CONTRIBUTIONS TO A RECLASSIFICATION OF THE FORMICIDAE. IV. TRIBE TYPHLOMYRMECINI (HYMENOPTERA)

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The Typhlomyrmecini (spelling here emended) are a tribe of Ponerinae here considered to contain the single small genus *Typhlomyrmex*. In this sense the tribe dates only from Brown, 1953. The name Typhlomyrmicini *(sic)*, however, goes back to Emery, 1911, who first proposed it as a subtribe of tribe Ectatommini to contain the three genera *Prionopelta, Typhlomyrmex,* and *Rhopalopone*. Brown (1950) showed that *Prionopelta* belongs to tribe Amblyoponini, while *Rhopalopone* is a synonym of *Gnamptogenys* in tribe Ectatommini (Brown, 1958). After these subtractions, the genus *Typhlomyrmex* could not be placed comfortably in any existing tribe, and its present taxonomic position is an expression of this fact.

At first sight, *Typhlomyrmex* workers look like rather ordinary small cryptobiotic members of tribe Ponerini, although the frontal lobes are not as prominently developed as in Ponerini, and the petiole is never quite "right" in form. The males and larvae clearly conform to Emery's "Section Proponerinae," including Amblyoponini, Ectatommini, and Platythyreini in the modern sense; (the cerapachyines all probably belong here as well), so that the resemblance of the workers to those of certain Ponerini (in Emery's "Section Euponerinae") is either convergent or else marks a side lineage from near the base of the stock that led to the Ponerini.

Among "proponerines", *Typhlomyrmex* shows some similarities to Amblyoponini and to Ectatommini, but it can be distinguished from both by the wing venation of the sexes and the larval mandibles. The main similarity between Typhlomyrmecini and Amblyoponini, other than in "basic ponerine" traits, lies with the shape of the petiolar node of one *Typhlomyrmex* species, *T. rogenhoferi*. This node, because of its elongate form without a distinct posterior face, resembles that of an *Amblyopone* very closely in side view. In dorsal view, however, *T. rogenhoferi* proves to have a much thinner (bilaterally compressed) petiolar peduncle, and this makes it seem possible that its amblyoponine features could have been convergently acquired. Whether or not this is the correct interpretation, it is true that, aside from basic "proponerine" characters, the *Typhlomyrmex* adult has little in common

with the Amblyoponini. It shares more characters with the small "degenerate" members of *Gnamptogenys,* but here again, though less certainly, I feel that the similarities may be convergent ones. The two main characters contributing to this opinion are the forewing venation of the larger *Typhlomyrmex* species (Mf1 arising basad of cu-a) and the shape of the mandible in the larva (inflated basal part, suddenly narrowed to an acute apical blade). Even these characters do not weigh decisively against a possible origin of *Typhlomyrmex* from ectatommine ancestors, and it must be admitted that the convergence hypothesis is to some extent based on subjective impressions that remain to be tested.

Tribe Typhlomyrmecini

Genus *Typhlomyrmex*

Typhlomyrmex Mayr, 1862, Verh. zool.-bot. Ges. Wien, 12: 736. Type species: *Typhlomyrmex rogenhoferi* Mayr, 1862, monobasic.

Typhlomyrmex Emery, 1911, Gen. Insect., 118: 33-34, characterization and catalog of species.

Nec Typhlomyrmex Gistel: J. Betrem and C. Jacot-Guillarmod have called my attention to a generic name *Typhlomyrmex* obscurely published by J. Gistel in his *Mysterien der europäischen Insectenwelt* (1856, cf. p. 447) for a *"Myrmica typhlops* L." This species name is a *nomen nudum* of Lund (not Linnaeus!), published in 1831 in Ann. Sci. Nat., 23: 128. Because it was based on an unavailable species name, and is itself without description, indication or figure, *Typhlomyrmex* Gistel is considered to be a stillborn name *(nomen nudum),* and I am well satisfied to let it subside into permanent nomenclatorial limbo.

Worker: Monophenic ("monomorphic") or feebly polyphenic; size small (full length under 2 mm to slightly over 5 mm); pigment-poor, yellowish to ferruginous in color.

Head parallel-sided, or sides slightly converging anteriad, occipital margin straight to slightly concave. Eyes reduced to minute vestiges with or without pigment. Clypeus with a broad, convex median part and narrow, concave side pieces, the anterior median border often with a narrow translucent margin, in a minority of cases produced as a variously-shaped small median process. Frontal carinae forming small frontal lobes that lie close together and roof a small basal part of the antennal scape insertion (but not the basal collar of the scape); lobes not or only weakly pinched in behind, and not expanded as in typical members of tribe Ponerini. Between the lobes lies a narrow, often indistinct frontal fossa, and a shallow median furrow may run back from the fossa to the vertex, or even to the occipital margin; it is not usually as distinct as in most Ponerini. Antennae short, with thick scapes that either fail to reach the occipital margin, or else surpass it just barely, when held straight back. Funiculus of 11

segments, with the last 3 or 4 enlarged and forming a more or less distinct club.

Mandibles triangular in basic plan, their dorsal surfaces convex in both directions; basal border distinct from masticatory border, although they may meet either in an angle or a broad curve. Masticatory border with minute crenulation, denticulation and/or small, uneven teeth; apical tooth large to very large, and tending to cross with its opposite number when the mandibles are fully closed. Shape and dentition varying with the species.

Under-mouthparts relatively bulky; labrum bilobed, with a broad median excision. Palpi segmented maxillary 1, labial 2.

Alitrunk robust, with rounded humeri and propodeum, slightly constricted at posterior mesonotum; promesonotal suture distinct and apparently movable; metanotal groove distinct, only feebly impressed. A distinct line curving posteroventrad from the propodeal spiracle represents the upper edge of the metapleural gland atrium showing through the integument. Legs short and thick; tarsal claws small, those on the anterior legs toothed, the others simple; tibial calcariae of middle and hind legs 1 or 2, indistinctly pectinate or simple.

Petiole briefly pedunculate; node distinct, variable in form (Figs. 1, 3); subpetiolar process well-developed, acute or rounded at apex. Gaster porrect or slightly downcurved, of the usual ponerine type, with slight but distinct constriction after postpetiole; sternum fused to tergum in abdominal segment III (postpetiole) and IV, but not fused in V (*T. rogenhoferi* worker, female). Sting well-developed and acute, usually exserted in dried specimens.

Sculpture generally fine, varying in development with the species and, within species, allometrically. Cranium longitudinally striate or striolate above, especially mesad, mostly shading off to reticulate on the sides. Mandibles and central part of clypeus usually smooth and shining. Alitrunk, petiole and gaster smooth, with spaced punctation, or partly reticulo-striate or otherwise roughened, the sculpture always becoming weaker caudad. Pilosity fine, rather short, uneven, fairly abundant and widely distributed. A pair of long fine sensory hairs rises steeply from the clypeus.

Alate female, or gyne: Slightly *(T. pusillus)* to considerably *(T. rogenhoferi)* larger than associated workers, and often darker in color, at least around the ocelli; darkest in *T. rogenhoferi,* which is brown. Sculpture sometimes better developed than in workers, and petiolar node distinctly shorter and more transverse. Compound eyes large and hairy; ocelli developed.

Alitrunk somewhat box-like, with a rather flat dorsal surface;

notauli obsolete; parapsidal furrows present but inconspicuous. Venation nearly "complete," with the median abscissae of Rs (Rsf2•3) missing, so that the cubital cell is undivided (single). The first abscissa of M forks off from Cu basad of crossvein cu-a, as in the army ants. (This pattern of venation does not hold for *T. pusillus,* in which the veins are reduced and their relationships modified.) The hind wing entirely lacks an anal lobe, but has the large discal cell, usually with 2 or 3 stubs of apical abscissae corresponding to Rs, M and Cu; another small cell may occur at the base of the discal cell behind, or may be incorporated into the discal cell. The hamuli number 3, and usually arise from a small darkened sclerotic patch a little beyond the midlength of the costal margin.

In other characters, gynes resemble workers.

Male: (Based on *T. rogenhoferi* and *T. clavicornis*) smaller and more slender than the corresponding gyne, but the difference is slight in the smaller species; dark brown to black in color; habitus typical of proponerine males. Eyes large and hairy, occupying nearly half of the sides of the head. Ocelli distinct. Scapes straight, of moderate length, usually equal to about the basal 3 or 4 flagellar segments; flagellum 12-segmented, the segments all longer than broad and increasing very slightly in thickness toward the apex. Mandibles well-developed, opposable or crossing at closure, dentition a variably reduced copy of that of the corresponding worker. Palpi segmented 1, 2 *(rogenhoferi)* or 1, 1 *(clavicornis)*. Clypeus with a large, swollen mid section and small sunken side pieces.

Alitrunk with notauli developed only as the anterior arms of the "Y" and obsolete medially; parapsidal furrows present but inconspicuous. Wings as in gyne (see above). Legs slender, all three pairs with tarsal claws toothed.

Petiole subclavate, i.e., with the peduncle rising gradually caudad toward nodal summit, which is rounded; ventral tooth or process present. Gaster with a slight constriction behind postpetiole; the latter segment has tergum and sternum firmly fused, but the next segment, abdominal IV, appears to have them connected only by thin cuticle or membrane. Genitalia only partly retractile, with parameres broadly rounded at apex; volsellae varying with the species (Figs. 7, 8); aedeagal valves ordinary, serrate. Hypopygium with a long, more or less digitiform, upcurved, hairy, median process (ventral view, Fig. 9).

Head longitudinally striate, rest of body predominantly smooth and shining, with fine scattered punctures. Pilosity fine, mostly erect and rather short, abundant and generally distributed.

Larva: (After G. C. and J. Wheeler, 1952 *(rogenhoferi = robustus)* and 1964 *(pusillus)*. Thorax moderately stout and bent ventrally; slightly constricted at first abdominal somite; remainder of abdomen stout and ovoidal. Body densely covered with moderate-sized branching (mostly trifid) hairs; head with a few bifid hairs. Mandible distinctive, composed of a strongly inflated basal 2/5 and a very narrow, acute apical 3/5, the latter with 2 small median teeth in addition to the apical. This mandible is somewhat like those of amblyoponine larvae, except that the basal portion is relatively much wider than in *Amblyopone*.

Distribution and biology: So far as known, *Typhlomyrmex* is restricted to the warmer parts of the Americas, from southern Mexico to northern Argentina. Within this region, *T. rogenhoferi* is the most widespread and by far the most often-collected species, being an inhabitant of rotten logs in forest. This species is common in the Amazon Basin, where I have seen nests of several hundred workers moving in file through the rot zone just beneath the bark of a log. I have examined several such aggregations in the field, but I was not able to find definite indications of the prey of these undoubtedly predaceous ants. In some sites in the Amazon Basin, where *rogenhoferi* is moderately common, I found the species in very close proximity to termite colonies, but I never saw it actually taking or feeding upon a termite.

T. pusillus appears to be a soil dweller in cultivated and pampas areas as well as in forest (Kempf, 1961). It also seems to exist at higher elevations (e. g., in a coffee plantation at Venecia, near Medellin, Colombia). Probably it is strongly subterranean in foraging and nesting habits. The small series taken by P. F. Darlington at the mouth of the Amazon came from a rotten root in rain forest soil.

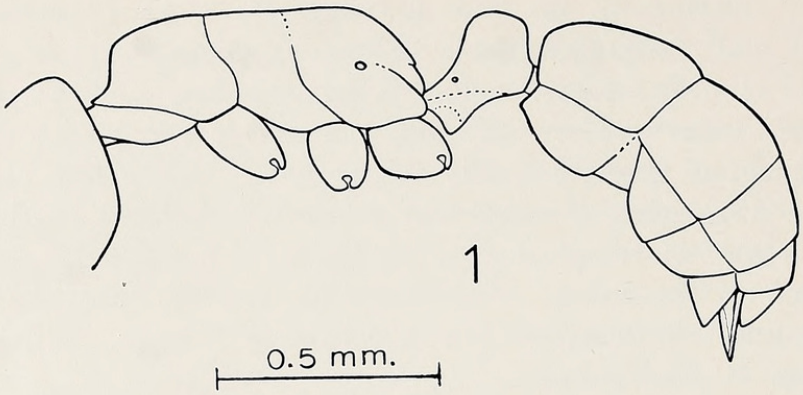
The remainder of the species are rare, and nothing is known of their biology. Probably their habits are strongly cryptic; the large proportion known from alate males and females indicates that most samples are taken during or after nuptial flight. *T. major* may be restricted to the south of Brazil and neighboring countries, while *T. clavicornis* is widespread in South America. *T. prolatus* is known only from the unique type, a female from Costa Rica.

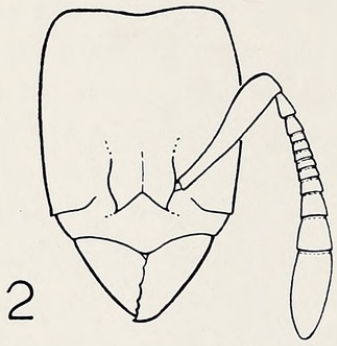
Synonymic synopsis of *Typhlomyrmex* species

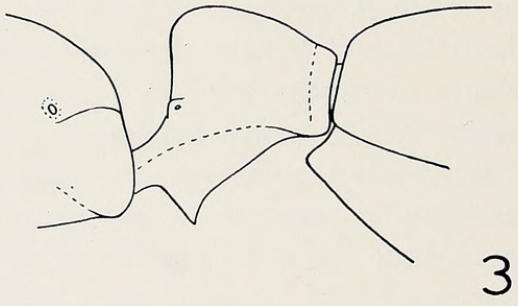
Typhlomyrmex clavicornis (Figures 4, 5, 7)

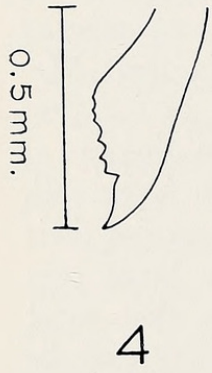
Typhlomyrmex clavicornis Emery, 1905, Bull. Soc. ent. Ital., 37: 112, nota, alate female. Type locality: Mapiri, Bolivia. Holotype examined in Coll. Emery, Museo Civico di Storia Naturale, Genoa.

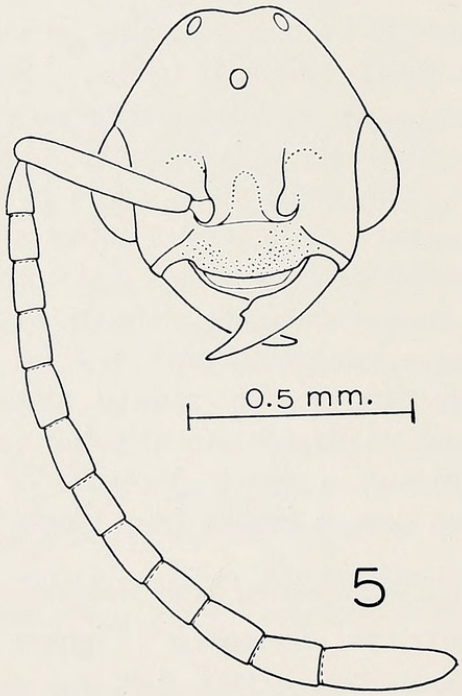
Typhlomyrmex clavicornis var. *divergens* Forel, 1906, Ann. Soc. ent. Belg.,

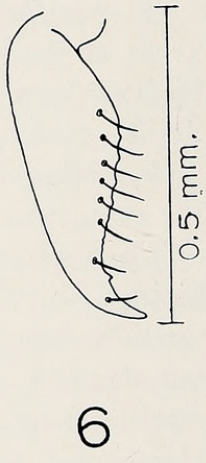












BROWN — TYPHLOMYRMEX

50: 248, female, male (in cop.). Type locality: San Bernardino, Paraguay. Type examined in Coll. Forel, Muséum d'Histoire Naturelle, Geneva. New synonymy.

Typhlomyrmex richardsi Donisthorpe, 1939, Ent. mon. Mag., 75: 161, male. TL: Mazaruni Clearing, British Guiana. Type series examined in British Museum (Natural History). New synonymy.

This species is distinguished in all castes by means of the wide head; long, falcate apical mandibular tooth (Figs. 4, 5); and oblique basal borders of the mandibles, which fail to meet the clypeus when closed. The worker-female antennal club is prominent, as the name suggests, and the petiolar node is short. A single worker (taken at Bartica, British Guiana by H. O. Lang, together with winged females) has a head length, without mandibles, of 0.67 and a head width of 0.65 mm., which is within the size range of the smaller *T. rogenhoferi* workers.

The type series of *T. richardsi* consists of numerous males, accompanied on one card by a female specimen (the latter not mentioned by Donisthorpe). The differences cited among the synonymous species by Forel and Donisthorpe mainly concern mandibular form and the proportions of the antennal segments. On examining all the types and comparing them with digms from British Guiana, I was impressed by the similarity of the mandibles between members of the same caste from different series. The basal segments of the funiculus show noticeable variation in length among males, even in those on one card, and I do not think they make a good diagnostic character.

T. clavicornis is known from the above-mentioned widely separated localities in South America, ranging from Bolivia and Paraguay north to British Guiana. A female with forewings missing, probably fully alate when captured, comes from the Floresta di Tijuca, near Rio de Janeiro, February 1960, C. A. Campos Seabra leg. The *T. richardsi* types were a part of a large series (apparently nearly all males) taken from a nest of the social vespid *Polybia bistriata.*

Typhlomyrmex major, new status

Typhlomyrmex pusillus st. *major* Santschi, 1923, Rev. Suisse Zool., 30: 246, worker. Type locality: Blumenau, Santa Catarina, Brazil. Location of type unknown (not in Santschi Collection).

EXPLANATION OF PLATE 5

Figures 1-6, *Typhlomyrmex* spp. Fig. 1, *T. pusillus* worker from El Rey, Salta, Argentina, lateral view of body. Fig. 2, Same, head in full-face view. Fig. 3, *T. rogenhoferi,* large worker, lateral view of petiole. Fig. 4, *T. clavicornis,* mandible of gyne from British Guiana, hairs omitted. Fig. 5, *T. clavicornis* from British Guiana, full-face view of male head. Fig. 6, *T. prolatus* sp. nov., female holotype, anterodorsal view of right mandible. Drawings by Nancy Buffler, D. Alsop and the author.

I refer to this species a worker from Agudos, São Paulo State, Brazil (W. W. Kempf leg.) with head length (HL) 0.71 mm, head width (HW) 0.63 mm. In habitus, this worker is like a small specimen of *T. rogenhoferi,* but the short, *pusillus*-like petiolar node separates it at once. It is distinguished from *pusillus* by its larger size and longer antennae. the scapes of which reach or surpass the occipital border when they are held straight back. The cephalic striation is also coarser and more distinct than in *pusillus.*

A female from Petropolis, Guanabara, Brazil (T. Borgmeier leg.), apparently belonging to this species, has HL 0.76 and HW 0.65. As has already been indicated, the female described by Santschi as *T. foreli* may belong to *T. major.*

Typhlomyrmex prolatus species nov. (Figure 6)

Diagnosis (gyne): A medium-sized *Typhlomyrmex* with unusually elongate, narrowly subtriangular mandibles; basal border short and curving broadly into long, indistinctly denticulate masticatory border (Fig. 6); apical tooth very long and acute. Petiolar node as seen from above broader than long, with feebly concave (almost straight) anterior border and strongly concave posterior border. Postpetiole with a distinct, sharp median longitudinal carina on the anterior third of its dorsal surface.

Holotype gyne, further description: Total outstretched length (TL) 3.8 mm, head length (HL) 0.72, head width without eyes (HW) 0.63, in full-face view, closed mandibles extend beyond median clypeal margin (ML) 0.31, straight-line length of right mandible from external point of insertion to apex 0.49, length of alitrunk (WL) 1.13, scape length 0.52, greatest diameter of eye 0.18, petiolar node length in dorsal view 0.20, width 0.33 mm. Cephalic index (HW/HL × 100) 88.

Head with parallel, feebly convex sides; occipital border with a shallow v-shaped concavity. Eyes feebly convex. Clypeus with the raised median area very smooth, with a broad strip hairless. Mandibles smooth, with small elongate punctures, becoming striatopunctate and opaque laterally toward insertions. Antennal scapes just barely reaching occipital margin in full-face view when held straight back from insertions; antennal club rather distinctly 3-segmented; flagellar segments 2-8 broader than long. Median furrow distinct, reaching anterior ocellus. Ocelli small but distinct.

Remainder of body much as in other species. Middle and hind tibiae each with a single simple calcar. Forewing as in *T. rogenhoferi,* but M forking from Cu even farther back toward wing base. In hind wing, there is only a single large cell.

The median carina on the postpetiole is a curious feature; it is symmetrical and does not look like a pathological condition. It is followed by a flat central area, which may even be slightly impressed. It remains to be seen whether the corresponding worker also carries it.

On the head, the longitudinal striation is indistinct except on the cheeks, and dense opaque reticulo-punctulation prevails. Dorsal surface of alitrunk densely punctulate, opaque to subopaque; propodeum mostly smooth and shining; sides of alitrunk weakly shining, pronotal part densely punctulate, remainder finely longitudinally striate, with scattered punctures. Petiole smooth and shining, with sparse punctulation on sides. Gaster smooth and shining, but with dense punctulation. Scapes densely punctulate, subopaque, as are also most of legs; mesal surfaces of femora smooth and shining.

Pubescence short, reclinate or appressed, fairly abundant over most dorsal body surfaces, gaster and appendages; longer fine hairs on clypeus, mandibles, and sparse on gaster above and below (abundant at gastric apex). Short oblique hairs extend beyond pubescence on scapes, funiculi and legs.

Color light ferruginous, legs lighter and more yellowish; head infuscated around ocelli.

Holotype (and only known specimen) from the vicinity of San José, Costa Rica, in 1940 (H. Schmidt leg.). Deposited in the collection of W. W. Kempf, São Paulo, Brazil.

Typhlomyrmex pusillus (Figures 1, 2)

Typhlomyrmex pusillus Emery, 1894, Bull. Soc. ent. Ital., 26: 141, pl. 1, fig. 2, worker. Type locality: Bolivia.

Typhlomyrmex schmidti Menozzi, 1927, Ent. Mitt., 16: 268, female, male. Type locality: vic. San José, Costa Rica. Syntypes in Istituto di Entomologia della Universitá, Bologna, Italy; 2 alate females examined. New synonymy.

This is the smallest species of the genus. It will probably turn out to be much more common and widespread than it seems at present; its habitat in the soil and its very small size have made it scarce in collections.

Samples that I have referred to this species show so much variation that they may actually represent more than one species. Specimens from the south (northern Argentina, Santa Catarina) and the Colombian Andes (Venecia, near Medellin) average larger and more robust (HW 0.34-0.50 mm) than those from Amazon drainage and the Guianas. Among the smaller forms, most samples (Surinam: Dirkshoop and Maripaheuvel; Brazil: near Belém do Pará; Peru: Finca Santa Beatriz, Chanchamayo) have the petiolar node and

postpetiolar dorsum very finely and densely sculptured, usually striolate with interspersed shallow punctulation, and opaque or nearly so, but two samples from Tambahredjo in Surinam have the petiole and postpetiole smooth and shining, with only the usual abundant fine punctures. Of special interest is the occurrence, in two of the above samples (Peru: Finca Santa Beatriz, Chanchamayo, 10°57'S, 75°12'N, 1000 m, C. A. Portocarrero leg., No. 88-SB29, 11 July 1964. Brazil: Utinga tract, near Belém, Pará, P. F. Darlington leg., No. 335, Aug. 24, 1962) of a small, square to sharply trapezoidal lamellar lobe or process on the median anterior clypeal margin. This process is variable in shape and size, and is transparent and thus very difficult to see unless the mandibles are open at least partly. It appears to represent a modification of the lamellar free clypeal margin seen in other samples. This margin is usually evenly convex, but some Surinam specimens show a tendency for its most central part to form a narrow, shallow truncate lobe. Such a character would normally separate good species among ponerine ants, but the overall variation in the small *Typhlomyrmex* calls for caution and more than the present meager material before we draw new species boundaries.

The wings of the female of this species are atypical for *Typhlomyrmex,* in that M leaves Cu distad of cu-a, and the crossvein r-m is missing, so that the cubital cell is open at its apex.

The Santa Beatriz collection was made from a single chamber about 4 mm in diameter, located in the ground; Portocarrero found there 21 workers and one queen, plus 8 pupae, 1 larva, and 10 eggs. The Utinga collection came from a red-rotten root in rain forest.

Typhlomyrmex rogenhoferi (Figures 3, 8-11)

Typhlomyrmex rogenhoferi Mayr, 1862, Verh. Zool.-bot. Ges. Wien, 12: 737, worker. Type locality: "Amazonas."

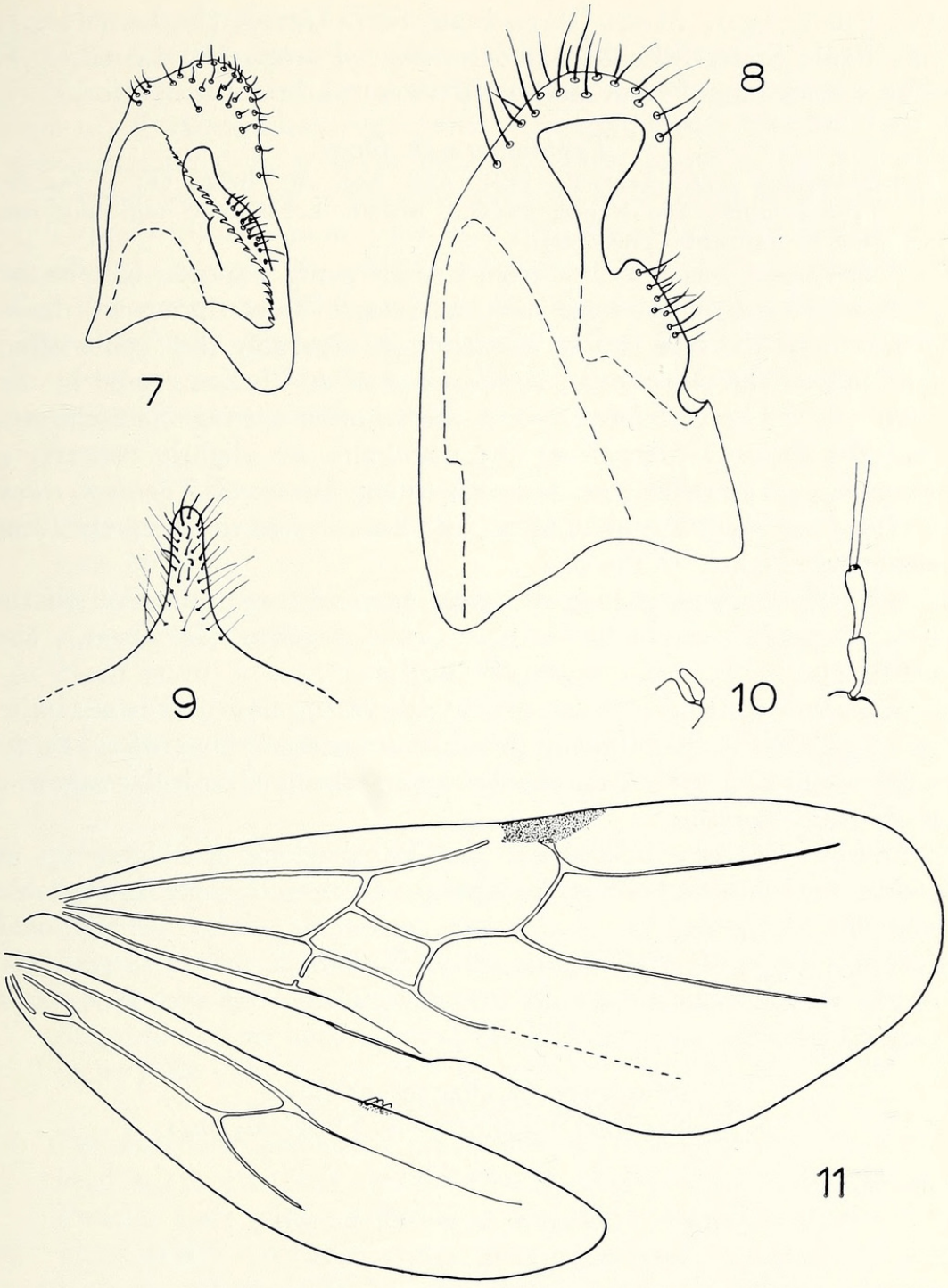
Typhlomyrmex Rogenhoferi r. *robustus* Emery, 1890, Bull. Soc. ent. Ital., 22: 40, worker. Type locality: Alajuela, Costa Rica. Syn. Brown, 1957.

Typhlomyrmex robustus subsp. manco Wheeler, 1925, Ark. f. Zool., 17A (8): 2, worker. Type locality: Pablobamba, Peru. Syn. Brown, 1957.

Centromyrmex sculpturatus Santschi, 1931, Revista Ent., Rio de Jan., 1: 266, dealate female. Type locality: Panama Canal Zone. Holotype examined in Naturhistorisches Museum, Basel. New synonymy.

Easily recognized by the relatively large size, triangular mandible and shape of the petiolar node in worker and female. The male can be recognized by size, the distinct angle between basal and masticatory borders of the mandible, and by the distinctive volsella of the genitalia.

Interesting Brazilian records for the species have been furnished by W. W. Kempf from his collection: Goiás State, Goiânia, Campinas (Schwarzmaier leg.). Espírito Santo State, Santa Teresa



Figures 7-11, *Typhlomyrmex* spp. Fig. 7, Right half of genital capsule of *T. clavicornis* male from British Guiana, viewed from inside, ventral side to right, semidiagrammatic. Fig. 8, same, *T. rogenhoferi,* aedeagal valve omitted. Fig. 9, hypopygial process of *T. rogenhoferi,* ventral view. Fig. 10, maxillary palpus (left) and labial palpus (right) of *T. rogenhoferi.* Fig. 11, right wing of *T. rogenhoferi* Figs. 8-11 are drawn from a male from Perene, Peru. Drawings by D. Alsop and the author.

(O. Conde leg.). Minas Gerais State, Serra Caraça (K. Lenko leg.). São Paulo State, Fazenda Itaquerê, Nova Europa (K. Lenko leg.). The species ranges from Bolivia to Veracruz State in Mexico.

Typhlomyrmex foreli

Typhlomyrmex foreli Santschi, 1924, Ann. Soc. ent. Belg., 64: 6, female. Type locality: Rio Negro, Parana, Brazil. Location of type unknown (not in Santschi Collection).

This species was described from a single gyne. I suspect it to be the gyne of *T. major,* but some items in Santschi's description will leave doubts until the type can be re-examined. Probably the "court sillon médian" on the clypeus can be dismissed as an illusion caused by the shiny surface here; I have noticed this in other species. Santschi says that the external margins of the mandibles are slightly concave, a description that will fit no specimen of any species of *Typhlomyrmex* in full-face view, but will fit all of them if viewed obliquely from above and slightly to the side.

The "bord terminal long, finement denticulé avec une dent apicale bien dévelopée" would fit the new species *prolatus* (see above), but would also fit *T. major* reasonably well.

Santschi's statement, "The first article of the funiculus is not quite as long as the three following ones taken together" fits *prolatus* fairly well, while in a gyne I take to be *major,* the first funicular segment is shorter than this.

In spite of these difficulties, the like of which often crop up in connection with Santschi's descriptions of ants, I think it probable that *T. foreli* and *T. major* are conspecific. The distributional evidence weighs for this decision, and Santschi mentions no posterior concavity of petiole and no median postpetiolar carina such as *prolatus* carries.

Summary of changes proposed in species-level taxonomy of *Typhlomyrmex*

clavicornis Emery
= *clavicornis* var. *divergens* Forel, n. syn.
= *richardsi* Donisthorpe, n. syn.
? foreli Santschi (possibly a synonym of *T. major*)
major Santschi, raised to species level
prolatus sp. nov.
pusillus Emery
= *schmidti* Menozzi, n. syn.
rogenhoferi Mayr
= *robustus* Emery

= *robustus manco* Wheeler
= *Centromyrmex sculpturatus* Santschi, n. syn.

Note: Brown (1953) cited *Prionopelta marthae* Forel as a synonym of *Typhlomyrmex rogenhoferi.* The synonymy was based on a specimen labeled as a cotype of *P. marthae,* found in the Wheeler Collection, and which is clearly a specimen of *T. rogenhoferi.* Studies in European museums in 1963 and 1964 show that this specimen is mislabeled, because *P. marthae* syntypes ("cotypes") in the Forel Collection and elsewhere are true *Prionopelta* close to, and possibly conspecific with, the species currently called *Prionopelta antillana. P. marthae* must, therefore, be deleted from the synonymy of *T. rogenhoferi* and returned to genus *Prionopelta.*

Key to *Typhlomyrmex* species, workers

1. Petiolar node longer than high, without a differentiated posterior face (Fig. 3) ..... *rogenhoferi*
   Petiolar node as high as or higher than long, with a differentiated posterior face (Fig. 1) 2
2. Head width <0.55 mm ..... *pusillus*
   Head width >0.55 mm 3
3. Mandibles triangular, with basal border fitting tightly against clypeus at full closure; apical tooth stout, not notably elongate ..... *major*
   Mandibles more elongate, basal borders oblique and not closing up against clypeus; apical tooth notably elongate and very acute (Fig. 4) ..... *clavicornis*
   Note: The worker of *T. prolatus,* at present unknown, probably would key to couplet 3, where it would undoubtedly be distinguished from both alternatives by having mandibles like those of its gyne (Fig. 6).

Key to *Typhlomyrmex* species, gynes

1. Petiolar node without a differentiated posterior face; size large, head width (without eyes) normally >0.85 mm ..... *rogenhoferi*
   Petiolar node with a differentiated posterior face; size smaller .. 2
2. Head width (without eyes) <0.58 mm; r-m crossvein missing from forewing ..... *pusillus*
   Head width (without eyes) >0.58 mm; r-m present in forewing 3
3. Petiolar node as seen from above concave behind; mandibles elongate but only weakly denticulate, of a particular form (Fig. 6); postpetiolar disc with a distinct anteromedian longitudinal carina ..... *prolatus*

Petiolar node as seen from above with a straight or convex posterior margin; mandibles not as in Fig. 6; no carina on postpetiolar dorsum 4

4. Same as couplet 3 of worker key, above: *major* vs. *clavicornis*. Note: *T. foreli* is not included in the key. It may be the female of *T. major*.

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