

**Article XVII.—THE TERMITES OF PANAMA AND BRITISH
GUIANA**

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PLATE LI

I.—PANAMA

A number of years ago Mr. P. H. Dudley, who was at work in Panama, became much interested in the white ants of that place and in their ravages to woodwork. He published several papers on their habits and sent specimens to Dr. Hagen, but only a few were identified and these only to genera. In the '50's Motschulsky collected in Panama and in his interesting "Etudes" he named two species of termites. Although he gives only a few words of description, I think they are sufficient to hold the names; if not, the names will be credited to Hagen, who gives a description of one and further notes on the other. Specimens from Motschulsky are in the Hagen collection. While at work on the material from Mr. Dudley I learned that there was material from Panama in The American Museum of Natural History, and Dr. Lutz kindly forwarded it. To my surprise, it was the material collected by Mr. J. Beaumont, from whom Mr. Dudley received much of his material. This Beaumont collection is very much larger than the Dudley collection. Later I received some Panama material from the National Museum, mostly collected by Mr. Busck.

Altogether there are sixteen species known from Panama, the most interesting part being the series of *Cryptotermes* representing three new species of this striking genus. Several of the species are found in various parts of the West Indies, and all of the genera are common in South America. One species, *Kalotermes marginipennis*, extends up into the southern part of the United States.

KALOTERMITINÆ

***Kalotermes marginipennis* Latreille**

A number in the Beaumont collection agree with Texas specimens; also from Taboga Island, June 13 (Busck, U. S. Nat. Mus.).

***Neotermes holmgreni*, new species**

ADULT.—Head rufous; the rest of body rather more yellowish, a soiled dark yellowish. Wings brownish, especially along the costal margin; the three heavy veins near costa are colored like the body. Head plainly longer than broad, polished,

but with a number of scattered, erect hairs, as long as two or three antennal joints. Eyes large, nearly circular, not one-half their diameter from the lower margin of head; ocelli large, elliptic, close to the eyes. Antennæ about as long as the head and pronotum; 17- or 18-jointed; the joints all rather short, the last few longer. Clypeus short, its apical margin rounded. Pronotum plainly a little broader than the head, fully twice as broad as long; the anterior margin strongly concave, the sides rounded, the hind margin slightly convex; the surface with scattered, long, erect hairs. Abdomen polished; each segment with a row of long, erect hairs on its hind border, these hairs more numerous toward the tip of abdomen. Femora moderately slender, but the hind femora stouter than in *N. castaneus*; femora with long hairs, as on body. Tibiæ with only very short and more numerous hairs. Length of body, 6.5 to 7 mm.; with wings, 14 to 14.5 mm.

From Taboga Island, Panama, June 13 (Busck).

Type in Mus. Comp. Zool.; paratypes in U. S. Nat. Mus.

CRYPTOTERMES

Three very distinct species are in the collection, two of them represented by adults.

WINGED

1. Wings with veins at tip without oblique branches, membrane coarsely punctate; body brown; small..... *brevicollis*.
Wings with veins at tip with some oblique branches; membrane very minutely punctate; color pale yellowish..... *dudleyi*.

SOLDIERS

1. Pronotum fully three times as broad as long; mandibles hardly visible from above..... *brevicollis*
Pronotum hardly more than twice as broad as long..... 2.
2. Mandibles hardly visible from above; edge of elevation vertical; pronotum obliquely emarginate in front..... *longicollis*.
Mandibles visible from above; edge of the elevation sloping backward; pronotum deeply, roundedly emarginate..... *dudleyi*.

Cryptotermes dudleyi, new species

SOLDIER.—Front of head and the mandibles black, the rest yellowish; front of pronotum dark; antennæ very pale. Head not so much elevated in front as in *C. cavifrons*, the ridge obliquely sloping backward, not roughened above; from the side, the head is nearly twice as long as high and the black ridge is a little uneven or roughened; the surface with scattered erect hairs. Mandibles longer than in *C. cavifrons*, evenly curved, toothed slightly on inner edge, as in the figure. Pronotum hardly twice as broad as long; deeply, roundedly emarginate in front; the surface with many short hairs. Length, 5 mm.

Panama (Dudley; Beaumont).

Type in Mus. Comp. Zool.; paratypes in Amer. Mus. Nat. Hist.

WINGED.—Head pale reddish yellow; abdomen and thorax yellowish; antennæ

and legs paler. Larger than *C. cavifrons*; the head plainly a little longer. Eyes nearly circular, less than their diameter from the lower margin of the head; ocelli small, close to the eyes; although the eye is actually larger than the eye of *C. cavifrons*, the ocellus is not larger than in that species. Pronotum broader than in *C. cavifrons*, nearly twice as broad as long, the sides evenly convex, the front margin concave. Head and thorax with scattered fine hairs, which are longer than in *C. cavifrons*. The radial sector has several oblique branches near its tip to the margin; the median runs into the radial sector about three-fourths the way to tip; membrane very finely punctate, about as in *C. cavifrons*. Length, 10 mm.

***Cryptotermes brevicollis*, new species**

SOLDIER.— Head black in front; the rest of head and the pronotum red-brown; front legs more or less reddish brown; the rest of body and the legs pale. Head (from above) but little longer than broad; the sides parallel, barely constricted in the middle; the front margin elevated, each side oblique and with a deep median incision; the surface smooth. From the side, the head is about one and a fourth times as long as high; elevated on the front edge and behind. Mandibles short, hardly visible from above. Pronotum fully three times as broad as long, with the front margin slightly concave, the hind margin a little convex, the sides evenly rounded. Length, 4 mm.; length of head, 1.1 mm.

Panama (Beaumont).

Type in Amer. Mus. Nat. Hist.; paratype in Mus. Comp. Zool.

WINGED.— Red-brown; antennæ and legs paler. Head longer than broad, flattened in front. Eyes circular, a little more than half their diameter from lower margin of head; ocelli elongate, above the middle, and touching the eye. Antennæ short (broken), the joints very short and broader toward the tip. Head with few short hairs. Pronotum about twice as broad as long; the front margin slightly concave; the sides nearly parallel; the hind border slightly convex; the surface with some erect hairs. Abdomen with a few hairs above and below. Legs very short and stout. Wings hardly twice the length of the abdomen; the surface densely, coarsely punctate; costal venation of three parallel veins, the veins at tip without oblique branches but one or two transverse connections. Length to tip of wings, 6.5 mm.

***Cryptotermes longicollis*, new species**

SOLDIER.— Head black in front, reddish brown behind; front margin of pronotum brownish, the rest pale. Head (from above) scarcely longer than broad, a trifle broader in front than behind, the sides faintly constricted; the front margin elevated, indented in middle, each side rounded; the anterior part of the surface faintly, transversely wrinkled. From the side, the head is about one and one-fourth times as long as high. Mandibles very short, not visible from above. Pronotum about one and one-fourth times as broad as long; the anterior margin slightly obliquely emarginate; the sides narrowed slightly and rounded into the hind margin. Head, 1 mm. long; entire length, 3.5 mm.

Panama, in wood of sill (Beaumont).

Type in Amer. Mus. Nat. Hist.; paratype in Mus. Comp. Zool.

TERMITINÆ

Cornitermes acignathus Silvestri

Soldiers and adults from Cabina, May 22 (Busck). The adult is very similar to *C. striatus*, with a slender fontanelle.

Armitermes armigera Motschulsky

SOLDIER.— Head: main part about as broad as long, much broader than the species figured by Silvestri from South America; nose nearly as long as the head, pointed, thick at base, its upper surface slightly below the plane of the head. The mandibles very slender and strongly curved, with a prominent tooth, which points a little outward, before the middle. Antennæ fully reach the tip of the beak; the first joint very long, the second very much longer than the third or the fourth. Gula broadest at tip. Pronotum with the anterior elevated part lobe-like and hardly one-half as wide as the widest part of the pronotum, and at the tip very faintly indented in the middle; the broad, posterior part of pronotum almost semicircular. Head with a very few short hairs, some on the margin of the pronotum, more on the abdomen. The head is yellowish, the other parts very pale, the abdomen discolored. Length of head, 2 mm.

Obispo, Panama (Motschulsky).

A type is in the Hagen collection. Winged specimens of this genus from Paraiso (U. S. Nat. Mus.) may be adults of this species, but it is not certain that they are.

Coptotermes marabitanus Hagen

In both Dudley and Beaumont collections; a common species in South America.

Mirotermes hispaniolæ Banks

WINGED.— Hard parts red-brown; venter and legs paler; antennæ pale brown; wings yellow-brown. Head no longer than broad, flattened in front. Eyes moderately prominent, circular, less than one-fourth its diameter from lower margin of head; ocelli nearly circular, close to the eyes; fontanelle small, about on a level with the top of eyes. Clypeus prominent, twice as broad as long, deeply indenting the lower face. Antennæ longer than the head; 15-jointed; joints short, the third shorter than the second, the fourth hardly longer than the third. Pronotum not much narrower than the head, twice as broad as long; hardly concave in front; the hind margin straight; the sides but little rounded, not narrowed behind. Body and legs with dense, fine hair. Wings short, bluntly rounded at the tip; median vein not forked; cubital extending out to the tip of the wing. Length to tip of wings, 8 mm.

Panama (Beaumont). The species was based on soldiers from Hayti.

Leucotermes tenuis Hagen

Panama (Beaumont); Obispo (Hassler Exped.). Occurs in South America and the West Indies.

Eutermes debilis Heer

WINGED.—Head, thorax, and abdomen pale reddish brown to dark brown; antennæ and legs pale yellowish; wings brownish. Head a little longer than broad, the anterior margin concave. Clypeus three times as broad as long. Eyes small, not quite circular, about the diameter of an eye from the lower margin of the head; ocelli nearly circular, about their diameter or a little less from the eyes. Fontanelle indistinct. Antennæ 16-jointed; the second, third, and fourth joints all short. Pronotum nearly as broad as the head; the front margin nearly straight; the sides narrowed and rounded into the hind border. Body densely clothed with fine, short, yellowish hair. Wings brown; the median vein forked near the tip; the cubital vein runs out somewhat before the tip. Length to tip of wings, 10 mm.

The freshly transformed specimens have the ocelli close to the eyes; the pronotum is more rectangular, and the color is pale.

SOLDIER.—Similar to *M. struncki*, but the head smaller, although of about the same proportions or perhaps a little broader in front. The mandibles proportionally longer and more slender than in *M. struncki*, the inner edge faintly, minutely dentate. Antennæ nearly as long as mandibles; 13-jointed; the second joint about equal to the third. Pronotum one and a half times as broad as long; deeply incised in the middle of the front, each part rounded; the sides narrowed and rounded into the hind border. Body with short, fine hairs, longer ones on the abdomen. Gula narrowed in the middle, about twice as wide in front. Hind femora slightly thickened. Head yellowish; mandibles dark red-brown, pale on the base; antennæ and body pale. Length of head, 1.4 mm.; of mandibles, 1 mm.

Panama (Dudley; Beaumont).

Termes theobromæ Desneux is probably this species; the soldier Hagen described on page 203 of his Monog. Termit. from Panama, Bates' *T. corticicola* (referred to by Hagen under *T. albidus*), and the soldier described with *T. exiguus* are also this species.

Amitermes medius, new species

SOLDIER.—Head yellowish; mandibles red-brown beyond the middle; antennæ, legs, and abdomen pale. Head a little longer than broad, and broader behind than in front. Clypeus deeply indented in the middle. Mandibles not as long as the width of the head in front; at about the middle of their length is a very distinct tooth, whose posterior edge is less sloping than the anterior edge; tip of mandibles much curved. Head sparsely clothed with moderately long, erect hair. Antennæ nearly as long as the head; 14-jointed; the first joint very long, the next two or three very short. Gula broad, barely narrowed toward the base. Pronotum diamond-shaped,

the anterior part very strongly elevated, the edge margined with hairs. Abdomen with some rather long hairs and denser short hair; legs slender and hairy. Length of head (excluding mandibles), 1.6 mm.

Panama (Dudley; Beaumont).

Type in Mus. Comp. Zool.; paratypes in Amer. Mus. Nat. Hist. I have also seen specimens from Taboga Island (Jennings, U. S. Nat. Mus.).

WINGED.—Reddish brown; soft parts yellowish; wings yellowish brown. Head broader than long, flattened in front. Eyes large, higher than broad, nearly touching the lower margin of the head; ocelli large, slightly elongate, close to the eyes; fontanelle distinct, circular, a little below the top of the eyes. Clypeus prominent, twice as broad as long, deeply and roundedly indenting the lower face. Antennæ longer than the head; 15-jointed; the second, third and fourth joints all short and subequal. Pronotum about as broad as the head between the eyes, twice as broad in front as long; front straight across; sides rounded and narrowed behind to the short hind border. Body with much fine, short, yellowish hair. Wings long and rather broad; the median vein forked one or more times; the cubitus running out on the hind border much before the tip of the wing. Length to tip of wings, 10.5 to 11 mm.

Amitermes beaumonti, new species

SOLDIER.—Head yellowish; mandibles (except the base) red-brown; antennæ, body, and legs pale. Head broad, rounded, but little longer than broad; its sides convex, broadly rounded behind; with numerous, rather long, erect hairs. Clypeus subtriangular, hairy at tip. Mandibles about as long as the width of the head in front, very much curved, slender; on the apical third is a tooth, which is well marked behind but in front grades off into the edge. Antennæ 13-jointed; about as long as the head, very hairy. Gula fairly broad, with parallel sides. Pronotum very much elevated in the front part, bordered with long bristles; laterally angulate. Abdomen and legs with erect hairs. Length of head, 1.1 mm.; width, .85 mm.

Panama (Beaumont).

Type in Amer. Mus. Nat. Hist.; paratype in Mus. Comp. Zool.

Small, black-winged adults from Trinidad River, Panama (Busck, U. S. Nat. Mus.) may be this species.

NASUTITERMES

ADULTS

1. Ocelli about twice their diameter from the eyes. *cornigera*.
Ocelli larger, nearer to eyes. 2.
2. Eyes large, projecting, hardly two diameters apart. *pilifrons*.
Eyes small, not projecting, fully three diameters apart. *ephrata*.

SOLDIERS

1. Head with numerous hairs. *pilifrons*.
Head with six hairs. 2.
2. Head nearly black; nose short and very stout at base. *cornigera*.
Head reddish or reddish brown; nose longer, much more slender at base. *ephrata*.

Nasutitermes cornigera Motschulsky

ADULT.—Close to *N. morio*, but the ocelli are still farther from the eyes, being about twice the diameter of an ocellus distant. It is also close to *N. costalis*, but the wings, which are black, do not show a white stripe, and the muscular impressions below the fontanelle are in a very broad and low trapeze, hardly out of line with each other. The antennæ have the second and third joints about equally short, as in *N. morio*. The pronotum is about as in *morio*, the sides narrowed behind, but it is perhaps a trifle broader in proportion to the length than in that species. The body is densely clothed with short fine hairs. The queens are hardly as black-headed as *morio*, but the males are as dark. The soldier has a moderately short nose; there are six bristles in front, as in *morio*. The antennæ have the third joint much longer than the second or the fourth, which is hardly equal to the second. It agrees with the description of *Eutermes cayennæ* of Holmgren and is possibly that species.

Motschulsky's types from Obispo are before me. Mr. Dudley and Mr. Beaumont took specimens, including several queens; Mr. Busck took males at Trinidad River, May; and Jennings collected the species at Las Cascades.

Nasutitermes pilifrons Holmgren

ADULT.—Closely related to *N. ripperti*, but the ocelli are plainly a little smaller; also related to *N. montanæ* and *N. guatemalæ*, but the ocelli are much smaller. Head dark red-brown; pronotum pale yellowish, but dark in middle of front part; antennæ, legs, and mouth parts pale; abdomen brownish; wings yellowish, as in *ripperti* and allied forms. Head very broad, not much elevated above the eyes. Eyes very large, and projecting in front much beyond the edge of the head, longer than the space to the anterior margin; ocelli small, close to the eyes; fontanelle triangular. Clypeus short. Antennæ 16-jointed; the third joint as long as the second, the fourth about as long. Pronotum fully twice as broad in front as long; front margin nearly straight; sides sloping backward and rounded into the hind margin, which is hardly one-half as wide as the front margin. All the body and legs with fine, short, appressed hair and longer, erect bristles. Length with wings, 15 to 16 mm.

From Cabima, Panama, May 20 (Busck).

Soldiers in Beaumont collection, Trinidad River.

Nasutitermes ephratæ Holmgren

ADULT.—Head and other hard parts reddish or reddish brown; legs yellowish; soft parts pale. Head, from in front, longer than broad. Eyes small, circular, well separated from the lower margin of the head, fully three diameters apart, and much more than one diameter from the top of the head; ocelli rather small, slightly elongate, less than their diameter from the eyes; fontanelle small, subtriangular. Clypeus hardly as short as in *N. morio*. Head with both erect and appressed hair. Antennæ short; the second, third, and fourth joints short, subequal. Pronotum about twice as broad in front as long; the sides much narrower behind.

Panama (Beaumont, Amer. Mus. Nat. Hist). This differs somewhat from Holmgren's description, the eyes being less prominent than his descrip-

tion would indicate. The species was described from British Guiana, and specimens from that country agree with those from Panama. Also Cabima, Panama, May 20 (Busck, U. S. Nat. Mus.).

SOLDIER.—Head reddish or brownish red; front margin of pronotum reddish; the rest of the body pale or yellowish. Head longer than broad, scarcely elevated above the nose; nose slender, as long as half the width of the head or more; four bristles above base of nose, and two toward vertex. Antennæ slender; the third joint plainly longer than the second, the fourth equal to the second. Pronotum not indented in front, margined with short hairs. Abdomen with a few long bristles.

Taken from nests with queens at Panama. This appears to be the *N. klinckstroemi* of Holmgren from Surinam, but he says that the fourth joint of the antennæ is as long as the third.

II.—BRITISH GUIANA

During a trip to British Guiana in 1911, Prof. H. E. Crampton and Dr. F. E. Lutz obtained a fairly large collection of termites. Since two are new species and several have not previously been reported from that part of South America, a list of all the species is given here.

Rhinotermes marginalis Linnæus.—Tukeit, July 21 (soldiers).

Leucotermes tenuis Hagen.—Rockstone, July 9.

Cornitermes acignathus Silvestri.—Tukeit, July 18 (soldiers).

Capritermes cingulatus Burmeister.—Kaietur, August 6 (soldiers).

Nasutitermes ephratae Holmgren.—Tukeit, July 2 and 26 (soldiers and adults). The soldiers agree with the description of *N. klinckstroemi* Holmgren.

Nasutitermes guyanæ Holmgren.—Tukeit, July 17; Kaietur, July 29; Amatuk, August 17; and Tumatumari, July 12 (soldiers). Apparently the most common termite of the region.

***Nasutitermes octopilis*, new species**

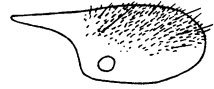
SOLDIER.—Head pale yellowish; nose pale reddish brown, darkest at tip; the rest of the body, legs, and antennæ pale yellowish. Head broad, subglobular, very convex as seen from the side; nose slender, acute, nearly as long as the length of the head; four bristles in a curved row over the base of the nose, and two on each side toward the vertex, about their length apart but two or three times as far from opposite pair. Antennæ slender; the third joint plainly a little longer than the second, the fourth hardly equal to the second. Pronotum with the front margin rounded, not emarginate. Abdomen, above, with hairs only along the hind edge of each segment; venter with many hairs. Legs slender, with few hairs. Length, 4.8 mm.; head, 1.8 to 1.9 mm.



From Tukeit, British Guiana, July 17. Differs from *N. aurantiacus* and allied species in the short and more rounded head. Type in Amer. Mus. Nat. Hist.; paratype in Mus. Comp. Zool. "Collected in the forest from a log which was so decayed that little was left but the bark. The interior of the log was filled with soil, detritus, roots, etc. The termite galleries went through into the sandy soil beneath" (Lutz, from field notes).

***Nasutitermes holmgreni*, new species**

SOLDIER.— Head red-brown, darkest at the base of the nose, paler at the tip of the nose; anterior margin of the pronotum and dorsum of the abdomen brown; venter, legs, and antennæ pale. Head plainly a little longer than broad; nose about as long as two-thirds the width of the head, moderately slender; from the side, no noticeable elevation above the base of the nose. Head, in front, with many, very short, fine, yellowish hairs, and some erect longer bristles, mostly situate above the base of the nose and on each side toward the vertex; no hair on the nose. Antennæ with rather short joints; the third only a little longer than the second, the fourth equal to the second. Front margin of the pronotum rounded, not emarginate. Abdomen, above, with scarcely visible hair, and long bristles at the tips of the segments; venter more hairy. Length, 2.3 to 2.6 mm.; head, 1.05 to 1.1 mm.



From Tukeit, British Guiana, July 19. Distinguished by the small size and pilosity of head. Type in Amer. Mus. Nat. Hist.; paratype in Mus. Comp. Zool. "These termites had a nest on the side of a tree trunk in the forest. The nest was irregular in contour, about three square inches in area, and about half an inch in maximum height" (Lutz, from field notes).

EXPLANATION OF PLATE LI

- Figure 1. *Nasutitermes pilifrons*, head.
 2. *Nasutitermes pilifrons*, at left; *N. ephratæ*, at right.
 3. *Cryptotermes dudleyi*, head (above), pronotum and mandibles.
 4. *Armitermes armigera*, mandible.
 5. *Amitermes medius*, head.
 6. *Cryptotermes brevicollis*, head (above and from the side).
 7. *Eutermes debilis*, head.
 8. *Cryptotermes longicollis*, head (above and from the side).
 9. *Neotermes holmgreni*, head (side view).
 10. *Armitermes armigera*, pronotum.
 11. *Nasutitermes ephratæ*, head (side view).
 12. *Nasutitermes cornigera*, head (side view).
 13. *Armitermes armigera*, head (side view).
 14. *Amitermes beaumonti*, head.
 15. *Leucotermes tenuis*, head.

