

NOTES ON INDIAN SPECIES OF THE GENUS *APOLABIS* BURR
(DERMAPTERA : CARCINOPHORIDAE)

By

G. K. SRIVASTAVA

Zoological Survey of India, Calcutta

INTRODUCTION

(With 25 Figs.)

The genus *Apolabis* was erected by Burr (1915) with *Forcinella hottentotta* Dohrn as the type. Besides, one Asiatic species, viz. *Forcinella marginalis* Dohrn and five other Ethiopian species namely *Anisolabis isomorpha* Borelli ; *Anisolabis vicina* Burr ; *Anisolabis turgida* Burr ; *Forficula laeta* Gerstaecker and *Gonolabis picea* Borelli were also included.

In India the genus is hitherto represented by two species, *Apolabis castetsi* (Bormans) and *A. ramachandrai* (Ramamurthi and David).

It is proposed to place here under the genus *Euborelli aborensis* Burr and *Thekalabis genitalis* Kapoor, both known from India.

On the basis of the shape of male parameres the genus *Thekalabis* Kapoor (1967) appears to be identical with *Apolabis* Burr (1915) and is placed as synonym of the latter.

Genus *Apolabis* Burr

Apolabis Burr, 1915, *J. R. micr. Soc.*, 1915 : 538.

Thekalabis Kapoor, 1967, *J. nat. Hist.*, 1355 (Type species : *T. genitalis* Kapoor, 1967).

Diagnostic characters : Elytra abbreviated as narrow ovate flaps on mesonotum or narrowed at base but dilated in apical half and meeting along the middle line. Male genitalia with parameres three to four times longer than broad, at or near the base broadest but gradually narrowing apically with tip pointed or gently hooked.

Type-species : *Forcinella hottentotta* Dohrn.

Distribution : Oriental and Ethiopian Regions.

Remarks : Regarding the validity of various genera included under the subfamily Carcinophorinae there appears to be no unanimty amongst recent workers on the group. Besides the male genitalia is still considered as the sole critaria and occasionally with other morphological characteristics, for the discrimination of genera. Therefore, in

view of the prevailing confusion, it is considered desirable to follow Burr's (1915) arrangement in the present work which certainly helps in recognising most of the existing genera excepting a few extremely closely related ones in which some modifications may be necessary.

Key to species (on ♂♂ only)

- 1 (1). Body thickly pubescent ; elytra abbreviated in the front of narrow, ovate flaps on the sides of mesonotum ... *A. aborensis* (Burr)
- 2 (1). Body not thickly pubescent; occasionally short fine pubescence present on abdomen ; elytra abbreviated, narrowed strongly at base, in apical half dilated into broad lobes which meet along the median line
- 3 (4). Sides of abdominal segments ecarinate ; penultimate sternite posteriorly rounded ... *A. castetsi* (Bormans)
- 4 (3). Sides of certain abdominal segments with a median carina ; penultimate sternite narrowed posteriorly, feebly obtuse in middle
- 5 (6). Parameres with external and internal margin undulate and tip gently incurved ... *A. genitalis* (Kapoor)
- 6 (5). Parameres triangular, external and internal margins straight and tip straight and pointed ... *A. ramachandrai* (Ramamurthi and David)

***Apolabis castetsi* (Bormans)**

(Figs. 1-6)

Carcinophora castetsi Bormans in Bolivar, 1897, *Am. Soc. Ent. Fr.*, 66, 284 (♂♂, India : Madras, Kodaikanal) ; Bormans, 1900, *Das Tierreich*, 11 : 41 ; Kirby ; 1904, *Syn. Cat. Orth.*, 1 : 15.

Psalis castetsi : Burr, 1910, *Fauna Brit. India, Dermaptera* : 77 ; Burr, 1911, *Genera Insect.*, 122 : 31.

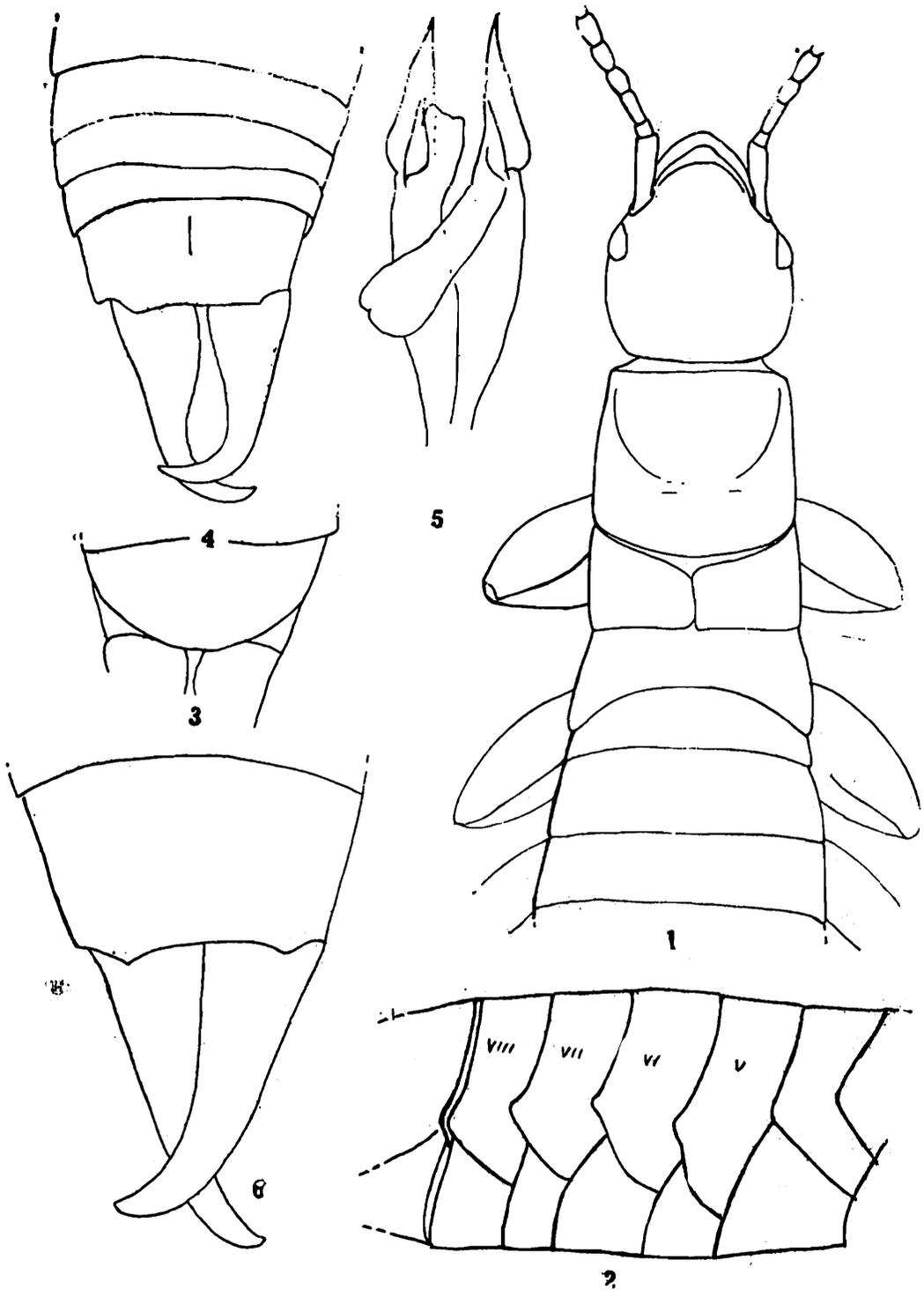
Paralabis castetsi : Hebard ; 1923, *Mem. Dep. Agric. India ent. ser.* 7 : 204.

Apolabis castetsi : Borelli, 1931, *Rev. Suisse Zool.*, 38 : 295 ; Hincks, 1954, *Mem. Inst. Franc. Afr. noire*, 40 (4) : 104 ; Ramamurthi, 1960, *Bull. Ent.*, 1 : 34, fig. 1.

Euborellia astrusi Burr, 1911, *J. Asiat Soc. Beng. (N. S.)* 7 : 779 (South India, Shembaganur, Madura Dist., several specimens—Types at British Museum (Natural History, London) ; Boesemann, 1954, *Zool. Verh., Leiden*, 21 : 43.

Apolabis mnemosyne Menozzi, 1929, *Mem. Soc. ent. Ital.*, 8 : 8, figs. 1, 2 and 3. (♂♂ ; Madura, India—Location of Types not mentioned).

♂ : General colour dark brownish black to light blackish brown ; antennae and legs yellowish brown, often shaded with black in parts.



Figs. 1-6. *Apolabis castetsi* (Bormans), ♂ ; 1. Anterior portion of body 2. Sides of abdominal segments, 3. Penultimate sternite, 4. Hind portion of body, 5. Genitalia ; ♀, 6. Ultimate tergite and forceps.

Head triangular, slightly longer than broad, frons raised, feebly punctulate, sutures faint, hind margin slightly emarginate in middle. Eyes small, about $\frac{1}{8}$ as long as the post-ocular length. Antennae 14-segmented ; 1st stout, gently expanded apically, about as long as the distance between antennal bases ; 2nd short ; 3rd long and slender ; remaining stouter ; 4th shorter than the preceding and 5th almost equal to 3rd ; 6th onwards gradually increasing in length excepting a few pre-apical ones slightly shorter. Pronotum slightly longer than broad,

smooth, sometimes a trifle widened posteriorly, median sulcus faintly marked, hind margin subtruncate, prozona and metazona not well differentiated. Elytra abbreviated, narrowed strongly at base exposing a large transverse scutellum, posteriorly widened and meeting along the middle line, obscurely punctulate. Metanotum transverse, obscurely punctulate and finely pubescent, hind margin broadly emarginate. Prosternum about three times longer than broad, anteriorly convex, feebly narrowed between fore-coxae, hind margin truncate. Mesosternum about as long as broad, hind margin briefly convex. Metasternum transverse, slightly narrowed beyond hind coxae with hind margin truncate. Legs long, slender, tarsi with 1st segment slightly longer than the combined length of 2nd and 3rd segments. Abdomen spindle shaped, finely punctulate, convex, sides of segments 5th to 9th angulate posteriorly but ecarinate, only obscurely striate sometimes. Penultimate sternite transverse, triangular, broadly rounded posteriorly with slight emargination in middle, obscurely punctate. Ultimate tergite transverse, narrowed posteriorly, gently sloping backwards, smooth, hind margin straight in middle, oblique laterally above the bases of forceps, median sulcus faint and short. Forceps with branches subcontiguous, expanded at base, tapering apically and incurved in apical $\frac{1}{2}$, at base above with a blunt ridge, afterwards branches depressed, internal margin obscurely crenulate. Genitalia with parameres broadest at base, about four times longer than broad, apices acutely pointed; distal lobes without virga.

♀ : Agrees with males in most characters except that sides of abdominal segments obtuse or convex; penultimate sternite obtusely triangular posteriorly and forceps simple and straight.

Measurements : (in mm)

	♂ ♂	♀ ♀
Length of body	7.5-8.0	8.0-13.0
Length of forceps	1.4-1.5	1.7- 2.2

Material examined : India : Tamil Nadu : Madura Dist., Kodai-kanal, 2125 m, 1 ♂ (genitalia mounted between two coverslips and attached with the specimens), 25.xii. 1982, under stones, G. K. Srivastava; 4 ♂ ♂ (1 ex with male genitalia mounted between two coverslips and pinned with the specimen), 4 ♀ ♀, 1 nymph, 29-30.xii. 1962, K. V. Lakhminarayna; Borijam Lake, 2000 m, 11 ♂ ♂, 15 ♀ ♀, 15.v.1981, B. C. Saha.

Distribution : South India (Western Ghats).

Remarks : This species commonly occurs under stones on the edge of streams. It can be easily separated from other members of the genus by the smaller size and ecarinate sides of abdominal segments.

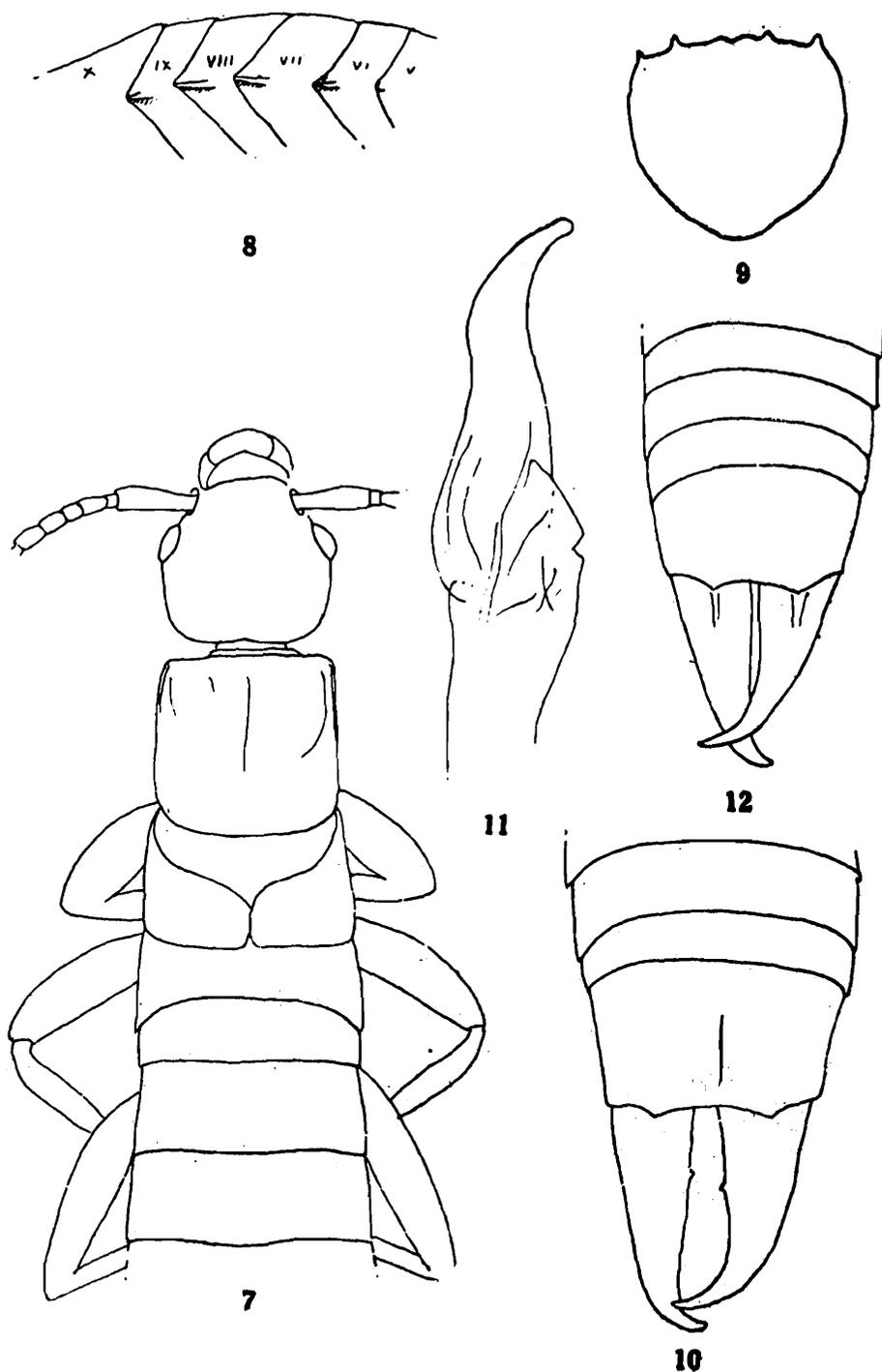
***Apolabis genitalis* (Kapoor)**

(Figs. 7-15)

Thekalabis genitalis Kapoor, *J. nat. Hist.*, 1 : 335, figs. 1-3 (♂ ; India, Kerala, Thekkady, 855 m—Holotype ♂ in poor condition, deposited at Indian Agricultural Research Institute, New Delhi).

♂ : General colour shining dark brownish black ; antennae with basal two segments and legs dark brown.

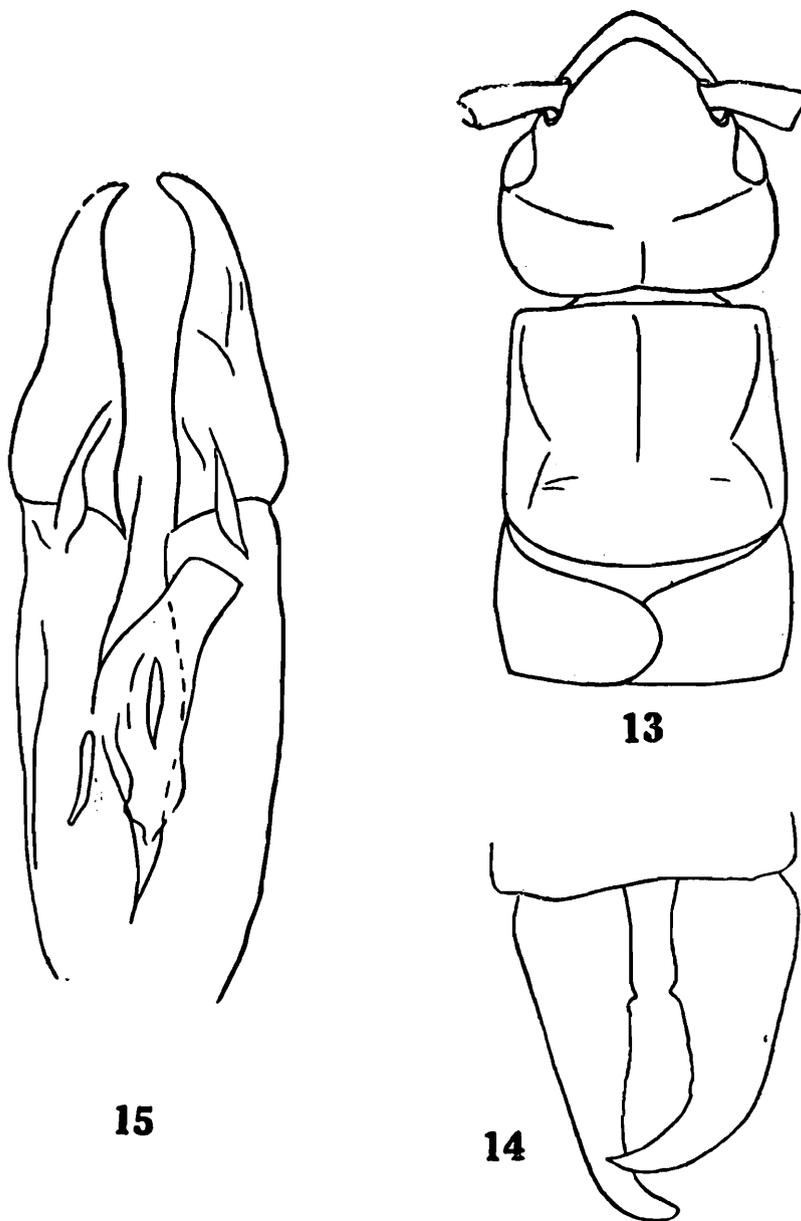
Head slightly longer than broad, smooth, frons moderately raised, sutures fine but distinct, hind margin emarginate. Eyes shorter than the post-ocular length. Antennae 17-segmented, 1st stout, gently expanded apically, slightly longer than the distance between antennal bases ; 2nd small, transverse ; 3rd long, slender, gently expanded apically ; 4th stout, only slightly longer than broad ; 5th stout, longer than 4th but equal to 3rd, remaining stout and gradually increasing in length excepting a few apical ones slightly shorter and thin. Pronotum slightly longer than broad, smooth, anteriorly straight, gently widened posteriorly with hind margin gently convex, sides depressed, median sulcus faint, prozona moderately convex and well differentiated from flat metazona. Elytra abbreviated, smooth, narrowed at base, exposing a transverse scutellum, broadened apically and meeting along the median line. Metanotum faintly punctulate with hind margin broadly emarginate. Sternal plates typical for the genus. Legs moderately long, hind tarsi with 1st segment slightly longer than the combined length of 2nd and 3rd segments. Abdomen spindle shaped, moderately convex, punctulate, covered with short yellow pubescence, on the sides of tergites above with three lobate, smooth patches arranged in the form of a triangle, sides of segments rugosely punctate, median carina present on segments 6th to 9th and faintly marked by a convexity on 5th. Penultimate sternite punctulate, obtusely triangular posteriorly. Ultimate tergite obscurely punctulate, transverse, moderately convex, hind margin between branches of forceps straight and above sinuate and oblique. Pygidium vertical, narrowed posteriorly. Forceps subcontiguous, expanded at base, tapering apically, almost straight in basal $\frac{2}{3}$, afterwards incurved, apices gently hooked and pointed, in basal $\frac{1}{3}$ trigonal with a blunt ridge above, internally at basal $\frac{1}{3}$ with a faint tooth. Genitalia with parameres broadest at base, three times longer than broad, internal



Figs. 7-12. *Apolabis genitalis* (Kapoor), ♂, 7. Anterior portion of body, 8. Sides of abdominal segments, 9. Penultimate sternite, 10. Hind portion of body, 11. A portion of genitalia showing left paramere; ♀, 12. Hind portion of body.

and external margin undulate, tip slightly incurved; distal lobes with a short chitinous rod.

♀ (nova): Agrees with males in most characters except that sides of abdominal segments convex, ecarinate, finely punctulate; ultimate tergite more strongly narrowed posteriorly and forceps simple, contiguous and straight.



Figs. 13-15. *Apolabis genitalis* (Kapoor), Holotype ♂, 13. Anterior portion of body showing head, pronotum and elytra, 14. Hind portion of ultimate tergite and forceps, 15. Genitalia.

Measurements : (in mm)

	♂ ♂	♀ ♀
Length of body	12.0-14.6	11.5-12.2
Length of forceps	2.0- 2.6	2.0- 2.1

Material examined : India : Kerala, Thekkady, 855 m, Holotype ♂ (genitalia mounted separately on a slide), 7.v.1966, V. C. Kapoor ; 4 ♂ ♂ (1 ♂ with genitalia mounted between to converslips and pinned with the specimen), 2 ♀ ♀, 4 nymphs, 11,12,ii. 1983, G. K. Srivastava.

Distribution : It appears to be endemic to Western Ghats, South India.

Remarks : The Holotype ♂ is in poor condition and is placed on a card. Although in the original description of the species it is stated

to be apterous but re-examination reveals that abbreviated elytra are present. Figs. 13-15 are drawn from the Holotype ♂ which conform the above. Further material collected from the type locality agrees well with the Holotype.

This species appears to be closely related to *A. castetsi* (Bormans) but differs by its slightly larger size; sides of abdominal segments rugose with a longitudinal carina on 6th to 9th only; shape of penultimate sternite and the apical portion of parameres in being slightly incurved.

***Apolabis ramachandrai* (Ramamurthi and David)**

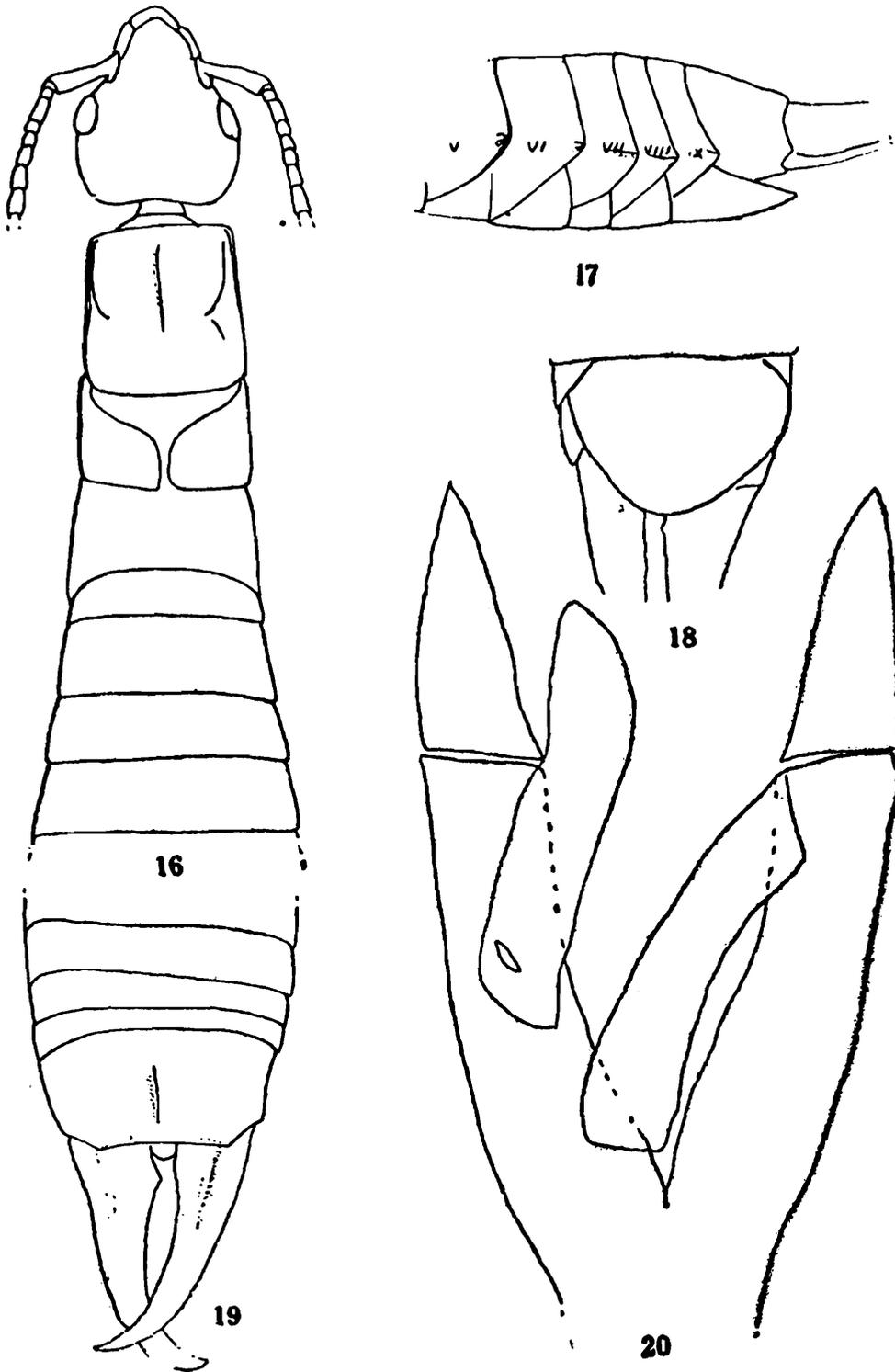
(Figs. 16-20)

Epilabis (Cryptolabis) ramachandrai Ramamurthi and David, 1973, *Zool. Anz.*, 190 (5-6) : 438, figs., 7, 8 (♂, India, North Malabar, Taliparamba-Type with the author).

Apolabis ramachandrai : Srivastava, 1978, *Bull. zool. Surv. India*, 1 (1) : 7.

♂ : General colour dark brownish black, head on frons in part, pronotum and elytra shining reddish; antennae and legs light brown.

Head longer than broad, weakly convex, micro-sculptured, sutures obsolete, hind margin emarginate. Antennae (in Holotype ♂ remaining with 15 segments on the right and 18 on the left side) 1st stout, gently expanded apically, about as long as the distance between antennal bases; 2nd short; 3rd long and slender; 4th about as long as broad; 5th slightly longer than broad but both shorter than the 3rd; 5th onwards segments gradually increasing in length and thinning. Eyes prominent, only slightly shorter than the post-ocular length. Pronotum longer than broad, gently widened posteriorly, sides and anterior margin straight, hind margin briefly rounded, prozona weakly raised, metazona weakly depressed, median sulcus faint but complete. Elytra abbreviated, near base narrowed, exposing a large transverse scutellum, posteriorly enlarged, meeting along the median line, smooth. Metasternum transverse, punctulate, hind margin broadly emarginate posteriorly. Sternal plates and legs typical for the genus. Abdomen finely punctulate, gradually enlarging posteriorly, each tergite above laterally with three smooth lobular patches, arranged into a triangle, sides of segments rugosely punctulate, segments 7th to 9th acute angled posteriorly with a faint carina and segments 5th and 6th obtuse posteriorly with a small tubercle. Penultimate sternite triangular with hind margin obtusely produced in middle posteriorly. Ultimate tergite transverse, sparsely punctulate, moderately convex, narrowed posteriorly, hind margin between the bases of forceps straight and above the branches



Figs. 16-20. *Apolabis ramachandrai* (Ramamurthi and David), Holotype ♂.
 16. Anterior portion of body, 17. Sides of abdominal segments,
 18. Penultimate sternite 19. Ultimate tergite and forceps,
 20. Genitalia (fig. 20 redrawn from Ramamurthi and David).

concave and oblique. Forceps subcontiguous, dilated at base, afterwards tapering, almost straight in basal half, thence gently curved with apices pointed and hooked, at base above trigonal with a ridge present in basal $\frac{1}{4}$, internally left arm provided with a small tooth near base and right one with a feeble sinuation, afterwards obscurely crenulate. Genitalia with parameres roughly triangular, narrowed apically with tip pointed, distal lobes with a short chitinous rod.

♀ : Unknown.

Measurements : (in mm)

	♂
Length of body	20.0
Length of forceps	4.5

Material examined : India : N. Malabar, Taliparambu, Holotype ♂ (male genitalia removed), 19.v.1923, Y. R. Rao.

Distribution : South India.

Remarks : Through the courtsey of Shri B. N. Ramamurthi the Holotype ♂, without male genitalia, was available for study.

On the basis of the shape of elytra this species comes close to *A. castetsi* (Bormans) and *A. genitalis* (Kapoor) but differs from both by its larger size and the shape of parameres which are triangular with all margins straight and tip narrowed and pointed.

***Apolabis aborensis* (Burr)**

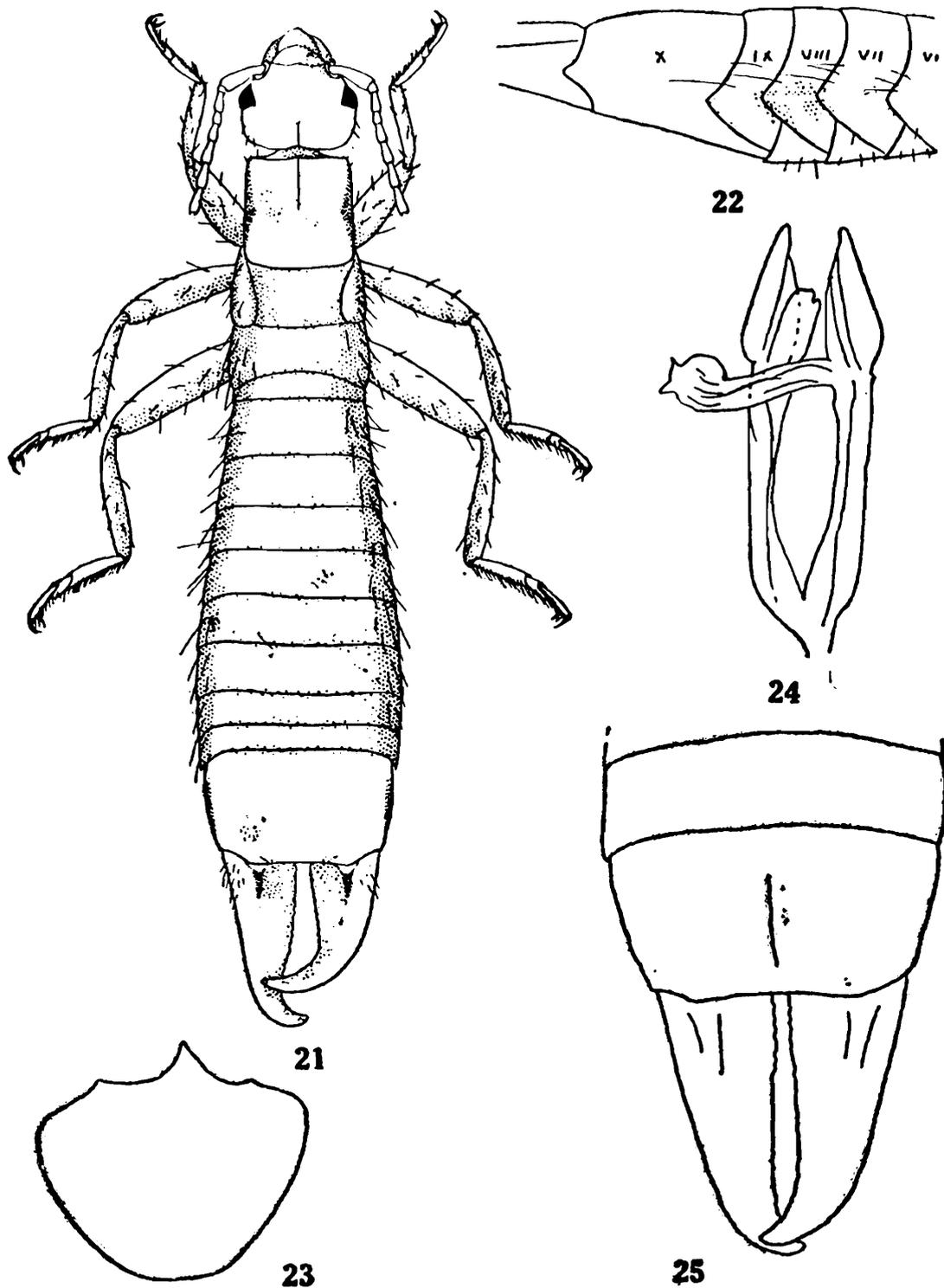
(Figs. 21-25)

Euborellia aborensis Burr (pars), 1913. *Rec. Indian Mus.*, 8 (2) : 137 (♂, ♀; Arunachal Pradesh, Siang Dist., Rotung, 1 nymph and 1 ♀, Janakmukh (excluding 1 ♂, Assam, Dibrugarh)—Nomotype in the Zoological Survey of India, Calcutta).

Paralabis aborensis : Srivastava, 1968, *Ent. Rec. J. Var.*, 80 : 292 (excluding 1 ♂, Assam, Dibrugarh and the description of male genitalia) ; Srivastava, 1971, *Ent. Rec. J. Var.*, 83 : 22 (excluding figs. B, D and F) ; Srivastava & Roychowdhury, 1975, *Newsl. zool. Surv. India*, 1 (2) : 22 (♂, ♀ ; Tripura).

♂ : General colour reddish brown, often shaded with black in parts ; antennae, sides of pronotum and legs yellowish brown. Form moderately depressed, thickly pubescent with long and short hairs.

Head about as long as broad, triangular, smooth, frons weakly raised and occiput comparatively depressed, sutures fine, hind margin straight. Eyes black, not very prominent, much shorter than the post-ocular length. Antennae 15-segmented or more, 1st stout, expanded apically, about as long as the distance between antennal bases ; 2nd short ; 3rd long and slender ; 4th and 5th, both shorter than the 3rd ; 6th almost equal to 3rd, remaining gradually increasing in length and thinning apically. Pronotum slightly longer than broad, laterally a little reflexed and parallel, posterior margin feebly rounded, disc flat, pro- and metazona weakly differentiated, median sulcus faint. Elytra present as narrow ovate flaps on the sides of mesonotum. Metanotum transverse and broadly emarginate posteriorly. Sternal plates typical for the genus. Legs normal, hind tarsi with 1st segment slightly longer than the 2nd and 3rd segments together, clad with fine pubescence and a row of thick chitinous hairs on underside. Abdomen



Figs. 21-25. *Apolabis aborensis* (Burr), Nomotype ♂, 21. Dorsal view, 22. Sides of abdominal segments, 23. Penultimate sternite, 24. Genitalia; ♀, 25. Ninth and ultimate tergites and forceps.

weakly depressed, punctate, gradually expanded posteriorly, sides of segments 7th to 9th rugosely punctate, acute angled posteriorly, an oblique carina present on the segments 7th to 9th only but carina on 9th segment sometimes weak. Penultimate sternite narrowed posteriorly with margin rounded. Ultimate tergite transverse, punctation faint and sparse, pubescence wanting, gently narrowed posteriorly with hind margin between the branches of forceps straight and above oblique and emarginate, laterally with a weak longitudinal fold, median sulcus

faint. Forceps contiguous or subcontiguous, trigonal in basal $\frac{1}{8}$, afterwards depressed, tapering, almost straight in basal $\frac{1}{2}$ to $\frac{1}{8}$, thence incurved with right branch more strongly so, apices gently hooked and pointed. Genitalia with paramers three times longer than broad, broadest at base, narrowing apically with tip acute; distal lobes without any discernible virga.

♀ : Agrees with male in most characters except that penultimate sternite obtuse posteriorly; ultimate tergite comparatively more narrowed posteriorly and forceps almost symmetrical and less curved.

Measurements : (in mm)

	♂ ♂	♀ ♀
Length of body	12.3-14.9	12.0-15.9
Length of forceps	2.0- 2.5	2.0- 2.0

Material examined : India : Arunachal Pradesh : Siang Dist., Rotung, 427 m, Holotype ♂ (genitalia mounted between two coverslips and pinned with the specimen), 4 ♀ ♀, under the leaf stems of plantain, 24-26.xii.1911; Janakmuhi, 1 ♀, 1 nymph, 19.xi.1911, S. W. Kemp, Lohit Dist., Deopani (Roing); 2 ♂ ♂, 1 ♀, 6.iii.1969, S. K. Tandon; Tripura, Bramachera, Teliamura, 1 ♂, 2 ♀ ♀, 2 nymphs, 10.xi.1974, M. S. Shishodia.

Distribution : India : Arunachal Pradesh and Tripura.

Remarks : This species can be easily separated from the other Indian species of the genus in having body strongly pubescent and the elytra as narrow lateral, ovate flaps on mesonotum.

Besides, it is interesting that this species is confined to the Hills of NE India whereas the remaining three are endemic to Western Ghat Hills in South India.

ACKNOWLEDGEMENTS

I am thankful to Dr. B. K. Tikader, Director, Zoological Survey of India, Calcutta for providing necessary facilities during the course of present work. My thanks are due to Shri B. N. Ramamurthi and the Head, Division of Entomology, Indian Agricultural Research Institute, New Delhi for allowing me to examine the Holotype ♂ of *Epilabis* (*Cryptolabis*) *ramachandrai* Ramamurthi and David and *Thekalabis genitalis* Kapoor, respectively.

REFERENCES

- BURR, M. 1915. On the male genital armature of Dermaptera, Part II Psalidae. *J. R. micr. Soc.*, 521-546, pls. 10-12, figs. 58-64.
- KAPOOR, V. C. 1967. On a new genus of Dermaptera from South India. *J. nat. Hist.*, 1 : 355-358.