

Description of five new species of *Chinavia* ORIAN (Hemiptera, Pentatomidae, Pentatominae) from western and northwestern South America^{1,2}

J. GRAZIA, C.F. SCHWERTNER & A. FERRARI

Abstract: Five new species of *Chinavia* ORIAN (Heteroptera, Pentatomidae) are described and illustrated: *C. boliviensis* nov.sp. from Bolivia, *C. chilensis* nov.sp. from Chile and Peru, and the following three species from Venezuela, *C. ernsti* nov.sp., *C. heissi* nov.sp., and *C. neoteretis* nov.sp.

Key words: *Chinavia*, morphology of genitalia, neotropics, new species, Nezarini.

Introduction

The genus *Chinavia* ORIAN was established in 1965 to include nine species from Afrotropical region, and since then its taxonomic status has been disputed (SCHWERTNER 2005). ROLSTON (1983) considered *Chinavia* a subgenus of *Acrosternum*, including in it all species of *Acrosternum* from the western hemisphere. AHMAD (1996), based on ROCHE (1977), considered *Chinavia* a valid genus and more closely related to *Nezara* AMYOT & SERVILLE than to *Acrosternum*. In a tentative tribal classification of Pentatominae, *Chinavia* was included in the tribe Nezarini (RIDER 2005). The monophyly of the genus was established by SCHWERTNER (2005).

Chinavia represents a very common group of green stink bugs, medium in size, and distributed in Afrotropical, Nearctic and Neotropical regions. Polyphagous in habit, they have been recorded on hosts of more than 30 plant families. Some species are pests of important crops, i.e. *Chinavia acuta* (DALLAS) in tropical Africa, *C. hilaris* (SAY) in the United States and Canada, and *C. impicticornis* (STÅL) in Brazil (MCPHERSON & MCPHERSON 2000; PANIZZI et al. 2000). More than 80 species of *Chinavia* are

known (SCHWERTNER 2005), the greatest diversity in the Neotropical region, from where several new species have been described in the last two decades (ROLSTON 1983; RIDER & ROLSTON 1986; RIDER 1987; EGER 1988; FREY-DA-SILVA & GRAZIA 2001; SCHWERTNER & GRAZIA 2006). In this paper five new species, three from Venezuela, one from Bolivia, and one from Chile, are described and illustrated.

Material and Methods

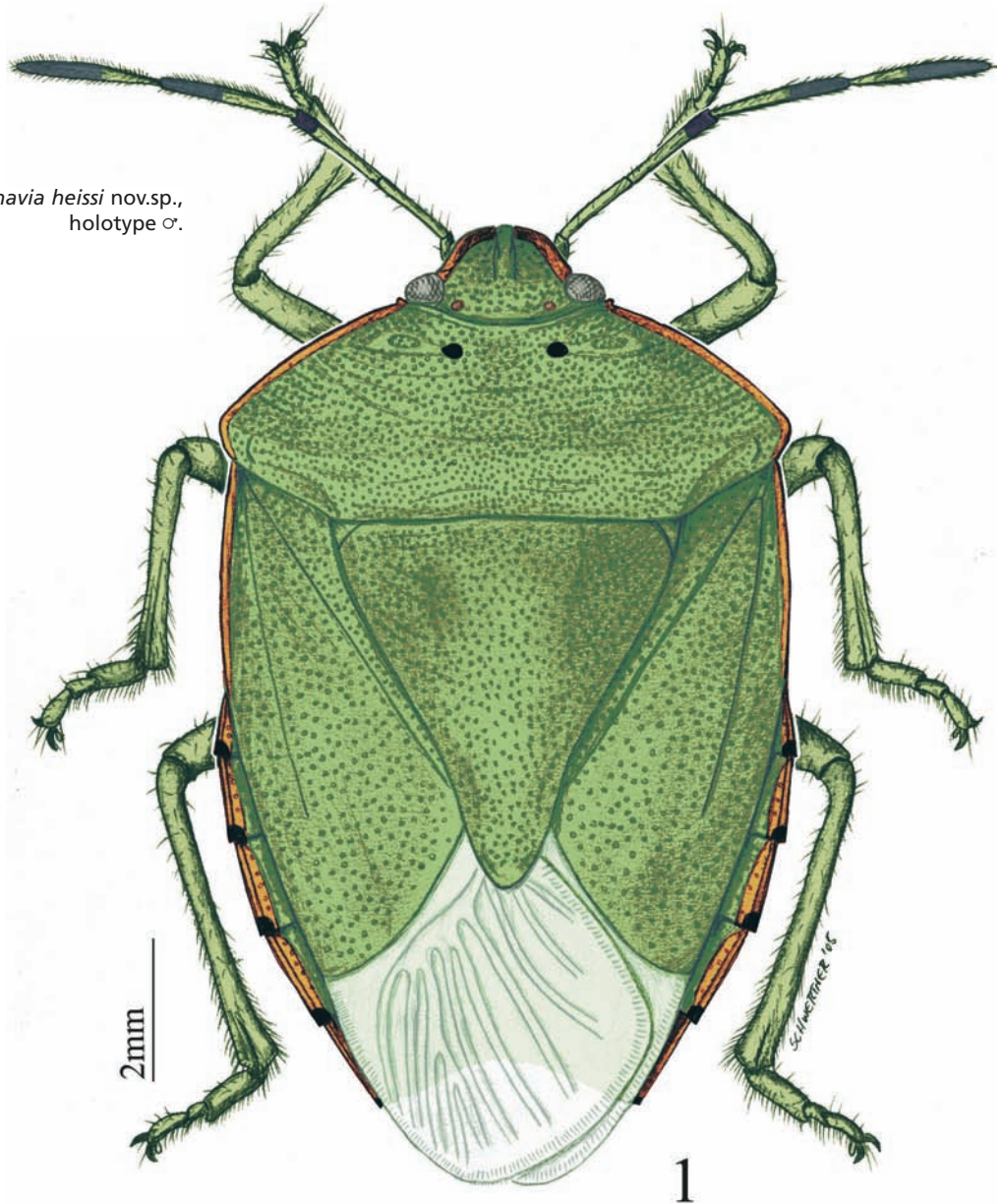
The material studied was lent from the following museums (acronyms and curators are in parentheses): American Museum of Natural History, New York, USA (AMNH, R.T. Schuh); Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires, Argentina (MACN, A. Bachmann); Museo del Instituto de Zoología Agrícola, Facultad de Agronomía, Universidade Central, Maracay, Venezuela (MIZA, E. Osuna); Museum National d'Histoire Naturelle, Paris France (MNHN, D. Pluot-Sigwalt); National Museum of Natural History, Washington D.C., USA (NMNH, T.J. Henry).

Measurements (mean \pm standard deviation, minimum and maximum values, when available) are given in millimeters (Tab. 1);

¹We are glad to dedicate this species to our friend Ernst Heiss, in appreciation of the important works he has realised on Heteroptera, particularly on Aradidae.

²Contribution No. 481 of the Department of Zoology, Federal University of Rio Grande do Sul.

Fig. 1: *Chinavia heissi* nov.sp.,
holotype ♂.



the average size of species was defined by comparison with size of other species of the genus. The proportions of the antennal and rostral segments were indicated as follows: “<” smaller than; “>” larger than; “≈” subequal to. When possible, the study of the internal genitalia was carried out as follows: clarification with 10% KOH solution; washed with distilled water and stained with Congo red; then, washed with 50% to 100% ethanol series, and stored in liquid glycerin for subsequent observation and illustration. Terminology of genitalia follows DUPUIS (1970), SCHWERTNER (2005) and SCHWERTNER & GRAZIA (2006). Illustrations were made with digital camera and camera lucida mounted on a stereomicroscope.

In the male genitalia, the flaps of the infolding of ventral rim of the pygophore (fvr, Figs 7, 12) are 1+1 structures laterally to the segment X and represent a synapomorphy of *Chinavia* (SCHWERTNER 2005). In general, the flaps are subtriangular in shape, ectal surface more or less concave and the degree of bending over genital cup variable; lateral margins concave or rectilinear, sometimes blackish, crenulate or denticulate, apical angle toothed or not; mesial margin sinuose in general, together forming a variable median excavation in posterior view; posterior margin corresponding to the ventral rim of pygophore.

Results and Discussion

Chinavia boliviensis nov.sp. (Figs 2, 6, 11, 16)

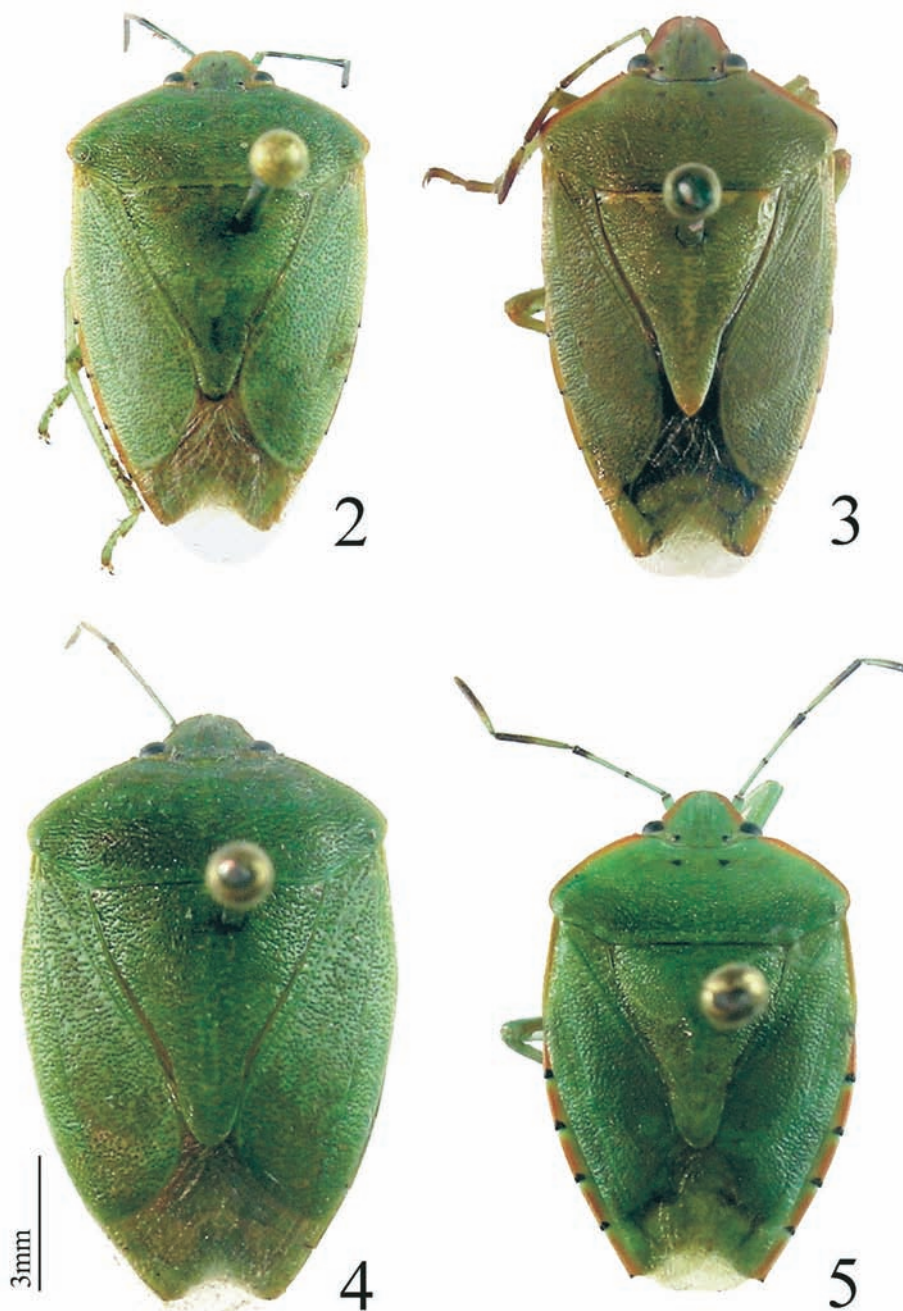
Description. Dorsal surface dull green, densely punctured with concolorous punctures, finer and denser on head, pronotum and scutellum (Fig. 2). Yellow band along margins of head, pronotum, basal third of corium and connexivum. In dark-castaneous to black: line on lateral margins of jugs, very apex of scutellum, spots on posterolateral angles of urosternites scarcely extending onto connexivum. Hemelytral membrane hyaline. Ventral surface greenish on thoracic pleura and margins of abdomen laterad of spiracles; yellow on sterna and abdominal disc. Spiracles dull green, each placed on an inconspicuous yellow callus. Black line between eyes and base of antenniferous tubercles present. Antennae olive green; apical half of third, fourth and fifth segments ferruginous. Legs uniformly green.

Medium size. Male length 14.9, width 6.2.

Head. Jugal surfaces flat, margins convex to apex, convergent to each other. Proportions of antennal segments: $I < II \approx III < IV \approx V$. Apex of rostrum lying between hind coxae. Proportions of rostral segments: $I < II \approx III > IV$.

Thorax. Anterolateral margins of pronotum inconspicuously convex, humeral angles right angular. Costal angles of corium rounded, almost attaining posterior margin of connexival segment VI; sutural margins of membrane moderately convex. Ostiolar ruga attaining $2/3$ of metapleural width. Abdominal venter convex. Medial spine of third abdominal segment short, laterally compressed, probably reaching hind coxae (thorax and abdomen displaced by pin).

Male genitalia. Pygophore subtriangular; posterolateral angles projected posteriorly (Figs 6, 11, 16). Genital cup moderately excavated. Median projection of dorsal rim trapezoidal, slightly concave at apex; lateral third of dorsal rim not projected over genital cup (Fig. 6). Flaps of the infolding of ventral rim moderately bent over genital cup; ectal surface of flaps concave, lateral margins with irregularly spaced denticles, apical tooth present; mesial margin of flaps



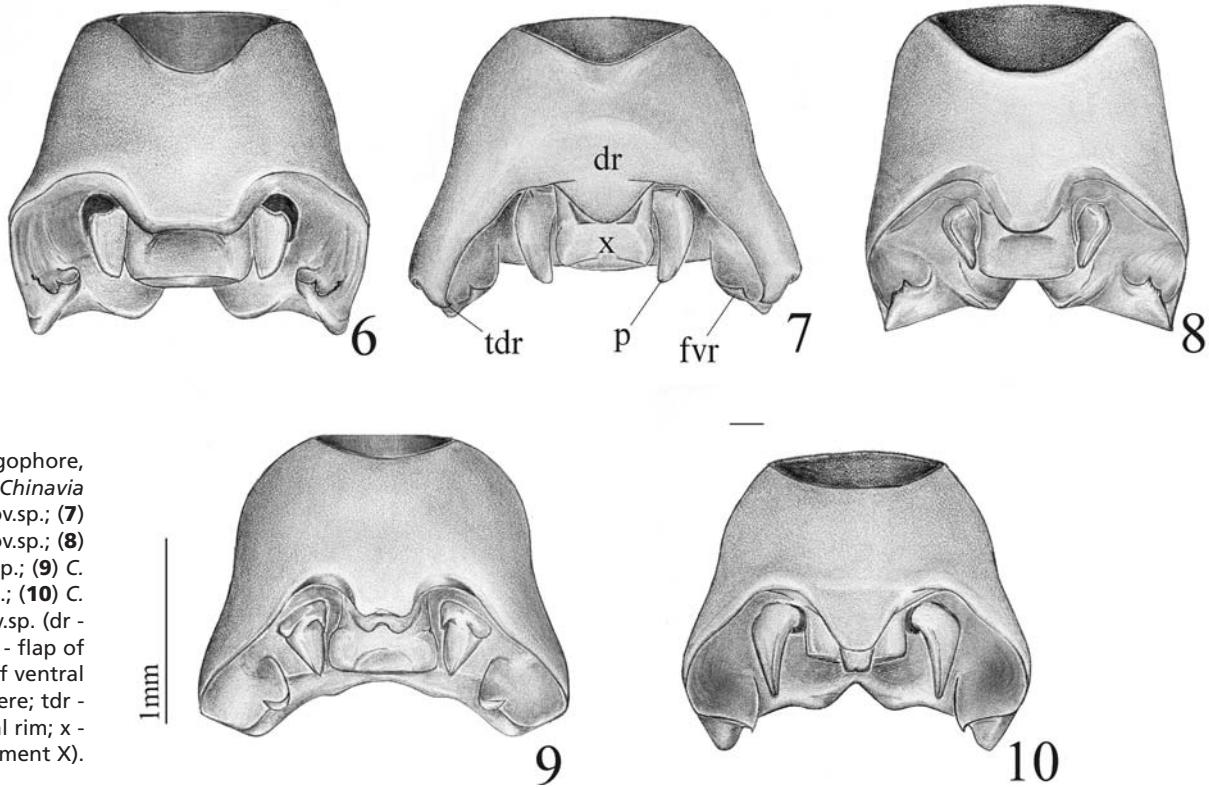
sinuous, moderately concave in posterior view (Figs 6, 11). Median excavation of ventral rim “U”-shaped in ventral view (Fig. 16). Depression of ventral wall of pygophore well developed, median carina conspicuous. Dorsal surface of segment X with well marked depression, delimited by keel-like carina (Figs 6, 11).

Type material. Holotype: Bolivia, La Paz, Maipiri, 1♂, 10-16.VIII.1989, L.E. Peña coll. (AMNH).

Etymology. Named according the type locality.

Distribution. Bolivia.

Figs 2-5: *Chinavia* spp. (2) *Chinavia boliviensis* nov.sp., holotype ♂; (3) *C. chilensis* nov.sp., holotype ♂; (4) *C. ernsti* nov.sp., holotype ♂; (5) *C. neoteretis* nov.sp., holotype ♂.



Figs 6-10: Pygophore, dorsal view (6) *Chinavia boliviensis* nov.sp.; (7) *C. chilensis* nov.sp.; (8) *C. ernsti* nov.sp.; (9) *C. heissi* nov.sp.; (10) *C. neoteretis* nov.sp. (dr - dorsal rim; fvr - flap of the infolding of ventral rim; p - paramere; tdr - tooth of dorsal rim; x - segment X).

Tab. 1: Measurements (mm) of *Chinavia* spp. (HL: head length; HW: head width; ID: interocular distance; HLE: head length in front of eyes; AI-AV: length of antennal segments I-V, respectively; RI-RIV: length of rostral segments I-IV, respectively; PL: medial pronotal length; PW: pronotal width across humeri; SP: medial scutellum length; SW: scutellum width at base).

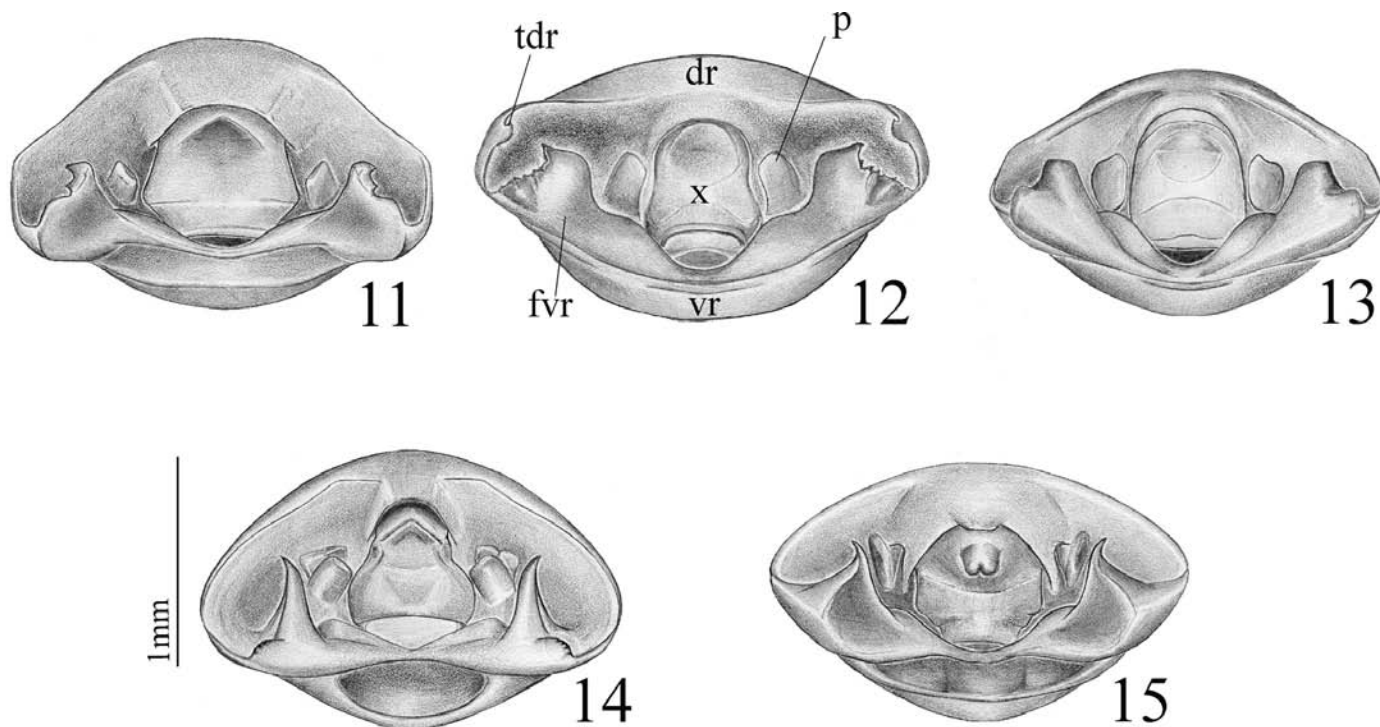
Comments. The black spots on urosteronites scarcely extending onto connexivum, the short abdominal spine and the colored band along body place this species near *C. macdonaldi* (ROLSTON) and *C. wygodzinskyi* (ROLSTON). *Chinavia boliviensis* nov.sp. can be distinguished from both by the yellow instead of orange (*C. macdonaldi*) or red (*C. wygodzinskyi*) band along the body margins,

and by the spiracles placed on yellow calli. The humeri are right angular in *C. boliviensis* nov.sp. and *C. macdonaldi*, but produced laterad in *C. wygodzinskyi*.

Chinavia chilensis nov.sp. (Figs 3, 7, 12, 17, 21, 22, 23, 27, 28, 31, 35)

Description. Dorsal surface dark to light green speckled with subcaloused yellow

| | | HL | HW | ID | HLE | AI | AII | AIII | AIV | AV | RI | RII | RIII | RIV | PL | PW | SP | SW | |
|-----------------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <i>C. boliviensis</i> | ♂ | 2.02 | 2.73 | 1.56 | 0.98 | 0.52 | 1.04 | 1.17 | 1.50 | 1.63 | 0.91 | 1.17 | 1.11 | 0.85 | 2.53 | 7.45 | 5.19 | 4.66 | |
| <i>C. chilensis</i> | ♂♂ | Mean | 2.21 | 2.71 | 1.64 | 1.17 | 0.55 | 0.99 | 1.40 | 1.46 | 1.37 | 0.85 | 1.47 | 1.19 | 0.98 | 2.09 | 6.78 | 4.89 | 4.16 |
| | | SD | 0.05 | 0.03 | 0.03 | 0.05 | 0.04 | 0.06 | 0.08 | 0.05 | 0.09 | 0.11 | 0.08 | 0.04 | 0.00 | 0.07 | 0.19 | 0.17 | 0.13 |
| | | Min | 2.15 | 2.67 | 1.63 | 1.11 | 0.52 | 0.91 | 1.30 | 1.43 | 1.30 | 0.78 | 1.43 | 1.17 | 0.98 | 2.00 | 6.52 | 4.66 | 3.99 |
| | | Max | 2.28 | 2.73 | 1.69 | 1.24 | 0.59 | 1.04 | 1.50 | 1.50 | 1.43 | 0.98 | 1.56 | 1.24 | 0.98 | 2.13 | 6.92 | 5.05 | 4.26 |
| | ♀♀ | Mean | 2.43 | 2.95 | 1.76 | 1.26 | 0.57 | 1.11 | 1.59 | 1.50 | 1.45 | 0.96 | 1.65 | 1.35 | 1.07 | 2.50 | 7.45 | 5.67 | 4.63 |
| | SD | 0.16 | 0.20 | 0.10 | 0.10 | 0.10 | 0.11 | 0.20 | 0.12 | 0.10 | 0.10 | 0.20 | 0.13 | 0.13 | 0.30 | 0.64 | 0.59 | 0.44 | |
| | Min | 2.28 | 2.73 | 1.69 | 1.17 | 0.46 | 1.04 | 1.37 | 1.37 | 1.37 | 0.91 | 1.56 | 1.24 | 0.98 | 2.26 | 6.92 | 5.19 | 4.26 | |
| | Max | 2.73 | 3.32 | 1.95 | 1.43 | 0.72 | 1.30 | 1.89 | 1.63 | 1.56 | 1.17 | 2.02 | 1.56 | 1.30 | 3.06 | 8.65 | 6.78 | 5.45 | |
| <i>C. ernsti</i> | ♂ | 2.41 | 3.12 | 1.69 | 1.11 | 0.52 | 1.24 | 1.30 | 1.89 | 1.89 | 0.98 | 1.69 | 1.37 | 0.98 | 2.39 | 7.98 | 5.85 | 5.19 | |
| | ♀♀ | Mean | 2.34 | 3.22 | 1.72 | 1.11 | 0.59 | 1.20 | 1.30 | 1.89 | 1.85 | 1.04 | 1.69 | 1.40 | 1.17 | 2.59 | 8.38 | 6.12 | 5.25 |
| | | SD | 0.09 | 0.05 | 0.05 | 0.00 | 0.00 | 0.05 | 0.00 | 0.09 | 0.05 | 0.09 | 0.00 | 0.05 | 0.00 | 0.09 | 0.19 | 0.00 | 0.09 |
| | | Min | 2.28 | 3.19 | 1.69 | 1.11 | 0.59 | 1.17 | 1.30 | 1.82 | 1.82 | 0.98 | 1.69 | 1.37 | 1.17 | 2.53 | 8.25 | 6.12 | 5.19 |
| | | Max | 2.41 | 3.25 | 1.76 | 1.11 | 0.59 | 1.24 | 1.30 | 1.95 | 1.89 | 1.11 | 1.69 | 1.43 | 1.17 | 2.66 | 8.51 | 6.12 | 5.32 |
| <i>C. heissi</i> | ♂♂ | Mean | 2.21 | 2.67 | 1.63 | 1.14 | 0.52 | 1.14 | 1.37 | 1.95 | 1.95 | 0.94 | 1.56 | 1.14 | 0.94 | 2.39 | 7.45 | 5.12 | 4.59 |
| | | SD | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 | 0.09 | 0.09 | — | 0.05 | 0.09 | 0.05 | 0.00 | 0.00 | 0.28 | 0.09 | |
| | | Min | 2.21 | 2.67 | 1.63 | 1.11 | 0.52 | 1.11 | 1.30 | 1.89 | 1.95 | 0.91 | 1.50 | 1.11 | 0.91 | 2.39 | 7.45 | 4.92 | 4.52 |
| | | Max | 2.21 | 2.67 | 1.63 | 1.17 | 0.52 | 1.17 | 1.43 | 2.02 | 1.95 | 0.98 | 1.63 | 1.17 | 0.98 | 2.39 | 7.45 | 5.32 | 4.66 |
| | ♀♀ | Mean | 2.30 | 2.84 | 1.65 | 1.13 | 0.52 | 1.06 | 1.28 | 1.86 | 1.97 | 0.82 | 1.52 | 1.04 | 0.98 | 2.57 | 7.71 | 5.50 | 4.74 |
| | | SD | 0.08 | 0.04 | 0.14 | 0.04 | 0.00 | 0.08 | 0.04 | 0.04 | 0.08 | 0.08 | 0.10 | 0.00 | 0.00 | 0.08 | 0.00 | 0.33 | 0.33 |
| | | Min | 2.21 | 2.80 | 1.50 | 1.11 | 0.52 | 0.98 | 1.24 | 1.82 | 1.89 | 0.78 | 1.43 | 1.04 | 0.98 | 2.53 | 7.71 | 5.19 | 4.39 |
| | Max | 2.34 | 2.86 | 1.76 | 1.17 | 0.52 | 1.11 | 1.30 | 1.89 | 2.02 | 0.91 | 1.63 | 1.04 | 0.98 | 2.66 | 7.71 | 5.85 | 5.05 | |
| <i>C. neoteretis</i> | ♂ | 2.02 | 2.67 | 1.63 | 1.04 | 0.52 | 0.98 | 1.30 | 1.76 | 1.82 | 0.91 | 1.43 | 1.17 | 0.98 | 2.13 | 6.65 | 4.52 | 3.99 | |
| | ♀♀ | 2.41 | 3.06 | 1.89 | 1.24 | 0.59 | 1.17 | 1.63 | 2.08 | 2.21 | 0.98 | 1.69 | 1.30 | 1.11 | 2.26 | 7.71 | 5.59 | 4.79 | |



Figs 11-15: Pygophore, posterior view (**11**) *Chinavia boliviensis* nov.sp.; (**12**) *C. chilensis* nov.sp.; (**13**) *C. ernsti* nov.sp.; (**14**) *C. heissi* nov.sp.; (**15**) *C. neoteretis* nov.sp. (dr - dorsal rim; fvr - flap of the infolding of ventral rim; p - paramere; tdr - tooth of dorsal rim; vr - ventral rim; x - segment X).

dots, especially on scutellum and hemelytra; punctures concolorous, finer on head and pronotum (Fig. 3). Reddish (sometimes pale yellow) along margins of head, pronotum, basal third of corium and connexivum; base of scutellum with five irregular red dots, apex pale red. In black: lateral and sometimes mesial margins of jugs, humeral angles, spots on lateral and mesial angles of pronotal cicatrices, spots on posterolateral angles of urosternites, sometimes onto posterolateral angles of connexivum, extending or not to posterior margins of connexival segments. Hemelytral membrane hyaline. Ventral surface light green; punctures concolorous, finer on abdominal segments. Spiracles dark, each placed on yellow callus. Antennae green, ferruginous on apical half of third and the entire fourth and fifth segments; black line between eyes and base of antenniferous tubercles present. Rostrum sometimes reddish. Legs green, base of tibiae sometimes pale reddish.

Medium to large size. Male length 14.8 ± 0.38 (14.50-15.30), width 6.58 ± 0.23 (6.25-6.78). Female length 16.91 ± 1.59 (15.69-19.95).

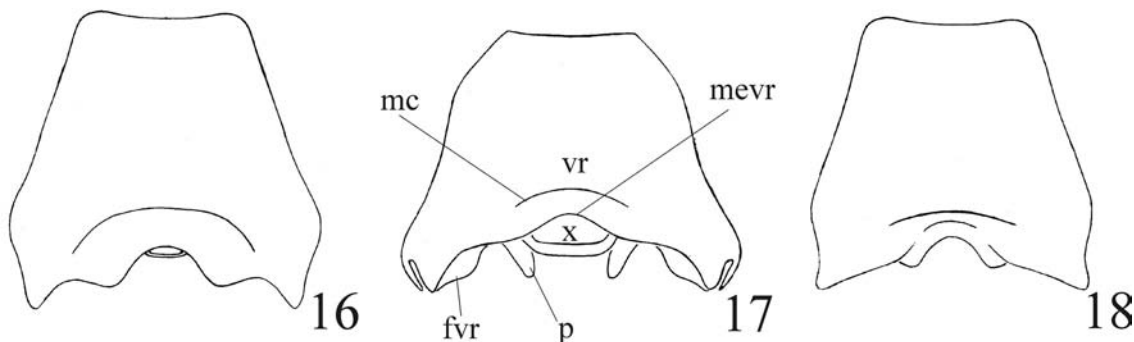
Head. Surface of jugs flat, margins convex at apex, convergent to each other. Proportions of antennal segments:

$I < II < III \approx IV \approx V$. Apex of rostrum lying between hind coxae; proportions of rostral segments: $I < II > III > IV$.

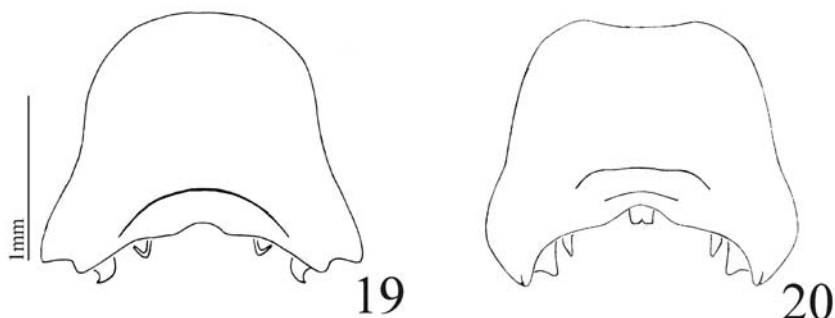
Thorax. Anterolateral margins of pronotum inconspicuously concave; humeral angles angular, sometimes pointed. Coastal angles of corium rounded, surpassing posterior margin of connexival segment VI, sometimes attaining one third of connexival segment VII; membrane sutural margins convex. Ostiolar ruga attaining $3/4$ of metapleural width.

Abdominal venter convex. Medial spine of third abdominal segment very short, laterally compressed, not reaching hind coxae.

Male genitalia. Pygophore subtriangular, posterolateral angles projected posteriorly (Figs 7, 12, 17). Genital cup moderately excavated. Median projection of dorsal rim subtriangular; lateral thirds of dorsal rim well projected over genital cup, apex with a tooth bent ventrad into genital cup (Fig. 7, tdr). Flaps of the infolding of ventral rim (fvr) weakly bent over genital cup; ectal surface of flaps concave, lateral margin with denticles along its entire length, apical tooth present; mesial margin sinuous, medial emargination U-shaped in posterior view (Figs 7, 12), broadly V-shaped in ventral view (Fig. 17, mevr). Depression of ventral



Figs 16-20: Pygophore, ventral view (16) *Chinavia boliviensis* nov.sp.; (17) *C. chilensis* nov.sp.; (18) *C. ernsti* nov.sp.; (19) *C. heissi* nov.sp.; (20) *C. neoteretis* nov.sp. (fvr - flap of the infolding of ventral rim; mc - median carina of ventral wall; mevr - median excavation of ventral rim; p - paramere; vr - ventral rim; x - segment X).



wall of pygophore low, median carina (mc) inconspicuous. Dorsal surface of segment X with a low depression; delimited by an inconspicuous semicircular carina (Figs 7, 12). Parameres with apical portion 2/3 longer than basal portion; basal spur (bs) almost 1/5 the length of apical portion, which is straight in dorsal view and tapered to the round apex (Figs 21-23). Phallosome (ph) opening posteroventrally, ventral surface concave. Vesica (v) subrectilinear, apex dorsal, same diameter as ductus seminis proximalis (dsp). Process of vesica (pv) rectilinear, parallel at apex (Figs 27, 28).

Female genitalia. Posterior margin of segment VII truncate at gonocoxites 8 (gc8), sinuosity over basal angles of laterotergites 8 conspicuous (Fig. 31). Gonocoxites 8 with lateral third pleated, mesial ? flattened; basal half of sutural margins juxtaposed, sutural angles rounded; posterior margins almost rectilinear, posterolateral angles not developed. Gonapophyses 8 (g8) surpassing gonocoxites 8. Apices of laterotergites 9 (la9) rounded, surface of each moderately concave, mesial margin convex. Spine of posterior margin of gonapophyses 9 (sg9) present, not surpassing anterior margin of gonocoxites 9 (gc9), and covered by gonapophyses 8. Ductus receptaculi (dr) before vesicular area (va) almost as long as

vesicular area (Fig. 35). Pars intermedialis (pi) almost as long as capsula seminalis (cs); diameter of capsula seminalis twice the diameter of pars intermedialis; length of processes of capsula seminalis (pcs) almost the same length of the capsula.

Type material. Holotype: Chile, Antofagasta, San Pedro de Atacama, 9-12.VI.1952, L.E. Peña coll. (1♂, AMNH). Paratypes: Peru, Arequipa, 1912, Dr. Escomel (1♀, MNHN); Chile, Antofagasta, San Pedro de Atacama, 9-12.VI.1952, L.E. Peña coll. (2♂♂ 4♀♀, AMNH); Antofagasta, Pocos, IV.1954, L.E. Peña coll. (1♂, AMNH); Azapa, Arica, 23.XII.1948 (1♀, MACN).

Etymology. Named according to the type locality.

Distribution. Chile and Peru.

Comments. Near *C. laetum* (STÅL), from which it can be distinguished by having a broader reddish band on the head, and the humeral angles are more angular, sometimes pointed.

***Chinavia ernsti* nov.sp.**
(Figs 4, 8, 13, 18, 32, 36)

Description. Dorsal surface dark green, densely punctured; punctures dark castaneous to ferruginous, scutellum and hemelytra speckled with minute yellow calli (Fig. 4). Margins of head, pronotum and hemelytra also dark green. Connexival segments,

each with a black spot on middle of posterior margin. Hemelytral membrane hyaline. Ventral surface pale green on thorax and yellowish on abdomen; spiracles castaneous; lateral thirds of abdomen with concolorous punctures. Antennae and legs greenish. Antennal segments with castaneous rings at apex of third and apical half of fourth and fifth. Black line between eyes and base of antenniferous tubercles present.

Medium size. Male length 16.89, width 7.98. Female length 17.82 ± 0.19 (17.69-17.96), width 8.31 ± 0.09 (8.25-8.38).

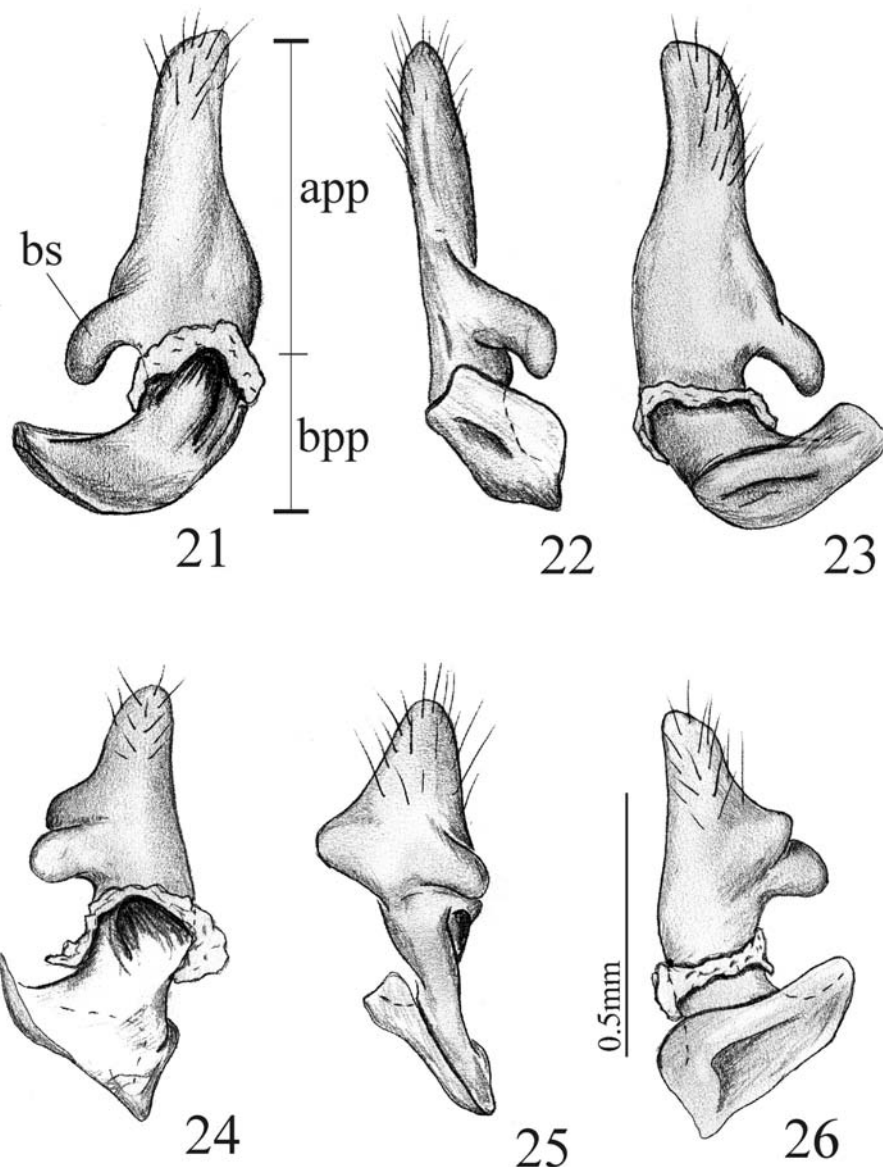
Head. Surface of jugs flat, margins convex at apex, convergent to each other. Proportions of antennal segments: $I < II \approx III < IV \approx V$. Apex of rostrum lying between hind coxae; proportions of rostral segments: $I < II > III > IV$.

Thorax. Anterolateral margins of pronotum straight; humeral angles rounded. Costal angles of corium forming an angle of almost 90° , attaining middle of connexival segment VI; membrane sutural margins nearly straight. Ostiolar ruga attaining $3/4$ of metapleural width.

Abdominal venter convex. Medial spine of third abdominal segment very short, laterally compressed, scarcely attaining hind coxae.

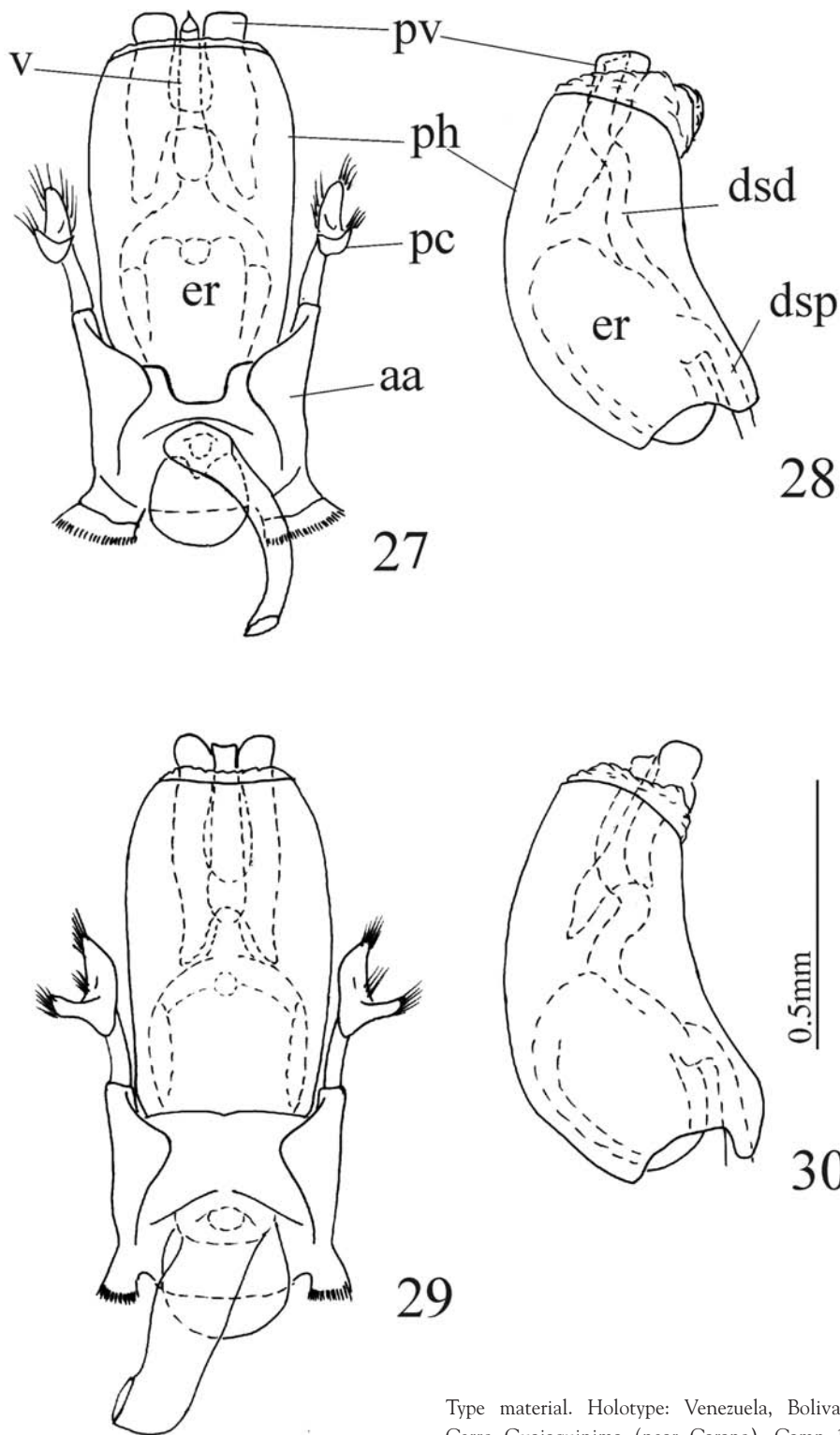
Male genitalia. Pygophore subquadrangular; posterolateral angles projected posteriorly (Figs 8, 13, 18). Genital cup moderately excavated. Median projection of dorsal rim subtriangular, apex slightly convex; lateral thirds of dorsal rim not projected over genital cup (Fig. 8). Flaps of the infolding of ventral rim moderately bent over genital cup; ectal surface of flaps almost flat, lateral margin crenulate, apical tooth not developed; mesial margin of flaps strongly sinuate, broadly "U"-shaped in posterior view (Figs 8, 13). Median excavation of ventral rim broadly "U"-shaped in ventral view (Fig. 18). Depression of ventral wall of pygophore low, median carina inconspicuous. Dorsal surface of segment X with a low depression; delimited by a inconspicuous semi-circular carina.

Female genitalia. Sinuosites of posterior margin of segment VII over basal angles of laterotergites 8 inconspicuous (Fig. 32).



Surface of gonocoxites 8 slightly convex; sutural margins juxtaposed, sutural angles rounded, not covering posterior apex of gonapophyses 8; posterior margin of gonocoxites 8 almost straight. Spine of posterior margin of gonocoxites 9 well developed reaching basal third of gonocoxites 9, not covered by gonapophyses 8. Apex of laterotergites 9 rounded, surface moderately convex, mesial margins rectilinear. Ductus receptaculi before vesicular area almost as long as vesicular area (Fig. 36). Pars intermedialis almost as long as capsula seminalis; diameter of capsula seminalis twice the diameter of pars intermedialis; length of processes of capsula seminalis almost the same length of the capsula.

Figs 21-26: Left paramere in lateromesial, lateroexternal and dorsal views, respectively (**21-23**) *Chinavia chilensis* nov.sp.; (**24-26**) *C. heissi* nov.sp. (app - apical portion of paramere; bpp - basal portion of paramere; bs - basal spur).



Figs 27-30: Phallus in dorsal and lateral views, respectively (**27, 28**) *Chinavia chilensis* nov.sp. (**29, 30**); *C. heissi* nov.sp. (aa - articular apparatus; dsd - ductus seminis distalis; dsp - ductus seminis proximalis; er - ejaculatory reservoir; pc - processus capitati; ph - phallosoma; pv - processes of vesica; v - vesica).

Type material. Holotype: Venezuela, Bolivar, Cerro Guaiquinima (near Carapo), Camp 1, 63°37'W 5°56'N, 1.000m, II.1990, D. Grimaldi coll. (1♂, AMNH). Paratypes: same data as holotype (2 ♀, AMNH).

Etymology. This species is named in honor of Dr. Ernst Heiss in recognition of his contributions to the knowledge of the true bugs.

Distribution. Venezuela.

Comments. Using ROLSTON's (1983) key, this species, *C. boliviensis* nov.sp., *C. wygodzinskyi* (ROLSTON), and *C. macdonaldi* (ROLSTON) all key to the same couplet. *Chinavia ernsti* nov.sp. can be distinguished from those species by the dorsal surface being totally dark green with dark castaneous punctures; the presence of a black spot at the middle of the posterior margins of the connexival segments is also diagnostic.

***Chinavia heissi* nov.sp.** (Figs 1, 9, 14, 19, 24, 25, 26, 29, 30, 33, 37)

Description. Dorsal surface green to yellowish green; punctures concolorous, finer and denser on head and pronotum (Fig. 1). Orange along margins of head, pronotum, basal third of corium and connexivum. In black: spots on mesial angles of pronotal cicatrices and spots on posterolateral angles of urosternites and connexivum. Hemelytral membrane hyaline. Ventral surface yellowish green on median third; punctures concolorous, finer and denser on abdominal segments. Spiracles dark. Antennae green; apices of third and fourth and almost half of fifth segments darker green to ferruginous. Black line between eyes and antenniferous tubercles absent. Rostrum and legs yellowish green; sometimes apices of tibiae and tarsi dark green.

Medium size. Male length 15.49±0.09 (15.43-15.56), width 7.58±0.19 (7.45-7.71). Female length 16.49±0.27 (16.23-16.76).

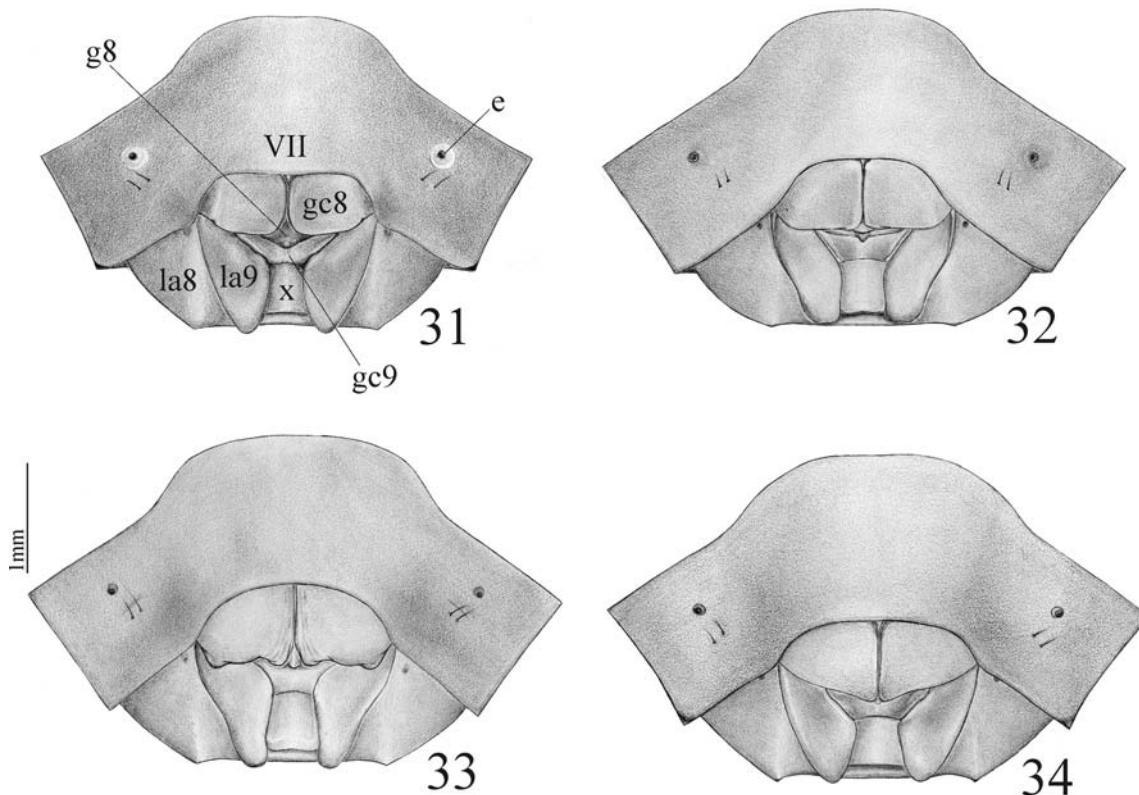
Head. Surface of juga flat; head slightly truncate at apex. Proportions of antennal segments: I<II<III<IV≈V. Apex of rostrum lying between hind coxae; Proportions of rostral segments: I<II>III≈IV.

Thorax. Anterolateral margins of pronotum straight; humeral angles rounded. Costal angles of corium forming an angle of almost 90°, not attaining posterior margin of connexival segment VI; membrane sutural margins nearly straight. Ostiolar ruga attaining 2/3 of metapleural width.

Abdominal venter convex. Medial spine of third abdominal segment short, laterally compressed, lying between hind coxae.

Male genitalia. Pygophore subtrapezoidal; posterolateral angles not projected

Figs 31-34: Genital plates, posteroventral view (31) *Chinavia chilensis* nov.sp.; (32) *C. ernsti* nov.sp.; (33) *C. heissi* nov.sp.; (34) *C. neoteretis* nov.sp. (e - spiracles; g8 - gonapophyses 8; gc8 - gonocoxites 8; gc9 - gonocoxites 9; la8 - laterotergites 8; la9 - laterotergites 9; VII - segment VII; x - segment X).



(Figs 9, 14, 19). Genital cup moderately excavated. Median projection of dorsal rim almost quadrangular, conspicuously concave at apex; lateral thirds of dorsal rim slightly projected over genital cup. Flaps of the infolding of ventral rim weakly bent over genital cup (Figs 9, 14). Ectal surface of flaps almost flat, lateral margin inconspicuously crenulate, without denticles, apical angles strongly produced dorsad, apex turned laterad. Mesial margin sinuate forming a broad "V" in posterior view (Figs 9, 14). Ventral rim concave, notched at middle (Fig. 19). Depression of ventral wall of pygophore strongly excavated, carina well developed. Dorsal surface of segment X with a low depression delimited by a well developed, bifid carina (Figs 9, 14). Paramere with apical portion shorter than basal portion; basal spur half the length of apical portion which is conical (Figs 24-26). Phallus (Figs 29, 30) as described for *C. chilensis* nov.sp.

Female genitalia. Sinuities of posterior margin of segment VII over basal angles of laterotergites 8 inconspicuous (Fig. 33). Surface of gonocoxites 8 convex; sutural margins juxtaposed, sutural angles rounded, not covering apex of gonapophyses 8; posterior margin of gonocoxites 8 sinuate, pos-

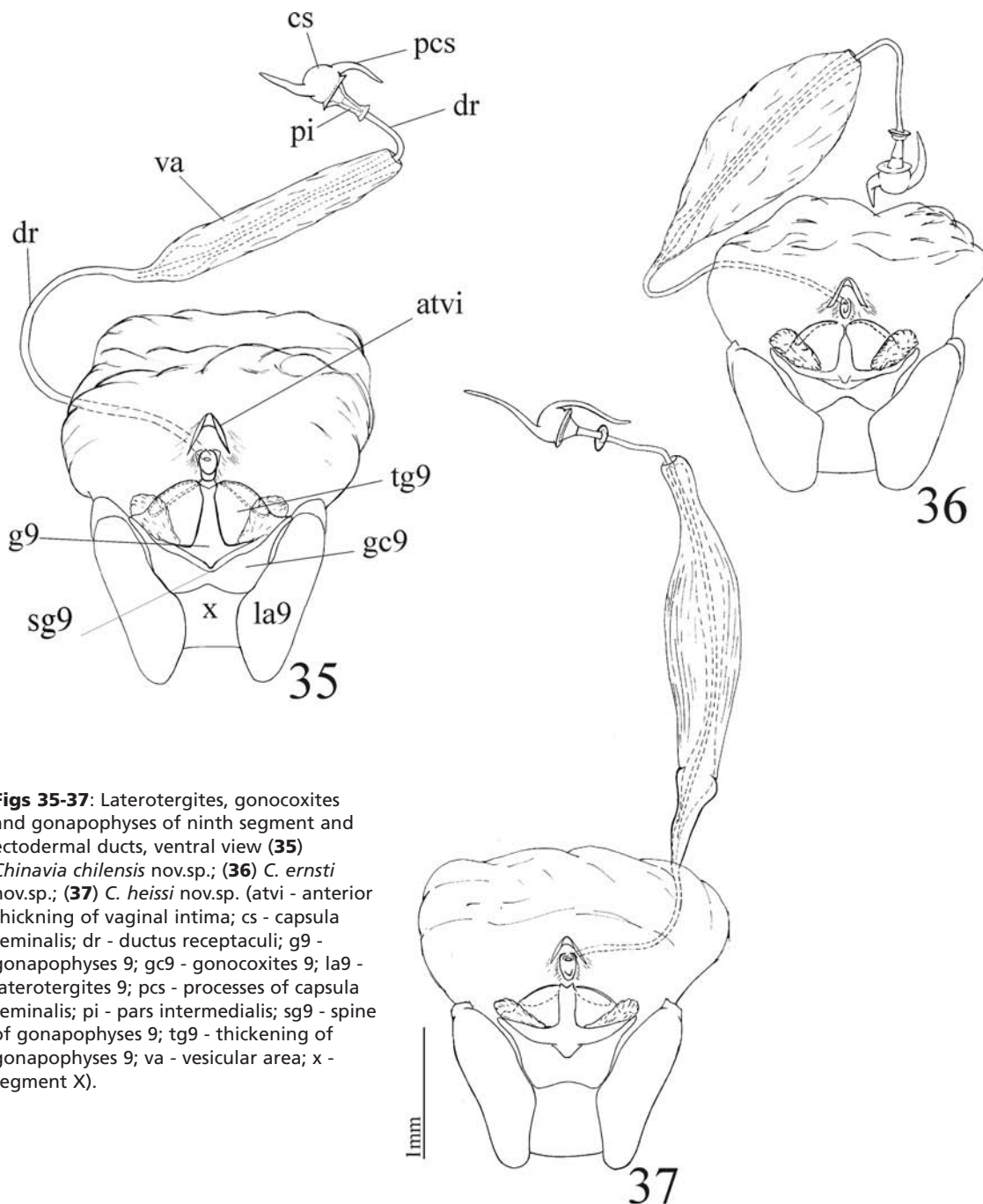
terolateral angles posteriorly projected. Spine of posterior margin of gonapophyses 9 developed, reaching basal fourth of gonocoxites 9, not covered by gonapophyses 8. Apex of laterotergites 9 rounded, surface moderately concave, mesial margins concave at apical third. Ductus receptaculi before vesicular area shorter than vesicular area (Fig. 37). Diameter of pars intermedialis 1/3 the diameter of capsula seminalis. Basal fourth of vesicular area differentiated, seemingly more sclerotized than remaining apical 3/4. Length of processes of capsula seminalis more than twice the length of capsula.

Type material. Holotype: Venezuela, Rancho Grande, 1.100m, 5.V.1951, F. Fernandez coll. (1♂, MIZA). Paratypes: Venezuela, Distrito Federal, near El Junco, 1.500m, 9.I.1982, R.T. Schuh & B.M. Massie, beating on forest edge (3♀, AMNH); illegible label, 1936 (1♂, NMNH).

Etymology. This species is named in honor of Dr. Ernst Heiss in recognition of his contributions to the knowledge of the true bugs.

Distribution. Venezuela.

Comments. Using ROLSTON's (1983) key, *C. heissi* nov.sp. and *C. neoteretis*



Figs 35-37: Laterotergites, gonocoxites and gonapophyses of ninth segment and ectodermal ducts, ventral view (35) *Chinavia chilensis* nov.sp.; (36) *C. ernsti* nov.sp.; (37) *C. heissi* nov.sp. (atvi - anterior thickening of vaginal intima; cs - capsula seminalis; dr - ductus receptaculi; g9 - gonapophyses 9; gc9 - gonocoxites 9; la9 - laterotergites 9; pcs - processes of capsula seminalis; pi - pars intermedialis; sg9 - spine of gonapophyses 9; tg9 - thickening of gonapophyses 9; va - vesicular area; x - segment X).

nov.sp. will key to *C. teretis* (ROLSTON). In *C. heissi*, the abdominal spine is a little shorter than in the other two species. The most striking differences among them can be found in the male genitalia. Segment X in *C. heissi* has the surface excavated, delimited by a bifid carina; in *C. neoteretis*, the surface is convex with a tubular process bifid at apex; and in *C. teretis*, the surface is simply convex without a process. The apical tooth of the flaps of the infolding of the ventral rim of pygophore are less developed

and directed dorsad in *C. heissi* and *C. neoteretis* than in *C. teretis* in which the apical tooth is directed posteriorly.

***Chinavia neoteretis* nov.sp.**
(Figs 5, 10, 15, 20, 34)

Description. Dorsal surface olive green with concolorous punctures (Fig. 5). Yellow along margins of head, pronotum, basal third of corium, and connexivum. In black: spots on mesial angles of pronotum cicatrices and spots on posterolateral angles of

urosternites and connexivum. Hemelytral membrane hyaline. Ventral abdominal surface uniformly green with concolorous punctures. Spiracles black. Antennae green, apex of second, apical fourth of third, almost apical half of fourth and 3/4 of fifth ferruginous. Black line between eyes and antenniferous tubercles present. Legs uniformly green.

Medium size. Male length 13.70, width 6.78. Female length 16.89, width 8.65.

Head. Surface of gena flat, convex at apex. Proportions of antennal segments: I<II<III<IV≈V. Apex of rostrum lying between hind coxae; proportions of rostral segments: I<II>III<IV.

Thorax. Anterolateral margins of pronotum straight, humeral angles rounded. Costal angles of corium rounded, attaining posterior margin of connexival segment VI; sutural membrane margins straight. Ostiolar ruga attaining 3/4 of metapleura width. Abdominal venter convex. Medial spine of third abdominal segment short, laterally compressed, reaching hind coxae.

Male genitalia. Pygophore subquadangular; posterolateral angles projected posteriorly (Figs 10, 15, 20). Genital cup moderately excavated. Median projection of dorsal rim subtriangular, apex truncate; lateral thirds of dorsal rim not projected over genital cup (Figs 10, 15). Flaps of the infolding of ventral rim weakly bent over genital cup, ectal surface of flaps concave; lateral margin straight, apical angles developed into a hook-like projection; mesial margin sinuous, moderately concave in posterior view. Median excavation of ventral rim narrowly "U"-shaped in ventral view (Fig. 20). Depression of ventral wall of pygophore well developed, median carina conspicuous. Dorsal surface of segment X strongly convex (Figs 10, 15), forming a basal tubular process, bifid at apex.

Female genitalia. Sinuosities of posterior margin of segment VII over basal angles of laterotergites 8 inconspicuous (Fig. 34). Surface of gonocoxites 8 nearly flat; sutural margins juxtaposed, sutural angles slightly projected mesially, posterior margins sinuate; posterolateral angles of gonocoxites 8 not developed. Spine of posterior margin of

gonapophyses 9 clearly visible in posterior view. Apex of laterotergites 9 rounded, surface slightly concave, mesial margins rectilinear.

Type material. Holotype: Venezuela, Trujillo, 12.4 km NE of Bocono, along Pampan-Bocono Rd, 31.III.1992, Miller coll. (1♂, AMNH). Paratype: same as the holotype (1♀, AMNH).

Etymology. The name of this species reflects the similarity to *C. teretis*.

Distribution. Venezuela.

Comments. As mentioned previously, the abdominal spine in *C. neoteretis* nov.sp. is a little longer than in *C. heissi* nov.sp.; in females, the posterolateral angles of gonocoxites 8 are not developed, in *C. heissi* they are clearly developed.

Acknowledgements

To the curators of listed collections for the loans. To CNPq (Research National Council) and CAPES for financial support and fellowships. To Dr. David Rider (North Dakota State University) for his valuable suggestions to improve the manuscript.

Zusammenfassung

Fünf neue Arten der Gattung *Chinavia* ORIAN (Heteroptera, Pentatomidae) werden beschrieben und abgebildet: *C. bolivienensis* nov.sp. aus Bolivien, *C. chilensis* nov.sp. aus Chile und Peru, und die folgenden drei Arten aus Venezuela: *C. ernsti* nov.sp., *C. heissi* nov.sp. und *C. neoteretis* nov.sp.

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Address of the Authors:

Dr. Jocelia GRAZIA
Dr. Cristiano Feldens SCHWERTNER
B.Sc. Augusto FERRARI
Universidade Federal do
Rio Grande do Sul (UFRGS)
Instituto de Biociências –
Departamento de Zoologia
Laboratório de Entomologia Sistemática
Rua Bento Gonçalves 9500 Bloco IV
prédio 43435 sala 216
91501-970 Porto Alegre,
Rio Grande do Sul, Brazil
E-Mail: jocelia@ufrgs.br (J. Grazia)
acrosternum@yahoo.com.br
(C. Schwertner)
ferrariaugusto@gmail.com (A. Ferrari)

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Denisia](#)

Jahr/Year: 2006

Band/Volume: [0019](#)

Autor(en)/Author(s): Grazia Jocelia, Schwertner Christiano, Ferrari Augusto

Artikel/Article: [Description of five new species of Chinavia ORIAN \(Hemiptera, Pentatomidae, Pentatominae\) from western and northwestern South America 423-434](#)