

12 REVISION OF THE ANT TRIBE DACETINI: III.¹
EPITRITUS EMERY AND QUADRISTRUMA
NEW GENUS

(HYMENOPTERA: FORMICIDAE)

BY WILLIAM L. BROWN, JR.

The Biological Laboratories, Harvard University

(Text-figure)

In my preliminary generic revision of the ant tribe Dacetini (1948) I showed that the ants with four antennal joints, formerly included in the genus *Epitritus* Emery, belonged in four separate genera representing unrelated phylogenetic lines. These genera were further discussed in a paper dealing with the group of genera around *Glamyromyrmex* Wheeler, now in press. The 1948 revision lists (p. 123) several forms under *Epitritus* in addition to *argiolus* Emery, the genotype, but I have since found that the genus must be restricted to *argiolus* alone of the known four-jointed forms. Though all these ants are closely similar in habitus, a detailed study of the mandibles and labral lobes show that *argiolus* is derived from a *Smithistruma*-like ancestor, while *emmae* Emery and probably *eurycerus* Emery are really only modified *Strumigenys*. Thus another monotypic genus is added to the long list already known within the dacetines; many of these monotypic genera, however, will prove to hold more species than just the single one, since my working collection contains new forms as yet undescribed which fit very well into several of them.

¹ A preliminary paper to this series appeared in these Transactions, LXXIV, p. 101, 1948. Two other parts are in press in *Acta Soc. Lilloana* and in *Mushi*.

EPITRITUS Emery

1869. *Epitritus* Emery, Bull. Soc. Ent. Ital., I, p. 136.

WORKER.—Resembling in habitus the ants of the subgenus *Wessonistruma* of *Smithistruma* Brown, but the funiculus with only three joints and the mandibles lengthened and strongly deflected ventrally at their apices. Inner (masticatory) mandibular border terminated basally by a low, obtusely angular lamina; above this begins the basal border, which runs obliquely to the condyle, but which is hidden under the clypeus at full mandibular closure. The apex of the mandible does not bear a true apical fork, and the basic arrangement of the teeth is a serial one, though the greatly lengthened subapical spine and the downturned apical portion in *argiolus* together create a false fork of a sort. The pilosity is mostly squamiform as in *Wessonistruma* and many other dacetines. Size small, color varying degrees of ferruginous. Labral lobes long.

FEMALE.—As long as or slightly longer than the worker, similar in form, but with the usual thoracic differences and a slightly more bulky gaster.

MALE.—Uncertainly associated with this species; see discussion below.

GENOTYPE.—*Epitritus argiolus* Emery, 1869, Bull. Soc. Ent. Ital., I, pp. 136–137, fig. 1, female, monobasic.

Contains, so far as is known, only the species *argiolus* from the Mediterranean area.

***Epitritus argiolus* Emery**

(Figure 1: a, b.)

1869. *Epitritus argiolus* Emery, Bull. Soc. Ent. Ital., I, pp. 136–137, fig. 1, female.

1875. *Epitritus argiolus* Emery, Ann. Mus. Civ. Stor. Nat. Genova, VII, p. 473, fig., worker.

1882. *Epitritus argiolus* Ern. André, Spec. Hymn. Eur., II, 402, Pl. 16, fig. 23, Pl. 25, figs. 13–17, 20, 21, worker, female, male.

1917. *Epitritus argiolus* Emery, Bull. Soc. Ent. Ital., XLVII, pp. 206–207, fig. 64, worker, female, male. (Emery gives 1917 as the date in his listing in Gen. Insect.: Hym., Fasc. 174, p. 327, but this paper is marked '1916'.)

1923. *Epitritus argiolus* var. *barbarus* Santschi, Bol. Soc. R. Esp. Hist. Nat., XXIII, p. 136, worker.

WORKER.—Best figured by Emery in 1917 (op. cit.) for head and mandibular characters. Specimens sent me by Sr. Mario Consani of Florence show the following measurements: maximum measurable length of head proper, $0.46 \pm .005$ mm., exposed length of mandibles, $0.18 \pm .003$ mm., length of alitrunk, $0.50 \pm .01$ mm., total length, 2.05–2.15 mm., cephalic index, 92–93, mandibulo-cephalic index, 39–40. (Two specimens taken at Ancona by Dr. A. Andreini.) I have also seen four specimens in the collection of Dr. W. M. Mann which agreed closely with my specimens. Emery, who had

a considerable number of specimens before him in 1917, gave the range of the length in the worker as 1.8-2.2 mm.

The mandibles, just distad of the long, sharp subapical spinelike tooth which each bears on its inner border, are slightly thickened and bent sharply ventrad and somewhat posteriorly, so that in side view they resemble a stout, slightly recurved hook protruding from the mouth region. The masticatory border of each recurved apical section bears six or so minute, serially arranged denticles, the apicalmost being larger, more acute and toothlike. Basad of the long spine, each mandible bears on its inner border four small, separated, serially arranged acute teeth which alternate shorter-longer, beginning just basad of the spine with a shorter one. Emery shows this more or less correctly in his figure (1917, fig. 64), but the dentition is best shown on the right mandible, while that of the left is obscure and sketchy. Basad from these are several spatulate hairs.

The long labral lobes and the angulate anterolateral borders of the occipital lobes are shown clearly in Emery's figure just cited, but my specimens have the antennal scapes slightly more incrassate. The cephalic hairs are much like those on the dorsum of the head of *Smithistruma pergandei*; that is, with a short petiole and a suborbicularly flattened apical portion bent at right angles to the petiole so as to lie parallel with and close to the integumental surface.

Other characters which have received little notice in former descriptions and figures are noted for my specimens and those in the Mann collection: The mandibles with a basal border running obliquely under the clypeus at full closure, this border separated from the apical (inner or masticatory) border by an obtuse angle probably representing a reduced basal tooth. The apical border has two margins, an upper or dorsal and a lower one; the prespinal teeth and denticles and the long spiniform tooth itself borne on the dorsal of these two margins; the space between these margins in the form of a shallow convex groove with a median ridge.

Pronotum depressed above and nearly plane, but not definitely marginate laterally. The mesonotum drops off rather suddenly at its rounded posterior border to meet the dorsum (base) of the propodeum, the latter sloping sharply (at an angle of 45° from the general dorsal thoracic plane) to meet the vertical propodeal declivity. Propodeal teeth very small but rather acute, each subtended ventrally by a thin lamella which is slightly widened ventrally. Alitrunk in profile very weakly convex from the anterior pronotal margin to the posterior mesonotal margin.

Petiole with a fairly long, anteriorly tapering peduncle; node seen from above globular, only half as long and less than half as wide as the postpetiolar node, its spongiform appendages obsolete. Postpetiolar node transverse-oval, relatively bulky, with only a rather sparse growth of spongiform appendages, and these restricted to the posterior borders.

Hairs on dorsum of alitrunk and of the two nodes extremely few and scattered, squamiform to varying degrees; gastric dorsum with scattered, fine, short, erect hairs, most of which are weakly flattened at their tips.

Sculpture of head and alitrunk minutely punctulate-granulose, much like that of ordinary *Smithistruma* and *Strumigenys* species; nodes also similar, appearing opaque to subopaque; basal costulae of first gastric segment few and widely spaced, long on the sides and shorter in the middle; first gastric segment dorsally with what appears to be faint pebble-shagreening, but rather strongly shining. This effect may be due to a thin coat of the secretions with which dacetines often cover themselves, but there definitely seems to be some sort of feeble sculpture present, at least in the Ancona specimens.

Color yellowish to medium ferrugineous.

FEMALE.—Emery gives the total length as 2.2 mm. and the length without the mandibles as 2 mm. and describes the alitrunk as "subtilius, longitudinaliter coriaceo-rugulosus." There appears to be little or no difference in proportion between the female and large workers except the usual ones in the case of thoracic development and possibly in the greater bulk of the gaster.

MALE.—The male which André associated with this species has not, to my knowledge, actually been taken with workers or females. It could be the male of *Smithistruma baudueri*, with which another male has been uncertainly identified, or of *Trichoscapa membranifera*, for which no male is known, or it could belong to an undescribed dacetine species, the workers or females of which have not yet been found. I refer those who wish to speculate on the relationships of the males to the references given above in the synonymy.

I have synonymized Santschi's variety *barbarus* because of his very feeble differentiating characters, based on a single small specimen from Tunisia as compared with Italian specimens from what was apparently a single collection. Since Emery had already (1917) determined some typical *argiolus* from Tunisia, I can see no reason for considering his small specimen as a geographical race.

Range.—(According to Emery): *Type locality*—"in graminibus . . . ad S. Concordio di Moriano in agro Lucensi." Insular and continental Italy, Southern France, Pantelleria, Tunisia, Hungary.

This species probably occurs at many points on the shores of the Mediterranean.

Biology.—Apparently this species accepts drier and more open situations than do most other dacetines; in this respect *argiolus* seems to be similar to *Smithistruma baudueri* and *Trichoscapa membranifera*, which apparently have similar ranges in the Mediterranean area. It would not be surprising if *argiolus* were found to occur in southeastern North America or other New World

localities with a warm, dry climate. No observations on the feeding habits of this species have been reported. Emery states that the nests are small and "subterranean." The male linked doubtfully with this species was taken separately in August.

QUADRISTRUMA new genus

1890. *Epitritus* Emery, *sensu* Emery, Bull. Soc. Ent. Ital., xxii, p. 70, part.
1893-1948. *Epitritus* Emery, authors, part.

WORKER AND FEMALE.—Small ants with three funicular segments, superficially resembling *Epitritus*, but with a true apical fork of two spiniform teeth and a small posteriorly directed basal lobe on the mandible as in *Strumigenys*. Labral lobes very short and inconspicuous, the triggers or trigger-hairs set laterally to them and diverging widely anteriorly; labrum acutely cornuate on each anterolateral angle. Pilosity and sculpture much as in the majority of *Smithistruma* and *Strumigenys* species.

MALE.—Unknown.

GENOTYPE.—*Epitritus emmae* Emery, Bull. Soc. Ent. Ital., xxii, p. 70, Pl. 8, fig. 6, worker, by present designation.

This genus is understood to include, besides the genotype, the species *eurycera* (Emery), which was formerly included in *Epitritus*.

Quadristruma emmae ranges over a great part of the earth's tropics and subtropics in scattered localities.

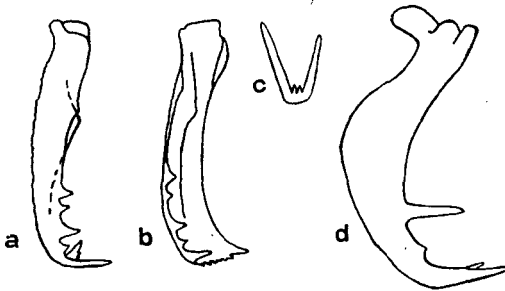


Figure 1.—Mandibles, *a* dorsal view, *b* medial view, *Epitritus argiolus* Emery, Arezzo, Italy. *c* apical fork, *d* dorsal view, *Quadristruma emmae* (Emery), Soledad, Cuba. Both from workers.

Quadristruma emmae² (Emery) (Figure 1: c, d.)

1890. *Epitritus emmae* Emery, Bull. Soc. Ent. Ital., xxii, p. 70, Pl. 8, fig. 6, worker.
1897. *Epitritus emmae* Emery, Term. Füzetek, xx, p. 581, worker.
1908. *Epitritus emmae* Wheeler, Bull. Amer. Mus. Nat. Hist., xxiv, p. 149, female.
1909. *Epitritus clypeatus* Szabó, Arch. Zool. (Budapest), I (7), p. 1, fig. 1, worker.
1913. *Epitritus clypeatus* var. *malesiana* Forel, Zool. Jahrb. Syst., xxxvi, pp. 83-84, worker, female.
1916. *Epitritus wheeleri* Donisthorpe, Ent. Record, xxviii, p. 121, worker.

This species has been described so many times, and figured as well, that a formal description would be superfluous. Only the worker and female are known, the female being slightly the larger of the two forms, with the usual thoracic differences and a slightly larger gaster. Otherwise, the female is quite similar in proportions of the head and mandibles.

Szabó was led to describe *clypeatus* because of differences he found in New Guinea specimens which had previously been determined as *emmae* by Emery. Szabó compared these specimens with Emery's 1890 figure of *emmae* and pronounced his new species as distinct from it on the basis of supposed differences in length of clypeus, form of antennal scape, and general size. Forel and Donisthorpe then described *malesiana* (Sumatra) and *wheeleri* (Hawaii) as forms intermediate between *emmae* and *clypeatus* in these very same characters! Although I have not seen the type of *emmae*, I believe that it is identical with *clypeatus* for the following reasons:

(1) Emery originally identified the specimens used as the types for *clypeatus* as his *emmae*, they differing only slightly in size from the St. Thomas specimens.

(2) Plates 7 and 8 of Emery's 1890 paper contain figures of several other dacetine species which I know to be seriously in

² After sending this paper off to press, I received two series of *Quadristruma emmae* from Dr. J. W. Chapman of the Silliman Institute. One lot was labelled simply "Philippines, Domingo Empeso," while the other was taken by Dr. Chapman at Dumaguete, Negros, Philippine Islands. Dr. Chapman also says that he has taken an "*Epitritus*" on another occasion in a graveyard at Dumaguete. So far as I can tell, there are no previous records from the Philippines.

error, so it seems safe to assume that the drawings, including that of *emmae*, were carelessly and hastily executed.

(3) The heads of several specimens tilted slightly out of the horizontal viewing plane gave outlines much the same as those of the original figure of *emmae*; these specimens were Hawaiian in origin.

(4) Cuban, Porto Rican and Dutch Guianan specimens of this form's New World populations were compared with Hawaiian specimens; no differences worth mentioning were found, either in size or details of form. These specimens agreed better with Szabó's figure of *clypeatus* than with any other figure listed in the synonymy, including that of *emmae* mentioned in (2) above.

(5) The records of distribution for *emmae* and its synonyms are distinctly indicative of tropicopolitan tramp habits like those of *Trichoscapa membranifera* Emery, thus destroying any arguments for validity of the synonyms on a basis of geographical isolation. Most of the records are from seaports or other coastal localities.

If *clypeatus* is a synonym of *emmae*, the forms *malesiana* and *wheeleri* must also be synonyms; anyone desiring confirmation of this fact has but to read the original descriptions of these forms, keeping in mind the considerations outlined above.

Workers of *emmae* from Hawaii, Cuba, and Porto Rico show the following measurements and proportions: total length, including mandibles, 1.4–1.8 mm., length of head proper 0.40–0.44 mm., cephalic index 77–83, mandibulo-cephalic index 28–30; based on 7 specimens.

Females from Cuba, Hawaii, and Paramaribo show the following: total length 1.8–2.1 mm., length of head proper 0.46–0.49 mm., cephalic index 81–85, mandibulo-cephalic index 28–32; based on four specimens.

The mandibles are strongly bowed and possess an apical fork of two long spiniform teeth, the dorsal of the pair nearly half again the length of the ventral; inner border adjacent to the condyle with a small, rounded lobe which points inwardly and somewhat posteriorly when the mandibles are closed, this lobe completely concealed except when the mandible is opened to nearly full extent; subapical tooth stout and acutely spiniform, situated between the midlength and the apex of the inner border. Some

specimens seem to have a small, indistinct denticle on the inner border in the space between the apical and subapical teeth; this tubercle, when present, is very difficult to see because of the hairs which obscure it. It seems not to be correlated in any way with distributional patterns. Two acute denticles between the two teeth of the apical fork.

Range.—Type locality (according to Emery), St. Thomas. Other reliable records include the following, the asterisks (*) indicating that I have examined specimens:

HAWAIIAN ISLANDS: Oahu, *teste* Donisthorpe, as *wheeleri*. Oahu (without collector), det. M. R. Smith *. Waimanaloa, Oahu (Swezey) *.

GUAM: Oca Point (G. Wharton), det. M. R. Smith *.

UNITED STATES: Miami, Florida (W. Buren), *teste* M. R. Smith.

PORTO RICO: Arecibo (M. R. Smith), det. M. R. Smith *. Ensenada (M. R. Smith), det. M. R. Smith *.

ST. VINCENT: Dry River, near sea (H. H. Smith), *teste* Forel.

CUBA: Havana (C. F. Baker), det. Wheeler *. Soledad (F. G. Walsingham), det. Weber *.

DUTCH GUIANA: Paramaribo (Buenzli) *.

SUMATRA: Soengei Bamban (Buttel-Reepen), described by Forel as *clypeatus* var. *malesiana*.

SINGAPORE: (L. Biró), described by Szabó as *clypeatus*.

NEW GUINEA: Lemien, near Berlinhafen (L. Biró), determined as *emmae* by Emery; described as *clypeatus* by Szabó.

Biology.—Nothing is known of the food preferences. Many of the collecting records are of single females taken under objects lying on sea beaches; workers have been taken with the sieve and Berlese funnel in both forested and agricultural areas, usually near the sea. This ant seems to show tolerance for a wider range of environmental conditions than most dacetines. My guess is that the original range of this species lay in the Indomalayan-Papuan regions, since it seems adventitious in most of the other recorded localities, and since *Q. eurycera*, which is clearly related, is from the mainland of New Guinea.

Quadristruma eurycera (Emery)

1897. *Epitritus eurycerus* Emery, Term. Füzetek, xx, p. 581, Pl. 14, fig. 17, worker.

1922. *Epitritus eurycerus* Emery, Gen. Insect.: Hym., Fasc. 174, p. 327, Pl. 7, fig. 7, worker.

I have not seen specimens of this ant, which has not been taken since the type collection. Emery's short description gives the length as "1½-1½" (*sic!*) mm., and his figure portrays the head as in the neighborhood of cephalic index 90 and mandibulo-cephalic index about 30 or 31. The mandibles are very slender and rather straight, with two long equal or subequal spiniform teeth forming an apical fork, plus a single short spiniform tooth at about the apical third of the inner border. By far the most striking character, and one which separates *eurycera* from all other ants I have seen or seen figures of, is the amazingly extreme incrassation of the antennal scapes. These members form nearly equilateral triangles of an apparently lamellar nature, the total surface area of each exceeding the area of the entire clypeal disc! Of the thorax, Emery says, "Thorax suturis impressis, pronoto medio depressione longitudinale." And of other features, ". . . epinoti dentibus acutis. Petioli segmentum 1 nodo subrotundo, 2 transversim ovale, postice et lateribus margine spongioso."

And, "fusco-testacea . . . creberrime punctulata, opaca, gaster nitida, basi striatula; squamulis minutissimis, parce conspersa . . . clypeo antice arcuato." Only the worker caste is known.

Range.—Known only from *type locality*: "E silva Lemien, prope Berlinhafen . . ." (L. Biró), in what was formerly German New Guinea.

Biology.—Nothing known.

The types of *Epitritus argiolus*, *Quadristruma emmae* and *Q. eurycera* presumably rest in the collection of the late Prof. Carlo Emery either at Bologna or Genoa.

I wish to thank the following persons for aid in the matter of loans of specimens: Dr. M. R. Smith, Sr. Mario Consani and Dr. J. C. Bequaert of the Museum of Comparative Zoology; the checking of many of the original references is to be credited to my wife, Doris Evelyn Brown.