

Contributions
of the
American Entomological Institute

Volume 15, Number 4, 1978



A REVIEW OF THE NEW WORLD GENUS
ATHYREUS MACLEAY
(SCARABAEIDAE, GEOTRUPINAE, ATHYREINI)

by

Henry F. Howden and Antonio Martínez

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ABSTRACT

Thirty-one species are included in the genus Athyreus Macleay. Seventeen previously proposed names are considered valid, six are considered synonyms, and three names, billbergi Gray, subarmatus Westwood and vicinus Laporte are listed as incertae sedis. Fourteen new species are described: acuticornis from Brazil, alvarengai from Brazil, anneae from Brazil and Paraguay, biarmatus from Trinidad, bilobus from Brazil, brasilicus from Brazil, capricornis from Brazil, conspicuus from Argentina, hypocritus from Argentina and Paraguay, juanae from Brazil, nitidus from Bolivia, parvus from Brazil, pyriformis from Peru, and unicornis from Colombia. The introduction and keys are given in both Spanish and English. Following the incertae sedis a list of the species included in the genera Neoathyreus and Parathyreus is given.

CONTENTS

Introduction	2
Resumen	4
Collections studied	5
Key to the species of <u>Athyreus</u> Macleay	5
Clave para <u>Athyreus</u> Macleay	12
Species descriptions	
1. <u>cyanescens</u> Klug	20
2. <u>capricornis</u> n. sp.	21
3. <u>aeneus</u> Klug	22
4. <u>vavini</u> Boucomont	23
5. <u>hypocritus</u> n. sp.	24
6. <u>brasilicus</u> n. sp.	25
7. <u>bilobus</u> n. sp.	26

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8. <u>hemisphaericus</u> Boucomont	28
9. <u>nitidus</u> n. sp.	29
10. <u>anneae</u> n. sp.	30
11. <u>forcipatus</u> Boucomont	31
12. <u>alvarengai</u> n. sp.	31
13. <u>pyriformis</u> n. sp.	32
14. <u>unicornis</u> n. sp.	33
15. <u>armatus</u> Westwood	34
16. <u>biarmatus</u> n. sp.	35
17. <u>gigas</u> Westwood	36
18. <u>parvus</u> n. sp.	37
19. <u>bifurcatus</u> Macleay	38
20. <u>tuberifer</u> Felsche	39
21. <u>juanae</u> n. sp.	41
22. <u>bellator</u> Westwood	42
23. <u>tridens</u> Laporte	42
24. <u>championi</u> Bates	43
25. <u>acuticornis</u> n. sp.	44
26. <u>tribuliformis</u> Felsche	46
27. <u>zischkai</u> Martínez	47
28. <u>martinezi</u> Howden	48
29. <u>hastifer</u> Felsche	49
30. <u>chalybeatus</u> Fairmaire	50
31. <u>conspicuus</u> n. sp.	51
Incertae sedis	53
List of species in <u>Neoathyreus</u> Howden and Martínez	53
List of species in <u>Parathyreus</u> Howden and Martínez	54
Acknowledgments	54
Literature cited	54
Figures	57

INTRODUCTION

In 1819 Macleay proposed the name Athyreus. Until 1963 the genus included a heterogeneous mixture of New and Old World forms with some 61 names being listed in the genus by Boucomont (1912). In 1963 Howden and Martínez created the tribe Athyreini and restricted the genus Athyreus to include only a group

of relatively large, sexually dimorphic species with at least four, often six, relatively distinct intervals on each elytron. *Athyreus bifurcatus* Macleay was designated as type for the genus but no complete list of included species was attempted at that time as no key or revision for any of the groups had been attempted.

Both authors have slowly been accumulating information and specimens, and many of the types of *Athyreus* have been studied. We now consider 26 old names referable to *Athyreus* as presently constituted. Three names are based on females seemingly belonging to the *bifurcatus* complex of species and we consider them unassignable, listing them as *incertae sedis*. The other 23 names we believe can be assigned to 17 species with reasonable accuracy. However, there is some uncertainty and when the lack of specimens in series is also considered, we do not consider that a revision of the group is feasible. Hence, we have merely tried to assign the earlier names, describe fourteen new species and to present keys, brief descriptions, and illustrations. The keys, unfortunately, are based largely on males except for the *chalybeatus* group. Unless males and females can be associated in the field their association is usually questionable.

In *Athyreus*, well developed males often have a well developed clypeal horn and one or more pronotal horns or strongly elevated lobes. In contrast, females, with one exception (*tuberifer*), have a transverse carina across the anterior face of the clypeus and a second transverse carina posteriorly at the clypeal-frontal junction. This posterior carina is normally trituberculate, with a distinct median tubercle and a smaller one on each side at the lateral margin. In addition, female pronota may have several conspicuous carinae, particularly in the *chalybeatus* group, and in the other groups low central tubercles, but in only one species (*tuberifer*) do females have what could be termed a pronotal "horn". If there is any doubt about the sex it is best to check the genitalia.

Neither the use of the term "groups" in the keys or text nor the sequence used in numbering the species is meant to imply phylogenetic relationships. Rather atypical species, such as *gigas* Westw., *armatus* Westw., *biarmatus* n. sp., *unicornis* n. sp., and *pyriformis* n. sp., are arbitrarily placed and *pyriformis* at least could be assigned to either the *aeneus* or *bifurcatus* groups. The divisions were established, at least in part, as a convenient method of proportioning the descriptive work evenly between the authors.

Little can be said about the habits of *Athyreus*. Almost all specimens have been, as far as we can ascertain, collected at light. A few have been caught flying at dusk (crepuscular) but most are apparently nocturnal. The genus seemingly occurs mainly below 1500 m in elevation in a variety of habitats varying from relatively undisturbed lowland rainforest to seasonally wet, semiarid sandy habitats. Unfortunately, attraction to light seems to be an infrequent occurrence, and the rarity or lack of material in collections has seriously hindered our studies.

We have attempted to avoid special terms but, even so, our attempts to describe the complexities of the pronotal carinae or male genitalia can easily cause some confusion. Hopefully, the numerous illustrations will alleviate this problem to a major degree.

RESUMEN

Los autores presentan una tentativa de revisión del género Athyreus, propuesto por Macleay en 1819. En 1912 Boucomont cataloga unas 60 especies para el mismo, incluyendo formas heterogéneas del viejo y nuevo mundo. En razón de tal anómala situación, Howden y Martínez en 1963 crean la tribu Athyreini, restringiendo el género Athyreus para el grupo de especies relativamente grandes, con dimorfismo sexual y como máximo con 4 a 6 claros interespacios en cada elitro, designando como tipo a Athyreus bifurcatus Macleay, pero sin incluir una lista completa de especies, hasta no efectuar una clave o revisión del mismo o de los otros grupo-género por ellos creados.

Durante el tiempo transcurrido desde éste estudio, ambos autores estuvieron acumulando información y material, habiendo sido estudiados en ese lapso muchos de los tipos de Athyreus. En la actualidad han considerado 26 nombres referidos a especies del género; 3 de éstos nombres basados en hembras asignadas al complejo "bifurcatus" y las que han considerado como "incertae sedis". Los otros 23 nombres han podido ser asignados con relativa seguridad a 17 especies. Sin embargo en alguno de los casos, la falta de series de algunas de las especies, ha hecho no poder considerar a este trabajo como una revisión en el sentido estricto y sí, como lo señalan precedentemente como una primera tentativa. Eso ya se nota en la clave, que desafortunadamente ha tenido que ser basada en machos bien desarrollados, con excepción hecha del grupo chalybeatus, ya que no siempre machos y hembras han podido ser asociados, siendo ésta una investigación de campo.

En los Athyreus bien desarrollados, los machos tienen cuerno clipeal y uno más cuernos o lóbulos pronotales prominentes. Las hembras, con la sola excepción tuberifer, tienen quilla transversal en la región dorso-anterior del clipeo y una segunda quilla, también transversal, en el límite clipeo-frontal, siendo ésta última normalmente tridentada, con el diente o tubérculo mediano más desarrollado y uno menor a cada lado sobre el borde lateral. Sin embargo, el pronoto de las hembras puede tener algunas quillas conspicuas, especialmente en el grupo chalybeatus; en los otros grupos puede haber éstas o tuberculitos centrales, exceptuando una sola especie, tuberifer, en las que las hembras tienen un cuerno pronotal, necesitando, a veces, para salir de dudas acerca del sexo, la verificación del genital.

Referente a hábitos y comportamiento de Athyreus es muy poco lo que se sabe. Muchos de los ejemplares han sido colectados a la luz. De unos pocos se conoce que vuelan durante el crepúsculo, pero una gran mayoría aparentemente son nocturnos. No son conocidos ejemplares del género capturados por arriba de los 1500 m de altura y su "habitat" son aparentemente los bosques relativamente no perturbados de las regiones bajas en la estación húmeda o regiones arenosas semiaridas. Desafortunadamente la atracción por la luz no es muy frecuente y la rareza o falta de material en las colecciones obstruye muy seriamente los estudios. Es esa falta de series razonables de material en las colecciones, es lo que a hecho hacer un intento de agrupar y no revisar el género.

Como se nota, en éste intento se ha evitado una terminología especial, por que ello puede llegar a causar alguna confusión cuando son descritos los complejos cuernos, quillas o genitales; por ello son las numerosas ilustraciones que se dan pensando que éste problema puede ser así solucionado en mayor o menor grado.

Para la mejor comprensión de las personas de lengua española o portuguesa, es que además de la clave en inglés, se dá otra, poco más ampliada, en idioma español.

COLLECTIONS STUDIED

In citing the collections studied we utilize the name of the city in which the museum is situated, and in a private collection, we cite the individual's last name. The major collections studied and the curators assisting are as follows:

Buenos Aires	Museo Argentino de Ciencias Naturales "Bernardino Rivadavia". Dr. M.J. Viana.
Cambridge	Museum of Comparative Zoology, Harvard University. Dr. A. Newton.
Chicago	Field Museum of Natural History. Mr. Henry Dybas.
Leiden	Rijksmuseum van Natuurlijke Historie. Dr. J. Krikken.
London	British Museum (Natural History). Mr. R. Pope.
Ottawa	Canadian National Collection, Biosystematics Research Institute. Dr. A. Smetana.
Oxford	University Museum, Hope Department of Entomology. Mr. E. Taylor.
Paris	Museum National d'Histoire Naturelle. Dr. A. Descarpentries.
Washington	United States National Museum. Dr. R. Gordon.
Hardy	Dr. A. Hardy, Sacramento, California.

The personal collections of the authors.

Deposition of types cited as "Howden" are deposited on loan in the Canadian National Collection, Biosystematics Research Institute, Canadian Department of Agriculture, Ottawa, Canada.

Key to the species of *Athyreus* Macleay

1. Pronotum in male never with a complete median longitudinal furrow, often with central median horn or tubercle or with nearly cylindrical horn on each side; female pronotum with central horn or with two small tubercles on disc, one on either side of midline, or with transverse carina across midline in anterior third of disc. 2
Pronotum in male with median longitudinal furrow or shallow depression narrow or wide, variable, essentially dividing pronotal prominences (these not cylindrical); female pronotum without tubercles on disc either side of midline or without anterior transverse carina I. aeneus Group (p. 6)

2. Pronotum of male never with lateral carina extending from edge of a central depression to lateral edge; female pronotum with central horn or with two small tubercles near center of disc, one on either side of midline II. bifurcatus Group (p. 8)
- Pronotum of male and female with a lateral carina extending from edge of discal depression to lateral edge, carina sometimes briefly interrupted; female with transverse carina in anterior third of discal region III. chalybeatus Group (p. 11)

I. aeneus Group

1. Posterior border of pronotum on each side, anterior to humerus, interrupted. Brazil 1. cyanescens Klug (p. 20)
Posterior marginal bead or border of pronotum entire 2
- 2(1). Median anterior margin of pronotum more or less angular and unidentate 3
Median anterior margin of pronotum transversely keeled or not, but never unidentate 7
- 3(2). Acute tubercle of anterior pronotal margin well marked, sometimes small, tip acute 4
Acute tubercle of anterior pronotal margin poorly developed, obtuse or obsolete 5
- 4(3). Pronotal disc with anterior transverse carina reaching lateral edge; color dark bluish-green with more or less bronze caste. Brazil 3. aeneus Klug (p. 22)
Pronotal disc with lateral carina obsolete, short, situated on posterior half; color largely testaceous or castaneous. Brazil 4. vavini Boucomont (p. 23)
- 5(3). Pronotum of male with anterior depression broadly cordiform; longitudinal carina each side of midline costiform, raised and not dentate; first (most anterior) transverse carina reaching lateral edge; second (lateromedial) carina broad, short, and shiny; third (posterior) carina fine; color of dorsum shiny black with slight steely reflections; pronotum of female with the three lateral transverse carinae as in male. Brazil 2. capricornis n. sp. (p. 21)
Pronotum of male with medial depression circular or oval, with longitudinal furrow impressed (distinct); transverse carina, if present, not attaining lateral margin; discal horn or carina on each side of midline dentate; pronotum of female without transverse anterior carina or carina extending to lateral margin; both sexes brown to dark brown dorsally 6
- 6(5). Male with horn or keel on either side of depressed midline near middle of pronotum laminiform, the anterior and posterior edges dentate; prescutellar region concave and

- with small punctiform impression. Brazil, Paraguay . . .
 10. anneae n. sp. (p. 30)
- Male with carina on each side of medial depression anteriorly
 unidentate, feebly elevated; prescutellar region with median
 furrow narrow, well impressed, each side elevated and
 posteriorly dentiform. Brazil, E. Paraguay and N.
 Argentina 8. hemisphaericus Boucomont (p. 28)
- 7(2). Anterior margin of pronotum in median fourth distinctly
 elevated, carinate; carina dentate or abruptly arcuate on
 each side. 8
 Anterior edge of pronotum in median fourth arcuately
 elevated; obsolete denticle often present at midline 11
- 8(7). Pronotum of male on each side with lateral border of medial
 depression elevated into a laminate, bidentate horn or
 keel. Bolivia 9. nitidus n. sp. (p. 29)
 Pronotum of male on each side with lateral border of
 depression elevated; elevated carina or horn with apex
 blunt to abruptly rounded, never bidentate. 9
- 9(8). Male with clypeal horn robust, wider than long in cross
 section, posterior face excavated or flat; pronotum on
 each side with keel or horn which borders medial depression
 wide and not angular, apically rounded, sometimes more so
 posteriorly, terminating in front of and on each side of wide
 prescutellar depression; depression large, subquadrate,
 usually wider than long. Brazil, Paraguay. 7. bilobus n. sp. (p. 26)
 Male with clypeal horn slender, as long as wide or longer
 in cross section, posterior face narrow; pronotum with
 keel or horn on each side of median depression lobate,
 with apex unevenly rounded, blunt to acute; prescutellar
 depression small, scarcely wider than scutellum. 10
- 10(9). Male with prescutellar impression very small, normally
 elongate and situated in median angle of posterior margin;
 central depression without longitudinal line of median
 granulations; medial carina of anterior margin slightly
 wider than half width of prescutellar region, high, with
 edge centrally slightly concave and laterally denticulate.
 N.E. Argentina, Paraguay 5. hypocritus n. sp. (p. 24)
 Male with prescutellar impression in form of a medial
 longitudinal furrow; central depression with longitudinal
 band of granulations which connects anterior and
 posterior regions; medial carina of anterior margin as
 wide as width of prescutellar region, low, with edge
 centrally sinuate, not denticulate laterally. Brazil.
 6. brasilius n. sp. (p. 25)
- 11(7). Pronotal depression anterior to horns mostly smooth on
 either side of median granulate area; setose granules
 in elytral intervals distinctly separated, third interval
 with moderately even double row of granules. Bolivia.
 11. forcipatus Boucomont (p. 31)

Pronotal depression anterior to horns almost entirely granulate, briefly smooth in narrow band anterior to each horn; setose granules in elytral intervals close, often almost contiguous, granules in third interval in three irregular rows. Brazil 12. alvarengai n. sp. (p. 31)

II. bifurcatus Group

1. Prescutellar area of pronotum with deep longitudinal furrow behind horn; declivous sides of furrow posteriorly more or less dentiform; pygidium broadly rounded apically - female (only species with female having median anterior clypeal horn). Brazil, E. Paraguay and N.E. Argentina 20. tuberifer Felsche (in part) (p. 39)
- Prescutellar area of pronotum lacking deep longitudinal furrow behind horn, depression if present not posteriorly dentiform; apex of pygidium narrowly rounded, truncate or otherwise modified - males (females not included in subsequent key - often identifiable only by association with male). 2
- 2(1). Pronotum with slightly to distinctly overhanging latero-discal expansions on either side of central horn or tubercle(s); anterior margin medially elevated, with feeble median denticle. 3
- Pronotum without overhanging latero-discal expansions; anterior margin regular, sometimes medially almost angular and obsolete unidentate. 4
- 3(2). Pronotum with central horn slender, cylindrical, anteriorly inclined. (probably Brazil) 15. armatus Westwood (p. 34)
- Pronotum with horn (tubercles) bifurcate, base only slightly elevated. Trinidad 16. biarmatus n. sp. (p. 35)
- 4(2). Pronotum on each side with an oval or circular, slight to distinct depression (not lateral fovea) anteriorly or antero-laterally, situated adjacent to or in front of horns; midline anterior to horn or horns not longitudinally indented. 5
- Pronotum without anterior depression either side of midline, at most with shallow medial depression or fine longitudinal furrow anteriorly; pronotal horn single, medial; simple, bidentate or tridentate distally 10
- 5(4). Disc of pronotum with two horns or triangular corniform lamellae. 6
- Disc of pronotum with three horns. 9
- 6(5). Clypeal armature consisting of three small but distinct horns or prominent tubercles. 7
- Clypeal armature consisting of an elongate medial anterior horn, laterally clypeus with or without small denticles. 8

- 7(6). Pronotal armature consisting of a low, central bifurcate horn, each bifurcation broadly triangular; pronotum anterior and lateral to horn with much of surface smooth, not granulate or setose. Brazil.
- 17. gigas Westwood (p. 36)
- Pronotal armature consisting of a moderately developed central bifurcate horn, each bifurcation tapered to acute tip; pronotum anterior and lateral to horn with surface granular or punctate, setose. Brazil.
- 18. parvus n. sp. (p. 37)
- 8(6). Clypeal horn inclined anteriorly, posterior face with a very distinct medial carina, latero-posterior carina denticulate in front of canthus; pronotum with lateral concavity large, elongate-oval, shallow, almost reaching posterior edge, horns contiguous or approximate at base and obliquely directed upward and forward. Brazil, E. Paraguay and N. E. Argentina.
- 19. bifurcatus Macleay (p. 38)
- Clypeal horn nearly vertical, without medial carina on posterior face and latero-posterior carina not denticulate near ocular canthus; pronotum on each side with deep circular fovea situated in front of horn and almost on anterior edge; horns widely separated at base, somewhat compressed and vertical. Peru.
- 26. tribuliformis Felsche (p. 46)
- 9(5). Pronotum with anterior impressions and horns well separated from each other, each impression large and with lateral edge outside ocular canthus; prescutellar horn conical; fore tibia with six teeth on outer margin. Bolivia, Brazil, Peru. 27. zischkai Martínez (p. 47)
- Pronotum with anterior impressions well marked and narrowly separated from each other; lateral edge of impression inside lateral edge of eye canthus; two anterior horns narrowly separated, third prescutellar horn compressed; fore tibia with five teeth on outer margin. Peru, Ecuador. 28. martinezi Howden (p. 48)
- 10(4). Middle of pronotal disc with upright longitudinal, laterally compressed horn or keel; in lateral view edge of horn dentate on angles, depressed between. Brazil.
- 21. juanae n. sp. (p. 41)
- Disc of pronotum with central, nearly cylindrical horn; never with a central longitudinal, laterally compressed median horn or keel. 11
- 11(10). Disc of pronotum with horn simple, acute apically. 12
- Disc of pronotum with horn bi- or tri-dentate at its apex. 13

- 12(11). Head with clypeal horn, latero-posterior carina on each side subdentate; pronotum with horn conical, vertical; pronotal fossae of anterior edge behind head, small, scarcely evident. Brazil. 25. acuticornis n. sp. (p. 44)
- Head unarmed, without horn, convex anteriorly; pronotum with horn long, directed forward and somewhat ventrally arcuate; pronotal surface in anterior half medially concave, pronotal fossae of anterior margin behind head well marked. Colombia. 14. unicornis n. sp. (p. 33)
- 13(11). Pronotal armature apically tridentate 14
 Pronotal armature apically bifurcate 15
- 14(13). Pronotum opaque, except anterior edge of horn which is smooth, rest completely punctate to granulate; color piceous or black. Costa Rica, Panama to western Ecuador. 24. championi Bates (p. 43)
- Pronotum with medial or antero-lateral area or areas impunctate and shiny, sides punctate and granulate; color yellowish to reddish castaneous. S. E. Brazil, Paraguay, E. Bolivia and N.E. Argentina. 23. tridens Laporte (p. 42)
- 15(13). Clypeal horn lacking distinct posterior median carina, horn noticeably wider than long in cross section, apex broadly truncate; pronotal horn vertical, slender, apex narrowly divided into two longitudinally plate-like projections, apex of each in lateral view broadly, bluntly rounded. Peru. 13. pyriformis n. sp. (p. 32)
- Clypeal horn with carina or tubercle on posterior median edge, horn not noticeably wider than long in cross section, apex rounded or acute; bifurcation of pronotal horn consisting of divergent, somewhat cylindrical, acutely pointed processes. 16
- 16(15). Pronotal horn slightly transversely compressed and vertically bifurcate at apex; each side of bifurcation nearly cylindrical, tip acute; horn anteriorly with fine longitudinal median furrow and with punctiform median depression posterior to anterior margin; clypeal horn inclined anteriorly and with posterior median carina. Brazil and N. 22. bellator Westwood (p. 42)
- Pronotal horn consisting of a large protuberance, the apex of which slants anteriorly in two sharp, divergent dentiform processes, surface anterior to horn feebly transversely concave, smooth and shiny, with median longitudinal furrow obsolete and without distinct median impression; head with the clypeal horn strongly inclined anteriorly, posterior edge of horn basally with slightly compressed tooth. Brazil, E. Paraguay and N. E. Argentina. 20. tuberifer Felsche (in part) (p. 39)

III. chalybeatus Group

1. Males, pronotum with horn projecting anteriorly, on each side or below horn with a very conspicuous fovea; pronotal disc never with transverse carina at anterior third or fourth; clypeus with anterior median horn. 2
 Females, pronotum without horn or antero-lateral fovea; pronotal disc with transverse carina at anterior third or fourth; clypeus without distinct anterior horn. 3
- 2(1). Pronotal horn situated above wide fovea or medial concavity, central depression often continuous laterally with deep lateral, oval fovea, carina on each side above (posterior to) concavities conspicuous, continuous and not interrupted; clypeus anteriorly with small, slightly recurved horn; posteriorly with transverse carina strongly tridentate; color black or reddish testaceous with elytra black and light metallic bluish green. S. E. Brazil, N. E. Argentina and S. E. Paraguay. 29. hastifer Felsche (in part) (p. 49)
 Pronotal horn dividing anterior depression, depression forming at each side a very deep oval fovea; adjacent carina irregularly marked and laterally obsolete; clypeus anteriorly with small horn with base posteriorly denticulate; transverse carina lacking or obsolete, a tubercle present on each side near gena; color black with metallic bluish-green reflections. Argentina, Uruguay. . 30. chalybeatus Fairmaire (in part) (p. 50)
- 3(1). Pronotum medially deeply impressed, cordiform, depression delimited on all sides by carinae, anterior transverse carina slightly dentate on either side of midline; midline of impressed area with two distinct foveae, one anterior, one posterior, united by a fine longitudinal line; color almost uniformly testaceous. (Male unknown). Argentina. . . . 31. conspicuus n. sp. (p. 51)
 Pronotum medially shallowly to moderately impressed; anterior transverse carina not tuberculate either side of midline; elytra black with bluish or steely reflections. 4
- 4(3). Anterior median clypeal tubercle distinct, united to posterior median tubercle of transverse carina by a fine, longitudinal carina; pronotum on either end of anterior median transverse carina with short carina at right angle to transverse carina extending anteriorly about half the distance to anterior margin; fore tibia usually with six distinct teeth on outer margin; color and distribution as described for male. Argentina, Uruguay. . 30. chalybeatus Fairmaire (in part) (p. 50)
 Anterior median clypeal tubercle obtuse, not carinate posteriorly; pronotum on each side of anterior median transverse carina lacking distinct anterior carinate extensions; fore tibia usually with five distinct teeth

on outer margin; color and distribution as described for male. S. E. Brazil, N. E. Argentina and S. E. Paraguay. 29. hastifer Felsche (in part) (p. 49)

Clave para Athyreus Macleay

1. Pronoto en el macho sin surco o depresión longitudinal medial completa; en la hembra con dos pequeños tuberculitos discales paramedios, o con quilla o tubérculo medio anterior, limitando al disco por delante. 2
 Pronoto en el macho y hembra con surco o depresión longitudinal medial mas o menos ensanchada marcada y completa; en la hembra sin tuberculitos, quilla o tubérculo discales. I. Grupo aeneus (p. 12)
- 2(1). Pronoto del macho nunca con quilla lateral que desde el borde de la depresión llegue al borde lateral; en la hembra con dos pequeños tuberculitos discales paramedios o, tuberifer, con tubérculo medio anterior. II. Grupo bifurcatus (p. 15)
 Pronoto del macho y hembra con quilla lateral que desde el borde de la depresión discal llega al borde lateral; hembra con quilla medial anterior que limita la region discal. III. Grupo chalybeatus (p. 18)

I. Grupo aeneus

1. Borde posterior del pronoto, próximo al húmero, interrumpido. Brasil. 1. cyanescens Klug (p. 20)
 Borde posterior del pronoto entero. 2
- 2(1). Margen anterior del pronoto en la mitad más o menos angulado y unidentado. 3
 Margen anterior del pronoto en la mitad aquillado o no, pero nunca unidentado. 7
- 3(2). Dentículo del borde anterior del pronoto bien marcado. 4
 Dentículo del borde anterior del pronoto poco marcado, a veces sólo como angulosidad. 5
- 4(3). Pronoto con quilla transversal anterior que llega al borde lateral; color verde azulado oscuro con visos más o menos bronceados. Brasil. 3. aeneus Klug (p. 22)
 Pronoto con quilla lateral obsoleta, corta, situada en la mitad posterior; color testáceo castaño, generalmente con los lados del pronoto y bordes laterales de los élitros aclarados. Brasil.
 4. vavini Boucomont (p. 23)
- 5(3). Pronoto del macho con quilla transversal anterior que llega al borde lateral; depresión anterior anchamente cordiforme; surco longitudinal medial poco marcado, sin fosa anterior notable; quilla discal costiforme,

- realzada y no dentada; quilla látero-medial ancha y brillante; quilla posterior fina y poco conspicua; cuerno clipeal erecto, pequeño, la base con fina quilla conectada al borde lateral, que es elevado en diente alargado y comprimido, la cara posterior finamente aquillada. Color negro algo brillante con leves matices acerados. Hembra en el pronoto con quilla transversal anterior que llega al borde lateral. Brasil. 2. capricornis n. sp. (p. 21)
- Pronoto del macho sin quilla transversal anterior; la depresión medial circularforme u oval, con surco longitudinal impreso y fosa anterior marcada; quilla discal siempre dentada; sin quilla ántero-medial o ésta angosta; falta la quilla póstero-lateral; cuerno clipeal sin quilla en la cara posterior. Hembra en el pronoto sin quilla transversal anterior. 6
- 6(5). Macho con la quilla que margina la depresión discal más o menos elevada, laminiforme, alargada y con los bordes anterior y posterior dentados; región preescutelar deprimida y con impresion puntiforme marcada. Hembra desconocida. Brasil, Paraguay. 10. anneae n. sp. (p. 30)
- Macho con la carena que margina la depresión discal dentiforme, poco elevada, aproximada a la opuesta y unidentada; región preescutelar con surco medio bien impreso, de borde elevado, por detrás denticulado sobre la región escutelar y sin impresión puntiforme. Hembra con la quilla que margina la depresión discal del pronoto poco marcada, subdentada, posteriormente rasa y no formando denticulo por detrás. Brasil, E. Paraguay y N. Argentina. . 8. hemisphaericus Boucomont (p. 28)
- 7(2). Borde anterior del pronoto elevado medialmente en quilla transversal a cada lado subdentada o ligeramente arqueada. 8
- Borde anterior del pronoto regular, no elevado en quilla ni denticulado. 11
- 8(7). Macho en el pronoto con el borde lateral de la depresión medial elevado en alto proceso laminiforme bidentado; quilla del borde anterior estrecha, su ancho menor que el ancho de la depresión. Hembra desconocida. Bolivia. 9. nitidus n. sp. (p. 29)
- Macho en el pronoto con el borde lateral de la depresión poco elevado, su ápice romo y nunca dentado; quilla del borde anterior subigual o apenas mas angosta que la depresión en la región preescutelar. 9
- 9(8). Macho con el cuerno clipeal robusto, la cara posterior excavada o plana, ancha y limitada lateralmente por quilla bien marcada, arqueado-dentada en la base y que alcanza al borde lateral; pronoto con la quilla que bordea la depresión medial poco elevada, a veces

un poco levantada por detrás, pero ancha y no angulosa, terminando por delante y a cada lado de la depresión preescutelar, ésta amplia, impresa y subcuadrada, o más ancha que larga. Hembra: pronoto con el borde anterior medialmente elevado en arista baja, fina y marcada, con su ancho igual al ancho de la región preescutelar. Brasil, Paraguay. 7. bilobus n. sp. (p. 26)

Macho con el cuerno clipeal grácil, la cara posterior angosta, limitada a cada lado por fina quilla que puede o no perderse hacia la base; pronoto con la quilla que bordea la depresión en lóbulo de ápice convergente y romo; depresión preescutelar no ocupando toda la región. 10

10(9). Macho con la impresión preescutelar muy pequeña, normalmente alargada y situada sobre el ángulo medial del borde posterior; depresión central sin zona longitudinal de escultura granulosa que la divide en dos partes; quilla medial del borde anterior poco más ancha que la mitad del ancho de la región preescutelar, alta, con la arista ligeramente cóncava y denticulada lateralmente; cuerno clipeal con la quilla póstero-lateral poco evidente, perdiéndose hacia la base. N. E. Argentina, Paraguay. 5. hypocritus n. sp. (p. 24)

Macho con ancha impresión preescutelar en forma de surco longitudinal medial; depresión central con ancha zona longitudinal de escultura granulosa, que conecta las regiones anterior y posterior; quilla medial del borde anterior tan ancha como el ancho de la región preescutelar, baja, de arista sinuosa y no denticulada lateralmente; cuerno clipeal con la quilla póstero-lateral fina, entera, llegando al borde lateral de la cabeza. Brasil. 6. brasilius n. sp. (p. 25)

11(7). Pronoto con la depresión anterior, por delante de la carena, con area semicircular lisa y englobando el area granulosa antero-medial; gránulos setíferos de los interespacios elitrales claramente separados, 3er. interespacio con dos hileras de gránulos. Bolivia. 11. forcipatus Boucomont (p. 31)

Pronoto con la depresión anterior casi enteramente granulosa y con banda lisa corta y angosta por delante del cuerno; gránulos setíferos de los interespacios elitrales frecuentemente contiguos y en el 3er. interespacio ordenados en 3 hileras irregulares. Brasil. 12. alvarengai n. sp. (p. 31)

II. Grupo bifurcatus

1. Hembra: pronoto en la región preescutelar con surco longitudinal más o menos impreso y dentiforme por detrás; en el disco con tubérculo pequeño y los cuernos dentiformes poco desarrollados, en la parte dorsal y por detrás con un denticulito; mitad anterior con profunda depresión transversal y la superficie centralmente granulosa; cuerno clipeal corto, algo oblicuo y en la cara posterior y basalmente inerme. Brasil, E. Paraguay y N. E. Argentina. 20. tuberifer Felsche (parte) (p. 39)
- Machos nunca con la región preescutelar surcada longitudinalmente e inerme. 2
- 2(1). Macho en el pronoto con expansiones alares látero-discales; el borde anterior medialmente elevado en quilla subdentada. 3
- Macho en el pronoto sin expansiones alares látero-discales; el borde anterior regular, a lo sumo medialmente algo anguloso y obsoletamente denticulado. 4
- 3(2). Pronoto con cuerno delgado y dirigido hacia adelante. (Brasil?). 15. armatus Westwood (p. 34)
- Pronoto con dos láminas triangulares corniformes. Trinidad. 16. biarmatus n. sp. (p. 35)
- 4(2). Macho en el pronoto, a cada lado, con una depresión oval o circulariforme anterior o antero-lateral al cuerno discal, estando éste más o menos separado del opuesto en la base interna. 5
- Macho en el pronoto sin depresión, a lo sumo con fino surco medial longitudinal anterior; armadura discal única, medial, simple, bidentada o tridentada distalmente. 10
- 5(4). Macho en el disco del pronoto con dos cuernos o láminas triangulares corniformes. 6
- Macho en el disco del pronoto con tres procesos corniformes. 9
- 6(5). Macho con la armadura clipeal consistente en tres pequeños pero evidentes dientes o cuernos; armadura pronotal formada por dos láminas triangulares divergentes. 7
- Macho con la armadura clipeal consistente en un cuerno medial anterior más o menos largo, lateralmente a éste con o sin denticulo; armadura pronotal constituida por un cuerno más o menos cilindroide o algo aplanado, pero más largo que ancho. 8

- 7(6). Pronoto con áreas ántero-laterales impunteadas y brillantes. Brasil. 17. gigas Westwood (p. 36)
 Pronoto con áreas laterales totalmente con puntos granuloso. Brasil. 18. parvus n. sp. (p. 37)
- 8(6). Macho con la armadura clipeal formada por un cuerno oblicuamente dirigido hacia arriba y adelante, que tiene en la cara posterior una quilla medial bien evidente, la quilla látero-posterior denticulada sobre el canto ocular; pronoto con la impresión grande, alargado-oval bien lateral, casi alcanzando al borde posterior, el cuerno algo aproximado del opuesto en su base interna y oblicuamente dirigido hacia arriba y adelante. Brasil, E. Paraguay y N. E. Argentina. 19. bifurcatus Macleay (p. 38)
 Macho con la armadura clipeal consistente en un cuerno más o menos vertical y algo arqueado, sin quilla medial en la cara posterior y la quilla látero-posterior no denticulada sobre el canto ocular; pronoto con fóvea circulariforme profunda, situada por delante del cuerno y casi sobre el borde anterior, éste ampliamente separado del opuesto en la base, algo comprimido y vertical. Perú. 26. tribuliformis Felsche (p. 46)
- 9(5). Macho en el pronoto con la impresión ántero-lateral y cuernos bien separados entre sí, aquella grande y con el borde lateral por fuera del canto ocular, cuerno preescutelar cónico. Bolivia, Brasil.
 Peru. 27. zischkai Martínez (p. 47)
 Macho en el pronoto con la impresión ántero-medial muy marcada y conjuntamente con los cuernos subcontiguos, el borde lateral de aquella por dentro del borde lateral del canto ocular; cuerno preescutelar comprimido. Perú. 28. martinezi Howden (p. 48)
- 10(4). Macho: pronoto en el disco con quilla longitudinal medial, la arista escotada y dentada sobre los ángulos. Brasil. 21. juanae n. sp. (p. 41)
 Macho: pronoto en el disco nunca con quilla longitudinal medial. 11
- 11(10). Macho: pronoto en el disco con cuerno simple. 12
 Macho: pronoto en el disco con cuerno bi o tridentado en el ápice. 13
- 12(11). Macho en la cabeza con cuerno clipeal y con la quilla látero-posterior a cada lado de éste subdentada; pronoto con el proceso delgado, coniforme, vertical, la superficie lateral y anteriormente granulosa, la fosa del borde anterior, por detrás de la cabeza, pequeña, poco evidente. Brasil. 25. acuticornis n. sp. (p. 44)

- Macho con la cabeza inerme, sin cuerno, convexa anteriormente; pronoto con proceso dirigido hacia adelante, largo y algo arqueado, la superficie en la mitad anterior muy brillante y con sólo algunos puntitos obsoletos lateralmente, fosa del borde anterior, por detrás del borde lateral de la cabeza, bien marcada. Colombia. 14. unicornis n. sp. (p. 33)
- 13(11). Macho con la armadura pronotal apicalmente tridentada. 14
- Macho con la armadura pronotal apicalmente bifurcada. 15
- 14(13). Macho con el pronoto opaco, excepto el borde anterior del proceso discal que es liso, totalmente punteado tornándose los puntos granuloso y bien notables hacia los lados; parte posterior de la frente y vértice densa y claramente punteada; color píceo a negro. Costa Rica, Panamá y Ecuador. 24. championi Bates (p. 43)
- Macho en el pronoto con área o áreas medial o ántero-laterales impunteadas y brillantes, hacia los lados punteado o punteado granuloso, los gránulos pequeños; parte posterior de la frente y vértice superficial y poco claramente punteada; color castano amarillento a castano rojizo. S. E. Brasil, Paraguay, E. Bolivia y N. E. Argentina. 23. tridens Laporte (p. 42)
- 15(13). Cuerno clipeal sin quilla ni diente en la cara posterior, ensanchado y truncado en el ápice; pronoto con la región preescutelar en surco longitudinal subpiriforme de borde elevado; borde lateral, un poco por delante del angulo medio, brevemente quebrado; la región lisa central no sobrepasando lateralmente el borde lateral del canto ocular: la región lateral con densa granulación pilosa; proceso pronotal regularmente angostado distalmente y allí estrechamente hendido longitudinalmente, formando dos dientecitos comprimidos, la cara posterior claramente surcada y el surco continuandose con el surco preescutelar; élitro con la elevación costiforme I apareciendo por detrás del escudete; el interespacio II en la mitad basal como el doble de ancho que el III. Perú. 13. pyriformis n. sp. (p. 32)
- Cuerno clipeal con quilla o diente en la cara posterior, aguzado hacia el ápice; pronoto con la región preescutelar plana o ligeramente deprimida, nunca en surco profundo de borde elevado; borde lateral entero; la región lisa central sobrepasando ampliamente el borde lateral del canto ocular; la región lateral lisa o solo con algunos gránulos pilosos dispersos; proceso pronotal en el ápice expandido y bifurcado en horqueta, formando dos claros y

evidentes dientes y sin ningún surco en la cara posterior; élitro con la elevación costiforme I completa desde la base; el interespacio II subigual en ancho al III. 16

- 16(15). Macho con la armadura del pronoto consistente en un cuerno alto, un tanto comprimido ánteroposteriormente y bifurcado en el ápice; por delante de esta superficie casi vertical, con fino surco longitudinal medio, que un poco por detrás del borde anterior tiene una fosa pequeña, a los lados de ésta lisa o casi lisa, tornándose punteada hacia los bordes laterales; cabeza con el cuerno clipeal algo oblicuo, en la cara posterior con quilla que lo recorre totalmente y sin diente basal. Brasil y N. 22. bellator Westwood (p. 42)
- Macho con la armadura del pronoto consistente en una protuberancia grande, cuyo ápice superior es proyectado hacia adelante en dos cuernos dentiformes aguzados y algo divergentes, por delante de éste la superficie algo cóncava transversalmente, lisa y brillante, con surco longitudinal medial obsoleto y sin impresión puntiforme; cabeza con el cuerno clipeal muy oblicuamente dirigido hacia adelante, en la cara posterior y sobre la base con diente comprimido ligeramente aquillado. Brasil, E. Paraguay y N.E. Argentina. 20. tuberifer Felsche (parte) (p. 39)

III. Grupo chalybeatus

1. Machos en el pronoto con cuerno proyectado anteriormente, al costado o por debajo de éste con fóvea muy marcada; disco nunca con quilla transversal medial anterior; clipeo con cuerno más o menos desarrollado. 2
- Hembras en el pronoto sin cuerno ni fóveas anterolaterales; con quilla medial anterior que limita el disco; clipeo sin cuerno. 3
- 2(1). Cuerno pronotal situado por encima de la fóvea o depresión medial, ésta muy ancha y corta, continuándose lateralmente con la profunda fóvea lateral ovaliforme, la quilla anterior que la margina superiormente, marcada, continua y no interrumpida; clipeo anteriormente con pequeño diente corniforme y por detrás de éste con quilla transversal ligeramente angulosa cefal y fuertemente tridentada; color negro o testáceo rojizo con los élitros negros y visos verde azulados metálicos leves. S. E. Brasil, N. E. Argentina y S. E. Paraguay. 29. hastifer Felsche (parte) (p. 49)
- Cuerno pronotal interrumpiendo la depresión anterior y formando a cada lado una fóvea ovaliforme muy profunda, que no sobrepasa lateralmente a los cantos oculares, la quilla anterior irregularmente marcada

y lateralmente algo obsoleta; clipeo anteriormente con pequeño diente corniforme, en cuya base posterior hay un dentículo, sin quilla transversal y sobre los cantos oculares con otro dentículo triangulariforme algo comprimido. Color negro con leves reflejos verdoso azulados metálicos.

Argentina, Uruguay. . . 30. *chalybeatus* Fairmaire (parte) (p. 50)

- 3(1). Pronoto con la región discal cordiforme, muy impresa, marginada por quilla divergente y algo arqueada, que en la región anterior se acoda fuertemente, para confluír con la opuesta en una pequeñísima angulosidad medial, que puede ser ligeramente biimpresa; a cada lado y en la mitad denticulada y convergiendo por detrás con la quilla transversal posterior, que es larga, muy marcada y finaliza sobre la rasa y poco visible fóvea lateral; la superficie de la región discal con dos fosas marcadas, unidas por fino surco longitudinal medial; a cada lado con 4 quillas bien evidentes, siendo la anterior arqueada; cabeza en la frente con dos quillitas paramedias algo arqueadas y notables, el vértice claramente deprimido. Color general testáceo. Macho desconocido. Argentina.
 31. *conspicuous* n. sp. (p. 51)

Pronoto con la región discal rombiforme alargada, marginada por quilla divergente y recta, no denticulada en el medio y que se pierde a cada lado de la región preescutelar; carena transversal ántero-medial inerme; la superficie rasa y sin fosas marcadas, pero con surco medial longitudinal impreso; a cada lado con 3 o 4 quillas, en éste último caso rectas y cortas; la quilla posterior nunca unida a la quilla longitudinal que limita al disco; cabeza en la frente con dos tuberculitos pequeños, obsoletos, a veces un tanto aquillados, el vértice plano. 4

- 4(3). Diente clipeal marcado, unido posteriormente al diente medio de la quilla transversal por fina, pero neta quillita. Pronoto con la quilla transversal medial recta; la ántero-lateral corta, recta; la medial anterior obsoleta sobre el ángulo ántero-superior de la fóvea lateral; la quilla posterior marcada desde el ángulo posterior hasta por detrás de la misma fóvea; pilosidad del élitro corta. Color y distribución geográfica similar a la del macho. Argentina, Uruguay. 30. *chalybeatus* Fairmaire (parte) (p. 50)

Diente clipeal marcado como una pequeña angulosidad, no unido por detrás al diente medio de la quilla transversal. Pronoto con la quilla transversal medial un tanto arqueada; la ántero-lateral falta; la medial anterior bien marcada en toda su longitud; la quilla posterior fina, irregular; pilosidad de la superficie del élitro larga. Color y distribución

geográfica similar a la del macho. S. E. Brasil,
 N. E. Argentina y S. E. Paraguay.
 29. hastifer Felsche (parte) (p. 49)

1. Athyreus cyanescens Klug

Figures 1-3, Map 1

Athyreus cyanescens Klug, 1845, p. 30.

TYPE. Male (Berlin ?), not examined.

MALES. Length 16.0 to 19.0 mm, greatest width 9.5 to 10.0 mm. Dorsally black with bluish tinge. Labrum on anterior median surface with a distinct, anteriorly arcuate, upright tubercle; a character not noted in any other Athyreus. Clypeal horn (Fig. 1) in well developed males approximately as long as length of frons and vertex combined; horn in apical half in cross section wider than long, apex rounded; anterior lateral carina present basally; posterior lateral carina on each side distinct for most of length of horn and curving posteriorly on frons to feebly elevated junction at gena; posterior median carina absent, posterior surface of horn slightly concave. Frons medially moderately, longitudinally convex; surface with scattered punctures; vertex nearly flat, moderately setose-granulate. Pronotum (Fig. 1) with anterior margin between large fossae upwardly and anteriorly angulate, dentate at median angle, a faint raised ridge extending posteriorly from denticle for about 1 mm. Pronotal midline feebly impressed, prescutellar depression lacking; in posterior third on each side raised carina or horn with acute anterior and posterior lobes (see fig. 1), posterior lobes much closer to each other than anterior lobes; on each side anterior to and parallel with pronotal margin, a short carina present anterior to humerus; pronotal margin broken, deeply excised in this area; pronotal surface except for carinae setose-punctate (median third) or granulate. Elytron with margin dentate at anterior-lateral angle. Fore tibia with five teeth on outer margin. Genitalia as in fig. 2.

FEMALES. Length 15.0 to 18.0 mm, greatest width 9.0 to 10.0 mm. Labrum with unusual anterior median tubercle as in male. Clypeal carinae varying from most species in that, in some specimens, the anterior and posterior carinae medially with a longitudinal carina between, in most cases joining both carinae but always contiguous with median tubercle of posterior carina. Pronotum (Fig. 3) with low arcuate carina on either side of indented midline, anterior margin not as elevated as in male but with larger median denticle (tubercle). Pronotal margin near humerus and adjacent short carina as described in male.

MATERIAL EXAMINED: 10 males, 10 females.

BRAZIL (type locality, no other data). Paraná, Curitiba, XI.1940, F. S. Pereira; X.1940, Lange. Santa Catarina, Pinhal, XII.1951, A. Maller; Cauna, XII.1945, A. Maller. São Paulo, Jundiá, XII.1956; Campos do Jordão, Lane; XII.1945, Pereira. Brasilia, Laferte, ex Musaeo Sharp. Guanabara, Rio de Janeiro.

Specimens are in: London, Ottawa, Paris, Howden, Martínez.

REMARKS. The black color with a distinct bluish caste, the odd tubercle on the anterior dorsal midline of the labrum, and the interrupted pronotal margin adjacent to the elytral humerus are all characters that readily distinguish both males and females of cyanescens from other Athyreus.

2. *Athyreus capricornis* n. sp.

Figures 4-6, Map 1

DIAGNOSIS. Black with steely hue; males with clypeal horn erect, anterior lateral carina interrupted near base, posterior lateral carina present apically and laterally, posterior median carina pronounced, extending to middle of frons; frons and vertex of both sexes closely, irregularly granulate or punctate; pronotum medially posterior to horns with wide cordiform depression in males; median pronotal area concave anteriorly, horn of males on each side low, irregularly rounded or sinuate, with anterior lateral branch extending to lateral pronotal margin; females with same carina not greatly elevated; two other short carinae present in both sexes on each side, one wide, one narrow, in posterior lateral half of pronotum paralleling posterior margin.

HOLOTYPE. Male, length 15.0 mm, greatest width 9.5 mm. Overall black with steely luster, feebly shining. Labrum short, wide (8:1), anterior median edge with face strongly impressed, concave, impunctate; dorsal surface of labrum confluent coarsely punctate, coriaceous. Clypeus (Fig. 4) anteriorly truncate, the truncate area bordered by a fine carina which is bow-shaped and with apex of upward angle on anterior base of clypeal horn; horn vertical, anterior lateral carina present on each side but not joining bow-shaped carina; posterior lateral carina pronounced on horn, becoming fine basally, laterally carina lobed; posterior median carina pronounced, extending down horn onto middle of frons, there becoming obsolete. Frons and vertex closely, often confluent punctate, posteriorly granulate. Pronotum (Fig. 4) with anterior margin obtusely, feebly tuberculate medially, lateral margins arcuate; posteriorly median depression posterior to horns deeply cordiform, internally smooth with scattered punctures; depression elevated between low rounded horns posterior to pronotal center, midline indicated as impressed line in broader depression; area anterior to horns with scattered punctures, then near anterior margin with large discrete granules; lateral thirds of pronotum excluding carinae closely granulate, setose. Pronotal horn on each side of midline low, cariniform, edge in lateral view rounded anteriorly, downwardly angulately truncate posteriorly; horn continuing anteriorly as carina, dividing at base of horn, pronounced lateral branch extending as sinuous carina of varying width to lateral margin; posterior to this carina and midway to posterior margin a short wide carina and more posteriorly a feebly developed carina. Elytra with six raised, polished intervals between suture and umbone, striae relatively narrow for genus; finely, closely granulate. Fore tibia with six teeth on outer margin. Genitalia (Fig. 5) with parameres apically thickened and lobed, the apical protrusions filiform and medially strongly arcuate.

ALLOTYPE. Female, length 15.0 mm, greatest width 9.0 mm. Clypeus lacking horn, with low anterior transverse carina and trituberculate posterior transverse carina (as is typical for most *Athyreus* females). Clypeus, frons and vertex all heavily granulate or confluent punctate. Pronotum (Fig. 6) not differing greatly from male; central longitudinal carina on either side of midline not elevated, very wide, posterior end narrowing and curving inward to midline, joining carina from opposite side just anterior to posterior margin; in posterior half midline impressed and smooth, granulate on either side, most deeply impressed posteriorly; pronotal surface granulate except for carinae and midline posteriorly.

TYPE MATERIAL: Holotype, male, Brazil, Estado de São Paulo,

Batatais, V. 1945, F.S. Pereira (Martínez).

Allotype, female, same data as holotype (Martínez).

REMARKS. This species, which has been confused with cyanescens, can be easily distinguished by its uninterrupted lateral pronotal margin, which is broken before the humerus in cyanescens. Also cyanescens has a denticulate labrum. The form of the labrum and anterior lateral carinae will distinguish capricornis from other related species, the closest of which is probably hemisphaericus.

3. Athyreus aeneus Klug

Figures 7-9, Map 1

Athyreus aeneus Klug, 1845, p. 31.

TYPE. Male (Berlin ?), not examined.

MALES. Length 16.0 to 17.0 mm, greatest width 11.0 to 12.0 mm. Dorsally black with distinct greenish reflections, particularly central third of pronotum and elytra. Clypeus (Fig. 7) with stout vertical horn, apex truncate, horn in cross section wider than long; anterior lateral clypeal carina evident only basally; posterior lateral carina well developed for length of horn, basally fine to lateral angulate junction at gena; posterior medial carina absent; posterior surface of horn in apical half shallowly concave. Frons medially distinctly, longitudinally convex; surface of frons and vertex with scattered punctures or granules. Pronotum (Fig. 7) with anterior margin between large fossae strongly elevated, acutely angulate at midline; median angle with faint ridge extending posteriorly almost to small deep fovea at midline, fovea of same diameter as marginal fossae. Midline depressed behind anterior fovea; prescutellar depression posteriorly wider, smooth, extending to pronotal margin. On each side of midline at posterior third an abruptly elevated plate-like horn with truncated apex sloping anteriorly; horns narrowly separated basally. Pronotum on each side lateral to horn with three irregular, obliquely transverse carinae; anterior carina joining lateral margin midway between anterior and median angles, at junction forming small tubercle; median of three carinae short, posterior carina nearly twice as long; all carinae distinct; surface between carinae and in lateral thirds of pronotum with unusually large, coarse granules; granular area setose but setae inconspicuous. Elytra with surface unusually polished, shining, striae feebly depressed, indicated by one or two irregular rows of punctures. Fore tibia with six teeth on outer margin. Genitalia as in fig. 8.

FEMALES. Length 17.0 to 18.0 mm, greatest width 11.0 to 12.0 mm. Head with anterior and posterior clypeal carina, the carinae somewhat atypical; anterior carina arcuate either side of dorsal median denticle, a longitudinal carina extending from denticle posteriorly to median tubercle of posterior, tridentate carina; median tubercle of posterior carina approximately twice size of lateral ones. Dorsal surface of clypeus rugose; frons and vertex granulate. Pronotum (Fig. 9) similar to male but with inner carina not elevated, feebly arcuate either side of deeply indented midline; depression not greatly widened in prescutellar region.

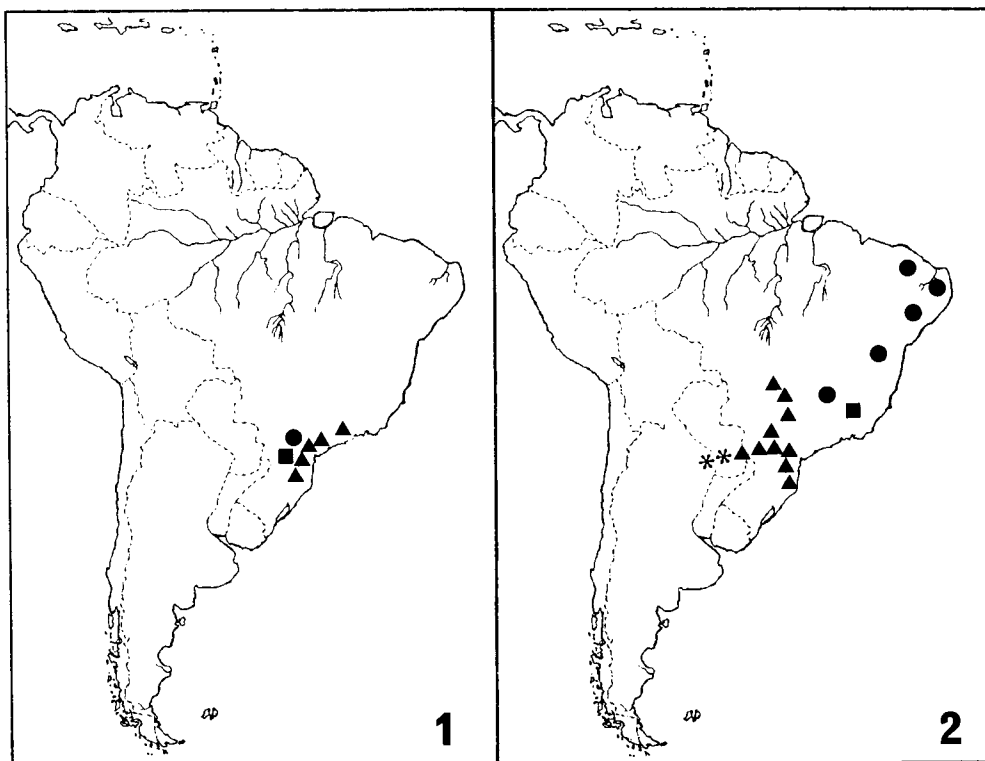
MATERIAL EXAMINED: 2 males, 4 females.

BRAZIL (type locality, no other data): Paraná, Curitiba, II. 1935, XI. 1936, X. 1940, and I. 1946.

Specimens are in: Howden, Martínez.

REMARKS. Athyreus aeneus is very distinctive; the black color with a definite greenish luster, relatively shining elytron and the three obliquely

transverse carinae on each side in the posterior half of the pronotum of both sexes should distinguish it from any other species in the genus.



- ▲ = 1. *cyanescens* Klug
● = 2. *capricornis* n. sp.
■ = 3. *aeneus* Klug

- = 4. *vavini* Bouc.
* = 5. *hypocritus* n. sp.
■ = 6. *brasiliicus* n. sp.
▲ = 7. *bilobus* n. sp.

4. *Athyreus vavini* Boucomont

Figures 10-12, Map 2

Athyreus vavini Boucomont, 1902a, p. 184; 1902b, p. 583.

TYPE. Male (Paris), examined.

MALES. Length 14.0 to 17.0 mm, greatest width 10.0 to 12.0 mm. Dorsally reddish brown, often tan laterally, some specimens dark brown in center of pronotum and on elytra. Clypeal horn (Fig. 10) erect, stout; vertical portion with four distinct carinae, two anterior lateral and two posterior lateral carinae, near base posterior lateral carinae divided in some well developed males, the inner carinae extending onto frons, there becoming obsolete; usual posterior lateral carina on each side arcuately extending to slightly raised, rounded terminus above antennal insertion. Frons mostly smooth, vertex mostly granulate. Pronotum (Fig. 10) with anterior margin between fossae thickened, abruptly raised into acute tubercle on posterior edge at midline; lateral pronotal margins arcuate. Pronotum in median third

concave, concavity deepest along midline, anteriorly near margin coarsely granulate, mostly smooth in remainder of concavity to base of low, obtusely rounded horn on each side at posterior fourth; a few widely separated granules near base of each horn. Median depression posterior to horns variable; in well developed males depression rapidly deepens and expands to approximately 1 mm anterior to posterior margin, base of horn on each side extending posteriorly and overhanging depression forming posterior denticles; in male minors only a broad shallow posterior depression present, in larger specimens sides become ridged, as in type; however even in male minors low horns obtusely angulate. Fore tibia with five teeth on outer margin. Genitalia as in fig. 11.

FEMALES. Length 15.0 to 17.0 mm, greatest width 11.0 to 12.0 mm. Clypeus typical of *Athyreus* females, anterior carina upwardly arcuate, posterior carina trituberculate; posterior carina when viewed from above feebly anteriorly arcuate, the median tubercle slightly anterior to lateral ones. Pronotum (Fig. 12) with anterior margin with median tubercle as in male; pronotal midline impressed, area on either side sloping upward, in posterior area depression limited by longitudinal carina on each side, carina slightly divergent anteriorly and becoming obsolete just anterior to middle; a short lateral carina present on either side anterior to humerus. Pronotal surface setose, closely granulate, granules sometimes reduced or absent medially in depression just anterior to middle. The granules and degree of elevation of carina are useful comparative characters.

MATERIAL EXAMINED. 10 males, 5 females.

BRAZIL: (type locality, no other data). Rio Grande do Norte, Natal, I. 1950, III/IV. 1951, III, VII/VIII. 1953, VIII/X. 1954, IV. 1957, IV. 1961, II. 1962. Paraíba, Joazeirinho, Soledade, IV. 1957. Ceará, Paraguru, III. 1953. Bahia, Vitoria da Conquista, IV. 1961. Minas Gerais, Paraizo, I. 1962; Collectors: Alvarenga, Machado, Pereira, Sebra.

Specimens are in: Paris, Howden, Martínez.

REMARKS. Boucomont's unique type is a relatively minor male with a small clypeal horn and only a moderate prescutellar impression on the pronotum, the impression lacking the dentiform posterior projection on each side.

The relatively small size, color, median tubercle on the anterior margin of the pronotum and the range will separate *vavini* from related species.

5. *Athyreus hypocritus* n. sp.

Figures 13-15, Map 2

DIAGNOSIS. Reddish brown to brown; similar to *vavini*. Males with pronotal concavity broad, as wide as or wider than head; pronotal horns posteriorly acutely rounded; anterior pronotal margin between fossae distinctly elevated, tuberculate on either side of raised margin; pronotal midline posteriorly with small nearly circular depression, depression contiguous to margin, marginal line obsolete medially; pronotal concavity with most or part of median area not granulate. Females with posterior clypeal carina feebly arcuate anteriorly, tridentate; anterior pronotal margin as in male but less distinctly dentate; longitudinal pronotal carina extending anteriorly to anterior third, slightly more widely separated than in *vavini*.

HOLOTYPE. Male, length 15.0 mm, greatest width 9.5 mm. Dorsally reddish castaneous, labrum, clypeus, sides of pronotum and elytra, and

legs lighter, yellowish tan to light brown. Most closely related to *bilobus*, differing in having more slender clypeal horn with rounded apex and lacking complete lateral posterior carina; front and vertex with small granulate punctures extending sparsely to near base of horn. Pronotum (Fig. 13) with anterior margin between fossae distinctly elevated, the elevation on either side with a small tubercle, slightly lower at middle than laterally; pronotum posteriorly with small, deep, cordiform (nearly circular) depression posteriorly contiguous with margin, adjacent margin lacking distinct marginal line; horns just anterior to and on either side of midline lobed, acutely rounded, delimiting posterior of broad, largely smooth, concavity; pronotal concavity at anterior base of horns as wide as head, medially in anterior half granulate-setose, posteriorly between horns with only scattered setose punctures. Lateral thirds of pronotum lacking distinct short carinae, granulate-setose. Fore tibia with five teeth on outer margin. Genitalia (Fig. 14) with apical edges of parameres plain, not bent or lobed, the slender protrusion on each paramere long, evenly arcuate.

ALLOTYPE. Female, length 16.0 mm, greatest width 11.5 mm. Carinae (Fig. 15) on head typical for genus, anterior clypeal carina slanted posteriorly, arcuate in frontal view; posterior clypeal carina slightly anteriorly arcuate, trituberculate. Frons and vertex punctate to granulate. Pronotum (Fig. 15) with anterior margin similar to holotype, less distinctly tuberculate laterally; depression between longitudinal carinae anteriorly approximately as wide as vertex, sparsely granulate near center on either side of median granulate band; midline slightly more deeply impressed in scutellar region; longitudinal carina on each side becoming obsolete in anterior half; small transverse lateral carina present on each side of pronotum anterior to humerus.

TYPE MATERIAL: Holotype, male, Argentina, Formosa, Clorinda, XI.1949, Martínez (Martínez).

Allotype, female, Paraguay, Santa Bárbara, III.1948, Schade (Martínez).

PARATYPES: 3 males, 4 females.

ARGENTINA: one male, same data as holotype.

PARAGUAY: Puerto Villeta, I.1945, Tepper. Departamento del Guayrá, Villarrica, III.1941, Schade. Departamento Capital, Trinidad, X.1948. Asunción, XI.1945, Podtiaguin.

Paratypes are in: Howden, Martínez.

REMARKS. The type series shows little important variation; one male measures 14.5 mm and the allotype represents the maximum size seen. The small male has slightly smaller horns and a deeper indentation in the pronotal prescutellar area. This type of allometric variation is relatively minor for the genus.

The combination of characters mentioned in the diagnosis should serve to identify *hypocritus*.

6. *Athyreus brasiliacus* n. sp.

Figures 19, 20, Map 2

DIAGNOSIS. Clypeal horn small, slender, erect, similar to *bilobus* in *yavini* group; frons and vertex punctate or granulate, setose. Pronotum with anterior margin elevated between fossae, margin thickened, posterior edge sinuate, slightly indented medially, lacking abrupt, tuberculate angle on each side near fossa; concave area of pronotum in central third, including inner

surface of flattened horns mostly smooth, shining, the smooth area divided by median granulate-setose band extending along midline from anterior to posterior margin; median area posterior to horns not sharply depressed nor otherwise modified.

HOLOTYPE. Male, length 13.0 mm, greatest width 9.2 mm. Dorsally brownish black, labrum and lateral portions of pronotum brown, elytral depressions (striae) dull, not shining. Similar to bilobus and hypocritus, differing primarily as follows: clypeal horn (Fig. 19) slender, tapered apically; posterior lateral carina fine, merging with lateral carina above antennal insertion, the carina subdentate or tuberculate. Frons and vertex irregularly punctate or granulate, setose. Pronotum with anterior margin elevated between fossae and thickened, posterior edge of elevated margin slightly sinuate, feebly indented medially, rounded laterally near fossae. Pronotal horn or lobe (Fig. 19) on each side of midline in posterior half laterally compressed, rounded at apex, somewhat longer than high, horn anteriorly divergent from opposite horn. Posterior of pronotum or prescutellar region feebly, longitudinally depressed, surface setose, granulate; the depression and granules continuing anteriorly in a band along midline to base of anterior margin; the granulate band completely dividing smooth areas of anterior central concavity into two. In other related species the median granulate band is incomplete or absent in well developed males. Pronotum laterally granulate, similar to vavini, bilobus and hypocritus in this respect. Fore tibia with five teeth on outer margin. Genitalia (Fig. 20) with ventral apex of each paramere reflexed, thickened, the apical protrusions small, arcuate and acute.

FEMALE. Unknown.

TYPE MATERIAL: Holotype, male, Brazil (Ottawa).

PARATYPES: 2 males.

BRAZIL: Sabara-Bello Horizonte, Rio das Velhao (sic), A. G. N. Chalmers.

Paratypes are in: London, Howden.

REMARKS. Athyreus brasilius is a member of the vavini complex and may be distinguished from closely related species by the complete granulate band that extends along the midline of the pronotum from the anterior to posterior margins. The two paratypes do not vary significantly from the holotype.

7. Athyreus bilobus n. sp.

Figures 16-18, Map 2

DIAGNOSIS. Color almost uniform brown to dark brown. Related to vavini, hypocritus and brasilius. Males readily distinguishable from these species by the clypeal horn in cross section wider than long, usually notched at apex, and with posterior vertical surface concave; anterior pronotal margin raised between fossae, edge of raised area relatively thin, truncate, laterally not noticeably tuberculate. Females with anterior pronotal margin between fossae elevated into a low, thin ridge; width of anterior elevation approximately equal to width of prescutellar depression.

HOLOTYPE. Male, length 19.0 mm, greatest width 12.0 mm. Dorsally brown with apices of horns and tubercles darker. Anterior clypeal face vertical, delimited dorsally by a semi-circular ridge, slightly dentate medially; clypeal horn (Fig. 16) immediately posterior to this with anterior face likewise vertical, horn unusually stout, as wide as long or wider in cross section near blunt apex; horn with anterior lateral carina on each side

distinct, not extending to arcuate anterior clypeal ridge; posterior lateral carina on each side extending laterally and slightly arcuately posteriorly to merge with ridge at anterior edge of gena. Frons posterior to horn smooth, sparsely punctate, vertex granulate, setose. Pronotum (Fig. 16) with anterior margin distinctly elevated between fossae, raised area truncate at top, edge relatively thin, not distinctly tuberculate laterally; pronotum posteriorly in prescutellar region with broad, almost circular depression; anterior, strongly declivous margin of depression setose and situated directly between posterior edges of horns; pronotal midline anterior to depression indicated by finely depressed line and small fovea midway between anterior margin and horns; area anterior to broadly lobed horns widely, shallowly concave; concavity largely smooth, punctate near anterior margin and on inner sides of lobes or horns. Pronotum lateral to horn on each side with feebly developed carina extending from near base of horn toward median lateral angle of margin; lateral to horns and concavity pronotum granulate-setose. Fore tibia with five distinct teeth on outer margin, a sixth minute tooth present basally (not present in other specimens). Genitalia (Fig. 17) with a distinct apical lobe on each paramere adjacent to arcuate, long, acute prolongation.

ALLOTYPE. Female, length 18.0 mm, greatest width 11.0 mm.

Head with carinae as is typical in genus, the posterior clypeal carina slightly anteriorly arcuate, trituberculate, median tubercle slightly larger. Frons and vertex entirely, irregularly granulate, granules never separated by more than three diameters, usually less. Pronotum (Fig. 18) with raised portion of anterior margin as in male, a faint denticle medially; pronotum almost completely granulate except for carinae, part of midline extending between faint anterior fovea at anterior third and faint fovea at posterior sixth (=prescutellar depression); on either side of midline between foveae granules irregular, sometimes widely separated; longitudinal carina on each side distinct from anterior fifth to posterior sixth; anteriorly separated by approximately width equal to width of clypeus, posteriorly converging to 1/2 anterior width. Lateral oblique carina feebly developed, similar to male.

TYPE MATERIAL: Holotype, male, Brazil, Estado do Paraná, Arapongas, XII.1951, A. Maller (Martínez).

Allotype, female, same data as holotype (Martínez).

PARATYPES: 11 males, 6 females.

BRAZIL: Paraná, XII.1951, XI.1956, A. Maller, XII.1956, Dirings; N. Paraná. São Paulo, Rio Claro, X.1940, I.1952, F.S. Pereira; Araraquara, Rio Aukumas, XII.1954, Olivastro; Ilha Comprida, IV.1969, J.S. Carvalho; Aguapehy, III.1941, Dufaux. D.F., Rio de Janeiro, 1926, Moraes-Mello. Minas Gerais, Rio Preto, II.1962, A. Machado; Belo Horizonte, III.1961, Machado; Varginha, X.1952. Goiás, Anápolis, XI.1930, Zellibor.

PARAGUAY: no other data. Guayrá, Villarrica, XI.1941, F. Schade; Colonia Elisa, 17.XI.1940, B. Podtiaguin.

Paratypes are in: Buenos Aires, Cambridge, London, Ottawa, Howden, Martínez.

REMARKS. Variation is not great. Some allometric growth is evident in the variation of male horn length, and the prescutellar depression of the pronotum in males also shows variation in the size and depth of the depression. Color also varies, the dark brown specimens we suspect are older as most are more abraded than lighter colored specimens. Characters needed for identification are summarized in the diagnosis.

8. Athyreus hemisphaericus Boucomont

Figures 25-27, Map 3

Athyreus hemisphaericus Boucomont, 1902a, p. 184; 1902b, p. 582; 1928, p. 206.

Athyreus canaliculatus Boucomont, 1928, p. 206. NEW SYNONYMY.

TYPE, hemisphaericus. Lectotype here designated, female originally described as male by Boucomont, 1902a, p. 184 and 1902b, p. 582 and used for figure 3, plate 5 of volume 71 (1902b). Type locality "Jatahy" (Prov. Goias, Brazil). (Paris), examined.

TYPE, canaliculatus. Male (Paris), examined.

MALES. Length 15.0 to 17.0 mm, greatest width 10.5 to 11.5 mm. Dorsally reddish brown to dark reddish brown, apices of horns, mandibles and margins often darker. Clypeal horn (Fig. 25) small, laterally compressed, anterior face obliquely slanted anteriorly then curved posteriorly in apical fourth, apex rounded, longer than wide in cross section; anterior lateral carina distinct, posterior lateral carina extending from base of horn in some specimens, obsolete in others, when present low and arcuate to junction with gena. Frons nearly flat, closely punctate. Vertex posteriorly concave on each side of convex midline, elevated median area expanding anteriorly, sparsely to densely punctate-granulate, setose. Anterior lateral edge of eye canthus nearly right-angled, not acute or more strongly recurved than remainder of canthus as is typical in related species. Pronotum (Fig. 25) with anterior margin between fossae obtusely angulate and subdentate at midline; pronotal midline deeply, narrowly impressed for most of length, almost forming fovea at anterior third with smooth area on either side extending posteriorly to anterior angles of raised carinae (equivalent to "horns" of vavini and relatives). Pronotum centrally with raised, obtusely angled carina on each side of midline, carina highest anteriorly, low and very slightly convergent posteriorly, ending in obtusely rounded, posteriorly and medially directed lobe just anterior to posterior margin and overhanging deep longitudinal median indentation; indentation 1 to 1.5 mm in length, narrowed anteriorly by overhanging sides, interior of indentation distinctly setose. Angulate pronotal carina anteriorly extending laterally, carina becoming feeble, obsolete in some specimens, joining lateral margin slightly posterior to mid point between anterior and median angle; juncture feebly angulate; a second short carina present on pronotum midway between anterior carina and posterior margin anterior to humerus, carina usually wide and well developed. Lateral pronotal surfaces, excluding carinae, closely granulate, setose. Fore tibia with five distinct teeth on outer margin, a sixth minute basal tooth often present on tibia of unabraded specimens. Genitalia (Fig. 26) with parameres apically simple, moderate in length, protrusion uniformly arcuate.

FEMALES. Length 15.5 to 17.5 mm, greatest width 10.5 to 12.0 mm. Head with typical female carinae, the posterior transverse carina often with median tubercle well developed and slightly anterior to smaller, more oblique lateral tubercle on each side; frons and vertex granulate, vertex not noticeably concave posteriorly near eyes. Pronotum (Fig. 27) with anterior margin and carinae not greatly different from small males; major difference is in lack of deep prescutellar indentation and overhanging lobes; instead area unmodified, midline narrow and deeply impressed, setose from just before posterior margin to anterior fourth; carina on either side almost parallel to anterior angulation, carina extending laterally from angulation to

pronotal margin poorly delimited, in some specimens absent; short carina near posterior pronotal margin anterior to humerus usually well developed.

MATERIAL EXAMINED: 17 males, 16 females.

ARGENTINA: Corrientes, Ituzaingó, Isla Apípe Grande, XI. 1945, Martínez. Misiones, Santa María, Viana; Loreto (Exp. St.), Ogloblin; San Ignacio, Villa Lutetia, January, Wagner.

PARAGUAY: Alto Paraná, Hohenau, XI. 1941, Jakob.

BRAZIL: São Paulo, Cidade (Ipiranga Santo Amaro), Pastore, Lane, Martínez. Minas Gerais; Uberaba, Summer 1956/57, Mendoza.

Specimens are in: Buenos Aires, London, Ottawa, Paris, Howden, Martínez.

REMARKS. The species is readily recognizable by the uniform reddish brown color, shape of pronotal carinae in both males and females, by the deep, sulcate indentation in the prescutellar region of males and by the male genital characters.

Boucomont originally (1902) confused the females of two different species describing one female (herein chosen as the lectotype of *hemisphaericus*) as a male. Subsequently when he described *canaliculatus* (1928) he stated that the male *canaliculatus* might be the same as *hemisphaericus* as he had discovered that two females were represented in his original description, the "male" of his description being the female of "*canaliculatus*". In selecting the lectotype it seemed best to select the female that could be definitely related to males without any doubt that they represented a single species, hence the establishment of *canaliculatus* as a synonym of *hemisphaericus*.

9. *Athyreus nitidus* n. sp.

Figures 21, 22, Map 3

DIAGNOSIS. Dorsally brown; head, pronotum and elytra unusually shiny, granules and punctures greatly reduced; clypeal horn erect, anterior and posterior lateral carinae obsolete at base of horn, distinct on horn; anterior pronotal margin raised and dentate on either side of midline; pronotal horn on either side of midline blade-like, erect, apically bidentate, widely separated; middle third of pronotum broadly, shallowly, concave.

HOLOTYPE. Male, length 15.0 mm, greatest width 10.0 mm. Dorsally shining brown. Clypeal horn (Fig. 21) erect, anterior and posterior lateral carinae present on horn, anterior carina briefly interrupted near base, posterior lateral carina present only on apical half of horn, absent elsewhere; posterior median carina lacking. Frons and vertex with scattered, long, semi-recumbent setae, seta-bearing punctures small, sparse, surface between shining. Pronotum (Fig. 21) with anterior margin between fossae raised medially, an obtuse tooth present on either side of midline; lateral pronotal margin somewhat irregularly arcuate to feebly sinuate near rounded median angle. Pronotum centrally, longitudinally broadly concave; on either side at edge of concavity just behind middle of pronotum with a laterally flattened, erect, blade-like horn having apex bifurcate, the posterior bifurcation much larger. Median posterior (prescutellar) area of pronotum not noticeably depressed, posterior margin at midline very narrow, marginal line obsolete. Elytra with broad indentations (striae) feebly delimited, much of surface unusually smooth and shining. Fore tibia with five teeth on outer margin. Genitalia as in fig. 22, with apical lobes very similar to *vavini* and *hypocritus*.

FEMALE. Unknown.

TYPE MATERIAL: Holotype, male, Bolivia, Dpto. Sta. Cruz, Pcia. Cordillera, Rio Seco, II. 1962, Martínez (Martínez).

REMARKS. The rather polished, shining brown appearance of *nitidus* is quite characteristic, and this coupled with the widely separated, blade-like bifurcate pronotal horns should be sufficient for identification.

10. *Athyreus aneae* n. sp.

Figures 23, 24, Map 3

DIAGNOSIS. Color tan to dark brown. Clypeal horn with anterior lateral carina complete or only slightly interrupted near base; posterior lateral carina present on horn, lacking on base; posterior median carina absent. Pronotum with midline depressed, posterior third with laterally compressed horn on each side adjacent to and paralleling median depression, each horn bidentate, the horn arcuately depressed between anterior and posterior denticles; posterior margin of pronotum not interrupted or greatly modified. Female unknown.

HOLOTYPE. Male, length 21.5 mm, greatest width 13.0 mm. Dorsally light brown. Clypeal horn (Fig. 23) vertical, anterior lateral carina complete, slightly interrupted at base of horn; posterior lateral carina present only on vertical portion of horn, absent elsewhere; posterior median carina absent. Frons and vertex almost completely impunctate, non-granulate; vertex with distinctly circular concavity on each side adjacent to eye, median area longitudinally strongly convex. Pronotum (Fig. 23) with midline indented except at anterior fifth or sixth; horn either side of and paralleling midline in posterior third, apex of horn bidentate, arcuately depressed between acute anterior and posterior denticles; horn separated from one on opposite side by distance of 3 to 4 mm; areas anterior and posterior to horns to margins mostly smooth, impunctate, non-granulate. Outer surface of each horn near base and lateral thirds of pronotum closely setose-granulate; lateral margin arcuate, anterior margin between fossae very obtusely angulate, summit of angulation at midline with minute tubercle; posterior margin at midline obtusely rounded and extended slightly posteriorly, area just anterior to posterior margin and posterior to horns concave, impunctate, non-granulate. Fore tibia with six teeth on outer margin. Genitalia as in fig. 24.

FEMALE. Unknown.

TYPE MATERIAL: Holotype, male, Paraguay, Caaguazú District, Estancia Primera, 28.xii.1931, R. F. Hussey (Howden).

PARATYPES. 2 males.

BRAZIL: São Paulo, Jundiaí, XII.1956, Martínez.

PARAGUAY: Cerro Amambay, X.1939, A. Schultze.

Paratypes are in: Washington, Martínez.

REMARKS. Variation is mainly evident in the allometric growth of the horns, the paratype from Paraguay having the poorest development but with the carinae and shape as described above. In the small paratype the vertex and frons are mostly granulate or punctate and the color is tan rather than brown. The species is named for Anne T. Howden in recognition of her contribution to many aspects of this paper.

11. *Athyreus forcipatus* Boucomont

Figures 31-33, Map 4

Athyreus forcipatus Boucomont, 1928, p. 207.

TYPE. Male (Paris), examined.

MALES. Length 15.0 to 17.0 mm, greatest width 10.5 to 11.0 mm. Color dorsally varying from brown centrally, tan laterally, to black centrally, brown laterally. Clypeal horn (Fig. 31) almost an equilateral triangle in median cross section, anterior surface flat, posteriorly with posterior lateral carinae joining near base to form single carinate posterior edge; near base of horn anterior and posterior lateral carinae present; posterior median carina absent. Frons and vertex with widely scattered punctures, otherwise smooth, vertex shallowly concave near eye either side of slightly convex midline. Pronotum (Fig. 31) with horn on posterior half either side of midline; viewed laterally horn trilobed, anterior lobe sharp, directed slightly anteriorly, median lobe distinct, usually slightly obtuse and nearly upright, posterior lobe extending horizontally over posterior pronotal margin and partially obscuring scutellum; posterior lobes narrowly, deeply separated; middle lobes separated by approximately 1 mm, anterior lobes by 1.5 to 2.0 mm. Pronotal depression anterior to horns with center of depression granulate, the surrounding area laterally and posteriorly largely smooth, with sparse, scattered punctures, non-granulate; lateral convex portions of pronotum closely granulate, lateral carinae absent; lateral margin arcuate. Elytral depressions or wide striae (Fig. 33) with setose granules distinctly separated, third depression with moderately even double row of granules. Fore tibia with five teeth on outer margin. Genitalia as in fig. 32.

FEMALES. Unknown or unassociated (granules in elytral intervals should be useful for identification of females when distribution is also considered).

MATERIAL EXAMINED: 4 males.

BOLIVIA: La Paz (type locality), Santa Cruz. Cochabamba, Peia. Chapare, Km. 14, 800 m, Martínez.

Specimens are in: Paris, Washington, Howden, Martínez.

REMARKS. In the four males seen the trilobed horn on each side of the pronotal midline varied both in height and in the degree of anterior-posterior separation of the lobes, the distance between the anterior and median lobes being most noticeable. The widely spaced granules in the elytral intervals seems to be a fairly unique character in the group and this coupled with the large, non-granulate area in the anterior portion of the pronotum should identify the species.

12. *Athyreus alvarengai* n. sp.

Figures 34-36, Map 4

DIAGNOSIS. Very similar to *forcipatus*. Males with posterior lateral carinae obsolete near base of clypeal horn; vertex distinctly concave on each side near eye, midline of vertex distinctly convex; pronotal depression anterior to horns largely granulate, granules in elytral depression (striae) dense, third stria with three irregular rows of granules.

HOLOTYPE. Male, length 15.8 mm, greatest width 10.5 mm. Dorsally black with lateral pronotal margins dark brown. Clypeal horn (Fig. 34) more acutely triangular than in *forcipatus*, anterior-posterior length near

base $1/4$ more than in forcipatus; posterior lateral carinae obsolete near base, distinct laterally. Frons mostly punctate; transverse band at junction of frons and vertex impunctate; concave area of vertex on each side near eye impunctate; median convex portion of vertex granulate. Pronotum (Fig. 34) similar to that of forcipatus but with trilobed horn on each side in anterior half separated from horn on other side by 2.5 to 3 mm; concavity anterior to horns occupying median third of pronotum, setose-granulate except for vague non-granular ridge anterior to each horn, the vague ridge delimiting central concavity; pronotum lateral to ridge and horns convex, closely setose-granulate. Elytral striae (Fig. 36) closely setose-granulate, granules in third stria forming three irregular rows. Fore tibia with five teeth on outer margin. Genitalia as in fig. 35.

FEMALE. Unknown.

TYPE MATERIAL: Holotype, male, Brazil, Pernambuco, Escada, X. A. Naller (Martínez).

Paratype, 1 male.

BRAZIL: Pará, Belém, Utinga, IX.1956, Martínez (Howden).

REMARKS. The single male paratype measures 16.0 mm in length and both the clypeal and pronotal horns are reduced in size compared to the holotype. Except for the allometric difference the two specimens are essentially similar.

This species is named for Col. Moacir Alvarenga from Rio de Janeiro in recognition of his numerous entomological endeavors which have advanced entomology in general and greatly aided this study in particular by providing the authors with many rare species of Athyreus.

13. Athyreus pyriformis n. sp.

Figures 37, 38, Map 4

DIAGNOSIS. Males with clypeal horn at apex much wider than long, horn anteriorly-posteriorly compressed, apex nearly truncate. Pronotum with anterior median half, smooth, shallowly concave; concavity rising nearly vertically and narrowing posteriorly, forming an upright horn; horn along median line narrowly, deeply sulcate, the midline indented posterior to sulcus, widening and deepening about 1 mm before posterior pronotal margin; margin posteriorly arcuate at posterior of indentation, marginal line incomplete. Pronotum in lateral view approximately three times higher than long. Females not recognized.

HOLOTYPE. Male, length 16.5 mm, greatest width 10.8 mm. Dorsally black, head and sides of pronotum and elytra very dark brown. Clypeal horn (Fig. 37) with anterior and posterior lateral carinae feebly developed, largely obsolete on horn, posterior median carina absent; horn (in cross section) near base only slightly wider than anterior-posterior length, in apical half two to three times wider than anterior-posterior length; apex bluntly rounded to truncate. Frons and vertex setose-punctate except for small median area in center of vertex smooth, a few scattered punctures present. Pronotum (Fig. 37) with anterior edge of horn rising nearly vertically from posterior edge of large, shallowly concave area extending from just posterior to anterior margin onto face of horn; central anterior half of pronotum smooth. Pronotal horn obliquely blunt in lateral view, in posterior (or anterior) view deeply sulcate the two plates of the horn narrowly separated (0.5 mm at apex); indentation continuing posteriorly down horn, deepening and widening on posterior portion of pronotum, forming oval cavity posteriorly

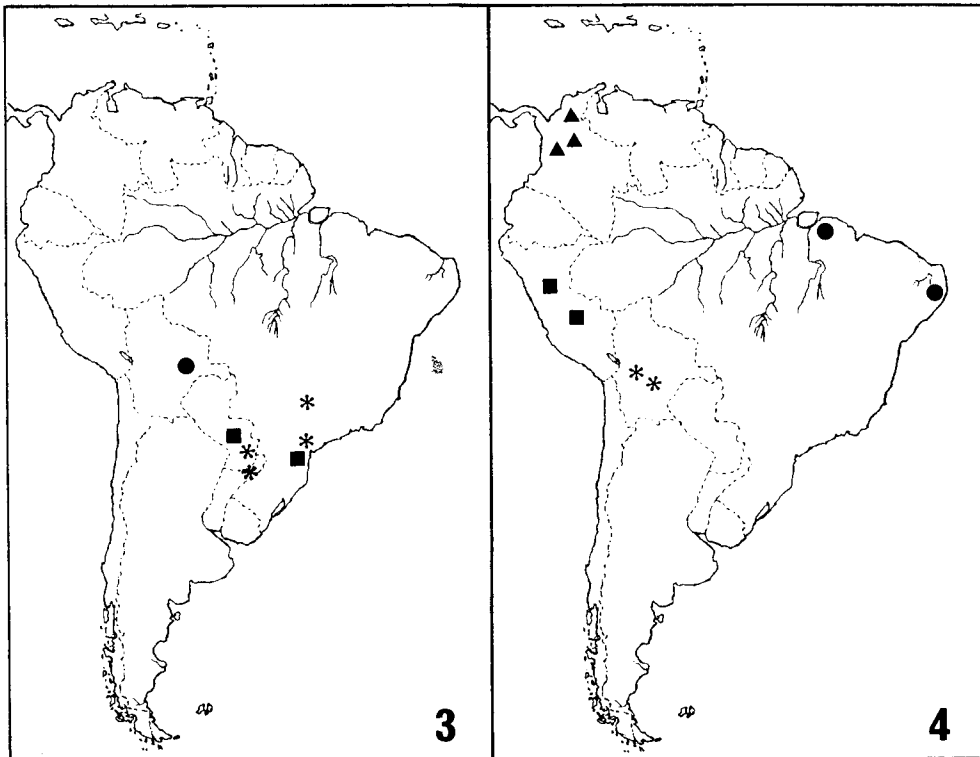
that is delimited by thin posterior pronotal margin, marginal line broken. Pronotum in lateral view much higher than long, lateral third on each side from anterior angles to posterior median depression behind horn closely setose-granulate; lateral pronotal margin just anterior to median angle, very feebly interrupted immediately below lateral fovea. Fore tibia with five teeth on outer margin. Genitalia as in fig. 38, the prolongations of the parameres relatively short for group.

TYPE MATERIAL: Holotype, male, Peru, Junin, Chanchamayo, 3.X. 1961, J. Schunke L. (Howden).

Paratype, 1 male.

PERU: Loreto, Pucallpa, Hocking (Washington).

REMARKS. The single male paratype does not vary significantly from the holotype except that the size is slightly less (about 0.5 mm).



* = 8. *hemisphaericus* Bouc.

● = 9. *nitidus* n. sp.

■ = 10. *anneae* n. sp.

* = 11. *forcipatus* Bouc.

● = 12. *alvarengai* n. sp.

■ = 13. *pyriformis* n. sp.

▲ = 14. *unicornis* n. sp.

14. *Athyreus unicornis* n. sp.

Figures 28-30, Map 4

DIAGNOSIS. Males lacking clypeal horn, pronotum with unique slender horn arising from center of pronotum, extending anteriorly and inclined downward over head, terminating near anterior edge of clypeus. Females with

two distinctly separated central pronotal tubercles, a short carina on each side delimiting central dark brown to black area that extends anteriorly to margin; remainder of elytra and sides of pronotum reddish brown. Both sexes with five teeth on outer margin of fore tibia. Occurring in northern Colombia.

HOLOTYPE. Male, length 17.5 mm, greatest width 12.0 mm. Distinctly bicolored dorsally; frons, vertex central third of pronotum and all but lateral and apical fourth or third of elytra very dark brown to black; labrum, clypeus, lateral portions of pronotum and elytra reddish brown. Clypeus (Fig. 28) with a single, uniformly low, arcuate carina extending from above antennal insertion on each side anteriorly to middle of clypeus; clypeus anterior to carina sloping gradually downward to margins; medially, a low tubercle present in center of frons. Frons evenly, vertex less evenly, punctate. Pronotum (Fig. 28) with slender, nearly cylindrical horn extending anteriorly and inclined downward, terminating above anterior margin of clypeus; basal dorsal half of horn and adjacent midline posterior to horn indented, indentation punctate on horn, setose granulate behind. Pronotum on each side with short vague carina near base of horn, second more distinct carina near posterior pronotal margin anterior to elytral umbone. Pronotum anterior to horn smooth and shallowly concave; lateral and posterior thirds of pronotum setose punctate or granulate; lateral pronotal margin on each side between acute anterior angle and median angle bisinuate. Fore tibia with five teeth on outer margin (basal notches between teeth enlarged by some mechanical process in type, not natural abrasion; also same is true for notches of mandibles). Genitalia as in fig. 29, similar to *bifurcatus*.

ALLOTYPE. Female, length 18.0 mm, greatest width 13.0 mm. Dorsally similar in color to male. Head not differing greatly in shape of carinae from females of related species. Pronotum (Fig. 30) with two central tubercles distinct, conical, separated by approximately 1 mm; on each side at edge of dark area posterior to tubercles a short, poorly developed carina (better developed in paratypes). A short distinct carina present paralleling posterior pronotal margin just anterior to elytral umbone. Pronotal surface entirely setose-granulate; lateral margin on each side between anterior and median angles vaguely sinuate; fovea above median angle, small, oval, moderately deep and shining. Fore tibia with five teeth on outer margin.

TYPE MATERIAL: Holotype, male, Colombia, Valle Medellín, X.1945, F.L. Gallego M., U.S.N.M. Ins. no. 176630. Col. 37-XX3 (Washington). Allotype, female, same data as holotype (Washington).

PARATYPES. 1 male, 3 females.

COLOMBIA: Magdalena, Sierra Nevada de Santa Marta, Pueblo Bello, 1100 m, 10-17.VI.1968, B. Malkin. Santander, Socorro, VIII.1940.

Paratypes are in: Chicago, Howden, Martínez.

REMARKS. Color normally is not a useful character in the *bifurcatus* group, but coloration is constant in the six specimens seen. At present the range by itself can be considered diagnostic since no other species of *Athyreus* is known from the area of Colombia in which *unicornis* occurs.

15. *Athyreus armatus* Westwood

Figure 39

Athyreus armatus Westwood, 1848, p. 386; 1851, p. 459; Boucomont, 1912, p. 4.

TYPE. Male (Oxford), examined.

MALE. Length 18.0 mm, greatest width about 11.0 mm. Dorsally black with mandibles and sides of pronotum brown. Anterior lobe of each mandible projecting strongly anteriorly, forming an elongate lobe. Clypeus anteriorly with a small median tubercle; a nearly straight carina on each side extending from median tubercle to lateral margin above antennal insertion, there forming a small tubercle. Frons and vertex centrally briefly impunctate, most of frons and vertex setose, punctate or granulate. Pronotum (Fig. 39) very unusual for genus; centrally with a single, anteriorly inclined horn; on each side anterior to horn a rounded, "flap-like" dilation or lobe extending to anterior margin behind eye, the dilation most pronounced near posterior terminus. Lobes or dilations laterally and horn posteriorly effectively delimiting anterior, central half of pronotum; area within shallowly concave and sparsely granulate. Area posterior to pronotal horn medially depressed, closely setose-granulate; pronotum laterally, including indentation below dilations, largely impunctate. Fore tibia with five teeth on outer margin.

MATERIAL EXAMINED: 1 male (holotype).

"AMERICA MERIDIONALI": no other data.

REMARKS. The single male of *armatus* differs greatly in the pronotal armature from other species of *Athyreus*. The laterally directed "flap-like" dilations projecting from lateral third of pronotum anterior to transverse line of central horn is nearly unique. The elongate, anteriorly projecting lobe on each mandible resembles to a degree the mandibles of *gigas*. The essentially hornless clypeus and the anteriorly inclined pronotal horn vaguely resembles *unicornis*. The lack of any additional specimens since Westwood's description indicates both rarity and lack of collecting. Boucomont, 1911, in his catalogue lists the locality of *armatus* as "Brazil" (which probably does equal "America meridionali").

16. *Athyreus biarmatus* n. sp.

Figures 79-81, Map 5

DIAGNOSIS. Male lacking clypeal horn, horn represented anteriorly by a low transverse tubercle; pronotum in anterior half on either side behind eye with a laterally directed lobe slightly overhanging pronotal surface; center of pronotum with horn represented by a low swelling bifurcate apically, each furcation distinct and acutely pointed. Female with very distinct U-shaped carina enclosing a short distinctly raised carina on either side of midline, the U-shaped carina incomplete posteriorly; short inner carinae slightly convergent posteriorly but completely separate.

HOLOTYPE. Male, length 15.0 mm, greatest width 9.9 mm, bi-colored dorsally; vertex, longitudinal central half of pronotum, and elytra very dark reddish brown; labrum, lateral fourths of pronotum, and legs light reddish brown. Clypeus (Fig. 79) with complete transverse anterior carina, carina feeble; medially and contiguous to carina a small transverse tubercle; posterior carinae obsolete, evident laterally above antennal insertions; frons slightly tumid, surface of frons and vertex with scattered setose granules. Pronotum (Fig. 79) with central third in anterior half lobed on either side posterior to fossa, the lobe raised, projecting laterally and slightly overhanging lateral surface; viewed from above lobes and anterior margin presenting a broadly U-shaped raised area with central portion slightly depressed and with scattered granules. Immediately behind this area at center of pronotum a feeble swelling present with apex distinctly bifurcate, each

portion of bifurcation abruptly raised, slightly divergent and acute at apex; on each side of horn posteriorly a slightly sinuate carina terminating just posterior and lateral to the posterior terminus of lobe; midline posterior to central horn or swelling shallowly, distinctly indented; surface of pronotum except for raised areas moderately granulate, setose; lateral pronotal margins sinuate. Elytron between suture and umbone with intervals strongly convex; each stria largely represented by irregular, double row of granules. Fore tibia with five teeth on outer margin. Genitalia as in figure 80.

ALLOTYPE. Female, length 17.1 mm, greatest width 10.5 mm. Color, granules, elytra, striae, and fore tibia as described for male. Clypeus anteriorly with evenly arcuate transverse carinae; posterior clypeal carina tridentate, median tubercle better developed and very slightly anterior in position to lateral tubercles. Vertex centrally flat, granules widely spaced. Pronotum (Fig. 81) with longitudinal central third largely enclosed by strongly raised U-shaped carina with greatest elevation near anterior margin; a fine carina extending posteriorly from margin on each side just inside fossa and merging with U-shaped carina; each terminus of U-shaped carina converging posteriorly, terminating approximately 1 mm before posterior margin; area between broadly, shallowly depressed. Center of pronotum on either side of midline with strongly raised longitudinal carina, the two carinae slightly convergent posteriorly.

TYPE MATERIAL: Holotype, male, Trinidad, 92-66 (London). Allotype, female, Trinidad, St. Augustine, 22.8.1925, C.L. Withycombe (London).

REMARKS. The species is closely related to armatus but can be readily distinguished by the bifurcate pronotal horn of the male; the male of armatus has a long, slender, anteriorly inclined horn. The lateral pronotal lobes will distinguish armatus and biarmatus males from all other species.

17. Athyreus gigas Westwood

Figures 40-42, Map 5

Athyreus gigas Westwood, 1848, p. 386; 1851, p. 458.

TYPE. Male (Oxford), examined.

MALES. Length 24.0 to 25.0 mm, greatest width 13.5 mm. Dorsally reddish tan to brown. Each mandible with three lobes in addition to acute apical tooth; anterior apical lobe directed anteriorly, acutely triangular in shape, similar in this respect to armatus. Clypeus (Fig. 40) with three low horns of equal height; one medially at anterior edge of clypeus with vague but typical anterior lateral, posterior lateral and posterior medial carinae evident; obsolete posterior lateral carina on each side forming an acutely triangular horn just anterior to gena, horn projecting slightly outward over antennal insertion. Clypeus and area between horns with scattered, distinctly separated punctures. Frons largely impunctate, posteriorly with a small, low tubercle on each side of midline; vertex posterior to tubercles setose-punctate. Pronotum (Fig. 40) with two divergent, blade-like horns arising from common base, nearly as in some bifurcatus but with horns stouter and recurved upward on anterior edge. Anterior face of horns impunctate, smooth; anterior and posterior surfaces setose-granulate. Pronotum laterally on each side of horns shallowly, broadly concave, the concavity slightly irregular and non-granulate, impunctate; area near anterior angles flat, with minute scattered punctures. Lateral pronotal margin straight from anterior angle to just anterior to median angle where briefly sinuate. Elytral intervals

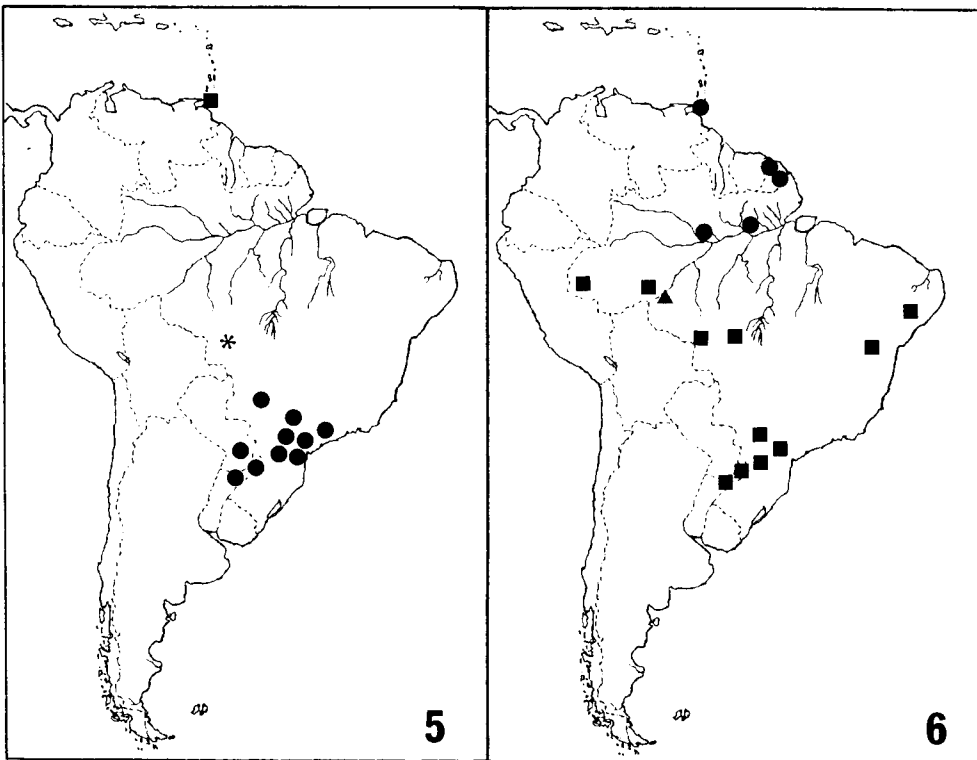
between suture and umbone poorly delimited, somewhat irregularly spaced. Genitalia (Fig. 41) with prolongation of paramere (Fig. 42) slightly expanded and bluntly rounded at apex.

FEMALE. Unknown.

MATERIAL EXAMINED: 2 males.

BRAZIL: no other data (holotype). Mato Grosso, near Cuiabá, XI. 43. Specimens are in: Oxford, Martínez.

REMARKS. The two specimens seen are very similar, and are easily separable from other *Athyreus*, except possibly for the smaller *parvus*. The three low horns on the head are an excellent specific character and this, in conjunction with the smooth areas of the pronotum, immediately separates *gigas* from related species such as *parvus* and *bifurcatus*.



■ = 16. *biarmatus* n. sp.

* = 17. *gigas* Westw.

● = 19. *bifurcatus* Macl.

■ = 20. *tuberifer* Fels.

▲ = 21. *juanae* n. sp.

● = 22. *bellator* Westw.

18. *Athyreus parvus* n. sp.

Figures 82-84

DIAGNOSIS. Clypeus with three horns or large tubercles; anterior median horn with anterior and posterior lateral carinae and feeble median posterior carina; lateral "horn" on each side formed by strongly protruding

angulation of lateral margin positioned above base of mandible distinctly anterior to gena. Central horn of pronotum bifurcate, as in some bifurcatus; a circular concavity present on either side of midline anterior to horn; anterior and lateral surfaces of pronotum granular or punctate, not smooth.

HOLOTYPE. Male, length 14.9 mm, greatest width 9.8 mm. Clypeus (Figs. 82, 83) with three horns or tubercles; anterior central horn most pronounced, occupying most of center of clypeus; anterior face of clypeus nearly vertical, triangular; face delimited on each side by the anterior lateral carina, carina merging with opposite one near slender apex of horn; horn in lateral view broadly triangular, slightly bent posteriorly; posterior median carina feeble; posterior lateral carina on each side strong, elevated, forming a large, acute tubercle or small horn overhanging base of mandible. Frons rising uniformly from vertex to base of clypeal horns or tubercles, inclined surface closely, often confluent punctate; vertex moderately punctate, nearly flat medially, with a minute tubercle on either side of midline in line with posterior margin of eyes. Pronotum (Figs. 82, 83) with central horn strongly bifurcate nearly from base, each furcation inclined anteriorly, divergent from opposite side, and tapered to acute tip. Pronotum on each side anterior to horn with moderately deep, almost circular depression; midline behind horn shallowly impressed; pronotum on each side posterior to horn with two short feeble carinae, posterior one anterior to humerus and parallel to posterior pronotal margin, more anterior and shorter carina positioned midway between base of horn and posterior carina; pronotal surface except for carinae punctate or granulate, largely setose, lacking smooth areas; lateral pronotal margin between anterior and median angles distinctly sinuate. Fore tibia with five teeth on outer margin, a suggestion of a minute basal sixth tooth present on right tibia. Genitalia (Fig. 84) with prolongations of parameres long, stout, feebly twisted and with blunt apices.

FEMALE. Unassociated.

TYPE MATERIAL: Holotype, male, Brazil (Howden).

REMARKS. Athyreus parvus was at first included with a series of bifurcatus because of the shape of the pronotal horn. The small size of parvus originally caused confusion in regards to the short clypeal horn. However when the genitalia was examined the species was found to be only distantly related to bifurcatus. We now consider it to be a well developed male with the clypeal characters showing affinities with gigas. The pronotal depressions and large prolongation of each paramere are similar to the tribuliformis - zischkai - martinezi complex. Athyreus parvus seems to be intermediate between these species and gigas.

19. Athyreus bifurcatus Macleay

Figures 43-45, Map 5

Athyreus bifurcatus Macleay, 1819, p. 124; Guerin, 1956, p. 262; Martínez, 1953, p. 232.

Athyreus herculeanus Laporte, 1840, p. 102; Boucomont, 1911 (1910), p. 346. NEW SYNONYMY.

Athyreus rotundus Westwood, 1848, p. 386; 1851, p. 461. NEW SYNONYMY.

Athyreus tuberculatus Westwood, 1848, p. 386; 1851, p. 460. NEW SYNONYMY.

TYPE, bifurcatus. Male (location uncertain), not examined.

TYPE, *herculeanus* (possible type). Female (Paris), examined.

TYPE, *rotundus*. Female (Oxford), examined.

TYPE, *tuberculatus*. Male (Oxford), examined.

MALES. Length 18.0 to 22.0 mm, greatest width 11.0 to 13.0 mm.

Dorsally brown to very dark brown, pronotum often lighter in color than elytra, particularly near margins. Clypeal horn (Fig. 43) strongly inclined anteriorly; anterior lateral, posterior lateral, and posterior median carinae all present; the posterior lateral carina on each side forming an abrupt, sharply pointed low tubercle just anterior to gena. Frons and vertex setose, punctate or granulate. Pronotum (Fig. 43) in well developed males with two widely divergent horns arising from a common base; on each side of horns a large, shallow concavity extending from near posterior pronotal margin $2/3$ of distance to anterior margin. Lateral third of pronotal surface usually impunctate; pronotal margin between anterior and median angles sinuate, area just inside anterior angle tumid. In poorly developed males pronotal horns indicated by two slightly separated divergent, longitudinal flaps (as in type of *tuberculatus*), surface of pronotum largely granular, pronotal cavities lacking, lateral pronotal margins between anterior and median angles nearly straight. Fore tibia usually with six distinct teeth on outer margin. Genitalia as in fig. 44.

FEMALES. Length 17.0 to 24.0 mm, greatest width 11.0 to 14.0 mm.

Females are either extremely variable or the series seen is a mixture of species, probably both factors are present. All specimens have six teeth on the fore tibia as do males of *bifurcatus*. Pronotum (Fig. 45) with central swelling single or double, low or distinctly elevated; carina on either side extending to anterior margin or incomplete laterally, in addition to large arcuate carina, one or two short carinae present.

MATERIAL EXAMINED: 42 males, 48 females (only data from males listed).

ARGENTINA: Misiones, Loreto, XI.1939, Ogloblin; Misiones, Oberá, X.1944, Pastrana; Misiones, San Ignacio, IV.1945, Röhmer; Misiones, Puerto Victoria, XI.1940; Misiones, no other data.

BRAZIL: No other data (type locality). São Paulo, Barueri, 10.IV.1956, K. Lenko; São Paulo, CIPO, 25.II.1974, 18.X.1972, 4.XII.1972, V.N. Alin; São Paulo, Ypiranga, 24.XI.1942, A. Alves. Mato Grosso, Pocone, XII.1948. Minas Gerais, Varginha, X.1950. Paraná, Jaguariava, XII.1955; Rio Tijuca, XII.1884, E. Gounelle. Rio de Janeiro.

PARAGUAY: Alto Paraná, Hohenau, 1929, 15.XI.1948, H. Jacob; Hohenau, 23.XII.1945, G. Angel.

Specimens are in: Buenos Aires, Leiden, London, Ottawa, Oxford, Paris, Washington, Hardy, Howden, Martínez.

REMARKS. Males of *bifurcatus*, except minor specimens, can be distinguished by the distinctly anteriorly inclined clypeal horn, the two laterally divergent pronotal horns with a shallow lateral concavity on each side, and the fore tibia with six teeth. In male minors it is best to check the genitalia (Fig. 44) which have the protrusions of the parameres abruptly widened, almost bifurcate, at the apex. Females can only be determined by association with males.

20. *Athyreus tuberifer* Felsche

Figures 46-48, Map 6

Athyreus tuberifer Felsche, 1909, p. 762; Martínez, 1953, p. 233 (the female)

"Allotype" is not tuberifer).

TYPE. Female (Dresden ?), not examined.

MALES. Not distinguishable from female by usual dimorphism in horns and carinae; males lack median dentate pronotal sulcus just anterior to posterior margin (see female description). Length 20.0 to 24.0 mm, greatest width 14.0 to 15.0 mm. Dorsally dark brown to black with lateral margins of pronotum and elytra often lighter. Clypeus (Fig. 46) with elongate, anterior median horn strongly inclined anteriorly, both anterior lateral and posterior lateral carinae extending nearly to apex; posterior median carina obsolete, represented by a small, abrupt tubercle at base of horn. Frons and vertex centrally impunctate, smooth, shallowly concave. Pronotum (Fig. 46) centrally with a nearly cylindrical horn (the base 1.0 to 1.5 mm high) having a small obtuse denticle at median posterior summit, and with an anterior extension directed slightly upward; apex of extension deeply (1 to 2 mm) bifurcate, each bifurcation slender, acute apically. Surface of central pronotal horn, except base anteriorly, closely punctate; on each side of midline from near base of horn to posterior margin a cluster of setose-granules; remainder of pronotal surface, except near anterior margin, smooth, impunctate, non-granulate; a few small scattered setose punctures present near anterior margin; surface of pronotum of male minors largely granulate. Pronotum either side of horn slightly concave (male majors), margin nearly straight between anterior and median angles; pronotal midline just anterior to posterior margin not modified, impunctate, slightly indented. Fore tibia with six teeth on outer margin. Genitalia as in fig. 47, the apical protrusions of the parameres small, acute.

FEMALES. Readily confused as males of a different but related species unless genitalia examined. Clypeus (Fig. 48) with single anterior, moderately elongate (about 2 mm) horn; anterior base of horn usually arising slightly behind anterior, transversely cariniform edge of clypeus (in males, base of horn anteriorly forms edge of clypeus); horn with both anterior and posterior lateral carinae, but lacking posterior median carina; posterior lateral carina on each side forming distinct tubercle above antennal insertion. Frons and vertex relatively evenly setose-granulate. Pronotum (Fig. 48) in anterior median half with a distinct oval concavity, width approximately equal to width of vertex; a low horn present posterior to and contiguous with concavity, oval horn almost truncate apically except for distinct vertical tooth on each side of anterior edge and vague median tubercle at posterior edge. Pronotum posterior to horn with midline narrowly depressed, an acute, posteriorly directed denticle present on each side of depression just anterior to posterior margin (this character readily identifies the females of tuberifer). Pronotum on either side of horn with one short, distinct and one obsolete carina; pronotal surface largely granulate except for smooth area on each side of central depression. Fore tibia with six teeth on outer margin.

MATERIAL EXAMINED: 9 males, 7 females.

ARGENTINA: Misionés, Loreto; Misionés, Puerto Victoria.

BRAZIL: Pernambuco (type locality). Terr. do Acre, Cruzeiro do Sul, I. 1954. Bahia. Terr. Guaporé, Pôrto Velho, III. 1944, A. Parko. Pará, Cachimbo, 25.IX-X. 1956, Travassos, Oliveira, and Adao. Paraná, Rolandia, II. 1955, A. Maller. Rio de Janeiro. São Paulo, Campinas, XI. 1955, Martínez, at light; São Paulo, Lusanvira, 1936, H. Zellibor; São Paulo, Pirassununga, I. 1951, Schubart; São Paulo, Anhembi, Faz, Barreiro Rico, XI. 1965, W. D. Edmonds.

Specimens are in: Dresden (?), London, Paris, Howden, Martínez.

REMARKS. In the original description Felsche (1909) did not state the

sex of the unique type, but from his drawing and description the type is a female. The single horn on the head of the female, normally a male character, has subsequently caused confusion, a female of another species of the *bifurcatus* group being described as the female of *tuberifer* (see Martínez, 1953). The species, once the sexual differences are recognized, can be distinguished by the central, oval, anteriorly bifurcate or bidentate and posteriorly, medially obtusely tuberculate horn (Figs. 46 and 48).

21. *Athyreus juanae* n. sp.

Figures 61, 62, Map 6

DIAGNOSIS. Pronotal horn of males very distinctive; laterally compressed, extending medially from center of pronotum to posterior fourth; horn viewed from posterior or anterior acutely elongate, viewed laterally consisting of anterior and posterior points, apical edge arcuately emarginate between, deepest point slightly anterior in position; pronotum medially between horn and anterior margin feebly concave, concave area and adjacent lateral area on each side not setose-granulate, lateral areas with a few scattered small punctures. Fore tibia with five teeth on outer margin. Females not associated.

HOLOTYPE. Male, length 22.5 mm, greatest width 12.5 mm. Dorsally very dark brown to black, lateral edges of pronotum and elytra dark brown. Clypeal horn (Fig. 61) nearly vertical, inclined slightly forward; anterior lateral carina on each side only evident from outer angle to base of horn; posterior lateral carina on each side distinct to near apex of horn, feebly arcuate from base to terminus with gena; posterior median carina distinct from base of horn nearly to apex, not tuberculate at terminus near middle of frons. Frons and vertex largely punctate or granulate, surface smooth mainly in transverse depression approximating junction of frons and vertex. Pronotum (Fig. 61) with laterally compressed horn extending along midline from center to posterior fourth, horn highest posteriorly, slightly less so anteriorly, the edge between arcuately depressed, deepest at anterior third; apical two-thirds of horn punctate. Area posterior and anterior to horn smooth, non-granulate; anterior area shallowly concave, a smooth area on either side of concavity distinctly delimited by lateral setose-granular area extending from near median angle upward to within 1 mm of base of horn. Side of pronotum straight to slightly arcuate anteriorly. Fore tibia with five teeth along outer margin, the seemingly closely related *tuberifer* and *bifurcatus* both having six teeth. Genitalia (Fig. 62) very similar to *tuberifer*.

FEMALES. Not associated.

TYPE MATERIAL: Holotype, male, Brazil, Guaporé, Pôrto Velho, II. 1945, A. Parko (Martínez). Paratype, 1 male, same data as holotype (Howden).

REMARKS. In the *bifurcatus* group females having five teeth on the fore tibia have at least two distinct types of pronotal carinae. Since none of these females were collected near the type locality no attempt was made to associate one of the forms with *juanae*.

This species is named for Señora Juana de Martínez.

22. Athyreus bellator Westwood

Figures 49-51, Map 6

Athyreus bellator Westwood, 1848, p. 387; 1851, p. 461.

TYPE. Male (Oxford), examined.

MALES. Length 17.0 to 22.0 mm, greatest width 10.5 to 12.0 mm. Dorsally tan to very dark brown, lateral pronotal margins sometimes lighter. Clypeal horn (Fig. 49) moderately inclined anteriorly, carinate near anterior angles; on each side posterior lateral carina extending along length of horn; posterior median carina extending along length of horn and sometimes onto frons. Frons and vertex, except laterally, largely impunctate; vertex shallowly concave. Pronotum (Fig. 49) with slender, upright central horn laterally bifurcate at apex, the bifurcation V-shaped, anterior midline of horn and pronotum shallowly impressed; pronotum medially posterior to horn with cluster of setae. Pronotal margin anteriorly between marginal fossae upwardly arcuate; pronotal surface laterally setose-punctate, punctures closer posteriorly, surface usually impunctate anterior to horn. Fore tibia with five teeth on outer margin. Genitalia (Fig. 50) with prolongation of parameres relatively short, slightly twisted near apices.

FEMALES. Length 20.0 to 22.0 mm, greatest width 11.0 to 12.5 mm. Pronotum (Fig. 51) with central swelling low, the encompassing carinae often obsolete anteriorly; setose granules near anterior angles separated by approximately 3 to 4 diameters, near posterior angles close, separated by approximately one diameter. Sometimes not separable from females of tridens or females in the bifurcatus group.

MATERIAL EXAMINED: 18 males, 8 females.

BRAZIL: No other data (type locality). Amazonas, Maues, H. Zellibor. Pará, Obidos, IX.1955, Martínez; III.1956, I-III.1959, F. Oliveira.

FRENCH GUIANA: Cayenne (=Cayenna, type locality); St. Jean du Maroni, VIII, Moul; St. Laurent du Maroni, V, Moul.

SURINAM: Zanderij, 26.XII.1961, J. Belle.

TRINIDAD: No other data.

Specimens are in: Cambridge, Leiden, London, Oxford, Paris, Washington, Howden, Martínez.

REMARKS. In all males seen including some relatively "minor" forms the pronotal horn is distinctly bifurcate, although the width and degree of bifurcation varies. In small males most of the pronotum is at least sparsely punctate. The sparsely placed anterior pronotal punctures (males) or granules (females) and the closely spaced posterior punctures or granules also seem characteristic but this, at present, is difficult to assess. Some females that we consider to be bellator have been identified as "billbergi Gray" (London), but the latter name could be referred to any female in the bifurcatus group.

23. Athyreus tridens Laporte

Figures 55-57, Map 7

Athyreus tridens Laporte, 1840, p. 102; Klug, 1843, p. 25; Westwood, 1851, p. 457; Boucomont, 1928, p. 207; Martínez, 1953, p. 232.

Athyreus similis Felsche, 1909, p. 760. NEW SYNONYMY.

Athyreus villosus Boucomont, 1902a, p. 184; 1902b, p. 581; 1928, p. 207.

TYPE, *tridens*. Male (Paris), not examined.

TYPE, *similis*. Male (Dresden ?), not examined.

TYPE, *villosus*. Male (Paris), examined.

MALES. Length 16.0 to 22.0 mm; color tan to brown with the center of pronotum sometimes darker. In well developed males clypeal horn (Fig. 55) either vertical or slightly inclined anteriorly; anterior of horn usually lacking distinct carinae; posterior lateral carinae present; sometimes a median, posterior carina present; frons smooth, not punctate or granulate; vertex shallowly concave, setose-punctate posteriorly. Pronotum (Fig. 55) centrally with erect, nearly cylindrical (flattened on anterior surface) horn, apex distinctly tridentate, an acute tooth present on either side anteriorly, and with single, prominent median posterior tooth; pronotal surface anterior and posterior to horn minutely setose-punctate (Brazil) or not setose and impunctate (usual for Argentina, Bolivia, Paraguay); pronotum anteriorly with small median depression midway between horn and margin; lateral pronotal margin slightly sinuate near median angle. Male genitalia as in fig. 56, with apical prolongation of each paramere abruptly bent near apex.

FEMALES. Apparently quite variable and only placed by association with males taken in same general area. Head and pronotum as in fig. 57; pronotum setose-granulate instead of setose-punctate as in males; median swelling feebly V-shaped to distinctly bituberculate; pronotum anteriorly briefly impunctate; carina on either side poorly developed, arcuate to straight posteriorly.

MATERIAL EXAMINED. 11 males, 5 females.

ARGENTINA: Corrientes, Alto Paraná, Isla Apipé Grande, XI. 1945, Martínez. Misiones, Concepción, Sta. Maria.

BOLIVIA: Santa Cruz, Ichilo, Buena Vista, Martínez; Pcia. Sara, XI.

BRAZIL: (Type locality) Paraná, Arapoti, XI, Müller. Goiás, Jatahy; Goiás, Monjolinho, Barreto; Goiás, Rio Verde, 7.XI.1945, Zellibor. Minas Gerais, Sertão de Diamantina, 10.XI.1902, Gounelle. Rio Grande do Norte, Natal, 2.VIII.1950, 28.VIII.1951, Alvarenga.

PARAGUAY: Dept. del Guayrá, Col. Independencia, XII.1950, Martínez. Asunción, San Lorenzo.

Specimens are in: Buenos Aires, Cambridge, Paris, Howden, Martínez.

REMARKS. All males examined had the central pronotal horn at least feebly tridentate. The only closely related species with a tridentate pronotal horn is *A. championi*. In *championi*, which is allopatric (Map 7), the color is normally black, the clypeal horn of the males is anteriorly carinate basally and the pronotum is almost entirely punctate, only the anterior face of the horn sometimes impunctate.

24. *Athyreus championi* Bates

Figures 58-60, Map 7

Athyreus championi Bates, 1887, p. 108; Boucomont, 1928, p. 207; Howden, 1964, p. 14; 1974, p. 567.

TYPE. Male (London), examined.

MALES. Length 17.0 to 20.0 mm; greatest width 10.0 to 11.0 mm. Color dorsally very dark brown to dull black, often with faint purplish tinge. Head (Fig. 58) with erect clypeal horn; anterior edge of horn arising from anterior clypeal margin; horn triangular in shape, sharp in front and near anterior base bifurcating into two carinae; carinae extending to proximate

anterior angles; posterior flattened surface of clypeal horn faintly carinate; basally, on each side of horn, a carina extending to gena. Surface of frons largely impunctate, with only scattered punctures posteriorly and laterally. Vertex nearly flat and setose-punctate. Disc of pronotum (Fig. 58) with conspicuous, central, trifurcate horn; posterior prong of horn much higher than two anterior ones. Surface of pronotum finely setose-punctate, granulate; area anterior to horn sometimes impunctate. Carina on either side of central horn indistinct. Lateral pronotal margin in front of median angle slightly sinuate. Genitalia as in fig. 59.

FEMALES. Length 20.0 to 22.0 mm; greatest width 11.5 to 12.5 mm. Clypeus anteriorly with sharp, arcuately raised, transverse carina; clypeal surface in front of carina largely impunctate. Clypeus posteriorly with tridentate carina, middle tubercle more anteriorly placed than lateral ones, normally more elongated. Pronotum with central, shining, shallowly bifurcate protrusion (Fig. 60); on either side of central protrusion and joining anterior pronotal margin, a distinct carina forming an inverted "U" around median projection; distinct oval impression present medially, just behind anterior margin; midline shallowly, distinctly impressed near posterior margin; on each side posteriorly, between U-shaped carina and posterior lateral pronotal margin, an indistinct, short, slightly elevated carina occupying the same position as in males. Other characters as described for males.

MATERIAL EXAMINED. 8 males, 6 females.

COSTA RICA: Cartago, Monte Redondo, 15. VI. 1893; Turrialba, K. Cooper. San José, 1000-1200m., F. Nevermann, at light; San Vito, VI. 1967, Robertson.

ECUADOR: Pichincha, Sto. Domingo de los Colorados, I. 1976, Venedictoff.

PANAMA: Canal Zone, Barro Colorado Is., VII. 1938, C.E. Williams. Chiriquí, Volcán de Chiriquí, 3000-4000 ft., Champion (Type); Mte. Lirio (nr. Sta. Clara), 4000 ft., 5. VI. 1977, R. Hartmann; Boquete, 3. IX. 1944, G.B. Fairchild.

Specimens are in: Cambridge, Chicago, London, Ottawa, Washington, Howden, Martínez.

REMARKS. Athyreus championi seemingly is allopatric to all other species in the genus, being the only species so far collected in the wet lowland forests of northwest South America and in Panama and Costa Rica. Even if this is incorrect, championi males can be confused only with males of tridens. Characters separating these species are given under tridens, but the nearly black color of championi alone would serve to distinguish it.

25. Athyreus acuticornis n. sp.

Figures 52-54, Map 7

DIAGNOSIS. Males with central pronotal horn vertical, tapering to slender, acute apex; base of horn, at least anteriorly, impunctate; posterior to horn, a shallow depression present, midway between base and pronotal margin, the depression with distinct, closely clustered group of setae. Clypeal horn nearly vertical, with distinct posterior median carina in addition to anterior and lateral carinae. Females difficult to separate from related forms; pronotum as in fig. 54, with the carina beside the median swelling posteriorly sinuate; the lateral margin posterior to median angle arcuate, curving distinctly inward anterior to elytral humerus.

HOLOTYPE. Male, length 23.0 mm, greatest width 13.5 mm. Color reddish brown; sides of pronotum, labrum, anterior and lateral portion of clypeus reddish tan. Labrum with median length of anterior vertical face equal to median horizontal length of dorsal portion of labrum. Clypeus (Fig. 52) with horn vertical, on each side a carina extending from anterior lateral clypeal angle onto anterior face of horn; posterior lateral carina extending on each side from base of horn to tubercle above mandibular insertion; median posterior carina extending from frons almost to vertex of horn. Frons impunctate except sparsely so laterally and on basal portions of horn between carinae. Vertex shallowly concave, median two-thirds impunctate, laterally with scattered setose punctures or granules. Pronotum (Fig. 52) with anterior margin arcuately raised and thickened between fossae, lateral margins anteriorly arcuate until slightly inwardly arcuate immediately anterior to rounded median angle; posteriorly arcuate until distinctly bowed inwardly anterior to humerus. Pronotum centrally with horn vertical, tapering to acutely pointed apex; horn anteriorly flattened and broader than posteriorly, both surfaces with a fine median indentation extending almost to apex; anterior base of horn smooth, remainder of surface setose-granulate, granules separated by two to three diameters. Pronotum laterally with short carina parallel to posterior margin present just anterior to humerus, length of carina approximately equal to that of umbone; lateral fovea with vague carina at anterior margin. Fore tibia with five teeth on outer margin. Genitalia (Fig. 53) with narrow apical prolongation of each paramere unequally bifurcate.

ALLOTYPE. Female, length 23.5 mm, greatest width 13.6 mm. Head (Fig. 54) with anterior transverse clypeal carina relatively evenly arcuate; posterior clypeal carina distinctly trituberculate, the median tubercle larger and carinate posteriorly; frons and vertex setose-granulate, the granules separated by two to three diameters. Pronotum (Fig. 54) centrally with median swelling briefly V-shaped, bituberculate; anterior face of swelling shining, with scattered punctures, not granulate; median swelling on each side with carina extending posteriorly almost to margin, carina slightly sinuate; near posterior margin midline briefly, sharply indented; lateral carinae, foveae, lateral granulate surface, and elytra similar to male.

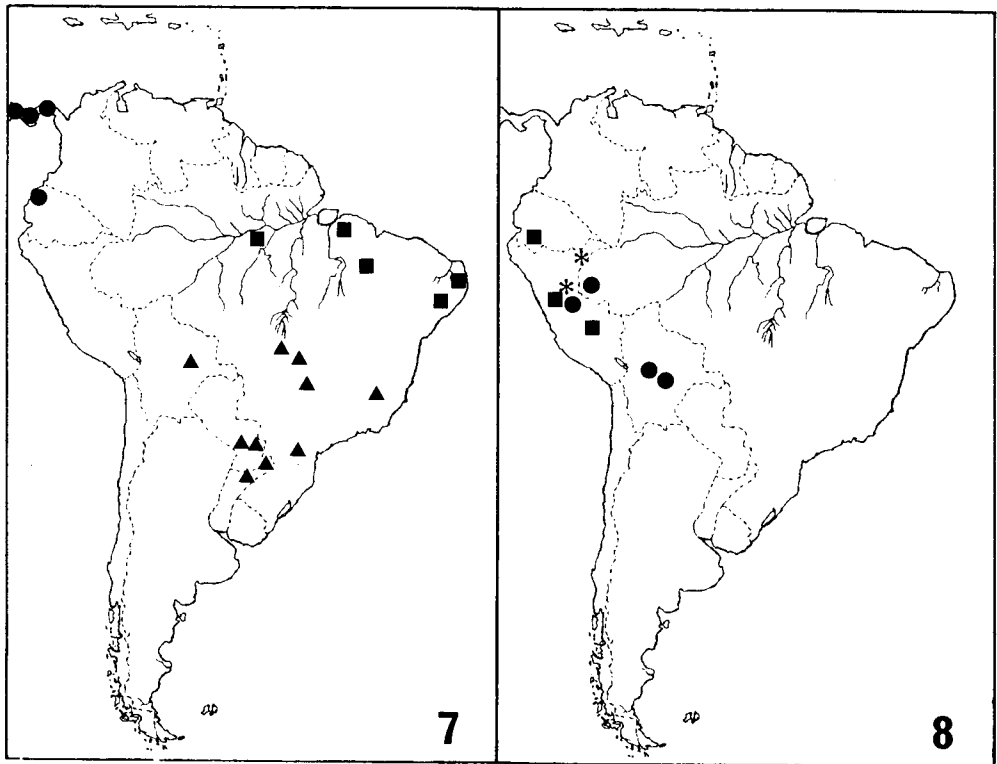
TYPE MATERIAL: Holotype, male, Brazil, Villa Braga, XII, 1919 (Howden). Allotype, female, Brazil, Pernambuco, Taperá, VII.27 (Martínez).

Paratypes; 6 males, 3 females.

BRAZIL: Rio Grande do Norte, Natal, 28.VIII.1951, M. Alvarenga. Maranhão, Barra do Corda, IV.1957, O. Rego. Pará, Belém, XII.1951, Martínez. Paraíba, 4.V.1953, J. Pessoa.

Paratypes are in: Howden, Martínez.

REMARKS. Variation is only moderate when other species in the genus are considered. Size varies from 18 to 24 mm and color varies from specimens similar to the holotype to ones uniformly reddish brown to very dark brown to black. Morphological variation is mainly evident in the development of the male horn and pronotal horn which may be reduced to large acute tubercles approximately 1 to 2 mm high. In large males a small, distinct pit is present on the pronotum approximately midway between horn and anterior pronotal margin. Other characters are quite consistent. The slender, vertical, acutely pointed pronotal horn of the male normally is sufficient for identification.



- ▲ = 23. tridens Lap.
 ● = 24. championi Bates
 ■ = 25. acuticornis n. sp.

- * = 26. tribuliformis Fels.
 ● = 27. zischkai Mart.
 ■ = 28. martinezi Howd.

26. Athyreus tribuliformis Felsche

Figures 64-66, Map 8

Athyreus tribuliformis Felsche, 1909, p. 760; Howden, 1955, p. 671.

TYPE. Male (Dresden ?), not examined.

MALES. Length 17.0 to 21.0 mm, greatest width 11.0 to 12.0 mm. Dorsally dark reddish brown. Clypeal horn (Fig. 64) nearly vertical, anterior lateral carina on each side extending from anterior clypeal angle to median basal third or half of horn anteriorly; posterior lateral carina on each side extending from apex of horn to junction with gena; posterior median carina absent. Frons and vertex smooth medially, laterally setose-punctate. Pronotum (Fig. 64) anteriorly with a large, deep circular fovea on each side behind eye; fovea and convex area between impunctate, smooth. An upright horn present posterior to each fovea; pronotum posterior to horns flat to convex, median horn lacking; median area near posterior margin smooth, area surrounded by setose-granulate area extending along posterior and lateral margins. Single short pronotal carina present on each side anterior to humeral area. Lateral pronotal margin sinuate near median angle; normally shallow fovea just above median angle small, represented by a single large,

deeply indented, circular puncture. Fore tibia with five or six teeth on outer margin. Genitalia as in fig. 65.

FEMALES. Length 17.0 to 20.0 mm, greatest width 11.0 to 12.0 mm. Head and pronotum (Fig. 66) with all carinae relatively low, not greatly elevated. Pronotum with central swelling low, shining, vaguely V-shaped; encompassed by an arcuate carina on each side extending from anterior nearly to posterior margin; two short carinae present on each side; lateral pronotal fovea above median angle same diameter as anterior marginal fossa, deeply indented. Fore tibia with five teeth on outer margin, a vague sixth tooth sometimes present basally.

MATERIAL EXAMINED: 3 males, 3 females.

PERU: Iquitos, Rio Cachiyacu (type locality); Pucallpa, 250 m., 16. VII. 1961, 25. IX. 1963, 22. X. 1962, J. Schunke L. (some specimens "at light").

Specimens are in: Washington, Hardy, Howden, Martínez.

REMARKS. The upright clypeal horn and the two well separated pronotal horns with the deep fovea anterior to each pronotal horn immediately identify males of *tribuliformis*. If consistent, the unusually deep circular, small fovea above the lateral median marginal pronotal angle may distinguish females of *tribuliformis* from those of related species. Also, generally, *tribuliformis* is slightly smaller in average size than is *martinezi*, *zischkai*, and other species in the *bifurcatus* group.

27. *Athyreus zischkai* Martínez

Figures 67-69, Map 8

Athyreus zischkai Martínez, 1953, p. 227; Howden, 1955, p. 671.

TYPE. Male (Martínez), examined.

MALES. Length 18.0 to 26.0 mm, greatest width 11.0 to 12.5 mm. Dorsally very dark brown to black, sides of pronotum often brown. Clypeal horn (Fig. 67) nearly vertical, lacking anterior carinae; posterior lateral carina on each side sometimes present (lacking in holotype); posterior median carina absent. Frons entirely or centrally smooth, vertex largely setose-punctate; flat to shallowly concave. Pronotum (Fig. 67) with three horns, one on either side at center of disc behind eye inclined anteriorly and separated by distance equal to distance between eyes; median posterior horn inclined posteriorly, often bent posteriorly, paralleling surface (holotype), sometimes laterally compressed. On each side of horns one (major males) or two (minor males) short carinae present as is normal for genus. Anterior to lateral horns on each side a deep circular or oval fovea separated from opposite fovea by one diameter, area between foveae convex, impunctate; male minors may lack fovea, if so then median surface granulate. Lateral pronotal margin slightly sinuate near median angle. Fore tibia with six teeth on outer margin. Genitalia as in fig. 68, prolongations of parameres evenly curved and narrowed.

FEMALES. Length 20.0 to 27.0 mm, greatest width 11.0 to 13.0 mm. Similar to other females in *tribuliformis* group but pronotum (Fig. 69) with central swelling often more distinctly elevated and more narrowly divided, sometimes with acute apex. Fore tibia with six teeth (related females usually have five).

MATERIAL EXAMINED: 8 males, 5 females.

BOLIVIA: Cochabamba, Pcia. de Chapare, Villa Gral. Román, 400 m., 18. IX. 1952, R. Zischka (type locality). Santa Cruz, Pcia. Sara, Nueva

Moka, XII.1960, Martínez; Reys, X.1921, Mulford Exp.

BRAZIL: Amazonas, Moura, VIII.1943, A. Parko.

PERU: No other data. Chanchamayo, 15.V.1973, J. Schunke L. Loreto, Pucallpa, 6.IV.1973, XI.1969, J. Schunke L.; Loreto, Ucayali Riv., Yarina Cocha, 26.XI.1956, P. Hocking.

Specimens are in: Chicago, Paris, Washington, Howden, Martínez.

REMARKS. The nearly vertical clypeal horn and the three horns on the pronotum will separate males of zischkai from all known species except martinezi. From the latter the more widely spaced foveae and lateral pronotal horns will distinguish males of zischkai. Unworn specimens of zischkai, both male and female, have six teeth on the fore tibia and this normally distinguishes them from the related martinezi.

28. Athyreus martinezi Howden

Figures 70-72, Map 8

Athyreus martinezi Howden, 1955, p. 667.

TYPE. Male (St. Mus. f. Naturkunde, Stuttgart), examined.

MALES. Length 20.0 to 23.0 mm, greatest width 12.0 to 13.0 mm. Chestnut brown to largely black dorsally. Clypeal horn (Fig. 70) vertical, anterior carina on each side extending from anterior-lateral angle of clypeus to center of horn; posterior lateral carina on each side extending down horn and arcuately from base to anterior edge of gena; posterior median carina absent. Frons centrally smooth, remainder of frons and vertex punctate or granulate, setose. Pronotum (Fig. 70) with anterior margin strongly arched, forming small median point. A deep fovea present behind margin on either side of midline, diameter of fovea about 2 mm, interior shining. Foveae separated by less than one fovea diameter. Behind each fovea at summit of pronotum on either side a nearly vertical horn; width between horns less than distance between eyes; posterior to upright horns a median posteriorly inclined, laterally compressed horn projecting over posterior pronotal margin. Two short carinae present on each side laterad to upright horn, the carinae anteriorly divergent, inner carina less conspicuous. Surface of pronotum setose punctate-granulate, each puncture with upright seta, punctures laterally separated by 2 to 3 diameters, medially by 3 to 4 diameters, punctures obsolete in foveae and near apices of horns. Genitalia (Fig. 71) with apical prolongation abruptly bent and widened at middle.

FEMALES. Length 22.0 to 25.0 mm. Very similar to females of tribuliformis differing slightly in shape of central V-shaped swelling in middle of pronotum (Fig. 72). Fore tibia with five teeth (both sexes) on outer margin.

MATERIAL EXAMINED: 3 males, 4 females.

ECUADOR: Loja, Abbé Gaujon.

PERU: No other data (type locality). Junin, Chanchamayo, 1200-1500 m., 4.III.1976, 15.V.1973, 10.XII.1968, J. Schunke L.; Loreto, Pucallpa, 200 m., 22.X.1960, J. Schunke L.

Specimens are in: Paris, Stuttgart, Frey, Howden, Martínez.

REMARKS. The narrowly separated lateral horns and foveae on the male pronotum of martinezi and the five teeth on the fore tibia distinguish it from zischkai. The presence of a posterior median horn immediately separates it from tribuliformis. However, in the case of small males and worn specimens the genitalia should be examined. Females in some cases cannot be identified with certainty, being very similar to other females in the bifurcatus group.

29. *Athyreus hastifer* Felsche

Figures 73-75, Map 9

Athyreus hastifer Felsche, 1909, p. 759; Bruch, 1914, p. 541.

TYPE. Male (Dresden ?), not examined.

MALES. Length 16.5 to 18.0 mm, greatest width 12.0 to 13.0 mm. Color entirely black with bluish caste (original description) or with entire body generally reddish brown except elytra black, with strong, shiny, steel-like luster. Setae atypical for genus, reddish in color, very dense ventrally, unusually sparse on elytra with single long upright setae arising from scattered stria punctures; entire suture of elytra with dense upright band of reddish setae. Clypeal horn (Fig. 73) strongly inclined anteriorly and upwardly arcuate, wider than long in cross section, shorter in height than length of clypeus, apex rounded; a single lateral carina feebly indicated on each side or obsolete; clypeus posteriorly with trituberculate carina similar to that of females but with tubercles three times as large, median tubercle slightly anterior to lateral ones. Vertex with minute tubercle near anterior third on either side of midline, vertex posterior to tubercles smooth, vertex (laterally and anteriorly) and frons granulate. Pronotum (Fig. 73) with anterior margin only slightly widened medially, anterior angles very broadly rounded, flared obliquely posteriorly so that median angle only slightly posterior to anterior angle; pronotum centrally with anteriorly directed, tapered, laterally compressed horn with acute apex; apex of horn overhanging base of frons; pronotal ridge above large transverse concavity extending 5/6 of distance between lateral margins; concavity with four depressed areas within; one either side of thin, slightly elevated midline, a larger, oval one near each margin; interior of concavity mostly smooth, shining. Pronotum posterior to horn with midline deeply, narrowly impressed, prescutellar region unmodified; pronotum each side with three carinae, anterior one arising either side of midline, then arcuate laterally extending along dorsal posterior edge of concavity, sinuous laterally then flared and anteriorly arcuate at junction with margin; second (middle) carina short, arcuate, anterior to humerus and umbone; posterior marginal carina arising anterior to humerus and terminating laterally at edge of fovea; dorsal surface of horn and surface between carinae granulate, mostly setose. In less well developed males transverse concavity greatly reduced, often forming four feebly concave areas, horn reduced to a large acute tubercle with an anterior branch of anterior carina extending forward on each side, becoming obsolete on transverse line with apex of horn. Fore tibia with five teeth on outer margin. Genitalia as in fig. 74.

FEMALES. Length 16.0 to 17.0 mm, greatest width 11.5 to 12.0 mm. Anterior clypeal carina obtusely angulate, obsolete tuberculate medially; posterior clypeal carina typically trituberculate; frons and vertex as described for male. Pronotum (Fig. 75) with sides not flared as in male, pronotum similar to male minor except acute central tubercle (horn) replaced by elevated transverse carina that merges on each side with anterior branch of anterior transverse carina; other lateral carinae as described for male; surface between carinae strongly granulate.

MATERIAL EXAMINED: 5 males, 2 females.

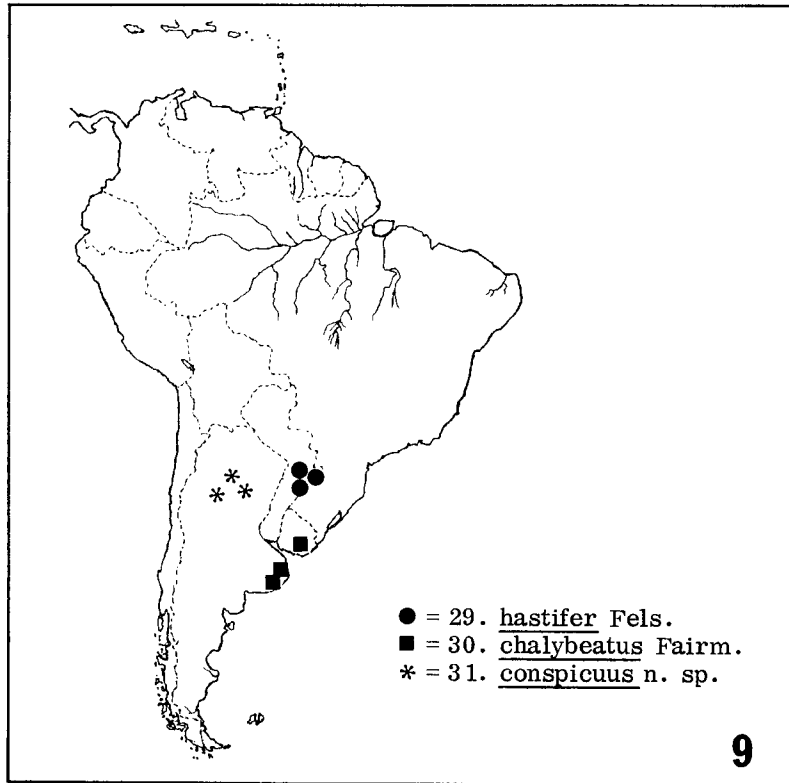
ARGENTINA: Misiones, Loreto, I. 1955, F.H. Walz; Misiones, Pindapoy, XI. 1945, Martínez; Misiones, San Pedro, I. 1956; Misiones, no other data, Bonpland.

PARAGUAY: Itapúa, Cantera, 20 m NE Encarnación, XI. 1956.

BRAZIL: Rio Grande do Sul, Pôrto Allegro (Type locality from Felsche).

Specimens are in: Buenos Aires, Dresden (?), Ottawa, Howden, Martínez.

REMARKS. The dense band of long setae along the elytral suture will separate hastifer from all other species of Athyreus except chalybeatus which has a somewhat similar line of setae. Size, color, and the presence of only five teeth on the fore tibia will separate hastifer from chalybeatus; the distributional patterns are also different.



30. Athyreus chalybeatus Fairmaire

Figures 76-78, Map 9

Athyreus chalybeatus Fairmaire, 1892, p. 242; Bruch, 1928, p. 1.

TYPE. Female (Paris), examined.

MALES. Length 15.5 to 17.0 mm, greatest width 9.0 to 10.5 mm. Dorsally black with faint aeneous or greenish blue luster; ventral setae and those in elytral suture conspicuous, very dense, yellowish white to tan (in specimens not collected in fluid). Clypeus (Fig. 76) of male majors with short stout horn; anteriorly with lateral carina each side extending to base of horn but not to clypeal margin; other carinae absent, posterior base of horn with distinct contiguous tubercle; laterally above antennal insertion lateral carina obtusely angled. Frons and vertex mostly granulate, vertex anteriorly with minute tubercle on each side of feebly depressed, smooth midline. Pronotum (Fig. 76) with anterior margin between small fossae slightly thickened

but not elevated or tuberculate; anterior angles obtusely rounded; lateral and posterior margins sinuate. Pronotum centrally with acute, anteriorly directed, laterally compressed horn; contiguous to horn on each side in male majors a deep, oblique, oval concavity, interior of each concavity smooth and polished. Posterior to concavity on each side three carinae present nearly paralleling posterior margin. Anterior of three carinae extending from side of deeply indented midline posterior to horn then above (posterior to) concavity becoming obsolete and sinuous anterior to shining, shallow lateral fovea, then distinct, raised abruptly, arcuate anteriorly to overhang, then join lateral margin; second (middle) of three carinae short, feebly arcuate, anterior to humerus in position; third (posterior) carina close to and parallel with posterior pronotal margin, extending from just below humerus to 0.5 mm from lateral margin. Surface of pronotum, except for smooth indentation, concavities and carinae granulate, inconspicuously setose. Elytral intervals shining, striae punctate. Fore tibia with six teeth on outer margin. Genitalia as in fig. 77.

FEMALES. Length 16.0 to 17.0 mm, greatest width 11.0 to 11.5 mm. Anterior face of clypeus delimited dorsally by obtusely triangular carina, feebly tuberculate medially, a longitudinal carina extending posteriorly to strongly developed median tubercle of posterior clypeal carina; frons and vertex as described for males. Pronotum (Fig. 78) laterally similar to males, differing centrally; at anterior third a strongly raised transverse carina extending a distance equal to width of vertex, terminus on each side with carina extending both anteriorly and posteriorly; anterior branch becoming obsolete in 0.5 mm, posterior branch merging with most anterior of the three oblique carinae (as described in males). Midline posterior to transverse carina narrowly, distinctly indented, surface on each side rising to carina. Pronotal surface granulate except for midline, particularly anterior to transverse carina, and near lateral foveae.

MATERIAL EXAMINED: 5 males, 4 females.

ARGENTINA: "Plata orientale" (type locality); Buenos Aires, General Madariaga, San Clemente del Tuyú, XII.1952, II.1957, Kormilev; Buenos Aires, General Lavalle, Punta Norte, I.1936; Buenos Aires, Playa Juancho.

URUGUAY: Montevideo, XII.1946, Ruffinelli, Malvin.

Specimens are in: Buenos Aires, Paris, Howden, Martínez.

REMARKS. The black dorsal color, with faint greenish blue luster and tan ventral surface, odd clypeal armatures of males and females (see description), unmodified anterior pronotal margin and three lateral carinae on each side of pronotum should serve to identify *chalybeatus*. Male minors lack the deep pronotal concavities and central horn but the characters mentioned as useful for identification seem reasonably consistent.

31. *Athyreus conspicuus* n. sp.

Figure 63, Map 9

DIAGNOSIS. Color reddish brown to brown. Clypeal characters similar to those of *hastifer*. Pronotum on each side with four oblique carinae either reaching or extending toward lateral or anterior margins; female (males not known) with cordiform concavity in center of pronotum sharply delimited by surrounding carina, midline of concavity with one anterior and one posterior fossa or small deep fovea; posterior transverse carina of pronotum almost straight; extremely close to posterior pronotal margin from humeral area to midline, this constricted area with distinct, erect band of setae.

HOLOTYPE. Female, length 16.0 mm, greatest width 10.5 mm.

Color reddish brown with carinae on head, central pronotal carinae, margins of mandibles and parts of legs brownish black. Clypeus with anterior carina obtusely angulate, the median angulation with posterior longitudinal carina extending to median tubercle on posterior transverse clypeal carina; posterior clypeal carina nearly straight, trituberculate, central tubercle slightly more elevated. Vertex anteriorly with a short, fine arcuate carina on each side of midline; carina laterally anteriorly arcuate, becoming obsolete near lateral margin. Dorsal surface of clypeus, frons and lateral portion of vertex closely, often confluent punctate. Pronotum (Fig. 63) with anterior margin unmodified, lateral margin angulate at middle where joined by an oblique carina. Pronotum centrally from anterior fourth or third to posterior margin with large cordiform depression, deepest anteriorly, at bottom of depression anteriorly a small deep fossa or fovea, midline faintly impressed posteriorly, extending to second fossa at posterior edge of depression just anterior to carina adjacent to posterior margin; depression widest anteriorly, elevated and subdenticulate on anterior carinate margin on either side of midline, carina then posteriorly arcuate to obtuse, inwardly directed angles on either side near middle of depression, then converging to fuse just behind posterior fossa. Four carinae present on either side of cordiform carina, anteriorly a short carina arising from edge of cordiform carina and extending half distance to anterior margin; second carina arising from just behind obtuse angulation of cordiform carina and extending to and joining lateral margin midway between anterior and median angles, carina sinuous in lateral half, obtusely angled at junction with margin; third carina (adjacent to posterior carina) relatively short, feebly arcuate, relative position anterior to humeral umbone; fourth or posterior carina long and atypically nearly straight, extending from posterior midline to faint lateral fovea near lateral margin; area between carina and posterior pronotal margin and anterior to base of elytron with dense band of erect setae. Surface of pronotum except for carina punctate (in central depression) or granulate, setose. Each elytron with six very convex intervals between suture and umbone. Fore tibia with five teeth on outer margin.

MALE. Unknown.

TYPE MATERIAL: Holotype, female, Argentina, Santiago del Estero, Río Salado, Icaño (Martínez).

Paratypes: 5 females.

ARGENTINA: one, same data as holotype; Santiago del Estero, Añatuya, I. 1944. La Rioja, Iliar. Tucumán.

Paratypes are in: Buenos Aires, Tucumán (Instituto Miguel Lillo), Howden, Martínez.

REMARKS. Structural variation occurs primarily in the degree of development of the fine carinae and denticles on the frons and vertex, which in one case is large, arcuate and extends to the margin at the mandibular insertion. Some minor variation occurs in the pronotal carinae, and size varies from 12.5 to 16.0 mm in length.

The reddish brown color, lack of a dense band of long, upright setae along the elytral suture, and the deep central depression of the pronotum will identify female conspicuus. The species is undoubtedly related to hastifer and chalybeatus and males will probably show similar sexual modifications.

Incertae sedis

(Species known only from females not associated with males.)

Athyreus billbergi Gray, 1832, p. 508; Westwood, 1851, p. 462.

Athyreus subarmatus Westwood, 1848, p. 386; 1851, p. 460.

Athyreus vicinus Laporte, 1840, p. 102.

List of species, many described in *Athyreus*,
assigned to *Neoathyreus* Howden and Martínez, 1963.

(In this and the following genus the numerous new combinations are marked
by an asterisk (*) preceding the species name.)

- **angulatus* (Klug), 1843.
- **anthracinus* (Klug), 1843.
- **arribalzagai* (Martínez), 1951.
- **biceps* (Felsche), 1909.
- **bicolor* (Laporte), 1840.
- **bidentatus* (Macleay), 1819.
- **castaneus* (Guerin), 1829.
- **catharinae* (Bates), 1887.
- **centralis* (Westwood), 1848.
- **centromaculatus* (Felsche), 1909.
- **corinthius* (Klug), 1843.
- **corniculatus* (Felsche), 1909.
- **excavatus* (Laporte), 1840.
- fissicornis* (Harold), 1880.
- **flavithorax* (L.-Arribalzaga), 1880.
- **fossulatus* (Westwood), 1851.
- **fulvescens* (Blanchard), 1837.
- **goyasensis* (Boucomont), 1902.
- granulicollis* Howden, 1964.
- hamifer* (Boucomont), 1902.
- interruptus* Howden, 1964.
- lanei* (Martínez), 1952.
- **latecavatus* (Boucomont), 1902.
- mexicanus* (Klug), 1845.
- mixtus* Howden, 1964.
- panamensis* (Robinson), 1946.

- *pholas (Westwood), 1848.
planatus Howden, 1964.
 *purpureipennis (Westwood), 1848.
quadridentatus Howden, 1964.
 *reichei (Westwood), 1851.
 *sexdentatus (Laporte), 1840.
tridentatus (Macleay), 1819.
tridenticeps (Bates), 1887.
 *tweedianus (Westwood), 1848.
 *violaceus (Klug), 1843.
 *viridis (Boucomont), 1902.
 *vulpinus (Harold), 1880.

List of species originally described in Athyreus,
 here assigned to Parathyreus Howden and Martinez, 1963.

- *bahiae (Arrow), 1913.
 *fissicollis (Arrow), 1913.
trituberculatus (Klug), 1843.

ACKNOWLEDGMENTS

This study was greatly expedited by an operating grant to H. Howden from the National Research Council of Canada. Support from this grant made it possible for A. Martínez to visit Ottawa to complete the project. Laboratory support was also derived from the same source, and we are both greatly appreciative of this support. We are also indebted to the Consejo Nacional de Investigaciones Científicas y Técnicas, Buenos Aires, for granting to A. Martínez a temporary transfer to Ottawa in order to complete this work.

Several individuals very kindly donated a number of specimens used in this study. Coronel Moacir Alvarenga and Dr. Carlos Alberto Campos Seabra, Rio de Janeiro; P. Francisco S. Pereira, São Paulo; Manuel J. Viana and P. Gregorio J. Williner, Buenos Aires, all were of great assistance through their energetic collecting and we acknowledge with thanks their generosity.

We would also like to thank Anne T. Howden for assistance with translation of the key into English. Mr. L.E.C. Ling, Carleton University, took the Scanning Electron Micrographs used herein and Mrs. Betty Perry typed the manuscript. Museum curators who assisted us are listed at the end of the introductory section along with their institutions. We thank all of these people and institutions for their support.

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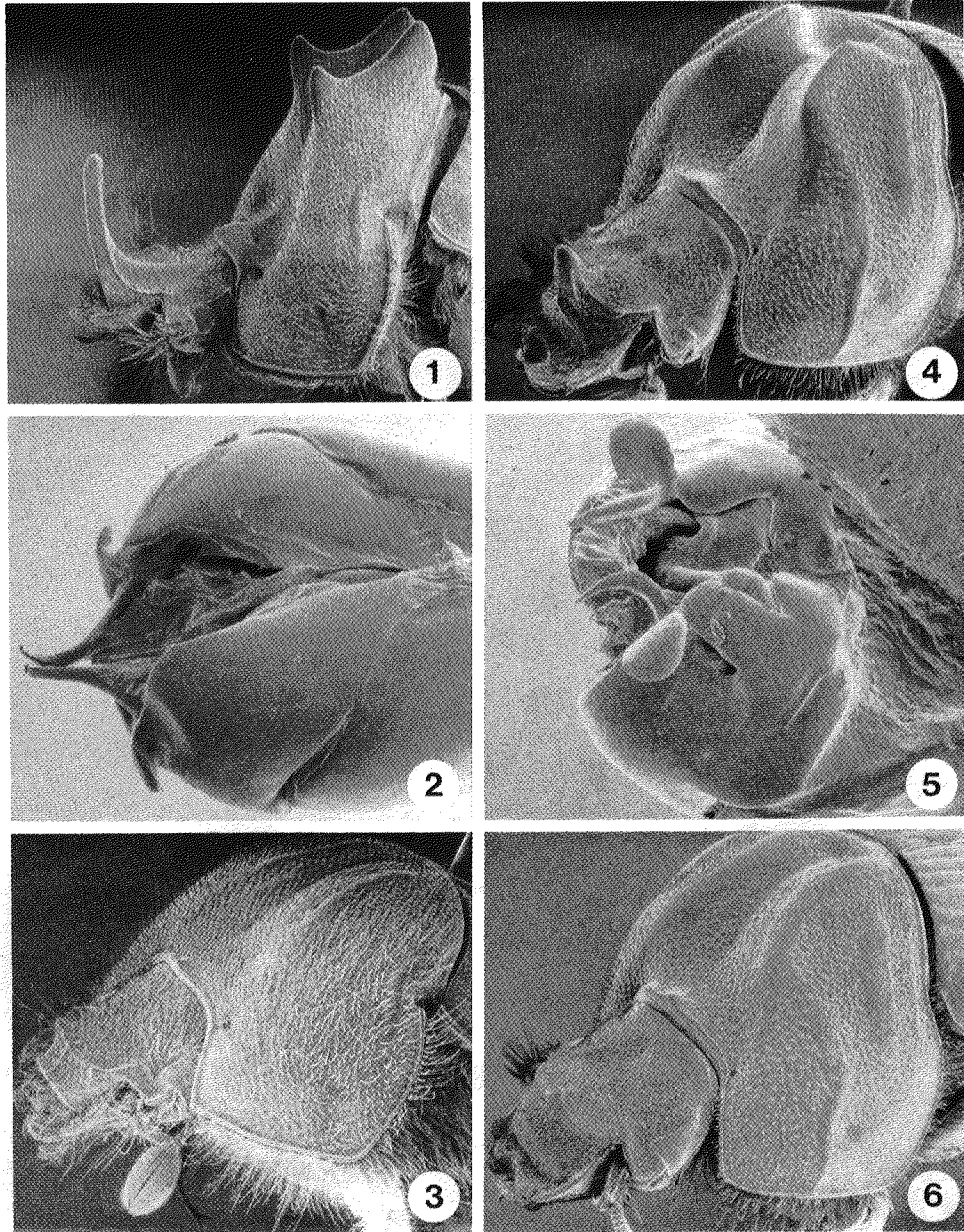
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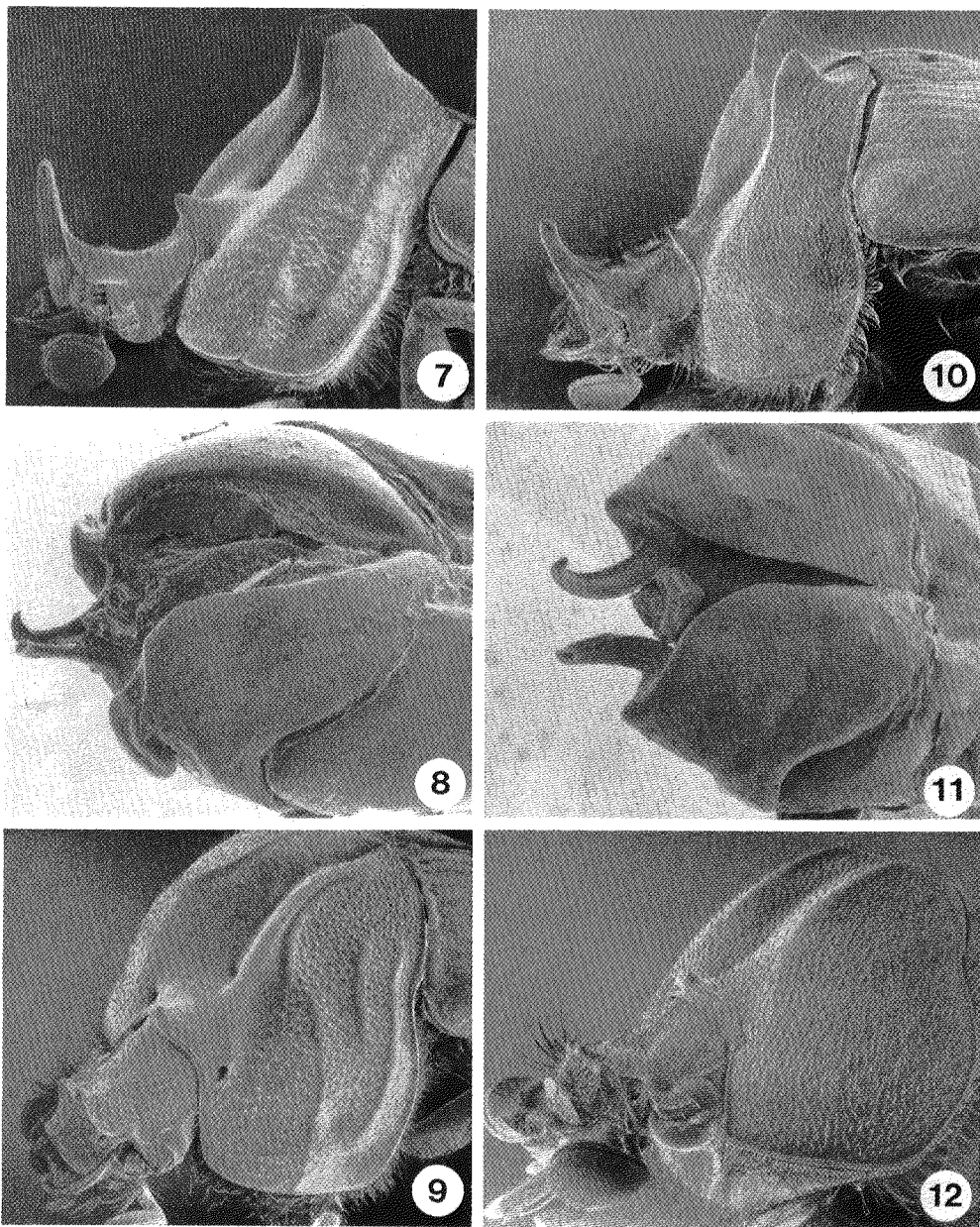
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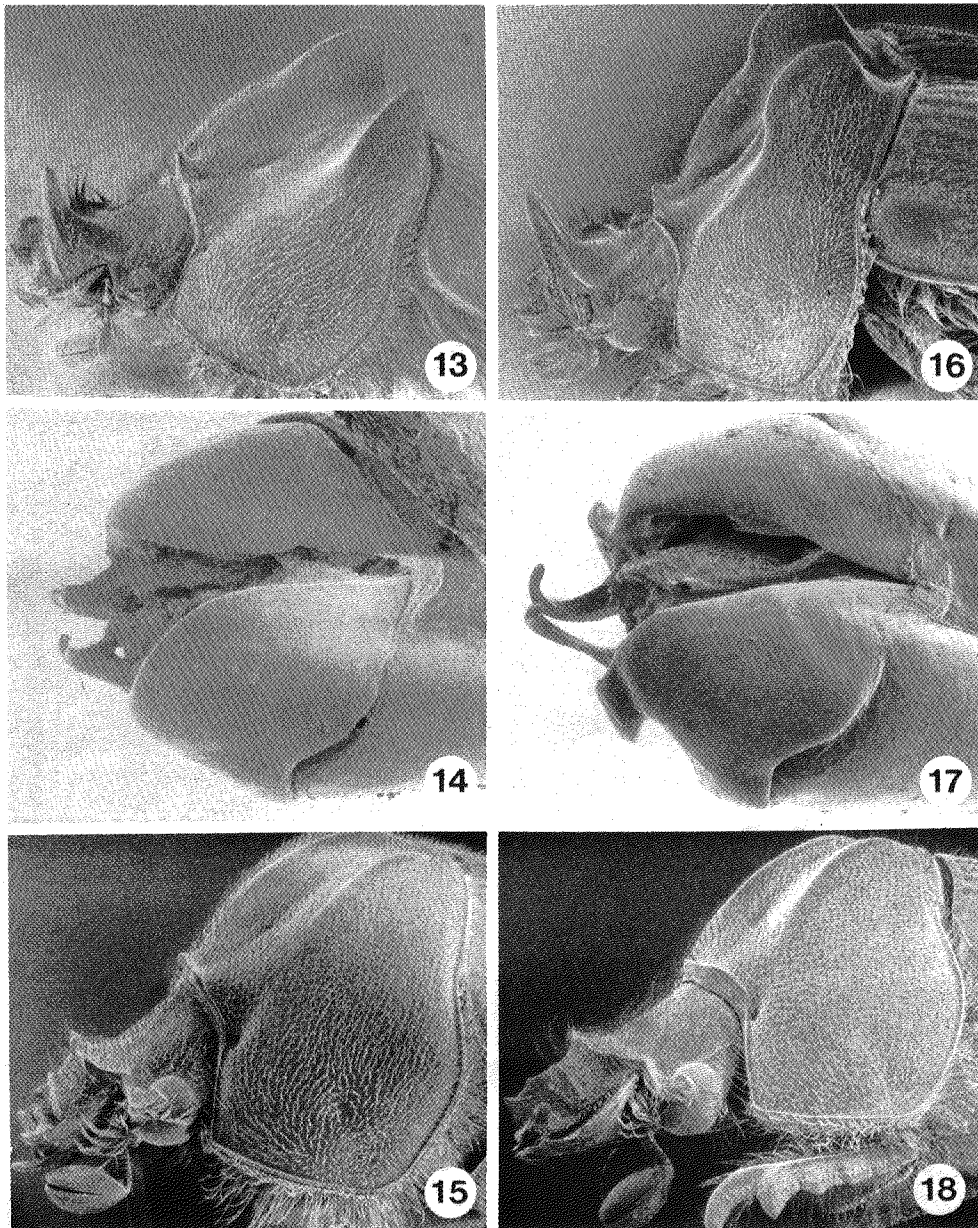
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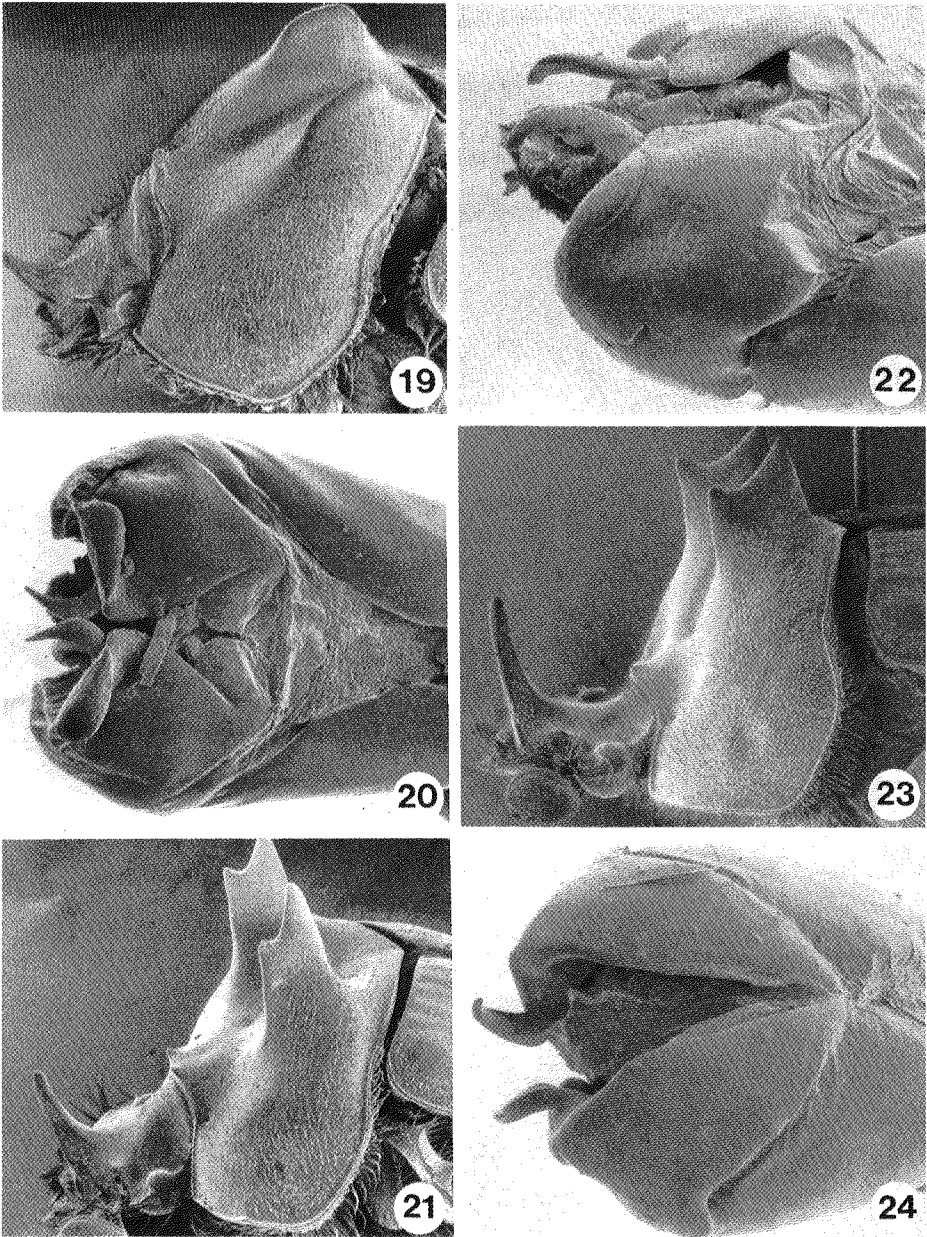
Figs. 1-3. *Athyreus cyanescens* Klug. 1. Male, head and pronotum; 2. Male genitalia, dorsal view; 3. Female, head and pronotum. Figs. 4-6. *Athyreus capricornis* n. sp. 4. Male, head and pronotum; 5. Male genitalia, ventral view; 6. Female, head and pronotum.



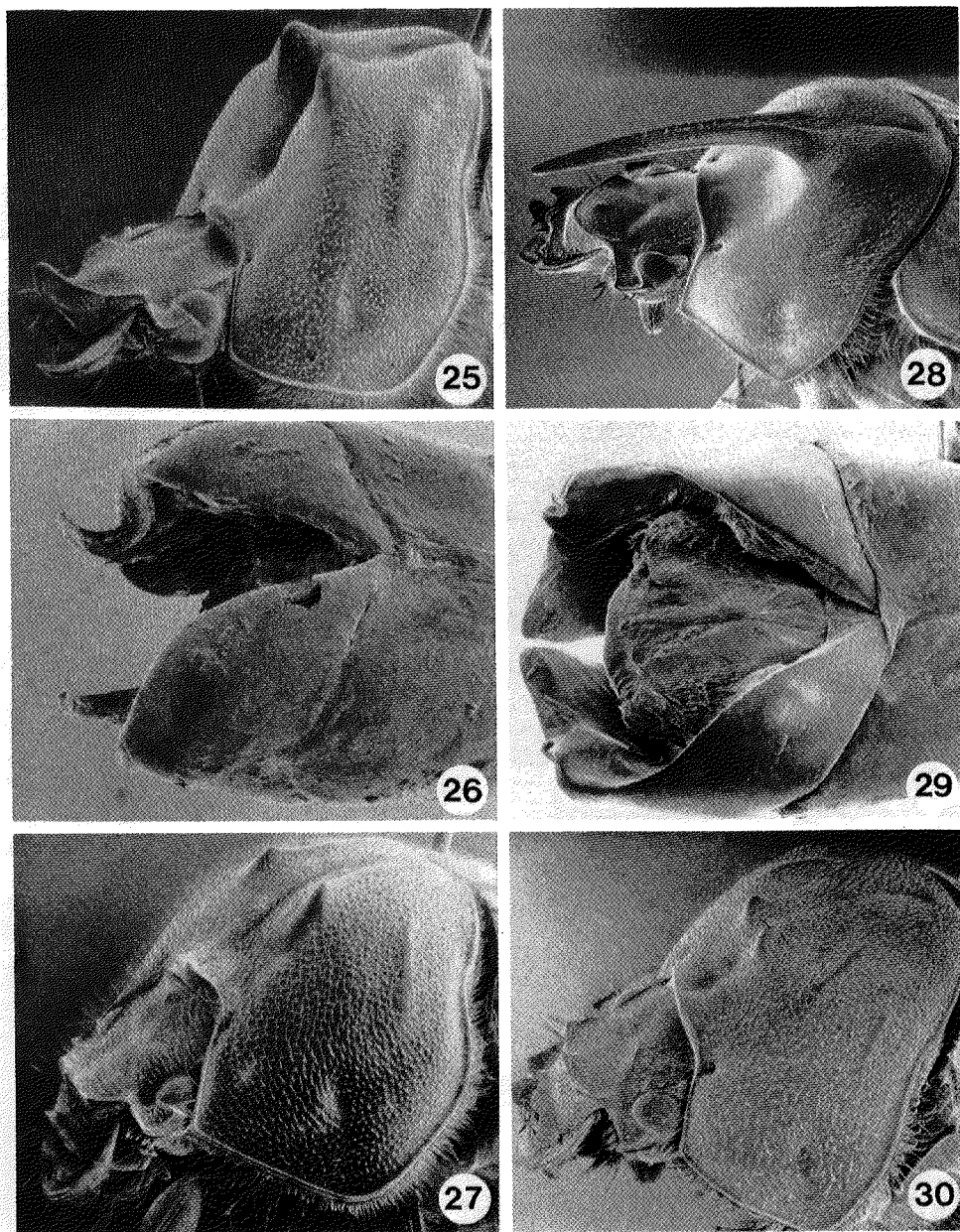
Figs. 7-9. *Athyreus aeneus* Klug. 7. Male, head and pronotum; 8. Male genitalia, dorsal view; 9. Female, head and pronotum. Figs. 10-12. *Athyreus vavini* Boucomont. 10. Male, head and pronotum; 11. Male genitalia, dorsal view; 12. Female, head and pronotum.



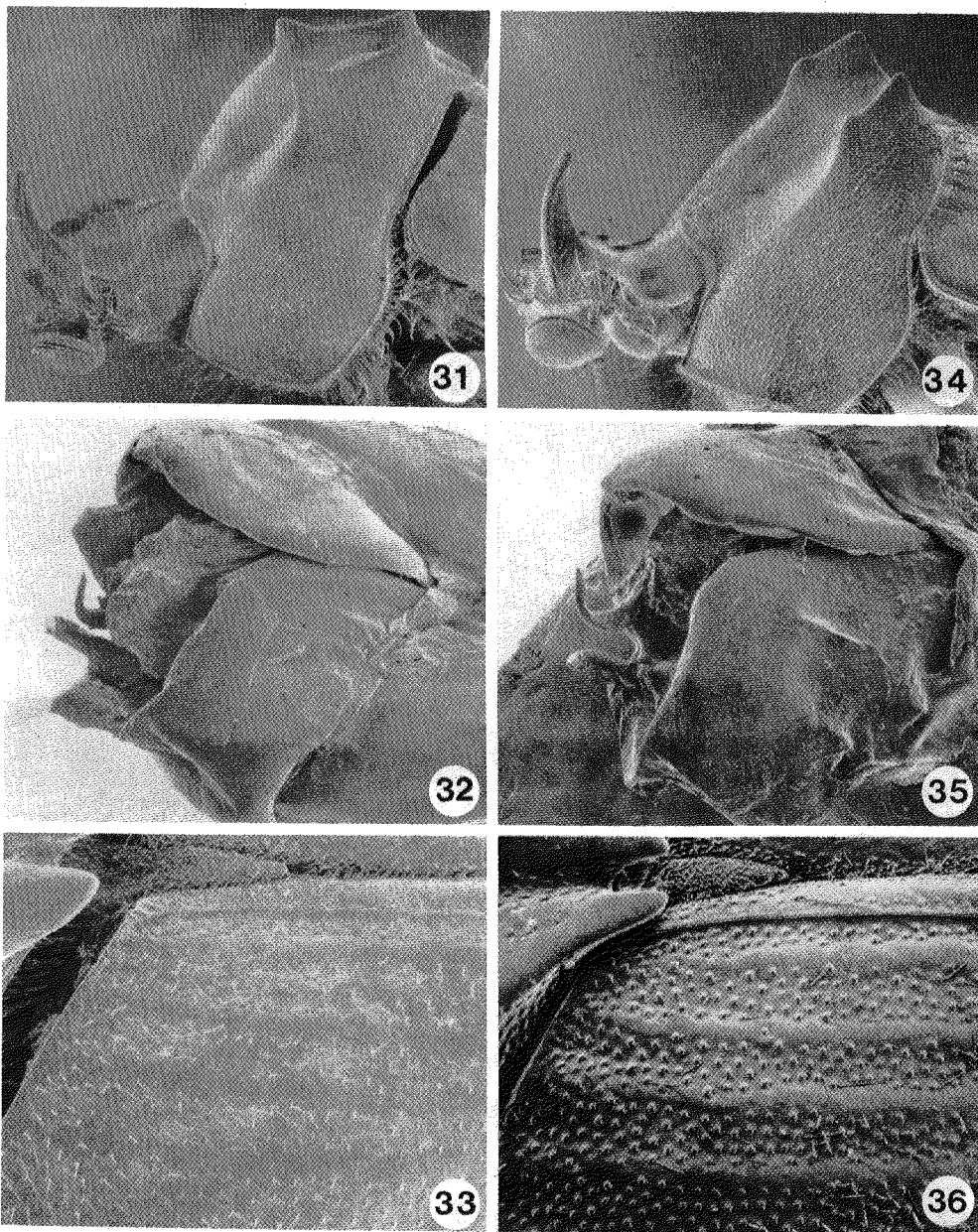
Figs. 13-15. *Athyreus hypocritus* n. sp. 13. Male, head and pronotum; 14. Male genitalia, dorsal view; 15. Female, head and pronotum. Figs. 16-18. *Athyreus bilobus* n. sp. 16. Male, head and pronotum; 17. Male genitalia, dorsal view; 18. Female, head and pronotum.



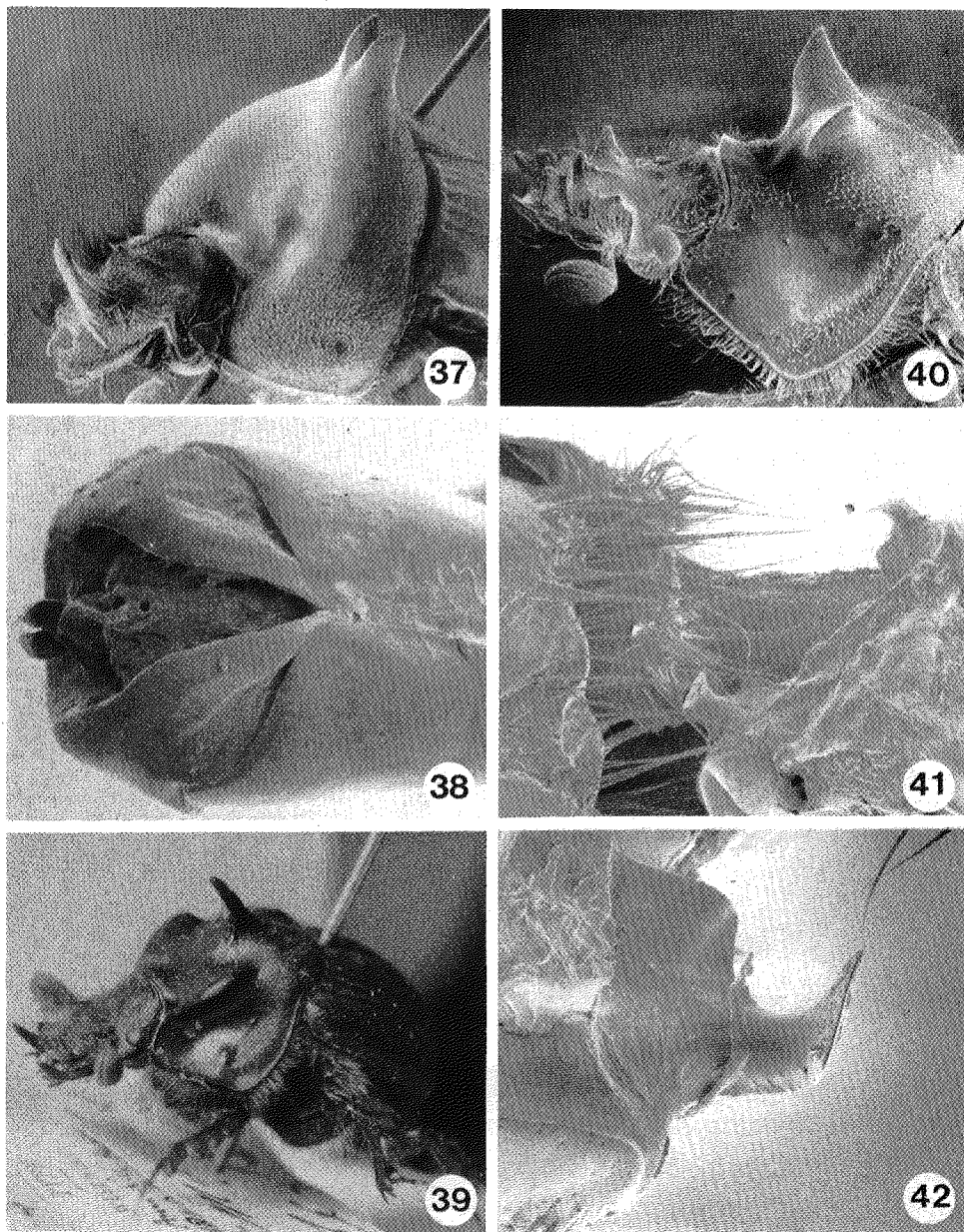
Figs. 19, 20. Athyreus brasiliicus n. sp. 19. Male, head and pronotum; 20. Male genitalia, ventral view. Figs. 21, 22. Athyreus nitidus n. sp. 21. Male, head and pronotum; 22. Male genitalia, oblique ventral view. Figs. 23, 24. Athyreus anneae n. sp. 23. Male, head and pronotum; 24. Male genitalia, dorsal view.



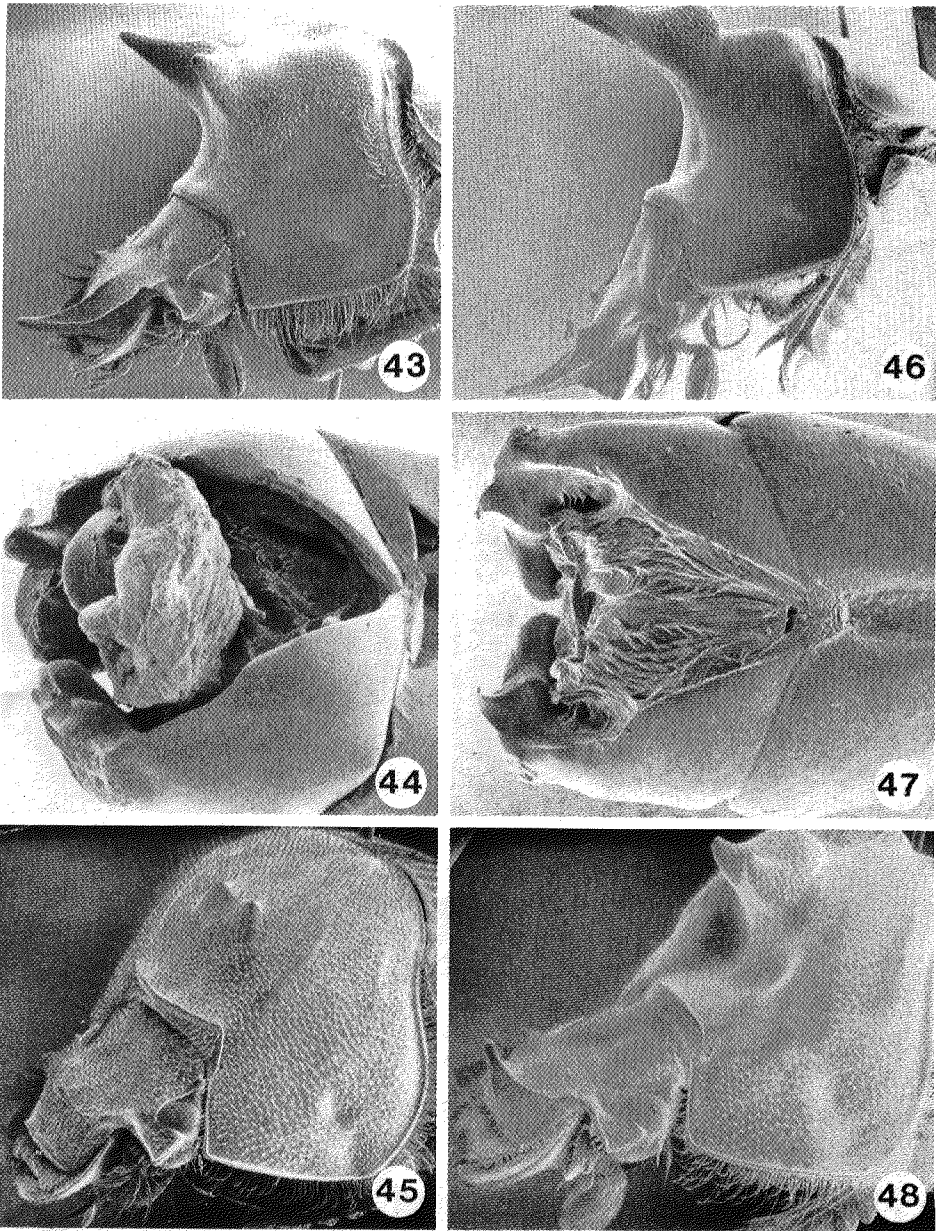
Figs. 25-27. *Athyreus hemisphaericus* Boucomont. 25. Male, head and pronotum; 26. Male genitalia, dorsal view; 27. Female, head and pronotum. Figs. 28-30. *Athyreus unicornis* n. sp. 28. Male, head and pronotum; 29. Male genitalia, dorsal view; 30. Female, head and pronotum.



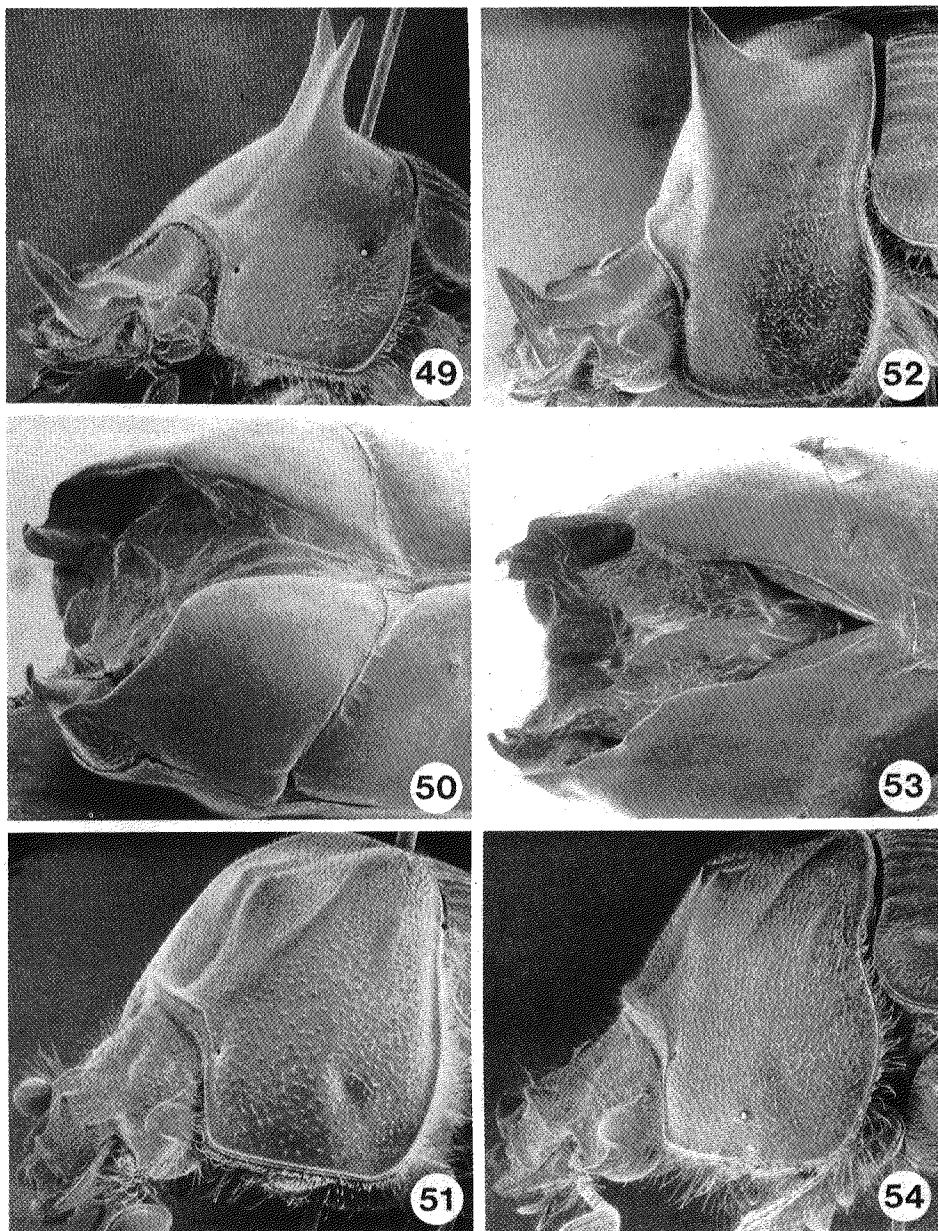
Figs. 31-33. *Athyreus forcipatus* Boucomont. 31. Male, head and pronotum; 32. Male genitalia, dorsal view; 33. Left elytron, inner basal portion showing striae and intervals. Figs. 34-36. *Athyreus alvarengai* n. sp. 34. Male, head and pronotum; 35. Male genitalia, dorsal view; 36. Left elytron, inner basal portion showing striae and intervals.



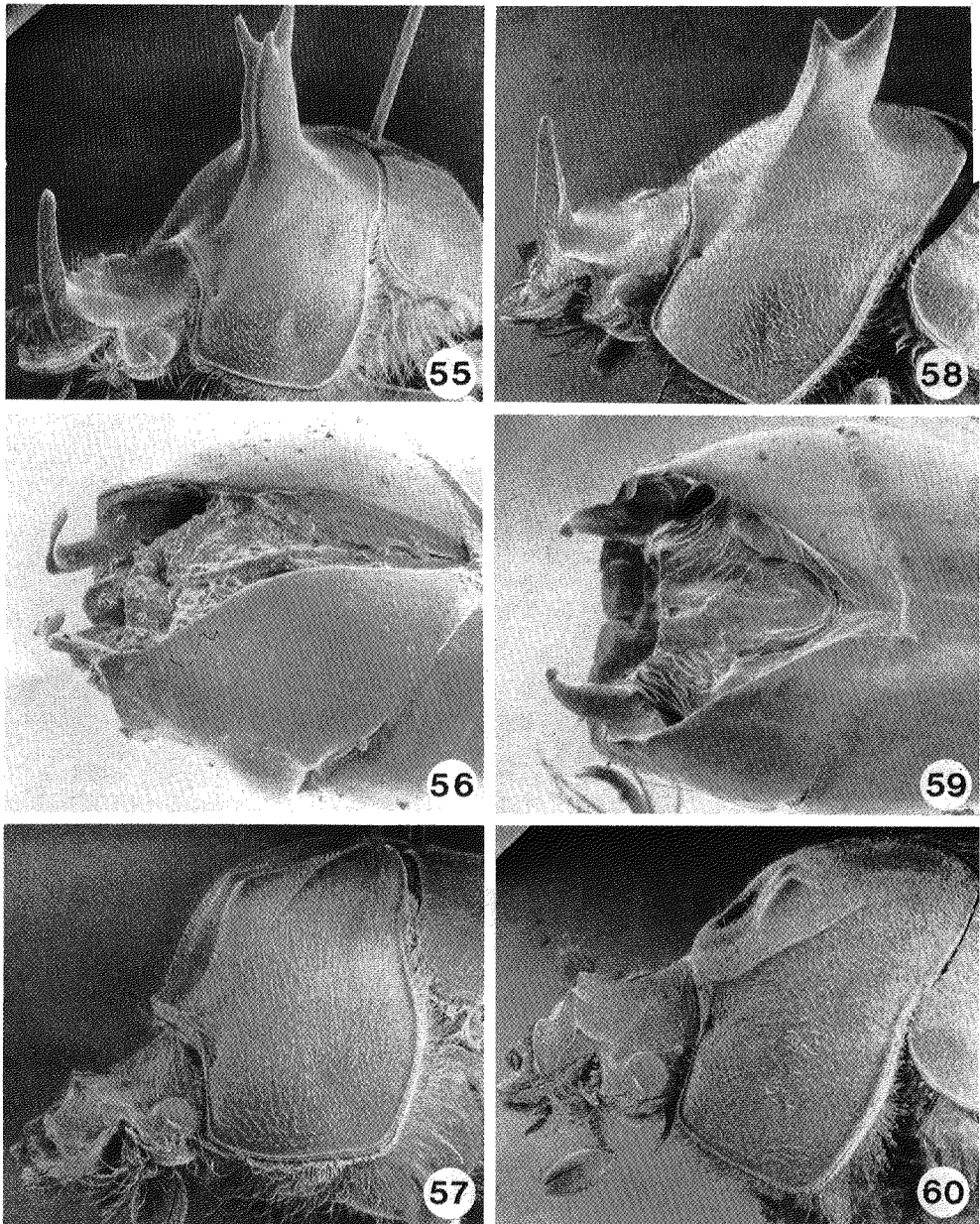
Figs. 37, 38. *Athyreus pyriformis* n. sp. 37. Male, head and pronotum; 38. Male genitalia, dorsal view. Fig. 39. *Athyreus armatus* Westwood. 39. Male, head and pronotum (reproduced from 35 mm color slide of type). Figs. 40-42. *Athyreus gigas* Westwood. 40. Male, head and pronotum; 41. Male genitalia and genital capsule; 42. Male genitalia, apex of left paramere.



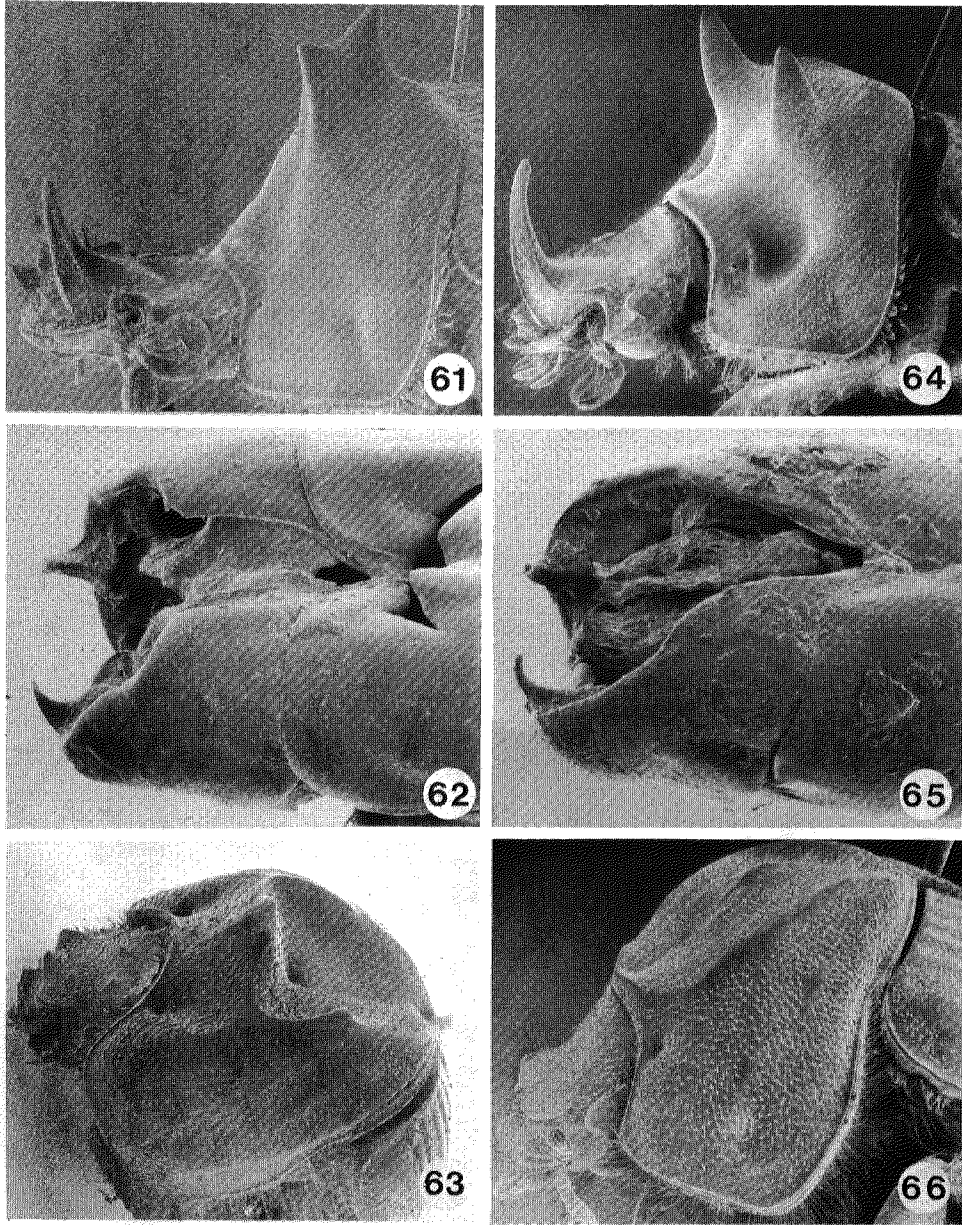
Figs. 43-45. *Athyreus bifurcatus* Macleay. 43. Male, head and pronotum; 44. Male genitalia, dorsal view; 45. Female, head and pronotum. Figs. 46-48. *Athyreus tuberifer* Felsche. 46. Male, head and pronotum; 47. Male genitalia, dorsal view; 48. Female, head and pronotum.



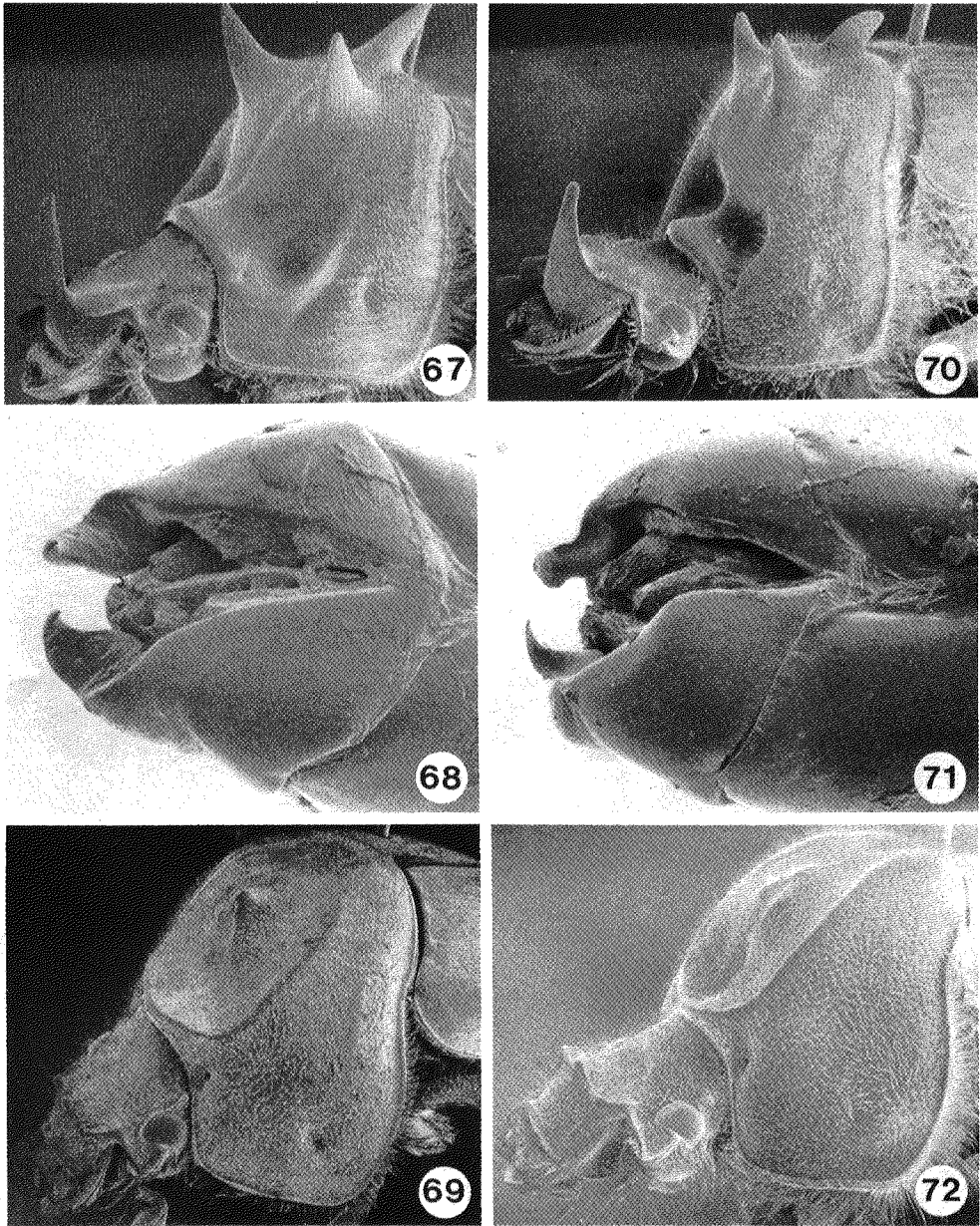
Figs. 49-51. *Athyreus bellator* Westwood. 49. Male, head and pronotum; 50. Male genitalia, dorsal view; 51. Female, head and pronotum. Figs. 52-54. *Athyreus acuticornis* n. sp. 52. Male, head and pronotum; 53. Male genitalia, dorsal view; 54. Female, head and pronotum.



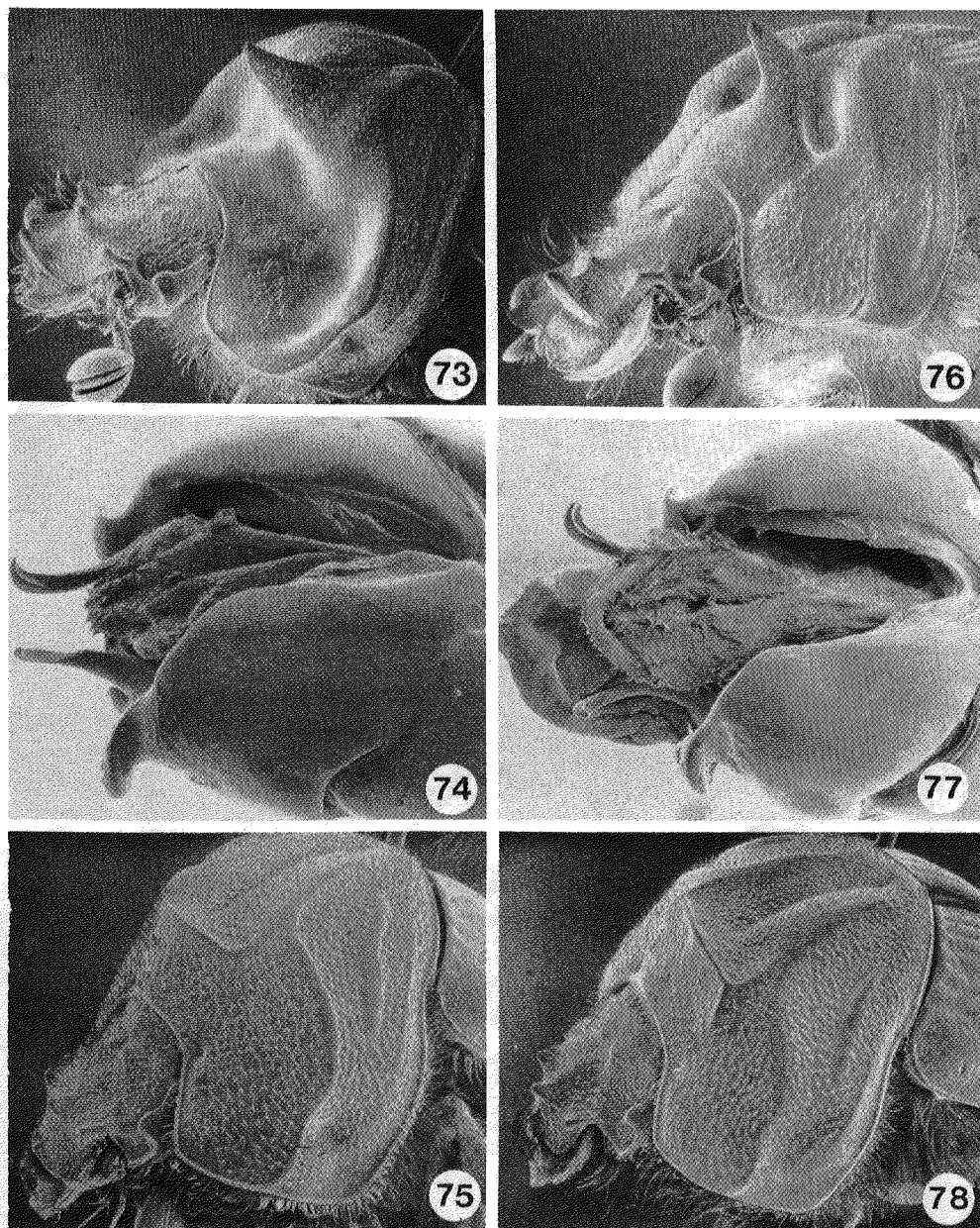
Figs. 55-57. *Athyreus tridens* Laporte. 55. Male, head and pronotum; 56. Male genitalia, dorsal view; 57. Female, head and pronotum. Figs. 58-60. *Athyreus championi* Bates. 58. Male, head and pronotum; 59. Male genitalia, dorsal view; 60. Female, head and pronotum.



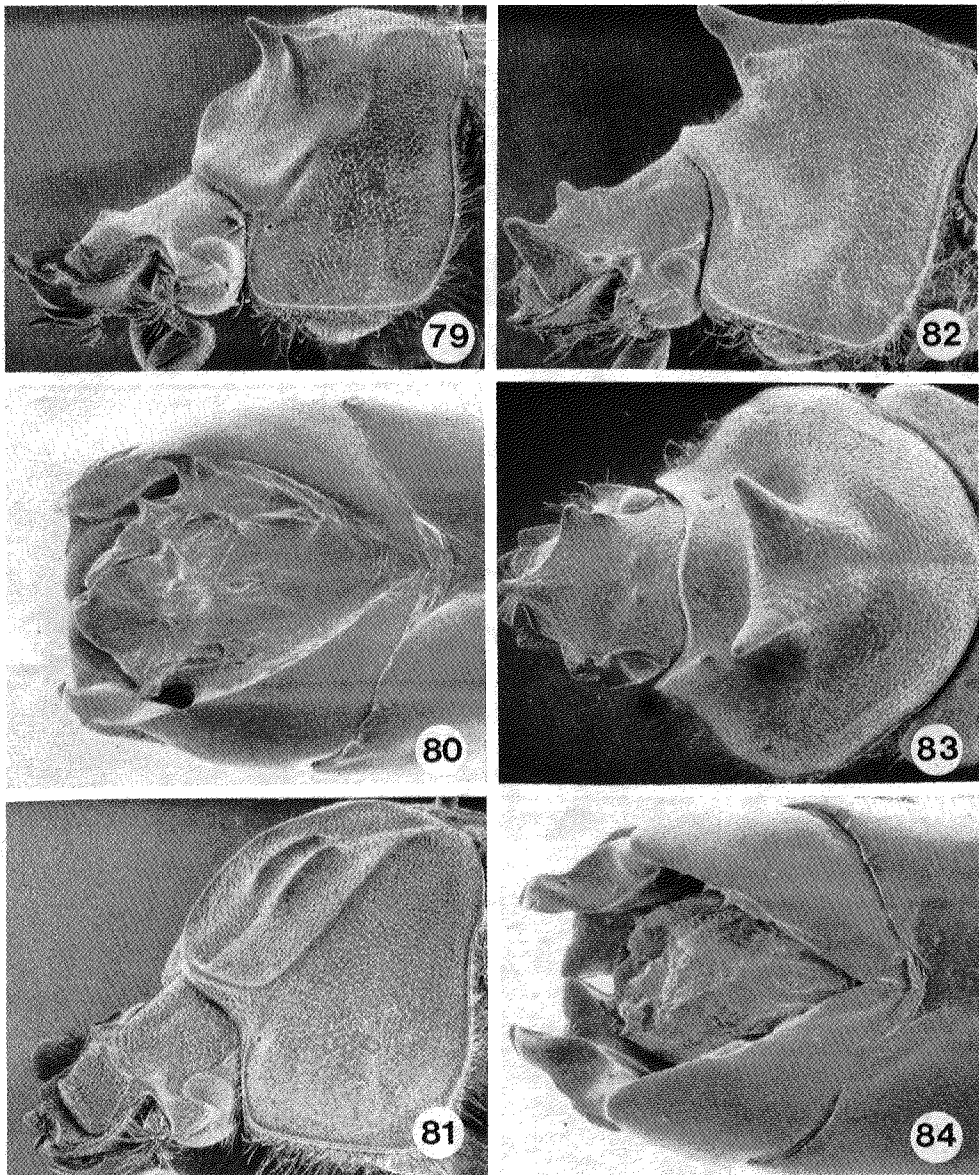
Figs. 61, 62. *Athyreus juanae* n. sp. 61. Male, head and pronotum; 62. Male genitalia, dorsal view. Fig. 63. *Athyreus conspicuus* n. sp. 63. Female, head and pronotum. Figs. 64-66. *Athyreus tribuliformis* Felsche. 64. Male, head and pronotum; 65. Male genitalia, dorsal view; 66. Female, head and pronotum.



Figs. 67-69. *Athyreus zischkai* Martínez. 67. Male, head and pronotum; 68. Male genitalia, dorsal view; 69. Female, head and pronotum. Figs. 70-72. *Athyreus martinezi* Howden. 70. Male, head and pronotum; 71. Male genitalia, dorsal view; 72. Female, head and pronotum.



Figs. 73-75. *Athyreus hastifer* Felsche. 73. Male, head and pronotum; 74. Male genitalia, dorsal view; 75. Female, head and pronotum. Figs. 76-78. *Athyreus chalybeatus* Fairmaire. 76. Male, head and pronotum; 77. Male genitalia, dorsal view; 78. Female, head and pronotum.



Figs. 79-81. Athyreus biarmatus n. sp. 79. Male, head and pronotum; 80. Male genitalia, dorsal view; 81. Female, head and pronotum. Figs. 82-84. Athyreus parvus n. sp. 82. Male, head and pronotum, lateral view; 83. Male, head and pronotum, dorsal view; 84. Male genitalia, dorsal view.