

REVISION OF THE GENUS *THOPHA* AMYOT AND  
SERVILLE CICADIDAE, DIVISION THOPIHARIA  
HOMOPTERA-HEMIPTERA

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## ABSTRACT

This genus erected by Amyot and Serville (1843) contains four species one of which (*saccata*) has been known for over 150 years. Prior to 1904 the genus contained four species, but in that year Distant erected the genus *Arunta* to which he transferred two species. In 1907 and 1910 respectively Distant added two more species to *Thopha* bringing the total back to four species. The main differences between *Arunta* and *Thopha* have already been set out under *Arunta*, it should be added however that in *Thopha* the eyes are strongly pedunculate. Two of the species rank probably as the two largest cicadas in Australia, and they are similar in size and pattern of markings.

## INTRODUCTION

The geographical distribution of the genus is interesting, two species (*saccata* and *sessiliba*) occur near the coast where the rainfall exceeds thirty inches a year, it is possible also that *nigricans* occurs in a region of similar rainfall, but *colorata* is definitely a dry country species; *saccata* is found in eucalyptus forest in a wide coastal strip from a little south of Sydney to some distance north of Brisbane, and at Mareeba on the Atherton Tableland. *Sessiliba* has a coastal as well as inland range of distribution being found in savannah forest; it ranges from southern Queensland (Gatton, Brisbane) along the coast of northern Australia to Wyndham, and in inland districts ranging from the Northern Territory (coastal) to Batchelor and Tennants Creek to Mundiwindi in Western Australia. Both species are at times very abundant, and are referred to as "Double Drummers" on account of the loudness and penetrating qualities of their song. They seem to prefer eucalyptus and angophora trees, and often climb to the uppermost branches of high trees especially if the weather is sunny. In warm dull weather however specimens may often be taken from the trunks of both large and small trees at heights only a few feet from the ground. *T. colorata* has an interesting range of distribution which appears mainly to follow a strip running across the continent from near Alice Springs to Carnarvon on the coast of Western Australia. I have been informed that it frequents fairly large trees, mainly eucalyptus. For information about *T. nigricans* I am indebted to Mr. Izzard of the British Museum (Natural History) for figure and structural details.

## SUMMARY OF EXTERNAL MORPHOLOGY.

General: Very large insects with robust bodies of which the length is a little over twice the width; the anterior wings approximately one and a quarter times body length. Body reddish brown or yellowish brown marked mainly with black, tympanal sacs very large but not covered with white tomentum. Wings clear vitreous, head sculptured, almost devoid of pubescence, slightly wider than pronotum, eyes pedunculate, ocelli small and grouped closely together, distance between two posterior almost twice that between anterior and each posterior, frons rather weakly and obtusely convex, grooved in front, rostrum extending to posterior coxae. Thorax with width of pronotum twice its length, sculptured, three sulci on either side of median, posterior margin well developed, very slightly concave, mesonotum almost smooth, cruciform elevation clearly but not strongly developed, rounded apically, metanotum only partly visible dorsally. Anterior femora not strongly developed, bearing two sharply pointed spines. Posterior tibiae normally with five or six spines; length of anterior wings just exceeding three times their width; of posterior, twice. Abdomen smooth, slightly pubescent dorsally on first three segments, sparingly on medians, fairly dense 7-9. Operculae small, (slightly larger than in *Arunta*) interior margins separated, exterior recurved; tympanal sacs very large and extending laterally almost to segment four. Remaining abdominal segments compressed. Measurements of each species are given with description.

Genotype: *Tettigonia saccata* Fabr. 1803, "Syst. Rhyng.": 34·9.

Key to the species of *Thopha*.

1. Wings clear vitreous, eyes pedunculate, head wider than pronotum, tympanal sacs (males) extending laterally almost to fourth abdominal segment . . . . . 2
2. (1) Head with a black transverse band between eyes enclosing ocelli; anterior to this a yellowish brown transverse band of similar width; frons (excepting vertex), genae, and ventral surface of head, black . . . . . *colorata*  
     Head and frons not banded transversely, ocelli almost equidistant and same colour as head, vitreous . . . . . 3
3. (1) Head, including frons, uniform deep purplish brown, posterior tibiae with six spines (male) . . . . . *nigricans*  
     Head not of uniform colour, ocelli not same colour as head . . . . . 4
4. (1) Head black, a narrow interrupted yellowish brown band across front, a similar band across back of head, ocelli small, dark red vitreous . . . . . *saccata*  
     Head not black or unicolorous, ocelli not equidistant and of same colour as vertex of head . . . . . 5
5. (1) Head reddish brown with light plum coloured suffusion, a pale yellowish transverse band across front, legs unicolorous with tympanal sacs . . . . . *sessiliba*

## THOPHA COLORATA Distant.

*Thopha colorata* Distant, 1907.—*Ann. Mag. Nat. Hist.* (7), 20: 411.

*Thopha colorata* Ashton, 1914.—*Trans. Roy. Soc. S. Aust.*, 38: 346.

*Thopha colorata* Ashton, 1921.—*Proc. Roy. Soc. Viet.* (N.S.), 33: 89.

This species is apparently not rare but rather local and is a dry country cicada. All specimens examined by the writer came from Alice Springs, Hermannsburg, and Carnarvon W.A., and label data indicates that it is an early summer species, November and December.

*Average body length*, male, 38.6 mm., female, 38.2 mm.; maximum of specimens examined, males, (12) 42. mm., females, (3) 39. mm.; minimum, males, 37. mm., females, 37.5 mm. Head yellowish brown with a black transverse bar between eyes enclosing ocelli, sculptured with numerous longitudinal grooves, a median sulcus from anterior ocellus to posterior margin. Frons black with yellowish brown vertex, front with a wide median, longitudinal groove, normally ten transverse ridges visible, interstitial depressions with very short greyish pubescence. Ocelli garnet vitreous, not equidistant, anterior in midline of eyes. Genae black, lightly invested with fine greyish pubescence. Antennae black; clypeus black, keeled longitudinally, half length of frons; labrum brown, sides planate; labium brownish black, grooved medianally and longitudinally. Eyes opalescent reddish brown, orbits not pubescent.

Thorax, average width 17 mm., yellowish brown; pronotum faintly sculptured, unicolorous with exterior margins edged black; three sulci on either side of median, posterior marginal band wide, transversely striate; mesonotum yellowish brown with black markings, anterior margins finely golden pubescent; close to median on each side a small triangular black marking anteriorly, dorso laterally another "7" shaped marking from anterior margin to external angle of cruciform elevation, and a black dorsal marking in its interior angle narrowing to a point at anterior margin. Cruciform elevation yellowish brown with a black median longitudinal line, angles lightly silvery pubescent. Metanotum reddish brown. Wings, anterior, average length, male, 48.1 mm., width, 16.8 mm.; female, 48.2 mm., 16.8 mm. Clear vitreous, veins yellowish brown excepting costal which is brownish black. Posterior, male, 28.0 mm., 13.0 mm.; female, 27.5 mm., 12.5 mm. Clear vitreous with veins yellowish brown; 2A and 3A bordered brownish orange. Legs brown, unicolorous, lightly clothed with fine short silvery pubescence. Anterior femora with two sharply pointed spines of about equal size; posterior tibiae with five spines; three on inner side, the proximal at middle, third near distal, second just beyond half way between; two on outer side and approximately opposite one and three of inner row. Underside of thorax yellowish brown mid-ventrally, yellowish laterally, dusted with white tomentum.

Abdomen black with pre-anal segment thickly invested with white tomentum; tympanal sacs brown, extending laterally almost to fourth segment; opercula pale yellowish brown, interior margins fairly widely separated, interior angles acutely rounded, exterior openly so. Underside of abdomen brownish black with some white tomentum along base of tympanal sacs and on ventral angles of sternites.

*Type:* British Museum.

### THOPHA NIGRICANS Distant.

*Thopha nigricans* Distant, 1910.—*Ann. Soc. ent. Belg.*, 54: 415.

An apparently rare or local species recorded by Distant (1910) as being allied to *T. sessiliba*, but recorded as differing from that species by the shorter and broader abdomen, strongly pedunculate eyes, and black head and thorax. I am indebted to Mr. R. J. Izzard of the British Museum (Natural History) for structural details and figure of this cicada. He expresses the opinion with which I agree, that this species is a colour variety of *T. sessiliba*. It is recorded only from North Queensland, the precise locality not being given.

Body length, male, 43 mm., female, 41 mm.; two specimens only examined. Head uniformly deep purplish brown, slightly darker in the male; wider than pronotum. Ocelli purplish brown vitreous, almost equidistant; antennae deep purplish brown. Frons unicolorous with head and showing nine visible transverse ridges (both sexes); genae purplish brown, invested with greyish pubescence. Labrum brown, slightly over half length of frons; labium brown; eyes opalescent brown.

Thorax, width, male, 18 mm., female 18 mm.; pronotum deep purplish brown, three sulci on either side of median, grooves and depressions pubescent, greyish. Mesonotum deep purplish brown, slightly pubescent in female, not so in male, excepting in grooves and sulci. Cruciform elevation purplish brown with greyish pubescence in depressed areas. Wings, anterior, length, male, 56 mm., width, 19 mm.; female, 56 mm., 17 mm.; clear vitreous with veins brownish yellow. Posterior, length, male, 31 mm., width, 14 mm.; female, 30 mm., 15 mm.; clear vitreous with veins light brown. Legs purplish brown of same shade as body in both sexes. Anterior femora with two rather sharp spines about equal in size, the first at proximal third, other at distal third; posterior tibiae (male) with six spines, three on inner margin, three on outer; female with five spines, three on inner margin, two on outer.

Abdomen deep purplish brown, sparsely pubescent excepting for penultimate tergite which is thickly invested with white tomentum. Tympanal sacs unicolorous with body, extending laterally almost as far as fourth segment; operculae purplish brown, interior margins fairly widely separated, interior angles rather sharply rounded, exterior obtusely so. Underside of abdomen coloured similarly to above, slightly pubescent at junctions of tergites and sternites.

It is probable that this species closely resembles *T. sessiliba*, to which it is allied, in habits. The writer has collected the latter many times in the Cairns area; in some seasons it is very common in eucalyptus forest, but over a number of years residence there, he did not encounter *T. nigricans*.

### THOPHA SACCATA (Fabricius).

- Tettigonia saccata* Fabricius, 1803.—“*Syst. Rhyng.*”: 349.
- Cicada saccata* Germar, 1830.—In Thon. “*Ent. Arch.*” (2): 5, 57.
- Cicada saccata* Guérin, 1838.—*Mag. Zool.*, 9: 80, pl. 238.
- Thopha saccata* Amyot and Serville, 1843.—“*Hist. Hem.*”: 471.
- Thopha saccata* Stål, 1869, “*Hem. Fabr.*” 2: 6, 1.
- Thopha saccata* Froggatt, 1903.—*Agric. Gaz. N.S.W.*, 14: 340, 419 fig. 3.
- Thopha saccata* Goding and Froggatt, 1904.—*Proc. Linn. Soc. N.S.W.*, 29: 571.
- Thopha saccata* Distant, 1906.—“*Syn. Cat. Hom.*”, 1: 26.
- Thopha saccata* Froggatt, 1907.—“*Australian Insects*”: 348, fig. 154.
- Thopha saccata* Jarvis, 1912.—*Qld. Nat.* : 229-232.
- Thopha saccata* Ashton, 1914.—*Trans. Roy. Soc. S. Aust.*, 38: 346.
- Thopha saccata* Ashton, 1921.—*Proc. Roy. Soc. Vict. (N.S.)*, 33: 89.
- Thopha saccata* Musgrave, 1926.—*Aust. Mus. Mag.*, 2: 405, figs.
- Thopha saccata* Tillyard, 1926.—“*Insects of Australia and New Zealand*”: 162.
- Thopha saccata* McKeown, 1942.—“*Australian Insects*”: 98.

A very pretty cicada and one of, if not the largest species in Australia. It is a very well known insect which ranges along the coastal strip from a little south of Sydney to some distance north of Brisbane, also at Mareeba, North Queensland. On account of the loudness and penetrating qualities of its song, it has for many years been commonly known as “The Double Drummer”. It is very abundant in certain seasons, especially

in localized areas between Sydney and Brisbane where it favours fairly open eucalyptus forest with angophoras and tristantias intermixed. In hot weather it seeks the higher branches of tall trees, but in warm dull weather or showery weather it is not uncommon to find many specimens on tree trunks a few feet from the ground.

Average body length, male, 47.5 mm.; female, 51.2 mm.; maximum of specimens examined, males, (8) 50.0 mm., females, (7) 52.5 mm.; minimum, males, 42.0 mm., females, 47.5. Head wider than pronotum, deep black, sculptured, an interrupted transverse narrow pale brownish band across vertex just posterior to ocelli; another narrower similar interrupted band across front and vertex of frons; a short median sulcus from anterior ocellus to posterior margin. Frons deep black with a few fine long greyish hairs on lateral margins, widely and openly depressed in front, a short groove at anterior angle of vertex; normally ten transverse ridges visible. Ocelli garnet vitreous, not quite equidistant, anterior slightly in front of eyes. Genae black with very light investment of fine grey pubescence, lateral margins carinate, pale brown. Antennae black. Clypeus black, with a median longitudinal keel, slightly more than half length of frons; labrum dark brown, planate laterally, with a median longitudinal groove; labium brownish black, grooved as labrum. Eyes opalescent dark brown slightly tinged reddish.

Thorax, average width, 20 mm.; light to dark fuscous with black markings. Pronotum with three sulci on each side of median, the raised areas between with vermiculate sculpturing; anterior margins of these areas, black; posterior marginal band wide, faintly transversely striate. Mesonotum slightly paler than pronotum, finely silvery pubescent on lateral margins; two black spots anteriorly on each side of median, the inner pair to one third, outer "7" shaped and almost reaching anterior arms of cruciform elevation; a small elongate central median black spot, and a black dot near base of anterior angles of cruciform elevation. Cruciform elevation fuscous, its posterior lateral areas with four transverse grooves. Metanotum dark brown. Wings, anterior, average length, male, 60.2 mm., width, 20.9 mm.; female, 62.2 mm., 21.4 mm.; clear vitreous with veins pale fuscous, sub-costal darker basally, 1A brownish black. Posterior, average length, male, 34.1 mm., width, 19.1 mm.; female, 34.9 mm., 19.6 mm.; clear vitreous with veins slightly paler, area 3A faintly translucent whitish. Legs dark brown, finely pubescent grey, anterior coxae and proximal portion of femora with black opaque markings; anterior femora with two small spines of about equal size; posterior tibiae normally with five spines, three on inner margin, the proximal half way, median half way between to distal, third near distal; two on outer margin being almost opposite proximal and distal of inner margin. Underside of thorax dark reddish brown, with very fine silvery pubescence. Abdomen, dark reddish brown, segments one and two black dorsally, three partly so, and remainder with a median black spot; some scattered short silvery pubescence dorso-laterally. Tympanal sacs dark reddish brown, extending laterally almost to fourth segment. Operculae brownish black, interior margins widely separated, interior angles sharply rounded, exterior broadly so. Underside of abdomen as above, intersegmental margins narrowly darker, junction first and second segment and base of opercula, and immediate junctions of tergites and sclerites segments three to eight dusted with white pubescence.

This cicada is larger and more stoutly built and the markings darker than *T. sessiliba* to which it bears a superficial resemblance. It is fairly constant in colour and pattern of markings; sometimes however females are met with which are darker in colour with the markings obscure or some even absent; such specimens are always more densely pubescent than normal ones, especially on the underside. Amongst the many specimens examined are two females and one male from Mareeba, North Queensland; the male is smaller than southern examples and has the ground colour dark brownish-black with the markings obscure and the sub-costal vein of the anterior wings brownish-black from base to apex; the females are almost normal in size, brownish-black; sub-costal veins as in the male, and generally more pubescent than normal southern specimens. *T. saccata* does not appear to extend its range northwards on the coast much further than Brisbane; Mareeba is over 1,000 miles north of Brisbane and about 2,000 feet above sea level with eucalyptus forest; the altitude gives it a climate similar to that of Brisbane including that of rainfall (49-50 inches average) though Kuranda, only 22 miles distant on the edge of the tableland, has about 90 inches.

Type: ?

#### THOPHA SESSILIBA Distant.

*Thopha sessiliba* Distant, 1892.—*Ann. Mag. Nat. Hist.* (6), 9: 314.

*Thopha stentor* Buckton, 1898.—*The Home Univ. Mag. &c.* (Haslemere), 1: 37.

*Thopha sessiliba* Goding and Froggatt, 1904.—*Proc. Linn. Soc. N.S.W.*, 29: 572.

*Thopha sessiliba* Distant, 1906.—“*Syn. Cat. Hom.*”, 1: 26.

*Thopha sessiliba* Froggatt, 1907.—“*Australian Insects*”: 349.

*Thopha sessiliba* Distant, 1912.—“*Gen. Ins.*” 142: 21, pl. 3, figs. 17A, 17B, 17C.

*Thopha sessiliba* Ashton, 1914.—*Trans. Roy. Soc. S. Aust.*, 36: 346.

*Thopha sessiliba* Ashton, 1921.—*Proc. Roy. Soc. Vict. (N.S.)*, 33: 89.

*Thopha sessiliba* Tillyard, 1926.—“*Insects of Australia and New Zealand*”: 162.

This species, as mentioned previously, ranges from near Brisbane through coastal northern Queensland and the Northern Territory to Wyndham, and some inland districts as far as Mundiwindi in Western Australia. It is very doubtful if the habitat, Sydney given by Distant (Ann. Mag. Nat. Hist. (6): 315, 1892) is correct. The song of this cicada is loud and penetrating but not as much so as that of *T. saccata*. In some seasons it is very abundant in eucalyptus forest near Cairns, and on parts of the Atherton Tableland.

Average body length, male, 45.6 mm.; female, 45.6 mm.; maximum of specimens examined, males (7), 46.5 mm., females (6), 50.0 mm.; minimum, males, 44.0 mm., females, 43.5 mm. Head wider than pronotum, brown with a light purplish tinge; grooved longitudinally, the median groove being deepest, depressions dusted fine golden pubescence; a creamy yellow transverse band across front including vertex of frons, another obscure similar interrupted band across vertex of head extending almost to each eye. Frons coloured as head, a faint median groove at anterior vertical angle, lateral margins fringed with long golden fine hairs; normally ten transverse ridges visible. Ocelli purplish brown vitreous, not equidistant, anterior well in front of eyes. Genae concolorous with frons, finely golden pubescent, lateral margins carinate, narrowly edged creamy yellow. Antennae dark brownish. Clypeus concolorous with frons, palely golden pubescent; about half length of frons, with median longitudinal keel. Labrum pale brown, sides planate, grooved as labrum; labium pale brown, darker laterally, grooved as labium. Eyes opalescent brown tinged purplish.

Thorax, average width 18.5 mm.; brown with purplish tinge and yellowish brown markings. Pronotum paler than mesonotum and with three sulci on each side of median, slightly sculptured, depressions finely silvery pubescent; a central darker marking from anterior margin to posterior marginal band which is pale yellowish brown and finely striate transversely. Lateral margins narrowly dark brown. Mesonotum dark brown suffused purplish, a pale brown narrow triangular marking on each side of median from anterior margin to cruciform elevation; exterior margin thickly pubescent, pale golden. Cruciform elevation pale yellowish brown; pubescent in anterior and lateral depressions, the latter with (normally) four transverse grooves. Metanotum dark purplish brown. Wings, anterior, average length, male, 58.6 mm., width, 20.6 mm.; female, 57.2 mm., 20.3 mm. Clear vitreous with veins brownish; posterior, average length, male, 34.3 mm., width, 17.8 mm.; female 32.1 mm., 17.5 mm.; clear vitreous with veins paler yellowish brown, area 3A very faintly translucent whitish. Legs concolorous with mesonotum and tympanal sacs, very finely silvery pubescent. Anterior femora paler along ventral and with two small spines of nearly equal size; posterior tibiae normally with five spines, three on inner margin, the proximal at half way, second half way from proximal to distal, third almost at distal; two on outer margin, the first just beyond half way between median and distal of inner margin, second just anterior to distal of inner margin.

Underside of thorax reddish brown almost obscured with white tomentum. Abdomen, dark brown with purplish suffusion, segments one and two silvery pubescent dorsally, others with scattered pubescence dorsally on



segments seven and eight. Tympanal sacs coloured as abdomen, extending laterally almost to fourth segment. Opercula greyish brown, interior margins widely separated, interior angles almost equally rounded, exterior obtusely so. Underside of abdomen paler than upperside, junctions of tergites and sternites silvery pubescent and a faint dusting on intersegmental margins of segments three to seven inclusive.

Type: British Museum.

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#### REFERENCES.

- Ashton, J. H.*, (1914).—*Trans. Roy. Soc. S. Aust.*, 38: 346.  
*Ashton, J. H.*, (1921).—*Proc. Roy. Soc. Vict. (N.S.)*, 33: 89.  
*Distant, W. L.*, (1892).—*Ann. Mag. Nat. Hist. (6)*, 9: 314.  
*Distant, W. L.*, (1906).—“*Syn. Cat. Hom.*”, I: 26.  
*Distant, W. L.*, (1907).—*Ann. Mag. Nat. Hist. (7)*, 20: 411.  
*Distant, W. L.*, (1910).—*Ann. Soc. Ent. Belg.*, 54: 515.  
*Distant, W. L.*, (1912).—“*Genera Insectorum*”, 142: 21, pl. 3, figs. 17A, 17B, 17C.  
*Froggatt, W. W.*, (1903).—*Agric. Gaz. N.S.W.*, 14: 340, 419, fig. 3.  
*Froggatt, W. W.*, (1907).—“*Australian Insects*”: 348, fig. 154.  
*Goding, F. W.* and *Froggatt, W. W.*, (1904).—*Proc. Linn. Soc. N.S.W.*, 29: 571, 572.  
*Jarvis, E.*, (1912).—*Queensland Naturalist*: 229-232.  
*McKeown, K. W.*, (1942).—“*Australian Insects*”: 95.  
*Musgrave, A.*, (1926).—*Australian Museum Magazine*, 2: 405, figs.  
*Tillyard, R. J.*, (1926).—“*Insects of Australia and New Zealand*”: 162.



## PLATE ?.

- FIG. 1.—*Thopha colorata*, male.  
2.—*Thopha saccata*, male.  
3.—*Thopha sessiliba*, male.  
4.—*Thopha nigricans*, male.

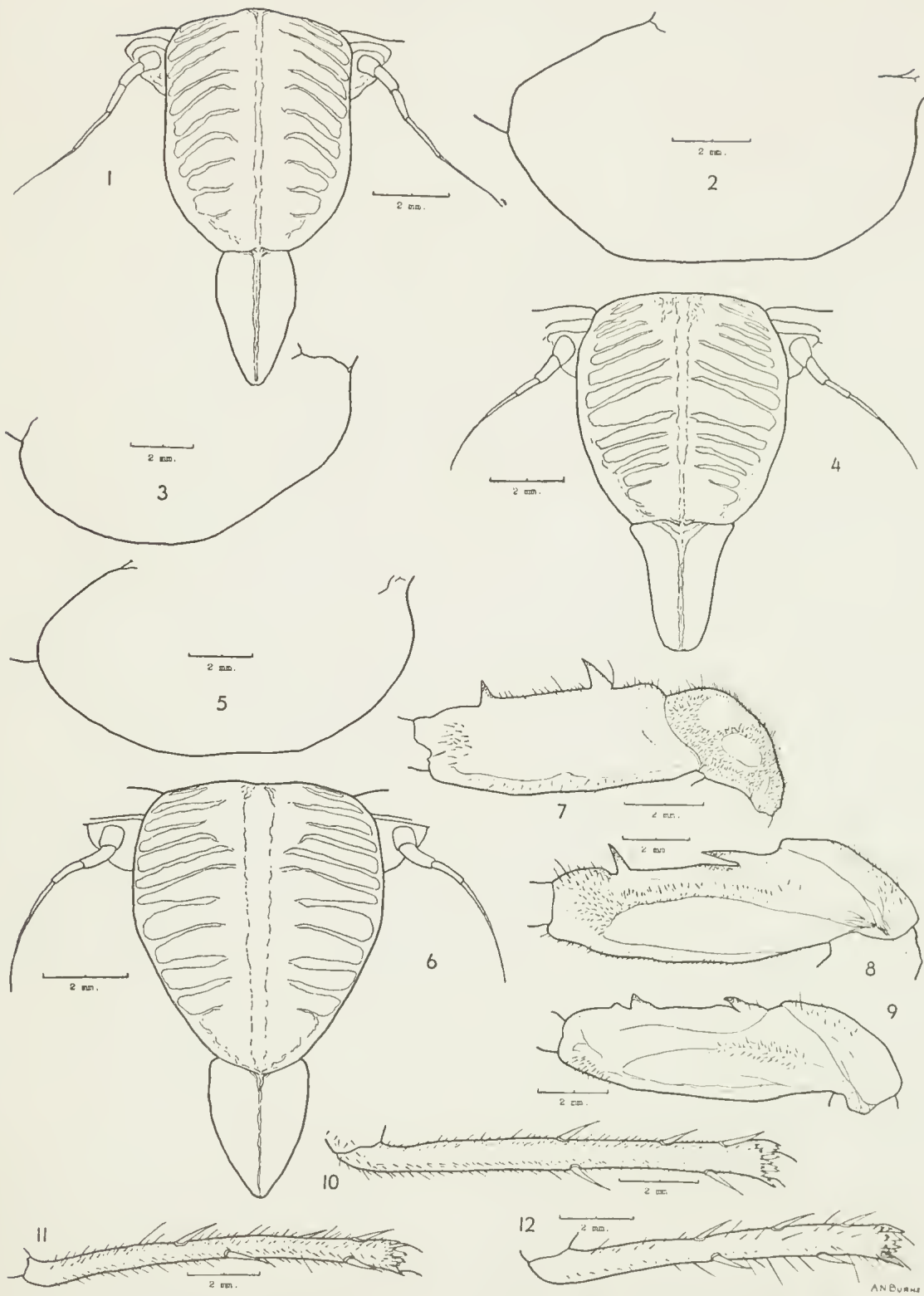


FIG. 1.—*Thopha sessiliba* (male), frons.  
 2.—*Thopha saccata* (male), operculum.  
 3.—*Thopha colorata* (male), operculum.  
 4.—*Thopha colorata* (male), frons.  
 5.—*Thopha sessiliba* (male), operculum.  
 6.—*Thopha saccata* (male), frons.

FIG. 7.—*Thopha colorata* (male), anterior femur.  
 8.—*Thopha saccata* (male), anterior femur.  
 9.—*Thopha sessiliba* (male), anterior femur.  
 10.—*Thopha saccata* (male), posterior tibia.  
 11.—*Thopha colorata* (male), posterior tibia.  
 12.—*Thopha sessiliba* (male) posterior tibia.

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