid, its apex acute, opposite middle of eye; median lobe separated from antennal lobe; latter shining, glabrous; temporal lobe 2.5 longer than wide; frontal space unusually long, wide; medial margins nearly straight; temporal lobe with rather broad fringe of pilosity on posterior margin and posterior 0.5 of medial margin; temporal lobes actually somewhat convergent posteriorly, but this is inconspicuous because it is concealed by the fringe; frontal grooves deep; postantennal grooves deep, entire, narrow; orbital groove deep, narrow, nearly straight, margin with postorbital pilosity shortly behind eye; temporal lobes separated by more than width of one of them; temporal lobe flat, shining, impunctate; eye narrow, crescentic, about twice as long as wide, 0.66 of length of temporal lobe; one temporal seta located in orbital groove just posterior to eye; genae glabrous.

Pronotum moderately long, length/greatest width 1.46; widest slightly behind middle, sides curved, base narrowed, apex more strongly narrowed; median groove very fine, linear between the pits; anterior median pit enlarged, tear-drop shaped, apical; posterior median pit at basal 0.25 of length, median groove posterior to it widened, shallow; median groove entirely glabrous; inner carinae together forming convex, glabrous surface, sloping laterally into paramedian groove; latter distinct, its floor glabrous, its lateral boundary (medial scarp of outer carina) pollinose; basal impression small, oblique, closed posteriorly by flat glabrous elevation; outer carina narrowed anteriorly, broadened posteriorly, its base rounded, apex very narrowly truncate; pollinosity of its medial margin attaining hind angle, curving into marginal groove; marginal groove complete, linear, not visible in dorsal view; pronotal setae absent, sub-marginal groove absent; propleuron iridescent; anterior part of notopleural suture pollinose; sternopleural groove absent; pleural groove represented by reduced pit.

Elytra rather narrow, scutellar pits very large, surrounded by pollinosity which meets at midline anterior to pits, forming triangle, tapering posteriorly to point at base of remnant of sutural stria, connected laterally to transverse strip which reaches base of parasutural stria; sutural stria reduced to short, medially-directed scarp in basal 0.2 of length; first and second intervals thus scarcely distinct; in some specimens a line of fine punctures represents more posterior part of sutural stria in middle 0.33 of elytron; parasutural stria straight, complete, forming pollinose, medially-directed scarp; Interval III nearly flat, facing dorsolaterally; basal pollinosity of elytron broadly interrupted opposite base of Interval III; apex of Interval III forming subapical tubercle which is not at all swollen; intratubercular stria linear, pollinose, impressed, its base disappearing into humeral pollinose area of elytron; apex of intratubercular stria merging with broad pollinose band across anterior walls of apical tubercles; marginal stria impressed, linear, pollinose, complete; apical tubercle impunctate, slightly swollen; elytron entirely without setae; metasternum not sulcate; transverse sulci of abdominal sternum narrowly separated at midline; female with lateral pits in Sternum IV; tibial spurs of middle and hind legs slightly unequal; male with trochanters I, III pointed; anterior femur of male with ventral tooth; calcar with distinct shoulder tooth, bounded above by rounded emargination (Fig. 20); tibia above emargination greatly thickened.

The greatly reduced sutural stria separates this species from all others excepting *R. singularis*. From the latter species it differs in having the subapical tubercle narrow, in lacking elytral setae, and in having the median groove of the pronotum impressed, though narrow.

Distribution.— New Guinea. In addition to the type material, we have seen one female specimen, labelled: "NEW GUINEA, Orio, 145', Purari River, Oct. 7, 1967" (MCZ) and one female, labelled: "Humboldt B., N. Guinea, Doherty" (MNHN). This locality was later called Hollandia.

Rhyzodiastes (Temoana) singularis (Heller 1898) NEW COMBINATION
(Fig. 16)

Clinidium singulare Heller 1898: 3.

Rhyzodiastes singularis (Heller) Bell and Bell 1978.

Type Material.— HOLOTYPE female, labelled: "S. CELEBES, Lompa-Battau, 3000', März, 1896, H. Fruhstorfer, ex museo W. Rothschild, 1899" (MNHN).

Description.— Length 7.0 mm. Antennal stylet small, acute; antennal segments entirely without basal setae; all antennal segments with pollinose rings (these broken on Segments IX, X), tufts of minor setae on V-X; head only slightly longer than wide, median lobe hastate, rather short, its apex acute, opposite middle of eye; antennal lobe entirely pollinose; temporal lobe 1.5 longer than wide; frontal space broad, its anterior 0.5 glabrous except for linear median strip; frontal grooves deep but glabrous; medial margins of temporal lobes broadly curved, closest together opposite middle of eyes; temporal lobe with fringe of pilosity on posterior margin; frontal grooves deep, glabrous; orbital groove complete though very narrow opposite middle of eye; temporal lobe convex, shining, impunctate; eye small, crescentic, about 0.5 length of temporal lobe, its length three times its width; one temporal seta present, in orbital groove midway between hind margin of eye and occipital angle; genae glabrous.

Pronotum moderately long, length/greatest width 1.44; widest behind middle, sides curved, base and apex both only slightly narrowed; median groove obsolete, scarcely visible; anterior median pit large, tear-drop shaped, apical; posterior median pit large, occupying basal 0.15 of length, constricted at 0.5 of its length, open posteriorly; inner carinae fused to form broad convex glabrous surface, sloping laterally into paramedian groove; bases of inner carinae form lobes on either side of posterior median pit; margins of lobes fringed with pollinosity; basal impressions oblique, punctiform, pollinose, bounded posteriorly by flat glabrous ridges; paramedian groove bounded laterally by steep, pollinose, slightly undulated scarp; outer carina only slightly narrowed anteriorly, medial margin nearly straight, lateral one feebly curved; pollinosity of its medial margin attaining hind angle, curved into marginal groove; marginal groove complete, linear, scarcely visible in dorsal view; submarginal groove absent; pronotal setae absent; pollinose pit present at anterior end of notopleural suture; sternopleural groove absent; pleural groove oblique, narrow.

Elytron moderately narrow; pilose area occupying lateral part of base of sutural interval, nearly concealing scutellar pits; sutural stria almost absent, in basal 0.2 represented by medially-directed scarp, from there to middle of length barely traceable as a shallow impression; in posterior 0.5 of elytron entirely invisible; first and second intervals thus not distinct; parasutural stria straight, complete, forming pollinose, medially-directed scarp; basal transverse pollinosity of elytron entire, not interrupted opposite base of Interval III, Interval III convex, its apex forms strongly swollen subapical tubercle, medial margin of latter (apex of parasutural stria) abruptly sinuate; intratubercular stria impressed, linear, entire, its apex merging with broad pollinose band across anterior wall of apical tubercle; Interval IV continuous with apical tubercle, latter not swollen; marginal stria complete, linear, impressed, pollinose; parasutural stria with at least three or four setae near base perhaps with complete row of very small setae (only basal punctures visible in holotype, but it appears that setae may have broken off); intratubercular stria with one big basal seta; apical tubercle with several small setae; marginal stria with several setae in apical portion; metasternum not sulcate; transverse sulci of abdominal Sterna III-VI widely separated medially; female with rather small lateral pit in Sternum IV; Sternum VI with basal transverse sulci broadly separated from submarginal groove; middle of Sternum VI evenly convex.

This species is separated from all other except *R. guineensis* by the great reduction of the sutural stria. It differs from the latter in having well-developed elytral setae, in having the medial margin of the subapical tubercle strongly swollen, and in having the median groove of the pronotum almost absent.

Rhyzodiastes (Temoana) bipunctatus new species
(Figs. 17, 21)

Type Material.— HOLOTYPE male, labelled: "SOLOMON ISLANDS: Gaudalcanal, Mt. Austen, 18/4.1963, P. Greenslade, 5401, B.M. 1966-477" (BMNH). PARATYPES one male, same data as holotype except dated 19-9-1962 (BMNH); one female, labelled: "SOLOMON ISLANDS, Gaudalcanal, Ngalim Mtn., 8/8,1963, P. Greenslade, 8383" (BMNH). There is another male, missing head and pronotum, that is mounted on the same pin as this specimen but it was not made a paratype.

Description.— Length 5.0-7.9 mm. Antennal stylet short, conical; tufts of minor setae on Segments V-X; antennal Segments VI-X with basal setae; antennal Segments I-X with pollinose rings (those of IX, X more or less broken between the setae); head longer than wide; median lobe short, triangular, its apex pointed, opposite anterior margin of eye; antennal lobe entirely pollinose; frontal space broad, parallel-sided pollinose; frontal grooves broad, deep, pollinose; temporal lobe 2.5 times longer than wide, entirely broadly fringed with pilosity; orbital groove broad, deep, continuous; two temporal setae present, one located in orbital groove near posterolateral angle of temporal lobe, the other arising from conspicuous puncture in glabrous part of temporal lobe well posterior to eye; eye narrow, crescentic, less than 0.5 length of temporal lobe; posterior 0.5 of gena pilose.

Pronotum moderately elongate, length/greatest width 1.50, widest at middle, sides distinctly curved; both ends narrowed, the apex more than the base; median groove deep, middle 0.33 sublinear; anterior median pit apical, dilated; posterior median pit appearing double, anterior portion at basal 0.33 of pronotum, this separated by constriction from posterior part which is almost as deep, and which reaches base of pronotum; median groove and pits pollinose; inner carina convex, glabrous, rather broad, its lateral margin more distinct from paramedian groove than in most species of *Temoana*; inner carina and paramedian groove without evident microsculpture; paramedian groove bounded laterally by broad pollinose strip along nearly vertical medial scarp on outer carina; basal impression oblique, pollinose, about 0.20 of length of pronotum; outer carina broad, its medial margin only slightly curved, its lateral margin more strongly so, therefore outer carina is widest at middle and tapered at both ends; marginal groove marked by complete strip of pollinosity, but little impressed, scarcely visible in dorsal view, but well-marked in lateral view; submarginal groove absent; pronotal setae absent; notopleural suture with pollinosity in anterior 0.5; sternopleural groove absent; pleural groove impressed, pollinose, its ventral 0.5 linear, its dorsal 0.5 expanded into a pit.

Elytra rather narrow, without a caudal lobe; scutellar pits present, but inconspicuous, lying within transverse band of pilosity which extends entirely across base of elytra; sutural interval flat; sutural stria with basal 0.25 glabrous, middle portion with pollinose strip, apex recurved for short distance at apical 0.25 of elytron; its apex not joining parasutural stria; Interval II nearly flat, sloped laterally; parasutural stria impunctate, broad, pollinose, its lateral wall a medially-directed scarp; pollinosity of parasutural stria continuing posteriorly, where it merges with that of intratubercular stria, and combined strip continues to midline along anterior slope of apical tubercle; Interval III convex, its apex forming short subapical tubercle which is scarcely dilated; tips of subapical tubercles separated by 3.5 times width of one of them; intratubercular stria impressed, pollinose, dilated; Interval IV broad, nearly flat, continuous with apical tubercle; latter moderately swollen; marginal stria complete, its base expanded, middle part (from basal 0.16 to middle) very fine, linear; apical part deeper, curving below apical tubercle; marginal stria entirely pollinose; submarginal stria impressed, ending opposite Sternum V of abdomen; sutural stria without setae (but apical impression without setae or with one or two setae in line with sutural stria); parasutural stria with complete series of seven to nine setae; intratubercular with two to four setae in apical 0.5; marginal stria with six to eight setae in apical 0.5; apical tubercle with three or four setae.

Metasternum with median sulcus; abdominal Sterna III-V each with dilated pollinose transverse sulci; that on Sternum III continuous; that of IV either continuous or very narrowly interrupted at midline; that of V distinctly but rather narrowly interrupted; female with large, deep lateral pit in Sternum IV; Sternum VI with short triangular transverse sulci broadly joined to greatly dilated marginal groove, partly isolating glabrous discal area (Fig. 21); tibial spurs of middle and hind legs decidedly unequal; male with anterior and posterior trochanters pointed; anterior femur of male with ventral side tuberculate; both calcaria are distinctly angulate proximally, separating basal transverse margin from oblique anterior margin, latter sloped to acute point; hind calcar larger than middle one.

This species is unique within the subgenus in having a setiferous puncture on the disc of the temporal lobe, in addition to the usual one in the orbital groove. Otherwise it is closest in form to *R. rimoganensis* (Miwa), but differs from the latter in having the median groove of the pronotum less dilated and in having the antennal lobe entirely pollinose.

Rhyzodiastes (Temoana) rimoganensis (Miwa 1934) NEW COMBINATION
(Fig. 18)

Clynidium (Rhyzodiastes) rimoganense Miwa 1934: 256-257 (note misspelling of generic name).
Rhyzodiastes rimoganensis (Miwa) Bell and Bell 1978.

Type Material.— HOLOTYPE, female. According to Miwa, from TAIWAN: Taihoku Province, Rimogan; coll. K. Obayashi, March 25, 1933. We have not studied the holotype, but have studied several specimens from Taiwan which agree closely with the original description and figure.

Description.— Length 5.5-6.9 mm. Antennal stylet short, conical, acute; tufts of minor setae on Segments V-X; basal setae present, though sparse on Segments VIII-X; Segment I pollinose dorsally; antennae otherwise without pollinosity; head slightly longer than wide; median lobe rather short, triangular, its apex acute, opposite middle of eye; antennal lobe glabrous, shining, well separated from median lobe; frontal space rather narrow anteriorly, becoming broad posteriorly; frontal grooves rather narrow, pollinose; temporal lobe 1.5 longer than wide; medial margins strongly curved, so that at middle, temporal lobes are separated by less than 0.5 of width of one of them; temporal lobe fringed with pilosity; orbital groove narrow but complete, angulate opposite posterior margin of eye; one temporal seta present, in orbital groove, posterior to eye; eye narrow, crescentic, about 0.75 of length of temporal lobe; genae glabrous, posterior face of temporal lobe pilose.

Pronotum moderately elongate, length/greatest width 1.57, widest at middle, sides distinctly, evenly curved; both base and apex distinctly narrowed; median groove moderately dilated, as broad as median pits; anterior median pit wider than posterior median pit, so margins of median groove slightly convergent posteriorly; posterior median groove displaced anteriorly, its anterior end at 0.20 of pronotal length anterior to pronotal base; median groove deep posterior to posterior median pit, but narrowed, its sides glabrous; median groove in and between median pits glabrous medially, but with lateral scarps pollinose; inner carina convex, its lateral margin sloping gradually into paramedian groove; paramedian groove bounded laterally by pollinose strip on vertical medial scarp of outer carina; medial margin of outer carina curved, slightly undulating; basal impression very small, narrowly closed posteriorly, connected to margin by strip of pollinosity; outer carina moderately narrow, tapered anteriorly; marginal groove fine, impressed, linear, complete; visible in dorsal view as is margin laterad to it; submarginal groove nearly complete, 0.95 of length of pronotum, becoming finely pollinose posteriorly; pronotal setae absent; notopleural suture not pollinose; sternopleural groove absent; pleural groove oblique; ventral surface of prothorax opalescent.

Elytra moderately elongate; elytral cauda absent; elytron with pilosity around scutellar pits, extending laterally to base of Interval II, but broadly interrupted in Interval III, and represented laterally only by small pilose area at base of marginal stria; sutural interval nearly flat; sutural stria impressed, faintly punctate, pollinose, finer than other striae, its apex slightly out-curved at apical 0.15 of elytron (in some specimens joining parasutural stria); Interval II nearly flat, sloped laterally; parasutural stria deep, its lateral wall a medially directed scarp, its extreme base curved medially, posterior its pollinosity combining with that of intratubercular stria, and the combined strip continuing across anterior face of apical tubercle to suture; Interval III nearly flat, its apex becoming slightly convex, forming subapical tubercle; latter scarcely dilated; subapical tubercles separated by 3.5 times width of one of them; intratubercular stria impressed, pollinose, dilated; Interval IV flat, continuous with apical tubercle; latter moderately swollen; marginal stria entire, impunctate, rather deep; submarginal stria impressed, ending opposite base of Sternum VI; sutural stria without setae; parasutural with two to seven setae; intratubercular stria with one seta near apex; marginal stria with several setae near apex; stria with two or three setae near apex; apical tubercle without setae.

Ventral surface of pterothorax and abdomen opalescent; metasternum not sulcate; male with flattened, microsculptured median area on abdominal Sterna I, II; abdominal Sterna III-V with pollinose transverse sulci, these entire on III, IV, narrowly interrupted at midline in V; female with lateral pits on Sternum IV; Sternum VI with triangular transverse sulci broadly joined to greatly dilated marginal groove, nearly isolating rhomboid glabrous area, latter in both sexes with pair of tubercles; tibial spurs of middle, hind legs unequal; male with front, hind trochanters pointed; anterior femur of male tuberculate ventrally; middle calcar small, pointed, acute; hind calcar small, obtuse. (Description of male characters taken from specimens from Nakanoshima.)

This species differs from *R. bipunctatus* in lacking a setiferous puncture in the middle of the temporal lobe and in having distinct submarginal groove of the pronotum. It differs from *R. mirabilis* and *R. convergens* in having basal setae on the antennae and more than one seta in the parasutural stria. The tubercles on Sternum VI are a unique but inconspicuous character of this species.

Distribution.— We have studied a female specimen from Taiwan: Puli (Hori), July 1954 "native collector" (BPBM). We tentatively assign to this species a series of 15 specimens from RYUKYU ISLANDS: Nakanoshima, Is. Tokara, 5 July, 1960, M. Sato leg. These do not appear to differ in form from the Taiwan specimen, except that the latter has seven setae in the parasutural stria, while the Nakanoshima specimens have two or three (or, unilaterally, one). However, we have not seen males from Taiwan, so it is possible that the populations from the two islands are not conspecific.

Rhyzodiastes (Temoana) mirabilis (Lea 1904) NEW COMBINATION
(Fig. 22)

Rhysodes mirabilis Lea 1904: 80-81.

Rhyzodiastes mirabilis (Lea) Bell and Bell 1978.

Type Material.— According to the original description, from Cairns, Queensland, Australia. We have not studied it, but have studied an enlarged photograph of it, kindly sent by Barry Moore. It is a female.

Description.— Length 6.5-7.0 mm. Antennal stylet short, slightly flattened; tufts of minor setae present on Segments V-X; basal setae entirely absent from antenna; Segments I-X each with apical pollinose band; head as wide as long; median lobe triangular, pointed posteriorly, its apex opposite middle of eye; antennal lobe largely pollinose, but with small isolated frontal boss; frontal space rather narrow, its smallest diameter about 0.33 of width of temporal lobe; frontal grooves narrow, entirely glabrous; temporal lobe 1.8 longer than wide, medial margins strongly curved so that at middle temporal lobes are separated by about 0.33 times width of one of them; temporal lobe fringed with pilosity; orbital groove narrow, complete, sinuate posterior to eye; temporal seta present, on medial margin of orbital groove posterior to eye; eye narrowly crescentic, about 0.67 as long as temporal lobe; genae glabrous, posterior face of temporal lobe pilose.

Pronotum moderately elongate, length/greatest width 1.56; widest at middle, sides distinctly, evenly curved; base distinctly narrowed; apex less narrowed than base; median groove deep, narrowed between median pits, which are small; posterior median pit at basal 0.33 of length; groove posterior to posterior median pit as deep as remainder of groove, deepened at pronotal base to form a secondary posterior median pit; inner carinae together convex, sloping laterally into paramedian groove; paramedian groove bounded laterally by vertical pollinose scarp on medial margin of outer carina; medial margin of outer carina evenly curved; basal impression very small, triangular, its posterior margin pollinose (so impression appears open posteriorly); outer carina broad, 0.5 as wide as inner one bounded posteriorly by pollinosity which reaches hind angle and connects to marginal groove; marginal groove visible in lateral but not in dorsal view, rather broad, 0.33 as wide as outer carina, shallow, pollinose; submarginal groove absent; pronotal setae absent; sternopleural groove absent; pleural groove oblique; notopleural suture pollinose; prosternum with anterior margin narrowly pollinose, narrowly interrupted at midline.

Elytra moderately broad, without caudal lobe; each elytron with prominent parascutellar pit at base of sutural stria; these pits situated relatively far from one another, separated by glabrous area; elytron with complete transverse strip of pollinosity at base, not interrupted opposite Interval III; Interval I broad, flat; sutural stria straight, impressed, pollinose, its apex slightly recurved; Interval II nearly flat, sloped laterally; parasutural stria impressed, straight, becoming slightly broader posteriorly, pollinose, its apex joined to intratubercular stria, and combined pollinosity continued posteriorly along anterior face of apical tubercle to suture; Interval III nearly flat, its apex convex, suddenly dilated, forming preapical tubercle; preapical tubercles separated by 3.5 times width of one of them; intratubercular stria impressed, pollinose; Interval IV flat, continuous with apical tubercle; latter scarcely dilated; marginal stria impressed, narrow, slightly dilated posteriorly, submarginal stria reaching base of Sternum V; sutural, parasutural and intratubercular striae without setae; preapical tubercle with five or six setae; marginal stria with five to seven setae near apex.

Ventral surface not opalescent; metasternum not sulcate; abdominal sterna with pollinose transverse sulci which are interrupted at midline (broadly so except for Sternum III of female which is very narrowly interrupted); both sexes with rather small lateral pits on Sternum IV; Sternum VI with dilated submarginal groove which connects anteriorly to transverse sulci, nearly isolating rhomboid glabrous area; latter not tuberculate; spurs of middle and hind tibiae equal; male with anterior, posterior trochanters pointed; anterior femur of male tuberculate ventrally; middle and hind calcars with slight "shoulder" angle on dorsal margin, calcars triangular, their apices obtuse.

The rounded temporal lobes of this species suggest *R. rimoganensis*, but it differs from the latter species in lacking basal setae on the antennae, and lacks a submarginal groove on the pronotum. It also has the elytral setae much more restricted, and has a small, isolated glabrous spot on each antennal lobe. The shape of the pronotum, wider at apex than base, is distinctive and separates it from *R. indigens*.

Distribution.— Restricted to Queensland. We have seen specimens from the following localities: one male, one female, Shipton's Flat (south of Cooktown), June, 1958, coll. Darlington (MCZ); one male, Upper Little Mulgrave, 3-VIII-69, coll. James Tobler (CAS); one female, labelled, "Queensl. Myoberg" (LUN); one male, one female, labelled "N. Queensland, Redlynch, 12-20-VIII-1938, R. G. Wind" (BMNH). The female of this pair is in all respects *R. mirabilis* except for a deep median pit in Sternum VI. Whether or not this is an anomaly will depend on the study of more specimens.

Rhizodiastes (Temoana) indigenus new species

(Fig. 23)

Type Material.— HOLOTYPE male, labelled: "SUMATRA, Si Rambé, XII-90-III-91, E. Modigliani", (GEN). PARATYPE one male, two females, same label as holotype (GEN). The female is labelled as a syntype of *R. gestroi*, but is not conspecific with it, and does not have convergent temporal lobes, as specified in the original description of the latter species.

Description.— Length 8.0-9.0 mm. Antennal stylet short, conical; tufts of minor setae on Segments V-X; Segments I-X each with subapical pollinose ring; basal setae of Segments IX, X one or two or absent; head slightly longer than wide; median lobe triangular, tip pointed, opposite anterior end of eye; frontal grooves rather wide, deep, glabrous; temporal lobe more than two times longer than wide; median margins curved, posteriorly oblique, slightly divergent; temporal lobe fringed posteriorly and on posterior 0.5 of medial margin with pilosity; orbital groove complete; one temporal seta in orbital groove posterior to eye; eye narrowly crescentic, about 0.67 of length of temporal lobe; genae glabrous, posterior face of temporal lobe pollinose.

Pronotum short, length/greatest width 1.37, widest near middle, sides curved; base moderately narrowed, apex very strongly narrowed, median groove deep, anterior 0.5 as wide as anterior median pit, constricted posterior to middle, then broadened to posterior median pit; groove posterior to posterior median pit as deep as at middle; inner carinae together convex, sloped laterally to paramedian groove; paramedian groove bounded laterally by vertical pollinose scarp on medial margin of outer carina; latter evenly curved; basal impression small, triangular, open posteriorly; outer carina broad, 0.5 as wide as inner one at middle, strongly narrowed anteriorly, extreme apex pollinose, marginal groove visible in dorsal view; submarginal groove absent; pronotal setae absent; sternopleural groove absent; pleural groove oblique, notopleural suture glabrous.

Elytron moderately broad, without caudal lobe; elytron with basal pollinosity interrupted at Interval III; Interval I broad, slightly convex, sutural stria straight, impressed, pollinose, apex slightly recurved; Interval II nearly flat, sloped laterally; parasutural stria impressed, straight, pollinose; apex joined to intratubercular stria; Interval III, raised above level of Interval II, nearly flat; preapical tubercle inflated; preapical tubercles separated by 1.5 width of one of them; intratubercular stria impressed, pollinose; Interval IV flat, continuous with apical tubercle; latter inflated; marginal stria impressed, not dilated posteriorly; submarginal stria reaching base of Sternum V; parasutural stria with one or two setae near apex; intratubercular stria with one seta near apex; marginal stria with four setae near apex.

Ventral surface not opalescent; metasternum not sulcate; abdominal sterna with transverse sulci broadly interrupted in midline in both sexes; each sulcus with prominent medial, lateral pit; female with large lateral pit on Sternum IV; Sternum VI with submarginal sulcus widely separated from transverse sulci; middle, hind tibiae with spurs nearly equal; male with anterior, posterior trochanters pointed; ventral surface of anterior femur of male with many small tubercles; tibiae thick; middle calcar triangular, small, acute; hind calcar larger, acute, dorsal margin convexly curved.

Among members of the *singularis* group, this species comes closest to *R. mirabilis*. It differs from the latter in having a much shorter pronotum which is strongly narrowed anteriorly. In appearance it comes close to *R. bonsae* in the *gestroi* group, but the latter species has the outer carina of the pronotum shallowly concave and the tufts of minor setae on the antenna beginning on Segment IV.

Rhizodiastes (Temoana) convergens new species

(Figs. 24, 30)

Type Material.— HOLOTYPE male, labelled: "New Britain, Gisiluve, Nakanai Mts., 1050 m., July 26, 1956, coll. E. J. Ford, Jr." (BPBM). PARATYPES two males, two females, same data as holotype (BPBM); two males, one female, same data as holotype but dated July 25, 1956 (BPBM).

Description.— Length 6.2-7.2 mm. Antennal stylet short, acuminate; tufts of minor setae present on Segments V-X; basal setae of antennae entirely absent; head distinctly longer than wide; median lobe short, broad, at widest point 0.33 of width of head, its apex opposite anterior end of eye; parafrontal boss rather large, narrowly separated from antennal rim; frontal grooves rather broad, deep, pollinose; temporal lobe about two times longer than broad, medial margins shallowly emarginate, margins divergent posterior to median lobe; then convergent, shallowly sinuate to occipital angles; latter separated by about 0.20 of width of head; medial margin of temporal lobe with fringe of very fine pollinosity; posterior margin with fringe of pilosity; orbital groove not quite complete, ending posteriorly at temporal seta, not quite attaining basal pilosity; orbital groove barely sinuate posterior to eye; one temporal seta present, on orbital groove near to posterior margin of temporal lobe; eye narrowly crescentic in lateral view, 0.67 as long as temporal lobe; genae glabrous; posterior face of temporal lobe pilose.

Pronotum elongate, length/greatest width about 1.67; widest at middle, sides distinctly curved; both base and apex narrowed; median groove deep, narrow, parallel-sided, scarcely enlarged opposite median pits; posterior median pit at 0.16 of length; groove posterior to posterior median pit as deep as remainder of groove, but not forming distinct secondary postero-median pit; inner carinae together convex, sloping laterally into paramedian grooves; paramedian grooves broad, bounded laterally by vertical pollinose scarp on medial margin of outer carina; medial margin of outer carina evenly curved; basal impression oblique, sloped up gradually to flat, very finely pollinose ridge which closes it posteriorly; outer carina broad, very convex, narrowed to both base and apex; pollinosity of median scarp connected to marginal groove at hind angle; marginal groove visible in lateral but not in dorsal view; marginal groove linear; submarginal groove absent; pleural groove oblique, impressed, rather narrow; notopleural suture pollinose; prosternum without pollinosity on anterior margin.

Elytra moderately broad, without caudal lobe; elytra with small, widely separated parascutellar pits at bases of sutural striae, with very little associated pilosity; basal pilosity of elytron narrowly interrupted opposite medial 0.5 of Interval III; Interval I broad, flat; sutural stria impressed, very finely pollinose, its apex curved laterally, to meet parasutural stria; Interval II convex; parasutural stria impressed, straight, becoming scarp-like posteriorly; Interval III nearly flat anteriorly, becoming convex posteriorly, forming scarp on lateral face near apex; subapical tubercle swollen, its median margin oblique, intratubercular stria impressed, linear anteriorly, becoming slightly dilated posteriorly, pollinose; Interval IV flat, connected to apical tubercle, latter impunctate, somewhat swollen; a pore ventrad to apical tubercles on suture; marginal stria fine, impressed, complete, pollinose; submarginal stria ends at apex of Sternum V; parasutural stria with one seta posterior to middle; intratubercular stria with two setae in apical 0.2; marginal stria with three or four setae near apex.

Ventral surface not opalescent; metasternum with fine, incomplete medial sulcus limited to posterior 0.5; abdominal sterna with pollinose transverse sulci which are broadly interrupted medially in both sexes; both sexes with lateral pits on Sternum IV; Sternum VI with marginal groove connected anteriorly to transverse sulci, nearly isolating rhomboid glabrous area (Fig. 30); latter not tuberculate; spurs of middle, hind tibiae equal; male with anterior, posterior trochanters pointed; anterior femur of male neither dentate nor tuberculate ventrally; middle and hind calcaria "shouldered" on dorsal side.

This species resembles *R. mirabilis*, but is more elongate and narrow, with the pronotum more oval, and more narrowed at the apex. The medial situation on the temporal lobe is characteristic, but is very small in some specimens.

THE MISHMICUS GROUP

This contains the only species from west of Wallace's Line which have the tufts of minor hairs beginning on Antennal Segment V, except for *R. indigena*. The species resemble those of the *singularis* group except in having the orbital groove strongly abbreviated or absent and in lacking temporal setae. All species lack pronotal and elytral setae. The anterior pits are enlarged, rounded and conspicuous. The transverse sulci of the abdominal sterna are reduced. The group ranges from Thailand to extreme eastern India. *R. waterhousei* and *R. preorbitalis* appear more closely related to one another than to *R. mishmicus*. The latter species has a distinct though reduced orbital groove and a long median lobe, while the two former species have a preorbital pit rather than an orbital groove, and have a very short median lobe. On the other hand, *R. preorbitalis* lacks the distinct median metasternal sulcus found in the other two species. This suggests that the sulcus was acquired by the common ancestor of the group, and then secondarily lost in *R. preorbitalis*.

Rhyzodiastes (Temoana) mishmicus (Arrow 1942) NEW COMBINATION (Fig. 26)

Clinidium mishmicum Arrow 1942: 182-183.

Rhyzodiastes mishmicus (Arrow) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: ASSAM: "Mishmi Hills, Delai Valley, Chauiliang, i-xii, 1936, alt. 4840 ft.; (Miss) M. Steele BM 1937-324" (BMNH).

Description.— Length 7.0 mm. Antennal stylet prominent, acuminate; basal setae of antennae restricted to lateral surfaces, sparse, but present on Segments V-X; head as broad as long; median lobe triangular, long, its apex opposite posterior 0.5 of eye; frontal space very narrow, scarcely wider than one frontal groove; frontal grooves long, broad, deep, pollinose; length of temporal lobe 1.5 greater than its width; medial margin of temporal lobe evenly, convexly curved; inner

and posterior margins of temporal lobe broadly fringed with pilosity; orbital groove present, shallow, extending posteriorly to end even with middle of eye; eye short, crescentic, about 0.33 as long as temporal lobe.

Pronotum short, broad, length/greatest width 1.25; widest near middle, sides curved; apex strongly narrowed, base moderately so; median groove fine, linear; both median pits displaced towards middle of pronotum; anterior median pit in oval depression; median groove distinct but shallow posterior to posterior median groove; inner carina convex, glabrous, its lateral margin sloped gradually into paramedian groove; lateral margin of paramedian groove bounded by very narrow, inconspicuous strip of pollinosity on medial scarp of outer carina; outer carina broad, its width at middle about 0.67 of width of inner carina at same level; outer carina strongly tapered anteriorly, moderately so posteriorly; basal impressions deep but narrow, about 0.33 as wide as posterior part of inner carina; marginal groove narrow, distinct, visible in dorsal view; submarginal groove absent.

Elytra short, rather broad, their sides parallel; sutural interval pollinose at base; sutural stria fine, its apical fifth obsolete; parasutural stria complete, its base bent medially to reach base of sutural stria; intratubercular stria deeper than the others, complete; subapical tubercle somewhat elevated, its apex rounded; marginal stria fine, complete, impressed; apical tubercles small, contiguous, marginal stria with three setae below apical tubercle; elytral setae otherwise absent.

Metasternum with complete, deep, dilated median sulcus; male with triangular lateral pits on abdominal Sterna III-V, that of IV deeper than the other; pits not extended medially to form transverse sulci; Sternum VI with complete marginal groove; female unknown; middle and hind tibiae each with spurs equal; male with large, distally-directed ventral tooth on anterior femur and deep lateral groove on anterior femur; all trochanters rounded distally; calcar small; calcar of middle leg with apex level with bases of spurs; that of hind leg with apex raised well above level of spurs.

The presence of a short orbital groove, the short, broad form of the body, the fine median groove of the pronotum, and the elongate median lobe of the head easily distinguish this species from the other members of the group. *R. myopicus*, in the *myopicus* group, is superficially similar in appearance, but has the tufts of minor hairs beginning on Segment IV of the antennae, the orbital groove entirely absent, tibial spurs strongly unequal, and the abdominal sterna with prominent transverse sulci.

Rhyzodiastes (Temoana) waterhousei (Grouvelle 1910) NEW COMBINATION
(Fig. 25)

Clinidium (Rhyzodiastes) waterhousei Grouvelle 1910: 326-327.

Rhyzodiastes waterhousei (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE female, labelled: "BIRMAH: Ruby Mines (coll. Doherty) 64626 Fry Coll. 1905.100" (BMNH)

Description.— Length 6.5 mm. Antennal stylet prominent, conical; basal setae numerous on Segments VII-X; head as broad as long; median lobe triangular, short, its apex opposite anterior end of eye; anterior tentorial pits very large, separated by less than the width of one of them; frontal space parallel-sided, elongate, its width about 0.33 of width of one temporal lobe; frontal grooves narrow, shallow, temporal lobe 1.5 longer than wide; medial margin of temporal lobe almost straight, forming obtuse angle with posterior margin; posterior margin of temporal lobe broadly fringed with pollinosity, medial margin glabrous; orbital groove absent; preorbital pit present; eye narrowly crescentic, rather elongate, about 0.67 of length of temporal lobe.

Pronotum moderately long, length/greatest width about 1.36; widest near middle; base distinctly narrowed; apex strongly so; median groove narrow, sublinear, deeper than in *R. mishmicus*; both median pits displaced towards middle of pronotum; anterior median pit in oval depression; median groove distinct but shallow posterior to posterior median pit; inner carina convex, glabrous, its lateral margin sloped gradually into paramedian groove; basal impressions broad, deep, distinctly wider than posterior part of inner carina; the base of latter consequently distinctly narrower than in *R. mishmicus*; lateral margin of paramedian groove bounded by narrow strip of pollinosity on medial margin of outer carina; outer carina broad, its width near middle about 0.67 of width of inner carina at same level; outer carina distinctly narrowed anteriorly, and posteriorly; marginal groove narrow, complete, visible in dorsal view; a shallow submarginal groove present, visible only in lateral view.

Elytra rather short, the sides nearly parallel; sutural interval pollinose at base; sutural stria rather fine, complete, its apex joining parasutural; sutural stria obsoletely punctate; Interval II distinctly convex; parasutural stria impunctate, more deeply impressed than sutural stria, its base bent medially to reach base of sutural stria; Interval III distinctly convex; intratubercular stria slightly less impressed than parasutural; subapical tubercle somewhat elevated, its apex rounded; marginal stria impressed, fine, complete; apical tubercles small, contiguous; marginal stria with three or four setae below apical tubercle; elytral setae otherwise absent.

Metasternum with complete, deep, linear median sulcus; abdominal sterna with short transverse sulci which are dilated laterally and which have a small pit at medial end; transverse sulci separated medially by approximately 0.33 of width of sternum; female with deep lateral pit on Sternum IV; middle and hind tibiae each with spurs equal; anterior

femur of female not angulate; male unknown.

This species is most similar to *R. preorbitalis*, but the latter species lacks the median sulcus on the metasternum, has the anterior tentorial pits less enlarged, the transverse sulci of the abdomen more poorly developed, and the anterior femur of the female is strongly angulate ventrally. *Rhizodiastes vadiceps*, in the *myopicus* group, is superficially similar to the two preceding species, but has the tufts of minor setae beginning on Antennal Segment IV, and the occiput largely glabrous and distinctly notched in lateral view.

Rhizodiastes (Temoana) preorbitalis new species
(Figs. 29, 31)

Type Material.— HOLOTYPE female, labelled: "THAILAND: E. slope Doi Sutep, 875-950 m., 15-VII-1962, coll. E. S. Ross, D. O. Cavagnero" (CAS). PARATYPE one female, labelled: "Doi Sutep, Siam, Feb. 10, 1928, Coll. Alice Mackie" (NMNH).

Description.— Length 6.8-7.8 mm. Antennal stylet small, acute; basal setae numerous on Segments VII-X; head as broad as long; median lobe short, triangular, its apex entirely anterior to eye; anterior tentorial pits moderately large, separated by 1.5 times the width of one of them; frontal space parallel-sided, elongate, its width about 0.33 of width of one temporal lobe; frontal grooves narrow, shallow, glabrous, temporal lobe 1.5 times longer than wide; medial margin of temporal lobe almost straight, forming angle with posterior margin; posterior margin of temporal lobe rather narrowly fringed with pilosity; medial margin glabrous; orbital groove absent; preorbital pit present; eye narrow, crescentic, less than 0.5 of length of temporal lobe.

Pronotum rather elongate, length/greatest width about 1.42; widest near middle, sides curved; base moderately narrowed; apex very strongly narrowed; median groove fine, linear, both median pits displaced towards middle of pronotum; anterior median pit in long, oval depression; median groove represented by fine, shallow line posterior to posterior median pit; inner carina convex, glabrous, sloped gradually to paramedian groove; basal impressions broad, deep, distinctly wider than posterior part of inner carina; the base of latter narrowed as in *R. waterhousei*; lateral margin of paramedian groove bounded by narrow strip of pollinosity on medial margin of outer carina; outer carina rather broad, its width at middle about 0.50 of width of inner carina at same level; outer carina distinctly narrowed anteriorly and posteriorly; marginal groove fine, complete, visible in dorsal view; submarginal groove short, oblique, restricted to basal 0.20 of pronotum, visible only in lateral view.

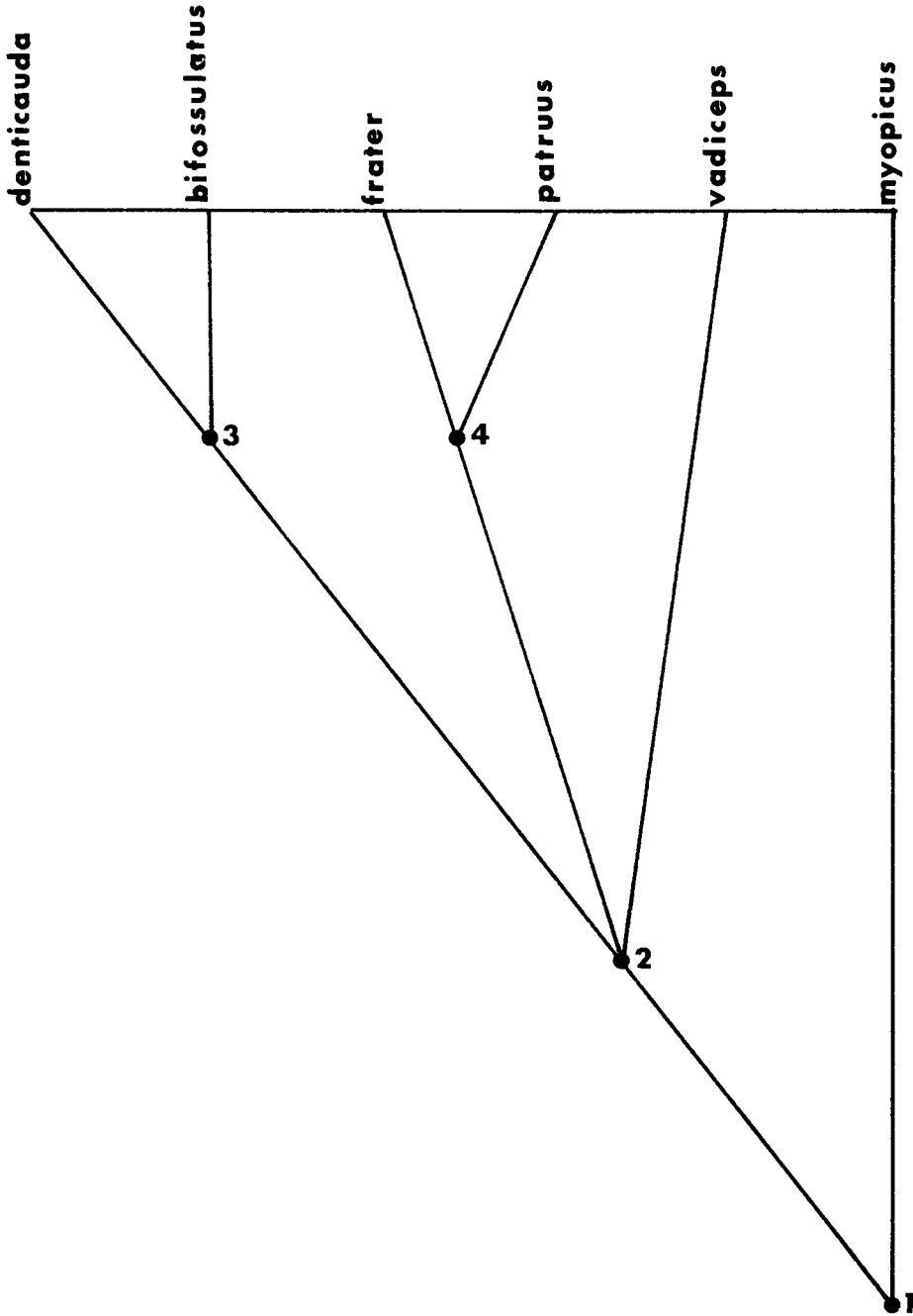
Elytra rather short, their sides nearly parallel; sutural interval pollinose at base; sutural stria rather fine, complete, impunctate; Interval II slightly convex; parasutural stria impunctate, more deeply impressed than sutural stria, its apex bent medially to reach base of sutural stria; Interval III distinctly convex; intratubercular stria complete, slightly less impressed than parasutural; subapical tubercle somewhat elevated, its apex rounded; marginal stria fine, scarcely impressed at middle, becoming finely punctate and more distinctly impressed posteriorly, where it passes below apical tubercle; apical tubercles small, contiguous; apex of marginal stria with three or four setae below apical tubercle; clytral setae otherwise absent.

Metasternum with elongate median impression near posterior margin, but without median sulcus; abdominal sterna with transverse sulci scarcely developed, each appearing as short medial extension from triangular lateral pit in Sterna III, IV, V; female with lateral pits of IV deeper than the others (Fig. 31); middle and hind tibiae each with two equal spurs; anterior femur of female strongly angulate ventrally; male unknown.

This species is closest to *R. waterhousei*, but differs sharply in lacking a median sulcus on the metasternum, in having the anterior tentorial pits less enlarged, and in having the anterior femur of the female strongly angulate ventrally.

THE MYOPICUS GROUP

The members of this group have the tufts of minor setae beginning on Segment IV of the antenna, and the median groove of the pronotum linear. Some species, particularly *R. myopicus*, resemble the *mishmicus* group in having a short, broad head, with the orbital groove absent or very reduced. In others the head is elongate, and the orbital groove more distinct. All species differ from the *mishmicus* group in having strongly developed transverse sulci on the abdominal sterna, and in having a tuft of minor setae on antennal Segment IV. The *gestroi* and *fairmairei* groups resemble the *myopicus* in the latter respect, but differ in having the median



Phylogenetic Diagram 1. Reconstructed Phylogeny of species of *Rhyzodiastes* subgenus *Temoana*, *Myopicus* group.

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groove of the pronotum dilated. Many of them have numerous elytral setae, while the *myopicus* group lack such setae, except, in some species, near the apex of the marginal stria.

There are six species, two from the Malay Peninsula, three from Borneo, and one of unknown range, but probably also from Borneo.

Phylogeny.— A possible phylogeny for the group is illustrated in Diagram 1. Species 1, the hypothetical ancestor for the group, probably had the following characters: antennal stylet long; Segment XI elongate, nearly cylindrical; basal setae present; antennal segments not thickened; orbital groove, one temporal seta present; base of parasutural stria straight; preapical tubercle not elevated; apical tubercles thickened, contiguous, elytral humeri not narrowed; setae present in apex of marginal stria; tibiae slender; at least anterior femur of male with many tubercles on ventral surface; middle, hind tibial spurs equal; male trochanters rounded at apex.

R. myopicus appears to be the sister species to Species 2, the hypothetical ancestor of the five remaining species. Apomorphic features of *R. myopicus* include loss of the orbital groove, the short, very flat head with strongly reduced eyes, and the strongly unequal tibial spurs. Probable plesiomorphic features include base of parasutural stria straight; antennae and tibiae slender; one temporal seta retained; setae in apex of marginal stria retained; elytral humeri not narrowed; antennal Segment XI cylindrical; trochanters of male rounded. The broad anterior truncation of the pronotum and outer carina are of uncertain significance.

Species 2 probably had the following apomorphic features: base of parasutural stria bent sharply medially at base; humeral region of elytra strongly narrowed; antennae, tibiae strongly thickened; antennal Segment XI compressed, short; at least hind trochanter of male pointed. Like *R. myopicus* it probably retained a temporal seta and several subapical setae in the marginal striae, although these have been lost in some of its descendants. Unlike *R. myopicus* it had the pronotum narrowed anteriorly, with the outer carina not truncate at the apex.

We postulate three species descended from Species 2. Species 3, Species 4, and *R. vadiceps*. Species 3 showed the following specializations: outer antennal segments with complete pollinose rings; preapical tubercle elevated, tooth-like; apical tubercle bounded anteriorly by deep transverse notch; basal setae of antennae entirely absent. Unspecialized features retained from Species 2 included equal tibial spurs; one temporal seta; one seta in apex of marginal stria; marginal groove present on pronotum, though shallow; male with trochanters 1 and 3 pointed; and femora 1 and 3 tuberculate ventrally.

Species 4 showed striking specializations in the apex of the middle and hind tibiae; only one tibial spur is present, while there is a curved apicolateral process. Other apomorphic characters included loss of setae of the marginal stria. Possible plesiomorphic characters include retention of basal setae on the antennae and of the marginal groove of the pronotum.

R. vadiceps shows the complete loss of the marginal groove of the pronotum as a specialization. Possibly the elongate antennal stylet is also an apomorphic feature, as are loss of marginal and temporal setae. Most of its other characters are plesiomorphic, for instance, the retention of two equal tibial spurs. The antennal segments are less thickened than in the descendants of Species 3 and 4. Of uncertain significance are the secondary sexual characters of the male. This species and *R. patruus* are the only species in which all three pairs of femora are tuberculate ventrally. If all were tuberculate in the male of Species 2, then the absence on some legs in the remaining species can be interpreted as a secondary loss. Likewise, the loss of the point on the anterior trochanter in *R. vadiceps* is probably secondary, as both anterior and posterior trochanters are pointed in the remaining descendants of Species 2, with the possible exception of *R. denticauda*, of which the male has not been collected.

Species 3 gave rise to *R. bifossulatus* and *R. denticauda*. *R. bifossulatus* is specialized by the great elevation of the preapical tubercles, which are close together. Otherwise, it is probably much like Species 3. It is the only member of the group besides *R. vadiceps* to retain setae in the marginal stria, and shares with the latter species and *R. patruus* the retention of the temporal seta. *R. denticauda* shows a unique specialization on the separation of the prominent, subtruncate apical tubercles. It has also lost both temporal and elytral setae. The preapical tubercles are less specialized than are those of *R. bifossulatus*, being further apart and somewhat less elevated. Unfortunately the secondary sexual characters of the male are unknown.

Species 4 gave rise to *R. frater* and *R. patruus*. *R. frater* has lost the temporal seta and the ventral tubercles on the femora. A plesiomorphic feature is the retention of the basal setae of the antenna. *R. patruus* has lost the basal setae. The tubercles and the projecting angle on the hind tibia of the male are clearly apomorphic features, while the retention of ventral tubercles on all femora of the male and the retention of a temporal seta are clearly plesiomorphic.

Rhyzodiastes (Temoana) myopicus (Arrow 1942) NEW COMBINATION
(Figs. 27, 32)

Clinidium myopicum Arrow 1942: 182.

Rhyzodiastes myopicus (Arrow) Bell and Bell 1978.

Type Material.— LECTOTYPE male, labelled: "FEDERATED MALAY STATES: Pahang, Cameron's Highlands, Bukit-Lendong, 5000 ft., May 21, 1931, coll. H. M. Pendlebury" (BMNH). PARATYPE According to Arrow there was a second specimen, sex unstated, collected with the type. We have been unable to locate it. If it still exists, it is a paralectotype.

Description.— Length 6.3-7.5 mm. Antennal stylet short, conical; antennal Segment XI longer than broad; sparse basal setae on Segments IX, X; antennal pollinosity restricted to Segment I; head as broad as long, strongly flattened; antennal lobe pollinose; median lobe somewhat cross-shaped with lateral lobe posterior to each tentorial pit; tip of median lobe acute, posterior to middle of eye; frontal grooves very narrow, shallow, postantennal pit scarcely evident; medial margin of temporal lobe curved; temporal lobe less than 1.5 longer than wide posterior margin; posterior 0.5 of medial margin narrowly fringed with pilosity; orbital groove entirely absent, eye narrow, short, less than 0.33 of length of temporal lobe; one temporal seta, near posteriormost point on temporal lobe; postorbit, genal lobe pilose.

Pronotum moderately elongate, length/greatest width 1.40; basal margin strongly curved; lateral margins rather weakly curved; base, apex moderately narrowed; apex truncate, with distinct anterior angles; median groove fine, linear; median pits narrow, not displaced from base, apex; inner carinae glabrous, together forming convex discal area, sloped gradually into paramedian grooves; medial margin of outer carina with narrow pollinose strip; basal impression small, oblique; outer carina broad, its width near middle about 0.5 of width on inner carina at same level; outer carina slightly curved, of nearly even width, anterior end truncate; marginal groove impressed, complete, clearly visible in dorsal view; submarginal groove represented by impression in basal 0.12 of pronotum; pronotal setae absent.

Elytra with sides parallel, base scarcely narrowed; sutural stria deep, entire, obsoletely punctate; Interval II less depressed than Interval I; parasutural stria impressed, impunctate, base straight; Interval III slightly convex, apex (subapical tubercle) not swollen; intratubercular stria complete, impressed, impunctate; marginal stria fine, complete, impressed; apical tubercles slightly swollen, contiguous at suture, with minute pore ventral to them in midline; marginal stria with three to six setae below apical tubercle; elytral setae otherwise absent.

Metasternum without median sulcus; abdominal Sterna III-V with prominent transverse sulci; in male, III, IV continuous across midline, V narrowly interrupted at midline; in female all sulci narrowly interrupted medially (Fig. 32); both sexes with enlarged lateral pit on Sternum IV; Sternum VI with transverse sulci at base, curved submarginal sulcus; abdominal sulci narrow; middle, hind tibiae rather slender, with inner spur shorter than outer one; anterior femur of male tuberculate ventrally, with small ventral tooth; all trochanters of male rounded distally; both pairs of calcaria small, acutely pointed.

The broad pronotum, broad outer carinae with anterior end truncate and the flat head and small eyes are distinctive of this species. The most similar member of the *myopicus* group is *R. frater* of Borneo. The latter species is much longer and more slender, has the outer carina of the pronotum narrower, and lacks the temporal seta. *R. mishmicus*, of the *mishmicus* group, is also rather similar in appearance but lacks a tuft of minor setae on antennal Segment IV, lacks the

transverse sulci on the abdominal sterna, and has the spurs of each middle and hind tibia equal.

R. patruus is the only other member of the species group from the Malay peninsula. It differs from the present species in having the outer carina very narrow, the head narrow and elongate, and in having only one tibial spur and an apicolateral process.

Range.— *R. myopicus* is known only from the Malay Peninsula. In addition to the lectotype, we have seen the following specimens: one male, labelled: "Malaya, G. Batu, Brinchang, 6500', VI-19-62, coll. E. S. Ross & D. Cavagnaro" (CAS); two females, labelled: "Malaya, Pahang, Cameron Highlands, Mt. Brinchang, coll. L. W. Quate" (BPBM). One is dated, I-4-1959, 1980 m., the other 5-I-1959 at 1900 m. "in dead wood".

Rhyzodiastes (Temoana) vadiceps new species
(Figs. 28, 33)

Type Material.— HOLOTYPE male, labelled: "Mjoberg Coll., W. W. Funge Bequest" (CAS). No locality is given. Borneo is a likely if unproven provenance, firstly because the closest relatives of the species, *R. frater*, *R. bifossulatus*, and *R. denticauda* are all from Borneo, and secondly, because Mjoberg is known to have collected in Borneo. The type specimens of *Omoglymmius fraudulentus* Bell and Bell and *Rhyzodiastes denticauda*, described herein, both have labels identical to that on the type of *R. vadiceps*, in addition to labels for specific localities in Borneo. If not from Borneo, this species might be from one of the Greater Sunda Islands or possibly from the Malay Peninsula.

Description.— Length 8.5 mm. Antennal stylet acute, longer than in other members of group; antennal Segment XI slightly compressed; slightly longer than wide; outer antennal segments strongly thickened, oblate sphaeroidal; tufts of minor setae present on Segments IV-X; basal setae entirely absent; antennal pollinosity restricted to Segments I, II; head 1.5 longer than wide antennal lobe glabrous; median lobe triangular, tip acute, opposite anterior 0.33 of eye; frontal grooves shallow, glabrous; postantennal pit small; lateral margin of frontal groove sloped gradually to temporal lobe; medial margin of temporal lobe long, oblique, sinuate near occipital angle; temporal lobe 2.5 longer than wide; margin lined with short pollinosity near occipital angle; orbital groove represented by very minute pollinosity medial to eye, invisible except under high magnification; small preorbital pit present; eye short, about 0.5 of length of temporal lobe, broader than in *R. myopicus*; temporal setae absent; genal lobe prominent, rectangular, nearly glabrous, separated from temporal lobe by deep, pollinose notch.

Pronotum elongate, length/greatest width 1.60; basal margin transverse; lateral margins strongly curved; base, apex strongly narrowed; anterior angles indistinct; median groove fine, linear; median pits large, oval, not displaced from base, apex; inner carinae glabrous, together forming convex disc, sloped gradually to paramedian grooves; medial margin of outer carina with only a trace of pollinosity; basal impressions small; outer carina tapered anteriorly, widest at middle; marginal groove entirely absent; submarginal groove absent; pronotal setae absent.

Elytra with sides parallel near middle; base strongly narrowed; sutural stria deep, its apex effaced, obsolete punctate; parasutural stria complete, impressed, more so apically, faintly punctate, base bent medially nearly to base of sutural stria; Interval III convex, its apex elevated, forming distinct preapical tubercle; intratubercular stria fine, complete; apical tubercles swollen, contiguous at midline, meeting medially above slit-like pore; elytral setae entirely absent.

Metasternum without median sulcus; midline of abdomen elevated, slightly cariniform, separating dilated transverse sulci; Sternum VI with transverse sulci, also with dilated submarginal sulcus; shallow lateral pit present on Sternum IV in male (Fig. 33); tibiae moderately thick; spurs equal; male with ventral surface of all femora with many minute tubercles; front, middle trochanters of male rounded at apex hind trochanter acutely pointed; middle, hind calcaria large, acutely pointed, proximal margin strongly angulate; female unknown.

This species is closest to *R. frater*, from which it differs most conspicuously in the absence of the marginal grooves of the pronotum, in the very shallow frontal grooves with indistinct lateral margins, and in the great reduction of the pollinosity of the postorbital region and of the genal tubercles.

Rhyzodiastes (Temoana) frater (Grouvelle 1903) NEW COMBINATION
(Figs. 34, 40, 42)

Clinidium frater Grouvelle 1903: 135-136.

Rhyzodiastes frater (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Born. Occ., Riv. Sambay, près Ngabang, J. B. Ledru 1887" (MNHN). This locality is in the northwestern part of Indonesian Borneo.

Description.— Length 5.9-8.0 mm. Antennal stylet minute, conical; antennal Segment XI compressed, as wide as long; outer antennal segments very short, thick, cylindrical, disc-like; tufts of minor setae present on Segments IV-X; basal setae present, though sparse on Segments III-X; Segments I-III with subapical pollinose rings; pollinosity of outer segments restricted to areas close to bases of setae; Segment I with prominent swellings around base of two setae of anterior aspect.

Head 1.5 times longer than wide; antennal lobe glabrous; median lobe hastate, short, narrow, tip acute, just posterior to anterior margin of eye; frontal grooves glabrous, moderately deep, margins distinct; tentorial, postantennal pits large; medial margin of temporal lobe long, oblique; temporal lobe 3.0 longer than wide; posterior margin and posterior 0.33 of medial margin fringed with long pilosity; orbital groove very fine, shallow, pollinose, in a few specimens interrupted posterior to eye; eye narrow, crescentic, 0.67 as long as temporal lobe; temporal setae absent; genal lobe, lower surface of temporal lobe long pilose, partly concealing notch between them.

Pronotum elongate; length/greatest width 1.54; widest behind middle; basal margin slightly oblique on either side of midline, where obtusely angulate; lateral margins curved; apex strongly narrowed; median groove fine, linear; median pits large, oval, not displaced from base, apex; inner carina glabrous, together forming convex discal area, sloped gradually to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; basal impressions small, oblique; outer carina widest posterior to middle, tapered anteriorly; lateral part of outer carina shallowly concave; marginal groove fine, linear, ventrad to concavity of outer carina; submarginal groove, pronotal setae absent.

Elytra elongate, lateral margins parallel near middle, obliquely narrowed to humerus; swollen apical tubercles form large but ill-defined cauda; sutural stria nearly complete, impressed, minutely punctate, apex effaced; parasutural stria complete, impressed, base bent medially nearly to base of sutural stria; Interval III convex, apex elevated, forming distinct preapical tubercle; intratubercular stria fine, complete; marginal stria effaced near humerus, otherwise narrow, complete to suture; apical tubercles swollen, contiguous at midline, meeting medially above round pore (Fig. 42); elytral setae entirely absent.

Metasternum with fine trace of median sulcus in posterior 0.5; mid-line of abdomen elevated, cariniform, separating dilated transverse sulci; transverse sutures of abdomen deeply impressed; Sternum VI in both sexes with transverse sulci, also broad, deep subapical depression occupying 0.67 of sternum, bounded posteriolaterally by impressed marginal groove; in both sexes, Sternum IV with rather small lateral pit; tibiae thick; middle and hind tibiae each with one spur, also with acute, medially-curved apicolateral process (Fig. 40); ventral surface of femur in male smooth, not tuberculate; front, hind trochanters of male acutely pointed; middle, hind calcars large, acutely pointed, proximal margin angulate.

This species is closest to *R. patruus* of the Malay Peninsula, which it resembles in having only one spur and an apicolateral process on the middle and hind tibiae. *R. frater* differs from the latter species in lacking a temporal seta, in having basal antennal setae, in having the intratubercular stria impressed, and in lacking tubercles on the femora of the male.

It differs from the two remaining Bornean species, *R. denticauda* and *R. bifossulatus* in not having the apical tubercle separated from the outer intervals by a notch, and in having the preapical tubercle less elevated and less tooth-like.

Range.— Northwestern Borneo, including both the Indonesian Borneo and Sarawak. In addition to the holotype we have studied a series of 13 males, three females labelled: "Mt. Matang, W. Sarawak, G. E. Bryant, Bryant Colln., 1919-147" with various dates from XII-1913 to II-1914 (BMNH).

Rhyzodiastes (Temoana) patruus new species
(Figs. 35, 41, 43)

Type Material.— HOLOTYPE male, labelled: "Malaisie Johor, Sedili Kechil, 15-VIII-72. T. Jaccoud" (GVA).

Description.— Length 5.3 mm. Antennal stylet minute, conical; Segment XI slightly compressed, as wide as long; outer antennal segments very short, thick, cylindrical, disc-like; tufts of minor setae present on Segments IV-X; basal setae entirely absent; Segments I-X with complete subapical pollinose rings; Segment I with carina on dorsal surface.

Head 1.5 longer than wide; antennal lobe glabrous; median lobe hastate, short, narrow, tip acute, just posterior to anterior margin of eye; frontal grooves glabrous, moderately deep, margins distinct; tentorial, postantennal pits large; medial margin of temporal lobe long, oblique; temporal lobe 3.0 longer than wide, posterior margin, posterior 0.33 of medial margin fringed with pollinosity; orbital groove very fine, pollinose, complete; eye narrow, crescentic, 0.67 as long as temporal lobe; lateral margin of temporal lobe posterior to eye more oblique than in *R. frater*; temporal seta present; genal lobe, lower surface of temporal lobe long, pilose, partly concealing notch between them.

Pronotum elongate; length/greatest width 1.58; widest behind middle; basal margin slightly oblique on either side of midline, but not angulate at midline; lateral margins curved; apex strongly narrowed; median groove fine, linear; median pits large, oval, not displaced from base, apex; inner carinae glabrous, together forming convex discal area, sloped gradually to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; basal impression small;

outer carina widest posterior to middle, tapered anteriorly; lateral part of outer carina shallowly concave; marginal groove fine, linear, ventrad to concavity of outer carina; submarginal groove of outer carina absent.

Elytra elongate; lateral margins parallel near middle, obliquely narrowed to humerus; apical tubercles less swollen than in *R. frater*; sutural stria complete, impressed, minutely punctate; parasutural stria complete, impressed, base bent medially nearly to base of sutural stria; Interval III convex, apex elevated, forming distinct preapical tubercle (Fig. 43); intratubercular stria impressed, pollinose near apex, otherwise effaced, marked only by elevated medial border of Interval IV; apical tubercles contiguous at midline, meeting above minute pore; setae of clytral striae entirely absent.

Metasternum without median sulcus; midline of abdomen less distinctly elevated than in *R. frater*; transverse sutures of abdomen deeply impressed; Sternum VI in male with transverse sulci, narrow subapical depression; tibiae thickened; middle, hind tibiae each with one spur, also with acute, medially curved apicolateral process; ventral surfaces of all femora of male tuberculate, anterior femur extensively so, middle femur with a few tubercles, hind one more densely tuberculate; trochanters of front, hind leg acutely pointed; calcaria acutely pointed; medial surface of hind tibia concave between calcar and basal angle, latter prominent, truncate; medial surface with two minute tubercles on either side of middle of length (Fig. 41); female unknown.

This species is closest to *R. frater* which it resembles in the presence of one tibial spur and a conspicuous apicolateral process on the middle and hind tibia. It differs from the latter in the presence of a temporal seta, absence of basal antennal setae, unimpressed intratubercular stria, and in having tuberculate ventral surfaces on the femora of the male.

Rhyzodiastes (Temoana) bifossulatus (Grouvelle 1903) NEW COMBINATION
(Figs. 36, 44)

Clinidium bifossulatum Grouvelle 1903: 139-140.

Rhyzodiastes bifossulatus (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Borneo, Oberthuer Coll." (MNHN).

Description.— Length 6.7-8.0 mm. Antennal stylet conical, short; antennal Segment XI compressed, as wide as long; outer antennal segments very short, thick, cylindrical, disc-like; basal setae absent; Segments I-X each with subapical pollinose ring; latter interrupted ventrally on Segments IV-X by tuft of minor setae; Segment I with swellings around bases of two prominent setae on anterior aspect.

Head as wide as long; antennal lobe glabrous; median lobe very short, its tip acute, opposite anterior margin of eye; frontal grooves glabrous, moderately deep; frontal space very wide; tentorial, postantennal pits very large; antennal groove oblique, slightly dilated; temporal lobes 2.5 longer than wide; closest together opposite middle of eye, posterior 0.67 oblique, divergent; posterior margin of temporal lobe fringed with long pilosity; orbital groove complete, fine, pollinose, reaching posterior margin of temporal lobe; eye narrow, crescentic, 0.67 as long as temporal lobe; one temporal seta, in orbital groove posterior to eye; posterior margin of temporal lobe, postorbit long, pilose, concealing cleft between temporal, genal lobes; latter smaller, or shortly pilose than in *R. denticauda*.

Pronotum elongate; length/greatest width 1.57; widest behind middle; basal margin curved; lateral margins curved; apex strongly narrowed; base moderately so; median groove fine, linear; anterior median pit oval, elongate; posterior median pit round, separated from base by 0.2 of length of pronotum; inner carinae glabrous, together forming convex discal area, sloped gradually to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; basal impressions small, deep, oblique; outer carina narrow, curved, bounded laterally by shallow broad concavity; ventral margin of latter with trace of minute pollinosity; posterior end of outer carina with tuft of pilosity; submarginal groove, pronotal setae absent.

Elytra elongate, lateral margins parallel near middle, obliquely narrowed to humerus; humerus with small lobe; apical lobes form prominent, narrow cauda; sutural stria impressed, faintly punctate, apex joining parasutural; parasutural stria complete, impressed, base bent medially to base of sutural stria; Interval III narrow, cariniform for most of length, base forming prominent, fringed medial angle; elevated preapical tubercle prominent; preapical tubercles closer together than in related species, separated by 0.5 of combined width of sutural intervals (Fig. 44); in lateral view, preapical tubercle with posterior margin emarginate; intratubercular stria shallow, broad; becoming obsolete ventrad to preapical tubercle; marginal stria impressed, connected by deep, narrow, glabrous impression to preapical impression, isolating apical tubercle from remainder of Interval III; portion of marginal stria beyond impression bent ventrally, passing across lower surface of apical tubercle to suture; apical tubercles swollen, contiguous at midline, meeting medially above slit-like pore; apex of marginal stria with one seta.

Metasternum with fine median sulcus in posterior 0.5; mid-line of abdomen scarcely carinate; abdominal sterna with deep, wide transverse sulci, scarcely interrupted in midline, interruption very narrow, pollinose; abdominal sutures deeply impressed; Sternum VI with transverse sulci, also deep marginal groove, delimiting central tubercle; small lateral pit on Sternum IV in both sexes; tibiae thick, coarsely punctate, each puncture with prominent seta; middle, hind tibiae each with two spurs; those of hind tibia equal; those of middle tibia very unequal, posterior spur minute, anterior one large, curved anteriorly; no apicolateral process; male with ventral surface of anterior, posterior femora with many small tubercles; male

with anterior, posterior trochanters pointed; middle calcar acute, hind calcar smaller than middle one, triangular; proximal margins of calcars not angulate.

This species and *R. denticauda* are characterized by having the preapical tubercle elevated and tooth-like, separated by a notch from the apical tubercle. In this species, the apical tubercles are contiguous at the suture, while in *R. denticauda*, they are separated.

Range.— Borneo, possibly restricted to the northeastern part. We have seen the following specimens with specific locality data, both from Sabah (The former British North Borneo): one male, labelled: "Sandakan, B. N. Borneo, Baker" (NMNH); one female labelled: "British North Borneo, Tawau, Quoin Hill, Cocoa Res. Sta., 30-VI-1962, Y. Hirashima, coll." (BPBM).

Rhyzodiastes (Temoana) denticauda new species

(Figs. 37, 45)

Type Material.— HOLOTYPE female, labelled: "Mt. Murud, Borneo, Mjöberg Coll., W. W. Funge Bequest" (CAS). This locality is in eastern Sarawak. PARATYPE one female, labelled: "SARAWAK: Claudetown, 25, vii, 1932, primitive white sand forest; Oxford Univ. Exp., B. M. Hobby and A. W. Moore, B.M.-1933-254" (BMNH). This locality is now called Marudi and is in eastern Sarawak, not far from Mt. Murud.

Description.— Length 6.8-7.0 mm. Antennal stylet conical, short; antennal Segment XI compressed, as wide as long; outer antennal segments very short, thick, cylindrical, disc-like; basal setae absent; Segments I-X each with subapical pollinose ring; latter interrupted ventrally on Segments IV-X by tuft of minor setae; Segment I swollen near bases of two prominent setae on anterior aspect.

Head 1.5 longer than wide; antennal lobe glabrous; median lobe short, hastate, tip acute, even with anterior margin of eye; frontal grooves glabrous, moderately deep; tentorial, postantennal pits very large; antennal groove transverse, very fine, its lateral 0.5 effaced; temporal lobe three times longer than wide, closest together opposite middle eye; posterior 0.67 oblique, divergent; posterior margin, posterior 0.33 of medial margin of temporal lobe fringed with pilosity; orbital groove very fine, complete, pollinose, reaching posterior margin of temporal lobe; eye relatively short, less than 0.5 of length of temporal lobe, narrow, crescentic; lateral margin of temporal lobe oblique posterior to eye; temporal setae absent; posterior long, pilose, concealing notch between temporal, genal lobes; dorsal surface with conspicuous, reticulate microsculpture.

Pronotum very elongate; length/greatest width 1.67; widest behind middle; basal margin curved; lateral margins curved, convergent anteriorly; apex strongly narrowed; base moderately narrowed; median groove fine, linear; median pits oval, elongate; posterior median pit separated from base of pronotum by 0.2 of length of pronotum; inner carinae glabrous, together forming convex discal area; sloped gradually to paramedian grooves; medial margin of outer carina with narrow strip of pollinosity; basal impression small, transverse, oval; outer carina narrow, curved, bounded laterally by shallow broad concavity; ventral margin of latter with trace of minute pollinosity; posterior end of outer carina with tuft of pollinosity; submarginal groove, pronotal setae absent.

Elytra elongate, lateral margins parallel near middle, obliquely narrowed to humerus; latter with prominent lobe bounded posteriorly by pilose notch; apical lobes form prominent, narrow cauda; sutural stria scarcely impressed, faintly punctate; parasutural stria shallowly impressed, complete; base bent medially to base of sutural stria; Interval III narrow, cariniform for most of its length, base forming prominent, fringed medial angle; apex of Interval III forming prominent, elevated preapical tubercle; preapical tubercles separated by combined width of sutural intervals; in lateral view, preapical tubercle with posterior margin emarginate; intratubercular stria shallow, broad, becoming obsolete ventrad to preapical tubercle; marginal stria broad, shallowly impressed, connected by deep, semicircular notch to preapical impression, isolating apical tubercle from remainder of Interval IV; portion of marginal stria posterior to notch bent ventrally, passing across lower surface of apical tubercle; apical tubercles swollen, subtruncate medially, separated by about 0.5 of distance between preapical tubercles (Fig. 45); elytron entirely without setae.

Metasternum with fine median sulcus in posterior 0.5; midline of abdomen elevated, cariniform separating broad, deep transverse sulci; abdominal sutures deeply impressed; Sternum VI with transverse sulci at base, apex deeply impressed, impression bounded posteriorly by pollinose submarginal groove; female with deep lateral pit on Sternum IV; tibiae thick; middle, hind tibiae each with two small, equal spurs; apicolateral process absent. Male unknown.

This species is easily recognized by the separated apical tubercles of the elytra. These, together with the subapical tubercles, form four tooth-like elevations bounding the deep preapical impression.

THE *GESTROI* GROUP

This group consists of three species, two from Sumatra and one from the Nicobar Islands. They resemble the members of the *myopicum* group in most respects, but have the median groove of the pronotum narrowly dilated, with its sides pollinose and its floor glabrous. In contrast to the *fairmairei* group, the median groove is narrower than the median pits. The elytral setae are more extensive than in the *myopicum* group, with at least one seta in the intratubercular stria.

Phylogeny.— *R. bonsae* and *R. propinquus* are clearly closely related. They share the following characters: outer carina of pronotum concave dorsad to marginal groove; parasutural stria with many setae; median groove shallow, its margins glabrous posterior to posterior median pit; antennae short, thick, outer segments short, cylindrical, disc-like; Segment XI as wide as long, compressed, stylet short, conical; preapical tubercle strongly elevated; antennal lobe glabrous; temporal lobes divergent posteriorly.

The third species, *R. gestroi*, is more distantly related, and has the following contrasting characters: carina of pronotum convex; parasutural stria without setae; median groove basad to posteriormedian pit deep, its margins pollinose; antennae longer, more slender, outer segments oblate sphaeroidal; Segment XI longer than wide, not compressed; stylet longer, acute; preapical tubercle scarcely elevated; antennal lobe largely pollinose; temporal lobes strongly convergent posteriorly.

Rhizodiastes (Temoana) gestroi (Grouvelle 1903) NEW COMBINATION
(Fig. 38)

Clinidium gestroi Grouvelle 1903: 136-137.

Rhizodiastes gestroi (Grouvelle) Bell and Bell 1978.

Type Material.— LECTOTYPE (here designated) male, labelled: "Luglio, Gunong Singalang, Beccari, 1878" (MNHN). PARALECTOTYPES one specimen, sex not recorded, labelled: "Si Rambé, Modigliana, Sep. 1892" (MNHN); one male, same label as lectotype (GEN); three specimens (GEN), labelled: "Syntype. Si Rambé, Modigliana, XII-90-III-91" are not *R. gestroi* but *R. indigenus*. Both localities are in Sumatra.

Description.— Length 6.2-7.0 mm. Antennal stylet acuminate; antennal Segment XI longer than broad, scarcely compressed; few basal setae on Segment X, absent from more proximal segments; antennae longer, more slender, than in related species, outer segments oblate spheroids; Segments I-X each with subapical pollinose ring; head slightly longer than wide; antennal lobe largely pollinose, with a few irregular glabrous areas; median lobe short, rather narrow, shield-shaped, its tip obtuse, opposite anterior 0.33 of eye; frontal grooves rather broad, deep, pollinose; medial margins of temporal lobe oblique, closest together posteriorly, where medial angles are narrowly separated, nearly closing frontal space posteriorly; temporal lobe 2.5 longer than wide; temporal lobe evenly rounded posteriorly, with conspicuous pollinose border; orbital groove complete, narrow; eye narrowly crescentic, 0.5 as long as temporal lobe; one temporal seta, in orbital groove posterior to eye; postorbit pilose.

Pronotum moderately elongate; length/greatest width 1.44; ovate, basal margin strongly curved; apex strongly narrowed; base moderately narrowed; lateral margins curved; median groove narrowly dilated, about 0.5 times as wide as anterior median pit; posterior median pit separated from base by 0.2 of length of pronotum; median groove basad to posterior median pit deep, margins pollinose; inner carina highest next to median groove, sloped gradually laterally to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; outer carina convex, relatively broad, marginal groove linear, entire, pollinose, pronotal setae absent.

Elytra relatively short, broad, margins parallel near middle; base strongly, obliquely narrowed to humeri; apex broadly rounded, cauda not distinct; stria pollinose; sutural, parasutural scarp-like, with lateral margin much higher than medial margin; intratubercular, marginal striae impressed; base of parasutural stria bent medially; Interval III subcarinate, base forming prominent medial angle; apex forming slightly elevated preapical tubercle; apical tubercles inflated, contiguous, no pore beneath them in midline; intratubercular stria with one seta just anterior to preapical tubercle; apex of marginal stria with four setae.

Metasternum without median sulcus; transverse sulci of abdominal sterna broadly interrupted at midline, shallow, barely impressed, each sulcus with pit at medial end; female with deep lateral pit in Sternum IV; submarginal sulcus of

Sternum VI well separated from transverse sulci; tibiae moderately slender, middle, hind tibiae with two spurs, these equal in female, posterior spur smaller in male; anterior femur of male with minute ventral tooth near apex; male with all trochanters pointed; calcaria narrowly triangular, acute.

This species is easily recognized by the form of the temporal lobes, which nearly meet posteriorly.

Range.— Known only from the west coast of Sumatra. In addition to the type material, we have seen three specimens with the following label: "Gunung Singgalang, Sumatra's Westkust, 1800 m. VII-1925, leg. E. Jacobson". Of these specimens, there is one male (NMNH) and one male, one female (AMS).

Rhyzodiastes (Temoana) propinquus new species

(Fig. 39)

Type Material.— HOLOTYPE female, labelled: "Nicobars, *Rhyzodiastes propinquus* Grouv." (MNHN). The latter is an unpublished species name which we are happy to adopt.

Description.— Length 6.8 mm. Antennal stylet minute, conical; antennal Segment XI as broad as long, somewhat compressed; few basal setae on Segment X, absent from more proximal segments; antennae very short, thick; outer segments short, disc-like cylinders; tufts of minor setae present on Segments IV-X; Segments I-X each with subapical pollinose ring; head slightly longer than wide; antennal lobe glabrous; median lobe short, hastate, its tip acute, opposite anterior 0.33 of eye; frontal grooves deep, glabrous; medial margins of temporal lobes curved, closest together opposite posterior part of eyes; temporal lobes appear to diverge posteriorly, because of broad posteriomedial glabrous area on each temporal lobe; temporal lobe about 2.5 longer than wide; posterior margin of temporal lobe pilose; orbital groove complete; eye narrowly crescentic, approximately 0.5 as long as temporal lobe; possibly small temporal seta, in posterior part of orbital groove; postorbit pilose.

Pronotum elongate; length/greatest width 1.50; widest posterior to middle, ovate; basal margin curved, apex strongly narrowed; base moderately narrowed; lateral margins curved; median groove narrowly dilated, about 0.5 as wide as anterior median pit; posteriomedian pit separated from base by 0.2 of length of pronotum; median groove based to posteriomedian pit shallow, margins glabrous; inner carina highest next to median groove, sloped gradually laterally to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; outer carina in dorsal view appearing narrow, because lateral 0.67 of outer carina is concave; marginal groove linear, entire, pollinose; pronotal setae absent.

Elytra moderately elongate; margins parallel near middle; base slightly narrowed to humeri; apex evenly rounded, not forming cauda; striae pollinose; sutural, parasutural striae scarp-like, with lateral margin higher than medial margin; intratubercular, marginal striae impressed, base of parasutural bent medially; base of Interval III forming prominent, pilose angle; Interval III laterad to basal angle glabrous; apex of Interval III forming rounded, elevated preapical tubercle; apical tubercles scarcely inflated, contiguous; round pore ventral to apical tubercles in midline; parasutural stria with six setae forming complete row; one seta at base of Interval III; intratubercular stria with one seta at base, one seta opposite anterior end of preapical tubercle; three or four setae in apex of marginal stria.

Metasternum with fine median sulcus; transverse sulci of abdominal sterna broadly interrupted at midline; deep, pollinose; female with deep lateral pit in Sternum IV; Sternum VI with marginal groove, posterior 0.33 impressed; tibiae moderately slender; middle, hind tibiae each with two equal spurs; male unknown.

This species is most similar to *R. bonsae* from which it can be distinguished by the apparent divergence of the temporal lobes posteriorly, the glabrous base of Interval IV, and the contiguous, scarcely inflated apical tubercles.

Rhyzodiastes (Temoana) bonsae new species

(Fig. 46)

Type Material.— HOLOTYPE female, labelled: "Sumatra, Mt. Tenggamoes, Lampons". (MNHN) The locality is now spelled "Gunung Tanggamus", and is near the southern tip of Sumatra.

Description.— Length 7.8 mm. Antennal stylet minute, conical; antennal Segment XI as broad as long, somewhat compressed; few basal setae on Segment X, basal setae absent from more proximal segments; antennae very short, thick; outer segments short, disc-like cylinders; Segments I-X each with subapical pollinose ring; head slightly longer than wide; antennal lobe glabrous; median lobe short, hastate, its tip acute, opposite anterior 0.33 of eye; frontal grooves deep, glabrous; medial margins of temporal lobes closest together opposite eyes, nearly parallel, very slight divergent posteriorly; medial and posterior margins of temporal lobe pilose fringe of even width; glabrous area of each temporal lobe about 2.5 longer than wide; orbital groove complete; one small, inconspicuous temporal seta in posterior part of orbital groove; postorbit with conspicuous, rather long golden pilosity.

Pronotum elongate; length/greatest width 1.54; ovate, widest near middle; lateral margins more strongly curved than in *R. propinquus*, base curved; base rather strongly narrowed; apex very strongly narrowed; median groove narrowly dilated, about 0.5 as wide as anteriomedian pit; posterior median pit separated from base by 0.2 of length of pronotum; median groove basad to posterior median pit shallow, margins glabrous; inner carina highest next to median groove, sloped gradually laterally to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; outer carina in dorsal view appearing narrow, because lateral 0.67 of outer carina is concave; marginal groove linear, pollinose, entire; pronotal setae absent.

Elytra moderately elongate; margins parallel near middle; base slightly narrowed to humeri; apical tubercles protruding, forming broad but distinct cauda; sutural stria with very narrow, inconspicuous line of pollinosity; remaining striae with broader, more conspicuous pollinose lines; sutural, parasutural striae scarp-like, with lateral margin higher than medial margin; intratubercular, marginal striae very shallow, scarcely impressed; base of parasutural stria bent medially; base of Interval III forming prominent pilose medial angle; latter connected to humerus by band of pollinosity crossing base of Interval III; apex of Interval III forming low preapical tubercles, these more rounded, further apart than *R. propinquus*; apical tubercles prominent, inflated, separately rounded medially, nearly touching at one point, medial surfaces pollinose; large rounded pore ventrad to them in midline; parasutural stria with row of about 10 setae, base of this row follows medially bent portion of parasutural stria to base of sutural stria, while most posterior setae of this row is displaced slightly laterad to stria, arising from medial surface of preapical tubercle; one seta at base of Interval III laterad to parasutural stria; one or two setae on preapical tubercle; one or two setae in apex of intratubercular stria; several setae near apex of marginal stria.

Metasternum with faint trace of median sulcus in posterior 0.5; abdominal sterna with transverse sulci well defined but glabrous, broadly interrupted in midline; small pit at medial end of each sulcus; female with deep, round lateral pit on Sternum IV; Sternum VI with transverse sulci, narrow marginal groove, disc not impressed; tibiae moderately slender; middle hind tibiae each with two equal spurs; male unknown.

Among species with the median groove narrowly dilated, this species may be recognized by the nearly parallel medial margins of the temporal lobes and by the inflated, separately rounded apical tubercles.

It is a pleasure to name this species for Madame Andree Bons, of the National Museum of Natural History in Paris, in gratitude for the aid that she has given to us and to many other coleopterists over the years.

THE FAIRMAIREI GROUP

There are four species in this group, all from the mainland of Southeast Asia. Among the species with a tuft of minor setae on Segment IV, they are easily recognized by the greatly dilated median groove of the pronotum.

Phylogeny.— The relationships within the group are relatively obvious. *R. fairmairei* differs from all the rest in the great enlargement of the posteriomedian pit of the pronotum, and in the absence of temporal and elytral setae. It is probably only distantly related to the three remaining species, which have the median groove of even width, not dilated by the enlargement of the posteriomedian pit; and which have one or more temporal setae, and, in most specimens, elytral setae. Among these three species, the two Vietnamese species appear to be very closely related, with *R. spissicornis* of Malaya being more distant. The latter species has a median sulcus on the metasternum, equal tibial spurs, setae in the sutural stria, in the fourth interval, and on the apical tubercle, and the head elongate, with margins oblique posterior to the eyes. In the two Vietnamese species, the median sulcus is absent, the tibial spurs are unequal, and the elytral setae are limited to the parasutural stria and the apex of the marginal stria, or else are absent.

Rhyzodiastes (Temoana) fairmairei Grouvelle 1895b NEW COMBINATION (Fig. 47)

Rhyzodiastes fairmairei Grouvelle 1895b: 762-763.
Clinidium fairmairei (Grouvelle) Grouvelle 1903.

Rhyzodiastes fairmairei (Grouvelle 1895b) Bell and Bell 1978.

(Incorrect citation: Grouvelle originally described the species in *Rhyzodiastes*.)

Type Material.— HOLOTYPE female, labelled: "Carin Cheba, 900-1100 m., L. Fea, V-XII-88" (MNHN). In the original description, the locality is given as "Montagnes des Carin, district des Carin Cheba". It is in eastern Burma.

Description.— Length 7.0 mm. (our measurement; Grouvelle gives the length as 6.5 mm). Antennal stylet acute, rather long; antennal Segment XI somewhat compressed, as wide as long; outer antennal segments very short, thick, cylindrical, disc-like; basal setae absent; Segments I-X each with subapical pollinose ring; latter interrupted ventrally on Segments IV-X by tuft of minor setae; head 1.25 longer than wide; antennal lobe glabrous; median lobe short, hastate, tip acute, extending slightly posterior level of anterior margin of eye; frontal grooves rather broad, deep, pollinose; antennal groove oblique, deep, pollinose; temporal lobe three times longer than wide; medial margins curved, closest together opposite posterior margin of eye; posterior margin rounded, broadly fringed with pilosity, latter extended obliquely anteriorly along medial margin; orbital groove complete, pollinose; eye crescentic, rather short, about 0.33 as long as temporal lobe; temporal seta absent.

Pronotum elongate, length/greatest width 1.51; oval, widest at middle, lateral margins curved; base, apex both narrowed; base strongly curved; median groove very broad, resembling keyhole, posterior portion (posteriomedian pit) round, about 0.33 of width of pronotum; anterior portion with parallel margins, about 0.2 of width of pronotum; inner carinae broad, sloped laterally; medial margin of outer carina with narrow strip of pollinosity; in dorsal view, outer carina appears narrow, curved; outer carina with lateral surface concave, bounded ventrally by poorly defined marginal groove; submarginal groove, pronotal setae absent.

Elytra elongate, rather narrow; lateral margins parallel near middle; humeri abruptly, obliquely narrowed; sutural, parasutural stria finely punctate, impressed, scarp-like, with lateral margin of each much higher than medial margin, base of parasutural stria bent medially; intercalary, marginal striae rather coarsely punctate, scarcely impressed except at apex; subapical tubercle slightly elevated; apical tubercles inflated, contiguous at midline; elytral setae entirely absent.

Metasternum without median sulcus; transverse sulci of abdomen broadly interrupted at midline; sulci largely glabrous, each with median, lateral pit; lateral pit of Sternum IV enlarged in female; submarginal sulcus of Sternum VI widely separated from transverse sulcus at base, latter scarcely impressed, appearing as pair of pits on either side; middle and hind tibia each with spur equal. Male unknown.

The broad, median groove of this species resembles a keyhole, and is unique within the genus.

Rhyzodiastes (Temoana) spissicornis Fairmaire 1895 NEW COMBINATION

(Fig. 48)

Rhyzodiastes spissicornis Fairmaire 1895: 11-12.

Clinidium spissicorne (Fairmaire) Grouvelle 1903.

Rhyzodiastes spissicornis (Fairmaire) Bell and Bell 1978.

(Incorrect citation; Fairmaire originally described the species in *Rhyzodiastes*.)

Type Material.— LECTOTYPE male, labelled: "Puolo Pinang, Raffray, Ty., voisin de parumcostatum de Fairmaire de Madagascar" (MNHN). PARALECTOTYPE female, labelled: "Singapore" (MNHN).

Description.— Length 5.5-7.0 mm. Antennal stylet small, conical; antennal Segment XI compressed, as broad as long; basal setae absent; antennae very short, thick; outer segments very short cylinders, 2.5 wider than long; tufts of minor setae present on Segments IV-X; Segments I-X each with subapical pollinose ring; head elongate, length/width 1.5; antennal lobe glabrous; medial lobe very short, shield-shaped, its tip obtusely pointed, at level with anterior margin of eye; frontal grooves deep, glabrous; medial margins of temporal lobe curved, closest together opposite middle of eye; temporal lobes divergent posteriorly; temporal lobe three times longer than wide; posterior half of medial margin, posterior margin of temporal lobe fringed with pilosity; orbital groove complete, sinuate; eye crescentic, short, 0.5 as long as temporal lobe; one small temporal seta, halfway between posterior end of eye, occipital angle; postorbits pilose.

Pronotum elongate; length/greatest width 1.55; widest posterior to middle, ovate; basal margin curved; base moderately narrowed; apex strongly so; lateral margins curved; median groove dilated, about 10 times longer than broad, gradually narrowed anteriorly; anterior median pit separated from apex of pronotum by about 0.1 of pronotal length; posterior median pit separated from base by about 0.33 of length of pronotum; median groove very shallowly impressed in front of anterior median pit and behind posterior median pit; inner carina highest next to median groove, sloped gradually laterally to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; outer carina in dorsal view appearing narrow, because lateral 0.67 of outer carina is concave; marginal groove represented only by inconspicuous line of minute pollinosity at ventral margin of concavity; pronotal setae absent.

Elytra elongate; margins parallel near middle; narrowed near humeri; latter prominent, tooth-like in dorsal aspect; apex evenly rounded, not forming cauda; all striae scarp-like, with lateral margin higher than medial one; sutural, parasutural, marginal impressed, pollinose; intratubercular with base, apex impressed, pollinose, middle not pollinose, scarcely impressed; base of parasutural stria bent medially; base of Interval III forming prominent medial angle, latter

fringed with pilosity; base of Interval III with prominent lateral swelling just posterior to humeral angle; apex of Interval III forming narrow, elevated preapical tubercle; apical tubercles slightly inflated, contiguous; sutural, parasutural stria and Interval IV each with complete row of many setae; posthumeral elevation, apical tubercle with setae; apex of marginal stria with several setae.

Metasternum with median sulcus; transverse sulci of abdomen broad, deeply impressed, each with narrow transverse line of pollinosity; transverse grooves well separated at midline; those of Sternum VI slightly oblique, well separated from submarginal groove; lateral pit of Sternum IV enlarged in female; tibiae thick; middle, hind tibiae each with two equal spurs; ventral surface of anterior femur of male with many minute tubercles, but without ventral tooth; male with front, hind trochanters pointed; calcars acute, triangular.

This species can be recognized by the dilated median groove in combination with the great development of elytral setae. The elongate head, with relatively short eyes, also separates it from the two species from Viet Nam.

Range.— Malay Peninsula. In addition to the type material we have seen the following specimens: one female, labelled: "Perka" (BMNH); one female, labelled: "Penang" (BMNH); one female, labelled: "Malaya, Kuala Lumpur, 90 m. VI-7-1962, coll. E. S. Ross and D. Q. Cavagnaro" (CAS), one male, labelled: "P. Penang, Raffray" (GEN), one male, labelled: "P. Penang, 600-800 M., Loria e Fea" (GEN), also one male without locality label (MNH).

Rhyzodiastes (Temoana) alveus new species
(Figs. 49, 52)

Type Material.— HOLOTYPE male, labelled: "Hoa Binh, Tonkin, de Cooman, B.M. 1929-299" (BMNH). PARATYPES two males, same label as holotype (BMNH); one male, three females, same label as holotype except that acquisition number reads "B,M, 1925-251" (BMNH).

Description.— Length 5.0-6.8 mm. Antennal stylet small, conical; antennal Segment XI not compressed, longer than wide, basal setae absent; antennae moderately short, thick; outer segments oblate spheroids, less than two times wider than long; tufts of minor setae present on Segments IV-X; pollinosity in some specimens present on all antennal segments, in other specimens limited to Segments I-III; head slightly longer than wide; median lobe short, shield-shaped, its tip acute, opposite anterior margin of eye; frontal grooves deep, glabrous; medial margins of temporal lobes curved, closest together opposite middle of eye; posterior 0.5 of medial margin, lateral margin posterior to eye, with long pilosity; glabrous area of temporal lobe three times longer than wide, tapered to point posteriorly, its medial margin concave opposite posterior 0.5 of medial margin; orbital groove complete, margin with lateral pilosity posterior to eye; eye narrow, crescentic, larger than *R. spissicornis*, 0.67 as long as temporal lobe; one small temporal seta opposite posterior margin of eye; postorbit pilose.

Pronotum moderately elongate; length/greatest width 1.44; widest at middle; base, apex equally narrowed; lateral margins moderately curved; base moderately curved; median groove dilated, its deep portion five times longer than wide, margins nearly parallel; posterior median pit separated from base by about 0.25 of length of pronotum; median groove shallowly impressed in front of anterior median pit, behind posterior median pit; inner carina highest next to median groove, sloped gradually to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; fine line of pollinosity in concavity of outer carina, distant from lateral margin and notopleural suture (Fig. 52); outer carina, in dorsal view, appearing narrow because lateral 0.67 of outer carina is concave; pronotal setae absent.

Elytra moderately elongate; margins parallel near middle, narrowed slightly near humeri; apex evenly rounded, not forming cauda; all striae scarp-like, with lateral margin much higher than medial one; all striae impressed, with very fine line of minute pollinosity; marginal stria interrupted posteriorly, apical portion detached, on ventral surface of apical tubercle; base of parasutural stria bent medially; base of Interval III forming prominent pilose medial angle; base of Interval III without lateral swelling; apex of Interval III forming narrow, elevated preapical tubercle; in posterior view, posterior margin of preapical tubercle emarginate, apex overhanging base; apical tubercles slightly inflated, contiguous; apex of marginal stria with several setae; elytron otherwise without setae.

Metasternum without median sulcus; transverse sulci of abdominal sterna narrow, not interrupted at midline, with pair of dilated pits on either side of midline; those of Sternum VI connected laterally to base of marginal groove; both sexes with lateral pit in Sternum IV, that of female larger than that of male; tibiae relatively slender; spurs of middle and hind tibiae unequal, medial one about 0.5 as long as lateral one; male with ventral tooth on anterior femur; male with hind trochanter pointed; calcars blunt, middle one narrow, hind one triangular, its proximal margins slightly angulate.

The short head, lack of a median metasternal sulcus, and greatly reduced elytral setae separate this species from *R. spissicornis*. The absence of setae from the parasutural stria and the broader median groove separate it from *R. fossatus*.

Range.— Northern Viet Nam, west and north of Hanoi. In addition to the type series, we have seen the following specimens: two females, labelled: "N. Viet Nam, northwest of Tam Dao, Shou-Zuong, 1-2-1962, 200, 300 m., Kabakov" (LEN); one female, same data, 300 m., 20-2-1962 (LEN); one female, same data, 31-1-1962 (LEN); one male, labelled: "North Viet Nam, hills 50 km. NW of Thai-Nguyen, 19-12-1962, 400 m. Kabakov" (LEN); one male, same data, except 9-3-1963, 300 m. Kabakov (LEN); one female, same data, except 8-II-1963, Kabakov (LEN).

Variation.— The type series, from southwest of the Son Koi (Red River), have subapical pollinose rings on all antennal segments, and have a pollinose area on the lateral surface of the hind, and in most specimens, of the middle tibia. Specimens from northeast of the Song Koi (Thai-Nguyen, Tam Dao) have pollinose rings only on antennal segments I and II, and lack pollinosity on the lateral surfaces of the middle and hind tibiae, although there is a pollinose line on the posterior face of the tibia. The latter is also present in the specimens from Hoa Binh. Further collecting may demonstrate that the northeastern populations represent a separate species or subspecies.

Rhyzodiastes (Temoana) fossatus new species
(Figs. 50, 53, 54)

Type Material.— HOLOTYPE male, labelled: "N. VIET NAM, hills s.w. Kui Chau, 300 m. 14-1-1963, Kabakov" (LEN). PARATYPES five males, five females, same locality, several dates from 12-1-1963 to 15-11-1963 (LEN). The locality is in the north part of the former Annam, about 200 Km. south of Hanoi.

Description.— Length 5.6-7.0 mm. Antennal stylet small, conical; antennal Segment XI slightly compressed, as wide as long; basal setae absent; antennae moderately thick, short; outer segments oblate spheroids, less than two times wider than long; tufts of minor setae present on Segments IV-X; Segments I-X with subapical pollinose rings, in some specimens interrupted near some of the apical setae; head slightly longer than wide; median lobe short, shield-shaped, tip acute, opposite anterior margin of eye; frontal grooves deep, glabrous; medial margins of temporal lobes curved closest together opposite middle of eye; posterior 0.5 of medial margin, lateral margin posterior to eye, with long pilosity; glabrous area of temporal lobe three times longer than wide, tapered to point posteriorly, its medial margin oblique, straight or nearly so opposite posterior 0.5 of medial margin; orbital groove complete, merging with lateral pilosity posteriorly; eye narrow, crescentic, 0.67 as long as temporal lobe; one small temporal seta opposite posterior margin of eye; postorbit pilose.

Pronotum moderately elongate; length/greatest width 1.42; widest at middle; base, apex equally narrowed; lateral margins moderately curved; base moderately curved, median groove dilated, but narrower than in *R. alveus*, deep portion six times longer than wide, margins nearly parallel; floor of groove minutely pollinose with narrow glabrous median line; posterior median pit separated from base by about 0.20 of length of pronotum; median groove shallowly impressed in front of anterior pit, behind posterior median pit; inner carina highest next to median groove, sloped gradually to paramedian groove; medial margin of outer carina with narrow strip of pollinosity; line of pollinosity along lateral margin of pronotum just dorsad to notopleural suture (Fig. 53); outer carina, in dorsal view, appearing narrow because lateral 0.67 of outer carina is concave; pronotal setae absent.

Elytra moderately elongate; margins parallel near middle, narrowed slightly near humeri; apex evenly rounded, not forming cauda; all striae scarp-like, with lateral margin much higher than medial margin; all striae impressed, with line of pollinosity; marginal stria interrupted posteriorly, apical portion detached, on ventral surface of apical tubercle; base of parasutural stria bent medially; base of Interval III forming prominent pilose medial angle; base of Interval III without lateral swelling; apex of Interval III forming narrow, elevated preapical tubercle; in posterior view, posterior margin of preapical tubercle emarginate, apex overhanging base; apical tubercles slightly inflated, contiguous; parasutural stria with five to eight setae, in a few specimens forming complete row, in most specimens with a gap near middle; apex of marginal stria with several setae (Fig. 54).

Metasternum without median sulcus; transverse sulci of abdominal sterna narrow, not interrupted at midline, with pair of dilated pits on either side of midline; those of Sternum VI connected laterally to base of marginal groove of Sternum VI; both sexes with lateral pit in Sternum IV, that of female larger than that of male; tibiae relatively slender; spurs of middle, hind tibiae unequal, medial one about 0.5 as long as lateral one; male with ventral tooth on anterior femur; male with hind trochanter pointed; calcars as in *R. alveus*; lateral surface of tibia in both sexes with extensive pollinose area containing glabrous tubercles.

This species is close to *R. alveus*, from which it differs most conspicuously in the presence of setae in the parasutural stria and in having a narrower, minutely pollinose median groove on the pronotum.

SUBGENUS *RHYZOSTRIX* NEW SUBGENUS

Type species.— *Rhyzodes maderiensis* Chevrolat 1873a.

Description.— Antennal stylet present, though minute in some species; tufts of minor setae present on Segments IV-X; clypeal setae present; compound eye relatively broad, oval; posterior margin of temporal lobe broadly pilose; gena with curved band of pollinosity ventrad to eye; temporal seta absent; inner carina of pronotum sloped gradually to paramedian groove; pollinosity limited to narrow line on medial slope of outer carina; base of pronotum with pollinose border; paramedian grooves straight to slightly curved; outer carina not greatly enlarged or broadened at middle; pronotal setae absent; intercalary stria absent; elytral striae coarsely punctate.

The large, oval eyes are diagnostic of this subgenus. Otherwise, it is superficially similar to *Temoana*. The very coarsely punctate elytral striae will separate it from all except *R. (T.) sulcicollis*. The appearance is quite different from *Rhyzodiastes sensu stricto*, the other subgenus found in South America. The latter genus has narrow, costate outer carinae, smaller, more crescentic eyes, and broadly pollinose paramedian and marginal grooves. However, the two South American subgenera have some characters in common, such as pollinosity of the gena in a curved, c-shaped band, elytral striae coarsely punctate, and posterior margin of temporal lobe with very broad band of pollinosity. Perhaps they are related to one another.

Clinidium quadristriatum (Chevrolat) was used by Vulcano and Pereira (1975b) as the name for a species of this genus. Their species is probably distinct from any known to us, but, as indicated below, there is doubt as to whether *C. quadristriatum* is the correct name for it. They illustrate another species under the name *C. integrum* Grouvelle, but this is not the species described by Grouvelle (a *Clinidium s. str.*), but is probably yet another undescribed *Rhyzostrix*.

Rhyzostrix is found in South America, in the Amazon Basin and Guiana and south along the coast to Rio de Janeiro. It is largely allopatric to *Rhyzodiastes sensu stricto*.

Phylogeny.— Of the species known to us, *R. menieri* and *R. maderiensis* appear to be closely related. If the convex, setose sutural interval is regarded as a synapomorphy, *R. nitidus* is closer to the two preceding than to *R. davidsoni*. If the flat non-setose sutural interval of the latter species is an apomorphy, *R. davidsoni* may be merely the most specialized species, and not the most phylogenetically distinct one. Current data are insufficient to choose between these possible phylogenies or to place *R. quadristriatus* in the phylogeny.

KEY TO SPECIES

- 1 Elytral Intervals I-III undulating, irregular, invaded by enlarged strial punctures *R. quadristriatus* (Chev), p. 49
- 1' Elytral Intervals I-III not undulating, irregular 2
- 2 (1') Suture interval flat, without setae; antenna without basal setae; hind calcar cultrate *R. davidsoni* new species, p. 49
- 2' Suture interval convex, with two to four setae near apex; basal setae of antenna present; hind calcar straight 3
- 3 (2') Punctures of sutural, parasutural striae very coarse, nearly as broad as Interval II; Stria III with pilosity limited to punctures; tip of preapical tubercle slightly dentate, its posterior margin emarginate; Sternum VI of female not impressed *R. nitidus* new species, p. 52
- 3' Punctures of sutural, parasutural striae smaller, less than 0.5 of width of Interval II; Stria III with continual pollinosity; tip of preapical tubercle not dentate, rounded posteriorly; Sternum VI of female impressed, with

- tubercle at midline 4
- 4 (3') Sternum VI of female with pollinose pit posterior to small tubercle;
Sternum IV without lateral pits in the female
..... *R. menieri* new species, p. 52
- 4' Sternum VI of female with pair of pollinose areas or crescent area posterior
to tubercle; Sternum IV of female with lateral pits evident, though small
..... *R. maderiensis* (Chevrolat), p. 53

Rhyzodiastes (Rhyzostrix) quadristriatus (Chevrolat 1873a) NEW COMBINATION

Rhyzodes quadristriatus Chevrolat 1873a: 211.

Clinidium quadristriatum (Chevrolat) Grouvelle 1903.

Rhyzodiastes quadristriatus (Chevrolat) Bell and Bell 1978.

Type Material.— HOLOTYPE (sex not stated) according to the original description "Cayenna ex museo Banoni". We have not been able to locate the type, which was not studied by Vulcano and Pereira (1975b). "Cayenne" refers to French Guiana.

Description.— Vulcano and Pereira (1975b) assigned a specimen from Brazil (Pará, Taperinha perto de Santarém, 1-10, VII. 1927 Zerny leg.) to this species. We have not studied this specimen. As indicated in our key, it differs from all species seen by us in having Intervals I-III undulating and irregular, invaded by enlarged punctures of sutural and parasutural striae. However, there is doubt as to whether the Chevrolat name really applies to this specimen. The original description does not mention the undulating, irregular intervals. Grouvelle (1903) did cite undulating, irregular intervals as characteristic of this species, and of *R. maderiensis* as well, but did not state that he had studied the type of *R. quadristriatus*. Unless the type can be located, *R. quadristriatus* should probably be regarded as a *nomen dubium*, and the specimen attributed to it by Vulcano and Pereira should be given a new name.

Rhyzodiastes (Rhyzostrix) davidsoni new species
(Figs. 51, 55, 62, 64)

Type Material.— HOLOTYPE male, labelled: "Brazil, Amazonas, 1 km. W. Taruma Falls, 100 m., 11-I-1981, coll. R. Davidson" (CMP). PARATYPES three males, three females, same data as holotype (CMP); one male, labelled: "Manaus, Amazonas, Brasil, VIII-1962, coll. K. Lenko" (MZSP).

Description.— Length 5.9-6.8 mm. Antennal stylet minute; basal setae of antenna absent; head longer than wide; frontal grooves very narrow, shallow; median lobe longer than in related species, its tip even with middle of eye; gena with horizontal pollinose line just below eye, but without curved ventral continuation.

Pronotum short for subgenus, length/greatest width 1.53; suboval, with apex more truncate, hind angles more distinct than in other members of subgenus; widest just posterior to middle; lateral margins constricted just anterior to middle, width anterior to constriction almost equal to greatest width; marginal groove strongly abbreviated posteriorly, ending just posterior to middle of pronotum.

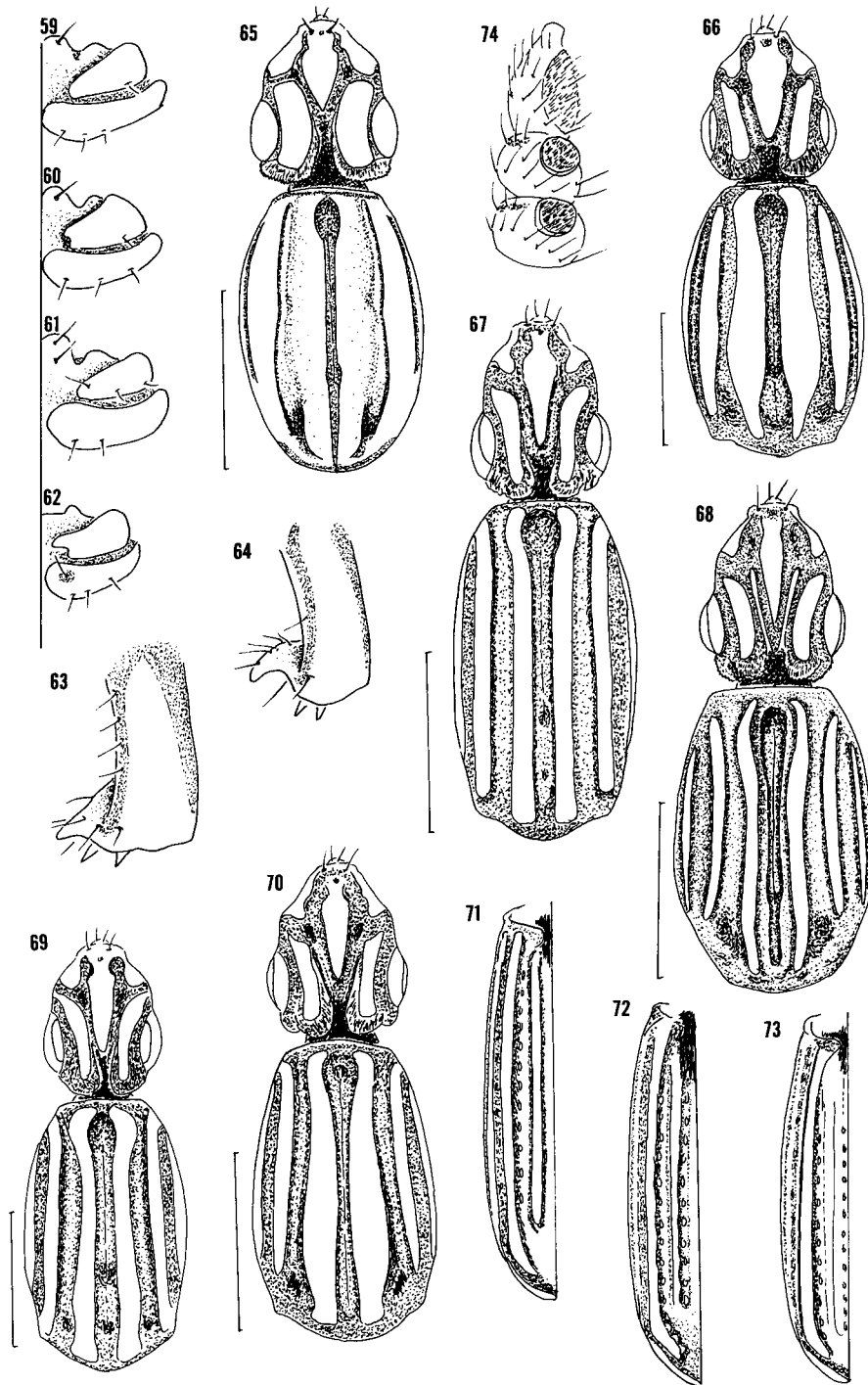
Elytra elongate, lateral margins parallel through most of length; humeri narrowed; sutural stria, fine with about 10 moderately fine punctures; parasutural striae impressed, wider than others, with about 10 coarse punctures: intercalary, marginal striae impressed, rather finely punctate; sutural interval completely flat (Fig. 62); second interval convex, subcarinate; third interval elevated above parasutural stria, medial margin broadly pollinose; third intervals strongly convergent anteriorly; apex of third interval forming elevated preapical tubercle, latter with posterior margin strongly emarginate; preapical tubercles dentate, nearly contiguous in midline; apical tubercle with one or two setae; apex of marginal stria with several setae; sutural interval without setae.

Metasternum with complete, deep, median sulcus; abdominal sterna each with narrow, coarsely punctate transverse sulcus; Sulci III-IV complete, V, VI complete or narrowly interrupted in midline; submarginal sulcus of Sternum VI of female with expanded pit at either side (Fig. 55), male without such expanded pit; middle, hind femora of male angulate beneath; hind trochanter pointed in male; middle calcar very narrow, straight, acute; hind calcar elevated above tibial spurs, strongly cultrate (Fig. 64).

The flat sutural interval, entirely without setae, differentiates this species from the rest of the subgenus. The strongly dentate preapical tubercles, short pronotum with distinct hind angles and truncate apex, and the curved, hooklike hind calcars, are also diagnostic.

Range.— In addition to the type series we have seen three males, three females, labelled: "Brasil, Amazonas, BR. 174, Km. 18, 5-XII-1979, Elias Brasil" (INPA).

Plate 6. Figs. 59–65. Genus *Rhyzodiastes*, new Subgenus *Rhyzostrix*. Figs. 59–62, Right elytron, posterior aspect; Fig. 59, *R. (R.) menieri* new species; Fig. 60, *R. (R.) nitidus* new species; Fig. 61, *R. (R.) maderiensis* (Chevrolat); Fig. 62, *R. (R.) davidsoni* new species; Figs. 63–64, Hind tibia, apex, male; Fig. 63, *R. (R.) maderiensis* (Chevrolat); Fig. 64, *R. (R.) davidsoni* new species; Figs. 65–70, Head and pronotum, dorsal aspect; Fig. 65, *R. (R.) maderiensis* (Chevrolat). Figs. 66–74. Subgenus *Rhyzodiastes sensu stricto*. Fig. 66, *R. (s. str.) pentacyclus* new species; Fig. 67, *R. (s. str.) liratus* (Newman); Fig. 68, *R. (s. str.) parumcostatus* (Fairmaire); Fig. 69, *R. (s. str.) suturalis* new species; Fig. 70, *R. (s. str.) costatus* (Chevrolat); Figs. 71–73, Left elytron, dorsal aspect; Fig. 71, *R. (s. str.) liratus* (Newman); Fig. 72, *R. (s. str.) suturalis* new species; Fig. 73, *R. (s. str.) costatus* (Chevrolat); Fig. 74, Antennal Segments IX–XI, *R. (s. str.) pentacyclus* new species.



Variation.— One of the females from Taruma Falls has a tubercle in the middle of Sternum VI of the abdomen, while the other two females lack any trace of a tubercle. This might prove to be a specific character; however, the tuberculate and one of the nontuberculate females were taken *in copula* with apparently identical males. It is possible that the females are morphs of a polymorphic population, analagous to *Clinidium veneficum* Lewis.

In addition to type material, we provisionally assign to this species a male, labelled: "Taracuá, Rio Uaupés, Amazonas, Brasil, VIII-1964 Pereira and Machado" (MZSP). It conforms to the description of *R. davidsoni* in most respects, but has a low second interval, only slightly more convex than the sutural interval. The hind trochanter is less distinctly pointed than in the type series. This locality is far to the west of Manaus, and is near the Colombian border. This form might be a distinct, though closely related species, a subspecies, or the differences might be clinal. A decision must await collections in the intervening area.

Rhizodiastes (Rhizostrix) nitidus new species
(Figs. 56, 60)

Type Material.— HOLOTYPE male, labelled: "Santarem, Brazil, Acct. No. 2966" (CMP). PARATYPES one male, one female, same data as holotype (CMP); two males, one female, labelled: "Rio de Jan., Brazil, Acct. No. 2966" (CMP); one male, one female, labelled: "Amaz., Pará" (MNHN). The female of this pair is labelled: "*Clinidium nitidum* Grouv.", an unpublished name.

Description.— Length 6.0-7.2 mm. Antennal stylet small, narrowly conical; basal setae present on Segment VII-X; head longer than wide; frontal grooves moderately wide, shallow; median lobe very short, its tip opposite anterior margin of eye; gena with curved pollinose line.

Pronotum oval, elongate; length/greatest width 1.59; widest near middle; base strongly curved; apex moderately curved; hind angles indistinct; marginal groove over 0.6 as long as pronotal margin, separated from base, apex by 0.2 of length of margin.

Elytra elongate, lateral margins parallel through most of length; humeri narrowed; sutural stria impressed, coarsely punctured, punctures nearly as wide as Interval II; parasutural stria deeply impressed, coarsely punctured, both striae with about 8 elongate punctures; intratubercular, marginal striae broad, impressed, with medial margins sloped gradually from intervals, coarsely punctate, though less coarse than punctures of sutural, parasutural striae; sutural intervals together convex (Fig. 60); Interval II convex, lower than I or III; Interval III elevated above parasutural stria, medial margin broadly pollinose; bases of third intervals weakly convergent; apex of third interval thickened, forming elevated preapical tubercle, latter with posterior margin emarginate; preapical tubercles weakly dentate, separated from one another by width of one sutural interval; sutural interval with two to four setae in apical 0.5; apical tubercle with one seta; apex of marginal stria with several setae.

Metasternum with complete median sulcus; abdominal Sterna III-VI each with narrow, coarsely punctate transverse sulcus, narrowly interrupted at midline; female with deep, large, round lateral pit on Sternum IV (Fig. 56); male without lateral pit; Sternum IV alike in both sexes, not impressed; middle, hind calcars similar, narrow, straight, acute.

The very coarse punctures of the sutural and parasutural striae and the separated pilose punctures of Stria III are distinctive of this species. The dentate preapical tubercle will separate it from *R. menieri* and *R. maderiensis*, while the convex and setose sutural interval separates it from *R. davidsoni*.

Range.— Coastal lands of Brazil, from the lower Amazon south to Rio de Janeiro.

Rhizodiastes (Rhizostrix) menieri new species
(Figs. 57, 59)

Type Material.— HOLOTYPE female, labelled: "GUYANE, Haut-Carsevenne, F. Geay, 1898" (MNHN).

Description.— Length 7.1 mm. Antennal stylet minute, conical; basal setae present on Segments VII-X; head slightly longer than wide; frontal grooves shallow, moderately narrow; median lobe with tip opposite anterior 0.25 of eye; gena with curved pollinose line.

Pronotum oval, elongate, length/greatest width 1.57, widest just posterior to middle; margin, marginal groove, paramedian groove slightly constricted near middle; base strongly curved; apex moderately curved; hind angles indistinct; marginal groove of pronotum nearly complete, separated from basal pollinosity by 0.1 of length of pronotum.

Elytra elongate, lateral margins parallel through most of length; humeri narrowed; sutural stria deeply impressed, with about 10 punctures, latter less than 0.25 as wide as Interval II; parasutural stria impressed, with 10 punctures; intratubercular, marginal striae broad, impressed, with medial margins sloped gradually from intervals, rather finely punctate; sutural intervals together, convex (Fig. 59); Interval II convex, lower than I or III; Interval III elevated above parasutural stria, medial margin broadly pollinose; bases of third intervals weakly convergent; apex of third interval thickened, forming elevated preapical tubercle, latter with posterior margin rounded, not dentate; preapical tubercles separated by combined width of both sutural intervals; sutural interval with two setae near apex; apical tubercle with one seta; apex of marginal stria with several setae.

Metasternum with complete shallow median sulcus; abdominal Sterna III-VI, each with coarsely punctate transverse sulcus, narrowly interrupted at midline; female without lateral pit on Sternum IV (Fig. 57); Sternum VI in female impressed in apical 0.33; impression bounded anteriorly in midline by small tubercle; small median pollinose pit posterior to tubercle; male unknown.

This species is close to *R. maderiensis*, but the female differs in having a smaller tubercle with one median pollinose pit posterior to it on Sternum VI and in lacking the lateral pit on Sternum IV.

It is a pleasure to name this species for Dr. Jean-Jacques Menier of the Muséum National d'Histoire Naturelle in appreciation of his aid in our study of Rhysodini.

Rhyzodiastes (Rhyzostrix) maderiensis (Chevrolat 1873a) NEW COMBINATION
(Figs. 58, 61, 63, 65)

Rhyzodes maderiensis Chevrolat 1873a: 211-212.

Clinidium maderiensis (Chevrolat) Grouvelle 1903.

Rhyzodiastes maderiensis (Chevrolat) Bell and Bell 1978.

Type Material.— HOLOTYPE (sex not specified), according to the original description, labelled "Madereo", and collected by Lethierry. The type locality refers to the Rio Madeira, a major tributary of the Amazon River. We have not studied the type specimen but Vulcano and Pereira (1965b) have seen the type from the Vienna Museum collection. The figure and description agree with specimens seen by us, and on which the description below is based.

Description.— Length 6.0-7.0 mm (according to Vulcano and Pereira, five to eight mm). Antennal stylet minute, conical; basal seta present on Segments VI-X or VII-X; head longer than wide; frontal grooves shallow, moderately narrow; median lobe with tip opposite anterior 0.25 of eye; gena with curved pollinose line.

Pronotum oval, elongate; length/greatest width averaging 1.60, ranging from 1.55-1.65, widest just posterior to middle, margin slightly constricted at middle, marginal, paramedian grooves slightly sinuate opposite constriction; base strongly curved; apex moderately curved; hind angles indistinct; marginal groove of pronotum less complete than in *R. menieri*, separated from basal pollinosity by 0.2 or more of length of pronotum.

Elytra elongate, lateral margins parallel through most of length; humeri narrowed; sutural stria deeply impressed, with about 10 punctures, latter less than 0.25 as wide as Interval II; parasutural stria impressed; with about 10 punctures like those of sutural stria; intratubercular, marginal stria broadly impressed, with medial margin sloped gradually from intervals, rather finely punctate; sutural intervals together convex (Fig. 61); Interval II convex, lower than I or III; Interval III elevated above parasutural stria, medial margin broadly pollinose; bases of third intervals weakly convergent; apex of third interval thickened, forming elevated preapical tubercle, latter with posterior margin rounded, not dentate; preapical tubercles separated by combined width of both sutural intervals; sutural interval with three to five setae in apical 0.67; apical tubercle with one seta or without; apex of marginal stria with several setae.

Metasternum with median sulcus incomplete, anterior part effaced; abdominal Sterna III-VI narrow, coarsely punctate; all sulci narrowly interrupted in midline in female; sulci of Sterna III, IV not interrupted in male; Sternum VI not impressed in male; Sternum VI of female with apical 0.33 deeply impressed, impression bounded anteriorly in midline by tubercle; pair of median pollinose pits posterior to tubercle (Fig. 58); male with femora obtusely angulate ventrally; both pairs of calcars acute, triangular, straight; hind calcar larger, more broad based than middle one (Fig. 63).

R. maderiensis is close to *R. menieri* but differs in the female having a larger tubercle on Sternum VI with paired pollinose pits or a crescent shaped pit and in having a lateral pit on Sternum IV.

Range.— We have seen the following specimens all from Manaus, Brasil: three males, four females, Manaus, 1 km. W. Taruma Falls, 100 m., 11-I-1981, coll. R. Davidson, (CMP); two males, three females, VIII, 1962, coll. K. Lenko (MZSP); one male, one female, 26-VIII-1962, coll. W. L. Brown (MZSP). Manaus is about 125

kilometers west of the mouth of the Rio Madeira. The latter is listed as the type locality, but there is no information as to where on the river it was taken.

SUBGENUS *RHYZODIASTES SENSU STRICTO*

Type species.— *Rhyzodes parumcostatus* Fairmaire 1868.

Description.— Antennal stylet compressed, broad, obliquely truncate, resembling chisel blade; tufts of minor setae begin on Segment IV, V, or VI; clypeal setae present; eye crescentic, narrow in most species, broad in one species; gena with curved band of pollinosity; pronotum elongate; inner carina with lateral margin sharply defined; paramedian groove broad, pollinose, at least 0.5 as wide as outer carina; marginal groove broad, sharply defined, pollinose, visible in dorsal view; pronotal setae absent; elytron with intercalary stria absent; elytral intervals, especially Interval III costate (least so in *R. pentacyclus*); elytral setae absent; metasternum with median sulcus.

This subgenus is easily recognized by the broad, pollinose paramedian grooves, narrow, sharply defined inner carinae, and broad, chisel-like antennal stylet. It is found in southern and eastern Brazil, in the coastal mountains and the Mato Grosso, and reaches northern Argentina. It apparently does not penetrate the Amazon Basin.

Phylogeny.— *R. pentacyclus* is the most distinctive species and probably represents the sister group to the remaining species. The elytral intervals are not costate, while among the remaining species at least Interval III is strongly costate. In this character state, *R. pentacyclus* is obviously the least modified member of the subgenus. The absence of tufts of minor setae from antennal Segments IV and V is probably also plesiomorphic, if it is accepted that the general tendency in the subtribe has been for the number of tufted segments to increase. On the other hand, the circular form of the tuft, with a raised rim, is probably an apomorphy for *R. pentacyclus*.

R. suturalis resembles *R. pentacyclus* in having a deeply impressed sutural stria and relatively limited pollinosity on the ventral surface. However, it resembles the remaining species in having the minor setae in transverse, unrimmed tufts. It is perhaps the sister species of the remaining species. It has tufts on antennal Segments V-X. The remaining species, *R. liratus*, *R. costatus*, and *R. parumcostatus* are closely related, with a very narrow sutural interval, sutural stria scarcely impressed, and ventral surface strongly pollinose. *R. parumcostatus* has tufts on Segments IV-X, in contrast to the two remaining species, which have them on Segments V-X.

KEY TO SPECIES

- | | | |
|----|--|---|
| 1 | Minor setae in round, rimmed tufts on Segments VI-X | |
| | <i>R. pentacyclus</i> new species, p. 55 | |
| 1' | Minor setae in transverse, oval tufts on Segments V-X or IV-X | 2 |
| 2 | (1') Minor setae on Segments V-X | 3 |
| 2' | Minor setae on Segments IV-X <i>R. parumcostatus</i> (Fairmaire), p. 55 | |
| 3 | (2) Sutural stria deeply impressed, coarsely punctate; lateral margin of pronotum sinuate anterior to hind angle | |
| | <i>R. suturalis</i> new species, p. 59 | |
| 3' | Sutural stria very shallow, impunctate or finely, shallowly punctate; lateral margin or pronotum not sinuate anterior to hind angle | 4 |
| 4 | (3') Sutural stria pollinose, impunctate or with shallow punctures; medial margin of parasutural stria pollinose; hind calcar slightly to strongly convex dorsally | |
| | <i>R. liratus</i> (Newman), p. 56 | |
| 4' | Sutural stria not impressed, represented by shallow, pollinose punctures, | |

not pollinose between punctures; medial margin of parasutural stria
 glabrous; hind calcar narrow, triangular, dorsal margin straight
 *R. costatus* (Chevrolat), p. 58

Rhyzodiastes (sensu stricto) pentacyclus new species

(Figs. 66, 74)

Type Material.— HOLOTYPE male, labelled: "BRASILIA, Alto da Serra, Stanzel-Lachnit, CNHM-1955. Karl Brancik Colln., ex Eduard Knirsch" (AMNH). PARATYPES one male, labelled: "A. Serra, 1921" (collector's name illegible) (MZSP); two females, labelled: "Est. Biol. Boraccia, Salesópolis, São Paulo, BRAZIL, 17-10-1960, 12-V-1961, K. Lenko col." (MZSP); one male, same data as preceding but dated 17-10-1960, (MZSP); four specimens with same data as preceding but dated as follows: one male, one female 16-19-VIII-1966, Biasi, Costa & Silva (MZSP); one male, V-966, E. Rabalo (MZSP), one female, 21-22-III-1973, J. Vanin & M. Jorge, "sob a casco de tronco caído" (MZSP); two males, two females, labelled "Paranapiacaba, S. P. Brasil, 30-IX-1974, EXP. MUS. ZOOL, col tronco caído" (MZSP); one male, without locality label (MZSP).

Description.— Length 6.7-8.9 mm. Each tuft of minor setae in flat, circular space, surrounded by raised rim, present on Segments VI-X (Fig. 74); basal setae present on Segments VII-X; head short, length/greatest width 1.1; median lobe long, triangular, tip opposite posterior margin of eye, obtusely pointed; glabrous part of temporal lobe oblique, length/greatest width 4.0, glabrous area separated posteriorly from lateral margin of head by broad pollinose space, latter wider than glabrous area; eye crescentic, rather narrow; eye separated from posteriolateral angle of head by 0.3 of length of eye, medial margin of eye straight.

Pronotum short for subgenus, length/greatest width about 1.48; widest posterior to middle, base moderately narrowed; apex very strongly narrowed; lateral margins curved, base oblique on either side of midline; apex truncate; median groove narrow between median pits; anterior median pit broad; posterior median pit narrower, separated from base by 0.30 of length of pronotum; median groove posterior to it broad, containing secondary, shallower pit at base; paramedian grooves relatively narrow, sinuate; marginal groove dilated, about 0.5 as wide as outer carina at middle; inner carina sinuate, broadest posterior to middle, where three times as wide as paramedian groove; outer carina of nearly even width, widest near middle, where about 0.5 as wide as greatest width of inner carina; narrow marginal carina visible in dorsal view; prosternum with tubercle posterior to coxa.

Elytra elongate, moderately narrow; sutural stria impressed, with about 12 very coarse punctures; parasutural stria impressed, with 12-14 coarse punctures, anteriorly equal to sutural stria, posteriorly becoming slightly more dilated; intratubercular stria impressed, very coarsely punctate, abruptly narrowed opposite preapical tubercle; marginal stria impressed, coarsely punctate; punctures of all striae each about as wide as elytral interval; intervals glabrous, convex; sutural interval only slightly less convex than Interval II; latter tapered posteriorly; Interval III with apex forming preapical tubercle, latter less prominent than in other members of subgenus; apical tubercle scarcely inflated; metasternum glabrous, with median sulcus; transverse sulci of abdominal Sterna V, VI narrowly interrupted at midline, those of III, IV continuous in female, narrowly interrupted in male; male with small lateral pit on Sternum IV, female with large one; anterior femur of male with many minute round tubercles below; middle, hind tibiae with traces of tubercles; middle calcar acute, straight, very slender; hind calcar cultrate, its ventral margin raised well above bases of spurs.

The circular tufts of minor setae, with raised rims, are distinctive of this species, as is the absence of tufts from Segments IV and V. The inner pronotal carinae are broader than in other species, and the elytral intervals are nearly equal and not costate.

Variation.— The series from Salesópolis differ from the remaining specimens in having the paramedian groove closed or nearly closed anteriorly by a junction of the inner and outer carinae. The outer carinae of the pronotum also averages narrower than in the remaining localities, Alto da Serra and Paranapiacaba.

Rhyzodiastes (sensu stricto) parumcostatus (Fairmaire 1868) NEW COMBINATION

(Fig. 68)

Rhyzodes parum-costatus Fairmaire 1868: 782.

Clinidium parumcostatum (Fairmaire) Dajoz 1975.

Rhyzodiastes parumcostatus (Fairmaire) Bell and Bell 1978.

This species was synonymized with *Clinidium costatum* (Chevrolat) by Arrow (1942), and so regarded by Hincks (1950). Dajoz (1975) recognized it as a distinct species and listed differences between it and *C. costatum*.

Type Material.— HOLOTYPE male, labelled: "Madag., *Rhysodes parumcostatum* Fairmaire" (MNHN). This must be a mislabelling, as the species is represented by numerous specimens from Brazil and one from northern Argentina, and has never been collected in Madagascar.

Description.— Length 5.6-7.7 mm. Each tuft of minor setae is oval, transverse depression, not rimmed; tufts present on Segments IV-X; basal setae present on Segments VII-X; head relatively elongate, length/greatest width about 1.23; median lobe glabrous medially, pollinose laterally, tip acute, opposite to posterior portion of eye; glabrous part of temporal lobe slightly curved, about 4.5 longer than wide; posteriolateral angle of head nearly rectangular, widely separated from glabrous part of temporal lobe; eye crescentic in lateral view; medial margin of eye slightly curved; gena with curved band of pollinosity, and diffuse pollinose area ventroposterior to it; in some specimens gena entirely pollinose.

Pronotum elongate; length/greatest width about 1.60; widest near middle; base, apex only slightly narrowed; lateral margins nearly straight, parallel, very slightly undulating; apex truncate; base strongly curved; median groove moderately broad between median pits; anterior median pit much broader than median groove; posterior median pit inconspicuous, small, separated from base by 0.3 of length of pronotum; secondary, inconspicuous posteriomedian pit at base of pronotum; median groove entirely pollinose; paramedian, marginal grooves broad, deep, pollinose; pronotal carinae largely pollinose, but each with narrow glabrous line; those of inner carinae strongly undulating; those of outer carinae nearly straight, complete (most specimens) or undulating, abbreviated posteriorly (southern specimens); marginal groove with very narrow glabrous line; prosternum without tubercle posterior to coxa.

Elytra elongate, narrow, convex; sutural stria not impressed, scarcely evident, with about 12 punctures, coarse in most specimens, in some specimens scarcely evident; parasutural stria deeply impressed, with about 12 coarse punctures; intratubercular stria impressed, coarsely punctate; marginal stria broad, shallow, scarcely impressed except near apex; parasutural stria glabrous between punctures; other striae pollinose; sutural interval flat, represented by very narrow glabrous line; Intervals II, III subcostate, largely pollinose, but with glabrous line; that of II complete; that of III complete in some specimens, limited to anterior 0.25 and preapical tubercle in others; Interval IV slightly convex, with glabrous line near humerus, latter incomplete in some specimens; preapical tubercles slightly inflated, rounded posteriorly; apical tubercles scarcely inflated; metasternum with median sulcus; metasternum largely pollinose, but with glabrous area on either side of sulcus anterior to hind coxae; transverse sulci of abdominal sterna not interrupted in midline in most specimens, in a few (both sexes) narrowly interrupted on V or VI, VI; abdominal sterna extensively pollinose, both in transverse sulci, and along posterior margin of each sternum; median longitudinal pollinose area connecting transverse sulcus with posterior margin on Sterna III, IV; male with lateral pit scarcely evident on Sternum IV; that of female deep; anterior femur of male with many minute tubercles on ventral surface; middle calcar acute, straight, very slender; hind calcar triangular, acute, moderately narrow, slightly cultrate, proximal margin convex, distal margin concave.

This species is the only member of the subgenus in which the tufts of minor setae begin on antennal Segment IV.

Range.— Southeastern Brazil and northern Argentina. We have studied the following specimens: ARGENTINA: one male, labelled: "Misiones, Dep. Concep., Sta. Maria X-1948, M. J. Viana" (MZSP). This is one of the specimens which Viana (1951) recorded as *C. costatus* Chevrolat. Viana listed two females and one additional male, and also one female from Santiago del Estero. We have not located these specimens, which were in Viana's personal collection; 19 specimens, labelled: "Rep. Arg., Misiones" without date or collector (MNHN). BRAZIL: SANTA CATARINA: three females, labelled: "Corupa (Hansa Humboldt), Nov. 1945, Dec. 1944, A. Maller coll., Frank Johnson, donor" (AMNH); one male, labelled: "Hansa, Sta. Catarina, VIII, 1910, Leuderw." (MZSP); three males, labelled: "Sainte Catherine, Deyrolle 1847" (MNHN); two males, Santa Cath. (BMNH); BRAZIL, SAO PAULO, one female, labelled: "Caioba, 25-50, 48-40 (latitude, longitude), 10 m., F. Plaumann IV-1965" (MZSP); one female, labelled: "Cantareira, S.P. 20-II-1958, K. Lenko" (MZSP); two females, labelled "Ilha de Vitoria, S. Paulo 16-27 III, 1964, Exp. Dep. Zool." (MZSP); five males, ten females, labelled: "Ilha dos Buzios, S. Paulo, 16-X-4-XI 1963, Exp. Dep. Zool." (MZSP); one female, labelled: "Brasil, Cn Fairm" (GEN).

There are five additional specimens (BMNH) without precise locality data.

Variation.— The specimens from Argentina, and some of those from Santa Catarina differ from more northern specimens in having the pollinosity more extensive, with the glabrous lines of the outer carinae abbreviated posteriorly and those of Interval III obsolete except at the base and on the preapical tubercle. These might represent an additional taxon, but more specimens are required to confirm it.

Rhysodiastes (sensu stricto) liratus (Newman 1838) NEW COMBINATION
(Figs. 67, 71)

Rhysodes liratus Newman 1838: 665-666.

Clindium liratum (Newman) Fairmaire 1873b.

Rhyzodiastes liratus (Newman) Bell and Bell 1978.

Grouvelle (1903) synonymized this species with *Clinidium costatum* (Chevrolat), while Bell and Bell (1978) resurrected it.

Type Material.— LECTOTYPE (here designated) female, labelled: "*Rhyzodes liratus* Newm., Rio" (BMNH). According to the original description, it was collected by Charles Darwin. PARALECTOTYPES: According to Newman, there were five specimens in the type series. We have not located any in addition to the lectotype, and do not know whether any of the paralectotypes are still preserved. Newman indicated that they were in Darwin's personal collection.

Description.— Length 6.2-7.5 mm. Each tuft of minor setae in oval transverse depression, latter not rimmed; tufts present on Segments V-X; head elongate, length/greatest width about 1.38; median lobe narrow, elongate, extending posterior to middle of eye, glabrous part of temporal lobe very narrow, elongate; pollinosity of orbital groove as broad as glabrous part of temporal lobe; posteriolateral portion of head completely pilose; eye broad, nearly semicircular in lateral view; eye separated from posteriolateral angle of head by 0.5 of length of eye; medial margin of eye curved.

Pronotum extremely elongate; length/greatest width about 1.83; base only slightly narrowed; apex moderately narrowed; lateral margins nearly straight in some specimens, slightly emarginate anterior to middle in others; base strongly curved; median groove glabrous medially, lateral slopes broadly pollinose; anterior median pit large; paramedian grooves broad, deep, largely pollinose, but with narrow glabrous area in bottom; marginal groove broad, pollinose; inner carina narrow, curved around median pits, in most specimens not broadened posteriorly, in some specimens distinctly broadened posteriorly; outer carina narrow, abbreviated posteriorly; margin with very narrow pollinose line; propleuron pollinose; prosternum pollinose except for part of intercoxal process; prosternum without postcoxal tubercle.

Elytra elongate, narrow, convex; sutural stria impunctate or faintly punctate, scarcely impressed, separated from suture by very narrow flat glabrous interval (Fig. 71), parasutural stria very deeply impressed, with 12-15 deep coarse punctures; intratubercular stria impressed, punctate, entirely pollinose; marginal stria shallowly impressed, punctate, but punctures obscured by thick pollinosity; lateral margin of Interval III pollinose; Intervals II, III, IV forming narrow glabrous carinae; preapical tubercles inflated, tapered posteriorly; apical tubercles inflated; metasternum with median sulcus; metasternum pollinose except for posterior margin, lateral borders of median sulcus; anterior part of abdomen largely pollinose; transverse sulci narrowly interrupted in midline; transverse sulci each with row of coarse punctures; female with deep lateral pit on Sternum IV; anterior femur of male with many minute tubercles on ventral surface; middle calcar acute, triangular; hind calcar with dorsal margin convex, strongly so in most specimens, only slightly so in a few specimens.

This species is most likely to be confused with *R. costatus*, which also has the tufts of minor setae beginning on Segment V, and has the sutural stria scarcely impressed. The latter species has the sutural stria punctate, with the pollinosity interrupted between the punctures. The lateral margin of Interval II is glabrous. Also, the hind calcar is triangular, with the dorsal margin not or scarcely convex, and the inner carinae of the pronotum are more broadened posteriorly.

Range.— Southeastern Brazil, north to Bahia State and south to Sao Paulo State. All localities are near to the Atlantic Coast. We have seen specimens from the following localities: BAHIA, two females, labelled: "Bahia Lewis" (BMNH), one female, two males, labelled: "Retiro, Bahia" (BMNH); two males, labelled: "Una, Bahia, Oct. 27, Friedrich" (BSL); GUANABARA (former Federal District), two females, no further data (MZSP); one female, labelled: "Corcovado 14-12-1945, Wygodzinsky" (MZSP); one male, labelled: "Corcovado, Guanabara, 700 m., Nov. 1-7, 1963, Wygodzinsky" (AMNH); one male, labelled: "Rio de J., Wygodzinsky" (BSL); RIO DE JANEIRO (STATE), one female, labelled: "Angra, E. do Rio, Pisseral. X-935, L. Tr. et Lopes" (MZSP), one female, labelled: "Floresta de Dijuca, 17-VII-1960, R. Schubartel" (MZSP); SAO PAULO: one female, labelled: "Santos, 17-23 2-99" (MNHB); one male, labelled: "Santos, 7-11-93" (MNHN); two males, one female, labelled: "Sao Paulo, J. Metz" (CNHM); STATE UNCERTAIN: one female, labelled: "Mendes, 4-IX-33, Eidmans" (BSL); one female, labelled: "P. N. do Itaiaia, 1.1958, L. C. Alvaranca" (MZSP). In addition, we have seen several specimens labelled simply "Brazil", including two members of the type series for *R. costatus* (Chevrolat) (NMW), labelled "*costatum*, Brasilia, Chevrolat".

Variation.— This species shows considerable variation in many characters, including the shape of the pronotum, the length of the marginal carina, the distinctness of the posterior median pit, and the convexity of the dorsal margin of the hind calcar. The sutural stria in most specimens is narrowly pollinose and impunctate, but in a few specimens there are indistinct punctures. The variation appears on the basis of very limited material to be geographical. The specimens from Bahia State have the posterior median pit virtually absent, the outer carina as long as the inner one, and the hind calcar less convex than in specimens from other areas. The hind calcar varies considerably within this population, in some specimens being scarcely more

convex than in *R. costatus*. The specimens from Rio de Janeiro have the posterior median pit distinct, the outer carina as in the Bahia specimens, and the hind calcar strongly convex. The specimens from Sao Paulo State have the posterior median pit distinct, the hind calcar strongly convex, and the outer carina of the pronotum abbreviated posteriorly. The available specimens are too few to be certain whether these differences represent subspecies or not. This species is in need of more detailed study.

Rhyzodiastes (sensu stricto) costatus (Chevrolat 1829)
(Figs. 70, 73)

Rhyzodes costatus Chevrolat 1829, t. 18, f. 12, in Guérin-Méneville 1829-1844.

Rhyzodes costatus (Chevrolat) Chevrolat 1844 (altered spelling of generic name).

Clinidium costatum (Chevrolat) Lewis 1888.

Rhyzodiastes costatus (Chevrolat) Bell and Bell 1978.

Type Material.—LECTOTYPE (here designated) female, labelled: "costatus, Guerin, Brasilia, Chevrolat", with red "typus" label (NMW). PARALECTOTYPES: The type series is a mixture of three species. One male and one female are *R. liratus*. One male and one female are *R. parumcostatus*. All are labelled like the lectotype, and all are in NMW. We have restricted the name to the lectotype, the one species in the series which has not been described elsewhere.

Description.—Length 6.9-7.3 mm. Each tuft of minor setae in oval transverse impression, not rimmed; tufts present on Segments V-X; head moderately elongate; length/greatest width about 1.29; median lobe narrow, elongate, extending posterior to middle of eye; glabrous portion of temporal lobe narrow, elongate; pollinosity of orbital groove as broad as glabrous portion of temporal lobe; posteriolateral portion of head completely pilose; eye broad, nearly semicircular in lateral view; eye separated from posteriolateral angle of head by 0.5 of length of eye; medial margin of eye curved.

Pronotum elongate; length/greatest width about 1.77; base only slightly narrowed; apex moderately narrowed; lateral margins slightly curved; base strongly curved; median groove broad, pollinose; paramedian grooves broad, deep, largely pollinose, but with narrow glabrous area in bottom; marginal groove broad, pollinose; inner carinae narrow, curved around anterior median pits, broader posteriorly, where distinctly broader than paramedian groove; outer carina narrow, of even width; marginal carina slightly narrower than outer carina; propleuron pollinose; prosternum pollinose except for part of intercoxal process; postcoxal tubercle absent.

Elytra elongate, narrow, convex; sutural stria not impressed, represented by row of shallow pollinose punctures, pollinosity absent between punctures except in some specimens, where present in posterior 0.25 of stria (Fig. 73); parasutural stria impressed, punctured, medial margin glabrous, lateral margin pollinose; intratubercular stria deeply impressed, pollinose; marginal stria shallowly impressed, punctures obscured by thick pollinosity; Interval II only moderately convex; Intervals III, IV forming narrow, glabrous carinae; preapical tubercles scarcely inflated posteriorly; apical tubercles slightly inflated; metasternum with median sulcus; metasternum very finely pollinose or microsculptured; abdominal sterna dull, very finely pollinose or microsculptured; transverse sulci narrowly interrupted in midline, each with pit at medial end, otherwise impunctate or obscurely punctate; female with deep lateral pit on Sternum IV; anterior femur of male with many minute tubercles on ventral surface; middle calcar acute, triangular; hind calcar narrow, acute, distinctly proximad to tibial spurs.

This species differs from *R. liratus* in having the sutural stria represented by a row of isolated punctures, these not connected by pollinosity except near elytral apex, in lacking pollinosity on the medial margin of the parasutural stria (in other words, on the lateral margin of the second interval), and in having the hind calcar narrowly triangular with the dorsal margin straight.

Range.—Southern Brazil, except for one female, labelled: "Rio Jano., FRY" (BMNH), from more inland localities than *R. liratus*. We have seen one male and three females, labelled "Matto Grosso, de Castelnuovo, 12-47" (MNHN), and one male, labelled: "Vicoso, M. G., 23-7-57, coll. J. Becker" (MZSP). "M.G." indicated Minas Gerais State. The characters of this species are approached by some of the variants of *R. liratus*, and it is possible that the two are only subspecifically distinct. However, the presence of both forms at Rio de Janeiro makes this doubtful. Like *R. liratus*, this form needs more study.

Rhyzodiastes (sensu stricto) suturalis new species
(Figs. 69, 72)

Type Material.— HOLOTYPE female, labelled: "Espiritu Santo, Sooretama, Linhares, X. 962, Pereira, Alv. Martins" (MZSP).

Description.— Length 7.4 mm. Each tuft of minor setae in oval transverse depression, not rimmed; tufts present on Segments V-X; head elongate, length 1.33 times greatest width; median lobe narrow, elongate, extending posterior to middle of eye, glabrous part of median lobe narrow, only slightly broader than pollinosity of orbital groove; posteriolateral portion of head completely pilose; eye broad, nearly semicircular in lateral view; medial margin of eye curved; eye separated from posterior angle of head by 0.5 of length of eye.

Pronotum elongate; length/greatest width 1.71; base, apex slightly narrowed; lateral margin with long, shallow sinuation anterior to hind angle; base strongly curved; median groove broad, bottom glabrous, margins pollinose; paramedian grooves broad, deep, pollinose; marginal groove moderately broad, pollinose, abbreviated anterior to sinuation of lateral margin; inner carinae narrow, convex, curved around anterior median pit; outer carina narrow, convex, complete; marginal carina complete; base of pronotum narrowly margined with pollinosity; propleuron largely glabrous, but very finely pollinose or microsculptured near notopleural suture; prosternum glabrous; postcoxal tubercle absent.

Elytra moderately narrow, elongate, but broader than in *R. liratus*, humeri strongly narrowed; sutural stria deeply impressed, with about 11 coarse punctures, bottom glabrous, margins pollinose; parasutural stria deeply impressed, becoming broader posteriorly, with about 12 coarse punctures; parasutural stria glabrous, lateral margin pollinose, medial margin nearly glabrous, with trace of pollinosity posteriorly; intratubercular stria impressed, broad, coarsely punctate, punctures obscured by pollinosity; marginal stria narrow, impressed, pollinose; sutural interval broad, convex, wider than second interval, glabrous; second interval convex, posterior 0.5 subcarinate; third interval narrow convex, fourth interval nearly flat; preapical tubercle strongly inflated, apex tapered; apical tubercle inflated; metasternum with median sulcus, largely glabrous; abdominal sterna largely glabrous; transverse sulci narrowly interrupted in midline, with enlarged pits at medial ends, coarsely punctate, narrowly pollinose; female with round lateral pit in Sternum IV; male unknown.

This species resembles *R. liratus* and *R. costatus* in having the minor setae in oval tufts on Segments V-X. It differs from them in having the sutural stria very strongly impressed and coarsely punctate and in the shape of the pronotum. The deep sutural stria gives it the appearance of *R. pentacyclus*. The latter species, however, has the minor setae in circular, rimmed tufts on Segments VI-X.

GENUS *CLINIDIUM* KIRBY 1835

Description.— Part I: 62

KEY TO SUBGENERA (slightly revised from Part I: 62)

- | | | |
|--------|---|---|
| 1 | Cleaning organ of anterior tibia entirely proximad to basal articulation of anterior tarsus | 2 |
| 1' | Cleaning organ more distad, basal articulation of tarsus opposite its midpoint | 4 |
| 2 (1) | Tufts of minor setae present on Antennal Segments VII-X; pronotum widest near middle; angular seta present; marginal setae absent; intercalary stria ending blindly posteriorly, except in <i>C. halfferi</i> and some <i>C. guatemalenum</i> <i>Mexiclinidium</i> Bell and Bell, p. 60 | |
| 2' | Tufts of minor setae present on antennal Segments VI-X; pronotum widest distinctly behind middle; either both angular, marginal setae present, or else both absent; intercalary stria not ending blindly posteriorly | 3 |
| 3 (2') | Parasutural stria complete anteriorly, reaching base of elytron; pronotum without setae <i>Protainoa</i> Bell and Bell, p. 69 | |
| 3' | Parasutural stria restricted to posterior 0.5 to 0.25 of elytron; pronotum | |

- with marginal, angular setae *Tainoa* Bell and Bell, p. 70
- 4 (1') Marginal stria clearly sixth from suture; all striae well developed; inner elytral intervals carinate, marginal groove of pronotum double or single ...
..... *Arctoclinidium* Bell, p. 75
- 4' Striation more reduced; marginal stria fourth or fifth from suture; supramarginal stria absent; inner elytral intervals not carinate or scarcely so; marginal groove of pronotum single *Clinidium sensu stricto*, p. 93

SUBGENUS *MEXICLINIDIUM* BELL AND BELL 1978

Type species.— *Clinidium mexicanum* Chevrolat 1873a.

Description.— Antenna with tufts of minor setae on Segments VII-X; antennal stylet small; 1 temporal seta present; eye narrowly crescentic (narrower than in *Arctoclinidium*); orbital groove pollinose, complete, reaching posterior margin of temporal lobe; pronotum with lateral margins curved, marginal groove double or single; pronotum with angular setae (except for *newtoni*), but without marginal setae; sternopleural grooves absent; elytral striae complete; marginal stria fifth or sixth from suture; supramarginal stria impressed in most specimens, represented by row of punctures in some specimens, absent in *C. championi*; intercalary stria ending blindly anterior to preapical tubercle, except in *C. halffteri* and some specimens of *C. guatemalenum*; intervals of elytra elevated, costate in most species; elytral setae more numerous than in *Arctoclinidium*; metasternum without median sulcus; female with enlarged lateral pit in Sternum IV; female without elytral cauda; anterior femur of male with ventral tooth; anterior tibia of male with proximal tooth present or absent; base of anterior tarsus entirely distad to cleaning organ; calcars small, hind calcar smaller than middle calcar.

The deep elytral striae and carinate intervals make most members of this subgenus superficially similar to *Arctoclinidium*. The position of the cleaning organ and the more numerous elytral setae separate it from the latter subgenus. Most *Mexiclinidium* differ from *Arctoclinidium* in the anastomosis of Intervals III and IV posterior to the end of the intercalary stria. In *C. halffteri* and some specimens of *C. guatemalenum*, the intercalary stria is complete and the intervals do not anastomose.

Mexiclinidium is known from central and southern Mexico and from Guatemala.

Phylogeny.— The nine species can be grouped as follows:

- I. *mexicanum* group
 - C. mexicanum*
 - C. balli*
 - C. triplehorni*
- II. *blomi* group
 - C. blomi*
 - C. iviei*
- III. *guatemalenum* group
 - C. guatemalenum*
 - C. newtoni*
- IV. *championi* group
 - C. championi*
 - C. halffteri*

The *mexicanum* group contains three very similar species which differ mainly in secondary sexual characters. The group occupies a compact area on the Mexican Plateau and its eastern margin. The outer marginal groove of the pronotum is shallow or absent, the transverse sulci of the abdomen are deep and widely separated, elytral setae are few, the male first trochanter is toothed, and Sternum VI has many round punctures.

The *blomi* group has two species, one on either side of the gap in the mountain chain at Tehuantepec. These have the outer marginal groove deep but hidden in dorsal view, the transverse sulci deep and widely separated, the male first trochanter toothed. Elytral setae are many, and Sternum VI either has elongate punctures (*iviei*) or else two pairs of impressions (*blomi*).

The *guatemalenum* group has two species in the highlands of Chiapas and Guatemala. They have a pair of precoxal setae. The outer marginal groove is deep and is visible in dorsal view. The median lobe of the head is shorter than in the two preceding groups. The transverse sulci of the abdomen are deep and are only narrowly separated medially. Elytral setae are few. The male first trochanter is toothed (*newtoni*) or rounded (*guatemalenum*). Sternum VI is coarsely punctate.

The *championi* group has two species, one in the Quiche Mountains of Guatemala, the other from a relatively low elevation near the Gulf of Mexico. These species have Sternum VI with a narrow submarginal groove and a pair of pits near the base. The first trochanter of the male is rounded, and the transverse sulci of the abdomen are relatively shallow. Otherwise the two species are quite dissimilar, and perhaps are not closely related. *C. championi* has the median lobe of the head elongate, the outer marginal groove of the pronotum deep and visible in dorsal view (as in the *guatemalenum* group), and the elytral setae few. *C. halffteri* has the median lobe short and truncate, the outer marginal groove absent, and the elytral setae numerous.

KEY TO SPECIES

1	Outer marginal groove of pronotum visible in dorsal view	2
1'	Outer marginal groove of pronotum not visible in dorsal view	4
2	Transverse sulci of abdomen present, pilose; Sternum VI coarsely punctured, submarginal sulcus absent	3
2'	Transverse sulci of abdomen absent, represented by isolated punctures; Sternum VI with crescent-shaped submarginal sulcus	
	. . . . . <i>C. championi</i> new species, p. 62	
3	Apex of pronotum narrowed, evenly curved; postorbital, suborbital tubercle present; medial ends of transverse sulci without enlarged pits	
	. . . . . <i>C. newtoni</i> new species, p. 63	
3'	Apex of pronotum truncate; postorbital, suborbital tubercle absent; medial ends of transverse sulci with enlarged pits	
	. . . . . <i>C. guatemalenum</i> Sharp, p. 63	
4	Intercalary stria ending blindly posteriorly; Intervals III, IV anastomosing posteriorly; median lobe of head elongate, tip acute, opposite or behind posterior region of eye	5
4'	Intercalary stria complete; Intervals III, IV not anastomosing; median lobe of head short, tip truncate, opposite middle of eye	
	. . . . . <i>C. halffteri</i> new species, p. 66	
5	Sternum VI with a pair of median pilose, oval impressions	
	. . . . . <i>C. blomi</i> Bell, p. 66	
5'	Sternum VI with scattered, round or elongate punctures	6
6	Punctures of Sternum VI elongate, coalesced; Sternum VI impressed	
	. . . . . <i>C. iviei</i> new species, p. 69	

6'	Punctures of Sternum VI large, round; Sternum VI unimpressed	7
7	Calcars present, males	8
7'	Calcars absent, females	10
8	Proximal tooth of anterior tibia present	9
8'	Proximal tooth of anterior tibia absent	
	..... <i>C. triplehorni</i> new species, p. 68	
9	Proximal tooth of anterior tibia large; femoral tooth large, almost carinate	
	..... <i>C. mexicanum</i> Chevrolat, p. 67	
9'	Proximal tooth of anterior tibia small, oblique; femoral tooth small, oblique	
	..... <i>C. balli</i> new species, p. 68	
10	Lateral pit of Sternum IV glabrous	11
10'	Lateral pit of Sternum IV pollinose	..... <i>C. triplehorni</i> new species, p. 68
11	Basal impressions of pronotum relatively large, 0.25 of length of pronotum; supramarginal stria impressed or represented by coarse punctures	
	..... <i>C. mexicanum</i> Chevrolat, p. 67	
11'	Basal impressions small, less than 0.20 of length of pronotum; supramarginal stria not impressed, represented by fine punctures	
	..... <i>C. balli</i> new species, p. 68	

Clinidium (Mexiclinidium) championi new species

(Figs. 75, 98)

Type Material.— HOLOTYPE male, labelled: "Quiche Mountains, 7-9000 ft., Champion" (BMNH). This locality is in Guatemala near Totonicapan.

Description.— Length 6.0 mm. Head as broad as long; median lobe long, tip opposite posterior margin of eye; medial margin of temporal lobe nearly straight.

Pronotum relatively short; length/greatest width 1.30; lateral margin moderately curved; base slightly narrowed, apex moderately narrowed; basal impression relatively large, length 0.33 of length of pronotum; basal impression closed posteriorly; inner, outer marginal grooves equally deep, outer marginal groove conspicuous in dorsal view; marginal carina curved, narrow; prosternum without precoxal seta on each side.

Striae impressed, coarsely punctured, narrowly pollinose; intervals convex, but not distinctly costate; supramarginal stria absent; sutural stria with one seta near apex; intercalary stria with two setae in apical 0.33; intratubercular stria without setae; marginal stria with five setae near apex; transverse sulci broadly interrupted in midline, scarcely impressed, not pollinose, each represented by row of punctures; male with small pollinose lateral pit on Sternum IV; Sternum VI with small round pit near each anteriolateral angle, curved submarginal groove (Fig. 98); male with small obtuse ventral tooth on anterior femur; male with anterior trochanter rounded; anterior tibia of male without proximal tooth; middle calcar triangular, acute, base relatively broad; hind calcar small, triangular, apex acute, distal margin raised well above level of spurs; female unknown.

This species differs from all others in the subgenus except *C. halffteri* in having the striae shallower and the inner intervals not truly costate. The reduction of the transverse sulci to rows of punctures is also distinctive. The absence of precoxal setae and impunctate sixth sternum easily separate it from the sympatric *C. guatemalenum*. *C. halffteri* differs in lacking the outer marginal groove and in having the supramarginal stria impressed.

We have named this species for the collector, George Champion, who collected fine series of Rhysodidae in Central America.

Clinidium (Mexiclinidium) newtoni new species
(Figs. 77, 86)

Type Material.— HOLOTYPE male, labelled: "MEXICO, Chiapas, 8 mi. N. Pueblo Nuevo S., 6000', cl. for. 26-27 VIII-73, N. 541 A. Newton" (BSRI).

Description.— Length 7.0 mm. Head slightly longer than broad; median lobe long, ended just anterior to posterior margin of compound eye; frontal grooves relatively shallow, convergent posteriorly; medial margins of temporal lobes oblique, convergent posteriorly; small postorbital, suborbital tubercles present.

Pronotum relatively short; length/greatest width 1.40; lateral margins curved; apex strongly narrowed; base moderately narrowed; basal impression large, 0.3 of length of pronotum; basal impression open posteriorly; inner, outer marginal grooves equally deep, outer marginal groove conspicuous in dorsal view; marginal carina curved, narrow; prosternum with precoxal setae; angular seta apparently absent.

All striae, including supramarginal deeply impressed; sutural stria with one or two setae near apex; intercalary stria without setae; intratubercular stria with two setae near apex; transverse sulci of abdominal sterna narrowly interrupted in midline, medial ends of sulci not enlarged; Sternum VI with a few very coarse punctures; anterior femur of male with very prominent ventral tooth, latter truncate with apex in form of oblique ridge; anterior trochanter of male with obtuse ventral tooth; male anterior tibia without proximal tooth, posterior face of anterior tibia with conical tooth opposite middle of cleaning organ (Fig. 86); middle calcar small, acute; hind calcar larger, dorsal margin emarginate near base (calcar thus slightly falcate); female unknown.

The distinct postorbital and suborbital tubercles of this species are unique within the subgenus. The presence of precoxal setae and the narrow interruption of the transverse sulci of the sterna are points of similarity to *C. guatemalenum*, but the latter species has enlarged pits at the medial ends of the transverse sulci, and the pronotum is much less narrowed and rounded anteriorly. *C. blomi*, which is probably sympatric with *C. newtoni*, differs in having the transverse sulci broadly interrupted, the precoxal setae absent, the pronotum much less narrowed anteriorly, and in numerous secondary characters of the male.

The species is named in honor of the collector, Alfred F. Newton, Jr.

Clinidium (Mexiclinidium) guatemalenum Sharp 1899
(Figs. 76, 101)

Clinidium guatemalenum Sharp 1899: 489.

Clinidium (Arctoclinidium) guatemalenum (Sharp) Bell 1970.

Clinidium (Mexiclinidium) guatemalenum (Sharp) Bell and Bell 1978.

Type Material.— LECTOTYPE (here designated) male, labelled: "GUATEMALA, San Geronimo, Vera Paz Prov., coll. Champion" (BMNH). PARALECTOTYPES one male, three females, same data as lectotype (BMNH).

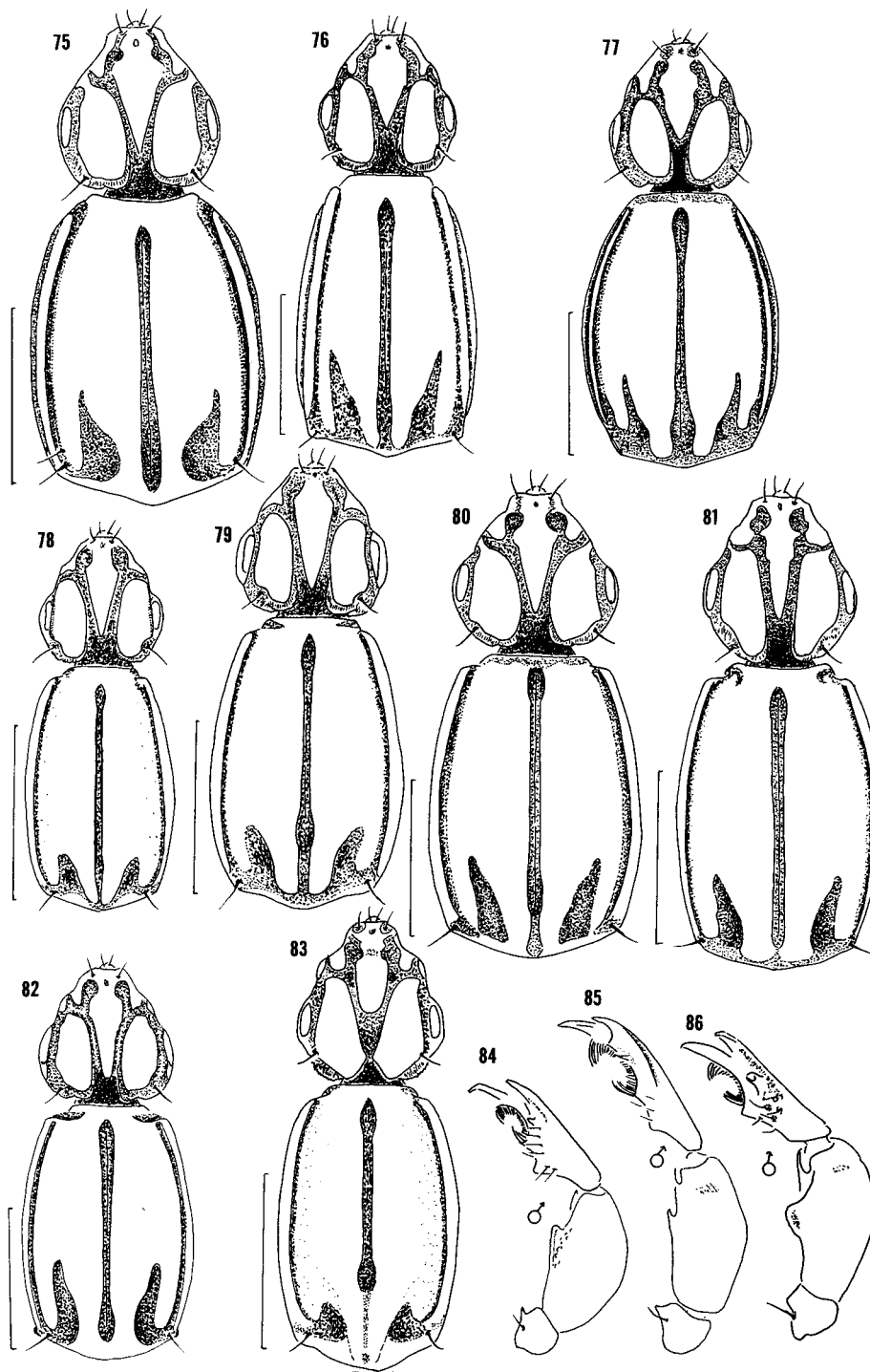
Description.— Length 7.0-7.7 mm. Head longer than broad; median lobe short, tip opposite middle of eye; medial margin of temporal lobe curved.

Pronotum relatively elongate, length/greatest width 1.48; lateral margins curved; apex strongly narrowed, basal margin moderately narrowed; basal impression relatively large, 0.4 of length of pronotum; basal impression closed posteriorly, closed or open laterally; inner, outer marginal grooves equally deep, outer marginal groove conspicuous in dorsal view; marginal carina curved, narrow; prosternum with precoxal seta on each side.

All striae, including supramarginal deeply impressed; sutural stria with one or two setae near apex; intercalary stria with two or three setae in posterior 0.5; intratubercular stria with two or three setae in posterior 0.3; marginal stria with three to five setae near apex; transverse sulci of abdominal sterna very narrowly interrupted in midline, medial end of each sulcus with enlarged pit; Sternum VI coarsely punctate (Fig. 101); lateral pit of Sternum IV in female glabrous; anterior femur of male, with acute, narrow, ventral tooth with one seta; male with anterior trochanter rounded; male anterior tibia with large proximal tooth; middle calcar triangular, acute, base relatively broad; distal margin not elevated above spurs; hind calcar small, triangular, apex acute, distal margin elevated above level of spurs; female without ventral tooth on anterior femur.

In the form of the pronotum, this species is closest to *C. blomi*, but the coarsely punctate Sternum VI separates it from the latter species, and the closely approximate medial pits on the transverse sulci are unique within the subgenus. The presence of precoxal setae is shared only with *C. newtoni*. The latter species differs in male secondary sexual characters and in the

Plate 7. Figs. 75–86. Genus *Clinidium*, Subgenus *Mexiclinidium*. Figs. 75–83, Head and pronotum, dorsal aspect; Fig. 75, *C. (M.) championi* new species; Fig. 76, *C. (M.) guatemalenum* Sharp; Fig. 77, *C. (M.) newtoni* new species; Fig. 78, *C. (M.) balli* new species; Fig. 79, *C. (M.) triplehorni* new species; Fig. 80, *C. (M.) blomi* Bell; Fig. 81, *C. (M.) mexicanum* Chevrolat; Fig. 82, *C. (M.) iviei* new species; Fig. 83, *C. (M.) halfpteri* new species; Figs. 84–86, Anterior leg, male (excluding tarsus); Fig. 84, *C. (M.) iviei* new species; Fig. 85, *C. (M.) balli* new species; Fig. 86, *C. (M.) newtoni* new species.



absence of pits at the medial ends of transverse sulci and in the presence of postorbital and suborbital tubercles.

Range.— Guatemala. In addition to the type series we have studied the following specimens: two males, two females, labelled: "Chichivac, Chimaltenango Prov., 8600', Aug. 19, 1926, J. R. Slevin" (CAS); two females, labelled: "El Quiche, 7.3 km from Chichicastenango, 14° 54' N, 91° 07' W, 2400 m., May 28, 1973, T. L. & L. J. Erwin" (NMNH); one male, one female, labelled: "Quiche Mts., 8500-10500 ft., Tonicapam, coll. Champion" (BMNH).

In the type series, the parasutural stria is interrupted for a short distance just anterior to the apex of the intercalary stria, so that a narrow bridge connects Intervals II and III.

In the specimens from other localities, this is not true. The specimens from Chichivac have a shallow median impression on the metasternum, though it does not form a discrete sulcus. There is no trace of this impression in the type series. It is not certain whether these variations are individual differences or represent geographic variation.

Clinidium (Mexiclinidium) blomi Bell 1970

(Fig. 80)

Clinidium (Arctoclinidium) blomi Bell 1970: 309.

Clinidium (Mexiclinidium) blomi (Bell) Bell and Bell 1978.

Type Material.— HOLOTYPE MCZ 31747, male, labelled: "Rancho Nuevo 8 1/2 miles SE of San Cristobal de las Casas, Chiapas, Mexico, coll. R. T. Bell, D. H. Van Horn, July 23, 1956" (MCZ). PARATYPES, three females collected with the type (UVM); four males, eight females, collected at same locality, Sept. 1, 1967, by Ball, Erwin, and Lecch (ALB).

Description.— Length 6.1-7.5 mm. Head nearly as broad as long; median lobe long, tip posterior to hind margin of eye; medial margin of temporal lobe curved.

Pronotum relatively short; length/greatest width about 1.40; lateral margins curved; apex strongly narrowed; base moderately narrowed; basal impression about 0.3 of length of pronotum; basal impression closed posteriorly, laterally; inner, outer marginal grooves equally deep; outer groove placed more laterally than in *C. guatemalenum*, scarcely visible in dorsal view; marginal carina curved, conspicuous; prosternum without precoxal setae.

All striae, including supramarginal, deeply impressed; sutural stria with two to four setae, most anterior of them anterior to middle of stria in most specimens; intercalary stria with complete row of five setae, most anterior of them near to elytral base; intratubercular stria with two or three setae near apex; marginal stria with five or six setae in apical 0.5; transverse sulci of abdominal sterna broadly interrupted in midline, without medial pits; Sternum VI not punctate, but with two pairs of oblique impressions; lateral pits of Sternum IV of female pollinose; anterior femur of male with large, broad ventral tooth with one seta; anterior trochanter of male dentate; anterior tibia of male with large proximal tooth; middle calcar acute, base narrow, not elevated above spurs; hind calcar small, triangular, apex acute; distal margin elevated above level of spurs; female with anterior femur not dentate.

This species resembles *C. guatemalenum* in having inner and outer marginal grooves of the pronotum equally developed, separated by a narrow marginal carina. In this species, however, the marginal carina is directed more laterally than in *C. guatemalenum* so that the outer groove is almost hidden in dorsal view. Unique to *C. blomi* are the great development of the elytral setae and the absence of coarse punctures on Sternum VI.

Range.— High Plateau of Chiapas, southeastern Mexico. In addition to the type material we have seen one specimen labelled: "Mexico: 5 mi. w. of San Cristobal, 7500', V-23-1961, J. M. Campbell" (BSRI).

Clinidium (Mexiclinidium) halffteri new species

(Figs. 83, 99)

Type Material.— HOLOTYPE male, labelled: "MEXICO, Ver., Amates, 29-V-1964, Catemaco, Halffter, Reyes" (MZSP). PARATYPES two males, same label as holotype (MZSP). The type locality is in southern Vera Cruz State, near the Gulf of Mexico, at a low elevation.

Description.— Length 6.1-6.5 mm. Head slightly longer than broad; median lobe short, tip subtruncate, opposite middle of eye; frontal grooves very narrow; frontal space very small; medial margins of temporal lobes convergent to narrowly separated medial angles, latter posterior to hind margin of eye; posteriomedial margin oblique.

Pronotum rather elongate; length/greatest width 1.58; lateral margins weakly curved; apex less narrowed than base; basal impressions very small, 0.12 of length of pronotum, closed posteriorly; outer marginal groove entirely absent; prosternum without precoxal setae.

Elytra much broader than pronotum; margins parallel for most of length; humeri strongly, obliquely narrowed; elytral intervals convex, inner ones not carinate; intercalary stria complete; Intervals III, IV not anastomosing posteriorly; intratubercular stria impressed at base, apex; middle portion not impressed, represented by row of coarse punctures; supramarginal stria not impressed; represented by row of punctures very close to those of intratubercular stria in middle 0.33; base, apex absent; marginal stria with base, apex impressed, middle 0.33 represented by row of punctures; sutural stria with two setae near apex; parasutural stria with four or five setae in apical 0.5; intercalary stria with complete row of five or six setae; intratubercular stria with one seta near apex; marginal stria with four or five setae in apical 0.33; transverse sulci of abdomen narrow, each with row of coarse punctures, broadly interrupted in midline; without enlarged punctures at medial end; Sternum VI of abdomen with small pit near each anteriolateral angle, long submarginal groove, its end angled medially (Fig. 99); anterior femur of male with large, sharp ventral tooth, without setae; anterior trochanter of male rounded; anterior tibia of male without proximal tooth; middle calcar slender, rather long, apex obtuse; hind calcar triangular, apex obtuse, only slightly elevated above level of spurs; female unknown.

This species is distinguished from all other members of the subgenus in having the median lobe short and truncate, and the temporal lobe with distinct medial angles. The pronotum is also distinctive, with the base slightly more narrowed than the apex and the outer marginal groove entirely absent. It is the only member of the subgenus to have setae in the parasutural stria.

The species is named for the collector, Dr. Gonzalo Halffter, a skilled specialist in Scarabaeidae and insect behavior.

Clinidium (Mexiclinidium) mexicanum Chevrolat 1873a

(Figs. 81, 100)

Clinidium mexicanum Chevrolat 1873a: 214.

Clinidium (Arctoclinidium) mexicanum (Chevrolat) Bell 1970.

Clinidium (Mexiclinidium) mexicanum (Chevrolat) Bell and Bell 1978.

Type Material.— According to the original description, there is a type series of seven specimens, collected in May, 1855 by Aguste Sallé, under pine bark at Jacale, at the Park of Orizaba. We have studied one male and one female of this series, labelled: "Jacale, Mexico, Sallé coll." (BMNH). Both are labelled as cotypes. We have not located the other five specimens. The pair which we have studied fit the concept of *C. mexicanum* of previous authors in all respects except one; both specimens are virtually without the outer marginal groove of the pronotum. This is probably an individual variation, as we have seen a few specimens from other localities which have the groove strongly reduced. Nevertheless, there might be two taxa in the type series, so we feel it improper to designate a lectotype until we have seen the rest of the series.

Description.— Length 6.0-8.5 mm. Head slightly longer than broad; median lobe long, tip posterior to hind margin of eye; medial margins of temporal lobes nearly straight, nearly parallel.

Pronotum relatively elongate; length/greatest width about 1.47; lateral margins curved, apex strongly narrowed; base moderately narrowed; basal impressions small, less than 0.25 of length of pronotum, open posteriorly; outer marginal groove completely hidden in dorsal view, shallower than inner marginal groove, fine but complete in most specimens, effaced anteriorly in a few specimens, nearly absent in a few specimens; prosternum without precoxal setae.

Supramarginal stria shallow in most specimens, in some specimens not impressed, represented by row of coarse punctures; remaining striae impressed; sutural stria with two or three setae near apex; intercalary stria with two or three setae posterior to middle; intratubercular stria with two or three setae posterior to junction with supramarginal; marginal stria with five or six setae near apex; transverse sulci of abdomen broadly interrupted in midline, without pits at medial ends; Sternum VI of abdomen coarsely punctate (Fig. 100); lateral pit of Sternum IV in female glabrous; anterior femur of male with large, sharp ventral tooth with several setae; anterior trochanter of male dentate; anterior tibia of male with large proximal tooth; middle calcar acute, base moderately broad, elevated above level of spurs; hind calcar small, less acute than in *C. blomi*, base broad, elevated well above level of spurs.

This species is most easily separated from *C. triplehorni* and *C. balli* by the secondary sexual characters of the male. It is also larger than the two related species, and has the

supramarginal stria better developed.

Range.— Mountains of the southern end of the Mexican Plateau, from Jalisco to Vera Cruz State, from 5000 to 12,000 feet elevation. Bell (1970) gives a list of localities. We have seen specimens from the following additional localities. MEXICO STATE: Temescaltepec, long series of both sexes, coll. Hinton, Usinger (BMNH) (this locality is near to Tejuipilco des Hidalgo); four males, four females 18 km. SW of Toluca, meadow, 3400 m., April 22, 1977, coll. J. S. Ashe, H. E. Frania, D. Shpeley (ALB); MORELOS: one female, 7 mi. s. of Tres Cumbres, VII-7, 1975, coll. Triplehorn (OSU); PUEBLA, one male, one female, 50.8 km. se of Azuabilla, 2480 m., oak pine forest, logs, ground, 78B-36a, Dec. 24-25, 1978, G.E., K. E. Ball (ALB); six males, nine females, 37.5 km. se of Azuabilla, 2500 m., wet oak-pine, 78B-37, G.E., K.E. Ball (ALB); one female, 7.6 km. e. of Santa Maria del Monte, wet pine-oak forest, 2480 m., VII-9-1975, G. E. Ball, H. E. Frania (ALB). These new records do not significantly extend the range of the species.

Variation.— The most significant variation is in the development of the outer marginal groove of the pronotum. In a large majority of specimens, it is complete. In a few, the anterior part is effaced, and in the two cotypes studied by us, it is entirely effaced, as in *C. balli* and *C. triplehorni*. It appears to us that this is an individual aberration, without taxonomic importance, though its presence in both the cotypes is surprising.

Clinidium (Mexiclinidium) balli new species
(Figs. 78, 85, 97)

Type Material.— HOLOTYPE male, labelled: "G. Ball Colln., MEXICO: Hgo, 16 mi. N. Zimapan 8000', at night, V-27-1974, C. & L. O'Brien & Marshall" (NMNH). PARATYPES two males, one female, same data as type (NMNH); three males, two females, labelled: "MEX:S. Luis Potosi, 14 mi. W. Xilitla, 4800'; VI-29-73, A. Newton" (MCZ); one male labelled: "MEX, Hidalgo, 4 mi. S.W. Chapalhuacan, 3500', VII-5-1976, A. Newton" (MCZ).

Description.— Length 5.0-6.0 mm. Head slightly longer than broad; median lobe not quite so long as in *C. mexicanum*, tip even with posterior margin of eye, blunter than in *C. mexicanum*; medial margins straight, parallel.

Pronotum elongate; length/greatest width 1.54; lateral margins curved; apex slightly more narrowed than base; basal impression very small, about 0.15 of length of pronotum, open posteriorly; outer marginal groove almost absent, less than 0.1 of length of pronotum, ventrad to hind angle; prosternum without precoxal setae.

Supramarginal stria not impressed, represented by row of fine punctures; marginal stria impressed at apex, represented at middle by row of fine punctures; both marginal, supramarginal striae with anterior 0.33 entirely effaced; sutural stria with one seta near apex; intercalary stria with one seta near apex; intratubercular stria without setae; marginal stria with three or four setae near apex; transverse sulci of abdomen broadly interrupted at midline, without pits at medial ends; Sternum VI of abdomen coarsely punctate; lateral pit of Sternum IV in female glabrous (Fig. 97); anterior femur of male with small, oblique ventral tooth, without setae; anterior trochanter of male dentate; anterior tibia of male with small, obtuse proximal tooth; middle calcar acute, base narrow, not raised above level of spurs; hind calcar small, base broad, scarcely raised above level of spurs.

This species is close to *C. mexicanum*, but has the supramarginal and marginal striae effaced anteriorly. The males is easily recognized by the small proximal tooth on the anterior tibia and the oblique tooth on the anterior femur (Fig. 85). *C. triplehorni* has the proximal tooth entirely lacking.

We take pleasure in naming this species for our longtime friend, Dr. George Ball, who has made long series of Mexican *Clinidium* available to us.

Clinidium (Mexiclinidium) triplehorni new species
(Figs. 79, 96)

Type Material.— HOLOTYPE male, labelled: "MEXICO, Hgo. 7 mi. ne. of Jacala, VI-23-1975, C. A., W. E., B. W. Triplehorn" (OSU). According to Dr. Triplehorn (*in litt.*), the elevation of the type locality is about 3200'. Despite the similar spelling, this locality is not the same as Jacala, the type locality for *C. mexicanum*. PARATYPES four males, two females, same label as holotype (OSU).

Description.— Length 6.0-6.7 mm. Head slightly longer than broad; median lobe long, tip posterior to hind margin of eye, blunter than in *C. mexicanum*; medial margins of temporal lobes straight, nearly parallel.

Pronotum elongate, length/greatest width 1.54; lateral margins curved; apex strongly narrowed; base moderately narrowed; basal impression small, about 0.2 of length of pronotum, open posteriorly; outer marginal groove reduced to 0.2 of length of pronotum, ventrad to hind angle; prosternum without precoxal setae.

Supramarginal stria not impressed, represented by row of very fine punctures; marginal stria impressed near apex, base, otherwise represented by row of fine punctures; sutural stria without setae or with one near apex; intercalary stria without setae or with one or two near apex; intratubercular with one seta near apex; marginal stria with three or four near apex; transverse sulci of abdomen broadly interrupted in midline, without pits at medial ends; Sternum VI of abdomen coarsely punctate; lateral pit of Sternum IV in female pollinose (Fig. 96); femur of male with very small obtuse ventral tooth, without setae; anterior trochanter of male dentate; anterior tibia of male without proximal tooth; middle calcar acute, base broad, not raised above level of spurs; hind calcar small, acute, base narrow, raised well above level of spurs.

This species resembles *C. mexicanum*, but differs strongly in secondary sexual characters, entirely lacking the proximal tooth on the anterior tibia in the male. The female, unlike *C. mexicanum* and *C. balli*, has the lateral pit of Sternum IV pollinose.

We dedicate this species to the collector, Dr. Charles Triplehorn, in appreciation of his making the type series and other Mexican Rhyzodini available for study.

Clinidium (Mexiclinidium) iviei new species
(Figs. 82, 84, 102)

Type Material.— HOLOTYPE male, labelled: "MEX: Oaxaca, 2 mi. S. Cerro Pelon, 03 Jul 1982, 8-9000 ft. M. A. Ivie Coll., ex rotten pine" (NMNH). PARATYPES two males, eight females, same data as holotype (NMNH); one male, one female each (UCD, UVM, MAI). All forementioned paratypes with same data as holotype; one male, two females (UVM); one male, one female (OSU); one male, one female (R. S. Miller Colln.); one male, one female sent to Thomas Atkinson at the Colegio de Post-graduados, Chapingo, Mexico. All forementioned paratypes with same locality data as holotype but labelled "July 2, 1982, (R. S. Miller Coll.)"; one female, labelled "Mexico, Oaxaca, 28 mi. N. Ixtlán de J., 10,000', VII-23-29, 1971, A. Newton, under pine bark (MCZ).

Description.— Length 6.2-8.0 mm. Head slightly longer than broad; median lobe long, tip posterior to hind margin of eye; medial margins of temporal lobes slightly curved.

Pronotum relatively elongate, length/greatest width 1.54; lateral margins curved; apex less narrowed than in *C. mexicanum*, anterior angles more distinct; base moderately narrowed; basal impressions larger than in *C. mexicanum*, about 0.3 of length of pronotum; basal impression closed posteriorly, open laterally; outer marginal groove completely hidden in dorsal view, as deep as inner marginal groove; prosternum without precoxal setae.

All striae impressed, pollinose, including supramarginal, marginal; sutural stria with two or three setae near apex; intercalary stria without setae; intratubercular stria with complete row of five or six setae; marginal stria with five or six setae near apex; transverse sulci of abdomen broadly interrupted in midline, without pits at medial ends; Sternum VI of abdomen shallowly impressed near apex in both sexes, in profile forming distinct angle; Sternum VI coarsely punctate, most punctures elongate, some reaching margin of sternum (Fig. 102); lateral pit of Sternum IV of female, large glabrous; anterior femur of male with large, broad, rather obtuse ventral tooth; surface proximal to tooth tuberculate; tooth without setae; anterior trochanter of male dentate; anterior tibia of male with large proximal tooth (Fig. 84); middle calcar acute, scarcely raised above level of spurs; hind calcar small, acute, elevated well above spurs; proximal margin of hind calcar slightly emarginate.

This species is unique in having elongate, slightly confluent punctures on abdominal Sternum VI. The pronotum is not as narrowed anteriorly as in *C. mexicanum*. The shape of the pronotum, the well developed outer marginal groove which is hidden in dorsal view, and the numerous elytral setae, all suggest *C. blomi*. The latter species, however, has four large impressions on Sternum VI, rather than elongate punctures.

The species is named for the collector, Michael A. Ivie, to whom we are grateful for the opportunity to study the type series.

SUBGENUS *PROTAINOA* BELL AND BELL 1978

Type species.— *Clinidium (Protainoa) extrarium* Bell and Bell 1978.

Description.— Antennal stylet slender, acuminate, long; tufts of minor setae present on Segments VI-X; one or two temporal setae present; orbital groove abbreviated posteriorly; marginal groove of pronotum single; angular seta,

marginal setae absent; sternopleural groove absent; elytral striation reduced; marginal stria fifth complete stria from suture; supramarginal stria represented by sparse row of fine punctures below intratubercular stria; sutural, parasutural, intercalary, intratubercular striae complete; setae present in sutural, intercalary, intratubercular, marginal striae; metasternum with broad median concavity, which is continued posteriorly to abdominal Sternum III; female with lateral pit on abdominal Sternum IV; male with anterior trochanter dentate; all femora of male with ventral surface tuberculate; tubercles most numerous on anterior femur; anterior femur of male with inconspicuous ventral tooth; male without proximal tooth on anterior tibia; base of anterior tarsus distad to cleaning organ; calcars small; middle one longer but more slender, more acute than hind one; latter triangular, its apex acute, slightly proximad of level of spurs; hind tibia of male with medial apical tooth, resembling third spur.

Clinidium (Protainoa) extrarium Bell and Bell 1978
(Fig. 87)

Clinidium (Protainoa) extrarium Bell and Bell 1978: 63-64.

Type Material.— HOLOTYPE male, labelled: "Am. Bor. Rhysodes", "N. Amerika" (BSL) PARATYPE female, same data (BSL).

Description.— Length 6.1-6.3 mm. Antenna with basal setae present on Segments VII-X; head slightly longer than wide; median lobe short, tip acute, opposite anterior margin of eye; medial margins of temporal lobes slightly curved; posterior margin of temporal lobe long, pilose; temporal lobe with two prominent, isolated punctures, probably both setose (but setae probably broken off in type series); holotype with only one puncture on right side.

Pronotum elongate; length/greatest width 1.67; widest at basal 0.33; strongly tapered anteriorly; basal impressions deep, oval, closed posteriorly; length of basal impression 0.16 of length of pronotum; hind angle with prominent tooth, preceded by pollinose pit.

Sutural, parasutural, intercalary stria impressed, coarsely punctate, entire; intratubercular stria impressed near apex, remainder not impressed, represented by row of fine punctures; marginal stria impressed, coarsely punctate near apex, effaced in middle 0.33, represented by row of fine punctures near humerus; sutural stria with two setae near apex; intercalary stria with complete row of four setae; intratubercular stria with two setae near apex; marginal stria with several setae near apex; metasternum with large transverse curved pilose area near anterior margin; transverse sulci of Sterna III-V prominent, rather narrowly interrupted at midline, medial, lateral ends each with prominent pits; in male, Sterna III-V also each with median pit; female with median pit on Sternum III but not on other sterna; Sternum VI with transverse sulci near base, curved submarginal sulci near apex; latter very narrowly interrupted at midline.

This isolated species resembles its nearest relatives in subgenus *Tainoa* in the shape of the pronotum, but differs strongly in having much more complete elytral striation, denticulate hind angles, and in lacking all pronotal setae.

The country of origin is unknown. We think it likely to be the tropical lowlands of Mexico or northern Central America. It seems likely that the endemic subgenus *Tainoa* of the Greater Antilles is derived from an ancestor much like *C. extrarium*.

SUBGENUS *TAINOA* BELL AND BELL 1978

Type species.— *Clinidium darlingtoni* Bell 1970.

Description.— Antennal stylet acuminate, long; tufts of minor setae present on antennal Segments VI-X; basal setae present on Segments VI-X; two or three temporal setae; orbital groove present, abbreviated at posterior margin of eye; marginal groove of pronotum single; angular, one or more marginal setae present; sternopleural groove absent; elytral striation strongly reduced; parasutural stria effaced anteriorly, reduced to remnant in posterior part of elytron; supramarginal not impressed, represented by row of punctures, incomplete; metasternum neither sulcate not impressed; female with lateral pit in Sternum IV; Sternum VI with two pairs of impressions, both oblique, posterior pair divergent posteriorly; in some specimens with additional pair of round anteriomedial pits; anterior femur with cleaning organ very large, entirely proximad to base of anterior tarsus; anterior trochanter of male dentate; anterior femur of male without ventral tooth.

Phylogeny.— The two Cuban species, *C. curvicosta* and *C. chevrolati* are obviously closely related, differing mainly in secondary sexual characters. *C. xenopodium*, of Hispaniola, and *C. darlingtoni*, of Jamaica, are rather distantly related to one another, but share enough characters, including a strongly abbreviated parasutural stria, to suggest that they are descended from a common ancestor different from that which led to the Cuban species.

KEY TO SPECIES

- 1 Parasutural stria relatively long, anterior and near middle of elytron 2
 1' Parasutural stria very short, arising at or behind apical 0.33 of elytron 5
 2 (1) Males, calcars present 3
 2' Females, calcars absent 4
 3 (2) Hind calcar with dorsal margin slightly sinuate, largest seta of hind calcar smaller, scarcely longer than width of calcar
 *C. curvicosta* Chevrolat, p. 71
 3' Hind calcar with dorsal margin strongly angulate, largest seta more than twice as long as width of calcar *C. chevrolati* Reitter, p. 74
 4 (2') Sternum VI sloped gradually posteriorly, in profile view angulate
 *C. curvicosta* Chevrolat, p. 71
 4' Sternum VI strongly impressed posteriorly, anterior margin of impression forming median tubercle; in lateral view, tubercle forming sharp angle ...
 *C. chevrolati* Reitter, p. 74
 5 (1') Parasutural stria not attached to intercalary anteriorly; intercalary ending blindly posteriorly *C. darlingtoni* Bell, p. 74
 5' Parasutural stria attached to intercalary stria both anteriorly and posteriorly, isolating small remnant of Interval III
 *C. xenopodium* Bell, p. 75

Clinidium (Tainoa) curvicosta Chevrolat 1873a
 (Figs. 88, 93, 94)

Clinidium curvicosta Chevrolat 1873a: 215.

Clinidium (Tainoa) curvicosta (Chevrolat) Bell and Bell 1978.

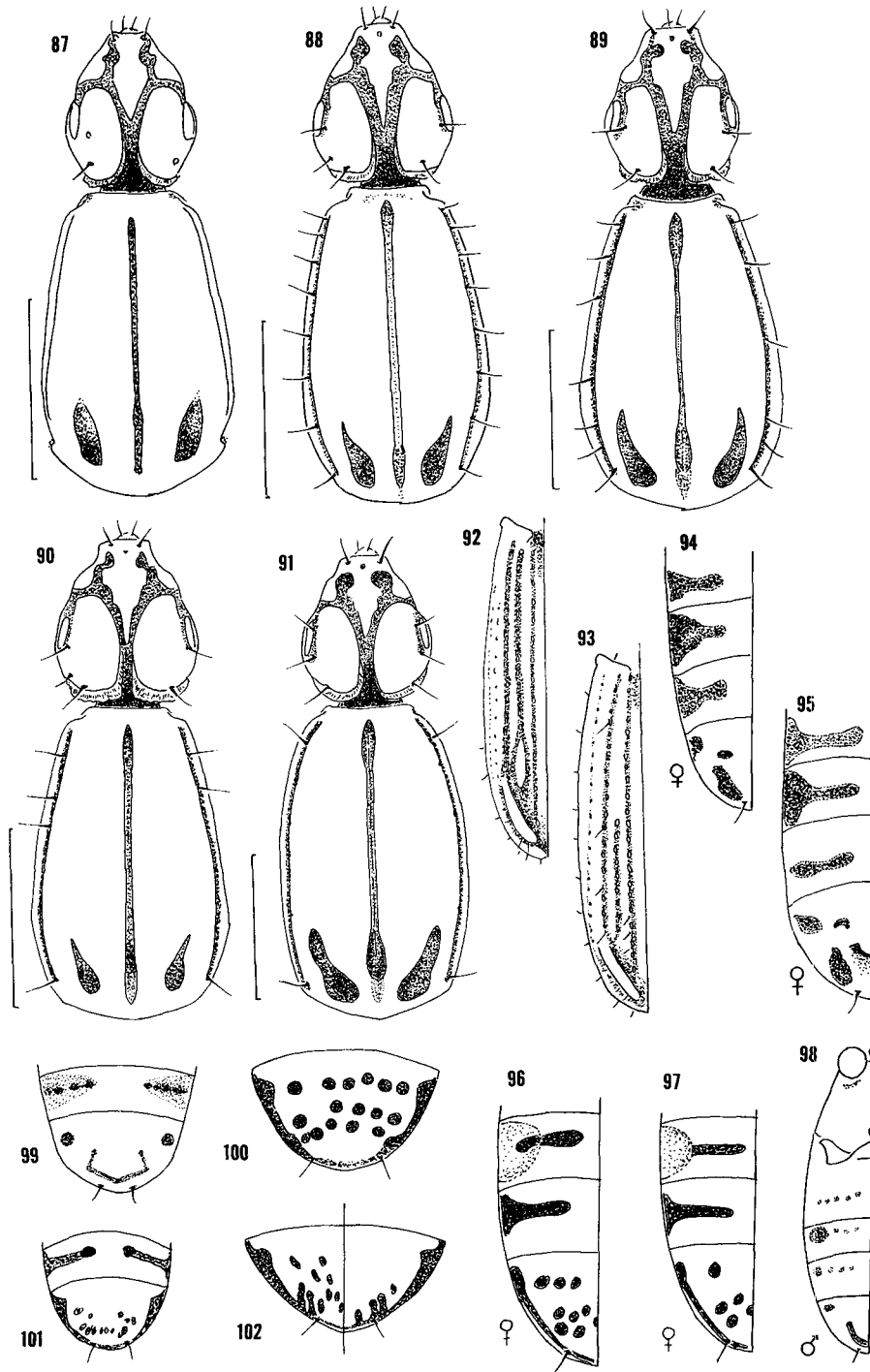
Type Material.— Not seen by us. According to the original description, collected in Cuba by F. Poey. Vulcano and Pereira (1975b) illustrated the elytron of a specimen in the Museum of Natural History in Vienna, which is labelled as the type. As previously noted (Part I:64), this specimen does not correspond to the original description, and probably is labelled incorrectly. The original description could apply either to the present species, or to the one subsequently described as *C. chevrolati*. Until an authentic type is located, it seems best to continue to use the Chevrolat name for the present species, as was the practice of Bell (1970) and previous authors.

Description.— Length 4.3-6.2 mm (according to Chevrolat, the type measured 8 mm). Basal setae present on antennal Segments VII-X; median lobe of head elongate, tip acute, opposite posterior margin of eye; medial margins of temporal lobe nearly parallel opposite frontal space; medioposterior margin of temporal lobe nearly evenly rounded, completely fringed with pilosity; temporal lobe with 3 setae in most specimens, two opposite eye, one near occiput; either anterior or posterior of those near eye absent in some specimens.

Pronotum elongate, length/greatest width 1.74; basal impression about 0.15 of total length of pronotum; in most specimens, basal impression pointed, suggesting rudimentary distal striole, four or five marginal setae.

Sutural stria impressed, entire, punctate; parasutural impressed, punctate, base near middle of elytron, not connected to neighboring striae, apex connected to intercalary stria; intercalary stria entire, impressed, punctate; intratubercular impressed near apex, otherwise not impressed, represented by row of coarse punctures; supramarginal effaced at base, apex, middle 0.33 represented by row of punctures; marginal stria coarsely punctate, shallowly impressed; sutural stria with four to six setae in nearly complete row, though absent from basal 0.25; intercalary stria with complete row of seven or eight setae; intratubercular stria with three to five setae in apical 0.25; marginal stria with 10-12 setae forming nearly complete row, though absent from basal 0.25 (Fig. 93); Sternum VI with reflected margin, anteriomedial pits present in most specimens, absent in 1; anteriolateral pits elongate; posterior pits convergent posteriorly, connected by fine submarginal groove (Fig. 94); anterior tibia of male with proximal tooth small, opposite proximal end of cleaning organ; calcars very small; hind calcar triangular, dorsal margin nearly straight, largest seta scarcely longer than width of calcar; lateral pit of Sternum IV of female laterad to sulcus; Sternum VI in female similar to that of male, only slightly concave in lateral view; neither impressed nor tuberculate, female with tip of elytra evenly rounded in posterior view.

Plate 8. Fig. 87. Genus *Clinidium*, Subgenus *Protainoa*, Head and pronotum, dorsal aspect, *C. (P.) extrarium* Bell and Bell. Figs. 88–95. Genus *Clinidium*, Subgenus *Tainoa*; Figs. 88–91, Head and pronotum, dorsal aspect; Fig. 88, *C. (T.) curvicosta* Chevrolat; Fig. 89, *C. (T.) chevolati* Reitter; Fig. 90, *C. (T.) darlingtoni* Bell; Fig. 91, *C. (T.) xenopodium* Bell; Figs. 92–93, Left elytron, dorsal aspect; Fig. 92, *C. (T.) xenopodium* Bell; Fig. 93, *C. (T.) curvicosta* Chevrolat; Figs. 94–95, Sterna III–VI, right half, female; Fig. 94, *C. (T.) curvicosta* Chevrolat; Fig. 95, *C. (T.) chevolati* Reitter. Figs. 96–102. Genus *Clinidium*, Subgenus *Mexiclinidium*. Fig. 96–97, Sterna IV–VI, right half; Fig. 96, *C. (M.) triplehorni* new species, female; Fig. 97, *C. (M.) balli* new species, female; Fig. 98, Metasternum, abdomen, right half, male *C. (M.) championi* new species; Figs. 99, 101, Sterna V–VI; Fig. 99, *C. (M.) halffteri* new species; Fig. 101, *C. (M.) guatemalenum* Sharp; Figs. 100, 102, Sternum VI; Fig. 100, *C. (M.) mexicanum* Chevrolat; Fig. 102, *C. (M.) iviei* new species (bisected, showing range of variation).



The relatively long parasutural stria, 0.5 the length of the elytron, distinguishes this species from all others except *C. chevrolati*. From the latter, the male can be distinguished by the triangular hind calcar with a relatively short major seta, and the female by the unmodified Sternum VI.

Range.— Cuba, central and eastern part of the Sierra Maestra. Bell (1970) lists localities.

Clinidium (Tainoa) chevrolati Reitter 1880

(Figs. 89, 95)

Clinidium chevrolati Reitter 1880: 30-31.

Clinidium turquinense Bell 1970.

Clinidium (Tainoa) chevrolati (Reitter) Bell and Bell 1978.

Type Material.— For *C. chevrolati* HOLOTYPE female, labelled: "Neu Granada, Chevr., type Cl., *granatense*, *chevrolati* Reitter" (NMW). It is not clear why this specimen should be labelled as a type of *C. granatense*. It does not match the description of the latter species, which is represented by another type, belonging to Subgenus *Clinidium s. str.* (NMW). The type specimen of *C. chevrolati* undoubtedly bears an incorrect locality label, as it appears identical to *C. turquinense* of Cuba. For *C. turquinense* HOLOTYPE male, labelled: "Pico Turquino, 3000-5000 ft., June, 1936, coll. P. J. Darlington" (MCZ 31752). PARATYPE one female, with head, prothorax missing, same data as type (MCZ).

Description.— Length 6.8-7.0 mm. Very similar to *C. curvicosta* except for the following points: body more robust; pronotum less elongate, length/greatest width 1.60; five or six marginal setae; sutural stria with only two to four setae limited to portion behind middle; hind calcar of male very large, strongly angulate on proximal margin, with very long, curved seta; female with Sternum VI deeply impressed in posterior 0.5, impression preceded by median tubercle (Fig. 95); female with tips of elytra separately angulate in posterior view.

Range.— Pico Turquino is the western Sierra Maestra of Cuba, and outside the known range of *C. curvicosta*.

Clinidium (Tainoa) darlingtoni Bell 1970

(Fig. 90)

Clinidium (s. str.) darlingtoni Bell 1970: 317-318.

Clinidium (Tainoa) darlingtoni (Bell) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Whitfield Hall, St. Thomas parish, JAMAICA, Jan. 9, 1967, coll. R. T. Bell, J. R. Bell, B. B. Chiolino" (MCZ 31751). PARATYPES ten males, five females, same data as holotype (MCZ, UVM); two males, same locality, coll. P. J. Darlington, Aug. 13-20, 1934 (MCZ).

Description.— Length 4.9-6.7 mm. Basal setae present on antennal Segments VIII-X; median lobe elongate, tip acute, opposite posterior margin of eye; medial margins of temporal lobes parallel, rather close together; medioposterior margin of temporal lobe nearly evenly rounded, fringed with pilosity; temporal lobe with three setae (preorbital, postorbital, occipital).

Pronotum relatively short; length/greatest width 1.58; basal impression very small, about 0.10 of length of pronotum; three or four marginal setae, one near angular seta, others anterior to middle of pronotum.

Sutural stria shallowly impressed, very coarsely punctate; parasutural stria deeply impressed, coarsely punctate, base far posterior to middle of elytron, not connected to neighbouring striae; apex attached to intratubercular stria; intercalary stria very deeply impressed, coarsely punctured, ending posteriorly just anterior to base of parasutural stria; interval laterad to intercalary stria elevated, forming medial-facing scarp; intratubercular stria impressed near apex, otherwise represented only by row of very minute punctures; supramarginal stria absent; marginal stria with basal 0.33 entirely effaced, middle 0.33 represented by row of minute punctures; apical 0.33 impressed; sutural stria with three or four setae near apex; intercalary stria with six to eight setae forming complete row; intratubercular stria with three or four setae near apex; marginal stria with seven or eight setae in apical 0.25.

Sternum VI with reflected margin; anteriomedial pits absent; anteriolateral pits elongate; posterior pits convergent posteriorly; anterior tibia of male with proximal tooth small, opposite proximal end of cleaning organ; calcars small, hind one scarcely larger than middle one; hind calcar angulate to proximal margin, with small, proximally directed seta; lateral pit of Sternum IV of female large, triangular, with short trace of transverse sulcus medial to it; Sternum VI of female slightly concave in lateral view, but not distinctly impressed.

This species is easily recognized by the very short parasutural stria which ends blindly anteriorly, close to the blind posterior end of the intercalary stria.

Range.— Jamaica from sea level to 4500'. Not known from west of Runaway Bay and Mt. Diable. Bell (1970) gives a list of localities. In addition, we have studied a series of eight specimens labelled: "JAMAICA, St. Andrew Parish, Hardwar Gap, 4000', J. Peck, 16, XII, 1972" (BSRI).

Clinidium (Tainoa) xenopodium Bell 1970
(Figs. 91, 92)

Clinidium (sensu stricto) xenopodium Bell 1970: 316.

Clinidium (Tainoa) xenopodium (Bell) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Loma Vieja, near Santa Constanza, Dominican Republic, 6000 ft., August 1938, coll. P. J. Darlington" (MCZ 31750). PARATYPES two males, one female, labelled: "La Cavite, Dominican Republic, March 5, 1917, coll. R. H. Beck" (MCZ, UVM).

Description.— Length 5.8-6.5 mm. Basal setae present on antennal Segments VII-X; median lobe short, tip acute, opposite middle of eye; medial margins of temporal lobes divergent posteriorly; occipital angle glabrous, prominent, interrupting fringe of pollinosity on margin of temporal lobe; temporal lobe with three setae, preorbital, postorbital, occipital.

Pronotum moderately elongate, length/greatest width 1.65; basal impression oval, about 0.25 of length of pronotum; one marginal seta near apex of pronotum, also one angular seta.

Sutural stria impressed, finely punctate; parasutural stria impressed, short, joined at both ends to intercalary stria, isolating small oval area; intercalary stria entire, impressed, finely punctate; intratubercular stria impressed near apex, otherwise represented by row of minute punctures; supramarginal stria effaced at base, apex, represented by row of fine punctures in middle 0.33 of elytron; marginal stria deeply impressed at apex, remainder shallow impressed; sutural stria with two or three setae near apex, or else these setae on Interval I, medial to sutural stria; intercalary stria with four setae near apex; intratubercular stria with two setae near apex; marginal stria with seven or eight setae in posterior 0.5 (Fig. 92).

Sternum VI of abdomen without raised rim; anteriomedial pits absent; anteriolateral pits elongate; posterior pits parallel or divergent posteriorly; anterior tibia of male with proximal tooth large, distinctly proximad to cleaning organ; calcars very large; middle calcar narrowly triangular, acute, 0.33 as long as tibia; hind calcar broadly triangular, apex acuminate, calcar more than 0.5 as long as tibia; female with lateral pit of Sternum IV very large, rounded medially, without trace of transverse sulcus medial to it; Sternum VI of female not impressed posteriorly.

The short parasutural stria, connected both anteriorly and posteriorly to the intercalary stria, is diagnostic of this species.

SUBGENUS *ARCTOCLINIDIUM* BELL 1970

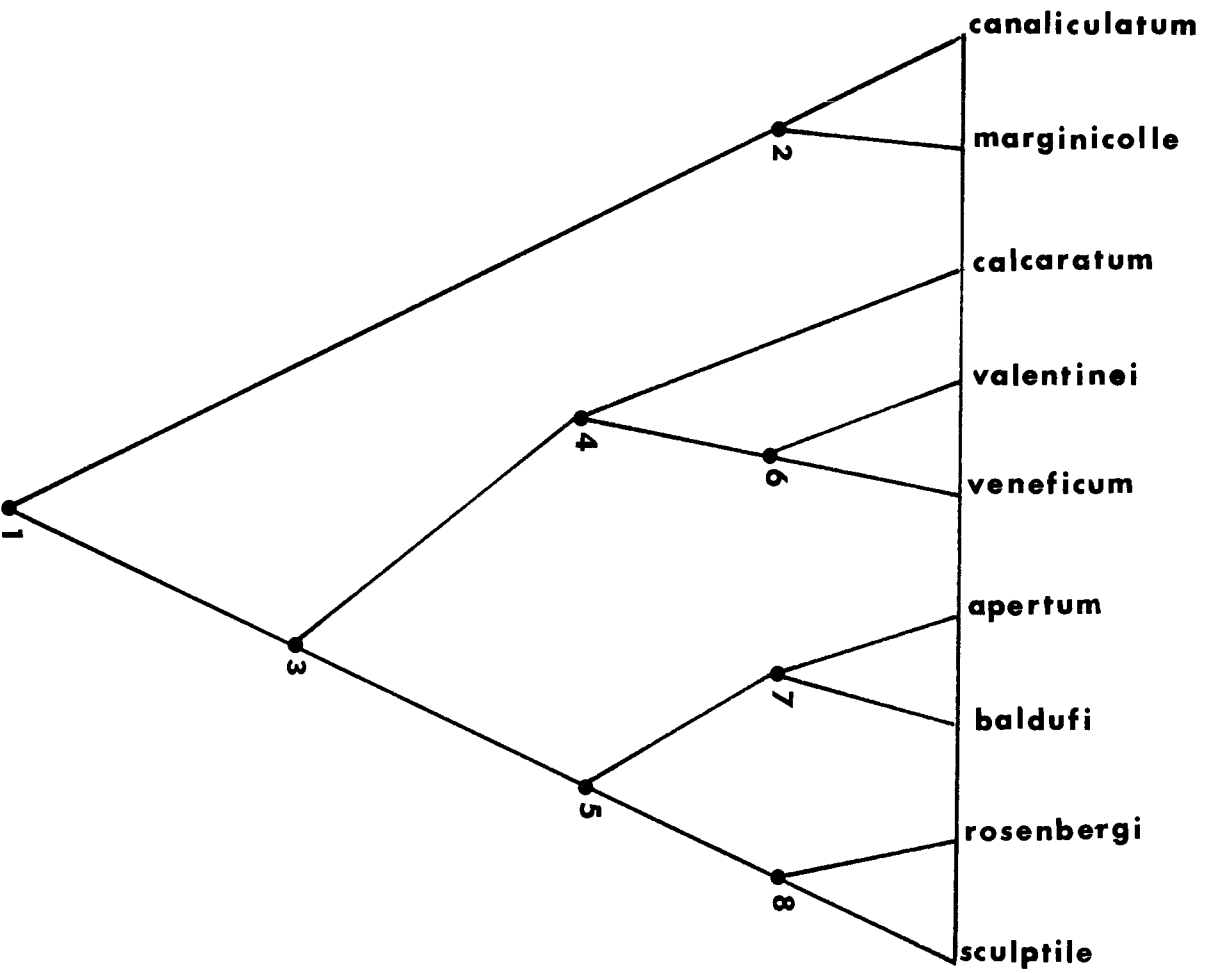
Type species.— *Clinidium sculptile* (Newman)

Description.— Antennal stylet small; tufts of minor setae present on Antennal Segments VI-X (*C. veneficum*) or VII-X (all other species); temporal seta one or absent; eye crescentic; orbital groove complete, joined posteriorly to marginal pollinosity of temporal lobe; pronotum with lateral margins curved, base, apex truncate; marginal groove double or single; pronotum with angular seta present (*C. marginicolle*) or absent (all other species); marginal setae absent; sternopleural groove present or absent; elytral striation complete; marginal stria sixth from suture; inner intervals of elytron convex or costate; elytral setae very few, at most one in apex of parasutural or sutural stria, several in apex of marginal stria, one on apical tubercle; metasternum with or without median sulcus; female with enlarged lateral pit on Sternum III or IV or both; base of anterior tarsus opposite cleaning organ.

The more distal position of the cleaning organ and the relatively few elytral setae separate this subgenus from *Mexiclinidium*. North American species have the inner intervals costate, and look similar to the larger *Mexiclinidium*, from which they can be distinguished by the presence of the sternopleural groove and the complete intercalary stria. European and western Asian species have the intervals not costate, and lack the sternopleural grooves.

This subgenus is Holarctic. It has five species in the eastern U.S.A., and one each on the Pacific Coast of North America, Japan, the Caucasus, and Southern Europe.

Phylogeny.— Our concept of the interrelationship of the nine species are as illustrated in Diagram 2. The subgenus is derived from two ancestral populations, Species 2 and Species 3,



Phylogenetic Diagram 2. Reconstructed Phylogeny of species of *Cnidium* Subgenus *Arctoclidium*

both descended from the common ancestor, Species 1. From Species 2 have arisen the two European species, *C. canaliculatum* and *C. marginicolle*. They are characterized by the following features: elytral intervals not carinate, though convex; sternopleural groove absent; precoxal setae present; parasutural stria incomplete at apex, so Intervals II, III fuse posteriorly; supramarginal row of punctures, not impressed; marginal stria not impressed except at extreme apex; one seta near apex of either sutural or parasutural stria; abdominal sterna in both sexes glabrous medially.

Species 3 was the ancestor of the six North American and one Japanese species. Among these species, the inner elytral intervals are carinate, the sternopleural groove is present; precoxal setae are absent; parasutural stria is complete, so Intervals II, III do not fuse; the supramarginal stria is impressed; marginal is completely impressed; setae are absent from apices of inner elytral striae, and the abdominal sterna of the male have a pattern of pollinose areas.

Synapomorphies of Species 2 and its descendants include loss of sternopleural groove; loss of apex of parasutural stria; possible synapomorphies are the reduction of marginal and supramarginal striae. Synapomorphies of Species 3 and its descendants are the development of ventral pollinosity in the male, the highly costate elytral intervals, and possibly the loss of setae from the apex of the sutural or parasutural striae.

The interpretation of the costate intervals is debatable. Noncostate, slightly convex intervals are found in most Rhysodini with functional hind wings, and probably represent the primitive character state for the tribe. Costate intervals have arisen several times, and can be regarded as advanced. However, it is quite possible that the costae can be reduced secondarily. Within *Clinidium*, both *Mexiclinidium* and *Arctoclinidium* have costate and noncostate species, and in the more highly modified members of subgenera *Tainoa* and *Clinidium sensu stricto*, the intervals are not costate. Thus, Species 2 may have lost its costae secondarily. The absence of the specialized pollinose areas on the abdomen of the male, however, suggests that Species 2 and its descendants are a separate phyletic line from the costate species.

Species 2 probably had the intercalary stria unmodified. The status of other characters is less definite. *C. marginicolle* is the only member of the subgenus to have an angular seta. It could be argued that this seta has been lost separately in *C. canaliculatum*, and in Species 3. However, in Rhysodini generally the greatest number of tactile setae are found in highly modified species with cryptic habits and strongly reduced eyes. This might imply that a proliferation of tactile setae has happened independently, and that the angular seta has appeared *de novo* in *C. marginicolle*. There are similar possibilities in relation to the presence of a temporal seta in both species descended from Species 2, and in *C. valentinei* alone among those descended from Species 3. Either *C. valentinei* retains the temporal seta, which was lost independently in *C. veneficum*, *C. calcaratum* and Species 5, or else the temporal seta was developed independently in *C. valentinei* and in Species 2.

Species 3 probably gave rise to Species 4 and 5. In Species 5, the metasternum developed a longitudinal sulcus. The four species descended from it are much alike, and all are found in eastern North America. The existence of Species 4 is less strongly indicated than that of Species 5. There are no clearly derived characters in common among *C. veneficum*, *C. valentinei*, and *C. calcaratum*, though a possible synapomorphy is the fact that the pollinose area of Sternum II is narrowed anteriorly, while in the remaining species, it is as wide or wider anteriorly than posteriorly. Otherwise, the three species without a sulcus are more widely divergent from one another than are those with a sulcus, and are widely distributed, with one

species each in Japan, the North American Pacific Coast, and the Appalachians.

We hypothesize the descent of *C. valentinei* and *C. veneficum* from Species 6. Common features include a ventral tooth on the anterior femur of the male, a relatively broad marginal carina on the pronotum, and a distinct cauda on the elytron in the female. In *C. calcaratum*, in contrast, the ventral tooth is lacking, the marginal carina is linear, and the cauda is small but distinct in both sexes. In all of these characters, there is uncertainty about which character state is plesiomorphic, and alternative arguments could be made to support other phyletic arrangements. Thus, *C. calcaratum* and *C. valentinei* both have the anterior trochanter of the male pointed, while it is rounded in *C. veneficum*. *C. calcaratum* and *C. veneficum* lack a temporal seta and a ventral tooth on the hind femur, while they have the lateral pits of Sternum IV enlarged. In *C. valentinei* a temporal seta and a tooth on the hind femur of the male are present, and the lateral pits of Sternum III are enlarged.

Both the posterior and anterior trochanters of the male are pointed in *C. calcaratum*, a feature it shares with *C. canaliculatum* and *C. marginicolle*. This suggests that pointed trochanters were a feature of the common ancestor of the subgenus, Species 1. *C. valentinei* is unique in having the anterior trochanter pointed, but the posterior one rounded, an intermediate condition, between the ancestral character state, and the condition seen in *C. veneficum* and all four descendants of Species 5, which have both anterior and posterior trochanters rounded.

C. valentinei has the lateral pit on Sternum III enlarged, while *C. calcaratum* and *C. veneficum* have that of Sternum IV enlarged. The latter character state is probably the primitive one. Sternum IV has enlarged pits in *C. canaliculatum* and *C. marginicolle*, and in the overwhelming majority of Rhysodini in other subtribes. It seems likely that a shift to Sternum III is a specialization that has occurred in *C. valentinei* independently of the species descended from Species 5. Of the latter, the shift is only partial in Species 8 and its descendants, *C. rosenbergi* and *C. sculptile* which have both III and IV enlarged, but is complete in the remaining species, *C. apertum* and *C. baldufi*, which resemble *C. valentinei* in having only the pits of Sternum III enlarged.

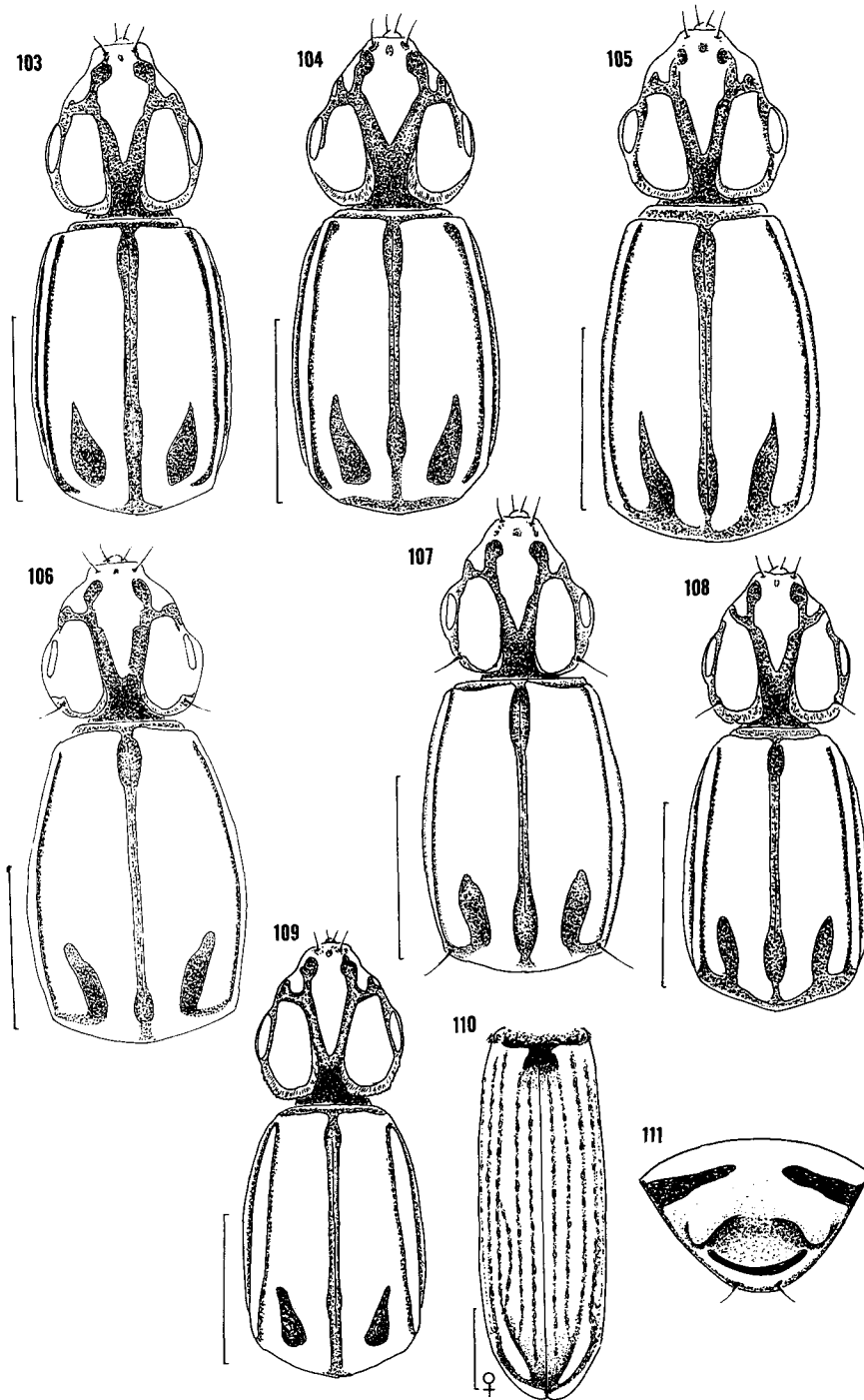
Species 5, with the metasternum sulcate, gave rise to two descendants, Species 7 and 8. Species 7 had enlarged lateral pits only on Sternum III in the female, and had the prosternum glabrous in the male. It gave rise to *C. apertum* and *C. baldufi*. Species 8 developed a pollinose area on the prosternum of the male, a feature not seen elsewhere in the genus, while the lateral pits of the female were enlarged on both Sterna III and IV. It gave rise to *C. rosenbergi* and *C. sculptile*.

KEY TO SPECIES

- | | | |
|-------|---|---|
| 1 | Parasutural stria abbreviated near apex, Intervals II, III fused posteriorly; elytral intervals merely convex | 2 |
| 1' | Parasutural stria complete, Intervals II, III not fused posteriorly; elytral intervals costate | 3 |
| 2 (1) | Angular seta absent from pronotum; intercalary stria only slightly broader, deeper than parasutural; anterior femur of male without ventral tooth . . .
..... <i>C. canaliculatum</i> (Costa), p. 83 | |
| 2' | Angular seta present; intercalary stria twice as broad and deep as parasutural stria, strongly dilated in apical 0.33; anterior femur of male | |

	with ventral tooth	<i>C. marginicolle</i> Reitter, p. 83	
3	(1') Metasternum without median sulcus		4
3	Metasternum with median sulcus		9
4	(3) Males, calcars present		5
4'	Females, calcars absent		7
5	(4) Anterior femur without ventral tooth; hind trochanter pointed		
		<i>C. calcaratum</i> Leconte, p. 84	
5'	Anterior femur with ventral tooth; hind trochanter rounded		6
6	(5') Posterior femur with ventral tooth; anterior trochanter pointed		
		<i>C. valentinei</i> Bell, p. 85	
6'	Posterior femur without ventral tooth; anterior trochanter rounded		
		<i>C. veneficum</i> Lewis, p. 88	
7	(4) Lateral pit of abdominal Sternum III enlarged		
		<i>C. valentinei</i> Bell, p. 85	
7'	Lateral pit of Sternum IV enlarged		8
8	(7') Marginal carina of pronotum linear; outer marginal groove not visible in dorsal view; basal impression of pronotum open posteriorly		
		<i>C. calcaratum</i> Leconte, p. 84	
8'	Marginal carina relatively broad; outer marginal groove visible in dorsal view; basal impression closed posteriorly	<i>C. veneficum</i> Lewis, p. 88	
9	(3) Males, calcars present		10
9'	Females, calcars absent		13
10	Prosternum glabrous		11
10'	Prosternum with median pollinose area		12
11	(10) Abdominal Sternum V with pollinosity interrupted by narrow median carina; anterior tibia without proximal tooth	<i>C. baldufi</i> Bell, p. 89	
11'	Abdominal Sternum V without median carina; anterior tibia with proximal tooth	<i>C. apertum</i> Reitter, p. 90	
12	(10') Pollinose area present between transverse sulci on Sternum V; hind calcar large	<i>C. sculptile</i> (Newman), p. 92	
12'	Sternum V glabrous between transverse sulci; hind calcar very small		
		<i>C. rosenbergi</i> Bell, p. 91	
13	(9') Lateral pit in Sternum III of abdomen		14
13'	Lateral pits present in Sterna III, IV		15
14	(13) Sternum VI with posterior 0.5 deeply impressed; cauda of elytra prominent, trapezoidal	<i>C. baldufi</i> Bell, p. 89	
14'	Sternum VI with posterior 0.5 not impressed; cauda small, rounded		
		<i>C. apertum</i> Reitter, p. 90	
15	(13') Lateral pits of Sterna III, IV equally large; cauda very small, rounded; Sternum VI impressed in some specimens, not impressed in others		
		<i>C. rosenbergi</i> Bell, p. 91	
15'	Lateral pits of Sternum IV smaller than those of Sternum III; cauda prominent, rounded; Sternum VI with posterior 0.5 deeply impressed		
		<i>C. sculptile</i> (Newman), p. 92	

Plate 9. Figs. 103–111. Genus *Clinidium*, Subgenus *Arctoclinidium*. Figs. 103–109, Head and pronotum, dorsal aspect; Fig. 103, *C. (A.) rosenbergi* Bell; Fig. 104, *C. (A.) baldufi* Bell; Fig. 105, *C. (A.) calcaratum* Leconte; Fig. 106, *C. (A.) canaliculatum* (Costa); Fig. 107, *C. (A.) marginicolle* Reitter; Fig. 108, *C. (A.) valentinei* Bell; Fig. 109, *C. (A.) veneficum* Lewis; Fig. 110, Elytra, dorsal aspect (showing stria variation), *C. (A.) veneficum* Lewis; Fig. 111, Sternum VI, *C. (A.) veneficum* Lewis.



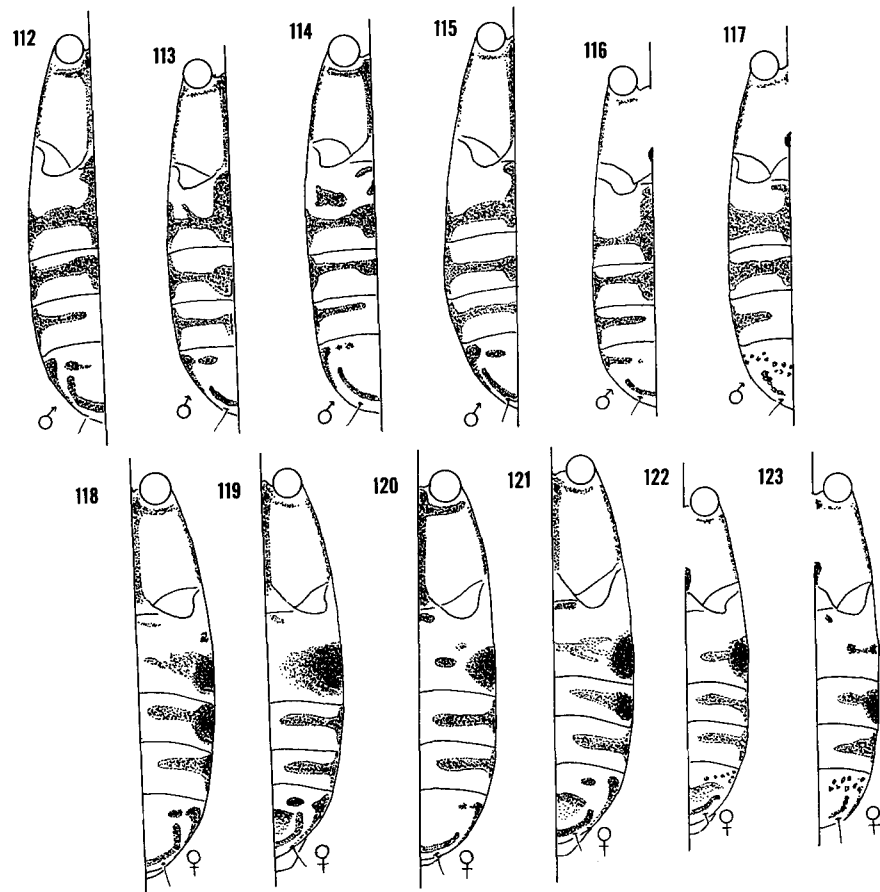


Plate 10. Figs. 112-123. Genus *Clinidium*, Subgenus *Arctoclinidium* *Metasternum*, abdomen, halved. Figs. 112, 118, *C. (A.) rosenbergi* Bell; Figs. 113, 119, *C. (A.) baldufi* Bell; Figs. 114, 120, *C. (A.) apertum apertum* Reitter; Figs. 115, 121, *C. (A.) sculptile* (Newman); Figs. 116, 122, *C. (A.) valentinei* Bell; Figs. 117, 123, *C. (A.) calcaratum* Leconte.

Clinidium (Arctoclinidium) canaliculatum (Costa 1839)

(Fig. 106)

Ips canaliculatus Costa 1839: 104.*Rhysodes trisulcatus* Germar 1840: 441.*Rhysodes sulcipennis* Mulsant 1853: 6.*Clinidium trisulcatum* (Germar) Chevrolat 1873a.*Clinidium canaliculatum* (Costa) Grouvelle 1903.*Clinidium (Arctoclinidium) canaliculatum* (Costa) Bell and Bell 1978.

Type Material.— We have not located type material for any of the three nominate species of *Clinidium* described from southern Europe. As there appears to be only one species of *Clinidium* in Europe, we follow Grouvelle (1903) in regarding *R. trisulcatus* Germar and *R. sulcipennis* Mulsant as being pure synonyms.

Description.— Length 6.0-7.5 mm. Antennal Segments VII-X with tufts of minor setae; basal setae sparse, limited to Segments IX-X; one temporal seta present; pronotum rather short, length/greatest width about 1.47; greatest width of pronotum slightly behind middle; pronotum strongly narrowed anteriorly, only slightly narrowed posteriorly; angular seta absent; basal impressions open posteriorly; outer marginal groove not visible in dorsal view, in most specimens abbreviated anteriorly; precoxal setae present on prosternum; sternopleural groove absent.

Elytral striae punctate; sutural stria complete, shallowly impressed; parasutural impressed, abbreviated near apex; intercalary stria much deeper than other striae; portion between 0.55 and 0.70 of length deeper but scarcely wider than remainder; intratubercular stria shallowly impressed; supramarginal stria not impressed, represented by line of very fine punctures near middle of elytron; base, apex effaced; marginal stria effaced at base, middle portion not impressed, represented by line of rather coarse punctures; apex impressed; Intervals I-III broad, nearly flat, of nearly uniform width; Interval IV not flattened laterad to deepened part of intercalary stria; elytron with one seta in apex of sutural stria, absent or one in apex of intercalary stria; two to four near apex of marginal stria.

Metasternum not sulcate; transverse sulci of abdominal sterna widely separated in midline, without median pollinosity in either sex; Sternum VI coarsely punctate; female with lateral pits on abdominal Sternum IV; Sternum VI of female without impression; male with anterior, posterior trochanters pointed; male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar acute, narrow; hind calcar large, somewhat cultrate, dorsal margin curved, ventral margin shallowly emarginate; male with prosternum, abdominal sterna glabrous.

This species is similar to *C. marginicolle*, from which it differs in the absence of the angular seta, in the wider, flatter elytral intervals, and in the smaller, narrower subapical enlargement of the intercalary stria. The males can also be distinguished by the different shape of the hind calcar, and by the absence of the ventral tooth on the anterior femur in *C. canaliculatum*. Some specimens of *C. canaliculatum* resemble *C. marginicolle* in having a complete outer marginal groove on the pronotum, although it is not visible except in lateral view.

Range.— Southern Italy (Sicily, Calabria), Greece. We have studied specimens with specific locality labels: GREECE: Taygetos, Morea (CNHM, UVM). ITALY: Aspromonte, Calabria (CNHM); Sta. Eufemia, Calabria (CNHM, UVM). Hincks (1950) and earlier authors also record it from the Caucasus. We have not seen this species from the Caucasus, and believe that records from there are misidentified *C. marginicolle*.

Clinidium (Arctoclinidium) marginicolle Reitter 1889

(Fig. 107)

Clinidium marginicolle Reitter 1889: 23.*Clinidium (Arctoclinidium) marginicolle* (Reitter) Bell and Bell 1978.

Type Material.— We have not located authentic type material. According to the original description, the type series was from Lenkoran (Azerbaijan), and was collected by Leder. A specimen in the Natural History Museum of Vienna is labelled as a type, but is labelled: "PERSIA: Kopet Dagh, Siaret 1160 m., 5.99, Col. Hauser". The label probably indicates that Reitter compared it with his type series and considered it identical.

Description.— Length 5.8-7.5 mm. Antennal Segments VII-X with tufts of minor setae; basal setae few, limited to Segment X; one temporal seta; pronotum more elongate than in *C. canaliculatum*, length/greatest width about 1.57; widest near middle; base more narrowed than in *C. canaliculatum*, nearly as narrow as apex; angular setae present; basal impressions closed posteriorly or almost closed; outer marginal groove deep, complete, barely visible in dorsal view; prosternum with precoxal setae; sternopleural groove absent.

Elytral striae punctate; sutural stria complete, shallowly impressed; parasutural impressed, abbreviated near apex, sinuate opposite dilated portion of intercalary stria; latter very deeply impressed; portion between 0.55, 0.70 of length deeper, wider than remainder; intratubercular stria shallowly impressed; supramarginal stria almost absent, represented by a few minute punctures near middle; marginal stria effaced at apex, marginal stria effaced at base, middle portion not impressed, represented by row of punctures; apex impressed; sutural interval of even width, nearly flat; Interval II similar

to sutural interval in anterior 0.5, posteriorly much narrower than sutural interval, convex, slightly sinuate opposite depressed part of intercalary stria; Interval III slightly convex, as broad as sutural interval, depressed opposite depressed part of intercalary stria; Interval IV broad, slightly convex except opposite depressed part of intercalary stria, where narrowed, depressed; elytron without setae or one in apex of sutural stria, one seta in intercalary stria opposite apex of parasutural stria, one near apex of intratubercular stria, two to four apex of marginal stria.

Metasternum not sulcate, transverse sulci of abdominal sterna rather narrowly separated in midline, without median pollinosity in either sex; Sternum VI coarsely punctate; female with lateral pits on abdominal Sternum IV; Sternum VI of female without impression; male with anterior, posterior trochanters pointed; male with small, obtuse ventral tooth on anterior femur; male without proximal tooth on anterior tibia; middle calcar small, acute, triangular; hind calcar small, with dorsal margin angulate, ventral margin straight, well above spurs; male with prosternum, abdominal sterna glabrous.

This species differs from *C. canaliculatum* in having an angular seta, in having a longer, narrower pronotum, and in the shape of the calcars. Also, the subapical enlargement of the intercalary stria is more conspicuous, and alters the neighbouring intervals and striae.

Range.— Caucasus Mountains of the southern U.S.S.R. and the Kopet Dag range of northeastern Iran. We have studied specimens from the following localities: IRAN, Siaret, Kopet Dag (NMW; NMHB, CNHM); Astrabad (MNHB); U.S.S.R. Paletan, 1200', Astar. R., Talysh. (LEN).

Clinidium (Arctoclinidium) calcaratum LeConte 1875

(Figs. 105, 117, 123)

Clinidium calcaratum LeConte 1875: 164.

Clinidium (Arctoclinidium) calcaratum (LeConte) Bell 1970.

Type Material.— HOLOTYPE sex not recorded, labelled: "Vanc." (MCZ 6831). In the original description the type locality is cited as "Vancouver Island".

Description.— Length 5.8-8.1 mm. Antennal Segments VII-X with tufts of minor setae; basal setae sparse, limited to Segments IX, X; temporal seta absent; pronotum relatively elongate, length/greatest width about 1.59; widest posteriorly, base slightly narrowed, apex strongly so; sides of pronotum only slightly curved; angular seta absent; basal impressions relatively large, open posteriorly; outer marginal groove scarcely visible in dorsal view, close to inner marginal groove, separated by narrow nearly linear marginal carina; precoxal setae absent; sternopleural groove present.

Elytral striae deep, broad, inconspicuously punctate; supramarginal stria shallower than the others; intervals narrow, costate; intercalary not abbreviated posteriorly in most specimens, in a few specimens very shortly abbreviated on one elytron; Intervals II, III not united posteriorly except as a unilateral aberration; elytron entirely without setae; cauda small, rounded, present in both sexes.

Prosternum glabrous in both sexes; metasternum not sulcate; transverse sulci widely separated at middle; male with pollinosity of Sternum II a narrow rectangle; male with median pollinose areas present on Sterna I-IV, absent from Sternum V; Sternum VI varying geographically (see below, under *variation*); female with lateral pits on Sternum IV; anterior, posterior trochanters of male pointed; male without ventral tooth on anterior, posterior femora, without proximal tooth on anterior tibia; hind calcar very large, 0.5 as long as hind tibia.

This is the only member of the genus in western North America. The male is easily recognized by the very large hind calcar, while the female differs from all species with carinate intervals other than *C. veneficum* in having the lateral pits in abdominal Sternum IV but not Sternum III. The narrow marginal carina and the absence of a tuft of minor setae on antennal Segment VI will separate it from the latter species.

Range.— Substantially as listed by Bell (1970), in the Coast Range and Sierra Nevada of California, from Mendocino and Tuolumne Counties northwards. In Oregon, known from a number of localities in Klamath and Jackson Counties, near the California state line, and from a few spots near the Columbia River, both in the Coast and Cascade Ranges, but not known from the remainder of Oregon. In Washington, known from the Puget Sound area, including the Olympic Peninsula, the San Juan Islands, and the lowlands east of the Sound; in British Columbia, known from southern half of Vancouver Island, north to Comox, and also from the mainland. The record from Mt. Garibaldi, collected by Virginia Anderson, is significantly north of previously recorded mainland localities.

The following locality records are in addition to those published by Bell (1970): BRITISH COLUMBIA: Goldfield (CMP); Goldstream (UK); Mount Garibaldi (UVM); Vancouver (CAS). CALIFORNIA: Denny (Bell Creek), 2500 ft. (LA); Georgetown (CAG); Happy Camp (Siskiyou Co.) (CAG); Lake Alamanor (Plumas Co.) (CAG); Maple Creek (Humboldt Co.) (CAG); Placer Co. (PU); Siskiyou Co. (MO; CNHM; BMS); Uncle Toms

(CAG); Yuba Pass (Sierra Co.) (OS; LA). OREGON: Ashland Peak, Siskiyou Mts., 7000 ft. (CNHM); Beaver-Sulfur (Jackson Co.) (OS); Forest Grove (MN); Huckleberry Mts. (Jackson Co.), 5500 ft. (CNHM); Josephine Co. (CNHM); Merlin (Josephine Co.) (OS); Oregon Caves (Jackson Co.) (CNHM).

Variation.— In most specimens from Puget Sound and vicinity, Sternum VI is impunctate in both sexes, and the submarginal groove is widely interrupted in the midline. In a few from Puget Sound, the base of Sternum VI has a few punctures. In a majority of northern females, Sternum VI is slightly impressed posteriorly. In this population the pronotum is shorter and more oblong than is usual for California specimens. Most California specimens have numerous punctures of Sternum VI, and the submarginal groove is scarcely interrupted. The female lacks an impression on Sternum VI, and the pronotum in both sexes is more slender and elongate.

These differences might indicate separate subspecies. However, it is also possible that the variation has a clinal nature. The absence of specimens from central Oregon makes it impossible to decide at present.

Bionomics.— Recorded many times from douglas-fir (*Pseudotsuga*) logs (Bell 1970).

Clinidium (Arctoclinidium) valentinei Bell 1970
(Figs. 108, 116, 122)

Clinidium (Arctoclinidium) valentinei Bell 1970: 313.

Type Material.— HOLOTYPE male, labelled: "Gorgas, Walker Co., Ala., April 17, 1949, coll. Barry Valentine" (OSU). PARATYPES one male, four females, collected with type (OSU; UVM).

Description.— Length 5.4-6.4 mm. Antennal Segments VII-X with tufts of minor setae; basal setae present on Segments VII-X; temporal lobe present; pronotum relatively short, length/greatest width 1.42; widest near middle; base, apex only slightly narrowed; lateral margins feebly curved; angular seta absent; basal impression large, 0.33 as long as pronotum, open posteriorly; outer marginal groove clearly visible in dorsal view, separated from inner groove by broad marginal carina; precoxal setae absent; sternopleural groove present.

Elytral striae broad, deep, scarcely punctate; supramarginal stria impressed in most specimens, reduced to row of coarse punctures in smallest specimens; intervals narrow, costate; intercalary stria not abbreviated posteriorly; Intervals II, III not united posteriorly; marginal stria without setae or one or two near apex; cauda of female small, rounded.

Prosternum glabrous in both sexes; metasternum not sulcate; transverse sulci of abdominal sterna narrowly separated in midline; male with median pollinose areas on Sterna I-IV, that of II narrowed anteriorly, its lateral margins straight or concave; Sternum V without pollinosity; Sternum VI of female with posterior 0.5 deeply impressed, impression bounded anteriorly by straight transverse scarp; disc with a few punctures anterior to scarp; female with large lateral pits on Sternum III; anterior trochanter of male pointed, posterior one rounded; anterior, posterior femora of male each with prominent ventral tooth; anterior tibia of male with large proximal tooth; hind calcar acute, smaller than in *C. calcaratum*, 0.40 as long as tibia.

This is the only member of the genus in the eastern U.S. to lack the median sulcus of the metasternum. The species can also be recognized by the presence of a temporal seta, though the latter is very small and often hard to see. The male is unique in the subgenus in having a ventral tooth on the posterior femur. The female resembles *C. baldufi* and *C. apertum* in having lateral pits on Sternum III but not Sternum IV. The rounded cauda separates it from *C. baldufi*, and the impression of Sternum IV from *C. apertum*.

Blanchard (1889) recognized this species as "Form B" of *C. sculptile*.

Range.— An Appalachian species, known from three widely scattered regions; north central Alabama; the mountains of eastern Tennessee, northeastern Georgia, and western North and South Carolina, and southwestern Pennsylvania, near Pittsburgh. It is not clear whether the range is really broken into relict areas or whether these merely record infrequent collection.

In addition to the localities listed by Bell (1970), we have seen specimens from the following localities: NORTH CAROLINA: Highlands (BSRI); PENNSYLVANIA: Jeanette (CMP), Wall (CMP; UVM); TENNESSEE: Chimneys C. Gr., Gt. Smoky Mt. Nat. Pk. 2800 ft. (CU), Gregory Bald, Gt. Smoky Nat. Pt. (CU); SOUTH CAROLINA: Clemson (UVM).

TABLE 1
POLYMORPHISM IN *Clinidium veneficum* LEWIS

Locality	Sex	Sternum VI	Stria III
Miyanoshita	f	b	t
Miyanoshita	m	r	s
Miyanoshita	f	l	s
Miyanoshita	f	l	s
Miyanoshita	f	b	s
Miyanoshita	m	b	s
Kiga	m	a	s
"Japan"	m	a	s
Nagasuki	m	a	s
Chiuzenji	f	b	t
Oyayama	f	b	t
Higo	f	b	t
Higo	f	b	t
Hakone	f	b	u
Mt. Kohtsu	f	a	t
Mt. Kohtsu	m	a	s
Mitsugi	m	a	s
Mitsugi	m	a	s
Mitsugi	m	a	s

(continued on next page)

Table 1 (continued)

Locality	Sex	Sternum VI	Stria III
Mitsugi	f	a	s
Mitsugi	f	a	s
"Japan"	f	b	t

Explanation of abbreviations:

Sternum VI - "b" indicates sternum tuberculate on both sides; "r" indicates tuberculate on right side only "l" indicates tuberculate on left side only "a" indicates tubercles absent.

Stria III = "t" indicates intercalary stria of both elytra contain tubercles; "u" indicates tubercle present on one side only; "s" indicates stria simple, without tubercle.

TABLE 2
COMBINATIONS OF POLYMORPHIC CHARACTERS *CLINIDIUM VENEVICUM*
LEWIS

Sternum VI	Simple Stria	Double Stria	
		Unilateral	Bilateral
bituberculate	1 m, 1 f	1 f	5 f
right tubercle	1 m	0	0
left tubercle	2 f	0	0
no tubercles	9 m, 2 f	0	1 f

m = male, f = female

TABLE 3
PROPORTION OF POPULATION WITH EACH CHARACTER STATE

I.	Sternum VI	males	females	both sexes
	bituberculate	9%	58%	34%
	right tubercle	9%	0%	4%
	left tubercle	0%	17%	9%
	no tubercles	82%	25%	53%
II.	Intercalary Stria			
	simple	100%	45.5%	70%
	unilateral double stria	0%	9%	4%
	bilateral double stria	0%	45.5%	26%

A specimen labelled (CANADA) "North West Territories, N. Karts Camp, S. Nahanni River, 61° 34' N, 124° 2' W, 28-VI-19-VIII, 1972, S. Peck, R. Syme" (BSRI) must surely be mislabelled.

Clinidium (Arctoclinidium) veneficum Lewis 1888
(Figs. 109, 110, 111)

Clinidium veneficum Lewis 1888: 83.

Clinidium (Arctoclinidium) veneficum (Lewis) Bell and Bell 1978.

Type Material.—LECTOTYPE (here designated) male, labelled: "Japan, Miyanoshta, 20-XII-23-XII, 80, G. Lewis 1910-320, *Clinidium veneficum* Lewis" (BMNH). PARALECTOTYPES four females, one male, same data as lectotype (BMNH); two females, labelled: "Higo, Japan, G. Lewis" (BMNH).

Description.—Length 5.1-7.2 mm. Antennal Segments VI-X with tufts of minor setae; basal setae sparse, limited to Segments IX, X; temporal seta absent; pronotum varied in proportions, length/greatest width 1.15 to 1.55; widest near middle; base, apex nearly equally narrowed; lateral margins curved; angular seta absent; basal impressions relatively small, length about 0.25 of length of pronotum, oblique, closed posteriorly; outer marginal groove prominent in dorsal view; inner marginal groove relatively distant from it; marginal carina broad at middle, narrowed to base, apex; precoxal setae absent; sternopleural groove present.

Elytral striae broad, deep, inconspicuously punctate; elytral intervals costate; intercalary stria complete; in female, dimorphic, either doubled for short distance behind middle, isolating small tubercle which looks like remnant of additional interval, or else entire (Fig. 110); intercalary stria of male entire; supramarginal stria scarcely impressed, represented by row of punctures, abbreviated posteriorly; marginal stria impressed near apex, more anteriorly represented by row of punctures; apex of marginal stria with one or two setae, or else these setae on apical tubercle just above marginal stria; cauda dimorphic, trapezoidal in some females, rounded in others.

Prosternum glabrous in both sexes; metasternum not sulcate; transverse sulci of abdominal sterna narrowly interrupted in midline; that of Sternum II not interrupted in some females; Sterna II-V in male with median pollinose area, that of Sternum II trapezoidal; Sternum VI impressed in posterior 0.5, polymorphic, either with large tubercle near lateral margin anterior to impression on either side, or with only one such tubercle on right side, or on left side, or entirely without tubercles; female with deep lateral pits on Sternum IV; all trochanters of male rounded; anterior femur of male with small ventral tooth; hind calcar acute, narrow, rather long, about 0.33 of length of tibia, not raised above level of spurs.

This is the only member of the species known from Japan. It is similar to *C. calcaratum* of western North America, but has a broader pronotum with broader marginal carinae, and has the basal impressions closed posteriorly. It is the only member of the subgenus to have a tuft of minor setae on Antennal Segment VI.

Range.—Japan, islands of Kyushu and Honshu. On the latter island, north to Nikko. In addition to type material, we have studied the following specimens: one female, labelled: "Chiuzenju, 19, VIII-24-VIII 81, Japan, G. Lewis, 1910-330" (BMNH); one female, labelled: "Hakone, Japan, Sharp Coll. 1905-313" (BMNH); one male, labelled: "Kiga, Japan, G. Lewis, 1910-320" (BMNH); one male, labelled: "Mie Univ. Forest. Ichishi-Gun Mie, 24-VI-1956, Coll. M. Sato" (SATO); four males, two females, labelled: "Mitsugi Mura, Mie Prf., 11-VI-1956, coll. Z. Naruso" (SATO); one female, labelled: "Mt. Kohtsu (Tokushima), 31-X-1965, M. Sakai leg." (SATO); one male, labelled: "Nagasaki, Japan, G. Lewis, 1910-320, 22-V-3-VI, 81" (BMNH); one female, labelled: "Oyayama, 26-4-81, Japan, G. Lewis, 1910-320" (BMNH).

Variation.—This species exhibits remarkable polymorphism, and deserves detailed study. The intercalary stria is either entire or is divided for a short distance behind the middle, isolating a small tubercle. In all males it is entire, while the females are roughly 0.5 entire and 0.5 divided. Sternum VI is polymorphic. Many specimens have a pair of large tubercles (Fig. 111), a few have only the left tubercle, one has only the right tubercle, and many lack tubercles entirely. These forms are not secondary sexual characters, though the relative numbers of each morph are very different in the two sexes. Most males lack tubercles, while over half the females have both tubercles. The elytral cauda of the female also seems to vary in shape from a round to trapezoidal form, but detailed studies have not been completed.

The combination of characters seen in the 23 specimens which we studied are indicated in Tables 1, 2, 3. Despite the diverse appearance of the individuals, it seems likely there is one

highly polymorphic species. The lectotype is a male with the intercalary stria entire, and Sternum VI with the right tubercle, but without the left one. The other male from Miyanosima has both tubercles on Sternum VI. Thus neither agree with the majority of males, which lack both tubercles.

Bionomics.— According to Lewis (1888) this species occurs in old beech trees.

Clinidium (Arctoclinidium) baldufi Bell 1970

(Figs. 104, 113, 119)

Clinidium (Arctoclinidium) baldufi Bell 1970: 313-314.

Type Material.— HOLOTYPE male, labelled: "Dayton, Ill., May 17, 1946, coll. F. G. Werner" (MCZ 31748). PARATYPES one male, one female, same label as holotype (UVM); two males, labelled: "Lasalle Co., Ill." (MCZ); one male, labelled: "Putnam Co., Ill." (UI); two males, labelled: "Starved Rock State Park, Ill." (ISNHS).

Description.— Length 5.9-7.4 mm. Antennal Segments VII-X with tufts of minor setae; Segment VIII with basal setae few to absent; Segments IX-X with basal setae; temporal seta absent; pronotum relatively short, subquadrate, length/greatest width about 1.42; widest near middle; base, apex slightly narrowed; basal impression closed posteriorly; outer marginal groove evident in dorsal view; marginal carina relatively broad; angular seta absent; precoxal setae absent; sternopleural groove present.

Elytral striae deep, broad, inconspicuously punctate; supramarginal striae shallower than others; intervals narrow, costate; intercalary stria complete; setae absent or one or two present near tip of marginal stria; cauda of female prominent, trapezoidal.

Prosternum glabrous in both sexes; metasternum sulcate; transverse sulci rather broadly interrupted in midline; male with median pollinose areas on Sterna I-V, that of V narrowly divided in midline by glabrous carina; Sternum IV of male with median carina posterior to middle, but with pollinosity continuous anterior to carina; pollinosity of Sternum II a narrow rectangle; female with lateral pits on Sternum III; Sternum VI of female with apical 0.5 impressed.

Male with all trochanters rounded; male with small ventral tooth on anterior femur; anterior tibia of male without proximal tooth; middle, hind calcears pointed; hind one moderately large, raised slightly above level of spurs.

The male of this species resembles *C. apertum* in lacking pollinosity on the prosternum. It can be separated from the latter by the presence of a median carina on Sternum V and the absence of a proximal tooth on the anterior tibia. The female, like that of *C. apertum*, has lateral pits on Sternum III but not on Sternum IV. The female of *C. baldufi* has a prominent, trapezoidal cauda on the elytra. In both sexes, the basal impressions are closed posteriorly, while in *C. apertum* they are open.

This is probably "Form C" of *C. sculptile* according to Blanchard (1889).

Range.— More extensive and less discontinuous than indicated by Bell (1970). South to northern Florida and southern Mississippi; northeast to Delaware River Valley of New Jersey; north to vicinity of Pittsburgh, Pennsylvania, northern Illinois and central Iowa; western limit central Iowa, southeastern Missouri and northwestern Mississippi.

We have seen specimens from the following localities, in addition to those listed by Bell (1970): ALABAMA: Blount Springs (CMP), Mt. Cheaha State Park (Cleburne Co.) (TB; CAS); ILLINOIS: Crab Orchard Lake (Williamson Co.) (SI), Gorham (CAS), Olive Branch (CAS), Peoria (CNHM), Wedron (WS), Wolf Lake (Union Co.) (WRS); INDIANA: Ellettsville (Monroe Co.) (IU), Jefferson Co. (IO), Lafayette (CNHM), New Harmony (CNHM), Turkey Run State Park (Parke Co.) (CNHM; WRS); IOWA: Ames (IO), Burlington (MNHB), Ledges State Park (Boone Co.) (IO); KENTUCKY: Blue Lick St. Park (Nicholas Co.) (RCG), Cumberland Falls (Whitley Co.) (UL), Hematite Lake (RCG), Henderson (WRS), Pine Mountain (Harlan Co.) (PA), Whitley City (McCreary Co.) (RCG); MARYLAND: Elk Neck St. Pk. (UD); MISSISSIPPI: Charleston (IO); Lucedale (CU); MISSOURI: Creve Coeur Lk. (St. Louis Co.) (MO), Cape Girardeau (MO), Reynolds Co. (MO), Rockwoods Res. (St. Louis Co.) (MO), St. Charles (CAS; UW); NEW JERSEY: Phillipsburg (CAS); NORTH CAROLINA: Black Mts. (CAS; PA), Cove Creek (Haywood Co.) (PK), Macon Co. (RCG), Wine Spring Bald (LS); OHIO: Cincinnati (CAS; UM); PENNSYLVANIA: Allegheny Co. (CMP; CU), Darby (CAS), E. Park (CAS), Easton (CAS), Ogontz (CAS), Vella Novo (Montgomery Co.) (CAS); SOUTH CAROLINA: Clemson College (WS); TENNESSEE: Blount Co., Thunderhead Mt. 6000 ft. (PA), Cades Cove, Gt. Smoky Mt. Nat. Pk., 2000 ft. (CNHM), Chimneys Campground, Gt. Smoky Mt. Nat. Pk., 2800 ft. (CU), Clarksville (UK), Gatlinburg (CNHM), Model (Stewart Co.) (DY), Newfound Gap, Gt. Smoky Mt. Nat. Pk., 5000 ft. (CU), Quinland Lk. (Putnam Co.) (TB); VIRGINIA: Nelson Co. (NMNH).

Bionomics.— Recorded from American Chestnut, and white oak logs (Bell 1970).

Clinidium (Arctoclinidium) apertum Reitter 1880

Clinidium apertum Reitter 1880: 29-30.

Clinidium (Arctoclinidium) allegheniense georgicum Bell and Bell 1975.

Clinidium (Arctoclinidium) apertum (Reitter) Bell and Bell 1978.

Type Material.— (*apertum*) HOLOTYPE male, labelled: "Himalaya, *Clinidium apertum* India, Reitt." (with red "typus" label) (NMW). The locality data on this specimen must be erroneous; (*georgicum*) HOLOTYPE male, labelled: "GEORGIA, Cartersville, 26-III-39, P. W. Fattig" (NMNH); PARATYPES one male, same data as holotype (GA); two females, same data as holotype (CNHM); one male, labelled "Athens, Georgia, 6-X-54, K. Parrish" (GA); two males, labelled "West Pace's Ferry X, Marietta Hgy (DeKalb Co.), 12-IX-54, W. H. Cross" (UVM); one female, labelled: "Dallas, 16-IV-44, P. W. Fattig" (UVM).

Description.— Length 5.5-7.0 mm. Antennal Segments VII-X with tufts of minor setae; basal setae present on Segments VII-X or VIII-X; temporal seta absent; pronotum moderately long, length/greatest width about 1.48; widest near middle, base scarcely narrowed, apex moderately so; basal impressions oblique, relatively long, about 0.38 of length of pronotum, widely open posteriorly; outer marginal groove clearly visible in dorsal view; marginal carina relatively broad; angular seta, precoxal setae absent; sternopleural groove present.

Elytral striae deep, broad, inconspicuously punctate; supramarginal stria shallower than the others; intervals narrow, costate; intercalary stria complete; setae absent or one or two present near apex of marginal stria; cauda of female elytra very small, rounded.

Prosternum glabrous in both sexes; metasternum sulcate; transverse sulci rather narrowly interrupted in midline; male with median pollinose areas on Sterna II-IV, in some specimens also on Sternum V, latter not carinate; pollinosity of Sternum II resembling letter "T", or with stem of "T" disconnected or absent, leaving curved transverse bar; female with lateral pits on Sternum III; Sternum VI not impressed; male with all trochanters rounded, anterior femur with large but obtuse ventral tooth, anterior tibia with large but obtuse proximal tooth; middle calcar narrow, pointed; hind calcar triangular, acute, not raised above level of spurs, much smaller than in *C. baldufi*.

The broadly open basal impressions will separate this species from all others of the eastern U.S. except for *C. valentinei* (and some specimens of *rosenbergi*). The sulcate metasternum separates it from *valentinei*. The male resembles *C. baldufi* in lacking pollinosity on the prosternum, but differs in having a proximal tooth on the anterior tibia, in lacking the median carina on Sternum V, and in having a smaller hind calcar. The female resembles *C. baldufi* and *C. valentinei* in having pits in Sternum III but not Sternum IV. It differs from the former in having a rounded cauda, and from the latter in lacking an impression on Sternum VI.

This species is divided into two subspecies, separated on the presence or absence of a median pollinose area on Sternum V of the male. An isolated female specimen labelled "Mobile, Loding" (MCZ) from Southern Alabama, cannot be identified to subspecies.

Clinidium (Arctoclinidium) apertum apertum Reitter 1880

(Figs. 114, 120)

Clinidium apertum Reitter 1880: 29-30.

Clinidium (Arctoclinidium) allegheniense georgicum Bell and Bell 1975.

Clinidium (Arctoclinidium) apertum apertum (Reitter) Bell and Bell 1978.

Description.— Male without median pollinose area on Sternum V; pollinosity of Sternum II of male in most specimens forming a broken "T", in a few (including holotype of *C. apertum*), an unbroken "T", in a few a curved transverse bar, stem of "T" entirely absent.

Range.— Mountains of northern Georgia, recorded only from the type series.

Clinidium (Arctoclinidium) apertum allegheniense Bell and Bell 1975

Clinidium allegheniense allegheniense Bell and Bell 1975: 65-66.

Clinidium apertum allegheniense Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Allegheny, 1-VI-24, coll. Chermock" (UK). This locality is now the Northside district of Pittsburgh. PARATYPES two females, same data as holotype (UK); one male, one female, same data (MCZ); 13 males, two females, labelled "PENNSYLVANIA: Wall, VI-21, H. Klages Collection" (CMP).

Description.— As described for *C. apertum* s. str., except that median pollinose area is present on Sternum V.

Range.— Southwestern Pennsylvania, and possibly mountains of western North Carolina. In addition to the type series, we have studied the following additional specimens from Pennsylvania: one male, one female, labelled: "Squaw's Run, Pa. i-VI-24, coll. Chermock, L. J. Milne collection" (UNH). We provisionally assigned the following specimens from western North Carolina to this subspecies; one male, two females, labelled: "Mount Mitchell, Black Mts., North Carolina" (CAS). These specimens have the median pollinose area on Sternum V as in *C. allegheniense*. They are atypical in having the inner impression of Sternum VI longer and more deeply impressed, and in the male, the stem of the "T" is dilated posteriorly.

Clinidium (Arctoclinidium) rosenbergi Bell 1970
(Figs. 103, 112, 118)

Rhysodes sculptilis Newman 1838: 666 (*partim*)

Clinidium (Arctoclinidium) rosenbergi Bell 1970: 315-316.

Type Material.— HOLOTYPE male, labelled: "Turkey Run State Park, Parke Co., Indiana, May 13, 1950, coll. Ross T. Bell" (MCZ 31749). PARATYPES one female, same data as holotype (UVM); one male, same locality, coll. Buser, May 3, 1953 (UI); three females, labelled: "Parke County, Indiana, coll. N. M. Downie, May 8, 1965" (WR).

Description.— Length 6.2-7.8 mm. Antennal Segments VII-X with tufts of minor setae; basal setae present on Segments VII-X or VIII-X; temporal seta absent; pronotum moderately long, length/greatest width 1.44; widest near middle, sides nearly parallel to weakly curved; basal impression closed posteriorly (open in a few specimens); outer marginal groove evident in dorsal view; marginal carina relatively broad; angular seta, precoxal seta absent; sternopleural groove present.

Elytral striae deep, broad, inconspicuously punctate; supramarginal stria shallower than the others; intervals narrow, costate; intercalary stria complete; setae absent or one or two present in or just above apex of marginal stria; cauda of female small, rounded.

Prosternum of male with medial pollinose area; metasternum sulcate; male with median pollinose areas on Sterna I-IV, median area of Sternum V glabrous; pollinose area of Sternum II relatively broad, constricted near middle, apex, base equally broad; female with lateral pits on Sternum III, IV equally large; Sternum VI impressed in some female specimens, not impressed in other ones.

Male with all trochanters rounded; anterior femur of male with ventral tooth; anterior tibia of male with strong angle proximad to cleaning organ, representing poorly defined proximal tooth; calcars pointed; hind one very small, scarcely longer than middle one.

Males from this species resemble those of *C. sculptile* in having a median pollinose area on the prosternum, but lack pollinosity at the middle of Sternum V and have a very small hind calcar. Females have equally large lateral pits in Sterna III and IV, while in *C. sculptile* the pits of Sternum IV are smaller than those of III.

Range.— North to the Great Lakes in Pennsylvania, Ohio, and Indiana. West to the Mississippi River in Tennessee and southern Illinois, and slightly west of the river near St. Louis, Missouri. South to southwestern Tennessee and western North Carolina. East to the Delaware River in Pennsylvania, but not known from east of the Appalachians south of Pennsylvania. Bell (1970) discussed female specimen from Mobile, Alabama, which may be this species, though the shape of the pronotum is unusual. It might be a distinct, though closely related species, but males must be collected to be sure of its status. A specimen labelled: "Treesbank, Manitoba" (BSRI) is likely to have an incorrect locality label.

We have studied the following specimens in addition to those listed by Bell (1970): ILLINOIS: Wolf Lake (Union Co.) (WRS); INDIANA: Lafayette (CNHM); KENTUCKY: Anchorage (UL), Mammoth Cave N. Park (WRS), Wolf Creek (Wayne Co.) (UL); MISSOURI: St. Charles (UW); OHIO: Cincinnati (UM), Clermont Co. (UM), Cleveland (HL), Columbiana Co. (UD), Oxford (NC); PENNSYLVANIA: Blain (AP), Harmerville (CMP), Jeanette (CMP).

Variation.— This species will merit additional study when more material is available. Sternum VI is not at all impressed in some specimens, mostly from western parts of the range, but is deeply impressed in others, especially ones from eastern localities. There is also considerable variation in the shape of the pronotum. Most specimens from Kentucky have a subquadrate pronotum with the sides nearly parallel. In specimens from other regions, the base and apex of the pronotum are more narrowed.

Clinidium (Arctoclinidium) sculptile (Newman) 1838
(Figs. 115, 121)

Rhysodes sculptilis Newman 1838: 666 (*partim*)

Clinidium sculptile (Newman) Chevrolat 1873a.

Clinidium (Arctoclinidium) sculptile (Newman) Bell 1970.

Type Material.— LECTOTYPE male, labelled: "Wheeling, Virginia" (BMNH). This locality is now in West Virginia. PARALECTOTYPES: Newman listed two localities, Wheeling and Mount Pleasant, Ohio. The latter was represented by two females. One of these is not conspecific with the male, but are the species described by Bell as *C. rosenbergi*, while the other is conspecific with the holotype.

Description.— Length 6.5-7.6 mm. Antennal Segments VII-X with tufts of minor setae; basal setae present on Segments VII-X or VIII-X; temporal seta absent; pronotum moderately long, length/greatest width about 1.45; pronotum subquadrate, lateral margins nearly parallel; basal impression closed posteriorly; outer marginal groove evident in dorsal view; marginal carina relatively broad; angular seta, precoxal setae absent; sternopleural groove present.

Elytral striae deep, broad, inconspicuously punctate; supramarginal stria impressed, shallower than the others; intervals narrow, costate; intercalary stria complete; setae absent or one or two present in or just above apex of marginal stria; cauda of female prominent, rounded.

Prosternum of male with median pollinose area; metasternum sulcate; male with median pollinose areas on Sterna II-V; pollinosity of Sternum II constricted near middle, anterior margin broader than posterior one; female with large lateral pits on Sternum III, smaller ones on Sternum IV; Sternum VI of female impressed in apical 0.5.

Male with all trochanters rounded; anterior femur of male with very small, obtuse ventral tooth or angle; anterior tibia of male with small, indistinct angle in place of proximal tooth; calcars pointed; hind calcar rather large, about 1.3 longer than middle one.

Males of *C. sculptile* resemble those of *C. rosenbergi*, in having a median pollinose area on the prosternum, but differ from the latter species in having median pollinosity on Sternum V and in having a larger hind calcar. Females differ from all other members of the subgenus in having large lateral pits on Sternum III and smaller ones on Sternum IV.

Range.— More extensive than supposed by Bell (1970). Primarily Appalachian from north central Alabama to southern New York (Catskill Mts.), but also in the Piedmont from northern Virginia northwards. Midwestern records are from central Kentucky, southern Ohio and Indiana, and the vicinity of Saint Louis, Missouri. *C. sculptile* is the commonest member of the genus in the eastern part of its range, but is much rarer than *C. baldufi* and *C. rosenbergi* in the Midwest. There are several specimens labelled as coming from localities far beyond the range as described below. Among these are some from unspecified localities in Florida (MO) and Texas (CAS), and from Westview, Millvale, and Squaw's River, in Manitoba (BSRI). We regard these records as dubious.

We have studied specimens from the following localities in addition to those listed by Bell (1970): ALABAMA: Sawdust (WRS); DELAWARE: Newark (UD); DISTRICT OF COLUMBIA: Rock Creek Park (AU); GEORGIA: Athens (UW), Clayton 2000-3700 ft. (CAS; CNHM; BMS); INDIANA: Turkey Run Park (Parke Co.) (CNHM); KENTUCKY: Mammoth Cave Nat. Park (TB); MARYLAND: Elk Neck St. Park (UT; UD), Forest Glen (NMNH; AU), Glen Echo (Montgomery Co.) (WRS), Catoclin Mtn. (Frederick Co.) (AU); MISSOURI: St. Charles (UW), St. Louis (CU); NEW JERSEY: "N. J." (CAS; CNHM); NORTH CAROLINA: Blue Ridge (LUN), Transylvania Co. (RCG); OHIO: Cincinnati (CAS); PENNSYLVANIA: Allegheny (CMP; MO), Bethayres (UW), Cook Forest (UVM), Cooksburg (WS), Charter Oak (AP), Harrisburg (SDA; AP), Ingelnook (AP), Jeanette (CMP), Keystone St. Pk. (WRS), Montebello (AP), Rockville (CU; CAS; AP); SOUTH CAROLINA: Oconee Co. (CAS; WRS); TENNESSEE: Cades Cove, Great Smoky Mts. Nat., Pk. 2000' (CNHM); VIRGINIA: Brush Mts. (Montgomery Co.)

(VP), Potomac River (Fairfax Co.) (CAS), Turkey Run, McLean (UVM); WEST VIRGINIA: Burlington (Mineral Co.) (CMP), White Sulphur (CNHM).

Bionomics.— Recorded from pitch pine and tulip-tree (*Liriodendron*) Bell (1970).

SUBGENUS *CLINIDIUM SENSU STRICTO*

Type species.— *Clinidium guildingii* Kirby.

Description.— Antennal stylet relatively large; tufts of minor setae present on Segments IV-X, V-X, VI-X, or VII-X, or else minor setae entirely absent except for Segment XI; temporal setae one to four; eye very narrowly crescentic in most species, in a few species minute, round, resembling an ocellus, or bilobed, or divided into two ocellus-like parts, or large, hemispherical. In many species, completely pigmented in some, probably old individuals; marginal groove of pronotum single; pronotum with angular seta, and one or more marginals; in some species, also with discal or basal setae; sternopleural grooves absent; elytral striation incomplete; marginal stria fourth or fifth from suture; supramarginal seta absent; inner elytral intervals flat to convex, not carinate; elytral setae numerous in most species; metasternum with or without median sulcus; base of anterior tarsus opposite cleaning organ.

The reduced striation makes this subgenus similar to *Tainoa*, from which it is distinguished by the position of the cleaning organ and the complete parasutural stria which is not abbreviated anteriorly.

The subgenus is large and the species are quite varied in appearance. Probably it is restricted to the Neotropical Realm, from Guatemala southwards in Central America, and in the Andean Region south to Ecuador. The only records from the Amazon Basin are from the upper or western portion, while the easternmost record from the northern coast is from Cayenne. The subgenus is widely distributed also in the Greater and Lesser Antilles.

Two of the four species of the *C. beccarii* group, *C. beccarii* and *C. argus*, are recorded from Old World localities, the former species from New Guinea and the latter from the Philippines. Each is known from only one specimen, and we suspect that both are mislabelled, as they are closely related to Central American species.

Phylogeny.— We divide the subgenus into six species groups, most of which are probably monophyletic. Possible exceptions are noted in the discussions of the groups in question.

- I. *impressum* group. Tufts of minor setae on Antennal Segments IV-X; eye large, broadly oval; temporal, pronotal setae absent. One species. This group might really belong to *Rhyzodiastes*, and have secondarily lost the anterior part of the paramedian groove.
- II. *granatense* group. Tufts of minor setae VII-X. Three species.
- III. *insigne* group. Tufts of minor setae VI-X. Four species.
- IV. *guildingii* group. Tufts of minor setae on Segments V-X; anterior median pit very small. 25 species.
- V. *cavicolle* group. Tufts of minor setae V-X; anterior median pit greatly enlarged. Nine species.
- VI. *beccarii* group. Tufts of minor setae absent; eye constricted or divided. Four species.

KEY TO SPECIES

- 1 Eye large, broadly oval; median groove of pronotum with middle 0.33 dilated, separated by constriction from anterior median pit; temporal, pronotal setae absent (*impressum* group) *C. impressum* new species, p. 99

1'	Eye small, narrowly crescentic, or constricted, or ocelliform, or divided; median groove not dilated; temporal, pronotal setae present	2
2 (1')	Outer antennal segments with tufts of minor setae on Segments V-X, VI-X, or VII-X; eye narrowly crescentic or ocelliform (may be concealed by heavy pigmentation)	3
2'	Outer antennal segments without tufts of minor setae; eye bilobed or divided (<i>beccarii</i> group)	43
3 (2)	Tufts of minor setae present on Antennal Segments VI-X or VII-X, but absent from Segment V	4
3'	Tufts of minor setae present on Antennal Segments V-X	10
4 (3)	Tufts of minor setae present on Segments VII-X, but absent from Segment VI (<i>granatense</i> group)	5
4'	Tufts of minor setae present on Segments VI-X (<i>insigne</i> group)	7
5 (4)	Eye narrowly crescentic; metasternum sulcate; head as wide as long; one temporal seta; pronotum with one angular seta and without or with one marginal seta, near angular; otherwise without pronotal setae; male without proximal tooth on anterior tibia; male calcars triangular, not notched above; female (where known) with lateral pits in Sternum III and IV. Anterior median pit less enlarged	6
5'	Eye small, round, ocelliform; metasternum not sulcate; head longer than wide; two temporal setae; pronotum with one angular, two marginals, anterior to middle, one basal, two discal setae; male with proximal tooth on anterior tibia; male calcars notched above; female with lateral pits on Sternum IV, not III; anterior median pit very large <i>C. incudis</i> Bell, p. 114	
6 (5)	Intercalary stria complete; one marginal seta on pronotum; transverse sulcus of Sternum V nearly complete in male; middle calcar obliquely truncate at tip <i>C. hammondi</i> new species, p. 113	
6'	Intercalary stria abbreviated; marginal seta absent; transverse sulcus of male Sternum V broadly interrupted; middle calcar acutely pointed <i>C. granatense</i> Chevrolat, p. 113	
7 (4')	Temporal lobes convergent posteriorly; anterior median pit of pronotum small to obsolete; antennal stylet very small; male protibia without proximal tooth	8
7'	Temporal lobes divergent posteriorly; anterior median pit very large, with tubercle; antennal stylet very large; male protibia with proximal tooth (metasternum sulcate; intercalary stria abbreviated posteriorly) <i>C. dubium</i> Grouvelle, p. 115	
8 (7)	Metasternum with median sulcus; intercalary stria abbreviated posteriorly	9
8'	Metasternum not sulcate; intercalary stria entire <i>C. boroquense</i> Bell, p. 117	
9 (8)	Preapical tubercles truncate, medial angles of tubercles well separate; head flattened, as wide as long; parasutural stria without setae <i>C. insigne</i> Grouvelle, p. 115	
9'	Preapical tubercles sinuate, medial angles lobate; head convex, longer than wide; parasutural stria with many setae	

	..... <i>C. howdenorum</i> new species, p. 116	
10	(3') Anterior median pit of pronotum very small, not wider than median groove (<i>guildingii</i> group)	11
10'	Anterior median pit very large, much broader than median groove (<i>cavicolle</i> group)	35
11	(10) Intercalary stria entire; pronotum with discal seta	12
11'	Intercalary stria abbreviated, ending blindly posteriorly; pronotum without discal setae	28
12	(11) Apex of intratubercular stria impressed, apical, preapical tubercles distinct	13
12'	Apex of intratubercular stria not impressed; preapical, apical tubercles not separated	24
13	(12) Paramedian groove (basal impression plus discal striole), 0.6–0.9 of length of pronotum	14
13'	Paramedian groove 0.5 or less of length of pronotum	15
14	(13) Paramedian groove about 0.9 of length of pronotum; preapical tubercle angulate posteriorly, angle overhanging subapical space	
	..... <i>C. integrum</i> Grouvelle, p. 119	
14'	Paramedian groove about 0.6 of length of pronotum; preapical tubercle not angulate nor overhanging subapical space	
	..... <i>C. pilosum</i> Grouvelle, p. 119	
15	(13') Median lobe joined laterally to antennal lobes; frontal grooves not joined to tentorial pits	16
15'	Median lobe not joined laterally to antennal lobes; frontal grooves joined to tentorial pits	18
16	(15) Precoxal seta absent	17
16'	Precoxal seta present	<i>C. alleni</i> new species, p. 122
17	(16) Median lobe short, ending opposite anterior or mid level of eye; paramedian groove 0.5 length of pronotum	
	..... <i>C. whiteheadi</i> new species, p. 122	
17'	Median lobe longer, ending posterior to mid level of eye; paramedian groove short, 0.2 length of pronotum	<i>C. haitiense</i> Bell, p. 125
18	(15') Precoxal seta present	19
18'	Precoxal seta absent	21
19	(18) Elytral humeri strongly narrowed; metasternum with deep median sulcus	<i>C. oberthueri</i> Grouvelle, p. 121
19'	Elytral humeri weakly narrowed; median sulcus of metasternum very shallow to absent	20
20	(19') Discal striole of pronotum present; eye elongate	
	..... <i>C. humboldti</i> new species, p. 123	
20'	Discal striole absent; eye very small, short	
	..... <i>C. trionyx</i> new species, p. 124	
21	(18') Parasutural stria with complete series of setae; paramedian groove about 0.5 of length of pronotum	<i>C. jolyi</i> new species, p. 120
21'	Parasutural stria without setae; paramedian groove 0.3 or less of length of pronotum	22
22	(21') Median lobe elongate, extending posterior to middle of eye; frontal grooves	

- deep, narrow, both margins equally sharp, both conspicuously pollinose . . .
 *C. corbis* Bell, p. 126
- 22' Median lobe short, ending opposite anterior part of eye; frontal grooves
 shallow, lateral margin indistinct, margins not or but faintly pollinose 23
- 23 (22') Sutural interval narrow, convex; female with lateral pits distinct
 *C. jamaicense* Arrow, p. 128
- 23' Sutural interval broad, flat; female with lateral pits indistinct
 *C. chiolinoi* Bell, p. 128
- 24 (12') Metasternum with median sulcus; three or four temporal setae; occipital
 setae absent 25
- 24' Metasternum without median sulcus; one temporal seta; one pair of crossed
 occipital setae *C. rossi* Bell, p. 129
- 25 (24) Median lobe joined to antennal lobe; discal striole absent; precoxal setae
 absent *C. penicillatum* new species, p. 131
- 25' Median lobe separate from antennal lobe; discal striole present; precoxal
 setae present 26
- 26 (25') Antennal stylet very short, acute; subapical, apical tubercles one
 continuous elongated lobe; median sulcus narrow 27
- 26' Antennal stylet long, slender, acute; tip of subapical tubercle abrupt,
 truncate, not continuous with apical tubercle; median sulcus wider
 *C. kochalkai* new species, p. 132
- 27 (26) Intratubercular stria entire, thin, pilose line anterior to tubercular
 punctures; frontal groove deeper; median lobe narrower
 *C. segne* new species, p. 131
- 27' Intratubercular stria abbreviated from tubercular punctures; frontal groove
 shallow, median lobe wider *C. dormans* new species, p. 130
- 28 (11') Metasternum without median sulcus; male without proximal tooth on
 anterior tibia; middle, hind tibiae with false spurs (West Indian species) 29
- 28' Metasternum with median sulcus; male with proximal tooth on anterior
 tibia; false spurs absent (South American species) 32
- 29 (28) Apical tubercles barely touching in midline above a large space; female
 with median tubercles on Sternum VI; discal striole 0.5 as long as
 pronotum; temporal setae two to four *C. guildingii* Kirby, p. 133
- 29' Apical tubercles broadly contiguous in midline, without conspicuous space
 below them; female (where known) with transverse scarp on Sternum VI;
 discal striole in most specimens less than 0.5 of length of pronotum; two
 temporal setae 30
- 30 (29') Intratubercular stria not impressed, represented only by row of fine
 punctures; marginal stria incomplete anteriorly; male with ventral surface
 of anterior femur with many tubercles; calcars not angulate dorsally
 (female unknown) *C. microfossatum* new species, p. 134
- 30' Intratubercular stria, marginal stria impressed, complete; male without
 ventral tubercles on anterior tibia; calcars angulate dorsally; female with
 transverse scarp on Sternum VI 31
- 31 (30') Basal impression plus discal striole 0.35 to 0.40 of length of pronotum;
 calcars weakly angulate dorsally; female with shallow impression posterior

- to scarp of Sternum VI, forming obtuse angle in lateral view; impression convex, glabrous in midline, with oval pollinose concavity on either side . . .
 *C. smithsonianum* new species, p. 134
- 31' Basal impression plus discal striole 0.25 or less of length of pronotum; calcars strongly angulate dorsally; female with deep impression posterior to scarp of Sternum VI, forming right angle in lateral view; impression entirely pollinose *C. planum* (Chevrolat), p. 135
- 32 (28') Female with Sternum VI deeply impressed in posterior 0.33, with pair of notches defining median lobe (male unknown) 33
- 32' Female with Sternum VI not impressed 34
- 33 (32) Parasutural stria without setae; median lobe of Sternum VI of female narrow, trapezoidal *C. pala* new species, p. 139
- 33' Parasutural stria with several setae; median lobe of Sternum VI of female broad, rectangular *C. excavatum* new species, 138
- 34 (32') Parasutural stria without setae; frontal space entirely pollinose; male with calcars acute, proximal tibial tooth acute *C. rojasi* Chevrolat, p. 136
- 34' Parasutural stria with three or four setae; frontal space glabrous in middle; male with calcars obtuse, proximal tooth of anterior tibia represented by obtuse angle *C. bechyneorum* new species, p. 138
- 35 (10') Intercalary stria entire; anterior median pit with central tubercle 36
- 35' Intercalary stria abbreviated posteriorly; anterior median pit without median tubercle *C. mathani* Grouvelle, p. 140
- 36 (35) Metasternum without median sulcus *C. humile* new species, p. 140
- 36' Metasternum with median sulcus 37
- 37 (36') Disc of temporal lobe without isolated or semi-isolated setiferous puncture; notopleural suture without pollinosity 38
- 37' Disc of temporal lobe with one large setiferous puncture, either isolated or in narrow contact with posterior pilosity; notopleural suture with pollinosity 41
- 38 (37) Basal impression plus discal striole 0.5 or less of length of pronotum; antennal stylet long 39
- 38' Basal impression plus discal striole more than 0.5 of length of pronotum; antennal stylet short 40
- 39 (38) Discal striole 0.45 of length of pronotum, curved; margin of median groove curved evenly into anterior median pit; basal setae absent
 *C. curvatum* new species, p. 141
- 39' Discal striole 0.20 of length of pronotum, scarcely curved; margin of median groove sinuate opposite tubercle, latter compressed
 *C. foveolatum* Grouvelle, p. 142
- 40 (38') Dorsal surface of femora glabrous, anterior median pit closed anteriorly, round; female with transverse sulci of all sterna broadly interrupted in midline; Sternum VI of female with submarginal groove reaching nearly to anterior margin *C. cavicolle* Chevrolat, p. 142
- 40' Dorsal surface of femora pilose; anterior median pit open anteriorly, sinuate laterally; sterna of female with transverse sulci narrowly interrupted in midline; Sternum VI of female with submarginal groove not extending anterior to middle *C. crater* new species, p. 143

- 41 (37') Margin of median groove curved evenly into that of anterior median pit; basal impression plus discal striole 0.30 of length of pronotum; discal seta of temporal lobe in isolated pollinose puncture in most specimens anterior to hind margin of eye *C. centrale* Grouvelle, p. 144
- 41' Margin of median groove sinuate near anterior median pit; basal impression plus discal striole 0.45 or more of length of pronotum; discal seta of temporal lobe at or posterior to posterior margin of eye, narrowly contacting pilosity of occiput 42
- 42 (41') Margin of median groove shallowly sinuate posterior to tubercle of anterior median pit, nearly oblique; basal impression plus discal striole about 0.55 of length of pronotum *C. validum* Grouvelle, p. 144
- 42' Margin of median groove strongly emarginate posterior to tubercle; basal impression plus discal striole about 0.45 of length of pronotum *C. spatulatum* new species, p. 145
- 43 (2') Eye constricted but not divided; median groove narrow, much narrower than anterior median pit; sternopleural groove incomplete; postantennal groove narrowly pollinose 44
- 43' Eye divided into two ocellus-like organs; median groove very broad, as broad as anterior median pit; postantennal groove broadly pollinose; sternopleural groove complete 45
- 44 (43) Median groove of pronotum closed posteriorly, slightly constricted at midpoint; posterior 0.5 of sternopleural groove marked by three separate pilose spots; male with pair of tubercles on either side of midline on abdominal Sterna III, IV; transverse sulci of male with only traces of pollinosity, but with pits at medial ends *C. moldenkei* new species, p. 146
- 44' Median groove broadly open posteriorly, not constricted at middle; posterior 0.5 of sternopleural groove continuously pollinose; male with deep longitudinal groove at middle of Sterna I-III, shallower one on Sternum IV; no tubercles on Sterna III, IV; transverse sulci of male abdomen pollinose, interrupted at midline *C. sulcigaster* Bell, p. 147
- 45 (43') Paramedian grooves about 0.5 of length of pronotum; male with middle, hind calcars cultrate; pollinosity of Sterna II, III extending anteriorly onto medial part of Sternum I *C. argus* new species, p. 148
- 45' Paramedian grooves over 0.67 of length of pronotum; male with middle, hind calcars triangular; Sternum III with transverse pollinose band, not extending anteriorly to Sternum I *C. beccarii* Grouvelle, p. 148

THE IMPRESSUM GROUP

This group is characterized by the large, almost round eyes, and the absence of temporal and pronotal setae. The median groove is dilated in the middle portion, and the dilation is separated from the anterior median pit by a constriction. A very small tuft of minor setae is present on Segment IV of the antenna, and a larger one on Segment V. The intercalary stria is complete, while the intratubercular stria is abbreviated posteriorly.

The large eyes are unique within the genus, and are reminiscent of those of *Rhyzodiastes* subgenus *Rhyzostrix*. The dilation of the median groove is similar to that of *Clinidium kochalkai*, but in the latter species the anterior median tubercle is not enlarged, the eyes are small and narrow, and temporal and pronotal setae are present. Only one species belongs to this group.

Clinidium (sensu stricto) impressum new species
(Fig. 124)

Type Material.— HOLOTYPE male, labelled: "Guyane Franc., St. Laurent du Maroni, colln. Le Mout, *Clinidium impressum* Grouv." (MNHN). The latter name was never published. Segments VI-XI of the antenna are missing from the holotype.

Description.— Length 5.3 mm. Antennal Segment IV with small tuft of minor setae; Segment V with larger one; Segments VI-XI missing from holotype; Segments III-V each with subapical ring of pollinosity; head slightly longer than wide; frontal grooves shallow, linear, not pollinose; median lobe triangular, tip pointed, opposite middle of eye; frontal space very narrow; temporal lobe rounded, nearly glabrous, small, finely pollinose area near posterior margin; eye large, nearly round, but short, less than 0.33 of length of temporal lobe; orbital groove absent; temporal setae absent; one pair of postlabial setae.

Pronotum elongate, oval, length/greatest width 1.61, widest near middle, sides strongly curved, apex, base strongly narrowed, rounded; median groove narrowly dilated, separated from median pits by constrictions; anterior median pit large, round; posterior median pit narrow, elongate; basal impression open posteriorly, tapered anteriorly, preceded by very short discal striole; combined length of basal impression, discal striole about 0.25 of length of pronotum; marginal groove very narrow, invisible in dorsal view; pronotal setae absent; notopleural suture glabrous; sternopleural groove absent; precoxal setae absent.

Elytra rather elongate; sutural interval nearly flat; Intervals II, III convex; sutural stria impressed, punctured, complete; parasutural impressed, punctate, complete; intercalary impressed, punctures complete, joining parasutural posteriorly; intratubercular effaced near base, for most of length not impressed, represented by row of punctures, slightly impressed near apex, but apex effaced, preapical tubercle therefore not distinct from apical tubercle; apical tubercles inflated, truncate posteriorly, nearly contiguous in midline; marginal stria entire, impressed, punctate; sutural stria with one seta near apex; intercalary stria with five setae in complete row; intratubercular stria with five setae near apex, in row of punctures on lateral face of apical tubercle; marginal stria eight or nine in complete row; metasternum not sulcate; male with transverse sulci complete on Sterna III, IV, narrowly interrupted on Sternum V; Sternum IV of male with small, round lateral pit; Sternum VI of male without transverse sulci, but with short submarginal sulcus, one pair of setae; male without ventral tooth on anterior femur, without proximal tooth; calcars small, blunt; middle, hind tibiae with two equal spurs, without false spurs; female unknown.

THE *GRANATENSE* GROUP

This group contains species in which tufts of minor setae are restricted to Antennal Segments VII-X. There is one pair of postlabial setae. The anterior median pit is expanded, several times wider than the median groove, but is not tuberculate. The paramedian grooves are about 0.5 as long as pronotum. The sternopleural groove is present. In the species in which the female is known, Sternum VI of the female has a median pit. The eye is either narrowly crescentic or is ocelliform. This group contains three species, two from northern Colombia, and the third from Puerto Rico.

Phylogeny.— *C. granatense* and *C. hammondi* share several characters, including the presence of a metasternal sulcus and a proximal tooth on anterior tibia of the male, indicating that they are closer to one another than to *C. incudis*. The presence of a median pit on Sternum VI of the female in the latter species suggests a real relationship with the Colombian species, rather than just a coincidence in the arrangement of tufts of minor setae.

Plate 11. Figs. 124–137. Subgenus *Clinidium sensu stricto*. Figs. 124–131. Head and pronotum, dorsal aspect; Fig. 124, *C. (s. str.) impressum* new species; Fig. 125, *C. (s. str.) hammondi* new species; Fig. 126, *C. (s. str.) granatense* Chevrolat; Fig. 127, *C. (s. str.) incudis* Bell; Fig. 128, *C. (s. str.) dubium* Grouvelle; Fig. 129, *C. (s. str.) boroquense* Bell; Fig. 130, *C. (s. str.) howdenorum* new species; Fig. 131, *C. (s. str.) insigne* Grouvelle; Fig. 132, Head, left lateral aspect, *C. (s. str.) incudis* Bell; Figs. 133–134, Left elytron, dorsal aspect; Fig. 133, *C. (s. str.) hammondi* new species; Fig. 134, *C. (s. str.) granatense* Chevrolat; Figs. 135–136, Sterna IV–VI, right half; Fig. 135, *C. (s. str.) insigne* Grouvelle; Fig. 136, *C. (s. str.) insigne* Grouvelle (Cali specimen); Fig. 137, Left elytron, apex, dorsal aspect, *C. (s. str.) howdenorum* new species.

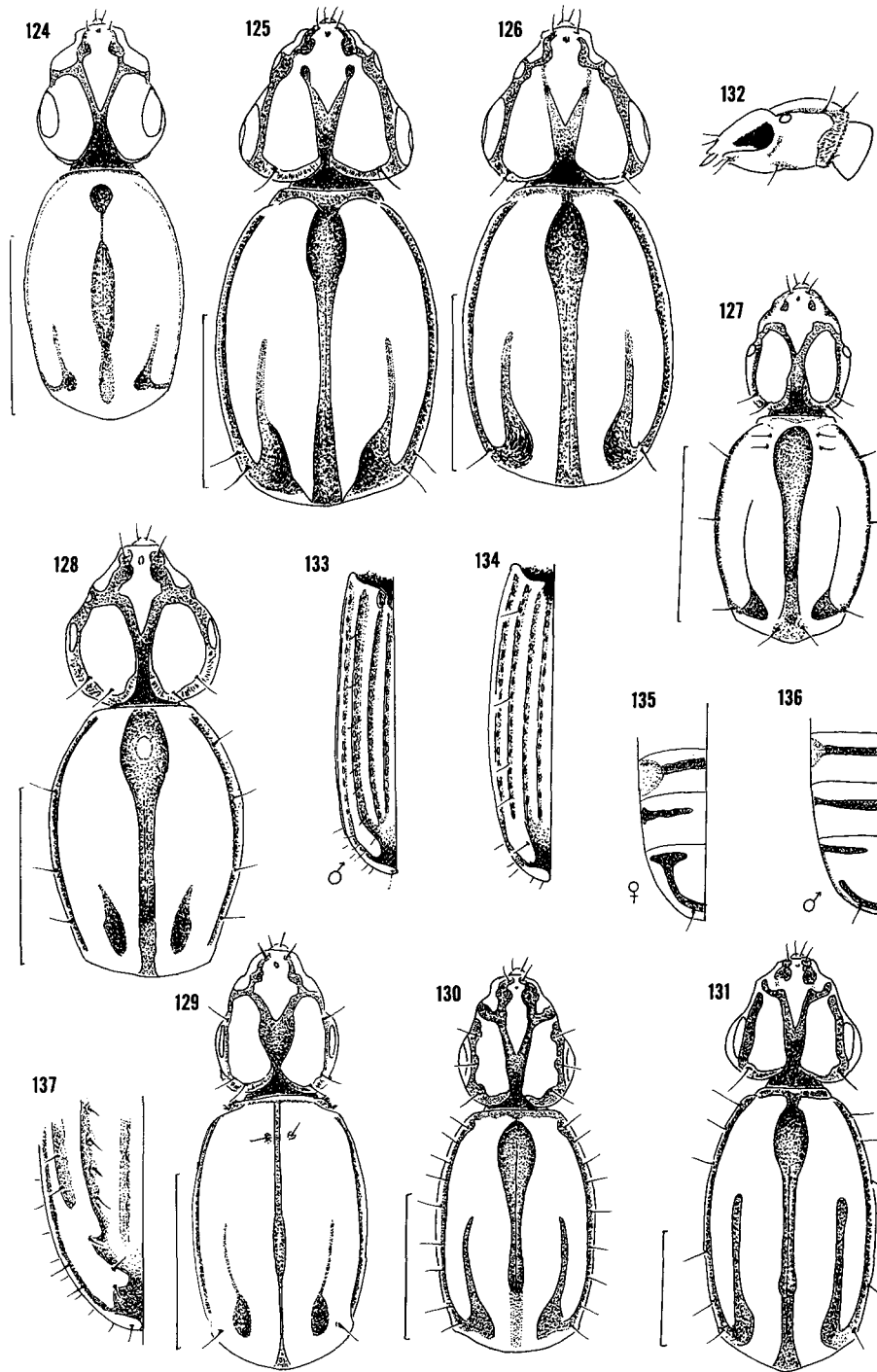


Plate 12. Figs. 138–150. Subgenus *Clinidium sensu stricto*. Figs. 138–144, Head and pronotum, dorsal aspect; Fig. 138, *C. (s. str.) integrum* Grouvelle; Fig. 139, *C. (s. str.) pilosum* Grouvelle; Fig. 140, *C. (s. str.) jolyi* new species; Fig. 141, *C. (s. str.) oberthueri* Grouvelle; Fig. 142, *C. (s. str.) alleni* new species; Fig. 143, *C. (s. str.) whiteheadi* new species; Fig. 144, *C. (s. str.) humboldti* new species; Fig. 145, Right elytron, apex, posterior aspect, *C. (s. str.) integrum* Grouvelle; Figs. 146–148, Sterna V–VI, right half; Fig. 146, *C. (s. str.) pilosum* Grouvelle, female; Fig. 147, *C. (s. str.) jolyi* new species, female; Fig. 148, *C. (s. str.) alleni* new species; Figs. 149–150, Left elytron, apex, dorsal aspect; Fig. 149, *C. (s. str.) alleni* new species; Fig. 150, *C. (s. str.) humboldti* new species, female.

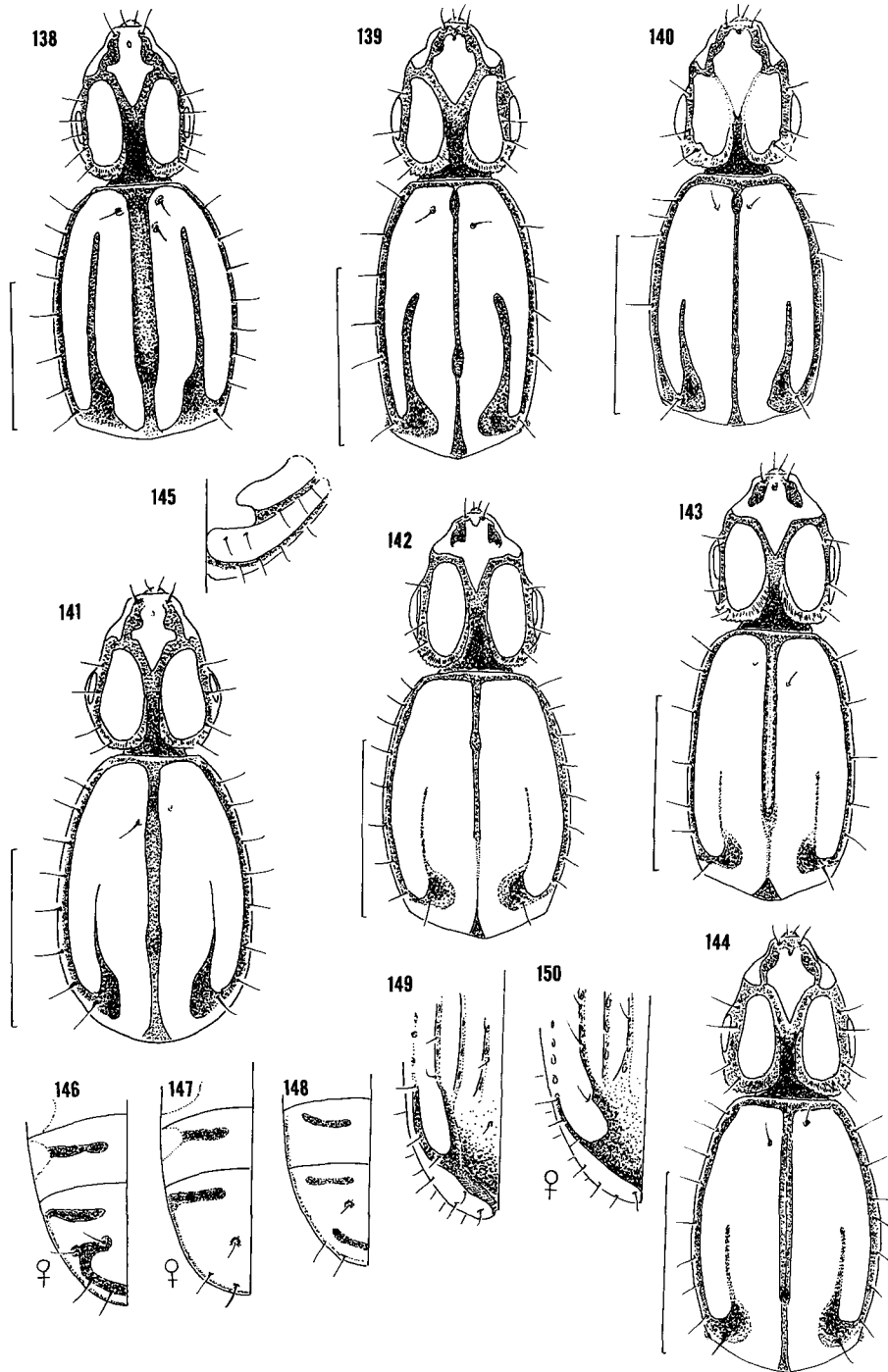


Plate 13. Figs. 151–162. Subgenus *Clinidium sensu stricto*. Figs. 151–157, Head and pronotum, dorsal aspect; Fig. 151, *C. (s. str.) trionyx* new species; Fig. 152, *C. (s. str.) haitiense* Bell; Fig. 153, *C. (s. str.) corbis* Bell; Fig. 154, *C. (s. str.) jamaicense* Arrow; Fig. 155, *C. (s. str.) chiolinoi* Bell; Fig. 156, *C. (s. str.) rossi* Bell; Fig. 157, *C. (s. str.) dormans* new species; Figs. 158–159, Elytra, posterior aspect; Fig. 158, *C. (s. str.) jamaicense* Arrow; Fig. 159, *C. (s. str.) chiolinoi* Bell; Fig. 160, Sterna V–VI, right half, male, *C. (s. str.) trionyx* new species; Fig. 161, Head, left lateral aspect, *C. (s. str.) trionyx* new species; Fig. 162, Left elytron, apex, dorsal aspect, *C. (s. str.) dormans* new species.

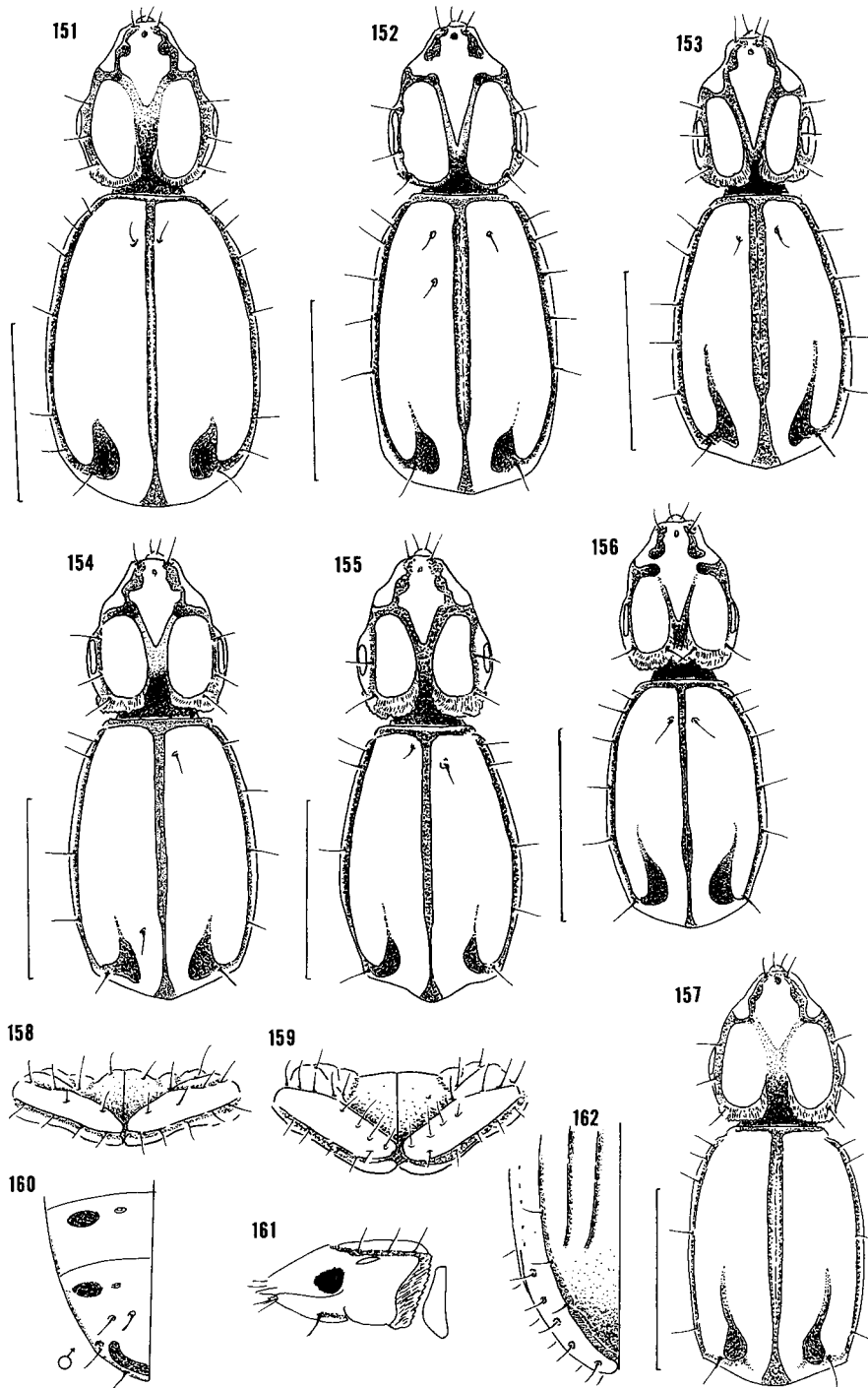


Plate 14. Figs. 163–178. Subgenus *Clinidium sensu stricto*. Figs. 163–169, Head and pronotum, dorsal aspect; Fig. 163, *C. (s. str.) penicillatum* new species; Fig. 164, *C. (s. str.) segne* new species; Fig. 165, *C. (s. str.) kochalkai* new species; Fig. 166, *C. (s. str.) planum* (Chevrolat); Fig. 167, *C. (s. str.) guildingii* Kirby; Fig. 168, *C. (s. str.) microfossatum* new species; Fig. 169, *C. (s. str.) smithsonianum* new species; Fig. 170, Hind leg (excluding tarsus), female, *C. (s. str.) penicillatum* new species; Figs. 171–173, Left elytron, apex, dorsal aspect; Fig. 171, *C. (s. str.) microfossatum* new species; Fig. 172, *C. (s. str.) planum* (Chevrolat); Fig. 173, *C. (s. str.) segne* new species; Figs. 174–175, Sternum VI, female; Fig. 174, *C. (s. str.) guildingii* Kirby; Fig. 175, *C. (s. str.) smithsonianum* new species; Fig. 176, Sternum VI, lateral aspect, female, *C. (s. str.) guildingii* Kirby; Figs. 177–178, Elytra, posterior aspect; Fig. 177, *C. (s. str.) guildingii* Kirby; Fig. 178, *C. (s. str.) smithsonianum* new species.

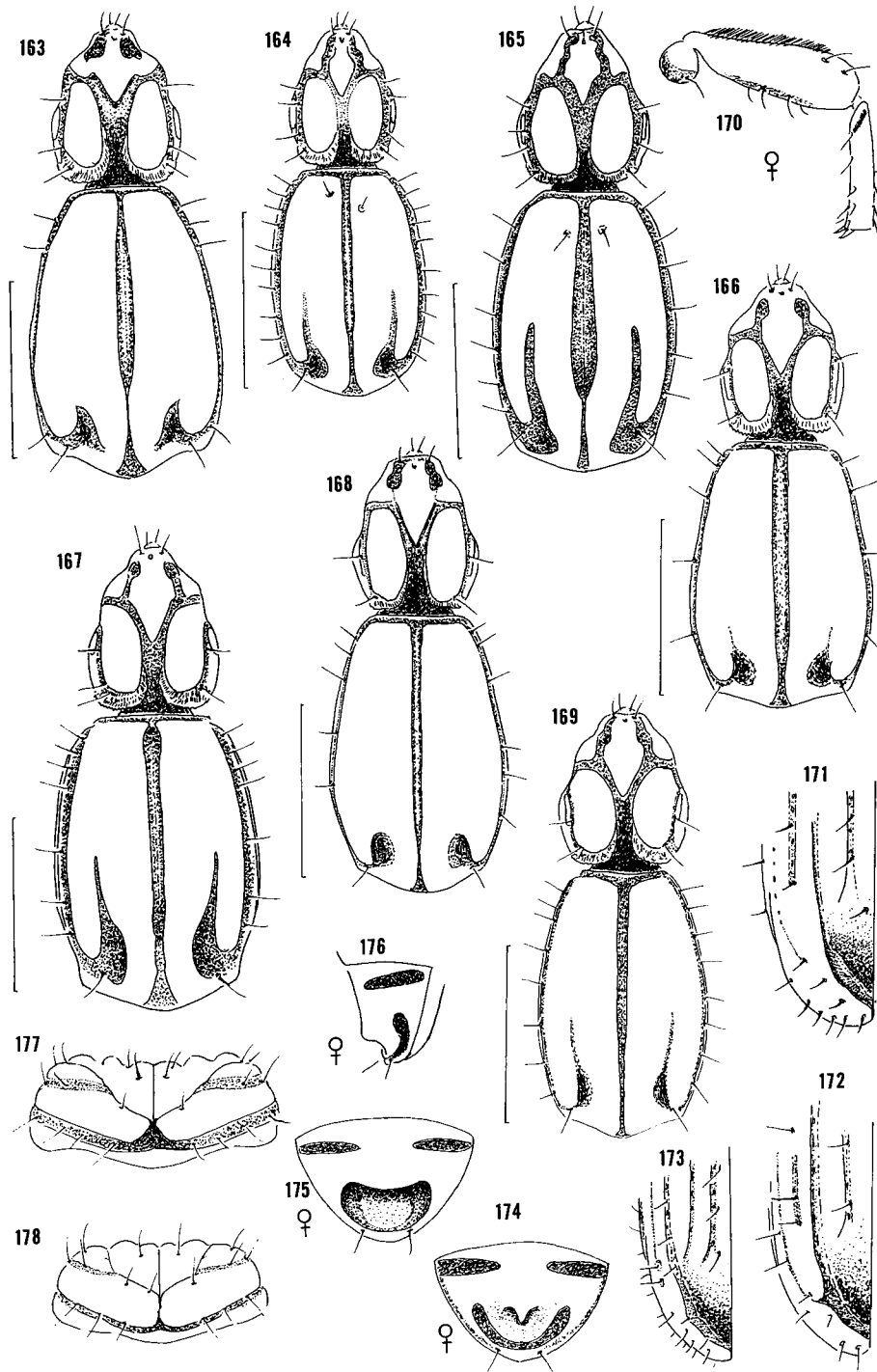


Plate 15. Figs. 179–193 Subgenus *Clinidium sensu stricto*. Figs. 179–183, Head and pronotum, dorsal aspect; Fig. 179, *C. (s. str.) rojasi* Chevrolat; Fig. 180, *C. (s. str.) bechyneorum* new species; Fig. 181, *C. (s. str.) humile* new species; Fig. 182, *C. (s. str.) mathani* Grouvelle; Fig. 183, *C. (s. str.) cavicolle* Chevrolat; Fig. 184, Anterior leg (excluding tarsus), male, *C. (s. str.) rojasi* Chevrolat; Fig. 185, Elytra, posterior aspect, *C. (s. str.) rojasi* Chevrolat; Figs. 186–191, Sternum VI; Fig. 186, *C. (s. str.) rojasi* Chevrolat; Fig. 187, *C. (s. str.) bechyneorum* new species; Fig. 188, *C. (s. str.) excavatum* new species; Fig. 189, *C. (s. str.) pala* new species; Fig. 190, *C. (s. str.) humile* new species; Fig. 191, *C. (s. str.) cavicolle* Chevrolat; Fig. 192, *C. (s. str.) mathani* Grouvelle; Fig. 193, Left elytron, dorsal aspect, *C. (s. str.) mathani* Grouvelle.

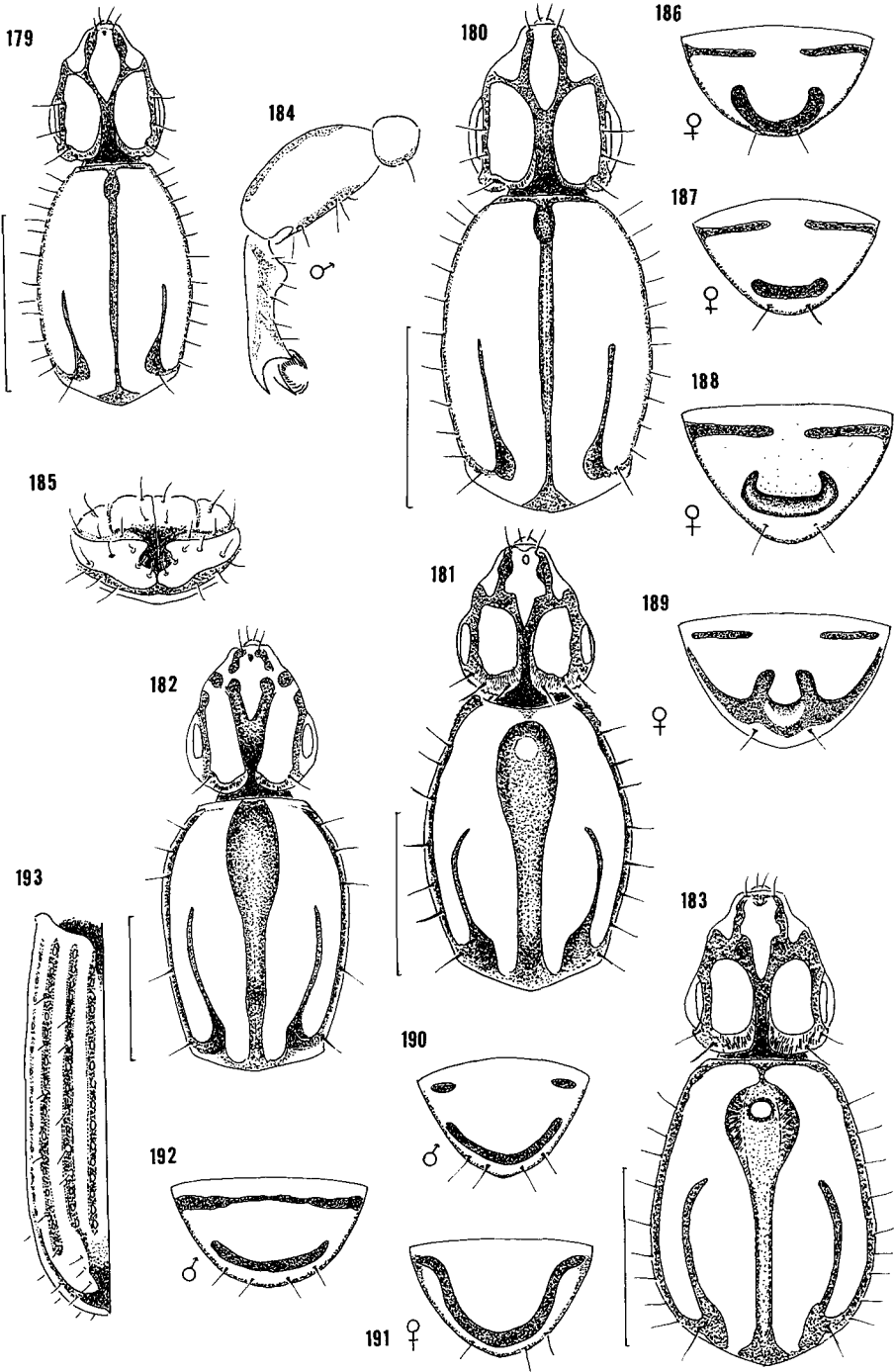
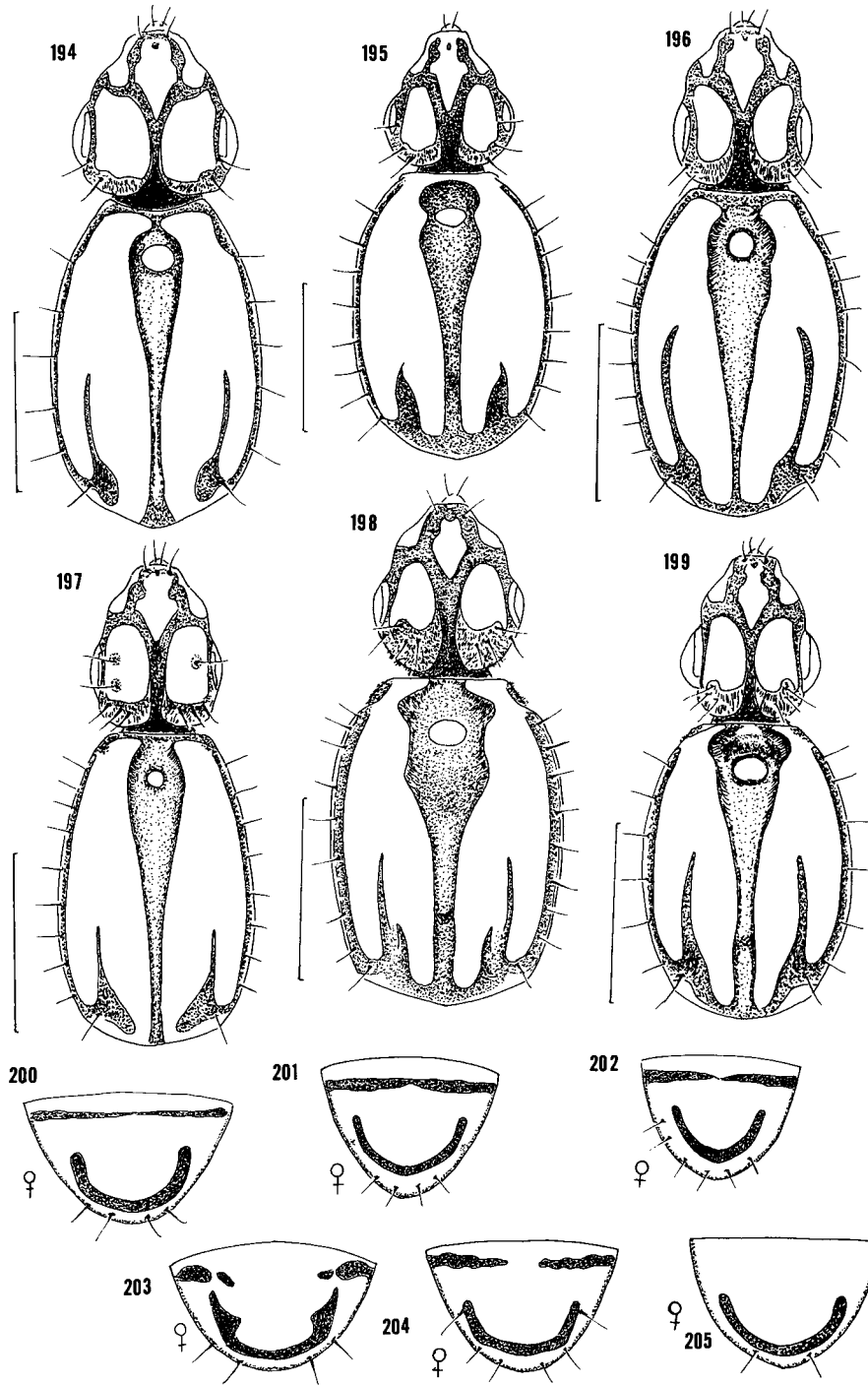


Plate 16. Figs. 194–205. Subgenus *Clinidium sensu stricto*. Figs. 194–199, Head and pronotum, dorsal aspect; Fig. 194, *C. (s. str.) curvatum* new species; Fig. 195, *C. (s. str.) foveolatum* Grouvelle; Fig. 196, *C. (s. str.) crater* new species; Fig. 197, *C. (s. str.) centrale* Grouvelle; Fig. 198, *C. (s. str.) spatulatum* new species; Fig. 199, *C. (s. str.) validum* Grouvelle; Figs. 200–205, Sternum VI, female; Fig. 200, *C. (s. str.) centrale* Grouvelle; Fig. 201, *C. (s. str.) spatulatum* new species; Fig. 202, *C. (s. str.) validum* Grouvelle; Fig. 203, *C. (s. str.) curvatum* new species; Fig. 204, *C. (s. str.) foveolatum* Grouvelle; Fig. 205, *C. (s. str.) crater* new species;



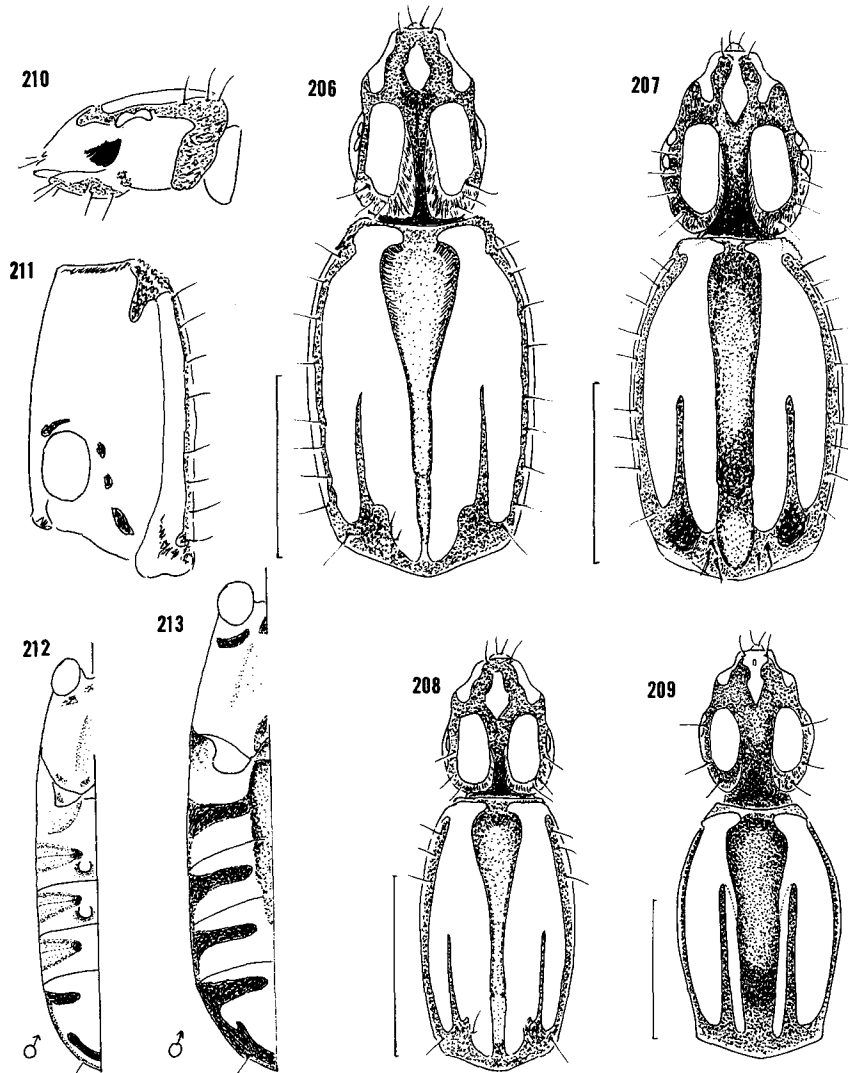


Plate 17. Figs. 206–213. Subgenus *Clinidium sensu stricto*. Figs. 206–209, Head and pronotum, dorsal aspect; Fig. 206, *C. (s. str.) moldenkei* new species; Fig. 207, *C. (s. str.) argus* new species; Fig. 208, *C. (s. str.) sulcigaster* Bell; Fig. 209, *C. (s. str.) beccarii* Grouvelle (redrawn from sketch by R. Poggi); Fig. 210, Head, left lateral aspect, *C. (s. str.) moldenkei* new species; Fig. 211, Prothorax, left lateral aspect, *C. (s. str.) moldenkei* new species; Figs. 212–213, Metasternum, abdomen, right half; Fig. 212, *C. (s. str.) moldenkei* new species, male; Fig. 213, *C. (s. str.) sulcigaster* Bell, male.

Clinidium (sensu stricto) hammondi new species
(Figs. 125, 133)

Type Material.— HOLOTYPE male, labelled: "Bogota, Rhyzophagus ?, *Clinidium granatense* Chaudoir" (BMNH). The type is in poor condition, broken into several pieces, but all important parts are present.

Description.— Length 6.0 mm. Antennal stylet very long, 0.4 as long as Segment XI; minor setal tufts present on Segments VII-X; basal setae present on Segments VIII-X, sparse on VIII; antenna devoid of pollinosity; head triangular, clearly broader than long; frontal grooves very shallow, obsolete anteriorly; median lobe short, broadly triangular, tip acute, opposite anterior part of eye; temporal lobes convergent posteriorly, forming rounded medial angles, which are narrowly separated; temporal lobe rounded posteriorly; eye short, rather broadly crescentic; orbital groove pollinose, complete, joined posteriorly to rather broad marginal band of pollinosity; one temporal seta, in prominent puncture near occipital margin; one pair of postlabial setae.

Pronotum oval, rather short, length/greatest width 1.40; widest near middle; sides strongly curved, apex truncate, base rounded; median groove deep, linear; anterior median pit enlarged, round, width about 0.20 of width of pronotum; basal impression open posteriorly, laterally, narrowed anteriorly, connecting to slightly curved discal striole, latter extending to middle of pronotum; medial part of disc sloped towards median groove; lateral part of disc convex; marginal groove prominent, visible in dorsal view; angular seta present; one marginal seta, just anterior to angular; notopleural suture glabrous; sternopleural groove nearly complete, interrupted near coxa; precoxal setae absent.

Elytra rather elongate; intervals convex; striae impressed, punctured, pollinose; sutural, parasutural striae complete, anastomosing posteriorly; intercalary intratubercular, marginal striae entire; preapical tubercle strongly inflated, rounded; apical tubercles slightly inflated, contiguous (Fig. 133); sutural, parasutural striae without setae; intercalary stria with complete row of four or five setae; one seta at apex of intratubercular stria; three or four setae in apical 0.2 of marginal stria; one seta each on apical, preapical tubercles; metasternum with complete median sulcus; transverse sulci of abdomen coarsely punctate, pollinose, those of Sterna III, IV continuous, that of V narrowly interrupted in midline in male; Sternum VI with transverse sulci joined to submarginal sulcus; Sternum VI with two setae; male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar narrow, triangular, its tip obliquely truncate; hind calcar smaller than middle one, raised above level of spurs; tibial spurs equal, large, false spur absent; female unknown.

This species is similar to *C. granatense* Chevrolat, but differs in having the intercalary stria entire and deeply impressed, and the middle calcar truncate. It is a pleasure to name this species for Peter Hammond, of the British Museum of Natural History, in gratitude for his aid in this project.

Clinidium (sensu stricto) granatense Chevrolat 1873a
(Figs. 126, 134)

Clinidium granatensis Chevrolat 1873a: 216

Clinidium granatense (Chevrolat) Grouvelle 1903 (grammatical correction).

Clinidium (sensu stricto) granatense (Chevrolat) Bell and Bell 1978.

Type Material.— LECTOTYPE (here designated) female, labelled: "Nov. Gren., *Clinidium granatense*, Chev. type" (MNHN). PARALECTOTYPES one female, labelled "Neu Granada, Madellin, Typus, *granatense*" (NMW); one male, labelled: "Bogota, *granatense*, Chevrolat, Typus" (NMW).

Description.— Length 5.3-6.8 mm. Antennal Stylet very long, 0.4 as long as Segment XI; minor setal tufts present on Segments VII-X; basal setae present on Segments VII-X or VIII-X; antenna devoid of pollinosity; head triangular, clearly broader than long; frontal grooves very shallow, obsolete anteriorly; median lobe short, broadly triangular, tip acute, opposite anterior part of eye; temporal lobes convergent posteriorly, forming rounded medial angles, latter narrowly separated; temporal lobe rounded posteriorly; eye short, rather broadly crescentic; orbital groove pollinose, complete, joined posteriorly to rather broad marginal band of pollinosity; one temporal seta, in prominent puncture at margin of pollinosity near posterior margin of temporal lobe; one pair of postlabial setae.

Pronotum slightly more elongate than that of *C. hammondi*, length/greatest width about 1.48; widest near middle, sides strongly curved; apex truncate, base rounded; median groove deep, linear; anterior median pit enlarged, width about 0.20 of width of pronotum; basal impression open posteriorly, laterally, narrowed anteriorly, connecting to discal striole, latter extending to middle of pronotum; marginal groove prominent, visible in dorsal view; angular seta present; marginal setae absent; notopleural suture glabrous; sternopleural groove nearly complete, interrupted near coxa; precoxal setae absent.

Elytra rather elongate; intervals convex; striae impressed, coarsely punctured; pollinosity less continuous than in *C. hammondi*; sutural, parasutural striae complete, anastomosing near apex; intercalary stria abbreviated, ending blindly at anterior part of preapical tubercle; intratubercular, marginal striae entire; preapical tubercle inflated, rounded; apical

tubercles inflated, contiguous (Fig. 134); sutural, parasutural striae without setae; intercalary stria with complete row of four or five setae; one or two setae at apex of intratubercular stria; four or five setae in apical 0.2 of marginal stria; one seta each on apical, preapical tubercles; metasternum with complete median sulcus; transverse sulci of abdominal sterna coarsely punctate, pollinose, continuous on Sternum III in both sexes, continuous on IV in male, narrowly interrupted in female; widely separated on V in both sexes, Sternum VI with transverse sulci joined to submarginals; Sternum VI with two setae; lateral pits present on both III, IV in both sexes very small in male; female with small median pit on Sternum VI; male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar triangular, acute; hind calcar broadly triangular, tip acute, raised above level of spurs; tibial spurs large, equal, false spur absent.

The abbreviated intercalary stria and the different shape of the middle calcar separate this species from *C. hammondi*, to which it is otherwise strongly similar.

Clinidium (sensu stricto) incudis Bell 1970
(Figs. 127, 132)

Clinidium (sensu stricto) incis Bell 1970: 319.

The original spelling, *incis*, is incorrect. The name is derived from *incus* (anvil), based on the type locality, El Yunque, the Spanish word for anvil. The genitive singular form of the word is *incudis* ("of the anvil").

Type Material.— HOLOTYPE male, labelled: "El Yunque, Puerto Rico, May, 1938, coll. P. J. Darlington" (MCZ 31756). PARATYPES two females with same data as type (MCZ); two males, two females, from the same locality, coll. T. B. Hlavac, L. Herman, Jr., 2200-3200 ft., Feb. 15-24, 1969 (MCZ).

Description.— Length 6.1-7.5 mm. Antennal stylet very long, about 0.5 as long as Segment XI; tufts of minor setae present on Segments VII-X; basal setae entirely absent; Segments I-V each with subapical pollinose ring; head longer than broad; frontal grooves linear, nearly glabrous, deeper than in preceding species; median lobe triangular, tip acute, posterior to eye; temporal lobes divergent posteriorly, not forming medial angles; temporal lobe rounded posteriorly, broadly bordered with pilosity; eye minute, round, protruding, resembling an ocellus, located near middle of length of head; orbital groove deeply impressed, pollinose, complete; two temporal setae; one pair of postlabial setae.

Pronotum rather short, length/greatest width 1.40; widest anterior to middle, lateral margins curved anteriorly, oblique posteriorly; margin shallowly sinuate anterior to hind angle; median groove deep, rather broad, parallel posteriorly, anteriorly gradually broadened to anterior median pit; latter large, about 0.25 of width of pronotum at level of pit; basal impression small, triangular, closed posteriorly; discal striole curved, extending to middle of pronotum; marginal groove linear, visible in dorsal view; angular seta present; two marginal setae, anterior to middle of pronotum; two pairs of discals, opposite anterior part of anterior median pit; one pair of basals, medial to basal impressions; notopleural suture glabrous; anterior part of sternopleural suture very shallow, incomplete; precoxal setae absent.

Elytra rather elongate; intervals convex; striae impressed, pollinose, inconspicuously punctate; all striae, including intercalary, complete; preapical tubercle strongly inflated; apical tubercles inflated, nearly contiguous, but separately rounded; sutural stria without setae; parasutural stria with two or three setae, anterior one near or anterior to middle; intercalary stria with complete row of four or five setae; one seta near apex of intratubercular stria; marginal stria with two to six setae in posterior 0.5; preapical tubercle with one seta; apical tubercle with one to three setae; metasternum without median sulcus; abdominal Sterna III-VI each with uninterrupted transverse sulcus, latter consisting of row of very coarse punctures; that of Sternum VI not joined to submarginal groove; Sternum VI of female with median pit; female with deep lateral pit on Sternum IV; male without ventral tooth on anterior femur, but with small triangular proximal tooth on anterior tibia; calcars triangular, dorsal margin separated from tibia by deep notch; tibial spurs large, equal; false spur absent.

The form of the eye is unique within the genus though it recalls those of *Shyrodes dohertyi* (Grouvelle) and *Srimara planicollis* Bell and Bell. This is the only species from the West Indies which has the anterior median pit enlarged. The eye, the anterior median pit, and the divergent temporal lobes easily separate this species from the only other Rhysodine from Puerto Rico, *Clinidium (sensu stricto) boroquense* Bell.

Range.— Puerto Rico. We have seen additional specimens from El Yunque, and have collected it there ourselves. In addition, we have seen a specimen labelled "Puerto Rico: Villalba, C. M. Matos, VI-30-1938" (MAY).

Bionomics.— Host species have not been recorded. Bell (1970) quotes observations by Hlavac (in litt.) on this species in the field and its behavior in the laboratory.

THE *INSIGNE* GROUP

In this group, the tufts of minor setae are present on Segments VI-X. The eye is crescentic. The form of the anterior median pit varies among the species. This group contains four species, two from northwestern South America, one from the "continental" island of Trinidad, and one from Puerto Rico.

Phylogeny.— The Ecuadorian species, *C. dubium*, is very different from the remaining ones, and possibly had an independent origin from the *cavicolle* group, which it resembles except in the absence of the tuft of setae from antennal Segment V. The rest of the species share the following characters: temporal lobes convergent posteriorly; antennal stylet rather small; anterior tibia of male without proximal tooth; anterior median pit medium to small, without tubercle. *C. boroquense* stands apart from the remaining two, in having the intercalary stria complete, the metasternum not sulcate, and the intratubercular stria not impressed except at the apex. The Ecuadorian (and possibly Colombian) species, *C. insigne*, is obviously closely related to *C. howdenorum* of Trinidad, despite the wide geographic separation of the two.

Clinidium (sensu stricto) dubium Grouvelle 1903
(Fig. 128)

Clinidium dubium Grouvelle 1903: 129-130.

Clinidium (sensu stricto) dubium (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Loja, Ecuador, *C. dubium* type" (MNHN).

Description.— Length 5.7 mm. Antennal stylet very long, 0.4 as long as Segment XI, acuminate; tufts of minor setae present on Segments VI-X; basal setae present on Segments VI-X, sparse on VI; Segments I-VII with subapical pollinose bands; head with length, width approximately equal; frontal grooves rather fine, shallow; median lobe triangular, tip acute, opposite middle of eye; temporal lobe divergent posteriorly, posterior margin rounded; bordered with pilosity; eye small, narrowly crescentic, about 0.25 of length of temporal lobe; orbital groove complete, pollinose; one or two temporal setae; two pairs of postlabial setae.

Pronotum rather short, length/greatest width 1.36; widest slightly anterior to middle, lateral margins curved, becoming oblique posteriorly; median groove deep, rather broad, slightly constricted near middle, anteriorly broadened gradually, slightly sinuate where joined to anterior median pit; latter large, about 0.25 of width of pronotum at level of pit; anterior median pit with round pollinose central tubercle; basal impression elongate, triangular, closed posteriorly, about 0.25 as long as pronotum; discal striole not distinct; marginal groove visible in dorsal view; three or four marginal setae; angular seta absent; notopleural suture glabrous; sternopleural groove complete, pollinose; precoxal setae absent.

Elytra moderately elongate; striae impressed, pollinose, inconspicuously punctate; intercalary stria abbreviated posteriorly, ending blindly at level of anterior end of preapical tubercle; other striae entire; preapical tubercle inflated; apical tubercles inflated, contiguous; intercalary stria with complete row of three or four setae; intratubercular stria with one seta near apex; marginal stria with six or seven setae in apical 0.2; metasternum with complete, deep median sulcus; hind coxa with conspicuous pollinose area on lateral margin; male with complete transverse sulci on Segments II-VI; submarginal groove of Sternum VI not connected to transverse sulcus; male without ventral tooth on anterior femur, but with acute proximal tooth on anterior tibia; calcars narrow, acute; tibial spurs equal, false spur absent.

This is the only species in the group that has a large anterior median pit with a central tubercle. It is similar to members of the *cavicolle* group except in lacking a tuft on Segment V. It will not key to any member of the *cavicolle* group, since the only member of the latter group, *C. mathani*, to have the intercalary stria abbreviated posteriorly, lacks a central tubercle in the anterior median pit and has long discal strioles on the pronotum.

Clinidium (sensu stricto) insigne Grouvelle 1903
(Figs. 131, 135, 136)

Clinidium insigne Grouvelle 1903: 132.

Clinidium (sensu stricto) insigne (Grouvelle) Bell and Bell 1978.

Type Material.— According to the original description, the type was from Ecuador, and was in the Oberthür collection. We were unable to locate a specimen labelled as a type. Possibly the description was based on a female specimen, labelled: “Ecuador, Slemiradski 1882-1883, *Clinidium insigne* Grouv.” (MNHN), though this was not labelled as a type, it is the only specimen of this species among the material studied by Grouvelle.

Description.— Length 7.0-7.4 mm. Antennal stylet conical, acuminate, moderately long, about 0.25 of length of Segment XI; tufts of minor setae present on Segments VI-X; basal setae present on Segments VII-X; Segment I with pollinose subapical band; pollinosity otherwise absent from antenna; head with length, width almost equal; frontal grooves narrow, deep, pollinose; median lobe triangular, narrow, tip acute, just behind level of anterior margin of eye; temporal lobes strongly convergent posteriorly, forming lobate medial angles, latter very narrowly separated; posterior margin rounded, bordered with pollinosity; eye crescentic about 0.5 length of temporal lobe; orbital groove complete, pollinose; one temporal seta arising from large pollinose puncture touching posteriolateral pollinose border of temporal lobe; two pairs of postlabial setae.

Pronotum long, length/greatest width 1.60; widest near middle, sides curved; base rounded; median groove deep, narrow, sides parallel except at slight expansion at basal 0.33 of length; anterior median pit elongate, oval, about 0.15 of width of pronotum opposite the pit; central tubercle absent; basal impression narrow, oblong, open posteriorly; discal striole deep, nearly straight, extending anteriorly beyond middle of pronotum; marginal groove deep, visible in dorsal view; six marginal setae, angular seta absent; notopleural suture glabrous; sternopleural groove nearly complete, narrowly interrupted near coxa; precoxal setae absent.

Elytra moderately elongate; striae impressed, pollinose, inconspicuously punctate; intercalary stria abbreviated posteriorly, ending blindly at level of anterior end of preapical tubercle; other striae entire; preapical tubercle strongly inflated, truncate posteriorly; apical tubercles strongly inflated, rounded, contiguous; parasutural striae without setae; intercalary stria with complete row of three to five setae; intratubercular stria with one or two setae near apex; marginal stria with six or seven setae in apical 0.33; preapical tubercle with one seta; apical tubercle with one seta; metasternum with deep, complete median sulcus; female with transverse sulci complete on Sterna III-IV, interrupted on midline on V, VI; female with transverse sulci of Sternum VI joined to submarginal groove; Sternum VI with two setae; female with large lateral pit on Sternum IV (Fig. 135); tibial spurs slightly unequal; false spur absent.

We provisionally assign a male, labelled: “Cali, Cauca, Colombia, VI-30-38, C. H. Seevers” (CNHM) to this species. It differs from the female holotype in having the transverse sulcus of Sternum V continuous and the submarginal groove of Sternum VI widely separated from the transverse sulci (Fig. 136). The first of these characters is likely to be a secondary sexual difference, but the second is not. It might be a separate, but closely allied species. The male from Cali has the following secondary sexual characters: anterior femur without ventral tooth; anterior tibia without proximal tooth; both calcars angulate dorsally; middle calcar longer than hind one; tips of calcars obtuse.

This species is closest to *C. howdenorum* of Trinidad, which has a narrower head, more elytral setae, and a differently shaped preapical lobe on the elytra.

Clinidium (sensu stricto) howdenorum new species

(Fig. 130)

Type Material.— HOLOTYPE male, labelled: “Morne Blue, 2700' TRINIDAD, W.I., Aug. 19, 1969, H. & A. Howden” (BSRI).

Description.— Length 6.0 mm. Antennal stylet flattened, narrowly, obliquely truncate, 0.2 of length of Segment XI; tufts of minor setae present on Segments VI-XI; basal setae present on Segments VI-X; Segment I with pollinose subapical band; pollinosity otherwise absent from antennae; head longer than wide; narrower, more convex than in *C. insigne*; frontal grooves narrow, deep, pollinose; median lobe very narrow, tip acute, posterior to level of anterior margin of eye; temporal lobes strongly convergent posteriorly, forming lobate medial angles, latter very narrowly separated; posterior margin rounded; eye crescentic about 0.15 of length of temporal lobe; orbital groove complete, pollinose; three temporal setae, respectively anterior to, opposite, posterior to eye; each seta base surrounded by pollinosity, latter extensively “scalloping” lateral margin of temporal lobe; orbital groove complete; three pairs of postlabial setae.

Pronotum elongate, but less so than in *C. insigne*; length/greatest width 1.50; widest near middle, sides curved; base rounded; median groove deep, narrow, sides parallel except at slight expansion at basal 0.33 of length; anterior median pit elongate, oval, about 0.20 of width of pronotum at pit; central tubercle absent; basal impression triangular, open posteriorly; discal striole deep, curved, extending anteriorly beyond middle of pronotum; marginal groove deep, visible in dorsal view; angular seta present; eight marginal setae; notopleural suture glabrous; sternopleural groove nearly complete, narrowly interrupted opposite coxa; precoxal setae absent.

Elytra moderately elongate; striae impressed, pollinose, inconspicuously punctate; intercalary stria abbreviated posteriorly, ending blindly at level of anterior end of preapical tubercle; remaining striae entire; preapical tubercle strongly inflated, medial angles lobate; medial margin of tubercle emarginate opposite tip of intercalary stria (Fig. 137); apical tubercles inflated, rounded, contiguous; parasutural stria with 10 setae; intercalary with nine setae; intratubercular stria with three or four setae near apex; marginal stria with 10-12 setae; preapical tubercle with three setae; apical tubercle with one seta; metasternum with deep, complete median sulcus; male with transverse sulcus narrowly interrupted on Sternum III, V, VI, complete on Sternum IV; male with distinct lateral pit on Sternum IV; Sternum VI with submarginal sulcus broadly separated from transverse sulcus; Sternum VI with four setae; tibial spurs equal; false spur absent; male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar acute, smaller than hind calcar; latter narrowly truncate.

This species is obviously closest to *C. insigne*, but differs in the form of the antennal stylet, in the head being narrower and more convex, the elytral setae being much more numerous, and in the preapical tubercles being lobate.

It is a pleasure to name this species, the first described from Trinidad, after the collectors, Anne and Henry Howden.

Clinidium (sensu stricto) boroquense Bell 1970
(Figs. 129, 137)

Clinidium (sensu stricto) boroquense Bell 1970:321.

Type Material.— HOLOTYPE male, labelled: "El Yunque, Puerto Rico, May, 1938, coll. P. J. Darlington" (MCZ 31757). PARATYPES, one male, one female, same label as holotype (MCZ); one male, from same locality, coll. T. B. Hlavac, L. Herman, Jr., 2200-3200 ft., Feb. 15-24, 1969 (MCZ).

Description.— Length 4.0-5.9 mm. Antennal stylet minute; tufts of minor setae present on Segments VI-X; basal setae present, but sparse on Segments IX-X; Segment I with pollinose subapical band; pollinosity otherwise absent from antenna; head slightly longer than wide; frontal grooves fine, scarcely pollinose; median lobe triangular, short, tip opposite anterior 0.2 of eye; temporal lobes convergent posteriorly, forming rounded, nearly contiguous medial angles; frontal space very narrow, posterior margin of temporal lobe rounded, very narrowly margined with pilosity; lateral margin of head only slightly curved; eye very narrowly crescentic, about 0.8 of length of temporal lobe; orbital groove complete, pollinose but very narrow; two or three temporal setae, one anterior to eye, one opposite middle of eye; posterior one near posterior margin of temporal lobe; two pairs of postlabial setae.

Pronotum rather long, length/greatest width 1.55; widest near middle, sides curved, abruptly rounded, narrowed to apex, more gradually rounded to base; latter curved; margin shallowly sinuate anterior to hind angle; median groove deep, nearly linear, margins parallel; anterior median pit very small, margins of median groove not at all expanded opposite it; basal impression small, triangular, closed posteriorly; discal striole fine, slightly curved, extending to middle of pronotum; marginal groove fine, visible in dorsal view; angular seta present; one or two marginals or absent, location differing among the specimens; notopleural suture glabrous; sternopleural groove absent; precoxal setae absent.

Elytra moderately elongate; striae impressed, pollinosity scant; striae punctate; all striae complete; intratubercular stria shallower than the others; preapical tubercle slightly inflated, apex of intratubercular stria shallowly impressed, so preapical, apical tubercles not strongly separated; apical tubercles inflated, rounded, slightly separated; sutural striae with one to four setae near base; intercalary stria with complete row of four or five setae; intratubercular stria with one to three setae near apex; marginal stria with three to five setae in apical 0.20; preapical tubercle without setae; apical tubercle with one seta; metasternum without median sulcus; transverse sulci of abdominal sterna impressed laterally, medial portion replaced by row of several very coarse punctures; Sternum VI on each side with two punctures in place of transverse sulcus; submarginal sulcus short; Sternum VI with two setae; female with lateral pits on Sterna IV, V; male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; calcars small, triangular, acute; hind calcar raised above level of spurs; tibial spurs large, equal; false spur absent.

This species shows many points of similarity to *C. insigne* and *C. howdenorum*, especially in the distribution of tufts of minor setae and in having convergent temporal lobes. The latter species, however, has the anterior median pit enlarged, and lacks discal setae on the pronotum. *C. boroquense* is not likely to be confused with the other known Puerto Rican species, *C. incudis*, as the latter has a strongly enlarged anterior median pit, divergent temporal lobes, and an ocelliform eye.

Range.— Puerto Rico. We have seen four additional specimens from the type locality, labelled: "El Yunque, Puerto Rico, Luquillo Exp. For., Rte. 915, 1.5 mi. off Rte. 988, Mar. 29, 1976, A. Gillogly, H. Harlan" (UVM). We have seen specimens from four additional localities: "Utuado, 11-15-1935, A. Ramirez" (MAY);

"Adjuntas, VIII-1933, R. G. Oakley" (MAY); "5 mi. s. of Utuado, 3 July, 1979, coll. M. A. Ivie" (MAI); "Aguas Buenas, forest at Aguas Buenas cave, 7-17-V-73, 250 m., S. Peck et al" (BSRI).

THE *GUILDINGII* GROUP

In this group, the tufts of minor setae are found on Segments V-X of the antenna, and the anterior median pit is very small. In most species, the median groove is not widened at the anterior median pit, while in a few species it is slightly widened. Most species have false spurs on the middle and hind tibiae. A false spur is a rigid tooth projecting from the apical margin of the tibia. In size and shape it resembles the true spurs. The eyes are narrow and crescentic. Some species have a broad tooth or a slight cusp in place of the false spur.

This group is the largest in the subgenus, with 25 species. The range is substantially that of the subgenus, except that members of this group are not known at present from Puerto Rico, French Guiana, or Guatemala.

Phylogeny.— We provisionally divided the group into five sections. The *oberthueri* section has both intercalary and intratubercular striae complete, and has the metasternum sulcate, sometimes only very shallowly so. The *jamaicense* section has similar striation, but lacks the metasternal sulcus. The *rossi* section has the intercalary stria complete, but has the intratubercular not impressed near the apex, so that the preapical and apical tubercles are fused. The metasternal sulcus is absent in *C. rossi*, but present in the other members of the section. The *gildingii* section has the intercalary stria abbreviated posteriorly, and the metasternum not sulcate. The *rojasi* section has the intercalary stria abbreviated and the metasternum sulcate.

The interrelationships among these sections can be analyzed in various ways, depending on which character states are regarded as derived. We regard the features of the *oberthueri* section as being primitive within the subgenus. Although the absence of a metasternal sulcus is probably a primitive character in the Rhysodini as a whole, it appears to us that a sulcus was present in the common ancestor of *Clinidium sensu stricto*, and has been secondarily lost three times in the *gildingii* group, in *C. rossi*, and in the ancestors of the *jamaicense* and *gildingii* sections. All but *C. rossi* are West Indian species. The metasternal sulcus is also absent in West Indian species of the *insigne* and *granatense* groups. This seems to be an unusual example of convergent evolution, comparable to the strongly narrowed outer pronotal carinae in members of various genera and subgenera of Omoglymmiina from the Andaman Islands. An alternative theory would be that the presence of a median metasternal sulcus is a derived character, which arose independently in several lines in the Andean Region.

THE *OBERTHUERI* SECTION

This section contains species with the intercalary and intratubercular striae entire and the metasternum with a median sulcus. There are seven species, probably occupying two disjunct areas. Two species are found in Panama. Four others are on the eastern side of the Andes, in Ecuador, Colombia, Venezuela, and the western part of Amazonas State, Brazil. They approach the sea only in Merida State, Venezuela, south of Lake Maracaibo. The locality of *C. humboldti* is ambiguous, as Nueva Granada included both Colombia and Panama.

Phylogeny.— The two Panamanian species, *C. alleni* and *C. whiteheadi*, have the basal impression round, and sharply separated from the discal striole, which is linear. They contrast strongly with the South American species, and perhaps are not closely related to them. The

latter species have the basal impression small, triangular, and poorly separated from the dilated discal striole.

C. humboldti is closest to the two Panamanian species, but differs from both in having the antennal lobes separated from the median lobe. The common ancestor of the Panamanian species was probably the sister species of *C. humboldti*.

The four South American species can be grouped into two pairs. *C. integrum* and *C. pilosum* have the paramedian groove more than 0.5 the length of the pronotum and the frontal groove relatively broad and deep, while in *C. oberthueri* and *C. jolyi* the paramedian groove is less than 0.5 the length of the pronotum and the frontal grooves are relatively shallow and narrow.

Clinidium (sensu stricto) integrum Grouvelle 1903

(Figs. 138, 145)

Clinidium integrum Grouvelle 1903: 127-128.

Clinidium (sensu stricto) integrum (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE female, labelled: "St. Paulo d'Olivencia, M. de Mathan, Mai, 1883" (MNHN). The type locality is on the Amazon River in western Amazonas State, Brazil, about 100 kilometers east of the Colombian border.

Description.— Length 6.8 mm. Antennal stylet moderately long, about 0.25 of length of Segment XI; minor setal tufts on Segments V-X; basal setae present though sparse on Segments VII-X; Segments I-X each with subapical pollinose band; head distinctly longer than wide; frontal grooves deep, rather wide; median lobe short, triangular, tip opposite anterior margin of eye; medial margins of temporal lobes curved, closest together near middle of head, divergent posteriorly; posterior margin rounded, with wide pilose border; eye narrowly crescentic, very short, about 0.33 of length of temporal lobe; head margins oblique behind eyes; orbital groove complete, pollinose; five or six temporal setae in orbital groove; two pairs of postlabial setae.

Pronotum rather short, length/greatest width 1.44; widest near middle, base only slightly narrowed, apex more strongly narrowed; lateral margins only slightly curved; apex truncate; base curved; median groove dilated, widest posterior to middle, where 0.09 of width of pronotum, slightly narrowed near apex, more suddenly narrowed near base; median groove not at all dilated at anterior median pit; basal impression narrow, open posteriorly, only moderately wider than discal striole, latter extended anteriorly 0.9 of length of pronotum; marginal groove visible in dorsal view; angular seta present; seven to 10 marginal setae; one or two discal setae; sternopleural groove absent; precoxal setae absent.

Elytra elongate; striae impressed, pollinose; all striae entire; apex of intratubercular stria deep; preapical tubercle inflated, apex angular in posterior view, overhanging preapical impression; apical tubercles inflated, rounded, contiguous; sutural stria with complete row of five or six setae; preapical impression with three setae aligned with those of sutural stria; parasutural stria with one or two setae near apex; intercalary stria with complete row of eight or nine setae; intratubercular stria with three or four setae near apex; marginal stria with complete row of about 10 setae; metasternum with deep median sulcus; abdominal sterna with transverse sulci widely interrupted in midline; female with deep lateral pit on Sternum IV; Sternum VI with eight setae; false spurs absent; male unknown.

This species is easily recognized by the great length of the discal striole of the pronotum. Within the section, the angulate preapical tubercle is also distinctive (Fig. 145).

Vulcano and Pereira (1957b) figured and described a species under this name. They did not study the type of *C. integrum*. Judging by their figure, they studied a quite different species, perhaps referable to *Rhyzodiastes*, subgenus *Rhyzostrix*.

Clinidium (sensu stricto) pilosum Grouvelle 1903

(Figs. 139, 146)

Clinidium pilosum Grouvelle 1903: 126-127.

Clinidium (sensu stricto) pilosum (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE female, labelled: "Venezuela, Dr. Moritz, 1858, *Clinidium pilosum* ty. Grouvelle" (NMW). There was no red "typus" label on the specimen, but the specimen was labelled in Grouvelle's hand, and the locality and collector agree with those cited in the original description.

Description.— Length 5.6-6.0 mm. Antennal stylet moderately long, about 0.20 of length of Segment XI; minor setal tufts on Segments V-X; basal setae present on Segments IX-X; Segments I-VIII with subapical pollinose bands; head distinctly longer than wide; frontal grooves deep, rather wide; median lobe short, triangular, tip opposite anterior margin of eye; medial margins of temporal lobes nearly straight, subparallel; posterior margin rounded, with wide pilose border; eye narrowly crescentic, longer than in *C. integrum*, over 0.5 of length of temporal lobe; orbital groove complete, pollinose; four or five temporal setae in orbital groove; two pairs of postlabial setae.

Pronotum longer than in *C. integrum*; length/greatest width 1.65; widest near middle, sides nearly parallel, only slightly curved; apex *truncate*; base curved; median groove narrow, margins nearly parallel except for dilation opposite middle of discal striole and another at base; median groove not at all dilated opposite anterior median pit; basal impression narrow, closed posteriorly but open laterally, only slightly wider than discal striole; latter extended anteriorly about 0.66 of length of pronotum; marginal groove visible in dorsal view; angular seta present; six to 10 marginal setae; one or two discals on either side anteriorly, one or two on each side in basal 0.25 of length or absent; sternopleural groove absent; precoxal setae absent.

Elytra elongate, striae impressed, pollinose, coarsely punctate; all striae entire; apex of intratubercular stria rather shallow; preapical tubercle inflated, rounded; apical tubercles inflated, contiguous; sutural stria with complete row of five setae, apical impression with two aligned with those of sutural stria; parasutural stria with one seta near base; intercalary stria with complete row of nine or 10 setae; intratubercular stria with four setae near apex; marginal stria with about 18 setae in complete row; apical tubercle with about six setae; metasternum with shallow median sulcus; transverse sulci of abdominal Sternum III not interrupted in midline; that of Sternum IV not interrupted in male, interrupted in female; those of Sterna V-VI broadly interrupted; Sternum VI with submarginal groove bent inward at base, not connected to transverse sulci (Fig. 146); Sternum VI with six to eight setae, two to four in transverse row between anterior ends of submarginal sulcus, four in curving row along submarginal sulcus; female with lateral pit in Sternum IV; tibiae with false spurs present, though small; male without ventral tooth on anterior femur, nor proximal tooth on anterior tibia; calcaris triangular; middle one narrow, longer, more pointed than hind one; latter with dorsal margin slightly angulate.

The very long, nearly parallel-sided pronotum is distinctive. *C. jolyi* differs in having a shorter pronotum, with the paramedian grooves less than 0.5 the length of the pronotum. Also, the parasutural stria has a complete row of setae, the submarginal groove of the sixth sternite is absent and the frontal grooves much shallower. *C. oberthueri* differs in having a much more oval pronotum, strongly narrowed at both base and apex. The eye is shorter, the frontal grooves are shallower, and precoxal setae are present.

Range.— Merida State, in western Venezuela, and possibly in adjacent parts of Colombia. In addition to the holotype, we have seen one male and two females, labelled: "Venezuela, Merida, La Azulita, 2000 m., 5,6-X-69, J. and B. Bechyne leg." (VEN), and a male, with a handwritten label which is difficult to interpret, but which appears to us to read "Cae Lun, N., Columb., Mor. 8129" (MNHB).

Clinidium (sensu stricto) jolyi new species
(Figs. 140, 147)

Type Material.— HOLOTYPE male, labelled: "VENEZUELA, Mérida, La Azulita, 2000 m., 6-X-69, J. & B. Bechyne, leg." (VEN). PARATYPES two males, labelled: "Venezuela, Merida, La Mucuy, 30-VIII-1956, C. J. Rosales col." (VEN); one male, one female, labelled: "Venezuela, Merida, Carbonera, 2600 m, 3-X-69, J. & B. Bechyne" (VEN).

Description.— Length 5.0-6.0 mm. Antennal stylet rather small, about 0.16 of length of Segment XI; minor setal tufts on Segments V-X; basal setae present on Segments IX, X; Segments I-IV with subapical pollinose bands; head slightly longer than wide; frontal grooves very shallow, linear, glabrous; median lobe short, triangular, ending just posterior to anterior margin of eye; medial margins of temporal lobes slightly divergent posteriorly; posterior margin transverse; posterior margin with very broad pilose border, this extending anteriorly along medial margin; eye narrowly crescentic, shorter than in *C. pilosum*, about 0.4 of length of temporal lobe; orbital groove complete, pollinose; three temporal setae, two opposite eye, the other behind eye, distant from margin, its base included in dilation of marginal pilose band; two postlabial setae.

Pronotum shorter than in *C. pilosum*; length/greatest width about 1.48; widest near middle, sides curved; base, apex nearly equally narrowed; apex *truncate*; base curved; median groove narrow, margins nearly parallel; groove scarcely dilated opposite anteriomedian pit; basal impression narrow, closed posteriorly, open laterally; discal striole relatively wide, extending to middle of pronotum; marginal groove visible in dorsal view; angular seta present; three or four marginal setae, mostly anterior to middle; one or two anterior discal setae; no posterior discals; sternopleural groove absent; precoxal setae absent.

Elytra elongate; striae impressed, pollinose, coarsely punctate; apex of intratubercular stria rather shallow; preapical tubercle inflated, rounded; apical tubercles inflated, contiguous; sutural striole with complete row of five to seven setae;

parasutural stria with complete row of five or six setae; intercalary stria with about 13 setae; intratubercular stria with about five setae in apical 0.33; marginal stria with complete row of about 15 setae; apical tubercle with two setae; metasternum with very shallow median groove; Sterna II-VI with shallow transverse sulci, each containing row of coarse punctures; transverse sulci broadly interrupted in midline; Sternum VI without submarginal sulcus; four setae near posterior margin of Sternum VI (Fig. 147); in most specimens two setae near middle of Sternum VI, one specimen with three, another with four; female with deep lateral pit on Sternum IV, shallower one on Sternum V; false spur present, 0.67 as long as true spurs; male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; calcars short, broadly triangular, hind one deeper but not longer than middle one; dorsal margins of calcars not angulate.

The very shallow frontal grooves on the head and the absence of the submarginal sulcus of Sternum VI are characteristic of this species. The shorter, more rounded pronotum with shorter discal strioles also separates it from the sympatric *C. pilosum*. The complete series of setae in the parasutural stria also differentiates the type series from the latter species. However, this character is lacking in a specimen from Trujillo State, which may be a variant of *C. jolyi* (see below, under "variation").

Range and variation.— The type series is known only from Merida State. We have studied a female specimen, labelled: "Venezuela-Trujillo, La Peña, 3000 m., 5-IX-1968, J. & B. Bechyne" (VEN). This specimen is closer to *C. jolyi* in most respects, including the shape of the pronotum and the sculpture and chaetotaxy of Sternum VI. However, the elytral striae are distinctly finer, and the chaetotaxy of the pronotum and elytra differ in important respects: four temporal setae, six to eight marginal setae on the pronotum; parasutural stria without setae, and pilose apical bands only on antennal Segment I. This specimen might be an extreme variant of *C. jolyi*, although we suspect it is more likely to be a closely allied but distinct form. A final decision will need to await the collection of more specimens.

Clinidium (sensu stricto) oberthueri Grouvelle 1903

(Fig. 141)

Clinidium oberthueri Grouvelle 1903: 128-129.

Clinidium (sensu stricto) oberthueri (Grouvelle) Bell and Bell 1978.

Type Material.— LECTOTYPE (here designated) male, labelled: "Ecuador, coll. Slemiradsky 1882-1883" (MNHN). PARALECTOTYPES, seven specimens, sexes not recorded, same label as lectotype (MNHN); one male, one female, same data as lectotype, labelled "Co-type" (BMNH).

Description.— Length 6.0-6.3 mm. Antennal stylet slender, acuminate about 0.20 of length of Segment XI; latter long, conical; minor setal tufts on Segments V-X; basal setae present, but very sparse, on Segments VI-X; Segment I with broad subapical band of pollinosity; antenna otherwise without pollinosity; head distinctly longer than wide; frontal grooves narrow, shallow, margins inconspicuously pollinose; median lobe short, triangular, tip slightly behind anterior margin of eye; medial margins of temporal lobes slightly divergent posteriorly; posterior margin rounded, with narrow pollinose margin; eye narrowly crescentic, short, about 0.25 of length of temporal lobe; orbital groove complete, pollinose; lateral margin of head oblique posterior to eye; four temporal setae in orbital groove; two pairs of postlabial setae.

Pronotum elongate, length/greatest width 1.67, oval, base, apex strongly narrowed, lateral margin strongly curved, base nearly evenly rounded; apex narrowly truncate; median groove narrow, margins nearly parallel, dilated very slightly opposite anterior median pit; basal impression very narrow, closed posteriorly, open laterally; impression only slightly wider than discal striole, latter extending nearly to middle of pronotum; marginal groove visible in dorsal view; angular seta present; seven or eight marginals; one anterior discal or absent; notopleural suture dilated, pollinose near middle; sternopleural groove present; precoxal seta present.

Elytra moderately elongate, humeral region very strongly narrowed compared to related species; striae impressed, pollinose, coarsely punctate; apex of intratubercular stria rather shallow; all striae entire; preapical tubercle strongly inflated, rounded; apical tubercles weakly inflated, contiguous; sutural striae with complete row of four or five setae; parasutural stria without setae; intercalary stria with complete row of five to six setae; intratubercular stria with four or five setae in apical 0.20; marginal stria with 10-13 setae in complete row; preapical tubercle with four or five setae; apical tubercle with two setae; metasternum with deep median sulcus; transverse sulcus of Sternum III continuous in both sexes; that of Sternum IV narrowly interrupted in both sexes; V narrowly interrupted in male, widely interrupted in female; that of VI widely interrupted in both sexes; submarginal groove short, broadly separated from transverse sulci; female with eight setae on Sternum VI, four in curved lines near hind margin, four in transverse line near middle; male with six setae, inner pair of transverse line absent; female with very large lateral pit on Sternum IV; false spur absent, replaced by obtuse

angle; male without ventral tooth on anterior femur or proximal tooth on anterior tibia; middle calcar broadly triangular, dorsal margin straight; hind calcar larger, its apex obtuse, dorsal margin angulate.

The oval pronotum and very narrow elytral humeri of this species are distinctive. The precoxal setae also differentiate it from all members of the section except for *C. alleni*. The latter species has a shorter pronotum with more parallel margins, and linear discal striae.

Range.— Ecuador. The only specimens with a definite locality are three labelled: “Papallacta, Napo-Pastaza Prov., 30 January 1958, R. W. Hodges, 10500 ft. elev.” (MSU; UVM). This is on the eastern side of the Andes.

Clinidium (sensu stricto) alleni new species

(Figs. 142, 148, 149)

Type Material.— HOLOTYPE male, labelled: “Panama, Cerro Jefe, 9° 12' N-79° 21' W, 700-750 m., May 20, 1972, beating and under bark. R. T. Allen, ADP 11544” (NMNH). This locality is in the Cordillera de San Blas, on the eastern, or South American side of the Panama Canal.

Description.— Length 6.4 mm. Antennal stylet very slender, inconspicuous, about 0.2 of length of Segment XI; latter short, nearly spherical; minor setal tufts on Segments V-X; basal setae entirely absent; Antennal Segments I-VI with pollinose subapical bands; more distal segments with pollinosity limited to bases of setae, forming broken bands; head 1.5 times longer than wide; frontal grooves narrow, deep, partly pollinose; median lobe short, triangular; joined to antennal lobe, tip opposite anterior margin of eye; medial margins of temporal lobes divergent posteriorly; posterior margin narrowly rounded; posterior and posteriomedial margins broadly bordered with pilosity, so glabrous part of temporal lobe is strongly narrowed posteriorly; eye narrowly crescentic, about 0.33 of length of temporal lobe; orbital groove complete, pollinose; lateral margin of head nearly straight posterior to eye; three temporal setae in orbital groove; two pairs of postlabial setae.

Pronotum rather short, length/greatest width 1.40, widest just posterior to middle; base, apex moderately narrowed; lateral margin curved, apex truncate; base rounded; median groove narrow, margins pollinose, anterior median pit very small, but distinctly wider than median groove; basal 0.3 of median groove shallow, linear, glabrous; basal impression very small, deep, punctiform, sharply distinct from discal striae, latter linear, slightly curved, extending slightly anterior to middle of pronotum; marginal groove fine, visible in dorsal view; angular seta present; nine or 10 marginal setae; one or two anterior discal setae; sternopleural groove absent; precoxal setae present.

Elytra rather short; humeri much less narrowed than in *C. oberthueri*; intratubercular stria impressed only at base, apex, in middle represented only by row of punctures (Fig. 149); remaining striae impressed, entire, pollinose, coarsely punctured; Intervals II, III forming prominent swelling just posterior to base of elytron (this asymmetrical, and possibly the result of an injury); preapical tubercle inflated, rounded; apical tubercles inflated, rounded, slightly separated; sutural stria with complete row of five setae; parasutural stria with one or two setae near base; intercalary stria with complete row of six or seven setae; intratubercular stria with two or three setae near apex; marginal stria with complete row of about 12 setae; preapical tubercle without setae; apical tubercle with three or four setae; metasternum with very shallow median sulcus; transverse sulci of all abdominal sterna interrupted in midline, submarginal sulcus of Sternum VI widely separated from transverse sulci (Fig. 148); Sternum VI with four setae in submarginal row; one or two on each side in transverse row; middle, hind tibiae each with false spur; male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; calcars triangular, middle one narrow, with dorsal margin straight; hind one broader, dorsal margin nearly straight. Female unknown.

This species resembles *C. oberthueri* in having precoxal setae, but differs from the latter in having a shorter, less rounded pronotum, elytral humeri much less narrowed, and discal striae and frontal grooves much shallower and narrower. *C. whiteheadi* is a similar species, found nearby, but to the west of the Panama Canal. It lacks the precoxal setae, has basal setae on the outer antennal segments, and has straight discal striae and a more parallel-sided pronotum.

We take pleasure in naming this species for Dr. R. T. Allen, whose collections have helped greatly in making known the beetle fauna of lower Central America.

Clinidium (sensu stricto) whiteheadi new species

(Fig. 143)

Type Material.— HOLOTYPE male, labelled: “PANAMA: Panama, Cerro Campana 8° 40' N, 79° 56' W, 29 June 74, 850 ms; T. L. Erwin, D. R. Whitehead, under loose bark of log; Exped #1 23, notebook #3, ADP 25285”

(NMNH). This locality is to the west of the Panama Canal, towards Central and North America. PARATYPES two males, three females, same label as holotype (NMNH); one female, same locality, collected by T. L. Erwin and J. L. Lawrence, 22 Feb. 1975 (in heartwood) (NMNH); one male, one female, same locality as holotype, labelled: "19-VIII-78, ex *Stemonitis*, Q. D. Wheeler 7867" (CU).

Description.— Length 5.0-5.8 mm. Antennal stylet minute, less than 0.1 of length of Segment XI; latter only slightly longer than wide; minor setal tufts on Segments V-X; basal setae present on Segments VIII-X; Segments I-IV with subapical pollinose bands; head slightly longer than wide, less elongate than in *C. alleni*; frontal grooves narrow but deep, pollinose; median lobe short, triangular, joined to antennal lobe; tip opposite anterior 0.25 of eye; medial margins of temporal lobes divergent posteriorly; posterior margin more broadly rounded than in *C. alleni*, posterior, posteriomedial margins broadly bordered with pilosity; eye narrowly crescentic, 0.33 of length of temporal lobe; orbital groove complete, pollinose; lateral margin of head nearly straight posterior to eye; two or three temporal setae in orbital groove; two pairs of postlabial setae.

Pronotum rather short, length/greatest width 1.54, widest near middle, lateral margins nearly straight; base, apex less narrowed than in *C. alleni*; apex truncate; base rounded; median groove narrow, though broader in *C. alleni*, widest in middle 0.33, slightly constricted near apex; not broadened at anterior median pit; posterior 0.33 very shallow, finely pollinose; basal impression very small, deep, punctiform, sharply distinct from discal striole; latter linear, straight, extending to middle of pronotum; marginal groove fine, visible in dorsal view; angular seta present; seven to nine marginals; one or two anterior discal setae; notopleural suture glabrous; sternopleural groove absent; precoxal setae absent.

Elytra rather short, humeri only slightly narrowed; intervals less convex than in *C. alleni*; intratubercular stria impressed only at base, apex; middle part, a row of fine punctures; remaining striae impressed, entire, pollinose, coarsely punctured; no swelling in Intervals II, III near base; preapical tubercle scarcely inflated, rounded; apical tubercles scarcely inflated, rounded, slightly separated; sutural stria without setae in most specimens, with one seta on one elytron in one female specimen; parasutural striae with one seta near base; intercalary stria with complete row of six or seven setae; intratubercular stria with three setae near apex; marginal stria with complete row of about 10 setae; preapical tubercle without setae; apical tubercle with two or three setae; metasternum with shallow median sulcus; transverse sulci of abdominal Sterna II-VI widely interrupted in midline; submarginal sulcus of Sternum VI widely separated from transverse sulci; Sternum VI with six to eight setae, four in row along submarginal sulcus, two on disc, in one male, with four on disc, lateral ones more anterior than medial ones; female with large lateral pit in Sternum IV; middle, hind tibiae each with large false spur; male without ventral tooth on anterior femur nor proximal tooth on anterior tibia; calcars triangular, dorsal margins slightly curved; penis of holotype mounted separately on point, distal 0.5 straight, apex abruptly deflexed.

This species has linear, straight discal striae and a parallel-sided pronotum. This and the absence of precoxal setae separate it from *C. alleni*. *C. dormans*, another similar Panamanian species, has the apex of the intratubercular stria not impressed, so that preapical and apical tubercles are not separate.

We take pleasure in naming this species for Dr. Whitehead, one of the ablest and most productive of the students of Latin American beetles.

Bionomics.— The specimens were collected by Mr. Wheeler (*in litt.*) in the fruiting bodies of the slime mold *Stemonitis*. To our knowledge, this is the first record of a rhyzodine in a fruiting body, and the first linkage of a particular species of rhyzodine with a particular genus of slime mold.

Clinidium (sensu stricto) humboldti new species
(Figs. 144, 150)

Type Material.— HOLOTYPE female, labelled: "nov. Granad., 43693 (MNHB).

Description.— Length 6.4 mm. Antennal stylet about 0.25 of length of Segment XI, larger than in related species; Segment XI distinctly longer than wide; tufts of minor setae on Segments V-X; basal setae present on Segments VI-X; Segments I-VI with subapical pollinose bands; head distinctly longer than wide; frontal grooves rather broad, moderately deep, glabrous except for medial margins; median lobe short, triangular, tip opposite anterior 0.25 of eye; median lobe separated from antennal lobe by frontoclypeal groove; medial margins of temporal lobes slightly divergent posteriorly; glabrous area of temporal lobe oval, widest posterior to eye; posterior, posteriomedial margins broadly bordered by pollinosity; eye narrowly crescentic, elongate, 0.67 of length of temporal lobe; orbital groove complete, broadly pollinose; 4 temporal setae; two pairs of postlabial setae.

Pronotum rather short, length/greatest width 1.47, widest near middle, lateral margins strongly curved; base, apex strongly narrowed; apex truncate; base rounded; median groove slightly dilated; 0.75 deep, posterior 0.25 shallow; median groove not widened at anterior median pit; latter far posterior to pronotal apex; basal impressions small, deep, sharply

distinct from discal striole; latter linear, slightly curved, extending to middle of pronotum; basal impression broadly joined laterally to marginal groove; latter fine, visible in dorsal groove; angular seta present; seven or eight marginal setae; one pair of anterior discal setae; notopleural suture glabrous; sternopleural groove absent; precoxal setae present.

Elytra rather short, humeri scarcely narrowed; elytral intervals nearly flat; intratubercular stria impressed at apex; remainder scarcely impressed, represented by row of fine punctures; remaining striae impressed, entire, pollinose, coarsely punctate; no swelling on Intervals II, III near base; preapical tubercle strongly inflated, medial margins sinuate, apex subtruncate (Fig. 150); apical tubercle inflated; sutural stria with three or four setae in posterior 0.67; parasutural stria without setae; intercalary stria with complete row of nine or 10 setae; intratubercular stria with four or five setae near apex; marginal stria with 11-12 setae; preapical tubercle with one seta on medial margin; apical tubercle with three or four setae; metasternum with very shallow glabrous median impression, latter containing two elongate pits, near anterior, posterior margins, respectively; transverse sulci of Sterna III-VI linear, widely separated in midline, those of Sternum V slightly oblique; female with lateral pit on Sternum IV; transverse sulci of Sternum VI widely separated from submarginal sulcus; Sternum VI with eight setae; four in transverse row anterior to submarginal sulcus, four near posterior margin; middle, hind tibiae with short, triangular cusp, which does not resemble a spur. Male unknown.

This species resembles *C. whiteheadi* and *C. alleni* in appearance. It differs from both in having the median lobe not connected to the antennal lobes. It differs from *C. alleni* in the presence of basal setae on the antennae, in the shape of the temporal lobes, and in the presence of anterior discal setae. *C. whiteheadi* lacks precoxal setae, and has the pronotum more elongate, with the margins less curved.

We dedicate this species to Alexander von Humboldt and to the museum named for him, in gratitude for the loan of their valuable collection of Rhysodini.

THE JAMAICENSE SECTION

Like the preceding section, this one contains species with both intercalary and intratubercular striae with apices complete. However, there is no trace of a median sulcus on the metasternum. There are five species, two in Jamaica, and three in Hispaniola.

Phylogeny.— *C. trionyx* of the Dominican Republic contrasts strongly with the four remaining species. It has precoxal setae and false spurs, both probably plesiomorphic characters, in which it resembles some members of the *oberthueri* section. The eye is reduced to a small vestige, the discal strioles are absent, and the intratubercular stria is virtually absent except for its impressed apex. These are specialized features in comparison to the character states in the remaining species. The latter are very close to one another, and can be regarded as a species complex.

In the *jamaicense* complex, the two Haitian species clearly form one unit, and the two Jamaican ones, another unit.

Clinidium (sensu stricto) trionyx new species (Figs. 151, 160, 161)

Type Material.— HOLOTYPE male, labelled: "Rep. Dominic, J. & S. Klapperich, Cazabita 1250 m. 30-VI-74" (BSL).

Description.— Length 6.0 mm. Antennal stylet minute; minor setal tufts on Segments V-X; basal setae absent; antennal Segments I-IV with subapical pollinose bands; head slightly longer than wide; frontal grooves narrow, shallow, glabrous; median lobe triangular, rather long, tip opposite posterior margin of eye; medial margins of temporal lobes slightly convergent posteriorly; posterior margin rounded; posterior, posteriomarginal margins bordered by pollinosity; eye minute, oblong, 0.2 of length of temporal lobe, eye 2.5 longer than deep (Fig. 161); orbital groove complete, pollinose; lateral margin of head slightly oblique posterior to eye; 3 temporal setae in orbital groove; one pair of postlabial setae.

Pronotum rather short, length/greatest width 1.47; widest just posterior to middle, oval, lateral margins curved; base curved; apex narrowly truncate; median groove narrow, margins pollinose, groove slightly dilated in middle 0.33; groove not at all dilated at anterior median pit; basal 0.33 of median groove shallow, pollinose; basal impression small, deep, triangular, closed posteriorly; discal striole absent; marginal groove fine, visible in dorsal view; angular seta present; five or six marginals, one pair of anterior discal setae; sternopleural groove absent; precoxal setae present.

Elytra relatively short, broad; three inner striae impressed, pollinose, entire; intratubercular stria with apex impressed, separating preapical from apical tubercle, remainder of intratubercular stria nearly absent, represented by faint impression visible by oblique lighting, without punctures or pollinosity; marginal stria entire, impressed, pollinose; preapical tubercle only slightly inflated; apical tubercles inflated, contiguous, meeting in straight median suture; sutural striae with complete row of five setae (most posterior one in apical impression just posterior to apex of sutural stria); parasutural stria with one seta at base; intercalary stria with complete row of six setae; apical impressed part of intratubercular stria with three setae, anteriormost one in conspicuous pollinose puncture; marginal stria with one seta near humerus, six or seven setae in apical 0.67, three or four in conspicuous punctures; metasternum without median sulcus; transverse sulci of abdominal Sterna III-VI widely separated in midline, also from margin, forming pairs of oval impressions, most with one or two small punctures medial to them; Sternum VI with submarginal groove widely separated from transverse sulci (Fig. 160); Sternum VI with four pairs of setiferous punctures, anterior ones in recurved row, posterior ones in procurved row along submarginal groove; middle, hind tibiae each with false spur; male without ventral tooth on anterior femur nor proximal tooth on anterior tibia; middle calcar narrowly triangular, close to spurs; hind calcar more broadly triangular, raised above level of spurs.

This species differs from the two Haitian members of the section in having slightly convergent temporal lobes, much more finely punctate striae, the intratubercular stria almost absent except for the impressed apex, a much smaller eye, precoxal setae and false spurs present. In the *oberthueri* group, it is closest to *C. alleni*, but differs in having only one pair of postlabial setae, metasternum not at all sulcate, and the discal striole absent.

THE JAMAICENSE COMPLEX

This includes *C. haitiense*, *C. corbis*, *C. jamaicense* and *C. chiolinoi*, in short, all members of the *jamaicense* section, excepting *C. trionyx*. The species are so similar that it is convenient to present a description for the complex before listing the distinctive features of each species.

Description.— Antennal stylet minute; minor setal tufts on Segments V-X; head distinctly longer than wide; orbital groove complete; eye narrowly crescentic, 0.5-0.67 of length of temporal lobe; cornea clear in some (younger?) specimens, completely darkly pigmented in other specimens; three temporal setae in orbital groove in most specimens, in some, one side has two or four setae; one or two pairs of postlabial setae, pronotum rather short, widest in middle, lateral margins curved, base rounded; apex truncate; median groove narrow, oval, pollinose, not at all dilated opposite anterior median pit; basal impression small, deep, triangular; closed posteriorly; discal striole varying among the species; marginal groove fine, visible in dorsal view; angular seta present; marginals two to six; one to three anterior discal setae; sternopleural groove, precoxal setae absent.

Elytra shorter, broader than in *C. trionyx*; striae coarsely punctured; inner three striae deeply impressed, pollinose, entire; intratubercular stria with apex impressed, remainder very shallowly impressed, but with coarse, conspicuous row of punctures; marginal stria entire, impressed; preapical tubercle scarcely inflated; apical tubercles slightly inflated, contiguous, meeting in straight median suture; metasternum not sulcate; transverse sulci moderately separated in midline, reaching to lateral margins of abdominal sterna; Sternum VI with submarginal sulcus widely separated from transverse sulci; Sternum VI with six to eight setiferous punctures; middle, hind tibiae without false spurs; male without ventral tooth on anterior femur nor proximal tooth on anterior tibia.

These four species differ strongly from *C. trionyx* in the absence of false spurs and precoxal setae, and in having the intratubercular stria coarsely punctate.

Clinidium (sensu stricto) haitiense Bell 1970 (Fig. 152)

Clinidium (sensu stricto) haitiense Bell 1970: 322.

Type Material.— HOLOTYPE male, labelled: "La Visité, La Selle Range, Haiti, 5000-7000 ft., coll. P. J. Darlington, Sept. 16-23, 1934" (MCZ 31755). PARATYPES one male, two females, same label as type (MCZ; UVM).

Description.— Length 5.7-6.4 mm. Antennae very thick; basal setae present on Segments VII-X or VIII-X; Segments I-II with complete subapical pollinose rings; Segments III, IV with rings interrupted; outer segments without pollinosity; median lobe of head long connected laterally to antennal lobes, tip of medial lobe opposite posterior margin of eye; frontal grooves deep, narrow, medial, lateral margins both sharp; margins of frontal grooves not pollinose; occipital pilosity short; orbital groove very narrow; head lateral to orbital groove behind eye glabrous; labium not pollinose medially.

Pronotum relatively elongate; length/greatest width 1.52; apex of pronotum more narrowed anteriorly than in *C. corbis*; discal setae in conspicuous punctures; in most specimens, two pairs of discals, forming rectangle, in one specimen one on one side, in another, three on one side; three to seven marginal setae; basal impression very narrow; discal striole in most specimens extending to posterior 0.25 of pronotum, but in one specimen, almost absent; pollinosity of discal striole much reduced.

Elytra relatively elongate with humeri slightly narrowed; Interval I slightly less convex than Intervals II, III; marginal coarsely punctate; sutural stria with three or four setae, mostly posterior to middle; parasutural without setae; intercalary with complete row of five to seven, intratubercular with two or three near apex; marginal stria with nine or 10 setae, one at humerus, others in posterior 0.5; apical tubercle with two or three setae; anterior femur with small pollinose spot at base of each seta; legs relatively long, slender; calcars very small; hind calcar slightly obtuse, lower margin evenly curved.

This species is larger and more elongate than the closely related *C. corbis*, also from Haiti. It has the pilosity much reduced, with the dorsal surface of the femora with isolated pollinose spots at the bases of the setae, and the side of the head laterad to the orbital groove glabrous.

Range.— Probably restricted to high elevations in the Morne La Selle, south of Port-au-Prince. Bell (1970) recorded it from Furcy and Mandeville in addition to the type locality.

Clinidium (sensu stricto) corbis Bell 1970
(Fig. 153)

Clinidium (sensu stricto) corbis Bell 1970: 322-323.

Type Material.— HOLOTYPE male, labelled: "Tardieu, Morne La Hotte, Haiti, 3000 ft., coll. P. J. Darlington, October 14, 1934" (MCZ 31754). PARATYPES one female, same label as male (MCZ); one male, labelled: "Roche Croix, 5000 ft., Morne La Hotte, coll. P. J. Darlington, Oct. 13, 1934" (MCZ); two males labelled: "northeast foothills, Morne La Hotte, 2000-4000 ft., coll. P. J. Darlington, Oct. 10-24, 1934" (MCZ).

Description.— Length 4.4-5.5 mm. Antennae less thick than in *C. haitiense*, with the segments more nearly round; basal setae present, though sparse on Segments IX, X; Segments I-VIII in most specimens with subapical band of pollinosity; in a few specimens, pollinosity restricted to I-VI or I-VII; median lobe of head long, separated laterally from antennal lobes; tip of median lobe opposite posterior margin of eye; frontal grooves deep, narrow, margins pollinose; medial, lateral margins equally pollinose; orbital groove relatively broad; occipital pilosity prominent; head laterad to orbital groove posterior to eye pilose; labium with median pollinose band.

Pronotum relatively elongate, length/greatest width about 1.51; discal setae in smaller punctures than in *C. haitiense*, one or two pairs, varying geographically; four to six marginal setae; basal impression very narrow; discal striole longer, more pollinose than in *C. haitiense*, 0.30-0.50 of length of pronotum except in specimens from Dajabon, P.R.

Elytra in most specimens shorter than those of *C. haitiense*, Interval I slightly less convex than Interval II; marginal stria coarsely punctate; sutural stria with two or three setae posterior to middle; parasutural stria in most specimens without setae, in a few, with one seta at base; intercalary stria with complete row of five or six setae; intratubercular stria with one to three setae near apex; marginal stria with five-10 setae, including one at humerus; apical tubercle with two or three setae; anterior femur with dorsal pollinose stripe containing most of the setal bases; legs shorter, thicker than in *C. haitiense*; calcars slightly larger than in *C. haitiense*; hind calcar acute, ventral margin abruptly bent.

This species is most easily separated from *C. haitiense* by the long pilosity laterad to the posterior part of the orbital groove.

Range.— This species is probably not confined to the Morne La Hotte, as supposed by Bell (1970). Specimens apparently belonging to this species have been found in the following additional localities: HAITI, Lebrun, near Miragoane, coll. R. T. Bell, R. Sette, over fifty specimens (UVM); Morne Grand Bois, 3780', coll. M. Langworthy, five specimens (UVM); Catiche, 2700', coll. M. Langworthy, one specimen (UVM); Ile de la Tortue, Aux Basin, w. of Aux Palmiste, coll. M. Langworthy, T. Dowhan (UVM). All localities except the last are from the Southern Peninsula: DOMINICAN REPUBLIC: Dajabon, Mariano Cestero, 650 m. 12-VIII-1980, A. Norrbom (CMP), two specimens. Probably this species was formerly throughout Hispaniola at low and medium elevations. One male and two females labelled: "WM 5958, Cinnamon Bay, June 6, 1980, between buttresses of large kapok tree" appear to represent this species, although they are unusually large, 5.0-5.6 mm. This locality is in the (American) Virgin Islands, on Saint John. They may represent an introduction by human agency, or a very recent natural invasion. The latter seems unlikely, in view of the apparent absence of the species from Puerto Rico. The specimens were collected by William Muchmore and sent to us by Kenneth Cooper.

Variation.— On the basis of the limited material available, the species appears to vary geographically, and might represent more than one taxon. In the type series, from Morne La Hotte, three have the discal setae on the pronotum 1-1 (one on each side), while two have them 1-2. The long series from Lebrun mostly have more discal setae. They are distributed as follows:

Discal setae	Number of specimens
1-1	9
1-2	13
2-2	22
2-3	4
3-3	1
2-1	1
3-1	1

In addition, the series from Lebrun appear to have the lateral margins consistently straighter and more parallel than specimens from other regions. The calcars appear identical to those from Morne La Hotte.

The series from Ile de la Tortue resemble those from Morne La Hotte in the shape of the pronotum and in having few discal setae. These are distributed as follows:

0-1	1 specimen
1-1	5
1-2	6

The hind calcar is scarcely raised above the level of the spurs.

The specimens from Dajabon, Dominican Republic, have the calcars as in the series from Morne La Hotte, which they also resemble in the shape of the pronotum. The discal setae are 1-1 and 0-1. The discal striae are much shorter than in other specimens of *C. corbis*, being scarcely longer than those of *C. haitiense*.

The specimens from Saint John have three or four discal setae, and have the calcar strongly raised above the tibial spurs. The length of the body is greater than those of the other series.

The differences among these populations may represent subspecific characters. However, they might be merely the result of individual variation. The large series from Lebrun were almost entirely from a single log. Two individuals were from a smaller piece of wood only a few meters away. Thus, the entire series could represent the offspring of a single mating. The same is true of the series from Ile de La Tortue.

Bionomics.— The series from Lebrun were mostly in small rotten areas in a large, dry, hard log. The local name of the tree is “marron”, but we were unable to find its scientific name. Two of the beetles were in a stick of *Cecropia* located a few meters away.

The series from Ile de La Tortue were in an unusual habitat, within a log in a sink hole in a large cave system.

Clinidium (sensu stricto) jamaicense Arrow 1942
(Figs. 154, 158)

Clinidium jamaicense Arrow 1942:181.

Clinidium (sensu stricto) jamaicense (Arrow) Bell and Bell 1978.

Type Material.— LECTOTYPE (here designated) male, labelled: “Jamaica, Dr. M. Cameron, BM-1936-555” (BMNH). According to the original description, the type series was collected at Newcastle, Jamaica, under rotting bark. PARALECTOTYPES one male, two females, same label as lectotype. (BMNH).

Description.— Length 4.6-5.7 mm. Antenna with basal setae very few, confined to Segment X, or IX, X; Segments I-IV with subapical bands of pollinosity; median lobe of head short, blunt, opposite anterior 0.25 of eye; frontal grooves very shallow, glabrous; lateral margin of frontal groove ill-defined; occipital pilosity long; orbital groove broadly pollinose; labium pollinose medially.

Pronotum slightly shorter than in Haitian species, length/greatest width about 1.48; discal setae in most specimens one on each side, a few specimens with 2-1 or 0-1; marginal setae two or three, in most specimens with two near anterior angle, one near middle or absent; basal impression triangular, discal striole very short, shorter than basal impression, in many specimens obsolete.

Elytra relatively short, broad; Interval I narrow, convex, not broadened posteriorly; sutural stria deeply impressed, medial border as distinct as lateral border; parasutural stria deeply impressed, coarsely punctate; Intervals I-III of nearly equal height, convexity; intercalary stria deeply impressed; intratubercular stria with apex impressed, remainder a row of coarse punctures; marginal stria complete in all specimens; sutural stria with two or three setae near apex; parasutural stria without setae; intercalary stria with two to five setae, when numerous forming complete row; intratubercular stria with two or three setae in impressed apex; marginal stria with six or fewer setae, most anterior one at humerus; apical tubercle with two or three setae; calca's very small.

The shallow frontal grooves and short medial lobe distinguish this species from the two Haitian ones, while the convex sutural interval separates it from *C. chiolinoi*.

Range.— Mountains of Jamaica above 2000 ft. elevation. Bell (1970) recorded it from Portland Gap, Cinchona, Hardwar Gap, Blue Mountain Peak, Whitfield Hall, and Belmore Castle.

Clinidium (sensu stricto) chiolinoi Bell 1970
(Figs. 155, 159)

Clinidium (sensu stricto) chiolinoi 1970: 323-324.

Type Material.— HOLOTYPE male, labelled: “Mount Diablo, St. Ann Parish, Jamaica, coll. R. T., J. R. Bell, B. B. Chiolino, Jan. 2, 1967” (MCZ). PARATYPES two males, five females, same label as type (MCZ; UVM).

Description.— Length 4.4-5.6 mm. Antenna with basal setae on VI-X, VII-X, or VIII-X, sparse, mostly lateral; all antennal segments with subapical pollinose bands, those of distal segments very narrow; median lobe of head short, blunt, tip opposite anterior end of eye; frontal grooves very shallow, very finely margined with inconspicuous pollinosity; lateral margin of frontal groove ill-defined; occipital pilosity long; orbital groove broadly pollinose; labium pollinose medially.

Pronotum proportion as in *C. jamaicense*, length/greatest width 1.48; discal setae in most specimens one on each side, in a few specimens 2-1 or 1-0; marginal setae 2-3, in most specimens one or two near anterior angle, one near middle;

angular seta present or absent; basal impression triangular; discal striole very short, shorter than basal impression, in many specimens obsolete.

Elytra relatively short, broad, Interval I broad, flat, depressed below level of other intervals, wider posteriorly; sutural stria deep, punctate, medial margin lower than lateral margin; parasutural stria deeply impressed, punctate; intercalary striae shallowly impressed; Interval III more convex, higher than other intervals; intratubercular stria with apex impressed, remainder row of very fine punctures, in many specimens almost absent anteriorly; marginal stria entire (western specimens) or interrupted near humerus (eastern specimens); chaetotaxy of elytra identical to *C. jamaicense* except for five or six setae on apical tubercle; hind calcars very small.

This species resembles *C. jamaicense* but is easily separated by the strongly depressed Interval I (Fig. 159).

Range.— Jamaica, at elevations of 2000 ft. or less. Bell (1970) lists the following localities in addition to the type locality: John Crow Mountains, Port Antonio, Ocho Rios (Fern Gulley), Cornpuus Gap, Belmore Castle.

Variation.— There is considerable variation among collections from various localities, and perhaps two or three subspecies will be recognized when more material is available. Specimens from western localities, Mt. Diablo, Fern Gulley, and Belmore Castle, have the parasutural and intercalary striae relatively shallow, and the marginal stria entire or nearly so. Specimens from the John Crow Mountains and Cornpuus Gap have the parasutural and intercalary striae relatively deep and the marginal stria interrupted near the humerus. Specimens from Port Antonio resemble those from the John Crow Mountains in striation, but have first interval extremely flat and more widened posteriorly than in other populations.

Bionomics.— Bell (1970) collected this species in logs and sticks in relatively moist forest between sinkholes in the Karst Plateau of Mount Diablo. The locality at Fern Gulley is a very moist ravine only a few meters above sea level.

THE ROSSI SECTION

In this section, the intercalary stria is complete, but the apex of the intratubercular stria is absent, so that the preapical tubercle is not distinct from the apical tubercle. The median sulcus of the metasternum is variable. Except in *C. kochalkai*, the eye is reduced to a narrow line. There are five species, ranging from Costa Rica to western Venezuela.

Phylogeny.— *C. rossi* is probably the most isolated member of the section. In the absence of a metasternal sulcus, and the presence of only one temporal seta and a pair of crossed occipital setae, it differs from the remaining species.

The latter consists of two pairs of similar species. *C. dormans* and *C. penicillatum* lack discal setae, have short discal strioles, only three temporal setae and two or three marginals, while the other pair, *C. segne* and *C. kochalkai*, have discal setae, long discal strioles, four temporal setae and five or more marginals. Each of these pairs has one species with a linear median groove and precoxal setae present (*C. dormans*, *C. segne*) and another with a dilated median groove and without precoxal setae (*C. penicillatum*, *C. kochalkai*). Possibly these characters indicate the real phylogeny, and the preceding characters are the result of convergence. On balance, we believe that the converse is more likely true, that *C. dormans* is related to *C. penicillatum* and *C. segne* to *C. kochalkai*.

Clinidium (sensu stricto) rossi Bell 1970 (Fig. 156)

Clinidium (sensu stricto) rossi Bell 1970:321-322.

Type Material.— HOLOTYPE male, labelled: "Golfito, Costa Rica, Oct. 30, 1950, coll. E. S. Ross" (CAS).

Description.— Length 4.1 mm. Antennal stylet minute; antennae short, stout; tufts of minor setae on Segments V-X; basal setae not studied; head 1.5 longer than wide; frontal grooves very shallow, anterior portion obsolete; median lobe relatively narrow, triangular, tip opposite middle of eye; medial margins of temporal lobes parallel posteriorly; posteriomedial, posterior margins of temporal lobe broadly margined with pilosity; orbital groove complete; eye very narrow, linear, pigments in holotype; one temporal seta, in orbital groove posterior to eye; one pair of occipital setae present, crossed; one pair of postlabial setae.

Pronotum moderately long, length/greatest width 1.53; lateral margins parallel in middle 0.33, obliquely narrowed to base, apex; base rounded, apex truncate; median groove linear, not at all dilated at anterior median pit, narrowly dilated between middle and basal 0.25; basal impressions elongate, triangular, closed posteriorly; discal striole relatively short, reaching basal 0.33 of pronotum; marginal groove linear, visible in dorsal view; angular seta present; five marginal setae; one pair of anterior discals; sternopleural groove distinct, though shallow; precoxal setae absent.

Elytra relatively short, broad; sutural, parasutural, intercalary striae complete, impressed, finely punctate; intratubercular stria with apex not impressed, so preapical tubercle not distinct from apical tubercle; remainder of intratubercular stria coarsely punctate, very shallowly impressed; marginal stria complete, deeply impressed; sutural striae with four or five setae in complete row; parasutural stria without setae; intercalary stria with five or six setae in complete row; intratubercular stria without setae; marginal stria with 10 setae, forming complete row; apical tubercle with three setae, forming complete row; apical tubercle with three setae in line with intratubercular stria, one ventrad to them, near suture; metasternum without median sulcus; transverse sulci of abdominal Sterna III-VI broadly interrupted in midline; submarginal groove of Sternum VI widely separated from transverse groove; Sternum VI with six setae, four in transverse row in middle, two near submarginal groove; male without ventral tooth on anterior femur nor proximal tooth on anterior tibia; calcar very small; female with lateral pit on Sternum IV, shallower pit on Sternum V.

This species is easily recognized by the very shallow frontal grooves, the crossed occipital setae and the presence of only one temporal seta.

In addition to the type specimen we have seen one male, one female labelled: "Golfito, Costa Rica, July 7, 1957, Truxal & Menka" (LA).

Clinidium (sensu stricto) dormans new species
(Figs. 157, 162)

Type Material.— HOLOTYPE male, labelled: "Finca Lerida, near Boquete, Chiriquí Prov., Panama, Mar. 15, 1959, G. A. Salem leg. CNHM Panama Zoo. Exped. (1959) ADP 06974, La Barca, 5650" (NMNH).

Description.— Length 5.2 mm. Antennal stylet minute; tufts of minor setae on Segments V-X; basal setae present on Segments VII-X; Segments I-III with subapical pollinose rings; head longer than wide; frontal grooves very shallow, glabrous; median lobe short, broad, triangular, tip even with middle of eye; medial margins of temporal lobes slightly divergent posteriorly; anterior part of frontal space glabrous, shallow; posteriomedial, posterior margins of temporal lobe margined with pilosity; orbital groove complete; eye very narrow, linear, 0.4 of length of temporal lobe; heavily pigmented in holotype; three temporal setae, two opposite eye, one posterior to eye; occipital setae absent; postlabial setae apparently absent (but possibly lost from holotype).

Pronotum moderately long, length/greatest width 1.47; lateral margins curved; apex truncate; base rounded; margin oblique anterior to hind angle; median groove narrow, margins nearly parallel, except for slight expansion at anterior median pit, constriction posterior to posterior median pit; basal impression elongate, triangular, discal striole relatively short; extending to posterior 0.33 of pronotum; marginal groove linear, visible in dorsal view; angular seta present; one or two marginal setae near apex of pronotum, also one just anterior to angular seta; discal setae absent; precoxal setae present, sternopleural groove absent.

Elytra moderately elongate, relatively broad; sutural, parasutural, intercalary striae complete, impressed, finely punctate; intratubercular stria virtually absent, represented by scattered, irregular punctures, preapical tubercle not separated from apical tubercle (Fig. 162); marginal stria impressed, apical 0.25 dilated; sutural stria without setae; parasutural stria with one seta at base; intercalary stria with complete row of five setae; marginal stria with one or two setae near middle, four in impressed apical portion; apical tubercle with two or three setae on medial margin, one in line with those of intercalary stria, also four or five arising from line of coarse punctures on lateral surface, probably representing posterior part of intratubercular stria; metasternum with shallow median sulcus; transverse sulci of abdominal Sterna narrow, shallow, broadly interrupted at midline; Sternum VI with submarginal sulcus widely separated from transverse sulci; Sternum VI with two pairs of setae, one on disc, other on submarginal sulcus; male without ventral tooth on anterior femur nor proximal tooth on anterior tibia; false spur absent, short, broadly triangular tooth in its place; middle calcar narrowly angular; hind calcar broadly triangular; both small. Female unknown.

This species is closest to *C. penicillatum* of Colombia, but the latter species has the median groove dilated in the middle 0.33, the frontal grooves deeper, precoxal setae absent, the discal striole scarcely evident, and the pronotum strongly narrowed anteriorly.

Clinidium (sensu stricto) penicillatum new species
(Figs. 163, 170)

Type Material.— HOLOTYPE female, labelled: "Colombia: Dept. Valle, 1967, R. B. Root, W. L. Brown, Represa Calima, below dam, 1200 m., 21 Mar., canyon bottom" (MCZ).

Description.— Length 6.0 mm. Antennal stylet small, 0.1 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae present on Segments V-X; Segments I-VII with subapical pollinose rings; head 1.5 longer than wide; frontal grooves narrow, moderately deep, partly pollinose; median lobe short, broad, triangular, tip margined by pollinosity, even with anterior margin of eye, joined to antennal lobe; medial margins of temporal lobes slightly convergent posteriorly; posteriomedial, posterior margins of temporal lobe bordered with pollinosity; orbital groove complete; eye very narrow, linear, 0.4 of length of temporal lobe; three temporal setae, two opposite eye, one posterior to eye; occipital setae absent; one pair of postlabial setae.

Pronotum rather elongate, length/greatest width 1.57; greatest width near base; margins convergent anteriorly; apex narrow, truncate; base slightly narrowed, rounded; anterior 0.1, posterior 0.33 of median groove linear, middle portion narrowly dilated, conspicuously pollinose; basal impression elongate, triangular; discal striole scarcely evident; angular seta present; two or three marginals present, near apex, one at base; discal setae absent; precoxal setae absent; sternopleural groove absent.

Elytra moderately elongate; sutural, parasutural, intercalary striae complete, impressed, rather coarsely punctate; intratubercular stria nearly absent, represented by row of very fine punctures; preapical tubercle not separate from apical tubercle; marginal stria impressed, apical 0.25 dilated; sutural stria with one seta near apex; parasutural stria with one seta at base; intercalary stria with complete row of five setae; marginal stria with one seta near middle, two behind middle, and five or six near apex; apical tubercle with row of three or four setae on medial margin, row of six on lateral surface, in line with intratubercular stria; metasternum with shallow, broad median sulcus; transverse sulci of Sterna III-VI broadly interrupted in midline, each with row of fine punctures; Sternum VI with submarginal sulcus widely separated from transverse sulci; Sternum VI with eight setae, four in transverse row, four in curved row posterior to submarginal sulcus; female with shallow lateral pit on Sternum IV, very shallow one on Sternum V; false spurs absent; hind femur of female with dense brush of long pilosity on dorsal aspect (Fig. 170); male unknown.

This species is closest to *C. dormans* but differs in having the median lobe connected to the antennal lobe, in having the middle part of the median groove dilated, and the pronotum widest near the base and strongly tapered anteriorly. The brush on the hind femur is unique, but may be a secondary sexual character, as the male is unknown.

Clinidium (sensu stricto) segne new species
(Figs. 164, 173)

Type Material.— HOLOTYPE female, labelled: "VEN. Edo. Aragua, Rancho Grande, 1500 m. (15 km n. of Maracay), 21-11-1971, S. Peck" (BSRI). PARATYPE one female, same label as holotype (BSRI). The type locality is near the north coast of Venezuela, a little west of Caracas.

Description.— Length 4.6-5.2 mm. Antennal stylet very slender, 0.25 of length of Segment XI; tufts of minor setae on Segments V-X; Segments I-VII with subapical pollinose rings; basal setae on Segments IX-X or VIII-X, sparse; head slightly longer than wide; frontal grooves deep, narrow, median lobe short, triangular, tip opposite anterior part of eye; medial margins of temporal lobes slightly divergent posteriorly; posterior, posteriomedial margins of temporal lobe very broadly bordered by pilosity; orbital groove complete; eye narrow, short, about 0.3 of length of temporal lobe; four temporal setae, one anterior to eye, two opposite eye, one posterior to eye; occipital setae absent; two pairs of postlabial setae.

Pronotum moderately long, length/greatest width 1.47; widest slightly behind middle, lateral margins curved; apex narrowed, truncate; base moderately narrowed, rounded; median groove narrow, margins parallel, not at all expanded at anterior median pit; posterior 0.20 very narrow, shallow; basal impression narrow, triangular; discal striole linear, straight or slightly curved, extending 0.30 to 0.40 of length of pronotum; marginal groove slightly dilated, visible in dorsal view; angular seta present; nine or 10 marginal setae; two pairs of discal setae, more anterior ones near anterior margin, posterior ones slightly anterior to middle; precoxal seta present; anterior part of sternopleural groove faintly suggested; middle part absent.

Elytra moderately elongate; sutural, parasutural, intercalary striae complete, impressed, finely punctate; intratubercular stria shallowly impressed, base entire, apex effaced, so preapical tubercle not separate from apical tubercle (Fig. 173); marginal stria impressed, entire, apical 0.25 dilated; sutural stria with complete row of five setae; one seta in conspicuous puncture at anteriomedial angle of Interval III; intercalary stria with complete row of nine setae; intratubercular stria without setae; marginal stria with complete row of about 18 setae; apical tubercle with two setae on medial margin, row of five setae in isolated punctures on lateral surface, in line with intratubercular striae; metasternum with deep median sulcus; transverse sulci of Sterna III-VI narrow, impunctate, broadly separated in midline; submarginal sulcus of Sternum VI widely separated from transverse sulci; Sternum VI with six setae, two on disc, four posterior to submarginal sulcus; female with shallow lateral pit on Sternum IV, very shallow one on Sternum V; false spurs absent. Male unknown.

In chaetotaxy, in having a long discal striole and an impressed intratubercular stria, this species resembles *C. kochalkai*. In the latter species, the median groove is much more dilated, and there is at most one seta in the sutural stria.

Clinidium (sensu stricto) kochalkai new species
(Fig. 165)

Type Material.— HOLOTYPE male, labelled: "COLOMBIA 8860', J. A. Kochalka, Casa Antonia, Loma Cebolleta, S(ierra) N(evada) de Santa Marta, V-8-1975" (to be deposited in NMNH). PARATYPE female, same label as holotype (to be deposited in NMNH).

Description.— Length 6.0 mm. Antennal stylet very slender, long, 0.33 of length of Segment XI; tufts of minor setae on Segments V-X; Segments I-IV with subapical pollinose rings, V-VI with small pollinose spots; a few basals on Segment X; head slightly longer than wide; frontal grooves deep, broader than in *C. segne*; median lobe short, triangular, tip opposite anterior margin of eye; medial margins of temporal lobes slightly convergent posteriorly; margins of temporal lobe with much narrower pilose borders than *C. segne*; orbital groove complete; eye narrow, 0.5 of length of temporal lobe; three or four temporal setae in orbital groove, one or two at anterior margin of eye; one at its posterior margin, one posterior to eye; occipital setae absent; two or three pairs of occipital setae.

Pronotum moderately long, length/greatest width 1.43; widest near middle, lateral margins curved; apex, base moderately narrowed, apex truncate, base curved; median groove dilated, deep in middle, tapered anteriorly, not at all dilated at anterior median pit; posterior 0.25 linear, shallow; basal impression triangular, tapered gradually into discal striole, latter broader than in *C. segne*; discal striole attaining middle of pronotum; marginal groove dilated, prominent in dorsal view; six or seven marginal setae; one pair of anterior discal setae; precoxal setae absent; sternopleural setae absent.

Elytra rather broad; sutural, parasutural, striae complete, impressed, finely punctate; intercalary stria impressed, apex entire, but base abbreviated posterior to level of humerus; intratubercular stria shallowly impressed, apex effaced so preapical tubercle not separate from apical tubercle; marginal stria impressed, entire, apical 0.25 dilated; sutural stria without setae, or with one seta anterior to middle; anteriomedial angle of Interval III without seta; intercalary stria with complete row of seven or eight setae; intratubercular stria without setae; marginal stria with complete row of nine or 10 setae; medial margin of apical tubercle with five setae, lateral surface with four or five setae in conspicuous punctures aligned with intratubercular stria; metasternum with deep median sulcus; transverse sulci of Sterna III-V linear, broadly separated in midline; transverse sulci of Sternum VI dilated, oval broadly separated; submarginal sulcus of Sternum VI dilated, well separated from transverse sulci; Sternum VI with six setae, four posterior to submarginal sulci, two on disc, widely separated; anterior margin of submarginal sulcus evenly curved in male, angulate, slightly tuberculate in midline in female; female with shallow lateral pit on Sternum IV; middle hind tibiae without false spur, but with short, triangular tooth in its place; male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; calcars raised above level of spurs; obliquely truncate.

This species is easily recognized by the dilated middle portion of the median groove of the pronotum and by the abbreviation of the base of the intercalary stria. It is named for the collector, the able and enthusiastic arachnologist, John A. Kochalka, our friend and former student.

THE *GUILDINGII* SECTION

In this section, the intercalary stria is abbreviated posteriorly, while the intratubercular stria is complete to the apex, separating the preapical tubercle from the apical tubercle. The metasternum lacks a median sulcus. The false spurs are well-developed. The section consists of

four species, each confined to one island in the Lesser Antilles.

Phylogeny.—Of the four species, *C. guildingii* is the most isolated, with the apical tubercles separated by a large, round space, and the female with Sternum VI with a median tubercle. The three remaining species have a small pore beneath the apical tubercle, which are broadly contiguous above it. Of these, *C. microfossatum* contrasts with the remaining two in the virtual disappearance of the intratubercular stria and the abbreviation of the marginal stria at the base. The femur of the male has many minute tubercles on the ventral surface, a feature not found in other members of the genus. *C. planum* and *C. smithsonianum* are closely related to one another, but differ in secondary sexual characters and in the length of the discal striole.

Clinidium (sensu stricto) guildingii Kirby 1835
(Figs. 167, 174, 176, 177)

Clinidium guildingii Kirby 1835: 8-10.

Rhyzodes guildingii (Kirby) Newman 1838. Chevrolat (1873a) changed the spelling to "guildingi", a practice followed by most later authors.

Clinidium (sensu stricto) guildingii (Kirby) Bell 1970.

Type Material.—We have not been able to locate type material for this species. The original description does not indicate the location of types, and the latter are not in the British Museum of Natural History. According to the description, the type locality is Mount Saint Andrews, Saint Vincent. We have studied two males and one female collected by ourselves at the type locality. If the type series is really lost, these could serve as neotypes.

Description.—Length 5.5-6.0 mm. Antennal stylet acuminate, 0.3 of length of Segment II; tufts of minor setae on Segments V-X; basal setae present on Segments VII-X or VIII-X; Segments I-VI with subapical bands of pollinosity; head slightly longer than wide; frontal grooves moderately deep, pollinose, of even width; median lobe short, broad, triangular, tip even with anterior part of eye; frontal space moderately broad; medial margins of temporal lobes oblique, slightly divergent posteriorly; posterior, posteriomedial margins of temporal lobe bordered with pollinosity; orbital groove narrow, complete; eye narrowly crescentic, deeply pigmented in mature specimens; most specimens with three temporal setae, in orbital groove; a few specimens with two or four temporals; two pairs of postorbital setae.

Pronotum elongate, length/greatest width 1.49; lateral margins curved; apex strongly narrowed, base moderately narrowed; apex truncate; base rounded; margin oblique anterior to hind angle; median groove slightly dilated, margins parallel in middle, groove slightly enlarged at anterior median pit; basal 0.33 of groove narrow, shallow; basal impression narrow, triangular; discal striole long, attaining middle of pronotum; marginal groove visible in dorsal view; angular seta present, anterior, medial to hind angle; about 10 marginal setae present; discal setae, precoxal setae absent; sternopleural groove complete.

Elytra short, relatively broad; striae impressed, indistinctly punctate; intercalary stria abbreviated posteriorly; intratubercular stria complete; marginal stria complete; apical tubercles inflated, truncate posteriorly, touching at dorsoposterior points above large, round opening (Fig. 177); sutural stria with complete row of four or five setae; intercalary stria with complete row of six to eight setae; intratubercular stria with one seta at base, three near apex; marginal stria with about 17 setae; apical tubercle with three setae in prominent punctures; metasternum without median sulcus; male with transverse sulci of abdominal Sterna III-V complete, not interrupted in midline, with those of VI narrowly interrupted in midline, connected laterally to submarginal sulcus; female with sulci of Sterna III-IV complete, that of V narrowly interrupted; that of VI broadly interrupted; Sternum VI in both sexes with one pair of setae in submarginal sulcus; Sternum VI of female with median tubercle, disc sloped gradually posterior to it (Figs. 174, 176); male anterior femur without ventral tooth; male anterior tibia without proximal tooth; false spurs present on middle, hind tibiae; middle, hind calcars triangular, not notched on dorsal margin.

The large circular opening between the apical tubercles is distinctive. The male has calcars similar to those of *C. microfossatum*, but does not have tubercles on the ventral side of the anterior femur. The female differs from other known females in having a tubercle in the middle of Sternum VI.

Range.—St. Vincent, in the Lesser Antilles. We have studied two males and one female, labelled: "Checkley Level, Mount Saint Andrew, coll. J. R. Bell, Dec. 31, 1968" (UVM), and one female, labelled: "Richmond Est., Oct. 31, open valley, sea level in rotten wood, Kingstown" (collector and year not given) (BMNH).

There is one female labelled "Guadeloupe", which is clearly this species and not *C. planum*. We suspect that the locality label is incorrect.

Bionomics.— Bell (1970) describes in detail the situation of the specimens from Mount Saint Andrews. These were collected in the stump and roots of *Torrubia fragrans* (Du Mont de Courset), a member of the Nyctaginaceae.

Clinidium (sensu stricto) microfossatum new species

(Figs. 168, 171)

Type Material.— HOLOTYPE male, labelled: "La Martinique, Dr. L. Pornain, 1901" (MNHN).

Description.— Length 5.8 mm. Antennal stylet acuminate, about 0.3 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae present on Segments VI-X or VII-X; Segments I-III with subapical bands of pollinosity; head distinctly longer than wide; frontal grooves deep, narrower than in *C. guildingii*, of even width, margined with pollinosity; median lobe short, broad, triangular, tip even with anterior part of eye; frontal space rather narrow; medial margins of temporal lobes oblique, slightly divergent posteriorly; posterior, posteriomedial margins of temporal lobe with very narrow pollinose borders; orbital groove very narrow, complete or with short interruption posterior to eye; eye narrowly crescentic; orbital groove with two temporal setae, one opposite eye, the other near posterior margin; two pairs of postlabial setae.

Pronotum elongate; length/greatest width 1.55; lateral margins curved; apex strongly narrowed, more so than in *C. guildingii*; base moderately narrowed; apex truncate; base rounded; margin oblique anterior to hind angle; median groove narrow, less dilated than in *C. guildingii*, margins parallel; groove very slightly dilated at anterior median pit; basal 0.33 very narrow, shallow; basal impression small, oval, discal striole absent; marginal groove visible in dorsal view, finer than in *C. guildingii*; angular seta medial, anterior to hind angle; five or six marginal setae; discal, precoxal setae absent; sternopleural groove effaced anteriorly.

Elytra short, relatively broad; sutural, parasutural, intercalary striae impressed, pollinose; intercalary stria abbreviated posteriorly; intratubercular stria not impressed, not pollinose, represented only by line of fine punctures, preapical tubercle thus scarcely separated from apical tubercle (Fig. 171); marginal stria incomplete, basal 0.25 entirely effaced, next 0.25 represented only by row of fine punctures; apical 0.5 impressed; apical tubercles inflated, truncate, meeting in straight line at suture, minute pore in midline below them; sutural stria with four or five setae in complete row; intercalary stria with complete row of eight setae; intratubercular with one seta at base, one at apex; marginal stria with about nine setae; apical tubercle with two setae in line with intratubercular stria; five setae in row ventrad to preceding; metasternum without median sulcus; male with transverse sulci of Sterna III, IV complete, that of V narrowly interrupted in midline, that of VI broadly interrupted in midline, widely separated from submarginal sulcus; Sternum VI with one pair of setae; male with anterior femur without ventral tooth, but with many minute tubercles on ventral surface; male without proximal tooth on anterior tibia; false spurs present; calcars triangular, dorsal margins straight, not notched. Female unknown.

The reduction of the intratubercular stria and of the base of the marginal stria are distinctive. The virtual absence of the discal strioles separates it from *C. smithsonianum* and *C. guildingii*. Some individuals of *C. planum* have the strioles equally reduced, but differ in the shape of the frontal space and, in the male, in the absence of tubercles on the ventral side of the anterior femur, and in the shape of the calcars.

Clinidium (sensu stricto) smithsonianum new species

(Figs. 169, 175, 178)

Type Material.— HOLOTYPE male, labelled: "Dominica: 2 mi. NW Pont Casse, X-26-1964, P.J. Spangler" (NMNH). Twelve PARATYPES: two females, same data as holotype (one specimen missing head and thorax) (NMNH); four females labelled: "Dominica, 3.0 mi. E. of Pont Casse, VII-31-1964, T.J. Spilman" (NMNH); one female labelled: "Dominica, 1.0 mi. E. of Pont Casse, VII-23-1964, T. J. Spilman" (NMNH); one male, one female labelled: "Dominica, 0.6 mi. W. of Pont Casse, VII-7-1964, T. J. Spilman" (NMNH). (All the foregoing specimens also bear the label: "Bredin-Archbold Smithsonian Survey".); one male, one female, labelled: "Dominica, nr. Jean, 2000', 11-17-65, JFGC & T. M. Clarke, in rotten log" (NMNH); one female, labelled: "Wet Area Exp. Sta. St. Joseph Parish, 800', 31 Dec. 1978, M. A. & L. L. Ivie" (MAI).

Description.— Length 5.0-6.1 mm. Antennal stylet acuminate, about 0.3 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae present on Segments V-X; Segments I-V with pollinose subapical bands; head distinctly longer than wide; frontal grooves deep, rather narrow, of even width, margined by pollinosity; median lobe short, broad, triangular, tip even with anterior part of eye; frontal space rather narrow; medial margins of temporal lobes oblique, slightly divergent posteriorly; posterior, posteriomedial margins of temporal lobes very narrowly bordered with pollinosity;

orbital groove very narrow, complete or with short interruption posterior to eye; eye narrowly crescentic; orbital groove with two temporal setae, one opposite eye, the other near posterior margin; two pairs of postlabial setae.

Pronotum moderately elongate; length/greatest width 1.50; lateral margins curved; apex strongly narrowed; base moderately narrowed; apex truncate; base rounded; margin oblique anterior to hind angle; median groove narrow, margins parallel; groove very slightly dilated at anterior median pit; basal 0.33 very narrow, shallow; basal impression small, triangular, discal striole well-developed, with basal impression about 0.35 to 0.40 of length of pronotum; marginal groove fine, visible in dorsal view; angular seta medial, anterior to hind angle; seven or eight marginal setae; discal, precoxal setae absent; sternopleural groove absent.

Elytra short, relatively broad; all striae impressed, pollinose; intercalary stria abbreviated posteriorly; marginal stria complete to base; apical tubercles inflated, truncate, meeting in straight line at suture, minute pore in midline below them (Fig. 178); sutural stria with complete row of four or five setae; intercalary with complete row of eight or nine setae; intratubercular stria with one seta at base, three or four setae in apical 0.33; marginal stria with 13-14 setae; apical tubercle with three setae in prominent punctures; metasternum without median sulcus; male with transverse sulci of Sterna III-V complete; transverse sulci of VI widely separated at midline, widely separated from submarginal sulcus; female with transverse sulci of Sterna III-IV complete; sulcus of V narrowly interrupted at midline; Sternum VI of female with transverse scarp at middle of length, scarp bounded posteriorly by deep oval impression, latter with central convexity, bounded laterally by longitudinal oval, pollinose cavity (Fig. 175); female with lateral pit on Sternum IV; both sexes with one pair of setae on Sternum VI, posterior to submarginal sulcus; false spurs present; male without ventral tooth or tubercles on anterior femur; male without proximal tooth on anterior tibia; calcars with dorsal margins weakly angulate.

The long discal striole gives this species a similarity to *C. guildingii*, but it differs from the latter species in having only a minute pore beneath the apical tubercles. *C. planum* is more closely related, but has shorter discal strioles, and differs in secondary sexual characters, the male having more strongly angulate calcars, and the female having the impression of Sternum VI without a central tubercle.

In addition to type material, we have seen two males labelled: "Dominica, St. Peter syndicate estate, under bark, 7-10-VII-1970, coll. J. H. Frank" (BMNH); one female, labelled: "Dominica, Springfield Est., VI-20-25-69, P. J. Darlington, Jr." (MCZ).

Clinidium (sensu stricto) planum (Chevrolat 1844)

(Figs. 166, 172)

Rhyzodes planus Chevrolat 1844: 58.

Clinidium guildingii Kirby (wrongly synonymized by Chevrolat 1873a).

Clinidium planum (Chevrolat) Arrow 1942.

Clinidium (sensu stricto) planum (Chevrolat) Bell 1970.

Type Material.— We have not been able to locate type material. We have studied a specimen from the type locality, Point-a-Pitre, Guadeloupe. It is a male, labelled: "Point-a-Pitre, Guadeloupe, W.I., June 6, 1911" (AMNH). If the type of *C. planum* is lost, this specimen could serve as a neotype. Another similar male specimen is labelled "Guadeloupe, Vitrac" (GEN).

Description.— Length 5.3-6.3 mm. Antennal stylet acuminate, 0.3 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae present on Segments VI-X; Segments I-V with subapical bands of pollinosity; head slightly longer than wide; frontal grooves narrow, rather shallow, pollinose, narrowed near junction with frontal space; median lobe short, broad, triangular, tip even with anterior part of eye; frontal space rather narrow, anterior part with margins parallel, separated by more or less distinct angles from posterior part with oblique margins; posterior, posteromedial margins bordered by pollinosity; orbital groove very narrow, complete or with short interruption posterior to eye; eye narrowly crescentic, orbital groove with two temporal setae; one opposite eye; other near posterior end of orbital groove: two pairs of postlabial setae.

Pronotum moderately elongate; length/greatest width 1.51; lateral margins curved; apex narrowed; base only slightly less narrowed than apex; apex truncate; base rounded; margin oblique anterior to hind angle; median groove slightly dilated near middle, narrowed anteriorly, scarcely dilated at anterior median pit; basal 0.33 very shallow, narrow; basal impression small, triangular; discal striole relatively short, 0.1 to 0.25 of length of pronotum; marginal groove fine, visible in dorsal view; angular seta medial, anterior to hind angle; seven or eight marginal setae; discal, precoxal setae absent; sternopleural groove absent.

Elytra relatively short, broad; all striae impressed, pollinose; intercalary stria abbreviated posteriorly (Fig. 172); marginal stria complete to base; apical tubercles inflated, truncate, meeting in straight line at suture, minute pore in midline beneath them; sutural stria with complete row of four or five setae; intercalary stria with complete row of five to seven setae; intratubercular stria with one seta at base, three in apical 0.33; marginal stria with six to eight setae in

complete row, sparse near middle of length; apical tubercle with three setae in prominent punctures; metasternum without median sulcus; male with transverse sulcus of Sternum III complete, those of III, IV complete in some specimens, narrowly interrupted in others; that of V narrowly separated; female with transverse sulci of Sterna III-V not interrupted; female with deep lateral pit on Sternum IV and shallow one on Sternum V; in both sexes, Sternum VI with submarginal sulcus widely separated from transverse sulci; one pair of setae, posterior to transverse sulcus; female with transverse scarp on Sternum VI, bounded posteriorly by deep, entirely pollinose impression without median convexity; scarp in lateral view forming right angle with anterior part of disc; false spur on middle and hind tibiae present; male without ventral tooth or tubercles on anterior femur, without proximal tooth on anterior tibia; calcars strongly angulate on dorsal margin; margin distinctly notched between angle and shaft of tibia.

The discal striae of this species are intermediate in length, separating it from *C. guildingii* and *C. smithsonianum*, which have long ones, and probably from *C. microfossatum* which almost lacks them. The male is also distinguished by the strongly notched dorsal margin of the hind calcar, and the female by the deep pollinose impression of Sternum VI.

Range.— Probably confined to Guadeloupe. We have seen several specimens labelled “W. Ind.” (MNHN) that appear to belong to this species. In addition we have seen a specimen labelled “Mexico, Bowditch” (MCZ) that is either *C. planum* or else another species closely related to it. It is a female which resembles *C. planum* except that the impression of Sternum VI is not pollinose, and the disc of Sternum VI has a broad, low tubercle anterior to it. The frontal grooves are very narrow. The specimen probably bears an incorrect locality label. If not an aberrant *C. planum*, it might belong to an undescribed species from one of the Lesser Antilles, such as Grenada or Saint Lucia, from which no members of the section have yet been described.

THE ROJASI SECTION

This section resembles the *guildingii* section in having the intercalary stria abbreviated posteriorly and the intratubercular stria complete. However, the false spurs are absent. The metasternum has the median sulcus well-developed, and the apical tubercle is strongly emarginate. The male has a proximal tooth or angle on the anterior tibia. There are four, or possibly more, species confined to the mountains near the coast of Venezuela, from Falcon State eastward.

Phylogeny.— Unfortunately two of the species, *C. pala* and *C. excavatum* are known only from the females. They show distinctive modifications of Sternum VI. This character suggests that they are sister species. Non-sexual characters, however, suggest that *C. pala* is closest to *C. rojasi* and *C. excavatum*, to *C. bechyneorum*. As noted under “variation”, there are possible additional species in this section. An analysis of phylogeny must wait until more material is collected.

Clinidium (sensu stricto) rojasi Chevrolat 1873a (Figs. 179, 184, 185, 186)

Clinidium rojasi Chevrolat 1873a: 211-215.

Clinidium (sensu stricto) rojasi (Chevrolat) Bell and Bell 1978.

Type Material.— We have been unable to study the types of this species. According to the original description, there were two specimens, one collected by Rojas, the other by Salle. Both were labelled simply “Venezuela”. Vulcano and Pereira (1975b) studied the types, borrowed from NMW. According to them, both syntypes are female. We studied a female example, labelled: “type, Colonia Tovar, E. Simon, III-88, exemplaire typique” (MNHN). This species is not an authentic type, as it was not listed in the original description, and was collected long after the publication of the name. Thus it is not quite certain which member of the section was really described by Chevrolat. We follow Vulcano and Pereira (1975b) in assigning it to this species, as their illustrations of the male legs show acute calcars and a sharp proximal tooth. The Simon specimen also belongs to this species, as shown by the pollinose frontal space and the absence of setae on the

parasutural stria.

Clinidium simplex Chevrolat 1873b: 378 is difficult to interpret. We have studied a specimen labelled: "Dr. Moritz, 1858, Venezuela, *Clinidium simplex*" (NMW). This was lent to us as the type, but is not labelled as such, and is from the wrong locality. The type locality in the original description is given as "Nova-Grenata". The Vienna specimen is a male *C. rojasi*. However, Vulcano and Pereira (1975b) describe and illustrate a different species under this name, and state that the description is based on a specimen labelled as a type and as from Nova Grenata. It appears to belong to the *rojasi* section, and has the emarginate apical tubercle typical of that section. According to the figure, it is longer and more slender than *C. rojasi*, with the head more narrowed behind. Thus it may represent an additional species in the section. This may also not be the real type, as it differs from the original description in an important feature, in not having double marginal grooves on the pronotum. No South American species of *Clinidium* known to us has double marginal grooves, a feature found in most species of subgenera *Arctoclinidium* and *Mexiclinidium*. At the present time we cannot interpret the name *C. simplex* with any certainty.

Description.— Length 4.7-5.8 mm. Antennal stylet acuminate, elongate, 0.3 of length of Segment XI; latter elongate; tufts of minor setae on Segments V-X; basal setae present on Segments VII-X or VIII-X; Segments I-VIII with pollinose subapical rings; head scarcely longer than wide; base rather broad; margin oblique posterior to eye; frontal grooves deep, narrow, pollinose; median lobe short, broad, triangular, tip even with anterior part of eye; frontal space rather narrow, completely pollinose; medial margins of temporal lobe oblique, slightly divergent posteriorly; posterior, posteriomarginal margins of temporal lobe bordered by pilosity; orbital groove complete; eye narrow, crescentic, heavily pigmented in most specimens; most specimens with three temporal setae, one midorbital, one postorbital, one posttemporal, one or two of these missing in some specimens; two pairs of postlabial setae.

Pronotum elongate; length/greatest width 1.59; lateral margins curved; apex strongly narrowed; base moderately narrowed; apex truncate, base rounded; median groove nearly linear, expanded at anterior median pit, latter about 0.1 of width of pronotum at apex; basal 0.2 of median groove very shallow, narrow; pollinosity of median groove connected to transverse band at base of pronotum; latter occupying about 0.3 of width of base; basal impressions small, triangular, closed posteriorly; discal striole slightly curved, extending to middle of length of pronotum; marginal groove visible in dorsal view; angular seta anterior, medial to hind angle; nine to 12 marginal setae; discal, precoxal setae absent; anterior part of sternopleural groove absent, posterior part barely indicated.

Elytra short, relatively broad; striae impressed, pollinose, indistinctly punctate; intercalary stria abbreviated posteriorly; apical tubercles inflated, strongly emarginate (Fig. 185); sutural stria with complete row of four to six setae; parasutural stria without setae; intercalary stria with complete row of nine to 11 setae; intratubercular stria with two setae near base, two near apex; marginal stria with complete row of 11-14 setae; anterior medial angle of Interval III with one seta in prominent pollinose pit; apical tubercle with three to six setae in prominent punctures; metasternum with complete median sulcus; in both sexes transverse sulci of abdominal Sterna III-IV entire, those of V and VI interrupted in midline, submarginal groove of Segment VI well separated from transverse sulci, deeply U-shaped in female (Fig. 186), transverse in male; Sternum VI evenly convex in both sexes, with one pair of setae; female with lateral pit in Sternum IV; false spur absent; male without ventral tooth on anterior femur, but with broad, obtuse proximal tooth on anterior tibia (Fig. 184); calcars acute, small.

The acute calcars of the male and the unmodified Sternum VI of the female separate this species from other members of the section.

Range.— Andes of northern Venezuela, from Falcon State (Cerro Galicia) on the west to Aragua State (Tiara) on the east. We have studied the following specimens: one male, one female, labelled: "Caracas, Silla" (MNHB); four males, four females labelled: "Cero Galicia, Venezuela, Falcon, 1500 m., 22-XI-1971, J. & B. Bechyne leg." (VEN); one male, labelled: "Colonia Tovar, capacha bajo, Venezuela, Aragua, 24-IX-1968, en corteza de guamo" (VEN); one female, labelled: "Colonia Tovar, E. Simon, III-88, exemplaire typique" (MNHN); one female, labelled: "Venezuela, Aragua, Tiara, 16-VI-1970, J. & B. Bechyne leg." (VEN); one male, labelled: "Venez., Fry Colln. 1905, 100, 18628." (BMNH). According to the ledger of the Fry Collection in the British Museum, this last specimen was collected at Caracas.

Variation.— An additional female specimen from Tiara has the posterior 0.5 of Sternum VI shallowly impressed and the transverse sulci of Sterna II-VI interrupted at the midline. This specimen might represent an extreme variant of *C. rojasi*, but could also belong to a different species. It was collected with the typical *C. rojasi* female from Tiara referred to above, and bears an identical label.

Clinidium (sensu stricto) bechyneorum new species

(Figs. 180, 187)

Type Material.— HOLOTYPE male, labelled: "Hac. Montero, Montalban, Venezuela, Carabobo, 1300 m., 18-IV-1968, J. & B. Bechyne leg." (VEN). PARATYPES one male, one female, same label as holotype. (VEN)

Description.— Length 5.5-6.0 mm. Antennal stylet acuminate, elongate, 0.3 of length of Segment XI, latter elongate; tufts of minor setae on Segments V-X; basal setae present on Segments VII-X; Segments I-IV with subapical pollinose rings; head as long as broad, base broad, margin not oblique posterior to eye; frontal groove deep, narrow, partly pollinose; median lobe short, broad, triangular, tip opposite anterior part of eye; frontal space rather narrow, anterior 0.5 glabrous, posterior 0.5 pollinose; medial margins of temporal lobes oblique, slightly divergent posteriorly; posterior, posteriomedial margins of temporal lobes bordered by pollinosity; orbital groove complete, wider than in *C. rojasi*; eye narrow, crescentic, longer than in *C. rojasi*; two or three temporal setae; two pairs of postlabial setae.

Pronotum elongate; length/greatest width 1.58; lateral margins curved, slightly sinuate anterior to hind angle; apex strongly narrowed; base moderately narrowed; apex truncate; base rounded; median groove very shallow, narrow; pollinosity of median groove connected to transverse band of pollinosity occupying median 0.3 of base of pronotum; basal impressions small, triangular, closed posteriorly; discal striole slightly curved, extending to middle of length of pronotum; marginal groove fine, visible in dorsal view; angular seta anterior, medial to hind angle; 7-10 marginal setae; discal, precoxal setae absent; sternopleural suture absent.

Elytra short, relatively broad; striae impressed, pollinose, indistinctly punctate; intercalary stria abbreviated posteriorly; apical tubercles inflated, strongly emarginate; sutural stria without setae or with one or two near apex; parasutural stria with two to four setae; intercalary stria with complete row of four or five; intratubercular stria without or with one basal and without or with one apical seta; marginal stria with complete row of eight to 15 setae; apical tubercle with two to five setae in prominent punctures; metasternum with complete median sulcus; in both sexes, transverse sulci of Sternum III, IV entire, those of V, VI interrupted in midline; submarginal sulcus of Sternum VI in both sexes short, scarcely curved (Fig. 187); Sternum VI with one pair of setae; Sternum VI evenly convex, similar to that of male; false spur absent; male without ventral tooth on anterior femur, with broad, obtuse proximal tooth on anterior tibia; calcars obtusely rounded at apices.

The presence of setae in the parasutural stria, the rounded calcars of the male, and the shape of the submarginal sulcus of Sternum VI of the female separate this species from *C. rojasi*. The evenly convex Sternum VI of the female separate it from *C. excavatum*. We dedicate this species to J. & B. Bechyne whose fine series of *Clinidium* have made the Rhysodine fauna of Venezuela the best known of any South American country.

Variation.— A single male specimen, labelled: "Venezuela, Aragua, Rancho Grande, 1400 m., 26-VIII-70, J. & B. Bechyne leg." (VEN) may represent this species. It is in poor condition, with middle and hind legs missing, and with most setae of the head missing. It was probably dead when found. The orbital groove is very narrow and the pollinosity is very reduced at the posterior margin of the temporal lobe, exposing a distinct occipital angle. It is not clear whether this represents a real difference from *C. bechyneorum* or is the result of abrasion after death. The regular arrangement of the pollinosity suggests that the former is more probably. The absence of the middle and hind legs prevents comparison of the calcars with those of *C. bechyneorum*. We suspect that this specimen represents an additional species, but decline to name it until better material is available.

Clinidium (sensu stricto) excavatum new species

(Fig. 188)

Type Material.— HOLOTYPE female, labelled: "Venezuela-Carabobo-Montalban Oeste 1800 mts. 26-VI-1968, C. J. Rosales, A. D. Ascoli" (VEN). PARATYPE one female, same label as holotype. (VEN)

Description.— Length 6.5-6.8 mm. Identical to *C. bechyneorum* in most respects, but larger with more elytral setae, and with Sternum VI strikingly modified. Setae within the ranges given for *C. bechyneorum*, except for intercalary stria, with eight setae and intratubercular without or with one at base and three near apex. Sternum VI with deep concavity in posterior 0.33, evidently representing a greatly enlarged submarginal sulcus; cavity bounded anteriorly by scarp, latter with broad rectangular lobe in midline, bordered on each side by deep, prominent notch (Fig. 188). Male

unknown.

C. pala has a similarly modified sternum, except that the notches are much closer together and are convergent anteriorly.

Clinidium (sensu stricto) pala new species

(Fig. 189)

Type Material.— HOLOTYPE female, labelled: "VEN.; Edo. Miranda Guatopo Nat. park, 50 km. SE Caracas, 5-6 III, 1971, 400m forest & hum dung" (BSRI). PARATYPE one female, same label as holotype. (BSRI)

Description.— Length 5.0-5.5 mm. Antennal stylet acute, both stylet and Segment XI less elongate than in *C. rojasi*; tufts of minor setae on Segments V-X; basal setae present on Segments VI-X or VII-X; Segments I-VIII ringed with pollinosity; head distinctly longer than wide, longer, narrower, more parallel-sided than in *C. rojasi*; frontal groove deep, narrow, pollinose, median lobe short, rather narrow, triangular, tip opposite anterior margin of eye; frontal space narrow, anterior part scarcely pollinose; medial margins of temporal lobes oblique, slightly divergent posteriorly; posterior, medial margins of temporal lobes bordered by pilosity; orbital groove complete; eye very narrow, crescentic; two temporal setae; two pairs of postlabial setae.

Pronotum elongate; length/greatest width 1.53; lateral margins curved; apex strongly narrowed; base moderately narrowed; apex truncate; base rounded; median groove nearly linear, scarcely expanded at anterior median pit; latter smaller than in *C. rojasi*; basal 0.2 of median groove very narrow, shallow; pollinosity of median groove connected to transverse band at base of pronotum, latter occupying about 0.3 of basal width; basal impressions small, triangular, closed posteriorly; discal striae curved, extending almost to middle of length of pronotum; marginal groove visible in dorsal view; angular seta anterior, medial to hind angle; eight or nine marginal setae; discal, precoxal setae absent; anterior part of sternopleural groove shallow, posterior part deep, incomplete.

Elytra short, relatively broad; striae impressed, pollinose, indistinctly punctate; intercalary stria abbreviated posteriorly; apical tubercles inflated, strongly emarginate; sutural stria with complete row of four or five setae; parasutural without setae; intercalary stria with complete row of six to eight setae; intratubercular stria with one or two setae near base, two near apex; marginal stria with complete row of 12-14 setae; anterior medial angle of Interval III with one seta in prominent pollinose pit; apical tubercle with eight or nine setae in prominent punctures; metasternum with median sulcus; transverse sulcus of abdominal Sternum III entire, those of IV-VI interrupted in midline; tibiae without false spurs; female with lateral pit in Sternum IV, smaller one in Sternum V; female with Sternum VI with submarginal groove greatly expanded, forming deep concavity occupying posterior 0.33 of sternum, limited anteriorly by scarp, latter interrupted by pair of notches which are convergent anteriorly defining narrow, trapezoidal median lobe (Fig. 189); male unknown.

The absence of setae from the parasutural stria link this species to *C. rojasi*. The latter species has a shorter, broader head, and does not have Sternum VI modified in the female. The form of Sternum VI in *C. pala* is similar to that of *C. excavatum* except that the median lobe is much broader and more rectangular in the latter.

THE CAVICOLLE GROUP

This group resembles the *guldinigi* group in having tufts of minor setae present on Antennal Segments V-X. It differs strongly in having the anterior median pit greatly enlarged. In all species except *C. mathani* the pit contains a prominent median tubercle. False spurs are absent. The form of the anterior median pit is strongly similar to that of *C. dubium*, in the *insigne* group, and the latter species might really be more closely related to the *cavicolle* group than to *C. insigne*.

There are nine species in the *cavicolle* group. They are restricted to southern Central America and northwestern South America, from Costa Rica to Ecuador, eastern Colombia, and the western part of Amazonas State, Brazil.

Phylogeny.— Phylogenetic relationships within this group are not clear. Of the nine species, both sexes are known in only three. Our tentative conclusions about relationships are reflected in the key. This arrangement might be altered substantially when both sexes of all species have been studied. The most distinctive species is *C. mathani*, which has the intercalary stria

abbreviated and lacks the tubercle in the anterior median pit. Both of these features, however, might be derived characters, and *C. mathani* might not be the sister group to the remaining species. Similarly, *C. humile*, the only species to lack a median sulcus of the metasternum, might have lost the sulcus secondarily, and might be close to *C. cavicolle*. We placed *C. centrale* and *C. validum* together because of the similar arrangement of temporal setae and the presence of pollinosity along the notopleural suture. However, *C. centrale* resembles *C. curvatum*, *C. humile* and *C. cavicolle* in having a round anterior median pit, while *C. validum* has a pit which combines a truncate anterior margin, as in *C. crater*, and sinuate margins, as in *C. foveolatum*. We provisionally attribute similarities in the anterior median pit to convergent evolution. It is possible that we are wrong, and that the similarities in chaetotaxy and pollinosity between *C. centrale* and *C. validum* are themselves the result of convergence. Further conclusions will have to await the collection of more specimens of this excessively rare group, of which we have studied only about 15 specimens.

Clinidium (sensu stricto) mathani Grouvelle 1903
(Figs. 182, 192, 193)

Clinidium mathani Grouvelle 1903: 131.

Clinidium (sensu stricto) mathani (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "St. Paulo d'Olivencia, Amazonas, M. de Mathan" (MNHN). The locality is on the upper Amazon in Brazil, close to the border with Peru and Colombia.

Description.— Length 6.3 mm. Antennal stylet conical, very large, about 0.4 of length of Segment XI, apex blunt; tufts of minor setae present on Segments V-X; basal setae on Segments VII-X; Segment I with subapical pollinosity; head slightly longer than wide; clypeal setae present, frontal grooves shallow, effaced anteriorly; median lobe narrow, tip opposite anterior 0.3 of eye; frontal space narrow; medial margins of temporal lobe oblique; convergent posteriorly, nearly contiguous at distinct medial angles; temporal lobe broadly bordered by pilosity posteriorly; eye crescentic, relatively broad, about 0.5 of length of temporal lobe; orbital groove complete; one temporal seta, in orbital groove behind eye; two pairs of postlabial setae.

Pronotum elongate; length/greatest width 1.50; pronotum widest slightly anterior to middle; lateral margins curved; base moderately narrowed, curved; apex strongly narrowed, truncate; median groove dilated, basal 0.33 shallow but broad; middle 0.33 deep, broad, margins parallel, apical 0.33 occupied by anterior median pit, latter elliptical, without tubercle, 0.25 of width of pronotum; basal impression small, triangular, open posteriorly; discal strioles elongate, curved, 0.60 of length of pronotum; marginal groove visible in dorsal view; angular seta present; three or four marginal setae; notopleural suture not pollinose; sternopleural groove broadly interrupted.

Elytra moderately elongate; striae deep, pollinose, very coarsely punctate; intercalary stria abbreviated posteriorly (Fig. 193); intratubercular stria strongly dilated near apex; preapical tubercle strongly inflated, truncate at apex, tubercles separated by combined widths of sutural intervals; sutural stria without setae; parasutural stria with complete row of four setae; intercalary with complete row of six setae; intratubercular stria with one seta near apex; marginal stria with five setae in apical 0.2; preapical tubercle with three or four setae; apical tubercle without setae; metasternum with median sulcus; abdominal Sterna III-VI each with transverse sulci complete, not interrupted in midline; submarginal sulcus of Sternum VI broad, curved, not joined to transverse sulcus (Fig. 192); male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar small, acute; hind calcar small, narrowly triangular, apex obtuse. Female unknown.

This species is recognized by the abbreviated intercalary stria and by the elongate elliptical anterior median pit, without a median tubercle.

Range.— Amazon Basin. Vulcano and Pereira (1975b) record it from Cerro de Nairo, Amapá Territory.

Clinidium (sensu stricto) humile new species
(Figs. 181, 190)

Clinidium cavicolle Chevrolat 1873b: 388 (*pars*)

Type Material.— HOLOTYPE male, labelled: “*cavicolle*, New Granada, Chev. type” (NMW). This specimen matches one discussed in the original description of *C. cavicolle* Chevrolat, as a possible representative of “the other sex” of *C. cavicolle*. It is a male, while the lectotype of *C. cavicolle* is a female, but the two are not conspecific.

Description.— Length 6.8 mm. Antennal stylet conical, relatively small, about 0.15 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae sparse on Segments IX, X; Segments I-IX with subapical pollinose rings; head short, broad, scarcely longer than wide, width behind eyes nearly equal to width across eyes; clypeal setae present; frontal grooves deep, entire; median lobe narrow, tip opposite anterior 0.33 of eye; frontal space narrow, sides parallel; medial margin of temporal lobe narrowly pilose, posterior margin broadly pilose; eye crescentic, narrow; orbital groove complete, broad; three temporal setae all posterior to eye; three or four pairs of postlabial setae.

Pronotum rather short, length/greatest width 1.39; pronotum widest slightly posterior to middle, lateral margins strongly curved; base moderately narrowed, curved; apex strongly narrowed, truncate; median groove dilated; gradually broader anteriorly to anterior median pit; latter rounded anteriorly, sides evenly curved, with large round median tubercle; greatest width 0.33 of that of pronotum; basal impressions small, triangular, open posteriorly; discal striae long, curved, 0.6 of length of pronotum; marginal groove visible in dorsal view; angular seta present; five to seven marginal setae; notopleural suture not pollinose; sternopleural groove absent.

Elytra moderately elongate; striae deep, pollinose, punctate; intercalary stria slightly dilated posteriorly; preapical tubercles scarcely inflated, rounded at apex, widely separated; sutural stria without setae; parasutural stria with one seta at base; intercalary stria with three setae in anterior 0.3; intratubercular stria with one seta at base; marginal stria with four setae in anterior 0.25, four setae in posterior 0.25; preapical tubercle without setae; metasternum without median sulcus; abdominal Sterna III-V with transverse sulci rather narrowly interrupted in midline; transverse sulcus of Sternum VI reduced to small oval pit, widely separated from submarginal sulcus (Fig. 190); Sternum VI with two pairs of setae; femora with dorsal pollinosity; male with large ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar small, triangular, acute; hind calcar slightly larger, subtriangular, obtuse. Female unknown.

This species is the only member of the group in which the metasternum lacks a median sulcus. It differs from *C. cavicolle*, in having a shorter, broader head; dorsal sides of femora pollinose, and Sternum VI with submarginal sulcus separate from transverse sulci. The last two characters might be secondary sexual differences, rather than species differences, since *C. cavicolle* is represented only by females and *C. humile* only by males.

Clinidium (sensu stricto) curvatum new species

(Figs. 194, 203)

Type Material.— HOLOTYPE male, labelled: “Oroque, Colombia, Santander del Norte, 10-VI-1965, J. & B. Bechyné leg.” (VEN). PARATYPES one broken female, same label as holotype (VEN).

Description.— Length 6.2 mm. Antennal stylet elongate, acute, 0.4 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae absent; Segment I with subapical pollinose ring; head slightly longer than wide; frontal grooves narrow, deep; clypeal setae present; median lobe short, broad, triangular, tip anterior to anterior margin of eye; frontal space very narrow, sides parallel; medial margin narrowly pilose; posterior margin broadly pilose; eye crescentic, narrow; orbital groove complete; two temporal setae, one medial to posterior margin of eye, other posteromedial to it; two pairs of postlabial setae.

Pronotum moderately elongate, length/greatest width 1.52; widest slightly behind middle, lateral margins strongly curved; base moderately narrow, curved; apex strongly narrowed, truncate; median groove narrow, almost linear except at anterior median pit; latter 0.33 of length of pronotum, about 0.3 of width of pronotum, margins divergent nearly to apex, there strongly narrowed, with very large round median tubercle; basal impressions small, rounded, open posteriorly; discal striae long, curved, about 0.45 of length of pronotum; marginal groove fine, visible in dorsal view; angular seta present, medial to hind angle; five or six marginal setae; notopleural suture not pollinose; sternopleural groove absent.

Elytra rather short; striae deep, pollinose, punctate; intercalary stria not abbreviated posteriorly; intratubercular stria slightly dilated posteriorly; preapical tubercles moderately dilated posteriorly, widely separated; sutural striae without setae; parasutural stria with one seta at base; intercalary stria with complete row of six setae; intratubercular stria with one seta at base, three near apex; marginal stria with complete row of about 15 setae; apical tubercle with one or two setae; metasternum with median sulcus; abdominal Sterna III-V in both sexes with transverse sulci broadly interrupted in middle; in female, large lateral pit on Sternum IV, smaller on Sternum III; Sternum VI of male with short, slightly oblique transverse sulci, narrowly separated from submarginal sulcus, three or four pairs of setae; female with each transverse sulcus of Sternum VI broken into two pits (Fig. 203); two pairs of setae; in both sexes, submarginal sulcus curved, extending nearly to transverse sulci; middle, hind tibiae each with only one spur, femora not pollinose dorsally; male with ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar triangular, apex obtuse; hind calcar subtriangular, apex narrowly truncate; ventral margin with minute tooth anterior to spur.

This species resembles *C. cavicolle* in general appearance, but differs in having shorter discal strioles, distinct transverse sulci on Sternum VI and a narrower anterior median pit with margins oblique and nearly straight.

Clinidium (sensu stricto) foveolatum Grouvelle

(Figs. 195, 204)

Clinidium foveolatum Grouvelle 1903: 130-131.

Clinidium (sensu stricto) foveolatum (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE female, labelled: "Ecuador, Siemiradski 1882-1883, *Clinidium foveolatum* Grouvelle, type" (MNHN).

Description.— Length 6.7 mm. Antennal stylet elongate, acute, 0.5 of length of Segment XI; tufts of minor setae present on Segments V-X; basal setae present on Segments VI-X; subapical pollinose rings on Segments I-IX; head as long as wide; clypeal setae absent; frontal grooves deep, rather broad; median lobe narrow, triangular, tip opposite middle of eye; frontal space moderately wide, margins slightly convergent posteriorly; medial margin narrowly bordered with pilosity; posterior margin widely bordered by pilosity; eye crescentic, rather short; orbital groove complete, rather broad; three temporal setae, in orbital groove, one opposite posterior part of eye, one near occiput, one between them.

Pronotum oval, rather short; length/greatest width 1.36; widest near middle, lateral margins strongly curved; base moderately narrowed, curved; apex very narrow, truncate; median groove with basal 0.5 moderately narrow, sides parallel; apical 0.5 strongly dilated, margin sinuate, curved medially opposite tubercle of anterior median pit, dilated, rounded anterior to constriction, tubercle transverse, oval; basal impression very small, triangular, open posteriorly; discal striole short, 0.2 of length of pronotum; marginal groove visible in dorsal view; angular seta present; six or seven marginal setae; sternopleural groove absent except near anterior margin.

Elytra elongate; striae deep, pollinose, indistinctly punctate; intercalary stria not abbreviated posteriorly; intratubercular stria scarcely dilated near apex; preapical tubercles moderately dilated, widely separated posteriorly; sutural stria without setae; parasutural stria with one seta near middle, one near apex; intercalary stria with complete row of seven setae; intratubercular stria with one seta at base, one near apex; marginal stria with complete row of about 11 setae; apical tubercle with three or four setae; metasternum with median sulcus; transverse sulcus of abdominal Sternum III not interrupted; those of IV-VI narrowly interrupted at midline; that of Sternum VI separated from submarginal sulcus (Fig. 204); all transverse sulci coarsely punctate; female with shallow lateral pit on Sternum IV; middle, hind tibiae with two small spurs; male unknown.

The very short discal strioles separate this species from all others except for *C. centrale*. The latter species has the margin of the anterior median pit rounded. The shape of the anterior median pit in *C. foveolatum* resembles that of *C. spatulatum*, but the latter species has a well developed discal striole and a much smaller antennal stylet.

Clinidium (sensu stricto) cavicolle Chevrolat 1873b

(Figs. 183, 191)

Clinidium cavicolle Chevrolat 1873b: 388.

Clinidium (sensu stricto) cavicolle (Chevrolat) Bell and Bell 1978.

Type Material.— LECTOTYPE, here designated, female, labelled: "*C. cavicolle*, Colombia, Steinheil, Ocaña (Landolt)", with red "typus" label (NMW). There is doubt as to whether this is the specimen described by Chevrolat, as he gives the locality as "Nova-Grenata, Bogoto". The latter is presumably a misspelling of "Bogota". Nevertheless, this specimen fits the original description better than the other syntype, described above as *C. humile* new species. The latter is the specimen discussed by Chevrolat as "probably another sex" of *C. cavicolle*.

Description.— Length 6.0-7.0 mm. Antennal stylet conical, rather small, about 0.2 of length of Segment XI; Segment XI somewhat compressed; tufts of minor setae on Segments V-X; basal setae present on Segments IX, X; Segments I-X with subapical pollinose rings; head slightly longer than in *C. humile*, with lateral margins more parallel, base more abruptly truncate; clypeal setae present; frontal grooves deep, entire; median lobe narrow, short, tip anterior to eye; frontal space narrow, sides parallel; medial margin of temporal lobe narrowly pilose; posterior margin broadly pilose; eye crescentic, narrow, rather short; orbital groove complete, broad; two temporal setae, one near posterior margin of eye, the other near occiput; one or two pairs of postlabial setae.

Pronotum rather short, oval; length/greatest width 1.39; pronotum widest near middle, margins strongly curved; base narrow, rounded; apex narrowly truncate; median groove dilated, margins parallel except in apical 0.25, opposite anterior median pit; median groove pollinose near base, otherwise with margins pollinose, middle glabrous; anterior median pit

rounded, about 0.33 of width of pronotum, lateral margins with long pilosity; median tubercle round; basal impression small, triangular, open posteriorly; discal striae long, 0.6 of length of pronotum, strongly curved; marginal groove visible in dorsal view; angular seta present, medial, anterior to hind angle; eight or nine marginal setae; notopleural suture not pollinose; sternopleural groove incomplete.

Elytra moderately elongate; striae deep, broad, pollinose, punctate; intervals narrow, subcostate; intercalary stria not abbreviated posteriorly; intratubercular stria slightly dilated posteriorly; preapical tubercle slightly dilated; sutural stria without setae; parasutural stria with one seta at base, two near apex; intercalary stria with seven setae in complete row; intratubercular stria with one seta at base, three or four near apex; marginal stria with complete row of about 15 setae; apical tubercle with two or three setae; metasternum with complete median sulcus; abdominal Sterna III-V broadly interrupted in midline; Sternum VI without transverse sulci, with submarginal sulcus long, curved, reaching nearly to anterior margin (Fig. 191); one or two pairs of setae on Sternum VI; female with large lateral pit in Sternum III, smaller one on Sternum IV; middle, hind tibiae each with one spur; femora not pollinose on dorsal surface. Male unknown.

The large, oval anterior median pit and the long, curved discal striae make this species resemble *C. humile*. The latter species, however, lacks the median sulcus on the metasternum, has a broader head, and pollinosity on the dorsal surface of the femora.

Range.— Colombia. Hincks (1950) also lists it from Brazil, but without a definite locality. We have been unable to find the source of this record. In addition to the lectotype, we have seen two females, labelled: "Mesa Rica, Colombia, Santander del Norte, 2500 m., 2-VI-1965, J. & B. Bechyne, leg." (VEN).

Clinidium (sensu stricto) crater new species
(Figs. 196, 205)

Type Material.— HOLOTYPE female, labelled: "PANAMA: Cerro Jefe, Azul Ridge, 9° 12' N, 79° 21' W, 700-750 m., cloud for., 20 May, 72, T. L., L. J. Erwin coll. Exped. #10, notebook #1, loose bark, log ADP01472" (NMNH). PARATYPES two females, labelled: "PANAMA, Province of Panama, Cerro Jefe, 1000 m., 21-V-1977, coll. Lloyd Davis, under dead bark, fallen hardwood" (UVM).

Description.— Length 5.9-6.9 mm. Antennal stylet near conical, small, about 0.2 of length of Segment XI, slightly curved; Segment XI slightly compressed; tufts of minor setae on Segments V-X; basal setae on Segments VI-X; subapical pollinose rings on Segments I-X; head slightly longer than wide; clypeal setae present; frontal grooves deep, entire; median lobe short, narrow, tip anterior to eye; frontal space narrow, sides slightly divergent posteriorly; medial margin of temporal lobe narrowly pilose; posterior margin very broadly pilose, to level of posterior margin of eye; eye narrow, crescentic, rather short; orbital groove complete, rather broad; two temporal setae, one near posterior margin of eye, other in middle of pollinosity near occiput; two pairs of postlabial setae.

Pronotum rather short, oval, length/greatest width 1.41; pronotum widest near middle, margins strongly curved, base narrow, rounded; apex narrowly truncate; median groove broadened from base to apex; basal 0.2 narrow, parallel, margins anterior to there oblique, divergent; anterior median pit over 0.5 of width of pronotum, margins sinuate opposite tubercle, latter rounded; anterior margin of pit transverse; sides of anterior median pit long, pilose; basal impression small, triangular, open posteriorly; discal striae long, over 0.66 of length of pronotum, curved; marginal groove visible in dorsal view; angular seta present, anterior, medial to hind angle; about nine marginal setae; notopleural suture not pollinose; sternopleural groove incomplete.

Elytra moderately elongate; striae deep, broad, pollinose, truncate; intervals narrow, subcostate; intercalary stria not abbreviated posteriorly; intratubercular stria slightly dilated posteriorly; preapical tubercles slightly inflated; sutural stria without setae or with one or two setae near apex; parasutural stria with complete row of eight setae; intercalary stria with complete row of eight setae; intratubercular stria with three setae near apex; marginal stria with about 15 setae; apical tubercle with two or three setae; metasternum with median sulcus; abdominal Sternum III with transverse sulcus entire; sulci of Sterna IV, V narrowly interrupted in midline; Sterna III, IV with shallow lateral pits in female; Sternum VI without transverse sulci, submarginal sulcus shorter than in *C. cavicolle* restricted to posterior 0.5 of sternum (Fig. 205); femora with dorsal surface pollinose; one spur on each middle, hind tibia. Male unknown.

The shape of the median groove of the pronotum in this species is closest to that of *C. validum*. In the latter species, however, the anterior median pit is larger, the notopleural suture is pollinose, and there are two tibial spurs.

Clinidium (sensu stricto) centrale Grouvelle 1903
(Figs. 197, 200)

Clinidium centrale Grouvelle 1903: 133-134.

Clinidium (sensu stricto) centrale (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Costa Rica, *C. centrale* Grouv., type" (MNHN). Two additional specimens, labelled as types (MNHN), must have been so marked by accident, as they bear collecting dates later than 1903.

Description.— Length 6.0-7.4 mm. Antennal stylet slender, small, about 0.2 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae on Segments VII-X; subapical pollinose rings on Segments I-X; head scarcely longer than wide, clypeal setae present; frontal grooves deep, entire, pollinose; median lobe short, broad, tip obtuse, opposite anterior margin of eye; frontal space very narrow, sides parallel; medial margin of temporal lobe narrowly pollinose; posterior margin very broadly pollinose, to level of posterior margin of eye; base of temporal lobe nearly transverse, abruptly curved to lateral margin, latter nearly longitudinal behind eye; eye narrow, crescentic, rather short; orbital groove complete; temporal lobe with one or two setae variously placed in large isolated pollinose punctures medial to eye, three temporal setae in transverse row in pilosity of posterior margin; three pairs of postlabial setae.

Pronotum rather elongate, length/greatest width 1.58; widest near middle; margins strongly curved, base narrow, curved; apex strongly narrowed, truncate; median groove moderately dilate, parallel-sided in basal 0.25; anteriorly, evenly broadened to anterior medial pit; nearly evenly rounded anterior to pit; pit 0.33 as wide as pronotum; tubercle rounded; sides of anterior median pit rather short, pilose; basal impression triangular, open posteriorly; discal striole short, about equal in length to basal impression; length of impression plus striole about 0.33 of length of pronotum; marginal groove visible in dorsal view; 1 angular seta, 8-11 marginal setae; notopleural suture pollinose (continuous in some specimens, interrupted anterior to middle in others); sternopleural groove absent.

Elytra rather elongate; striae impressed, pollinose, punctate; intercalary stria not abbreviated at apex; apex of intratubercular stria slightly dilate; preapical tubercle slightly inflated; sutural stria without setae; parasutural stria with complete row of six or seven setae; intercalary stria with complete row of nine or 10 setae; intratubercular stria with one seta at base, two near base; marginal stria with complete row of about 15 setae; preapical tubercle with one seta in prominent puncture; apical tubercle with two or three setae; metasternum with median sulcus; transverse sulci of Sterna III-VI entire in male; in female, sulcus of Sternum V narrowly interrupted, others entire; Sternum VI with submarginal sulcus rather broadly separated from transverse sulcus (Fig. 200); Sternum VI with two or three pairs of setae; female with deep lateral pit on Sternum IV; dorsal surface of femora with pollinosity; middle, hind tibiae each with two equal spurs; anterior femur of male with prominent ventral carina; anterior tibia of male with proximal tooth; calcars acute, triangular.

The pollinose notopleural suture and isolated setose punctures on the temporal lobe separate this species from all species except *C. validum*, which has a much larger, sinuate anterior median pit. The discal strioles of the pronotum are only slightly shorter than those of *C. curvatum* but the latter species has a smaller anterior pit and only one spur on each tibia.

Range.— Costa Rica. We have seen the following specimens with specific locality data: one female, labelled: "Costa Rica, Coté de Tablazo, 1904, coll. P. Biolley" (MNHN); one specimen, sex not recorded, labelled: "Sta. Maria de Dota, 1600 m., I-1907" (MNHN) (The two preceding are incorrectly labelled as types.); two males, four females, labelled: "Coronado, Costa Rica, VI-27-1967, E. B. Fagan" (FLA); one female, same locality as previous group but dated V-30-1967, elev. 5500 ft. (FLA). 20 males, 9 females, labelled: "Costa Rica: Cartago Prov., 5 km. S. El Empalme, VII-14-73, J. Doyen & P. A. Opler Coll." (UCB).

Clinidium (sensu stricto) validum Grouvelle 1903
(Figs. 199, 202)

Clinidium validum Grouvelle 1903: 133.

Clinidium (sensu stricto) validum (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Teffé (Ega, Amazonas, M. de Mathan 3^{me} trimestre 1878, *C. validum* Grouv." (MNHN). The locality is in Brazil, several hundred kilometers west of Manaus.

Description.— Length 5.8-6.4 mm. Antennal stylet slender, small, about 0.2 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae on Segments VI-X or VII-X; subapical pollinose rings on Segments I-X; head slightly longer than wide; clypeal setae present; frontal grooves deep, entire, median lobe short, narrow, tip opposite anterior margin of eye; frontal space moderately narrow, sides slightly divergent posteriorly; medial margin of temporal lobe narrowly pilose; posterior margin very broadly pollinose to level of posterior margin of eye; eye crescentic, rather broad of subgenus; orbital groove complete; one or two temporal setae medial to eye, in large punctures surrounded by pollinose spots, latter in partial contact with pilosity of posterior margin; three or four smaller setae among long pilosity of

occiput; three pairs of postlabial setae.

Pronotum rather elongate, length/greatest width 1.55, oval, widest near middle, sides curved; apex truncate, less narrowed than in other members of group; base moderately narrowed, rounded; median groove dilated, posterior 0.5 parallel-sided except for slight dilation at posterior median pit; margins anterior to middle divergent to anterior median pit; latter very large, margins oblique, divergent to level of tubercle; side suddenly broadened anterior to tubercle, apex broadly rounded; margins of anterior median pit very long pilose; pit over 0.66 of width of pronotum opposite it; basal impressions small, triangular, open posteriorly; discal striole very long, curved, 0.67 of length of pronotum; marginal groove visible in dorsal view; angular seta present; eight to 10 marginal setae; notopleural suture pollinose; sternopleural groove incomplete.

Elytra rather elongate; striae impressed, pollinose, punctate; intercalary stria not abbreviated posteriorly; intratubercular stria strongly dilated at apex; preapical tubercles strongly inflated, apex rounded, nearly contiguous; sutural stria without setae; parasutural stria with complete row of six or seven setae; intercalary stria with complete row of 10 setae; intratubercular stria with one seta at base, three near apex; marginal stria with about 20 setae; preapical tubercle with two setae; metasternum sulcate; transverse sulci of abdominal Sterna III-VI in male, very narrowly interrupted in female; submarginal sulcus of Sternum VI rather broadly separated from transverse sulcus (Fig. 202); Sternum VI with two to four pairs of setae; female with lateral pit on Sternum IV; dorsal surfaces of femora pollinose; middle, hind tibiae with two equal spurs; male with anterior femur without ventral tooth or carina; male with prominent proximal tooth on anterior tibia; calcaria small, triangular, acute.

The greatly enlarged anterior median pit of this species resembles only that of *C. crater* in shape. The latter species has the pit smaller, and the preapical tubercle of the elytron much less prominent. In addition, the middle and hind tibiae have only one spur.

Range.— Widespread in the Amazon Basin. In addition to the type, we have seen one male, three females from Ega (BMNH), and one specimen, sex not recorded, from Para (MNHN). Vulcano and Pereira (1975b) record it also from Serro do Navio, Amapá Territory.

Clinidium (sensu stricto) spatulatum new species

(Figs. 198, 201)

Type Material.— HOLOTYPE female, labelled: "PANAMA: Colon Prov. Santa Rita Ridge, 300 m, 10-11, VI-77, H. & A. Howden:" (BSRI).

Description.— Length 6.6 mm. Antennal stylet slender, small, about 0.2 of length of Segment XI; tufts of minor setae on Segments V-X; basal setae on Segments VII-X; subapical pollinose rings on Segments I-X; head slightly longer than wide; clypeal setae present; frontal grooves deep, entire, median lobe short, narrow, tip opposite anterior margin of eye; frontal space moderately narrow, sides slightly divergent posteriorly; medial margin of temporal lobe narrowly pillinose; posterior margin very broadly pollinose to level of posterior margin of eye; eye crescentic in lateral view, narrower than in *C. validum*; orbital groove complete; four temporal setae as follows: one pair at posterior end of eye; one pair near middle of temporal lobe opposite posterior margin of eye, in partially isolated tuft of pollinosity; two pairs posterior to eye; two pairs of postlabial setae.

Pronotum rather elongate, length/greatest width 1.43, oval, widest near middle, sides curved; apex truncate, less narrowed than in other species (except for *C. validum*); base moderately narrowed, rounded; median groove dilated, posterior 0.5 nearly parallel-sided except for slight dilation opposite posterior median pit; apical 0.5 strongly dilated, margin sinuate, curved medially opposite tubercle of anterior median pit, strongly dilated both anterior and posterior to constriction; tubercle nearly round, slightly transverse; basal impression small, open posteriorly; discal striole straight, about 0.45 of length of pronotum; marginal stria visible in dorsal view; angular seta present; seven or eight marginal setae; notopleural suture inconspicuously pollinose; sternopleural groove absent except for small pollinose spot near anterior margin of prothorax.

Elytra rather elongate; striae impressed, pollinose, punctate; all striae complete; intratubercular stria dilated at apex; preapical tubercle strongly inflated, apex rounded, well separated from opposite tubercle, medial margin appearing "scalloped" by depressed pilose areas around setal punctures; sutural stria without setae; parasutural stria with complete row of six setae; intercalary stria with complete row of 12 setae; intratubercular with one seta at base, and three near apex; marginal stria with complete row of about 20 setae; preapical tubercle with two setae; metasternum sulcate; transverse sulci of abdominal Sterna III-VI entire in female; submarginal sulcus of Sternum VI broadly separated from transverse sulcus; Sternum VI with two pairs of setae (Fig. 201); female with minute lateral pit on Sternum IV; dorsal surfaces of femora pollinose; middle, hind tibiae with two equal spurs; male unknown.

This species resembles *C. foveolatum* in having a very large anterior median pit with a strong constriction opposite the tubercle. The latter species differs in the virtual absence of the discal strioles and in having a much larger antennal stylet. *C. curvatum* has discal strioles of about the same length, as *C. spatulatum* but the strioles are curved, the anterior median pit is

smaller with the constriction merely suggested, and the stylet is much larger. *C. validum* has a large anterior median pit, but with the margin oblique posteriorly, not strongly sinuate, while the discal striole is longer and the sternopleural groove is better developed.

THE BECCARII GROUP

These four species are unique in the tribe in entirely lacking minor setae on Segments IV-X. As in all other Rhysodini, however, there are scattered minor setae on Segment XI. The compound eye is either constricted at its middle or else entirely divided into two structures resembling ocelli. The male has the midline of the anterior abdominal sterna modified with a sulcus or paired tubercles. The antennal stylet is elongate and compressed, with the tip obliquely truncate.

The range of the group is in doubt. *C. moldenkei* is the only species collected independently by more than one collector. It is certainly from Costa Rica. There is no reason to doubt that the single specimen of *C. sulcigaster* is from nearby Guatemala, as it was collected recently and has exact data. The two remaining species are supposedly from the southwestern Pacific, *C. argus*, from Negros, Philippine Islands, and *C. beccarii* from New Guinea. The holotype of *C. beccarii* has exact locality data, and Beccari was a notably careful collector. According to Dr. Poggi (*in litt.*) not one of his specimens has previously been shown to be mislabelled. If it were not for this, we would be almost certain that the specimen is mislabelled, as the distribution is totally unexpected within a group of closely related species. Moreover, the entire subgenus is otherwise strictly neotropical. It is still possible that Grouvelle or some other person inadvertently interchanged labels between this and some other specimen. One should be open-minded about the range of this group until more specimens of *C. beccarii* or *C. argus* come to light, either from their supposed localities, or from somewhere in Central America.

Phylogeny.— The group clearly consists of two pairs of closely related species. In *C. moldenkei* and *C. sulcigaster*, the eye is bilobed, the median groove of the pronotum is much narrower than the anterior median pit, and the anterior part of the sternopleural groove is absent. In *C. beccarii* and *C. argus* the eye is completely divided, the median groove is almost as wide as the anterior median pit, and the anterior part of the sternopleural groove is present.

Clinidium (sensu stricto) moldenkei new species (Figs. 206, 210, 211, 212)

Type Material.— HOLOTYPE male, labelled: "COSTA RICA, Rincon de Osa VII-15-66, A. R. Moldenke, borrowed ex G. E. Ball ADP 38023" (NMNH). PARATYPES three males, two females, labelled: "Rincon de Osa, Puntarenas, Costa Rica, 100 m., 3-X-1969, Halftter & Reyes" (MZSP).

Description.— Length 6.8-7.8 mm. Stylet elongate, 0.4 of length of Segment XI, compressed, apex obliquely truncate; minor setae absent except for Segment XI, basal setae absent; Segments I-X each with subapical pollinose rings; median lobe small, shield-shaped, frontal grooves broad, pollinose; temporal, antennal lobes separated by narrow postantennal groove; temporal lobes slightly divergent posteriorly; medial, posterior margins of temporal lobes broadly pilose; orbital groove complete; three temporal setae in transverse row near occiput; eye deeply bilobed, strongly constricted at middle (Fig. 210); two pairs of postlabial setae.

Pronotum elongate; length/greatest width 1.61; sides curved; base moderately narrowed, curved; apex strongly narrowed, truncate; median groove dilated, slightly constricted anterior to posterior median pit, closed at base; anterior median pit four times wider than median groove at middle of its length; pit 0.36 of width of pronotum; basal impressions open posteriorly; discal striole nearly straight, reaching middle of pronotum; marginal groove fine, visible in dorsal view; angular seta present; eight or nine marginal setae; two or three basal setae just medial to basal impression; anterior 0.5 of sternopleural groove absent, posterior part represented by three isolated pits (Fig. 211).

Elytra relatively short, broad; striae impressed, punctate; sutural interval depressed below level of others; intercalary stria not abbreviated; intratubercular stria only slightly dilated near apex; preapical tubercle only slightly inflated; apical tubercles more strongly inflated; sutural stria with one seta near apex, one seta in sutural interval posterior, medial to apex of sutural stria; parasutural stria with complete row of eight setae; intercalary stria with complete row of eight setae; intratubercular stria with three or four setae near apex; marginal stria with about 14 setae; apical tubercle with four or five setae; metasternum not sulcate; transverse sulci glabrous, narrowed medially, medial end of each half with small deep pit; sulci of Sternum VI pollinose, widely separated from one another, also from submarginal sulcus; female with slight lateral pit on Sternum IV; male with pair of tubercles posterior to medial ends of transverse sulci on Sterna III, IV, without median sulcus (Fig. 212); male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar narrow, prominent, apex obtuse; hind calcar triangular, apex slightly obtuse.

This species is closest to *C. sulcigaster*, but differs in having the median groove of the pronotum closed posteriorly, the posterior part of the sternopleural groove interrupted, and the eye more strongly constricted. The male lacks the median sulcus on abdominal Sterna I-IV which is characteristic of the latter species. We dedicate this species to the collector, Andrew Moldenke, a dedicated coleopterist and our onetime co-worker on Vermont Carabidae.

Clinidium (sensu stricto) sulcigaster Bell 1973

(Figs. 208, 213)

Clinidium (sensu stricto) sulcigaster Bell 1973: 279-282

Type Material.— HOLOTYPE male, labelled: "GUAT. Finca Moca, Santa Barbara, Such., 3000', VI-12-1966, J. M. Campbell" (BSRI, CNC no. 12,700). The locality is in Guatemala, Department of Suchitépéquez, near Lake Atitlán.

Description.— Length 5.5 mm. Stylet elongate, 0.5 of length of antennal Segment XI, compressed, apex slightly oblique; minor setae absent except for Segment XI; basal setae absent; Segments I-IX each with subapical pollinose ring; head longer than broad; median lobe small, shield-shaped; frontal grooves broad, pollinose; temporal, antennal lobes separated by narrow postantennal groove; frontal space narrow; medial margins of temporal lobe parallel; medial margin narrowly pollinose; posterior margin of temporal lobe broadly pilose; orbital groove complete; three temporal setae in orbital groove; eye very small, heavily pigmented, less constricted at middle than in *C. moldenkei*; three pairs of postlabial setae.

Pronotum elongate, length/greatest width 1.68, widest slightly anterior to middle; sides curved anteriorly, oblique, scarcely curved posteriorly; apex narrow, truncate; base moderately narrow, curved; median groove open posteriorly, moderately dilated, about 0.1 of width of pronotum at middle; margins parallel in posterior 0.5 except for slight dilation at posterior median pit, latter equidistant between middle and base of pronotum; anterior to middle, margins divergent to anterior median pit, abruptly narrowed anterior to pit; anterior median pit about 0.33 of width of pronotum; basal impressions narrow, open posteriorly; discal striole nearly straight, reaching nearly to middle of pronotum; marginal groove fine, visible in dorsal view; angular seta absent; three marginal setae present in anterior 0.33 of marginal groove; one basal seta just medial to basal impression; anterior 0.5 of sternopleural groove absent, posterior 0.5 entire.

Elytra relatively short, broad; striae impressed, punctate; sutural interval as convex as Interval II; intercalary stria not abbreviated; intratubercular stria with basal 0.25 effaced; middle portion represented by row of punctures; apical 0.33 impressed; marginal stria entire; preapical tubercle slightly inflated; apical tubercles inflated, contiguous; sutural, parasutural striae without setae; intercalary stria with one seta at base, one in basal 0.5 or absent, and two in apical 0.5; intratubercular stria with two setae near apex; marginal stria with one seta near middle, six setae in apical 0.33; preapical tubercle with two setae; metasternum not sulcate; transverse sulci interrupted medially, each 0.5 pollinose in medial 0.5, glabrous in lateral 0.5; in male, abdomen with median sulcus bounded laterally by paired carinae; sulcus deep, distinct on Sterna II, III, extending anteriorly to include medial part of Sternum I, posteriorly across Sternum IV to end on Sternum V (Fig. 213); male without ventral tooth on anterior femur, without proximal tooth on anterior tibia; middle calcar triangular, dorsal margin angulate, notched; hind calcar narrower, scarcely notched.

Female unknown.

This species differs from *C. moldenkei* in having the intratubercular stria incomplete anteriorly, in having fewer elytral setae and a less constricted, smaller eye. Also, the male has a median sulcus on the anterior 0.5 of the abdomen.

Clinidium (sensu stricto) argus new species

(Fig. 207)

Type Material.— HOLOTYPE male, labelled: "Philippines, Horns of Negros", date and collector not specified (MCZ). The label is similar to that on the holotype of *Omoglymmius (sensu stricto) crassicornis* Bell and Bell. The label on the latter specimen lists the collector as J. W. Chapman. The locality is a mountain on the Island of Negros. This locality is at least questionable.

Description.— Length 6.6 mm. Stylet elongate, 0.4 of length of Segment XI, compressed, apex truncate; minor setae absent except for Segment XI; basal setae absent; Segments I-X each with subapical pollinose ring; head 1.5 longer than broad; median lobe rhomboid; frontal grooves broad, pollinose; antennal lobe small, triangular, separated from temporal lobe by broad, pilose postantennal area; frontal space moderately broad; medial margins of temporal lobes parallel; posterior margin of temporal lobe broadly pilose; orbital groove complete; four or five temporal setae in orbital groove; eye divided into two portions resembling ocelli, anterior eye oval, posterior one smaller, round; two pairs of postlabial setae.

Pronotum elongate; length/greatest width 1.72; widest near middle; sides curved; apex strongly narrowed, truncate; base slightly narrowed, curved; median groove open posteriorly, strongly dilated, 0.16 of width of pronotum at middle; margins parallel, anterior median pit only slightly wider than median groove; basal impression round, closed posteriorly, but connected to lateral margin, median groove by depressed, pollinose areas; discal striole straight, extending to middle of pronotum; marginal groove slightly dilated, visible in dorsal view; angular seta absent; eight to 10 marginal setae; three basal setae medial to basal impression; sternopleural groove nearly complete, interrupted dorsad to coxa.

Elytra relatively long, narrow; sutural, parasutural striae impressed, narrow, conspicuously punctate; intercalary stria wider, deeper than others; intratubercular stria fine, entire; marginal stria entire, strongly dilated posteriorly; preapical tubercle scarcely inflated; apical tubercles strongly inflated, contiguous; sutural stria without setae; parasutural stria with one seta at base, one or two in anterior 0.33; intercalary stria with two setae at base, one laterad to the other, complete row of 10-11; intratubercular stria with four setae in apical 0.33; marginal stria with complete row of about 20 setae; apical tubercle with three setae in conspicuous punctures; metasternum with incomplete median sulcus in anterior 0.5; abdominal sterna with transverse sulci narrowly interrupted in middle; transverse sulci of Sternum VI narrowly separated from submarginal sulcus; Sternum VI with one pair of setae; in male, abdominal Sternum III with median pollinose area, latter continued onto Sternum II; Sternum IV with small median pollinose area; very small, inconspicuous pairs of tubercles posterior to transverse sulci at midline on Sterna III, IV; male without ventral tooth on anterior femur; without proximal tooth on anterior tibia; calcars large, strongly cultrate, curved anteriodorsally, apices recurved.

The divided compound eyes separate this species from all others except the closely related *C. beccarii*, described, possibly erroneously, from New Guinea, and *Rhyzodiastes (Rhyzotetrops) janus* of Fiji. *C. beccarii* has the paramedian grooves much longer, and the calcars are triangular.

Clinidium (sensu stricto) beccarii Grouvelle 1903 NEW COMBINATION

(Fig. 209)

Clinidium beccarii Grouvelle 1903: 140.

Rhyzodiastes beccarii (Grouvelle) Bell and Bell 1978.

Type Material.— HOLOTYPE male, labelled: "Nuovo Guinea: Hatam" (GEN). According to the original description, collected by Beccarii. In 1978 we erroneously assigned this species to *Rhyzodiastes* based on the description. We have not seen this specimen but now have studied detailed sketches of it, kindly supplied by Dr. Poggi.

Description.— Length 8 mm. Head longer than broad; median lobe small, rhomboid; antennal lobe small, separated from temporal lobe by broad postantennal pollinose area; three temporal setae; eye divided into two ocellus-like organs, latter only slightly separated.

Pronotum less elongate than in *C. argus*, length/greatest width about 1.55; median groove broadly dilated, margins parallel; anterior median pit slightly wider than median groove; discal striole much longer than in *C. argus*, reaching almost to anterior median pit.

Male with transverse band of pollinosity connecting transverse sulci in midline on Sternum III; Sternum IV-VI without pollinosity in midline; paired tubercles near middle of Sterna III, IV; calcars triangular, not cultrate.

ADDITIONS, CORRECTIONS TO PARTS I-III, INCLUDING ADDITIONAL SPECIES

Genus *Dhysores* Grouvelle 1903*Dhysores basilewskyi* (Brinck 1965)

Through the courtesy of Dr. Roy Danielsson, we have been able to compare the series of specimens from the former Belgian Congo (42 mi. N. of Kapona) (CAS) with a specimen labelled as a paratype in the collection of the University of Lund. The latter, a male, is labelled: "Tshuapa: Lac Tumba, Mabali, 350 m. (dans humus), N. Leleup 29-IX, 1955". This specimen and locality are not mentioned in the original description, and its status as a paratype is doubtful. Unlike all previous specimens of the genus from the tropical zone in Africa, this one is definitely from a lowland site, and implies that the genus is not limited to montane forests, as we previously thought. It also shows that *D. basilewskyi* has the most extensive range of any member of the genus.

Dhysores biimpressus new species

(Fig. 214)

Type Material.— HOLOTYPE male, labelled: "Usumbara, Neu Bethel, 10.3, 1905, coll. Jul. Moser" (MNHB). PARATYPE one female, same data (MNHB). The locality is in Tanzania, formerly German East Africa. It is a small mountain range, near Lushoto on the Kenyan border.

Description.— Length 6.2-7.2 mm. Anterior tentorial pits large, rounded; prefrontal pits entirely absent; frontal space broader than in other members of genus, nearly as wide as long; frontal grooves scarcely impressed; two pairs of postlabial setae; basal impressions about 0.6 of length of pronotum, anterior part of impression more abruptly narrowed than in *D. quadriimpressus*; hind angles of pronotum denticulate; one marginal seta on pronotum; elytral humeri not especially narrowed, resembling those of *D. basilewskyi* (Brinck) (Bell and Bell, Part II, p. 383); Stria VI represented by row of fine punctures, its anterior fourth effaced; Stria VII impressed except for anterior 0.15, where it is represented by row of punctures; elytral setae unusually long.

In our key to species of *Dhysores* (Part II, p. 382), this species will trace to Couplet 2, where it will not fit either alternative, since the anterior tentorial pits are large and round, while the prefrontal pits are entirely absent. The absence of the prefrontal pits and the broader frontal space separate it from the sympatric *D. quadriimpressus* (Grouvelle). The most similar species is probably *D. thoreyi* (Grouvelle), of South Africa, but in the latter species the anterior tentorial pits are small and oblique, while the prefrontal pits are at least suggested, and the humeri are markedly narrowed.

Dhysores quadriimpressus (Grouvelle)

We have seen 14 additional specimens of this species (all in MNHB), eight from Neu Bethel, the type locality for *D. biimpressus*, and six from Ost Usambara, coll. Methner. Dr. Basilewsky has informed us that we confused the type locality, Usumbara, with Usumbura (now Bujumbura) in Burundi. It is actually in northeast Tanzania and is the same as that of *D. biimpressus*. We are grateful to Dr. Basilewsky for clearing up the confusion.

Genus *Kupeus* Bell and Bell 1982

This name was substituted for *Kupea* Bell and Bell 1978, which is preoccupied by *Kupea* Philpott 1930.

Kupeus arcuatus (Chevrolat 1873a) NEW COMBINATION

R. M. Emberson (personal communication) has pointed out that two of the localities listed by us, Reefton and Springs Junction, are on the South Island of New Zealand. However he has indicated that the Springs Junction label is an invalid one. If the Reefton record (BMNH) is correct then this would be the only record of a rhysoidine from the South Island.

GENUS *KAVEINGA* BELL AND BELL 1978*Kaveinga (sensu stricto) occipitalis* (Grouvelle 1903)

Rhysoides occipitalis Grouvelle 1903: 105-106.

Type Material.— LECTOTYPE male (here designated), labelled: "NUOVA GUINEA, Fly River, L. M. D'Albertis 1876-1877" (GEN). PARALLECTOTYPES two males, two females, same label as lectotype (GEN); one female, same label as lectotype (MNHN). We erroneously listed the latter specimen as a holotype (Part II:406).

The hind calcar of the male of *K. occipitalis* is very small and acute, similar to that of *K. strigiceps* Bell and Bell.

Kaveinga (sensu stricto) poggii new species

(Fig. 215)

Type Material.— HOLOTYPE male, labelled: "Is. Goodenough:Gennaio 1890, L. Loria" (GEN). This island is one of the D'Entrecasteaux Group, north of the eastern tip of New Guinea.

Description.— Length 4.8 mm. Antennal Segment I pollinose dorsally; Segments II-V each with narrow pollinose band; basal setae sparse on Segment VII, more numerous on VIII-X.

Head as long as wide, clypeus broadly separated from median lobe by band of pollinosity; parafrontal boss small, nearly circular, separated from antennal rim and from median lobe by broad bands of pollinosity, and bordered posteriorly by pollinose band; sides of median lobe broadly emarginate; orbital groove short, narrowed posteriorly, ending opposite middle of eye; temporal lobe slightly wider than long; anteriomedial margins oblique, converging posteriorly; medial angle obtuse, narrowly overlapped by median lobe; temporal setae one or two (right anterior one absent from holotype); anterior seta in orbital groove; posterior one in round pollinose fovea in temporal lobe; postorbit entirely pollinose; temporal lobe with distinct overhang in lateral view; suborbital tubercle and gular ridge absent.

Pronotum relatively short, broad, length/greatest width is 1.15; widest anterior to middle; sides strongly curved and convergent between widest point and apex; sides oblique, slightly convergent from widest point to hind angles, margin not sinuate anterior to hind angle; latter obtuse; shallow emargination present between hind angle and base; basal knob small, depressed, pollinose; paramedian grooves deep, pollinose, width at middle nearly equal to that of outer carina; anterior end of inner carina pollinose, so that glabrous area appears abbreviated anteriorly; posterior tip of inner carina acutely pointed; marginal grooves broad; marginal seta absent; angular seta present; prosternum with shallow transverse groove between precoxal carinae; latter not quite reaching anterior margin of pronotum.

Elytra moderately broad, slightly flattened; humeral tubercles not exerted; striae deep, pollinose; intervals convex, subcarinate; stria punctures coarse, each puncture about 0.5 as wide as interval; Stria II with one basal seta, three setae in apical fourth; Stria IV with six setae; apical striole without setae; several setae near apex of Stria VII; abdominal Sterna III-V each with coarsely punctate, pollinose transverse sulcus, latter not interrupted at midline; femora with pollinose bands; serrulation of middle tibia well developed; hind calcar of male slender, but its extreme tip narrowly truncate; female unknown.

This species is named for Dr. Roberto Poggi of the Museo Civico di Storia Naturale "G. Doria" of Genoa, in gratitude for the help he has given us during this study.

In our Key to *Kaveinga s. str.*, this species will trace close to *K. abbreviata*. Therefore, the key should be modified to read as follows:

- 3 (2) Pronotum relatively short, broad; length/greatest width 1.15 or less 3.1
 3' Pronotum elongate, length/greatest width 1.2-1.3 4
 3.1 (3) Parafrontal boss small, round, separated from antennal rim and from median lobe by broad pollinose bands; inner carina of pronotum acutely pointed posteriorly *K. poggii* new species

- 3.1' Parafrontal boss large, triangular, separated from antennal rim and from median lobe by linear pollinose bands; inner carina of pronotum obtusely pointed posteriorly *K. abbreviata* (Lea)

K. poggii clearly belongs to Group I, the species with deep, pollinose striae and subcarinate intervals. The short pronotum makes it most similar to *K. abbreviata*, but it differs from the latter in having the middle tibia strongly serrulate, the inner pronotal carina acutely pointed posteriorly, and the parafrontal boss small and round.

The remaining members of the Group have the pronotum more elongate. *K. fibulata* differs in having the hind angles of the pronotum rounded, while the four species of the *K. pignoris* complex lack the parafrontal boss. *K. poggii* appears to be intermediate between *K. abbreviata* and the remaining members of Group I, and makes it appear more likely that the group is monophyletic.

GENUS *GROUVELLINA* BELL AND BELL 1978

Grouvellina hexadon new species

(Figs. 216, 220)

Type Material.— HOLOTYPE male, labelled: "COMORES, Mayotte Mamouzou, 13-8-69, s/ecorces, a la lumiere, Y. Gomy" (GVA)

Description.— Length 4.8 mm. Antennal Segment XI slightly longer than wide; apical stylet short, acute; tufts of minor setae on Segments V-X; antennal Segment I extensively pollinose in dorsal aspect; Segments II-X with two transverse pollinose bands, basal band interrupted in Segments VIII-X; head as wide as long, frontal, postantennal grooves deep, relatively narrow; median lobe rather narrow, broadly rounded posteriorly; parafrontal bosses narrow, rather long, temporal lobe as wide as long, sinuate anterior to medial angles, latter narrowly separated, obtusely pointed; two temporal setae; four labral setae; orbital groove complete, broadly pilose; two pairs of postlabial setae; mentum pollinose; postmentum contrastingly glabrous.

Pronotum moderately long, length/greatest width 1.35; lateral margins nearly parallel; base and apex slightly narrowed; outer carina not bent outwards at base; three or four marginal setae; prosternum without precoxal carinae except for trace just anterior to coxa.

Elytral striae deep, very coarsely punctate; intervals broader than striae, not carinate; base of Interval II elevated, forming small tooth (as in *G. edentata*); humerus prominent, quadrangular, with conspicuous patch of golden pilosity; Stria I with two setae near apex; Stria II with eight setae; Stria IV with six setae; Stria VII with about nine setae in its apical 0.2; metasternum entirely coarsely punctate without lateral pollinosity.

Male with ventral tooth on all femora; male with very minute prominent tooth on anterior tibia (Fig. 220); male with hind calcar truncate at tip.

This species is smaller than any other member of the genus. In our key (Part II: 411-413), it traces to couplet 6. The presence of a ventral tooth on all femora and the small size will differentiate it from both species at this couplet. The absence of a precoxal carina is an additional difference from *G. tubericeps*. It otherwise is almost a miniature of the latter species, to which it appears to be related.

This species is not *Rhysodes planifrons* Fairmaire 1893, the only Rhysodine previously described from the Comoro Islands. We have not been able to locate the type for the latter species, which we suspect of being a *Grouvellina*, but the original description indicates that the parafrontal bosses are united to the median lobe, and the length is given as 8mm.

GENUS *YAMATOSA* BELL AND BELL 1981

A misprint is present in the description of the genus (Part II:424). Setae are present in apex of Striae IV and VII or else are limited to apex of Stria VII.

A specimen labelled "Java, J. D. Pasteur 268-94", (MNHN) is labelled as a type of "Rhysodes v. longior". (now *Yamatosa longior*). It is not conspecific with the remaining types, but is *Omoglymmius (Hemiglymmius) rimatus* Bell and Bell (Part III, p.139).

The discovery of two additional species makes it necessary for us to revise our summary of the phylogeny of this genus, and to alter the key to species. *Y. kryzhanovskiy* is perhaps the most isolated species in the genus. It differs from all other species in having the prothoracic pleuron and the disc of the metasternum coarsely punctate. The absence of the "beard" on the labium links it to the "western" line, while the presence of the antennal stylet is a common character with the "eastern" line. *Y. kabakovi*, on the other hand, clearly belongs to the "eastern" line, and is closest to *Y. niponensis*.

KEY TO SPECIES

- | | | |
|--------|---|---|
| 1 | Prothoracic pleuron impunctate; punctures of metasternum limited to margin | 2 |
| 1' | Prothoracic pleuron densely punctate; metasternum with numerous punctures on disc, in addition to row along each lateral margin | |
| | <i>Yamatosa kryzhanovskiy</i> new species | |
| 2 (1) | Segment XI with distinct apical stylet; both eye and marginal groove of pronotum fully developed | 3 |
| 2' | Segment XI of antenna obtuse, without apical stylet; either eye reduced or else marginal groove of pronotum reduced | 7 |
| 3 (2) | Prosternum with distinct precoxal carina; discal striole ended at or posterior to middle of pronotum | 4 |
| 3' | Prosternum without precoxal carinae; discal striole ended at, or anterior to apical third of pronotum | 5 |
| 4 (3) | Precoxal carina extended more than 0.75 of distance from coxa to anterior margin of prosternum; discal striole 0.5 of pronotal length | |
| | <i>Yamatosa longior</i> (Grouvelle) (Part II, p. 425) | |
| 4' | Precoxal carina extended about 0.33 of distance from coxa to anterior margin of pronotum; discal striole 0.33 of pronotal length | |
| | <i>Yamatosa peninsularis</i> (Arrow) (Part II, p. 427) | |
| 5 (3') | Frontal and antennal grooves narrow, equal in width to posterior part of clypeal grooves; posterior margins of frontal, antennal grooves sharply defined; discal striole ended at or slightly anterior to middle of pronotum | 6 |
| 5' | Frontal and antennal grooves dilated, much wider than posterior part of clypeal grooves; posterior margins of frontal and antennal grooves not sharply defined; discal striole extended nearly to anterior margin of pronotum | |
| | <i>Yamatosa arrowi</i> (Grouvelle) (Part II, p. 428) | |
| 6 (5) | Punctures of elytral striae I-V rounded, hind calcar of male triangular, pointed | |
| | <i>Yamatosa niponensis</i> (Lewis) (Part II, p. 427) | |
| 6' | Punctures of elytral striae I-V elongate; hind calcar of male obtuse, with dorsal "shoulder" | |
| | <i>Yamatosa kabakovi</i> new species | |
| 7 (2') | Marginal groove of pronotum absent except in basal fourth of pronotum; eyes large, much deeper than long | |
| | <i>Yamatosa reitteri</i> (Bell) (Part II, p. 429) | |

- 7' Marginal groove of pronotum nearly complete, ended short distance from anterior margin of pronotum; eyes more or less reduced 8
- 8 (7') Head evenly rounded posteriorly, widest point just posterior to eye; eye only moderately reduced, deeper than long, with about 100 ommatidia
 *Yamatosa draco* (Bell) (Part II, p. 429)
- 8' Head broadened posteriorly, widest point far posterior to eye; eye markedly reduced, longer than deep, with about 50 ommatidia
 *Yamatosa boysi* (Arrow) (Part II, p. 430)

Yamatosa kryzhanovskyi new species
 (Figs. 217, 222)

Type Material.— HOLOTYPE male, labelled: "Vietnam, mts. NE Thai, Nguen, 12-1-1964, Kabakov" (LEN). PARATYPE one female, same data as holotype (LEN).

Description.— Length 5.9-6.3 mm. Antennal Segment XI with slender, acuminate stylet; head cordate; anterior tentorial pits rather small, punctiform; frontal grooves narrow, well defined; median lobe short, its tip rather broadly truncate; eye large, deeper than long; mentum with a few punctures near middle, not "bearded" in either sex; one pair of postlabial setae present.

Pronotum moderately elongate, length/greatest width 1.39; base only slightly narrowed; apex markedly narrowed, discal striole long, extending about 0.67 length of pronotum; marginal groove complete; propleura sparsely, coarsely, shallowly punctate (Fig. 222); prosternum with transverse band of punctures anterior to coxae; precoxal carinae absent.

Elytra relatively broad for genus, slightly flattened; stria punctures relatively coarse, close together, separated by less than diameter of one of them; elytral intervals convex; Striae I-VI scarcely abbreviated at base; basal portions of V, VI punctate but not impressed; Stria VII effaced in basal third, middle third represented by punctures but not impressed; apical third impressed, punctate; setae absent from Stria IV; metasternum with punctures on disc as well as margins; female with small, shallow lateral pit on Sternum IV.

Anterior femur with ventral tooth in both sexes; anterior tibia of male with medial groove, latter bounded both anteriorly and posteriorly near base by pair of flanges; spurs of middle, hind tibiae nearly equal; hind calcar small, obtuse, its tip just above level of spurs.

This species is unique within the genus in having the prothoracic pleura and the disc of the metasternum punctate. It differs in addition from the sympatric *Y. kabakovi* in having the elytral striae with coarse, crowded punctures, elytral Striae I-VI not abbreviated at base, the mentum without a beard, the tip of the median lobe broadly truncate, and the pronotum broader and less sharply narrowed to apex.

It is a pleasure to name this species for Dr. O. Kryzhanovsky, whose courtesy made it possible for us to study specimens in the Leningrad collection.

Yamatosa kabakovi new species
 (Figs. 218, 223)

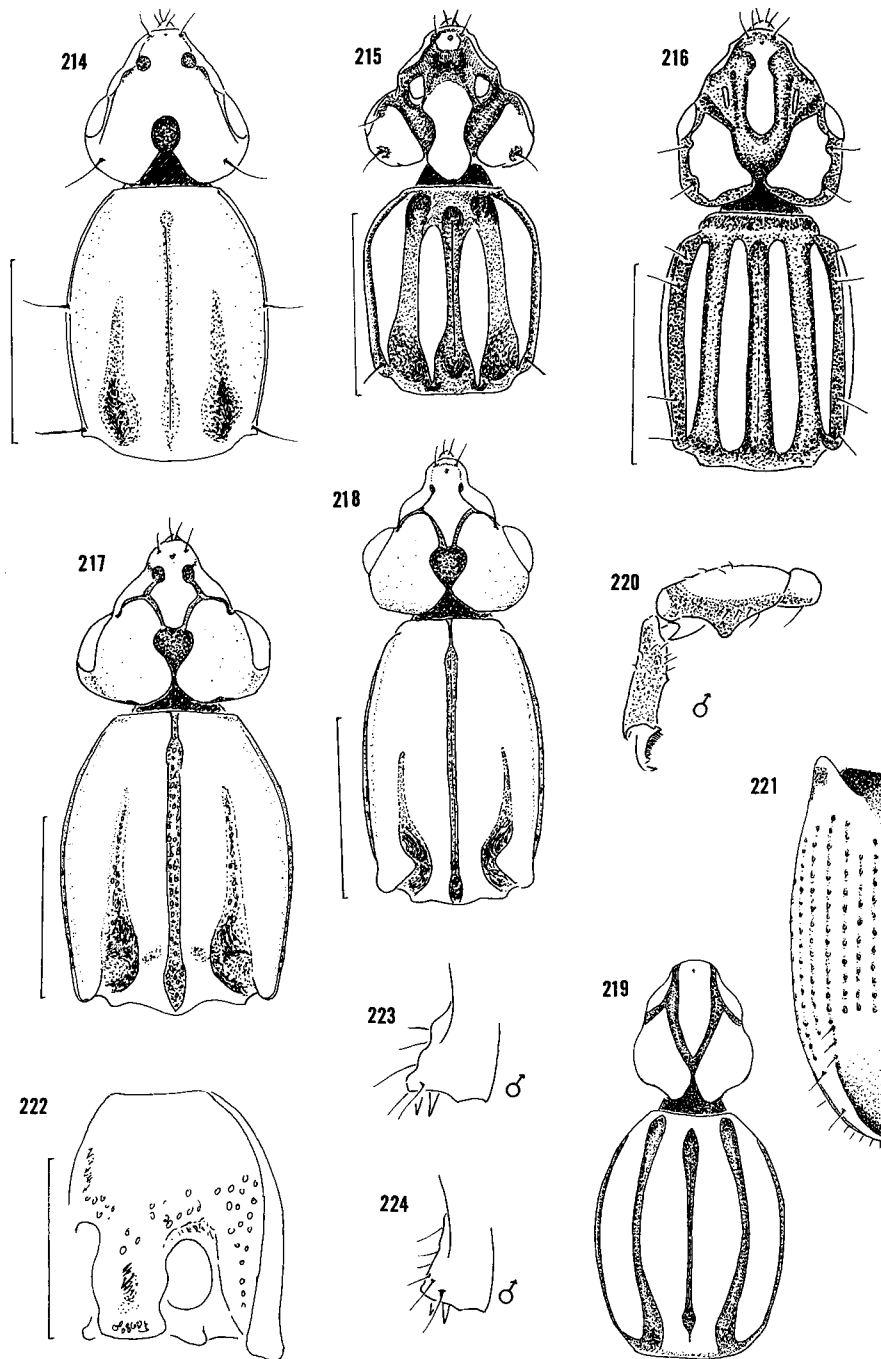
Type Material.— HOLOTYPE male, labelled: "Vietnam, mountains of Sha-Pa Province, 1600-2000 mm., 5.8, 1962, coll. O. N. Kabakov" (LEN).

Description.— Length 6.0 mm. Antennal Segment XI with apical stylet distinct, though small; head cordate; anterior tentorial pits small, punctiform; frontal grooves narrow, well defined, median lobe short, its tip narrowly pointed; eye large, deeper than long; mentum conspicuously punctate and "bearded" in male (female unknown); one pair of postlabial setae present.

Pronotum elongate, narrow, length/greatest width 1.59; sides nearly parallel except anteriorly; apex distinctly narrowed; base scarcely narrowed; discal striole ends slightly anterior to middle of pronotum; marginal groove of pronotum complete; precoxal carina absent; prothoracic pleuron impunctate; prosternum impunctate, including precoxal area.

Elytra very narrow, cylindrical; Striae I-IV impressed, punctate, punctures longer than wide; Striae V-VII not impressed, represented by fine, widely spaced, round punctures; Stria I with base entire; Striae II, III with base slightly abbreviated; Striae IV, V effaced in basal 0.20; Stria VI effaced in basal 0.25 and also near apex; Stria VII effaced in basal 0.33, its extreme apex impressed; setae confined to apex of Stria VII.

Plate 18. Figs. 214–219. Head and pronotum, dorsal aspect. Fig. 214, *Dhysores biimpressus* new species; Fig. 215, *Kaveinga* (*s. str.*) *poggii* new species; Fig. 216, *Grouvellina hexadon* new species; Fig. 217, *Yamatosa kryzhanovskyi* new species; Fig. 218, *Yamatosa kabakovi* new species; Fig. 219, *Arrowina punctatolineata* (Grouvelle) (redrawn from sketch by R. Poggi); Fig. 220, Anterior leg (excluding tarsus), male, *Grouvellina hexadon* new species; Fig. 221, Left elytron, dorsal aspect, *Arrowina punctatolineata* (Grouvelle); Fig. 222, Prothorax, left ventrolateral aspect, *Yamatosa kryzhanovskyi* new species; Figs. 223–224, Hind tibia, apex, male; Fig. 223, *Yamatosa kabakovi* new species; Fig. 224, *Y. niponensis* (Lewis).



Metasternum with row of punctures along lateral margin but without punctures on disc; metasternum of male shallowly impressed; abdominal Sternum IV of male with shallow lateral pit (female unknown).

Anterior femur of male with ventral tooth (female unknown); anterior tibia of male with medial groove bordered by small but distinct flanges near base; spurs of middle and hind tibiae nearly equal; hind calcar of male forming acute angle above spurs, its proximal margin with distinct "shoulder".

This slender, nearly cylindrical species has the elytral striation more reduced than in any other member of the genus. It is closely related to *Y. niponensis* Lewis (Fig. 224) but differs from the latter species in being narrower and more cylindrical with the pronotum more elongate, and with the elytral striae more reduced. In the male, the form of the hind calcar will separate the two species (Fig. 223).

This species is named for the collector, O. N. Kabakov.

Yamatosa longior (Grouvelle 1903)

In MNHN, there is an additional locality record, a specimen from Mt. Ardjoena, Java, Coll. Mme. E. Walsh.

GENUS *ARROWINA* BELL AND BELL 1978

In Parts I and II, we did not include *Rhysodes punctatolineatus* Grouvelle, as we did not know the location of the type, and were not able to learn the correct generic placement from the original description. We have since discovered that it is in the Museo Civico di Storia Naturale in Genoa. The curator, Dr. Roberto Poggi, has very kindly furnished us with detailed drawings and notes which make it clear, as he indicated, that it belongs in *Arrowina*. The range of the genus, as stated in Part I, p. 71, must be amended to read "Ceylon, southern India, Sumatra and Japan". Phylogenetically, *A. punctatolineata* is most closely related to *A. taprobanae* and *A. pygmaea*. The latter two species are closer together than either is to *A. punctatolineata*, however.

REVISED KEY TO SPECIES (Supersedes that of Part II, pp. 438-439)

- | | | |
|--------|--|--|
| 1 | Head almost twice as long as wide; anterior femur of male with ventral tooth (female unknown) | <i>Arrowina rostrata</i> (Lewis) (Part II, p. 439) |
| 1' | Head only slightly longer than wide; anterior femur of male without ventral tooth (male unknown in <i>A. punctatolineata</i>) | 2 |
| 2 (1) | Orbital groove absent; lateral margin of inner pronotal carina sloped gradually into paramedian groove | 3 |
| 2' | Orbital groove complete, somewhat dilated; lateral margin of inner carina vertical, sharply defined | 5 |
| 3 (2) | Metasternum with a few punctures on anterior margin, otherwise impunctate; eye reduced; elytral striae not impressed, represented only by rows of punctures which become obsolete both near base and near apex | <i>Arrowina punctatolineata</i> (Grouvelle) |
| 3' | Metasternum with row of coarse punctures along each lateral margin; eye not reduced; elytral striae distinctly impressed, punctate from base to apex | 4 |
| 4 (3') | Metasternum with punctures confined to lateral margins; length 5.0 mm or more | <i>Arrowina taprobanae</i> (Fairmaire) (Part II, p. 439) |
| 4' | Metasternum with punctures in middle as well as along lateral margins; | |

- length 4.3 mm or less
 *Arrowina pygmaea* Bell and Bell (Part II, p. 441)
 5 (2') Eyes large, deeper than long; posteriomedial margin of temporal lobe
 sinuate posterior to medial angles
 *Arrowina nilgiriensis* (Arrow) (Part II, p. 441)
 5' Eyes reduced, longer than deep; posteriomedial margin of temporal lobe
 not emarginate *Arrowina anguliceps* (Arrow) (Part II, p. 442)

Arrowina punctatolineata (Grouvelle 1903) NEW COMBINATION
 (Figs. 219, 221)

Rhysodes punctatolineatus Grouvelle 1903: 116.

Rhysodes punctostriatus Grouvelle 1903: 97, 143 (error).

Rhysodes punctolineatus Hincks 1950: 11 (error).

Type Material.— HOLOTYPE female, labelled: "SUMATRA: Mte. Singalang" (GEN). (Specimen deformed on right anterolateral margin of pronotum)

Description.— Length 6.8 mm. Antennal Segment XI slightly longer than wide; stylet minute, scarcely evident; head slightly longer than wide; rostrum not elongate; median lobe elongate, pointed posteriorly; frontal space scarcely evident; medial angles obtusely rounded, nearly contiguous; posteriomedial margin of temporal lobe rounded; posteriolateral margin distinctly emarginate; orbital groove absent; eye reduced, longer than deep, strongly pigmented and difficult to see; postorbital tubercle present, though very obtuse.

Pronotum elongate, length/greatest width about 1.3; widest at middle, sides evenly curved, apex and base both markedly narrowed; inner carina slightly wider than outer one; inner carina with lateral margin ill-defined, sloped gradually into paramedian groove.

Elytra with sides parallel in middle third; humeral region more narrowed than in *A. taprobanae*; elytral striae not impressed, represented only by rows of very fine punctures; stria punctures obsolete in basal 0.15 and apical 0.33; base of elytron obliquely depressed, forming triangular depression in region of scutellum; elytron with three setae in posterior part of Stria IV and several setae on lateral face of apical tubercle, and several setae in apex of Stria VII; metasternum with row of punctures along anterior margin, otherwise impunctate (Fig. 221); middle and hind tibiae with spurs nearly equal.

This distinctive species differs from other known members of the genus in the reduction of the elytral striation and in the triangular depression at the bases of the elytra. The reduction of the eye is a feature in common with *A. anguliceps*, but it differs from the latter species in the absence of the orbital grooves, as well as in the shape of the temporal lobes, and in the virtual absence of the frontal space.

SUBGENUS *PYXIGLYMMIUS* BELL AND BELL 1978

We have found an additional species from Sumatra. In the key it would trace to *O. hesperus*. The key can be modified as follows:

- 7 (6') Postorbital tubercles large, prominent; paramedian grooves relatively shallow 7.1
 7' Postorbital tubercles relatively small, not prominent in dorsal view; paramedian grooves deep, more sharply defined
 *O. strabus* (Newman)
 7.1 (7) Elytral intervals flat; intervals, pronotal carinae, temporal lobes strongly microsculptured in female, lateral pit of Sternum IV longitudinally striate, brace weakly developed *O. opacus* new species
 7.1' Elytral intervals convex; intervals, pronotal carinae, temporal lobes shining, without microsculpture; in female, lateral pit of Sternum IV not striate,

brace strongly developed *O. hesperus* Bell and Bell

Omoglymmius (Pyxiglymmius) opacus new species
(Figs. 225, 234)

Type Material.— HOLOTYPE female, labelled: "Sumatra, Padang, 1890, Modigliani" (GEN).

Description.— Length 9.0 mm. Antennal Segment XI slightly wider than long, tip obtuse; basal setae apparently absent (though possibly lost from holotype); head slightly longer than wide, large relative to pronotum, as in *O. strabus*; clypeus punctate, pollinose, continuous with median lobe; latter rhomboid, wider than long; posterior angle obtuse, anteriomedial margin of temporal lobe oblique; first medial angles distinctly, though narrowly separated; second medial angles contiguous; occipital angles very obtuse though distinct; posteriolateral margin of temporal lobe slightly oblique; each temporal lobe with two coarse punctures; temporal lobes coarsely microsculptured, opaque; postorbit concave dorsad to postorbital tubercle, postorbital tubercle large, 0.7 as long, 0.6 as deep as eye; tubercles less divergent than in *O. hesperus*, width across tubercles slightly greater than width across eyes.

Pronotum short; length/greatest width 1.26; widest point near middle, apex less strongly narrowed than in *O. hesperus*; base moderately narrowed; lateral margin scarcely sinuate anterior to hind angles; paramedian grooves broad, shallow, punctate; paramedian groove equal in width to inner carina at middle, narrower than outer one at middle; both carinae strongly microsculptured, coarsely, densely punctate; marginal groove fine, about 0.20 as wide as outer carina at middle.

Elytra longer, narrower than *O. hesperus*, but shorter than in *O. strabus*; stria punctures relatively coarse; one seta in apical 0.33 of Stria IV; subapical striole with seta; about four in apical 0.5 of Stria VII; elytral intervals strikingly flat, densely microsculptured; female with deep lateral impression in posterior 0.67 of metasternum; female with margin of elytron angulate opposite hind coxa; female with indistinct lateral pits on Sternum I, large lateral pits on Sternum IV, latter separated medially by about twice width of one of them; lateral pit with slight trace of anteriolateral brace, with elongate punctures suggesting longitudinal striation.

Male unknown.

The heavy microsculpture separates this species from *O. strabus* and *O. hesperus*. The very flat elytral intervals are also distinctive. In the proportions of the body and size of postorbital tubercles, it is intermediate between *O. strabus* and *O. hesperus*. The lateral pits of Sternum IV differ from either. *O. hesperus* has a very strong brace but no trace of longitudinal striation, while *O. strabus* has a prominent brace and strong longitudinal striation.

SUBGENUS *ORTHOGLYMMIUS* BELL AND BELL 1978

Omoglymmius (Orthoglymmius) feae (Grouvelle 1895b)

Dr. Poggi has kindly allowed us to study an additional specimen from the Genoa Museum also labelled as a type. We hereby designate the specimen cited as holotype in Part III (female, labelled: "Burma. Charin Cheba. 900-1100 m., X-88, coll. L. Fea" (MNHN)) as LECTOTYPE. The PARALECTOTYPE is a male with same data as lectotype (GEN). It has a pollinose postorbital tubercle, and is possibly not conspecific with the lectotype. Additional material is needed in this difficult subgenus.

SUBGENUS *OMOGLYMMIUS SENSU STRICTO* GANGLBAUER 1892

Three new species *O. gressitti*, *O. craticulus* and *O. largus* are described below.

Omoglymmius (sensu stricto) gressitti new species
(Fig. 229)

Type Material.— HOLOTYPE male, labelled: "PAPUA NEW GUINEA, Wau, Mt. Missim 1500 m. Feb. 25, 1982, R. T. Bell" (BPBM).

Description.— Length 7.9 mm. Antennal segments I-IV coarsely punctate; outer segments with punctures very fine; Segment XI impunctate; head slightly longer than wide; median lobe broad, apex broadly rounded; frontal space broad, U-shaped, its lateral margins strongly curved; medial angles rounded, well separated; posteriomarginal margin oblique, slightly concave; posteriolateral margin nearly evenly curved; occipital angle obtuse; antennal lobes glabrous; posteriomarginal margin, occipital angle pollinose; orbital groove narrow, very short, ended anterior to middle of eye; temporal lobe with about 25 rather coarse punctures; one temporal seta; small postorbital tubercle present; eye large, round.

Pronotum short, length/greatest width 1.07; widest near middle; base slightly narrowed; apex strongly narrowed; lateral margins strongly curved; margin slightly sinuate anterior to hind angle; inner carina almost twice as broad as outer carina at middle; outer carina widest at middle, narrowed to apex; narrowed nearly to base, but broadened at extreme base; outer carina relatively narrow, lateral and medial margins nearly parallel, so carina of nearly even width, strongly curved; inner carina impunctate; outer carina with about 40 moderately fine punctures; pronotum without setae; prosternum without precoxal carinae.

Elytron moderately long, narrow; striae not impressed; strial punctures coarse; base of Stria IV with longitudinal scarp; transverse basal scarp shining, not pollinose; subapical striole with one seta; Stria VII with one or two setae near apex; metasternum bluish, opalescent, punctate in midline, along margins, part of disc impunctate; abdominal Sterna III-V with punctures, fine, nearly in single line near midline, scattered, coarse near lateral margins; male with rather deep, semicircular lateral pits on Sternum IV; male with small ventral tooth on anterior femur; middle calcar minute; hind calcar larger, obtuse.

This is a large species with a minute postorbital tubercle. It is similar to *O. follis*, also found near Wau, but differs in having a very narrow, heavily punctate outer carina. This species is dedicated to the memory of J. L. Gressitt and his wife, Margaret, for their kind hospitality and assistance on our field trip to the Wau Ecological Institute, Papua New Guinea.

In our world key, this species would trace to couplet 69. The key should be changed as follows:

69	(68) (unchanged)	<i>O. quadraticollis</i> (Arrow)	
69'	(unchanged)		69.1
69.1 (69')	Outer carina narrow, curved, densely punctate	<i>O. gressitti</i> new species	
69.1'	Outer carina not conspicuously narrower than inner carina, sparsely punctate or impunctate		70

In our key to species from New Guinea, this species would trace to couplet 18 and should be changed as follows:

18	(17) Outer carina relatively narrow, curved	<i>O. gressitti</i> new species	
18'	Outer carina relatively broad, less curved		18.1

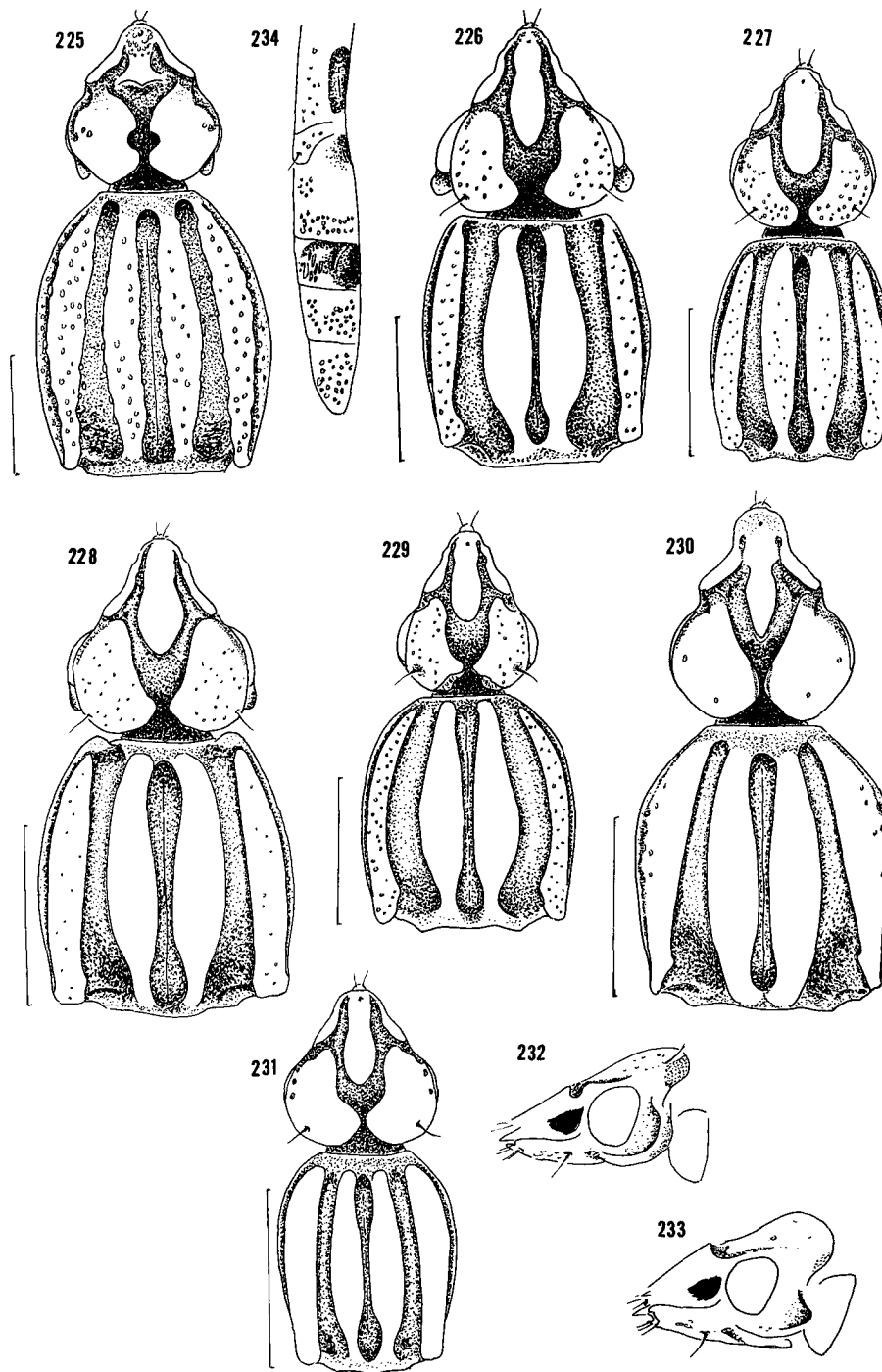
(Couplet 18 of the original key is to be renumbered as 18.1)

Omoglymmius (sensu stricto) craticulus new species
(Figs. 227, 232)

Type Material.— HOLOTYPE female, labelled: "N. Guinea, S. E., Moroka 1300 m., Loria, VII-XI, 93" (GEN). It had been labelled as *R. capito* Grouvelle.

Description.— Length 7.0 mm. Antennal Segments I-X punctate, outer segments finely so; Segment XI with a few punctures; head slightly longer than wide; median lobe short, broad, tip rounded; frontal space slightly wider than long, its margins curved; medial angles rectangular; posteriomarginal margin emarginate; occipital angle very obtuse; posteriolateral margin more strongly, evenly curved, than in *O. planiceps*; orbital groove fine, extending nearly to posterior

Plate 19. Figs. 225–234. Genus *Omoglymmius*. Figs. 225–231, Head and pronotum, dorsal aspect; Fig. 225, *O. (Pyxiglymmius) opacus* new species; Fig. 226, *O. (s. str.) largus* new species; Fig. 227, *O. (s. str.) tolai* new species; Fig. 228, *O. (s. str.) craticulus* new species; Fig. 229, *O. (s. str.) gressitti* new species; Fig. 230, *O. (Laminoglymmius) perplexus* new species; Fig. 231, *O. (Navitia) peckorum* new species; Figs. 232–233, Head, left lateral aspect; Fig. 232, *O. (s. str.) craticulus* new species; Fig. 233, *O. (Laminoglymmius) perplexus* new species; Fig. 234, Metasternum, abdomen left lateral aspect, *O. (Pyxiglymmius) opacus* new species.



margin of eye; temporal lobe with about 20 very fine punctures; one temporal seta, arising from puncture at margin of temporal lobe posterior to eye; posterior face of temporal lobe without pollinosity, but with area of strong microsculpture resembling grid; temporal lobe relatively convex in lateral view; postorbital tubercle short but very deep; eye large, round.

Pronotum very short, length/greatest width 1.05; widest near middle; base slightly narrowed; apex strongly narrowed; lateral margins slightly curved posteriorly; strongly curved, narrowed anteriorly; margin scarcely sinuate anterior to hind angle; marginal groove not dilated; in dorsal view, outer carina appears about 0.6 as wide as inner carina at middle; outer carina convex, directed dorsolaterad so it appears narrower in dorsal than in dorsolateral view; medial margin of outer carina shallowly sinuate just anterior to base; outer carina widest at base; inner carina strongly narrowed at base; inner carina impunctate; outer carina with many exceedingly fine punctures, not evident except under high magnification; pronotum without setae; prosternum without precoxal carinae.

Elytra moderately long; striae not impressed, represented by rows of round, relatively coarse punctures; base of Stria IV with longitudinal pollinose scarp; Stria IV with one seta near apex; subapical striole with one seta; marginal stria with apex impressed, with three or four setae; metasternum with broad medial, lateral bands of punctures, surrounding elongate impunctate space on either side of disc; abdominal Sterna III-VI with many scattered punctures; female with moderately deep, round lateral pit on Sternum IV; female without ventral tooth on anterior femur; male unknown.

The grid of microsculpture on the posterior face of the temporal lobe separates this species from all except *O. planiceps* Bell and Bell. The latter species has much finer, sparser strial punctures which are elliptical, rather than round. In addition, the temporal lobes are much more strongly flattened than in *O. craticulus* and the pronotum is shaped differently.

This species would trace to Couplet 19 in our key to *Omoglymmius sensu stricto* of New Guinea. The punctuation of the metasternum is equivocal, so the key should be altered as follows:

- | | | |
|-----------|---|-----------------------------------|
| 19 | (17') Posterior face of temporal lobe pilose or scaly; temporal seta not marginal . . . | 19.2 |
| 19' | Posterior face of temporal lobe with microsculpture in grid pattern;
temporal seta marginal | 19.1 |
| 19.1(19') | Strial punctures relatively large, round, separated from neighboring
punctures by about 0.5 of length of one of them; temporal lobe relatively
convex | <i>O. craticulus</i> new species |
| 19.1' | Strial punctures small, elliptical, separated by more than length of one of
them; temporal lobe strongly flattened | <i>O. planiceps</i> Bell and Bell |
| 19.2(19) | Metasternum with punctures limited to midline, margins | 20 |
| 19.2' | Metasternum with punctures scattered over entire disc | 23 |

Omoglymmius (sensu stricto) largus new species

(Fig. 226)

Type Material.— HOLOTYPE female, labelled: "NOUVA GUINEA, Fly River, L. M. D'Albertis, 1876-77" (GEN). The specimen also bears a pink label "6880".

Description.— Length 7.2 mm. Antennal Segments V-X coarsely punctate; Segment XI missing in holotype; head slightly broader than long; median lobe lance-shaped, broader anteriorly than in *O. capito*, tip obtuse; frontal space broader than long, lateral margin shallowly sinuate; medial angles rounded, more widely separated than in *O. capito*; posteriomedial margin curved into posteriolateral margin; occipital angle absent; antennal groove rather narrow, not expanded laterally; orbital groove shallow, ill-defined; temporal lobe with about 10 rather coarse punctures, not clearly differentiated into coarse and fine ones, as in *O. capito*; one temporal seta; postorbital tubercles about 0.8 as long as eye, more divergent than in *O. capito*, width across them much greater than width across eyes; eye large, round; posterior face of temporal lobe with minute pale scales which are separated from one another.

Pronotum very short, broad; length/greatest width 1.03, widest near middle; base slightly narrowed; apex more strongly narrowed; anterior part of lateral margins more oblique, less curved than in *O. capito*; margin slightly sinuate anterior to hind angle; outer carina about 0.5 as wide as inner carina at middle; outer carina narrow, convex, of nearly even width; inner carina narrowed just anterior to base, then slightly dilated; paramedian groove broader than in *O. capito*, apex of paramedian groove dilated; outer carina with about 30 fine punctures; inner carina impunctate; pronotum without setae; prosternum without precoxal carina.

Elytron rather broad, its surface microsculptured, shining, opalescent; striae not impressed, represented by rows of rather coarse, round punctures; base of Stria IV with longitudinal pollinose scarp; elytral striae without setae; metasternum nearly completely, finely punctate, but with punctures very sparse on either side of midline; female with oval lateral pits on abdominal Sternum IV; female with acute ventral tooth on anterior femur; male unknown.

This species has a broad head and divergent postorbital tubercles. It is close to *O. capito*, but differs in the shape of the pronotum, especially in having much narrower outer carinae.

O. largus will trace to *O. capito* in our key to *Omoglymmius* s. str. of New Guinea. Couplet 24' should be altered to lead to Couplet 25, which will separate the two species as follows:

- 25 (24') Outer carina slightly narrower than inner carina at middle; outer carina at anterior 0.33 broader than paramedian groove. *O. capito* (Grouvelle)
 25' Outer carina about 0.5 as wide as inner carina at middle; outer carina at anterior 0.33 narrower than paramedian groove. . . . *O. largus* new species

Omoglymmius (sensu stricto) tolai new species
(Fig. 231)

Type Material.— HOLOTYPE male, labelled: "NEW BRITAIN, Rabaul, 17-VII-79 sur arbre mort, J. D. Bourne" (GVA). PARATYPE one female, mounted on same pin as male.

Description.— Length 6.7-7.2 mm. Antennal Segments I-IV coarsely punctate; Segments V-X more finely punctate; Segment XI impunctate; head distinctly longer than wide; median lobe short, oval, its tip broadly rounded; median lobe impunctate; frontal space as long as broad, nearly V-shaped, its anterior medial margin oblique, long; medial angles nearly rounded, markedly separated; posteriomedial margin curved evenly; posteriolateral margin evenly curved; occipital angle indistinct; orbital groove narrow, ended posterior to middle of eye; anterior portion of temporal lobe a convex, pollinose ridge; temporal lobe with 10-28 fine punctures; one temporal seta; postorbital, suborbital tubercles absent; eye large, round.

Pronotum rather short; length/greatest width 1.14, widest near middle; base slightly narrowed; apex markedly narrowed, margin evenly curved from middle to apex; margin scarcely sinuate anterior to hind angle; outer carina about 0.67 as wide as inner carina at middle; medial margin of outer carina sinuate just anterior to base; outer carina widest at or posterior to middle, scarcely narrowed anteriorly except at extreme apex; inner carina narrowed to base; latter truncate; outer carina with 20-38 fine punctures; inner carina with 21-23 fine punctures; pronotum without setae; prosternum without precoxal carinae.

Elytron relatively elongate, narrow; striae impressed, coarsely punctate; transverse basal scarp pollinose; base of Stria IV with longitudinal pollinose scarp; Stria IV with one seta near apex; subapical striole with one seta; Stria VII with several setae near apex; metasternum largely punctate, but with small impunctate area near middle of disc; abdominal Sterna III-VI coarsely punctate; punctures confluent near lateral margin; female with lateral pit on Sternum IV small but relatively deep, male with similar but shallower pit; both sexes with ventral tubercle on anterior femur, that of female relatively small; middle calcar small, obtuse; hind calcar triangular, proximal margin slightly concave.

This species, the first of the genus to be described from the Bismarck Archipelago, is close to several species from New Guinea. In the shape of the pronotum it comes close to *O. puncticornis* Bell and Bell. It differs from the latter species in having the punctures of the distal antennal segments markedly finer than those of the proximal segments.

The punctures of the legs and ventral surface are also notably finer than in *O. puncticornis*. *O. fringillus* Bell and Bell differs in having the temporal lobes more transverse, with the posteriomedial angles longer and more oblique, so that the most posterior points on the two lobes are separated by more than 0.5 of the greatest width of the head. The pronotum is more nearly quadrate, with the lateral margins nearly parallel except near the anterior margin. The closest species is perhaps *O. oroensis* Bell and Bell, which resembles *O. tolai* in the shape of the temporal lobes, but which has the pronotum similar to *O. fringillus*.

In our general key, *O. tolai* will trace to Couplet 20. At this point the key should be altered as follows:

- 20 (19) Pronotum subquadrate, lateral margins convergent only near apex 20.1
 20' Pronotum with lateral margins curved, convergent from middle to apex 21
 20.1(20) Most posterior points on temporal lobes separated from one another by
 much less than 0.5 of width of head
 *O. oroensis* Bell and Bell (Part III: 240)
 20.1' Most posterior points on temporal lobes separated from one another by
 more than 0.5 of width of head
 *O. fringillus* Bell and Bell (Part III: 240)
 (some specimens: see below)
 21 (20') Medial angle of temporal lobe obtusely pointed; posteriomedial margin
 slightly sinuate; strial punctures elliptical, fine, sparse
 *O. viduus* Bell and Bell (Part III: 226)
 21' Medial angle rounded; posteriomedial margin rounded; elytral punctures
 coarse 21.1
 21.1(21) Antennal Segments V-X as coarsely punctate as Segments I-IV; legs,
 ventral surface very coarsely punctate. (New Guinea)
 *O. puncticornis* Bell and Bell (Part III: 241)
 21.1' Antennal Segments V-X more finely punctate than Segments I-IV; legs,
 ventral surface more finely punctate (New Britain)
 *O. tolai* new species

The title of the regional key should be altered to read "Key to species from New Guinea, the Admiralty Islands and the Bismarck Archipelago". In this key, the species would key to *O. puncticornis* (8'). The latter species can be separated from *O. tolai* by using couplet 21.1 of the general key (above).

O. fringillus Bell and Bell 1982

We have studied a series of four males and two females labelled "XII-78, PNG (Morobe) umg. Kaiapit" (GVA). These fit the original description of the species except that the lateral pollinosity of the temporal lobe is interrupted for a short distance posterior to the level of the eye. This is true also of a few in the type series, so the character should not be used in the keys. The general key above has been altered to correspond to this inconsistency.

SUBGENUS *LAMINOGLYMMIUS* BELL AND BELL 1982

We have found an additional species from Sumatra. The key should be modified as follows:

- 4 (2') Outer carina punctate, at least near margin 4.1
 4' Outer carina impunctate 5
 4.1(4) Median lobe concave; two medial angles, separated by shallow
 emargination *O. insularis* (Grouvelle)
 4.1' Median lobe flat; one medial angle, anteriomedial margin oblique
 *O. perplexus* new species

Omoglymmius (Laminoglymmius) perplexus new species
(Figs. 228, 233)

Type Material.— HOLOTYPE female, labelled: "SUMATRA, dono Grouvelle 1901, *philippensis* Chev., teste Grouvelle 1901" (GEN). The specimen was formerly mounted on the same pin as a male of *Omoglymmius (Hemiglymmius) inermis* Bell and Bell.

Description.— Length 7.1 mm. Antennal Segment XI as wide as long, apex rounded; basal setae sparse on Segments V-VI denser on VII-X; clypeus impunctate, continuous with median lobe; latter impunctate, narrow, tip pointed, not translucent; anteriomedial margin of temporal lobe almost straight, translucent area semicircular, less sharply different from remainder of temporal lobe than in *O. inaequalis*; one medial angle, latter obtusely rounded, nearly contiguous with that of opposite temporal lobe; medial angle with very narrow pollinose area; posteriomedial margin nearly rounded; temporal lobe convex, shining, with two or three coarse punctures, each with minute seta; postorbital tubercle small, about 0.5 as deep, 0.33 as long as eye, low, opposite lower 0.5 of eye; width across postorbital tubercles less than that across eye.

Pronotum relatively short, length/greatest width 1.10; widest point slightly anterior to middle; sides curved, strongly convergent to apex, latter narrow; sides oblique, slightly convergent to base, latter relatively broad; margin scarcely sinuate anterior to hind angle; paramedian groove deep, strongly narrowed anteriorly, width at middle 0.4 of that of inner carina; outer carina broad, nearly equal to inner carina at middle; outer carina with five or six punctures near lateral margin in middle 0.33; inner carina entirely impunctate; marginal groove linear.

Elytra relatively short, broad; striae shallow, intervals slightly convex, faintly microsculptured; stria punctures relatively coarse, each about 0.33 of width of interval; Stria VII with three to five setae near apex; female with shallow, semicircular lateral pit on Sternum IV; female with ventral tooth on anterior and posterior femora; male unknown.

The medial translucent area on the temporal lobe is very small and liable to be overlooked. If so, this species would be traced to Subgenus *Boreoglymmius*. In the latter species, it would be keyed to *O. lewisi* of Japan, because of the presence of a postorbital tubercle. The latter species differs in the conspicuously oblique posteriolateral margins of the temporal lobes, and in the much bigger lateral abdominal pits of the female. Also, it lacks a median gular tubercle, while *O. perplexus* has one. This appears to be a constant difference between the Subgenera *Laminoglymmius* and *Boreoglymmius*. Another superficially similar species is *O. lineatus* of southern India, in Subgenus *Indoglymmius*. The latter species lacks basal setae on the antennae, lacks a postorbital tubercle, and has a much more elongate pronotum.

With the Subgenus *Laminoglymmius*, the most similar species are *O. inaequalis* of the Andaman Islands, and *O. actae* of New Guinea. Both species have much narrower outer carinae. In addition, *O. inaequalis* has a much more conspicuous translucent area on the temporal lobe, and *O. actae* has two distinct medial angles.

O. inaequalis appears to be the species most closely related to *O. perplexus*. It appears to us that the two shared a common ancestor more recent than our hypothetical Species 3 (Part III, Diagram 2).

SUBGENUS *NAVITIA* BELL AND BELL 1978

The discovery of an additional species necessitates the substitution of a new species key.

KEY TO SPECIES (Supersedes that in Part III: 164)

- | | | |
|-------|--|---|
| 1 | Frontal grooves pollinose | 2 |
| 1' | Frontal grooves glabrous, scarcely evident | |
| | <i>O. intrusus</i> (Grouvelle) (Part III: 166) | |
| 2 (1) | Temporal lobe with eight or more punctures in addition to setiferous puncture; outer carina of pronotum with three to five punctures near base | |
| | <i>O. stylatus</i> Bell and Bell (Part III: 165) | |

- 2' Temporal lobe with one or two punctures in addition to setiferous puncture;
outer carina of pronotum without punctures *O. peckorum* new species

Omoglymmius (Navitia) peckorum new species
(Fig. 230)

Type Material.— HOLOTYPE male, labelled: "FIJI: Viti Levu 1100 m., Nandarivatu Microw, 16-20 VIII - 1978 S & J Peck, Ber. Elfin for litter, rainforest, berlese litter" (BSRI). PARATYPE male, same label as holotype (BSRI).

Description.— Length 5.5 mm. Antennal stylet more elongate than in related species, about 0.3 of length of Segment XI; head cordate, slightly broader than long, temporal lobes slightly flattened; frontal grooves pollinose, broader and deeper than in *O. stylatus*; orbital groove distinct, reaching to middle of eye; head broader than in *O. stylatus*, margins slightly convergent posteriorly; temporal lobe with three coarse punctures near margin, one or two of them with temporal seta; temporal lobe otherwise impunctate.

Pronotum elongate, length/greatest width 1.23; widest anterior to middle, lateral margin distinctly sinuate anterior to hind angle; marginal groove distinct in anterior 0.67-0.75, replaced posterior by group of five widely spaced punctures; pronotal epipleuron without ventral row of punctures.

Elytra narrow, relatively elongate; last puncture of Stria III enlarged, elongate oval; striae deeper, more coarsely punctate than in related species; intervals more convex than in related species; Stria IV with complete row of five setae; one seta at apex of Stria VI; about five setae near apex of Stria VII; punctures of Sternum V not confluent laterally; male with ventral tooth on anterior femur; middle calcar obsolete; hind calcar obtuse, proximal margin obtusely angulate. Female unknown.

This species has deeper striae with coarser punctures and more convex intervals than in other members of the subgenus. The antennal stylet is larger. In other respects it shows a mixture of the characters of the previously known species. The pollinose frontal grooves give a superficial resemblance to *O. stylatus*, while the relatively short marginal groove, and the absence of punctures on the pronotal epipleuron and the outer carina are similarities to *O. intrusus*. The hind wing was checked on the paratype, and was found to be fully developed.

We dedicate this species to the collectors, Drs. S. & J. Peck.

ACKNOWLEDGEMENTS

We wish to thank the numerous curators and collectors whose aid has made this study possible. Most were mentioned in Parts I-III. Dr. Ivan Löbl, of the Museum d'Histoire Naturelle, of Geneva, lent us the valuable Rhysodine collection under his care. We wish to extend special thanks to Dr. George Ball for his editorial help, and for many other types of assistance at all stages of this project. We are again indebted to Mrs. Joyce Murray for the typing of the original manuscript. We thank Mrs. Ruth Goodridge and Ms. Gail Porteus for typing the subsequent revisions. Finally, we acknowledge our debt to the late Dorothy A. Bell (mother of Ross T. Bell) for many years of support and interest, and for the bequest of funds which have made it possible to publish this work.

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