

A REVIEW OF THE INDIAN SPECIES OF THE GENUS  
*RETICULITERMES* HOLMGREN (ISOPTERA :  
RHINOTERMITIDAE)

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(With 6 Text-figures and 3 Tables)

INTRODUCTION

The genus *Reticulitermes* in the Indian region is restricted to North-eastern India and Bhutan. Only two species viz., *assamensis* Gardner and *saraswati* Roonwal & Chhotani were so far reported. The species *assamensis* was treated as a synonym of *chinensis* by Snyder (1949) and Roonwal and Chhotani (1962), but more recently Thakur (1977) and Roonwal and Chhotani (1977) have recognised *assamensis* as a distinct species.

A number of surveys of this part of the country have been undertaken by the Zoological Survey in the recent years and while going through the collections of the genus the authors have come across another two species, these are *chinensis chinensis* Snyder and a new species *tirapi*. Thus, in all four species of the genus are now known from India. In this present contribution all the species have been reviewed giving their descriptions, the distribution and the keys for identification.

*Abbreviations used* : coll., collected by ; Im., imago ; S., soldier ; W., worker ; Z. S. I., Zoological Survey of India.

II. SYSTEMATIC ACCOUNT

(A). KEY TO THE SPECIES

*Imago* :

The imagos of the two species known are separated as follows :—

- |   |                                   |
|---|-----------------------------------|
| 1 (2) Ocelli separated from eyes by long diameter of ocellus ; pronotum yellow ; tibia basally one fourth brownish, rest yellowish. ... | <i>assamensis</i> Gardner         |
| 2 (1) Ocelli separated from eyes by less than short diameter of ocellus ; pronotum dark brown ; tibia yellowish. ...                    | <i>chinensis chinensis</i> Snyder |

**Soldier :**

- 1 (2) Smaller species. Head-length without mandibles 1.53 mm ; head-width 1.00 mm. ... *saraswati* Roonwal & Chhotani
- 2 (1) Larger species : Head-length without mandibles 1.75-2.32 mm ; head width 1.05-1.25 mm.
- 3 (4) Labrum with a sharply pointed tip ; frontal protuberances absent or ill developed. ... *chinensis chinensis* Snyder
- 4 (3) Labrum with a blunt tip ; frontal protuberances well developed.
- 5 (6) Head thinner and narrower ; head-width 1.05-1.12 mm (mean 1.07 mm), head-height 0.90-0.95 mm (mean 0.93 mm). Pronotum narrower, (width 0.80-0.87 mm, mean 0.82 mm). ... *tirapi* sp. n.
- 6 (5) Head thicker and wider ; head-width 1.07-1.32 mm, (mean 1.17 mm), head-height 0.87-1.10 mm (mean 1.01 mm). Pronotum wider (width 0.77-0.92, mean 0.84 mm). ... *assamensis* Gardner

## (B) DESCRIPTION OF SPECIES

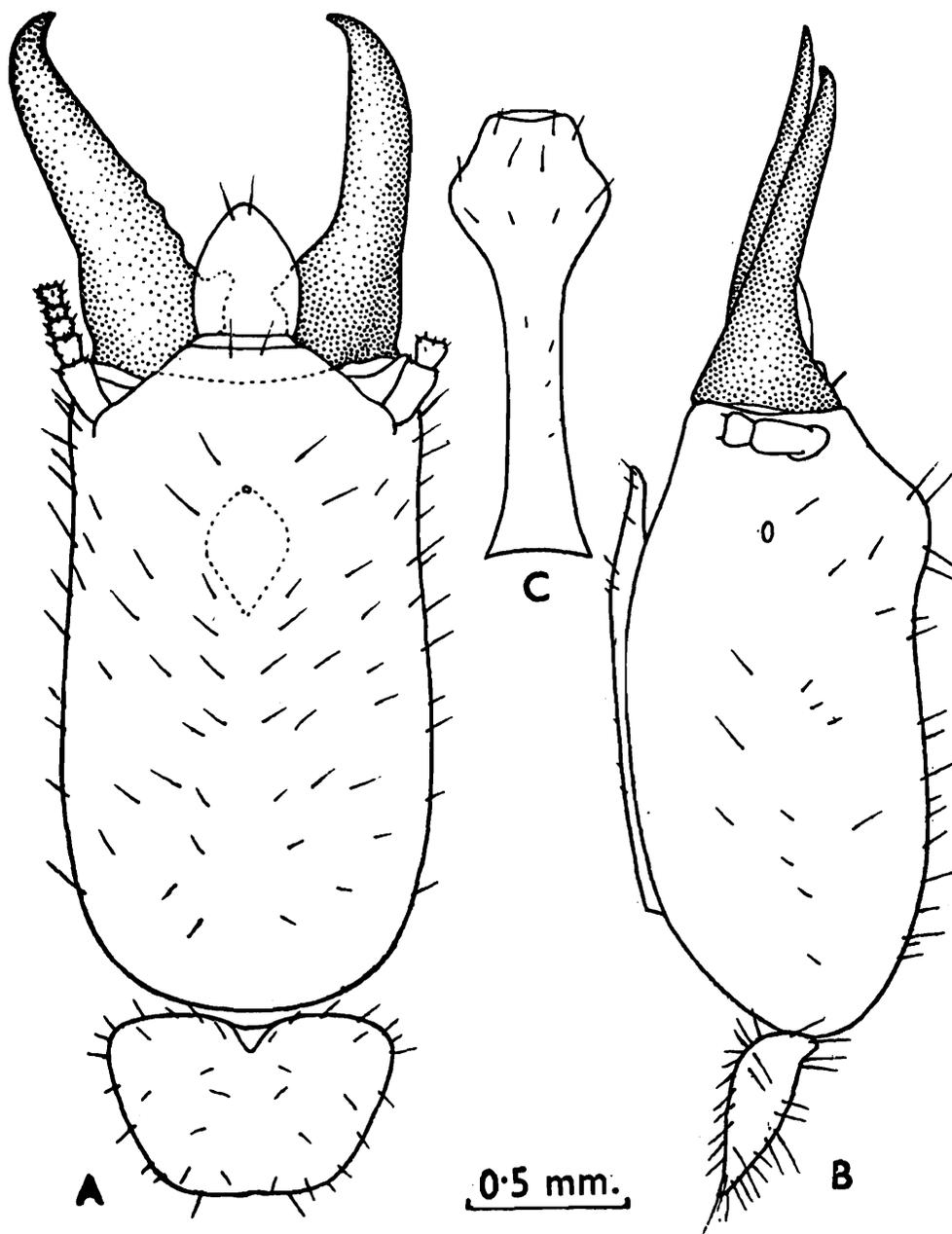
1. *Reticulitermes assamensis* Gardner

(Text-fig. 1 ; Tables 1 &amp; 2)

1944. *Reticulitermes assamensis* Gardner, *Indian J. Ent.*, 6 : 105-106. Type locality : Sadiya, Assam, India ; 1977. Roonwal and Chhotani, *Ent. Basil.*, 2 : 46-48 ; 1977. Thakur, *J. Bombay nat. Hist. Soc.*, 74 (1) : 191-195.
1949. *Reticulitermes chinensis* Snyder, *Smithson. misc. Collns.*, 112 : 71 ; 1953. Roonwal and Pant, *Indian Forest Leaflet. (Ent.)*. No. 121, pt. 9 : 54 ; 1962. Roonwal and Chhotani, *Proc. natn. Inst. Sci. India*, (B) 28 (4) : 301-302 ; 1962. Mathur and Thapa, *Indian Forest Leaflet. (Ent.)*, No. 167 : 27 [Indian records only].

*Material* : The following material from India and Bhutan was examined :—INDIA : Imagos, soldiers and workers, Shaitan Bridge. Kameng District, Arunachal Pradesh, coll. *A. N. T. Joseph*, 23. iv. 1966 (1 vial) and Mawphlong, Meghalaya, coll. *G. K. Srivastava*, 18. v. 1979 (1 vial). Soldiers and workers as follows :—*Meghalaya* : Shillong, coll. *A. P. Kapur*, 21. xii. 1958 (1 vial) and 6. iv. 1959 (1 vial). *Assam* : Sadiya, 14. xii. 1933 (Lectotype and Paralectotype). *Arunachal Pradesh* : Kameng District : Rupa, *K. C. Jayaramakrishna* coll., 2. v. 1961 ; Siggon village, *K. C. Jayaramakrishna* coll., 4. v. 1961. Subansiri District : Subansiri river Nacho, coll. *J. M. Julka*, 28. xi. 1971 ; Didi Camp, Chukru, *A. N. T. Joseph* coll., 22. v. 1966 ; Pabin, *J. M. Julka* coll., 17. i. 1975. Siang District : Tappi Dulla, 12. x. 1966 ; Tashidoni, 24. x. 1966 ; Kambong, 16 & 17. x. 1966, all *S. K. Tandon*

and G. S. Arora coll. Sikkim : A. G. K. Menon coll. as follows :—  
 Pechrek, 2. iv. 1959 ; Naga, 2. viii. 1959 ; Singhik, 6. viii. 1959.  
 BHUTAN : Sampa-Kothoka, coll. W. Wittmer and C. Baroni-Urbani, 9. vi.  
 1972.



Text-fig. 1. *Reticulitermes assamensis* Gardner. Soldier (Paralectotype). A, Head and pronotum, dorsal view ; B, Head and pronotum, side view ; C, Postmentum, ventral view.

**Distribution** : INDIA (Assam, Meghalaya, Arunachal Pradesh, Sikkim, West Bengal) and BHUTAN (Sampa-Kothoka).

**Remarks** : The Imago (Roonwal & Chhotani, 1977) and Soldier (Thakur, 1977) of this species have been described in detail recently as such their descriptions are not given here again. The figures and measurements are, however, given for comparison with the other species. The species is restricted to eastern India and Bhutan.

2. *Reticulitermes chinensis chinensis* Snyder

(Text figs. 2 &amp; 3 ; Tables 1 &amp; 2)

1923. *Reticulitermes chinensis* Snyder, *J. Wash. Acad. Sci.*, **13** : 107-109. Type locality : Suifu, Szechuan Province, China ; 1931. Light, *Lignan Sci. J.*, **7** : 583-584, 589-590 ; 1962. Roonwal & Chhotani, *Proc. natn. Inst. Sci. India*, (B) **28** (4) : 301-303 (Records from China only) ; 1962. Mathur and Thapa, *Indian Forest Leaflet*, No. 167 : 27 (Records from China only) ; *R. chinensis chinensis* : 1968. Hsia and Fan, *Acta ent. Sin.*, **14** (4) : 2.

*Material* : Imagos, soldiers and workers as follows were examined :—

CHINA : *Szechuan Prov.* : Suifu, 2 imagos and one soldier, paratypes. Soldiers and workers from : INDIA : *Arunachal Pradesh* : Kameng District : Kalaktang and Rupa, *K. C. Jayaramakrishna* coll., 17. iii. and 2. iv. 1961 ; Siggon village, *S. Biswas* coll., 27. viii. 1961. *Assam* : Shantipur, *S. K. Tandon* coll., 2. iii. 1969.

*Description* : There has been some confusion in respect of the species *assamensis* Gardner and *chinensis* Snyder. The former species was till recently regarded as a synonym of the latter until Roonwal & Chhotani (1977) and Thakur (1977) treated them as two distinct species. The imago and soldier of *assamensis* have been described in details (Roonwal and Chhotani, 1977 ; Thakur, 1977) while those of *chinensis chinensis* need redescription. As such they are being described here in some detail.

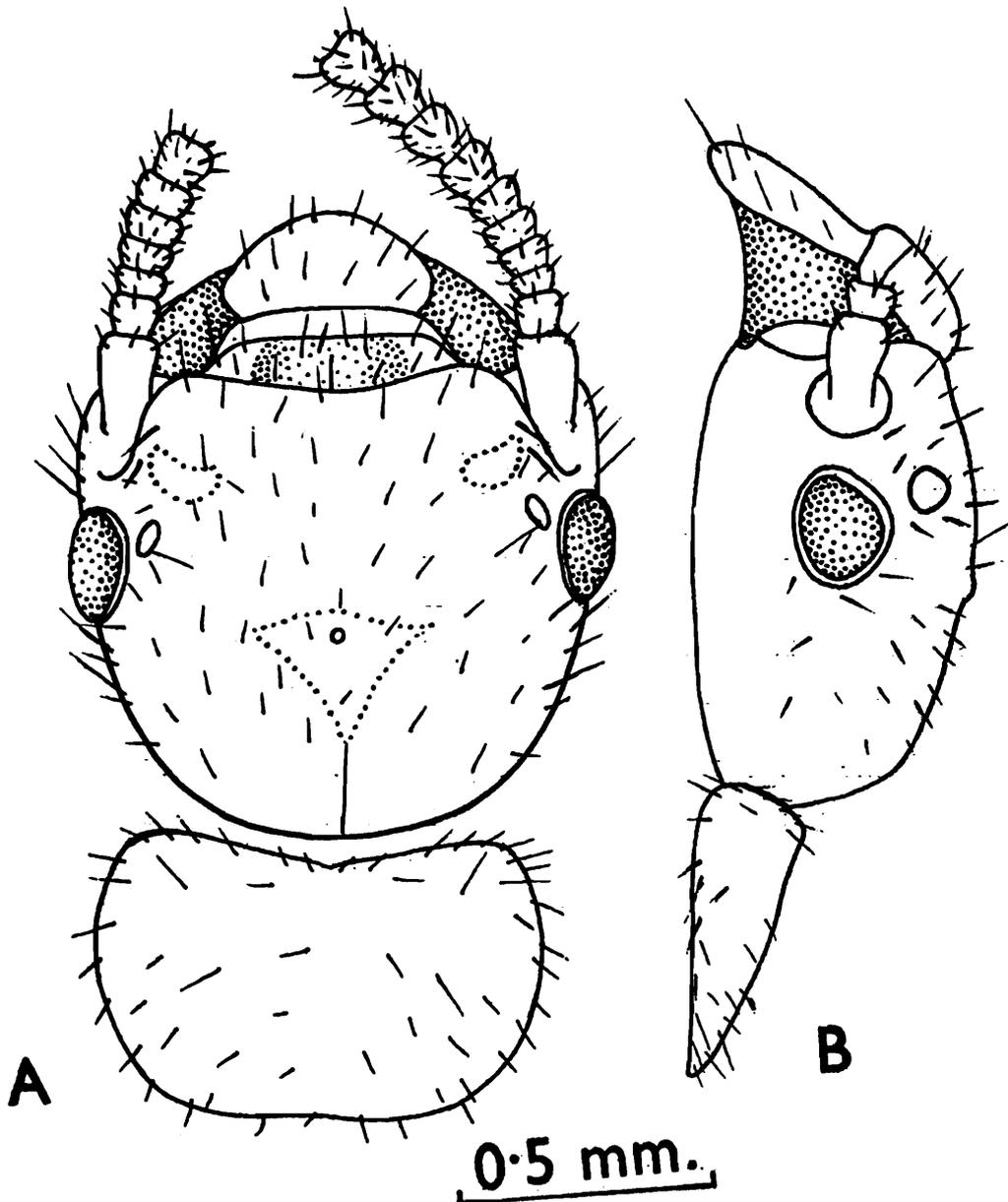
TABLE 1. Measurements (mm.) of imagos of *Reticulitermes assamensis* Gardner and *R. chinensis chinensis* Snyder. L, length ; W, width.

Body parts	<i>assamensis</i>	<i>chinensis</i>
	(range 3 exs)	(range 2 exs)
1. Total body-length without wings c	5.30-6.40	4.50-5.20
2. Head-length to tip of labrum	1.43-1.50	1.23
3. Head-length to base of mandibles	1.10-1.17	0.97-1.00
4. Max. head-width with eyes	1.10	1.05
5. Max. head-height	0.62-0.70	0.53-0.55
6. Occipito-fontanelle distance	0.50-0.55	0.45
7. Postclypeus L × W	0.17 × 0.50	0.10 × 0.50
8. Labrum L × W	0.33 × 0.40	0.33-0.35 × 0.40
9. Max. diameter of eyes	0.23-0.27	0.22-0.23
10. Eye-lateral margin distance	0.18-0.20	0.15
11. Max. diameter of ocelli	0.07-0.10	0.08-0.10
12. Min. eye-ocellus distance	0.07-0.075	0.05-0.055
13. Pronotum L × W	0.60-0.67 × 0.90	0.55-0.58 × 0.84-0.87
14. Length of forewing scale	0.62-0.69	0.75-0.80
15. Length of hindwing scale	0.55-0.58	0.45-0.50

## IMAGO (Text-fig. 2 ; Table 1) :

Only two paratype imagos were available for study and the following description and measurements are given from these specimens. The colour of the specimens seems to have run somewhat, since they appear to be paler than what is mentioned in the original description. The colouration, etc. of the various parts as mentioned by Snyder (1923) are given within parentheses.

Head dark brown (dark castaneous brown (dark finished mahogany)) ; postclypeus, coxae, meso- and metathorax yellowish brown ; antennae pale brown (grey-brown) ; pronotum brown slightly paler than head (about same color as head) ; femora yellowish brown (greyish brown) ; tibiae and tarsi yellowish ; abdominal tergites pale brown (slightly lighter colored (more grey) than head) ; wings pale brownish. Head



Text-fig. 2. *Reticulitermes chinensis chinensis* Snyder. Imago (Paratype). A; Head and pronotum, dorsal view ; B, Head and pronotum, side view.

and body fairly densely hairy with light yellowish hairs. Total body-length without wings c 4.5-5.2 mm.

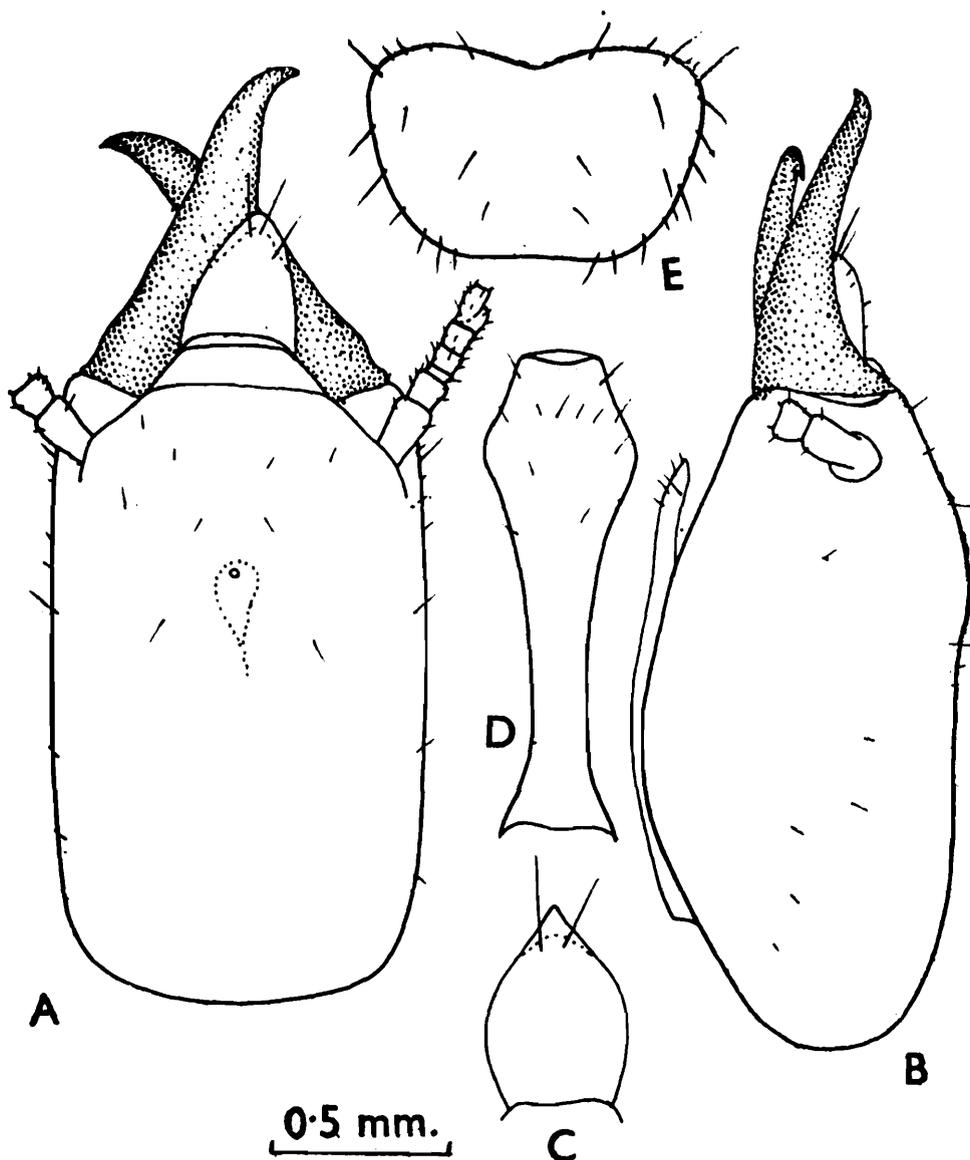
Head oval, head-capsule subsquarish, slightly narrowed posteriorly, length to base of mandibles subequal to width with eyes; epicranial suture faint. Fontanelle minute, slightly raised. Eyes small, broadly oval, slightly bulging, anteriorly straighter; from lower margin of head separated by nearly  $\frac{2}{3}$  of their long diameter. Ocelli small, subcircular; separated from the eyes by little less than short diameter, and by their diameter from antennae. Antennae broken, maximum of ten segments (17-18 segments) present in one of the specimens; segment 1 long, cylindrical; 2 shorter than 1, cylindrical; 3 shortest, ring-like; 4 onwards gradually increasing in length. Labrum broad, tongue-shaped, yellowish brown; wider than long; with a few hairs anteriorly and medially on body. Postclypeus weakly swollen, length less than half of width, hairy. Anteclypeus flat, apilose, hyaline. Pronotum flat, subrectangular, narrower than head-width with eyes; anterior margin incurved and with a weak median notch; posterior margin with a faint, median incurving. Legs elongate, hairy, fairly stout; apical tibial spurs 3 : 2 : 2; tarsi 4-segmented. Wings broken in the specimens examined, a few fragments available; membrane with minute granular spots. Abdomen elongate; cerci 2-segmented; styli present in male, single-jointed.

#### SOLDIER (Text-fig. 3 ; Table 2) :

Head-capsule straw yellow to yellowish brown; mandibles reddish brown; antennae, labrum, abdomen and legs yellowish white. Head-capsule sparsely and thorax and abdomen moderately, hairy. Total body-length c 5.90-7.10 mm.

Head-capsule subrectangular, longer than wide, about 1.75 times as long as wide; sides subparallel; postero-lateral corners rounded; frontal protuberance very ill developed or absent. Fontanelle minute, circular. Antennae 16 to 18 segmented, pilose; in 18-segmented antennae segment 4 smallest, segment 3 subequal to 5; in 16 and 17-segmented antennae segment 3 smallest, ring-like; segment 4 subequal to 2; rest of the segments progressively increasing in length, the last segment ovate. Clypeus trapezoidal; anteclypeus narrow, hyaline, apilose; postclypeus wider and pilose. Labrum oval, longer than broad, usually broadest near the base; sides convex with hyaline margin and converging into thin and sharply pointed tip having 2 long bristles. In the paratype soldier tip of labrum not sharply

pointed, probably broken ; according to Snyder (1923) it is pointed at apex. Mandibles short and stout, with weakly incurved apices ; left mandible with 3-4 crenulations and a basal projection on inner margin ; right mandible with smooth inner margin, basally with a minute tooth-



Text-fig. 3. *Reticulitermes chinensis chinensis* Snyder. Soldier : drawings A—B from a paratype, C, D and E from a specimen from Arunachal Pradesh, India. A, Head, in dorsal view ; B, Head, in side view ; C, Labrum, in dorsal view, showing pointed tip ; D, Postmentum, in ventral view ; E, Pronotum, in dorsal view.

like projection. Postmentum club-shaped, more than three times as wide at widest point as at waist ; anterior margin substraight. Pronotum flat, narrower than head ; widest anteriorly ; anterior margin with a deep, median notch ; posterior margin weakly notched medially. Mesonotum narrower than pronotum. Metanotum slightly wider than pronotum. Legs long, slender, pilose ; tibial spurs 3 : 2 : 2 ; tarsi 4-segmented. Abdomen elongate, moderately hairy ; cerci 2-segmented ; styli one-segmented.

TABLE 2. Measurements (mm.), etc. of soldiers of *Reticulitermes assamensis* Gardner, *R. chinensis chinensis* Snyder and *R. saraswati* Roonwal & Chhotani. H, height ; L, length ; W, Width.

Body parts	<i>assamensis</i> (20 exs)	<i>chinensis chinensis</i> (20 exs)	<i>saraswati</i> (Holotype)
(a) Measurements			
1. Total body-length with mandibles c	5.80-6.50	5.90-7.10	4.0
2. Head-length with mandibles	2.60-3.47	2.65-3.49	2.30
3. Head-length to mandible-base	1.75-2.32	1.83-2.27	1.53
4. Max. head-width	1.08-1.30	1.08-1.32	1.00
5. Max. head-height	0.87-1.10	0.93-1.14	0.80
6. Labrum (median L × W)	0.30-0.45	0.35-0.47	0.30 ×
	× 0.27-0.38	× 0.32-0.42	0.27
7. Length of mandibles	0.95-1.15	0.95-1.22	0.86
8. Occipito-fontanelle distance	1.22-1.65	1.28-1.60	1.03
9. Median length of postmentum	1.00-1.52	1.30-1.50	1.08
10. Max. width of postmentum	0.42-0.52	0.43-0.52	0.40
11. Width of postmentum at waist	0.12-0.17	0.12-0.15	0.12
12. Pronotum (L × W)	0.42-0.62 ×	0.50-0.55 ×	0.40 ×
	0.77-0.97	0.82-0.95	0.67
(b) Indexes			
1. Head Index-I(W/L to mandible-base)	0.50-0.64	0.55-0.59	0.65
2. Head Index II (H/L to mandible-base)	0.47-0.50	0.40-0.50	0.52
3. Head Index III (H/W of head)	0.84-0.93	0.81-0.89	0.80
4. Mandible-head Index (Left mandible-length/Head-length)	0.48-0.60	0.51-0.55	0.56
5. Postmentum Index (W at waist/Max.W)	0.24-0.35	0.24-0.30	0.30

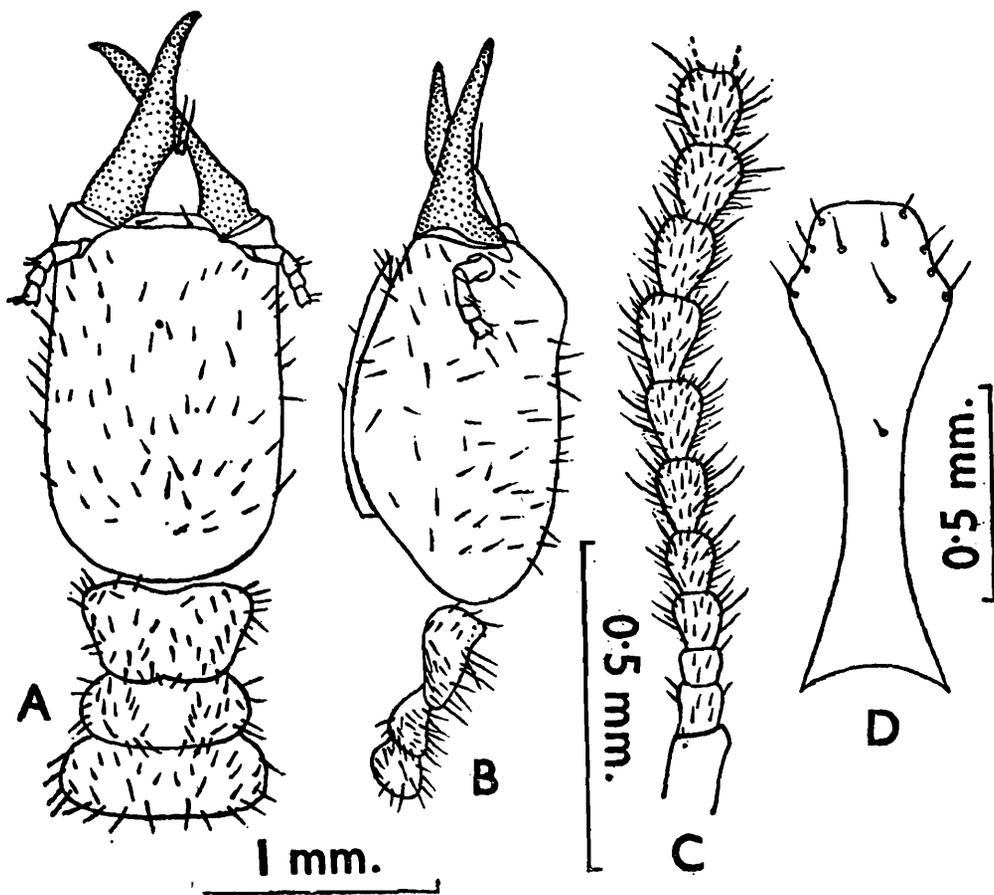
#### WORKER :

Head-capsule pale yellow ; antennae, legs and abdomen paler than head-capsule. Body less hairy than in *R. assamensis*. Total body-length c 3.50-4.00 mm.

Head subsquarish (length to base of mandibles 1.05-1.07 ; max. width 1.17-1.22 mm), lateral and posterior margins rounded. Fontanelle indistinct. Antennae 15-segmented, segment 2 longer than 3, 4 shortest. Anteclypeus flat, apilose. Postclypeus slightly swollen, pilose, length less than half its width (length 0.12-0.15 ; width 0.45-0.50 mm). Labrum subsquarish, slightly wider than long, anterior margin convex. Mandibles typically *Reticulitermes*-type, each with an apical and three marginal teeth. Pronotum flat (max. length 0.42-0.50 ; max. width 0.77-0.85 mm) ; with a prominent, median notch at anterior margin. Mesonotum narrower and metanotum wider than pronotum. Legs and abdomen as in soldier.

**Distribution :** It is a widely distributed species in China and is recorded from a number of provinces (for details *vide* Hsia and Fan, 1968). From the Indian region it is reported here from Arunachal Pradesh (Kameng District) and Assam (Shantipur).

**Remarks :** The imago of *R. chinensis chinensis* is separated from that of *R. assamensis* for its darker pronotum, colour of tibiae and ocelli closer to eyes. The soldier of *chinensis chinensis* is separated from those of other closely allied species i. e., *assamensis* and *tirapi* sp. n. for its sharply pointed tip of labrum and weaker frontal protuberances. The paratype soldier before us has weak frontal protuberances but its labrum is not as sharply pointed as in the other specimens. According to Hsia and Fan (1968) the soldier of *chinensis chinensis* has low or slightly raised frontal protuberances and narrow and sharply pointed labrum ; our specimens correspond to the description and figures given by them as far as these characters are concerned. In the original description Snyder (1923) mentions labrum to be "pointed at apex", very probably the tip of the labrum in the paratype soldier is damaged.



Text-fig. 4. *Reticulitermes saraswati* Roonwal & Chhotani. Soldier (Holotype). A, Head and thorax, dorsal view ; B, Head and thorax, side view ; C, Antenna ; D, Postmentum, ventral view. After Roonwal & Chhotani, 1962.

3. **Reticulitermes saraswati** Roonwal & Chhotani

(Text-fig. 4 ; Table 2)

1962. *Reticulitermes saraswati* Roonwal and Chhotani, *Proc. natn. Inst. Sci. India*, (B) 28 (4) : 289, 295, 303-306, 393, 397.

*Material examined* : Holotype S. and paratype (Morphotype and paramorphotype) W., Shillong (Meghalaya, India), coll. *A. P. Kapur*, 20. xii. 1958.

*Distribution* : INDIA : Meghalaya : Shillong.

*Remarks* : Since this species has been described in detail by Roonwal & Chhotani (1962), it is not redescribed here. The soldier of this species is the smallest of all the known species from India. Measurements (Table 2) and figures of soldier (Text-fig. 4) are, however, given here for comparison with other species.

4. **Reticulitermes tirapi** sp. n.

(Text-fig. 5 ; Table 3)

*Material* : A vial with S. and W., Nampong, Tirap district, Arunachal Pradesh, coll. *C. B. Srivustava*, 2. ii. 62.

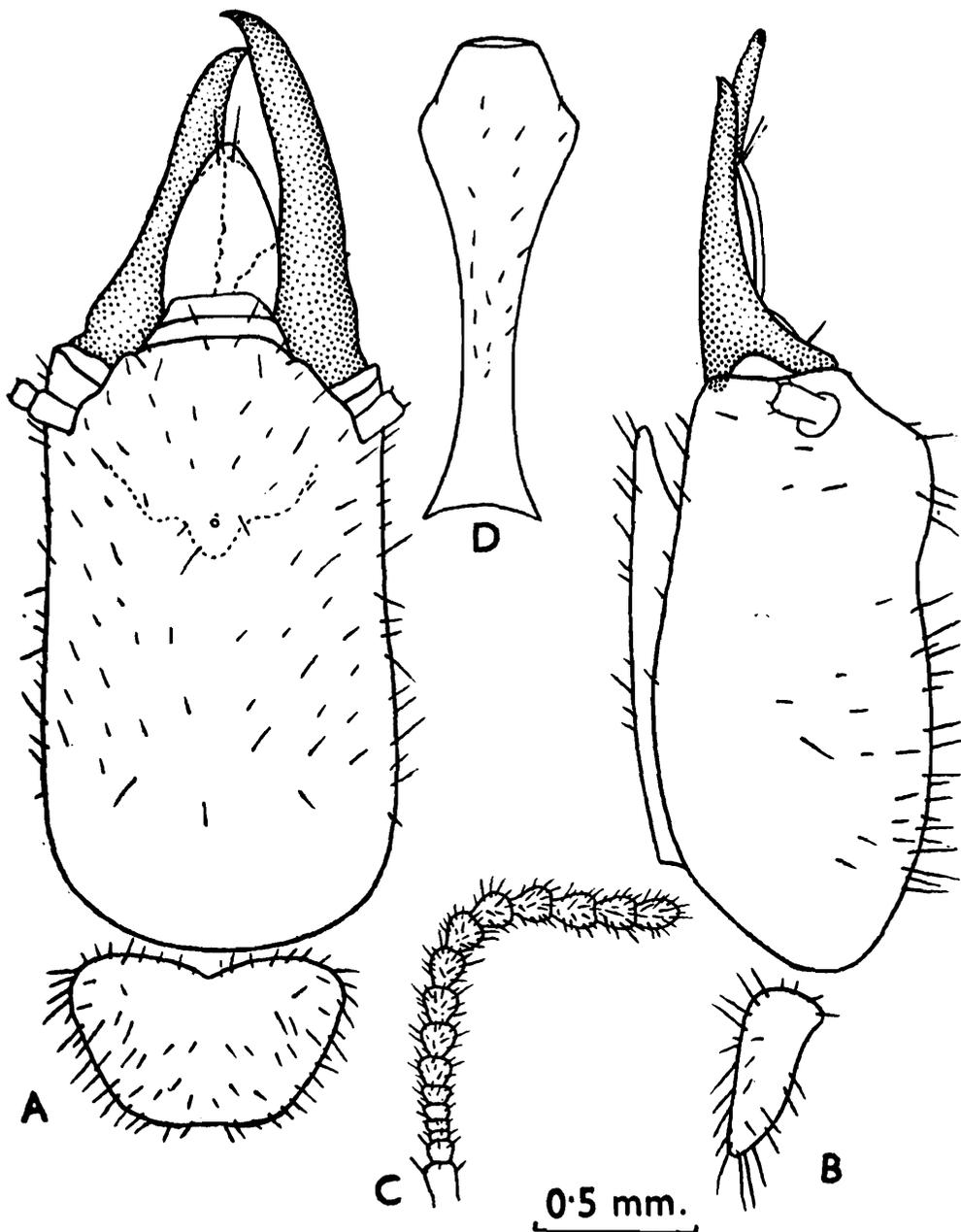
*Description* : IMAGO : Unknown.

SOLDIER (Text-fig. 5 ; Table 3) :

Head-capsule pale yellow, paler in frontal region ; mandibles dark brown, slightly paler basally ; antennae, labrum, thorax, abdomen and legs yellowish white. Head-capsule sparsely and thorax and abdomen rather densely, hairy. Total body-length 6.30-6.80 mm.

Head-capsule subrectangular, much longer than broad (index Width/Length 0.54-0.58) ; sides subparallel, slightly narrowed posteriorly ; postero-lateral corners rounded, posterior margin weakly convex ; frontal region swollen and steeply sloping in front. Fontanelle minute, placed at base of swollen part of frons. Antennae with 15-16 segments, pilose ; in 15-segmented antenna segment 3 longer than 4 ; latter as long as 5 ; 6 onwards progressively increasing in length ; in 16-segmented—one 3 shortest, 4 onwards gradually increasing in length ; last ovate. Postclypeus subtrapezoidal, pale yellow ; anteclypeus whitish, subrectangular, narrower than postclypeus. Labrum oval, narrower anteriorly ; slightly longer than broad and broadest near base ; tip blunt and with two long hairs. Mandibles stout, weakly incurved anteriorly, length

half to slightly more than half of head length ; inner margin of left with 3 crenulations and a basal projection ; right mandible with straight inner margin except for a small tooth-like projection near base. Post-



**Text-fig. 5.** *Reticulitermes tirapi* sp. n. Soldier (Paratype). A, Head and pronotum, dorsal view ; B, Head and pronotum, side view ; C, Antenna ; D, Postmentum, ventral view.

mentum club-shaped ; at widest point more than twice as wide as at waist. Pronotum flat, narrower than head, widest anteriorly, antero- and posterolateral corners rounded ; anterior margin with a distinct median notch ; posterior margin faintly incurved medially. Mesonotum narrower than pronotum, substraight at posterior margin. Metanotum as wide as pronotum, substraight posteriorly. Legs long, slender and pilose ; tibial spurs 3 : 2 : 2 ; tarsi 4-segmented. Abdomen elongate, hairy ; cerci 2-segmented ; styli finger-like, single-jointed.

TABLE 3. Measurements (mm.) etc. of soldiers of *Reticulitermes tirapi* sp. n.  
H, height ; L, length ; W, Width.

Body parts	Range (16 exs)	Holotype
(a) Measurements		
1. Total body-length with mandibles	6.30-6.80	6.50
2. Head-length with mandibles	2.80-3.08	2.80
3. Head-length to mandible-base	1.87-2.03	1.90
4. Max. head-width	1.05-1.10	1.075
5. Max. head-height	0.90-0.95	0.91
6. Labrum (median L × W)	0.37-0.45 × 0.30-0.35	0.45 × 0.33
7. Length of mandibles	1.00-1.05	1.03
8. Occipito-fontanelle distance	1.30-1.42	1.33
9. Median length of postmentum	1.30-1.43	1.40
10. Max. width of postmentum	0.45-0.50	0.45
11. Width of postmentum at waist	0.12-0.15	0.12
12. Pronotum (L × W)	0.45-0.55 × 0.80-0.87	0.50 × 0.85
(b) Indexes		
1. Head Index I (W/L to mandible-base)	0.54-0.58	0.56
2. Head Index II (H/L to mandible-base)	0.45-0.50	0.47
3. Head Index III (H/W of head)	0.83-0.88	0.85
4. Mandible-head Index (Left mandible-length/Head-length)	0.51-0.54	0.54
5. Postmentum Index (W at waist/Max. W)	0.24-0.31	0.26

## WORKER :

Head-capsule pale yellow ; antennae, labrum, abdomen, and legs yellowish white. Head moderately and thorax and abdomen densely hairy. Total body-length 3.70-4.20 mm.

Head subsquarish (length to base of mandibles 0.87-1.00 ; max. width 1.00-1.10). Fontanelle indistinct. Antennae 16-segmented ; segment 2 longer than 3 ; 4 shortest. Postclypeus slightly swollen, pilose ; length less than half of its width (length 0.12 ; width 0.37 mm), medially divided into two halves ; anteclypeus apilose, flat, whitish. Labrum broad, tongue-shaped, longer than wide. Mandibles typically *Reticulitermes*-type ; each with an apical and three marginal teeth. Pronotum flat (max. length 0.30-0.37 ; max. width 0.55-0.65 mm), broadest at the anterior margin ; anterior margin with a weak median notch and posterior-one faintly emarginate medially. Abdomen and legs as in soldier.

*Type specimens* : Holotype soldier (Z. S. I. Reg. No. 2575/H<sub>11</sub>), morphotype worker (Z. S. I. Reg. No. 2577/H<sub>11</sub>) and paratype soldiers and paramorphotype workers (Z. S. I. No. 2576/H<sub>11</sub>), in National Zoological

Collection, Zoological Survey of India. One paratype soldier and two paramorphotype workers each in Forest Research Institute, Dehra Dun (U. P., India) and American Museum of Natural History, New York (U. S. A.).

*Type locality and distribution* : INDIA : Arunachal Pradesh : Nampong (Tirap District) ; known only from the type locality.

*Comparison* : The soldier of *tirapi* sp. n. can be separated from that of *chinensis chinensis* for having blunt tip of labrum and prominent frontal protuberances, and is generally larger than that of *saraswati* Roonwal & Chhotani in size. It is closest to that of *assamensis* Gardner but can be separated for its narrower and slenderer head and thorax (head-width 1.05-1.12 vs. 1.07-1.32, mean value 1.07 vs. 1.17 mm ; head-height 0.90-0.95 vs. 0.87-1.10 mm, mean value 0.93 vs. 1.01 mm) and narrower pronotum (width 0.80-0.87 vs. 0.77-0.92, mean value 0.80 vs. 0.84 mm).

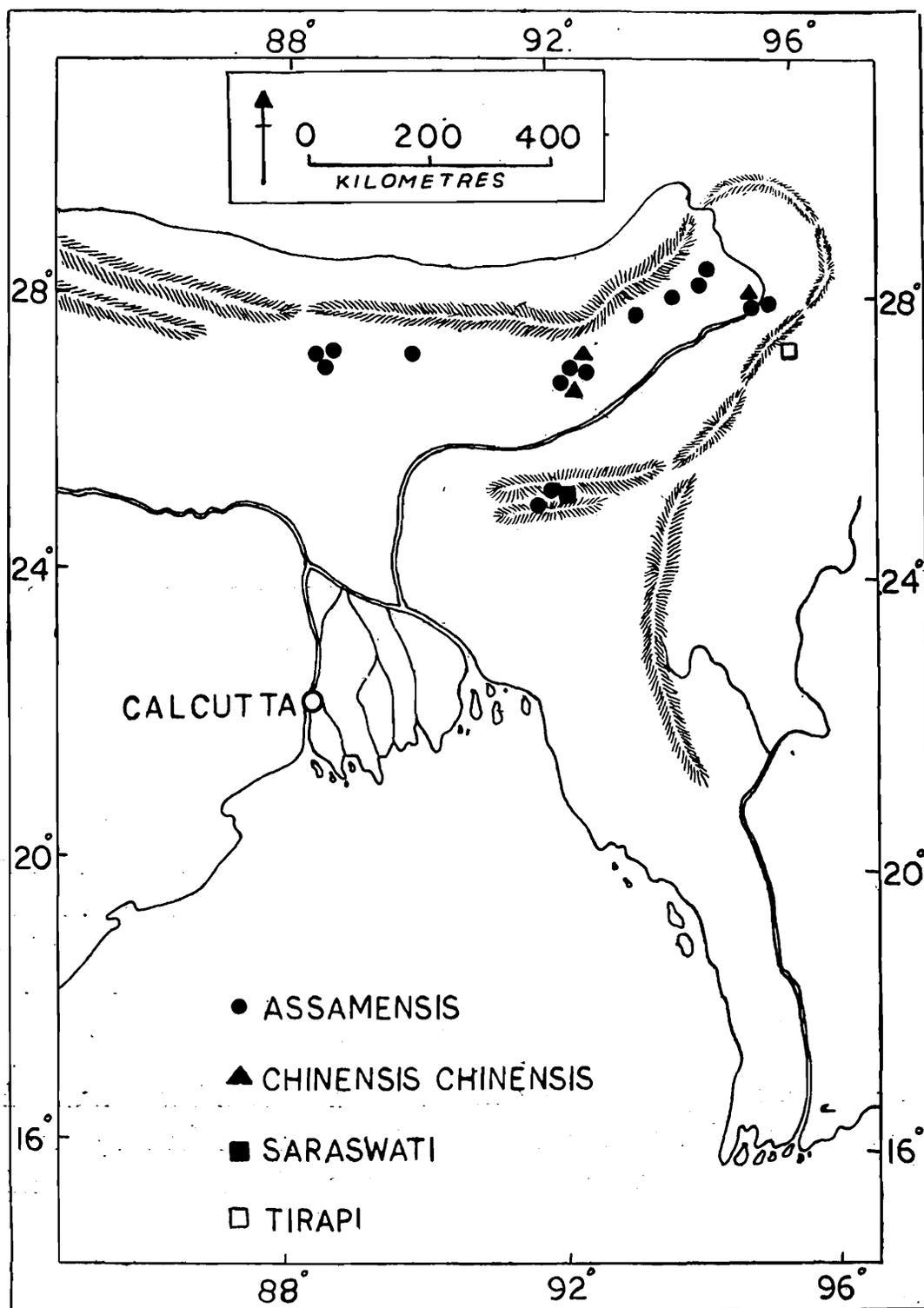
### III. DISTRIBUTION OF ORIENTAL RETICULITERMES

The Holarctic genus *Reticulitermes* is mainly reported from the Palaearctic and Nearctic zoogeographical regions. Some of the species, however, extend into the adjoining parts of the Oriental region and some are endemic in this zoogeographical region.

In all 27 living species and subspecies of the genus are so far known from the world, of which eleven are from the Oriental region, thirteen from the Palaearctic region (Europe and Asia) and six from the Nearctic region (North America). Six species are common between the Palaearctic and Oriental zoogeographical regions.

The Oriental species are known from North-East India, Bhutan Southern China, Formosa and Indo-China. The Indian species (Text-fig. 6) *assamensis* Gardner, *saraswati* Roonwal & Chhotani and *tirapi* Chhotani & Das are endemic to the Indian subregion ; *assamensis* having been reported from India (Sikkim, Assam, Meghalaya and Arunachal Pradesh) and Bhutan ; *saraswati* from Meghalaya, India ; and *tirapi* from Arunachal Pradesh, India. The species *chinensis chinensis* Snyder, reported here from Assam and Arunachal Pradesh in India, is mainly a Chinese species recorded from southern Oriental and Palaearctic parts of China. The species *affinis* Hsia & Fan, *grandis* Hsia & Fan, *chinensis leptomandibularis* Hsia & Fan and *fukiensis* Light are known from the southern Oriental and Palaearctic China and *flaviceps* (Oshima) from the Oriental Formosa and Oriental and Palaearctic

China. The species *megadalenae* Silvestri is reported only from the temperate altitudes of Indo-China and *longicephalus* Tsai & Chen from Fukien in southern China.



Text-fig. 6. Map showing distribution of the species of the genus *Reticulitermes* Holmgren in eastern India.

#### SUMMARY

The genus *Reticulitermes*, in the Indian subregion, is known by four species which are restricted to North-eastern states of India and Bhutan.

Two species viz., *assamensis* Gardner and *saraswati* Roonwal & Chhotani were so far recorded from this subregion ; the species *chinensis chinensis* Snyder is reported here from India from Arunachal Pradesh and Assam states and a species new to science is described from Tirap District of Arunachal Pradesh.

Keys for the identification of the known imagos of two species and the soldiers of the four species are given. The species *chinensis chinensis* is redescribed and the new species *tirapi* is described in detail while *assamensis* and *saraswati* are not described as the detailed descriptions of these species have been published recently. Figures and measurements of all the species are given. The distribution of the species of the genus in the Oriental Region is discussed.

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