

**A NEW AGONOXENINE MOTH DAMAGING *ARAUCARIA ARAUCANA* NEEDLES IN WESTERN ARGENTINA AND NOTES ON THE NEOTROPICAL AGONOXENINE FAUNA (LEPIDOPTERA: GELECHIOIDEA: ELACHISTIDAE)**

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**Abstract.**—Characters of the adult, pupa, and larva of *Araucarivora gentilii*, new genus and new species, are illustrated. The needle mining larvae cause conspicuous browning to monkey-puzzle tree in west-central Argentina. The check list of Neotropical Lepidoptera is revised to accomodate genera and species newly assigned to Agonoxeninae. A list of taxa removed from Agonoxeninae and placed in other families/subfamilies is provided. Five genera are transferred to new family/subfamily associations. One new generic synonym and 23 new combinations are proposed.

**Key Words:** Classification, check list, Cosmopterigidae, Chrysopeleinae, life history, morphology, needle miner

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In 1994 Mario Gentili (San Martín de los Andes, Neuquén, Argentina) noticed severe browning of needle tips of *Araucaria araucana* (Molina), K. Koch (Araucariaceae) throughout the area. He enclosed several twigs and waited for adults to emerge to learn what was causing this damage. The adults represent an undescribed species and genus of the moth family Elachistidae, subfamily Agonoxeninae. They are characterized as follows.

***Araucarivora* Hodges, new genus**

**Type species:** *Araucarivora gentilii* Hodges

**Diagnosis.**—Antenna without pecten; forewing with well-developed stigma; valva with free costal lobe, arms of gnathos free, ventral surface of each with very fine spicules; apophyses anteriores and apophyses posteriores absent; larva lacking prolegs on A5 and A6.

**Description.**—Forewing (Fig. 2): broadly

lanceolate, stigma well developed;  $R_3$ ,  $R_4$ ,  $R_5$  stalked,  $R_5$  to anterior margin;  $M_1$ – $CuA_2$  separate;  $CuP$  present at margin; 1A and 2A forked at base, 1A weak. Hindwing (Fig. 3): lanceolate;  $R_1$  weak, to Sc at  $\frac{1}{5}$  wing length;  $Rs$ – $M_3$  separate;  $M_3$  and  $CuA_1$  connate;  $CuA_2$  from  $\frac{1}{3}$  wing length, 1A and 2A forked at base, 1A weak; retinaculum of female diffuse, anteriorly directed scales between R and CuA. Abdomen: Sternum 2 with long, somewhat diffuse venulae, venulae extending anteriorly but not as apodemes (Fig. 6); segment 8 not modified. Male genitalia (Figs. 4–5): Vinculum a slender band, slightly expanded distally in saccal region; aedeagus with recurved flange at apex; juxta with pair of lateral lobes, each setose at apex; gnathos expanded distally; uncus narrowly triangular, anterolateral margin slightly excavated. Female genitalia (Fig. 7): Apophysis anterioris and posterioris absent; sternum 8 sclerotized laterally and posterad of ostium





Fig. 1. *Araucarivora gentilii*, habitus.

bursae; ostium bursae on anterior margin of sternum 8; ductus seminalis arising just beyond base of ductus bursae; corpus bursae finely spiculose; signum a lightly sclerotized, irregular plate with several inwardly directed projections; papilla analis blunt, densely setose on dorsal surface. Pupa (Figs. 8, 24–27): antennae meeting at  $\frac{3}{4}$ – $\frac{4}{5}$  their length, then diverging, exposing hindtarsi, extending to posterior margin of A4; maxillary palpus, femur 1, femur 2 visible; vertex, patagium, and anterior part of T2 coarsely spiculose; surface of wing finely spiculose; lateral condyles present on anterior margins of A5–7; well-developed “pupal legs” present on A9, each with many recurved setae at apex (Figs. 26–27); cremaster absent, several recurved setae present on A10 (Fig. 26). Larva (Figs. 9–23): Frons extending  $\frac{3}{4}$  distance to epicranial notch; stemmata well separated from each other (Fig. 10);  $P_1$  setae more distant from each other than  $P_2$  setae (Fig. 11); body densely and coarsely spiculose; prothoracic shield and pinacula heavily sclerotized, latter relatively large; secondary setae apparently absent, except few on L group of A9;

spiracle on T1 approximately  $2\times$  diameter of those on A1–7, spiracle on A8 larger than that on T1; tarsal setae setiform (Fig. 18); prolegs present on A3 and A4 (Fig. 20), absent on A5 and A6; crochets short, in circle, 15–16 (Fig. 21); 12–15 crochets on A10 in irregular line; A1, A2 with one SV seta; A7–8 with one SV seta; A8 with L1 dorsad of spiracle; A9 with 6–7 SV setae; A9 with D2 setae on separate pinacula, D1 seta slightly anterad of D2 and SD1.

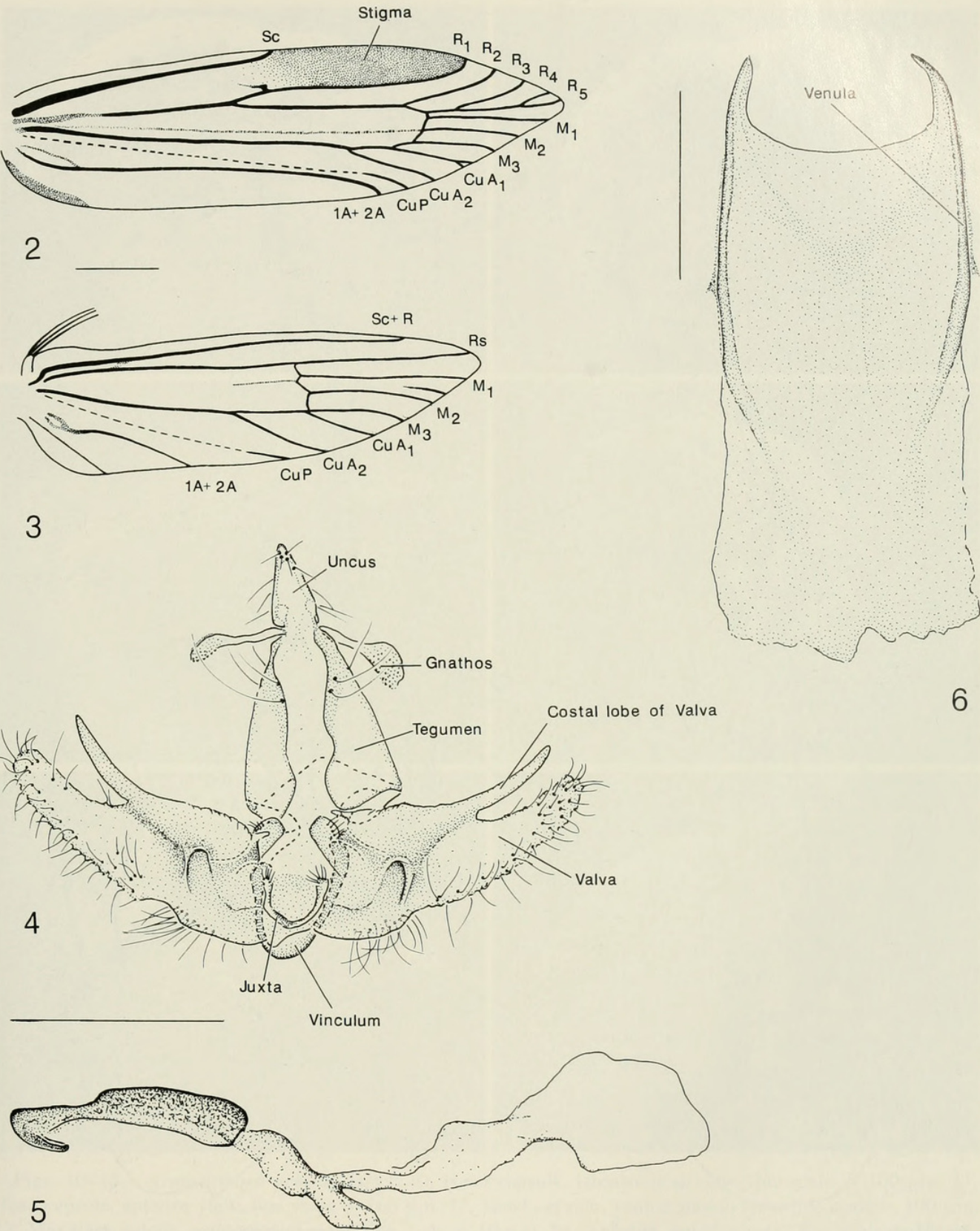
Superficially, adults of *Araucarivora gentilii* are similar to some species of *Tetanocentria* Rebel but differ in the lack of a color pattern on the forewings. The presence of a stigma on the forewing, absence of apophyses in the female, and absence of prolegs on larval A5 and A6 are unique character states in Agonoxeninae.

### *Araucarivora gentilii* Hodges, new species

Diagnosis.—The character states given for the genus will serve to diagnose the species.

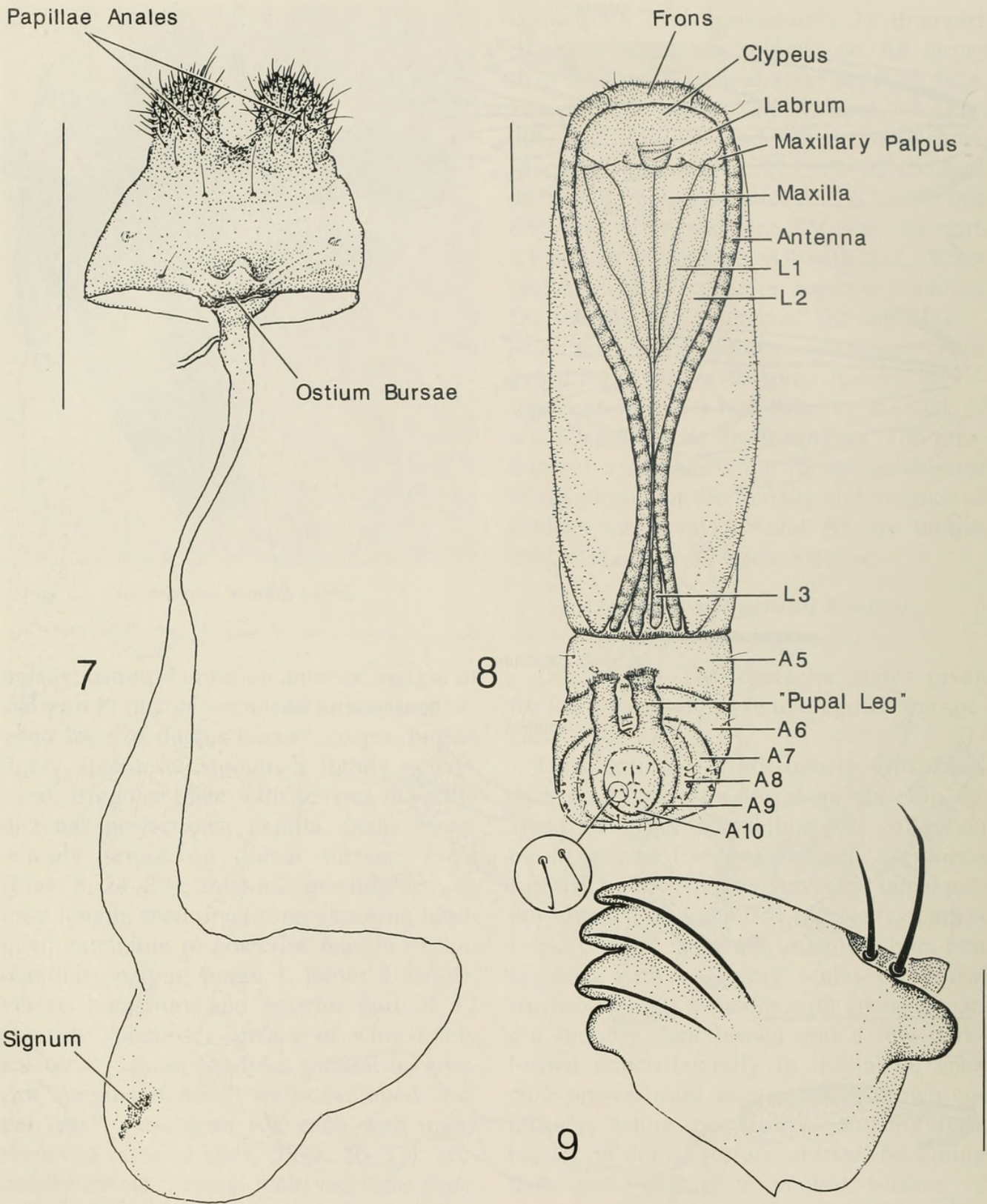
Description.—Moth nearly uniformly dark gray brown on dorsal surface (Fig. 1). Head: Scales on haustellum pale yellow on basal  $\frac{1}{3}$ ; maxillary palpus gray on dorsal surface, yellowish gray ventrally; labial palpus slender, 2nd and 3rd segments approximately equal in length, mainly white, first segment with pale-gray scales on dorsal surface, second segment with anterior margin broadly dark brown and a few dark-brown scales laterally in mesial  $\frac{1}{2}$ , apex dark brown, third segment dark brown anteriorly, white posteriorly; antenna dark brown on dorsal surface at base, becoming dark yellowish gray, ventral surface of scape and basal  $\frac{1}{7}$  of shaft white/off-white. Forewing: Nearly immaculate, dark gray brown, tips of individual scales pale gray on distal  $\frac{2}{3}$  of wing, slightly gray on basal  $\frac{1}{3}$  of wing, base of each scale paler than mesial part. Hindwing: Darker brown than forewing, fringe nearly same color as wing; prominent patch of white/pale-gray scales extending from base along costal margin to





Figs. 2–6. *Araucarivora gentilii*. 2, Forewing [USNM slide 81596], line scale = 1.0 mm. 3, Hindwing [USNM slide 81596], line scale = 1.0 mm. 4, Male genitalia, posteroventral view, aedeagus removed [USNM 81594], line scale = 0.5 mm. 5, Aedeagus [USNM 81601], line scale = 0.5 mm. 6, Abdominal sternum 2, ♂ [USNM slide 81601], line scale = 0.5 mm.



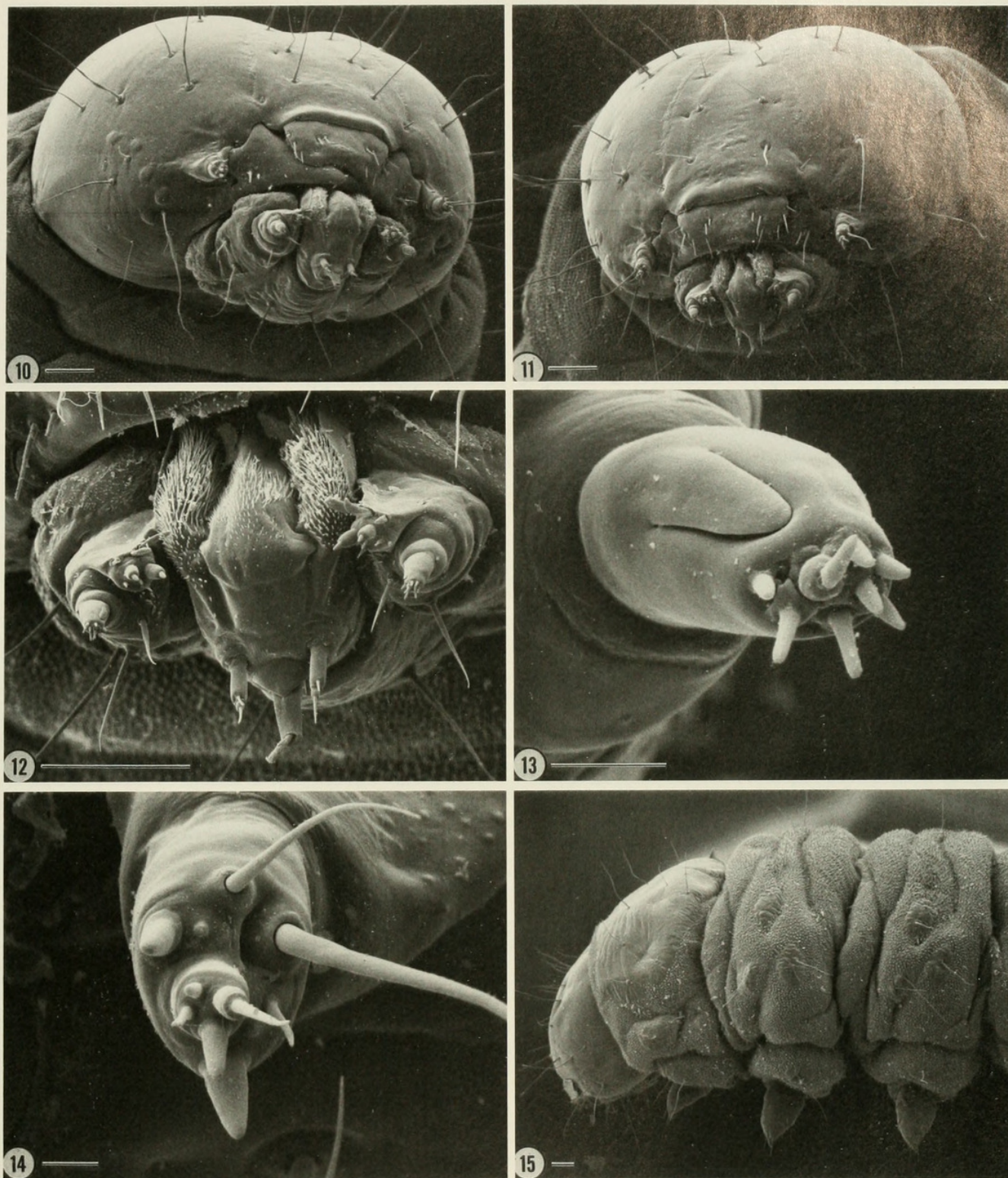


Figs. 7-9. *Araucarivora gentilii*. 7, Female genitalia, ventral view [USNM 81595], line scale = 1.0 mm. 8, Pupa, ventral view, line scale = 1.0 mm. 9, Mandible, mesial view, line scale = 0.4 mm.

slightly beyond  $\frac{1}{2}$  wing length and posterad into cell, narrowing at apex. Legs: Scales appressed to segments, except dorsal surface of hindtibia with long, slender scales.

Foreleg: Coxa and trochanter shining dark gray; femur mainly dark brown with pale gray on ventral margin; tibia and tarsus similarly colored, ventral margin nearly





Figs. 10–15. *Araucarivora gentilii*, larva. 10, Head capsule, lateroventral view, line scale = 100  $\mu\text{m}$ . 11, Head capsule, anterior view, line scale = 100  $\mu\text{m}$ . 12, Head capsule, ventral mouth area, line scale = 100  $\mu\text{m}$ . 13, Maxillary palpus, anteromesial view, line scale = 10  $\mu\text{m}$ . 14, Antenna, anterior view, line scale = 10  $\mu\text{m}$ . 15, Head and thorax, lateral view, line scale = 10  $\mu\text{m}$ .

white. Mid- and hindlegs: Similar to foreleg but with more pale scales. Abdomen: Mainly dark brown dorsally, scales on posterior margin of last two segments dark, slightly yellowish gray; ventral surface mainly pale

gray with yellowish cast, anterior part of many segments with yellowish-brown scales. Wing length 5.8–6.0 mm.

Types.—Holotype ♀. Argentina, Neuquén, San Martín de los Andes;  $13/16$  I 1995;



M. Gentili; ex needle mine *Araucaria araucana*. USNM [National Museum of Natural History, Washington]. Paratypes: 4 ♂, 11 ♀. Each with same data as for holotype; USNM slides 81594–81596, 81600–81602. Paratypes to The Natural History Museum, London, BM(NH); M. Gentili; USNM. In addition several larvae, pupae, and pupal skins are preserved in alcohol in the USNM.

Larvae make a large blotch mine in the distal part of the very broad needles of *Araucaria araucana*. Frass remains in the mine. Pupation occurs in the mine. Before pupating the larva cuts a nearly round hole through which the adult emerges. Because less than  $\frac{1}{3}$  of each needle is eaten by the larva, damage to the tree probably is mainly cosmetic. However, because the needles remain on the tree for several years, the heavily infested trees present a highly unattractive appearance.

#### TAXONOMIC SUMMARY OF NEOTROPICAL MOTHS FORMERLY ASSIGNED TO AGONOXENINAE

Agonoxeninae are relatively poorly known, but I give a short summary on their classification (Hodges, in press) in the forthcoming volume on Lepidoptera in the *Handbook of Zoology*. The major literature is contained in Bottimer (1926), Bradley (1966), Clarke (1965a, b), Common (1990), Hodges (1978), Kasy (1976), Kuznetsov, N. J. (1916), Riedl (1969), and Stehr (1987). Worldwide 23 genera and 95 species are known. Becker (1984b) listed nine genera and 42 species for the Neotropical Region. That document is modified to accommodate transfer of genera among families and subfamilies and species among genera.

*Amblytenes* Meyrick, 1930 (type species *lunatica* Meyrick) is here transferred from Batrachedrinae.

*Auxotricha* Meyrick, 1931b (type species *ochrogypsa* Meyrick) was transferred from Depressariinae by Minet, 1990.

*Glaucacna* Forbes, 1931 (type species *ir-*

*idea* Forbes) is here transferred from Gelechiinae.

*Nicanthes* Meyrick, 1928 (type species *rhodoclea* Meyrick) is known from a single female. The genital characters suggest that it belongs in Gelechioidea (possibly Gelechiinae) but not in Agonoxeninae.

*Pammeces citraula* Meyrick, 1922: 584 is here transferred to *Homaledra* (Batrachedrinae), **NEW COMBINATION**.

*Pammeces crocoxysta* Meyrick, 1922: 584 is here transferred to *Homaledra* (Batrachedrinae), **NEW COMBINATION**.

*Panclintis* Meyrick, 1929 (type species *socia* Meyrick) is here transferred to Gelechioidea (without family placement). *Panclintis socia* has an ocellus; no Agonoxeninae have ocelli.

*Prochola* Meyrick, 1915 (type species *oppidana* Meyrick) is here transferred to Cosmopterigidae, Chrysopeleinae. The male genitalia of the lectotype of *Prochola oppidana* (Clarke, 1965b: pl. 255) indicate that the genus is a chrysopeleine. It appears to represent a valid genus. Examination of the genitalia of one of the specimens in the type series demonstrates that Meyrick had a mixed series; the male genitalia of this specimen (USNM genitalia slide 87690) indicate that it is a species of *Periploca* Braun. Eighteen species of *Prochola* of Becker's list (1984b: 43) are given new assignments in the following taxonomic summary.

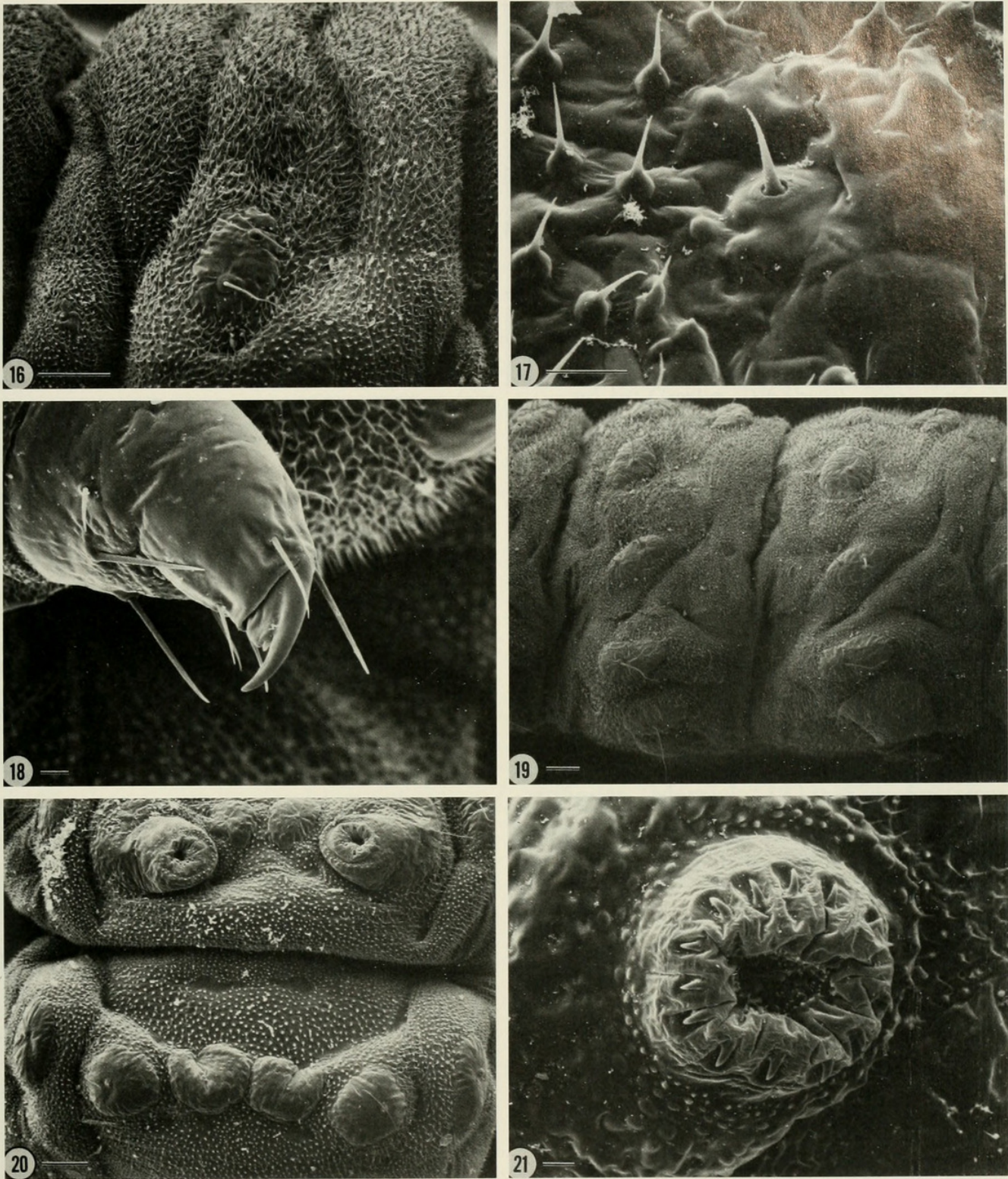
*Syntetrernis neocompsa* Meyrick, 1933: 428 is here transferred to *Scythris*, Scythrididae, **NEW COMBINATION**.

*Tocasta* Busck, 1912 (type species *priscella* Busck) was transferred from Coleophorinae by Baldizzone, 1989.

Study of *Eritarbes guttata* Busck shows that it belongs in *Tetanocentria*; it is transferred below. *Eritarbes otiosa* Walsingham, 1909, the type species of *Eritarbes*, is a species of *Ithome*; thus, *Eritarbes* is a junior synonym of *Ithome* Chambers, 1875.

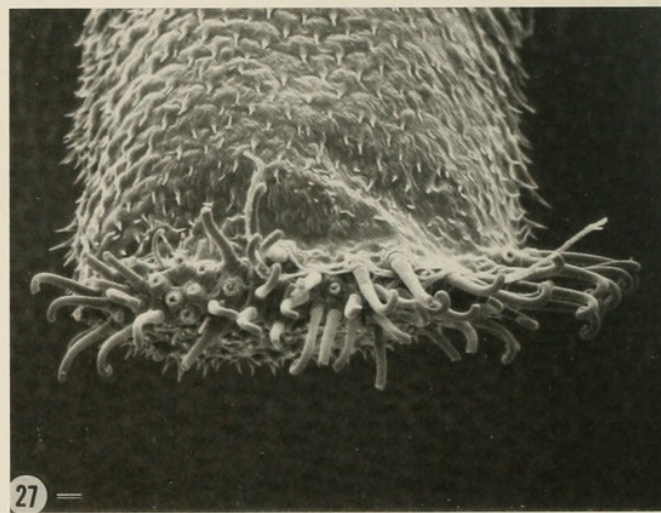
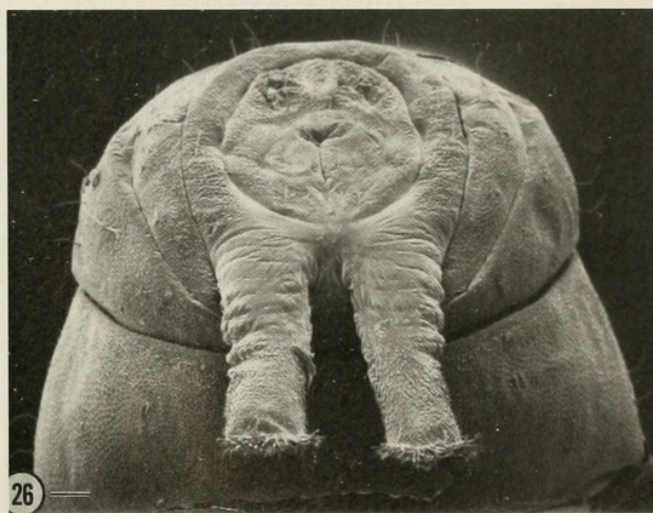
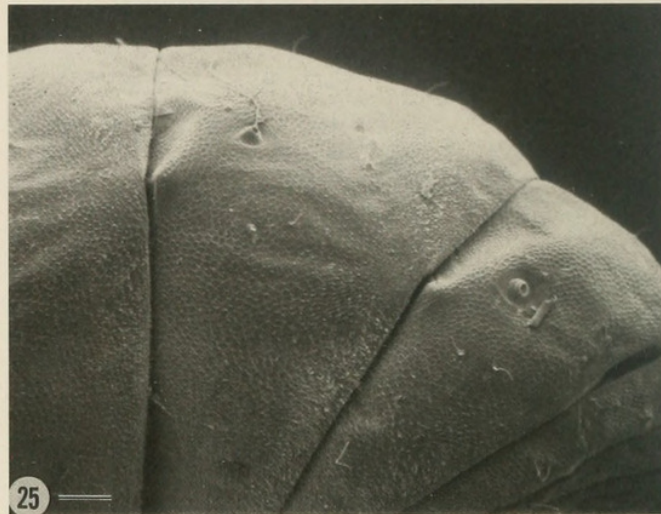
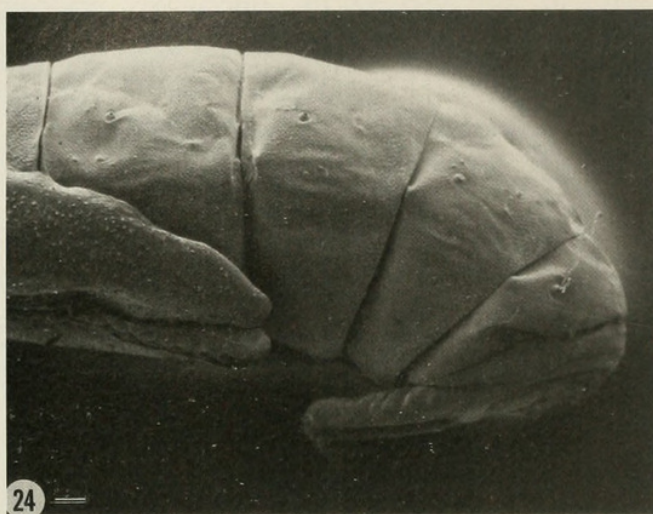
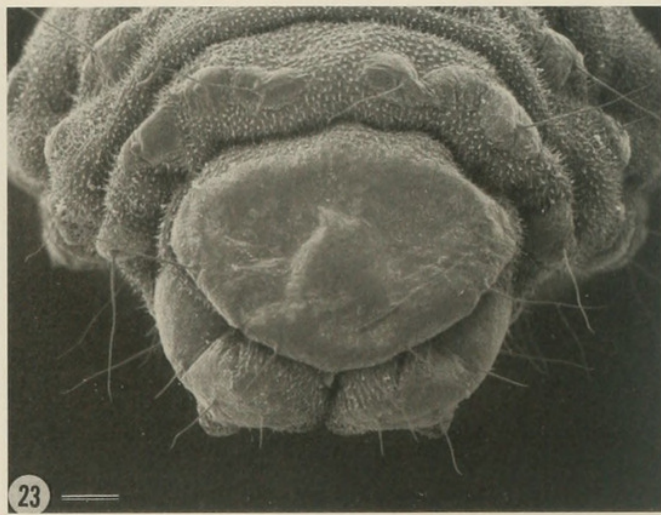
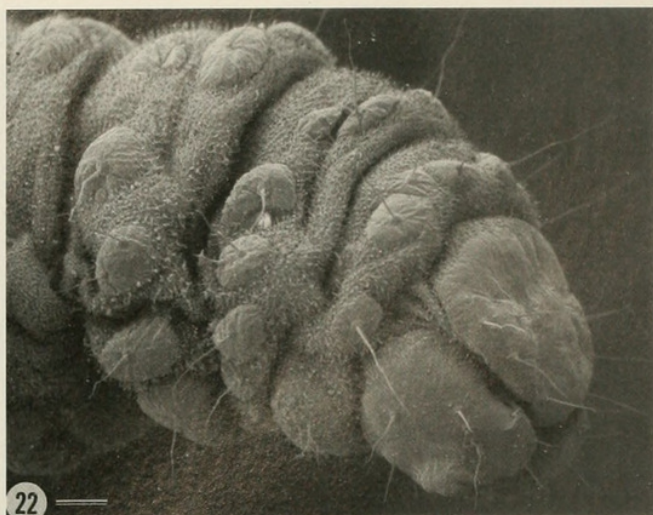
The result of this research is summarized in the following revised check list of Neo-





Figs. 16–21. *Araucarivora gentilii*, larva. 16, Thoracic segment 2 with L setae, lateral view, line scale = 100  $\mu$ m. 17, Thoracic segment 3, seta SD1, spinules, line scale = 10  $\mu$ m. 18, Thoracic leg 2, apex, line scale = 10  $\mu$ m. 19, Abdominal segments 4–5, lateral view, lateral view, line scale = 100  $\mu$ m. 20, Abdominal segments 4–5, ventral view, lateral view, line scale = 100  $\mu$ m. 21, Proleg and crochets, abdominal segment 4, ventral view, line scale = 10  $\mu$ m.





Figs. 22–27. *Araucarivora gentilii*. 22, Larva, lateral view of abdominal segments 7–10, line scale = 100  $\mu\text{m}$ . 23, Larva, dorsal view of abdominal segments 9–10, line scale = 100  $\mu\text{m}$ . 24, Pupa, lateral view of segments 4–10, line scale = 100  $\mu\text{m}$ . 25, Pupa, lateral view of segments 4–7, showing lateral condyles, line scale = 100  $\mu\text{m}$ . 26, Pupa, posteroventral view of segments 6–10, showing “pupal legs,” line scale = 100  $\mu\text{m}$ . 27, Pupa, apex of “pupal leg,” line scale = 10  $\mu\text{m}$ .



tropical Agonoxeninae and pertinent Chrysopeleiinae.

# AGONOXENINAE

## Parametriotini

### *Araucarivora* Hodges, new genus

*gentilii* Hodges, new species

*Auxotricha* Meyrick, 1931b: 189

*ochrogypsa* Meyrick, 1931b: 190 [lectotype illustrated by Clarke, 1963: pl. 60]

*Glaucacna* Forbes, 1931: 369

*iridea* Forbes, 1931: 369 [illustrated by Forbes, 1931]

*Homoeoprepes* Walsingham, 1909: 10

*felisae* Clarke, 1962: 375 [genital slides of type series studied]

*sympatrica* Clarke, 1962: 381 [genital slides of type series studied]

*trochiloides* Walsingham, 1909: 10 [illustrated by Clarke, 1962: Fig. 3; holotype without abdomen; male unknown]

*Microcolona* Meyrick, 1897: 370

*transennata* Meyrick, 1922: 575 [lectotype illustrated by Clarke, 1965b: pl. 251]

*Nanodacna* Clarke, 1964: 125

*ancora* Clarke, 1964: 126 [genital slides of type series studied]

*indiscriminata* Clarke, 1965a: 93 [genital slides of type series studied]

*logistica* (Meyrick, 1931c: 387, *Colonophora*)

*vinacea* (Meyrick, 1922: 574, *Homaledra*)

*Pammeces* Zeller, 1863: 152

*albivitella* Zeller, 1863: 152 [type not studied]

*lithochroma* Walsingham, 1897: 103 [type not studied]

*pallida* Walsingham, 1897: 103 [type not studied]

*phlogophora* Walsingham, 1909: 11 [type not studied]

*problema* Walsingham, 1915: 458 [type not studied]

*Tetanocentria* Rebel, 1902: 107

*Aetia* Chambers, 1880: 186, preoccupied by Agassiz, 1847: 10

*Platybathra* Meyrick, 1912: 78

*Parametriotes* Kuznetsov, N. J. 1916: 628

*Syntetrernis* Meyrick, 1922: 573

*Chaetocampa* Busck, 1926: 804

*agypsota* (Meyrick, 1922: 580, *Prochola*), NEW COMBINATION [type illustrated by Clarke, 1965b: pl. 256]

*catacentra* (Meyrick, 1922: 582, *Prochola*), NEW COMBINATION [lectotype illustrated by Clarke, 1965b: pl. 256]

*catholica* (Meyrick, 1917: 46, *Prochola*), NEW COMBINATION [lectotype illustrated by Clarke, 1965b: pl. 256]

*guttata* (Busck, 1914: 1, *Eritarbes*), NEW COMBINATION [genitalia of paratype studied]

*sollers* (Meyrick, 1917: 46, *Prochola*), NEW COMBINATION [lectotype illustrated by Clarke, 1965b: pl. 259]

*subtincta* (Meyrick, 1922: 574, *Syntetrernis*), NEW COMBINATION [lectotype illustrated by Clarke, 1965b: pl. 259]

*xiphodes* (Meyrick, 1922: 574, *Syntetrernis*), NEW COMBINATION [lectotype illustrated by Clarke, 1965b: pl. 278]

*Tocasta* Busck, 1912: 4

*Amblytenes* Meyrick, 1930: 229, NEW SYNONYMY [*Amblytenes* is transferred from Batrachedrinae]

*lunatica* (Meyrick, 1930: 230, *Amblytenes*), NEW COMBINATION [genitalia of type studied]

*priscella* Busck, 1912: 4 [genitalia of type studied]

*revecta* (Meyrick, 1922: 582, *Prochola*), NEW COMBINATION [lectotype illustrated by Clarke, 1965b: pl. 259]

*Zaratha* Walker, 1864: 789

[preliminary study of superficially similar species from the Neotropics resulted in discovery of 11 segregates based on genitalia.]

*macrocera* C. Felder & Rogenhofer, 1875: pl. 140, Fig. 18 [Becker, 1984a: 248]



illustrated a specimen from Costa Rica that matches the abdomenless lectotype]

*mesonyctia* Meyrick, 1909: 17 [type not studied]

*pterodactylella* Walker, 1864: 790 [lectotype illustrated by Becker, 1984a: 248]

*niveiventris* C. Felder & Rogenhofer, 1875: pl. 140, fig. 26 [type lost]

#### COSMOPTERIGIDAE

##### Chrysopeleinae

*Ithome* Chambers, 1875: 93

*Eritarbes* Walsingham, 1909: 7, **NEW SYNONYMY**

*fuscula* (Forbes, 1931: 357, *Prochola*), **NEW COMBINATION** [paratype examined]

*otiosa* (Walsingham, 1909: 7, *Eritarbes*), **NEW COMBINATION** [paratypes examined]

*Periploca* Braun, 1919: 261

*aedilis* (Meyrick, 1915: 331, *Prochola*), **NEW COMBINATION** [lectotype illustrated by Clarke, 1965b: pl. 255]

*basichlora* (Meyrick, 1922: 582, *Prochola*), **NEW COMBINATION** [lectotype illustrated by Clarke, 1965b: pl. 255]

*chloropis* (Meyrick, 1922: 580, *Prochola*), **NEW COMBINATION** [lectotype illustrated by Clarke, 1965b: pl. 256]

*euclina* (Meyrick, 1922: 583, *Prochola*), **NEW COMBINATION** [lectotype illustrated by Clarke, 1965b: pl. 257]

*obstructa* (Meyrick, 1915: 332, *Prochola*), **NEW COMBINATION** [holotype illustrated by Clarke, 1965b: pl. 257]

*orphanopa* (Meyrick, 1922: 582, *Prochola*), **NEW COMBINATION** [holotype illustrated by Clarke, 1965b: pl. 258]

*orthobasis* (Meyrick, 1922: 582, *Prochola*), **NEW COMBINATION** [lectotype illustrated by Clarke, 1965b: pl. 258]

*prasophanes* (Meyrick, 1922: 581, *Prochola*), **NEW COMBINATION** [holotype illustrated by Clarke, 1965b: pl. 258]

*semialbata* (Meyrick, 1922: 581, *Procho-*

*la*), **NEW COMBINATION** [lectotype illustrated by Clarke, 1965b: pl. 259]

*Prochola* Meyrick, 1915: 331

*oppidana* Meyrick, 1915: 331 [lectotype illustrated by Clarke, 1965b: pl. 255]

*pervallata* Meyrick, 1922: 581, **MISPLACED** [lectotype illustrated by Clarke, 1965b: pl. 258]

*Siskiwitia* Hodges, 1969: 10

*holomorpha* (Meyrick, 1931a: 282, *Prochola*), **NEW COMBINATION** [holotype illustrated by Clarke, 1965b: pl. 257]

*Stilbosis* Clemens, 1860: 170

*Aeaea* Chambers, 1874: 73.

*Amaurogramma* Braun, 1919: 261

*ochromicta* (Meyrick, 1922: 580, *Prochola*), **NEW COMBINATION** [lectotype illustrated by Clarke, 1965b: pl. 257]

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