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NEW PEMPHILIDINE WASPS FROM SOUTHERN NIGERIA

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THE present paper is a report on a small but very interesting collection of pemphilidine wasps (family Sphecidae) made by J. C. Bridwell in southern Nigeria. The types of all the new species are in the United States National Museum.

Genus ENCOPOGNATHUS Kohl

This widely distributed genus, which reaches its maximum specific differentiation in Africa, is represented in the Ethiopian Region by only the nominate subgenus.<sup>1</sup> The following key will serve to separate the eight known species:

KEY TO SPECIES OF THE SUBGENUS ENCOPOGNATHUS

1. Postscutellum armed posteriorly with a translucent lamella, or bilobate; abdomen more or less elongate. (*Brownei* group)..... 2  
    Postscutellum simple, unarmed posteriorly; abdomen relatively short and compact. (*Braueri* group)..... 5
2. Postscutellum bilobate, produced backward on each side in form of a thick, opaque, trigonal laminate plate (Southern Rhodesia) *\_chirindensis* (Arnold)  
    Postscutellum furnished with a translucent lamella around posterior and lateral margins..... 3
3. Abdomen with first three tergites coarsely rugosopunctate, fourth and fifth tergites more sparsely punctate; postscutellum yellow (Kenya to Southern Rhodesia) ..... *\_brownei* (Turner)  
    Abdomen with first three tergites impunctate; postscutellum black..... 4
4. Abdomen with fourth and fifth tergites granular to finely pustulate. Females with only middle tibiae yellow; pygidium yellow at base, ferruginous at apex (Belgian Congo)..... *\_granulata* (Arnold)

<sup>1</sup> Pate, V. S. L., On the taxonomy of the genus *Encopognathus*. *Lloydia* (Cincinnati), vol. 6, pp. 53-76, 1943.

Abdomen with fourth and fifth tergites finely sparsely acupunctate. Females with all tibiae and tarsi light yellow; pygidium wholly ferruginous. Males with fore femora armed beneath with a retrorse spine; fore metatarsi irregularly laminate; scape irregularly widened and angulate subapically; pedicel produced into an acuminate lateral process (Nigeria).

acanthomerus, new species

5. Front armed between antennal sockets with a short, porrect, lamelliform tooth; postscutellum bisected by a carinule; abdomen black with tergites closely punctured, the first two quite coarsely so; second sternite very coarsely and sparsely punctate; pygidial area coarsely, closely punctate (Southern Rhodesia)-----rhodesiana (Arnold)  
Front simple, unarmed; postscutellum not bisected by a carinule; abdomen impunctate or finely punctured at most----- 6
6. Abdomen black, the second and fourth tergites with yellow fasciae, the third with lateral spots, the fifth tergite wholly and the pygidium largely, yellow; smooth, shining, finely and sparsely punctate, but fifth tergite much more strongly and closely punctate than preceding tergites; the pygidium coarsely closely punctate (Senegambia)-----braueri (Kohl)  
Abdomen red, not maculated with yellow; fifth tergite not appreciably more coarsely punctate than preceding tergites----- 7
7. Scutellum longitudinally striatorugose; eyes separated at their nearest point by a distance equal to three-fourths length of scape; postorbital carina continued onto the posterior margin of head (Natal)---rugosopunctata Turner  
Scutellum with large scattered and well-separated variolate punctures; eyes separated at their nearest point by a distance equal to less than one-half length of scape; postorbital carina not continued onto posterior margin of head (Nigeria)-----bridwelli, new species

#### ENCOPOGNATHUS (ENCOPOGNATHUS) BRAUERI (Kohl)

*Crabro (Encopognathus) Braueri* KOHL, Ann. Naturhist. Hofmus. Wien, vol. 11, p. 486, fig. 89, 1896 (♀; Senegambia).

*T[hyreopus] (Encopognathus) Braueri* ARNOLD, Ann. Transvaal Mus., vol. 11, p. 346, 1926.

*Encopognathus (Encopognathus) braueri* PATE, Lloydia, vol. 6, pp. 75, 76, 1943.

This, the genotypic species, is known from only the unique female from Senegambia. The finely punctate, black, maculated abdomen readily separates *braueri* from the following three species.

#### ENCOPOGNATHUS (ENCOPOGNATHUS) RUGOSOPUNCTATA Turner

*Encopognathus rugosopunctatus* TURNER, Ann. Mag. Nat. Hist., ser. 8, vol. 9, p. 419, 1912 (♀; Durban, Natal).

*T[hyreopus] (Encopognathus) rugosopunctatus* ARNOLD, Ann. Transvaal Mus., vol. 11, p. 345, 1926.

*Encopognathus (Encopognathus) rugosopunctatus* PATE, Lloydia, vol. 6, p. 75, 1943.

The bright red, immaculate, finely punctate abdomen distinguishes *rugosopunctata* from all other members of the *braueri* group except *bridwelli*. The differential characters separating the present species from *bridwelli* have been presented in the foregoing key to species.

If all the pemphilidine wasps were to be placed in one blanket genus *Crabro*, as Arnold proposes, it would be necessary to rename this species inasmuch as it would then be a homonym of Taschenberg's 1875 Venezuelan species and also Provancher's 1882 Canadian form.

ENCOPOGNATHUS (ENCOPOGNATHUS) BRIDWELLI,<sup>2</sup> new species

FIGURE 16, *m*

The superficial habitus of *bridwelli* is very similar to that of Turner's Natal *rugosopunctata*, from which it may be differentiated by the variolate sculpture of the scutellum and the narrower front. In addition, the postorbital carinule of *bridwelli* is not continuous onto the vertex and the recurrent vein of the fore wing is received by the submarginal cell three-fifths of the way from its base, whereas in *rugosopunctata* the postorbital carinule is continuous dorsally on the vertex while the recurrent vein is received by the submarginal cell only two-fifths of the way from its base.

*Type*.—Female; Oloke-Meji to Ibadan, Lagos, southern Nigeria. (J. C. Bridwell; U. S. N. M. No. 58033.)

*Female*.—Length 8 mm. Black; the following stramineous: Basal half of mandibles (remainder red), scapes except for a small black spot behind; postscutellum with a small lateral spot on each side; fore and middle femora with a small spot at apex; all tibiae on outer faces; all tarsi except last segment. Fulvous: Apex of clypeal lobe; pronotal tubercles; fore femora; all tibiae beneath; last segment of all tarsi; trophi. Abdomen bright ferruginous. Wings clear hyaline, with a faint cloud in marginal cell; veins and stigma brunneous.

Head fulgid; clypeus except bevel, and inner orbits with a narrow band of silvery sericeous pile; temples with a thin vestiture of puberulent silvery hair. Front in scapal region strongly concave, impunctate, width at narrowest point about three-sevenths (0.436) the length of scape; upper front and vertex with scattered, irregular, coarse, variolate punctures; supraorbital foveae large, distinct, ovate, immarginate; ocelli in a curved line, the ocellocular line three-fourths the postocellar distance; postorbital carinule sharp, distinct, but not foveolate anteriorly or continuous above and separating the vertex from the occipital region, though with a low transverse ridge there medially; temples and occiput very finely punctulate. Antennae with sockets contiguous to nearest lower inner orbits; scapes simple, subcylindrical, ecarinate, about six-tenths the vertical eye length; pedicel obterete, seven-tenths the length of first flagellar article; flagellum

<sup>2</sup> After J. C. Bridwell, who collected the type of this and other species described in this report.

simple, second segment four-fifths the length of first. Clypeus (fig. 16, *m*) finely punctulate, median length almost three-eighths (0.363) the vertical eye length; disc flatly tectate, bisected by a low keel which ends in the gently declivous, glabrous, polite, impunctate, low trigonal bevel of the median lobe, the apical margin of which is truncate medially, laterally on each side with two teeth.

Thorax subfulgid; with a thin vestiture of decumbent silvery puberulent hair, which is most noticeable on mesopleura. Pronotum short, anterior dorsal margin bluntly carinate except medially, humeri bluntly dentate, tubercles edentate; dorsal face traversed by a transverse foveolate furrow. Mesonotum and scutellum with coarse, scattered, variolate punctures throughout, the latter with lateral edges very weakly margined; postscutellum finely rugulose, simple, without laminae or lobes. Mesopleura coarsely rugosopunctate above to finely punctate below; metapleura with a few horizontal rugulae. Propodeum: Dorsal face with a row of large areoles radiating from anterior margin; posterior face with a broad, trigonal discal areole, laterad of which the surface is traversed by horizontal rugae; lateral carinae well developed below, obsolescent above, simple and not bifurcate below; lateral faces finely acupunctate.

Legs stout, simple. Fore metatarsi flattened, with a pecten of short, stiff spines. Middle and hind tibiae with outer faces spinulose. Longer hind tibial calcar eight-tenths the length of hind metatarsus.

Forewings with marginal cell about three times as long as broad and broadly truncate at apex; both radius and cubitus with second abscissae almost eight-tenths (0.78) the length of first abscissae.

Abdomen fulgid; with a thin vestiture of decumbent silvery puberulent hair. Tergites with fine scattered acupunctures and fine microscopic transverse aciculation; fifth tergite with puncturation slightly more distinct than preceding tergite; ultimate tergite with a broad, equilaterally trigonal pygidial area, the disc polite, with a few coarse punctures. Sternites with fine microscopic cancellate sculpture.

This Nigerian species is known from only the unique female described above.

#### ENCOPOGNATHUS (ENCOPOGNATHUS) RHODESIANA (Arnold)

*T[hyrcopus]* (*Encopognathus*) *chirindensis* Arnold, Occ. Pap. Rhodesian Mus., No. 1, p. 19, figs. 10, 10a, 1932 (♀, ♂; Southern Rhodesia; Spongweni).

*Encopognathus* (*Encopognathus*) *rhodesianus* PATE, Lloydia, vol. 6, p. 75, 1943.

The porrect lamelliform frontal tooth, the coarsely punctate first two segments of the immaculate black abdomen, and the carinate postscutellum distinguish this Southern Rhodesian form from all the other members of the *braueri* group.

## ENCOPOGNATHUS (ENCOPOGNATHUS) CHIRINDENSIS (Arnold)

*T[hyreopus]* (*Encopognathus*) *chirindensis* ARNOLD, Occ. Pap. Rhodesian Mus., No. 1, p. 17, figs. 11, 11a, 11b, 1932 (♀, ♂; Southern Rhodesia: Chirinda Forest, tunneling in a shady, sandy path).

*Encopognathus* (*Encopognathus*) *chirindensis* PATE, Lloydia, vol. 6, pp. 75, 76, 1943; ♀, ♂; Southern Rhodesia: Chirinda Forest; Mount Selinda).

The thick, opaque postscutellar lobes differentiate *chirindensis* from all other members of the *brownei* group. This is apparently one of the commonest species of the subgenus.

## ENCOPOGNATHUS (ENCOPOGNATHUS) BROWNEI (Turner)

*Encopognathus Brownei* TURNER, Ann. Mag. Nat. Hist., ser. 8, vol. 19, p. 106, 1917 (♀; Kenya: Tana River, 3,000 feet, near Mount Kenya).

*T[hyreopus]* (*Encopognathus*) *Brownei* ARNOLD, Ann. Transvaal Mus., vol. 11, p. 346, 1926; Ann. Transvaal Mus., vol. 12, p. 122, 1927 (*egregius* Arnold, 1926, placed as a synonym of *brownei* Turner, 1917).

*T[hyreopus]* (*Encopognathus*) *egregius* ARNOLD, Ann. Transvaal Mus., vol. 11, p. 347, figs. 4a, 4b, 1926 (♀; Southern Rhodesia: Sawmills; Rhodesdale, nesting in sandy banks).

*Encopognathus* (*Encopognathus*) *brownei* PATE, Lloydia, vol. 6, pp. 75, 76, 1943 (♀; Southern Rhodesia: Sanyati Valley).

This and the following two species have the postscutellum armed with a translucent lamella around the lateral and posterior margins. The coarsely punctate first three abdominal tergites immediately separates *brownei*, which ranges from Southern Rhodesia northward to Mount Kenya in east Africa, from both *granulata* and *acanthomerus*.

## ENCOPOGNATHUS (ENCOPOGNATHUS) GRANULATA (Arnold)

*T[hyreopus]* (*Encopognathus*) *granulatus* ARNOLD, Ann. Transvaal Mus., vol. 11, p. 348, 1926 (♀; Belgian Congo: Penge).

*Encopognathus* (*Encopognathus*) *granulatus* PATE, Lloydia, vol. 6, pp. 75, 76, 1943.

The fourth and fifth tergites of this species are covered with small, oval, warty granules. This type of sculpture is very distinctive and of rare occurrence in the sphecoid wasps and serves to differentiate *granulata* from all other species of *Encopognathus*.

If all pemphilid wasps were to be placed in the single portmanteau genus *Crabro*, as Arnold proposes to do, the present species would require another name inasmuch as it would then be a homonym of the Egyptian *Crabro granulatus* Walker, 1871.

ENCOPOGNATHUS (ENCOPOGNATHUS) ACANTHOMERUS,<sup>3</sup> new species

FIGURE 16, b, j, n

The present Nigerian species is evidently most closely related to *granulata* but lacks the granular to finely pustulate sculpture on the

<sup>3</sup> δκανθα, spine+μηρός, thigh; in allusion to the retrorsely spined fore femora of the males.

fourth and fifth abdominal tergites, which is such a characteristic feature of the Belgian Congo form. In addition, the fore femora of the males are armed beneath with a long retrorse spine and also have the antennal scape and pedicel very curiously modified.

*Type*.—Male; Oloke-Meji to Ibadan, Lagos, southern Nigeria. (J. C. Bridwell; U. S. N. M., No. 58034.)

*Male*.—Length 5 mm. Black; the following citrinous: Scapes save for a black spot behind; pronotal tubercles; fore femora with a narrow stripe above and a broad stripe lengthwise below; fore tibiae; middle tibiae on outer faces; hind tibiae with a broad stripe lengthwise on outer faces; all tarsi. Mandibles dark red. Fulvous: Fore femora save for yellow maculation; middle tibiae on inner faces; last two abdominal segments.

Head fulgid; clypeus with a silvery sericeous appressed pile; temples with a thin vestiture of decumbent puberulent silvery hair. Front with scapal area concave, shining, impunctate, inconspicuously and transversely strigose; upper front and vertex with coarse, irregular pits and punctures, which somewhat obscure the supraorbital foveae; ocelli in a low triangle, the ocellocular line three-fourths the postocellar distance; posterior orbits margined by a carinule, which is weakly foveolate anteriorly and which is continuous across vertex behind posterior ocelli; temples and area between postorbital and occipital carinules finely punctulate. Antennae (fig. 16, *b*) with scapes irregular, angulate before apex, almost one-half (0.45) the vertical eye length; pedicel two-thirds the length of first flagellar article, with a long lateral acuminate appendix; flagellum with first segment angularly widened below toward apex and twice the length of second segment; last segment twice the length of penult article; antennocular line one-half the interantennal distance. Clypeus (fig. 16, *n*) one-fourth the vertical eye length, finely punctulate, flat laterally to sharply tuberculate discally; with a polite, impunctate, glabrous, trigonal bevel from discal tubercle to apex of the sex-dentate median lobe. Mandibles with apices slender, acuminate; lower margins distinctly excised.

Thorax fulgid; with a thin and inconspicuous vestiture of puberulent silvery pubescence, which is most noticeable on epicnemium and lower mesopleura. Pronotum short, anterior margin transversely carinate, humeri and pronotal tubercles sharply dentate. Mesonotum with scattered, coarse, variolate pits and punctures; suture between mesonotum and scutellum deeply impressed; scutellum with coarse variolate punctures, lateral edges sharply margined; postscutellum with anterior margin arcuately carinate, surface concave, bisected by a carinule, lateral and posterior margins edged with a translucent, brownish, ecarinulate lamina, which is emarginate medioposteriorly. Meso-

pleura and metapleura with coarse, close, variolate punctures. Propodeum with dorsal and posterior faces coarsely areolate and sculptured; lateral carinae well developed, bifurcate below; lateral faces microscopically granulose.

Forelegs with femora (fig. 16, *j*) stoutly subfusiform, angulate distally below and armed with a long retrorse spine; tibiae flattened beneath; metatarsi distorted-laminate. Middle and hind legs simple, the tibiae echinulate on outer faces; longer hind tibial calcar one-half length of hind metatarsi.

Forewings with marginal cell three times as long as wide and broadly truncate at apex; radius with second abscissa eight-tenths the length of first abscissa; cubitus with first abscissa almost two-thirds (0.65) the length of second abscissa.

Abdomen fulgid; with a very inconspicuous vestiture of fine puberulent silvery hairs. Tergites almost impunctate but with fine microscopic transverse aciculation. Penult tergite with a few coarse scattered punctures; last tergite with a subtrapeziform pygidial area, the disc coarsely punctate. Sternites practically impunctate; hypopygium with apex entire.

*Allotype*.—Female; topotypical. Same data as type. (U. S. National Museum collection.)

*Female*.—Length 6 mm. The following features are solely those noteworthy of difference from those given in the foregoing description of the male (type):

Livery the same, but base of mandibles yellow.

Head with clypeal lobe essentially the same, the median clypeal length one-fourth the vertical eye length. Antennal scapes one-half the vertical eye length; simple, cylindrical, ecarinate; pedicel simple, obterete, four-fifths the length of the first flagellar article; flagellum simple, first two segments subequal in length, ultimate segment twice the length of penult article. Ocellocular line almost six-tenths (0.571) the postocellar distance.

Thorax and propodeum essentially the same; the pronotum with anterior margin more strongly carinate; humeri and pronotal tubercles more strongly dentate.

All legs simple. Fore metatarsi flattened, rather wide, and with a pecten of short stiff spines.

Abdomen generally as in male, but pygidial area broad, equilaterally trigonal, the disc with a few coarse, scattered punctures. Second sternite medially with a sharp, transverse, arcuate ridge on each side of median line.

This distinctive Nigerian species is known only from the unique pair described above.

ARNOLDITA,<sup>4</sup> new genus

*Thyreopus* (*Tracheliodes*) [*nec* Morawitz] ARNOLD, Ann. Transvaal Mus., vol. 11, p. 349, 1926.

*Crabro* (species-group *Tracheliodes*) [*nec* Morawitz] ARNOLD, Ann. Transvaal Mus., vol. 20, p. 137, 1940; Occ. Pap. Nat. Mus. Southern Rhodesia, vol. 2, No. 2, p. 28, 1944.

*Genotype*.—*Thyreopus* (*Tracheliodes*) *perarmatus* Arnold, 1926 (= *Arnoldita perarmata* (Arnold)).

The three-segmented labial and six-segmented maxillary palpi differentiate *Arnoldita* from all other genera of pemphilidine wasps with the exception of *Tracheliodes* and *Enoplolindenius*. From both of these, the present genus may be distinguished by its slender, elongate, clavate abdomen, the well-developed sternauli and hypersternauli on the mesopleura, the porrect frontal process, and the 11-segmented antennae of the males. In addition, the transversely carinate pronotum, the vertical carina on the mesopleura before the middle coxae, the strongly flanged and foveolate occipital carina, and the carinate antennal scapes separate *Arnoldita* from *Tracheliodes*; while the rounded, ecarinate mesosternum, the incompletely margined scapal sinus, the incomplete occipital carinule, and the protean-shaped mandibles distinguish the present genus from the New World entity *Enoplolindenius*.

*Generic characters*.—Small, slender, fulgid, impunctate or at best finely punctate forms. Head broad, transversely subrectangular in both anterior and dorsal aspects; eyes naked, very large and broad below, which more coarsely faceted anteriorly than posteriorly, inner orbits either strongly convergent below or more or less arcuate; malar space wanting. Front on anterior vertical aspect generally narrow, and with a rather deep, incompletely marginate scapal sinus bisected by a longitudinal carinule from which arises just above antennal sockets one, or rarely two, large, porrect, protean-shaped processes. Vertex flat, nitidous, generally impunctate; supraorbital foveae present and generally distinct; ocelli moderately large, arranged in an equilateral triangle. Temples very well developed, ecarinate, but posterior orbits either paralleled or not by a marginate groove; occipital carina very well developed, strongly flanged, foveolate anteriorly, but neither a complete circle in extent nor attaining the hypostomal carinule bordering the broad, shallow, scyphate oral fossa. Antennae situated low on face on dorsal margin of clypeus, the sockets contiguous to each other and either contiguous to, or well separated from, the nearest lower inner orbits; 12-segmented in the females, and with only eleven apparent segments in the known males; scape slender,

<sup>4</sup>It gives me great pleasure to dedicate this distinctive genus to Dr. George Arnold, director of the National Museum of Southern Rhodesia, in recognition of his outstanding work on the aculeate Hymenoptera of Africa.



elongate, unicarinate lengthwise; flagellum generally simple in females, but in males with the first three segments apparently ankylosed. Clypeus reduced laterally to a mere line, medially with a very short lobe which is diversely dentate or excised apically. Maxillary palpi with six, labial palpi with three, segments. Mandibles slender, very elongate, strongly decussate; apices either simple and acuminate, bidentate or truncate; inner margins dentate or edentate; lower margins entire. Females without a psammophore.

Thorax compact, perfulgid, finely punctate at most. Pronotum relatively elongate, transverse, anterior dorsal margin furnished with a sharp, transverse carina which descends vertically at the humeri; the dorsal surface with a transverse torus and frequently with a row of large foveae. Mesonotum polite, impunctate, though sometimes with pits or foveae anteriorly; suture between mesonotum and scutellum foveolate; axillae small, lateral margins rounded; scutellum polite; postscutellum short, transversely linear, longitudinally striate. Mesopleura more or less horizontally striate, generally impunctate; prepectus sharply margined anteriorly; episternal suture, hypersternauli, and sternauli present, well developed and strongly foveate, and a vertical carina before the middle coxae. Metapleura finely sculptured. Mesosternum rounded, ecarinate anteriorly. Propodeum fulgid; dorsal face with a more or less well defined trigonal enclosure; lateral carinae present and well developed along posterior and dorsal faces; posterior face with a discal areole.

Forewing with marginal cell narrow and elongate, four times as long as wide, truncate at apex and with a small appendiculate cell; radial vein with first abscissa one-half the length of second abscissa; transverse cubital vein oblique, inclivous, one-third the length of second abscissa of cubitus; cubitus with first abscissa two-thirds the length of second abscissa and somewhat angled backward at point of reception of recurrent vein. Hind wing with anal lobe distinctly shorter than the short submedian cell.

Legs simple or variously modified. Fore trochanters slender, obterate, about one-half the length of fore femora. Middle tibiae with a calcar in both sexes.

Abdomen slender, elongate, clavate; nitidous, immaculate black, and impunctate or at best very finely punctate. First segment elongate, petioliform and more or less nodose at apex. Tergites with basal acarid chambers, the ultimate in the females with a fully marginate pygidial area, which is more or less narrowed and excavate apically, the disc shallowly concave, the lateral margins glabrous. Males probably without a distinct pygidial area.

*Remarks.*—Although Arnold has recognized the discreteness of the present group, he has consistently assigned the component species to the

Holarctic genus *Tracheliodes*. But as I have pointed out in my review of that myrmecotherous entity,<sup>5</sup> *Arnoldita* has little in common with *Tracheliodes* save the same number of segments in the labial palpi. The strongly flanged and foveolate occipital carina, the transversely carinate pronotum, the sharply margined prepectus, the presence on the mesopleura of a vertical carina before the middle coxae and of well-developed sternauli and hypersternauli, the well-developed lateral carinae on the propodeum, and finally the slender, elongate, clavate abdomen of which the first segment is petioliform and more or less nodose apically, all indicate that these African species cannot be placed in *Tracheliodes* without doing violence to recognized generic concepts. Instead, as predicted elsewhere,<sup>6</sup> these features attest the close relationship that *Arnoldita* bears to the *Foxita* complex, of which it may be considered a highly specialized and aberrant member.

*Ethology*.—Like the majority of the members of the *Foxita* complex, the species of *Arnoldita* are xyloecetes. Arnold states that *A. senex* was bred from the abandoned burrows made by bostrychid beetles in an old wooden post at Helenvale, near Bulawayo, Southern Rhodesia.<sup>7</sup> All the species of *Arnoldita* have a relatively large, much thickened head, with the face strikingly broad below, and the mandibles extraordinarily large and well developed. This peculiarity is evidently correlated in some manner with the biology of these wasps: The mandibles are probably used either for excavating the burrows in wood or pithy stems, or, as in *Tracheliodes*, for seizing and carrying the prey back to the nest.

*Distribution*.—The genus *Arnoldita* is an entity restricted to the Ethiopian Region. At present three species are known: the Southern Rhodesian forms *senex* and *canalifera*, and *perarmata* which ranges from the northern portion of the Belgian Congo to Nigeria. The following key will serve to differentiate these forms:

#### KEY TO THE SPECIES OF ARNOLDITA

1. Fore femora armed below with a median tooth; antennal sockets contiguous to nearest lower inner orbit; mesonotum with two small pits anteriorly; mandibular apices obliquely truncate, the inner margins with a large preapical tooth; front with a porrect spatulate horn, the lateral margins of which are reflexed and the apex emarginate (Belgian Congo to Nigeria).  
perarmata (Arnold)
- Fore femora edentate below; antennal sockets relatively remote from nearest lower inner orbit; mesonotum without two pitlike foveae anteriorly (South African forms)----- 2
2. Mandibular apices truncate, inner margins edentate; mesonotum simple, not bisected anteriorly by a carinule; front with two porrect median processes; clypeus quinque-dentate-----senex (Arnold)

<sup>5</sup> *Lloydia*, vol. 5, pp. 230-231, 1942.

<sup>6</sup> *Rev. Ent. (Rio de Janeiro)*, vol. 13, pp. 389-390, 1942.

<sup>7</sup> *Ann. Transvaal Mus.*, vol. 11, p. 352, 1926.

Mandibular apices bidentate, the inner margins with a large tooth on basal third; mesonotum bisected anteriorly by a carinule; front with a single, porrect, spatulate process; clypeus quadridentate, the two median teeth broad and obliquely truncate-----canalifera (Arnold)

ARNOLDITA PERARMATA (Arnold)

FIGURE 16, *i, l*

*T[hycopus] (Tracheliodes) perarmatus* ARNOLD, Ann. Transvaal Mus., vol. 11, p. 349, figs. 5, 5a-d, 1926 (♀; Moho, near Lesse, Belgian Congo. Type in Congo-Museum, Tervueren, Belgium).

The dentate lower margins of the fore femora and the position of the antennal sockets in relation to the nearest lower inner orbits distinguish *perarmata* from the following two species.

I have examined three female specimens of *perarmata* in the collection of the United States National Museum, taken by J. C. Bridwell between Oloke-Meji and Ibadan, Lagos, southern Nigeria.

ARNOLDITA CANALIFERA (Arnold)

FIGURE 16, *d, g*

*Orabro* [species-group *Tracheliodes*] *canaliferus* ARNOLD, Occ. Pap. Nat. Mus. Southern Rhodesia, vol. 2, No. 2, p. 28, figs. 29, 29a-b 1944 (♀; Bulawayo, Southern Rhodesia. Type in Stevenson collection).

This species is evidently somewhat intermediate between *perarmata* and *senex*. Like *perarmata*, the front of *canalifera* is armed with a spatulate frontal horn but the simple unarmed fore femora readily separate it from that species. The much larger size and differently shaped clypeus distinguish *canalifera* at once from both *senex* and *perarmata*.

ARNOLDITA SENEX (Arnold)

FIGURE 16, *a, c*

*T[hycopus] (Tracheliodes) senex* ARNOLD, Ann. Transvaal Mus., vol. 11, p. 350, figs. 6, 6a, 1926 (♂; bred from abandoned burrows of bostrychid beetles in wooden post; Helenvale, near Bulawayo, Southern Rhodesia. Type in National Museum of Southern Rhodesia).

*C[rabro]* (species-group *Tracheliodes*) *senex* ARNOLD, Ann. Transvaal Mus., vol. 20, p. 137, fig. 27, 1940 (Southern Rhodesia: ♀, Lupane; ♂, Khamis).

The present species is readily distinguished from the other members of *Arnoldita* by the presence of two frontal horns or processes. These differ in the sexes: in the female the upper one is lamelliform but not spatulate in dorsal aspect and is angularly excised at base, while the lower one is subconical, shorter, and less porrect than that of the male; in the male the upper process is spatulate and the lower one strongly compressed on the lower half. The mandibular apices of the male are

simple and acuminate whereas those of the female are truncate. The structure of the clypeus likewise differs in the sexes.

### Genus *LESTICA* Billberg

#### *LESTICA* *DASYMERUS*,<sup>8</sup> new species

#### FIGURE 16, *e, f, h, k, o*

The peculiar conformation of the legs, particularly the fore and middle pair, readily differentiates *dasymerus* from all other species of the *Ceratocolus* section of the nominate subgenus of *Lestica*.

*Type*.—Male; Oloke-Meji to Ibaden, Lagos. Southern Nigeria. (J. C. Bridwell; U. S. N. M. No. 58035.)

*Male*.—Length 7 mm. Black; the following badeous: Mandibles save for red apices; pedicel; flagellar segments beneath; all trochanters and tarsi; fore tibiae with a line along posterior margins; middle femora and tibiae on inner faces; apical abdominal sternites. Citrinous: Antennal scapes anteriorly; pronotum with a transverse stripe broadly interrupted medially; pronotal tubercles; scutellum; first four abdominal tergites with a small spot laterally on each side; fore femora and tibiae; middle femora with a broad stripe lengthwise above and below; middle tibiae on outer faces. Wings tinged with fuscous; veins and stigma very dark brunneous.

Head opaque; subtrapeziform in anterior aspect, subquadrate in dorsal aspect; clypeus, and a narrow stripe along inner orbits, silvery pubescent; lower temples with a sparse vestiture of silvery puberulent hair. Front with scapal area deeply concave, finely microscopically punctulate; upper front and vertex with large, coarse, irregular, close, variolate pits and punctures; supraorbital foveae distinct, elongate, linear, cicatrose; ocelli arranged in a subequilateral triangle, the ocellocular line four-fifths the postocellar distance; occipital carina very well developed, strongly flanged, shallowly but distinctly foveolate anteriorly, attaining the posterior angles of the oral fossa, the hypostomal carinule obtusely lobed along posterior margin. Temples variolately pitted above, finely punctulate below. Antennae with scapes about one-half (0.52) the vertical eye length, obterete, ecarinate lengthwise; pedicel suborbate, two-fifths the length of first flagellar article; flagellum slender, elongate, with an inconspicuous fringe of short silvery hairs beneath along the tyloides, second segment nine-tenths length of first article, penult segment two-thirds length of last article. Clypeus (fig. 16, *h*) with median length one-third the vertical eye length; flatly tectate; bisected by a distinct keel which terminates in a small deflexed, polite, glabrous bevel at the apex of the produced median lobe. Mandibles strongly incurved apically; apices evenly bidentate; inner margins with a low obtuse tooth.

<sup>8</sup> δασύς, shaggy hair + μῆρος, thigh; in allusion to the band of long shaggy hair on the fore femora.

Thorax opaque; with a thin vestiture of puberulent silvery hair which is most noticeable on lower half of mesopleura. Pronotum (fig. 16, *k*) with anterior and lateral margins sharply carinate, the humeri acutely angulate and projecting forward; dorsal surface coarsely, variolately sculptured. Mesonotum coarsely, closely, variolately pitted throughout; axillae sharply margined laterally; scutellum flat, coarsely, closely, variolately pitted throughout, lateral edges margined; postscutellum longitudinally rugulose. Mesopleura coarsely, variolately sculptured above to finely punctulate on lower third. Metapleura coarsely, longitudinally rugulate. Propodeum with large, coarse areoles on dorsal and posterior faces, the latter with a large, broad, subcuneate areole discally; lateral carinae well developed; lateral faces traversed by well-separated horizontal rugae.

Forelegs (fig. 16, *e, o*) with femora subtriquetrous and with a basal lobe projecting back beyond insertion of trochanter, lower outer edge sharply carinate, with a row of long white hairs near upper edge; tibiae subtriquetrous; tarsi distorted, without a pecten, second segment with a long appendix. Middle legs (fig. 16, *f*): coxae and trochanters with a brush of hair beneath; femora stoutly fusiform, keeled beneath at base and apex; tibiae irregularly subtriquetrous; metatarsi irregularly flattened, their anterior margin closely spinulate. Hind legs with coxae and trochanters villous beneath; femora stoutly subfusiform, finely rugulate and with a fine, irregular carinule below; tibiae stoutly obterate, the outer faces echinulate; metatarsi strongly compressed, elongate, three-fourths the length of tibiae and twice the length of the four distal segments combined; longer hind tibial calcar two-thirds the length of hind metatarsi.

Forewings with marginal cell elongate, narrow, four times as long as wide, broadly and squarely truncate at apex; radius with first abscissa five-eighths the length of second abscissa; transverse cubital vein one and a fourth times the length of second abscissa of cubitus which is one-fourth the length of first abscissa of cubitus.

Abdomen fulgid; compactly elongate-ovate; strongly constricted between the second, third, and fourth tergites; with a fine, thin vestiture of silvery puberulent hair. First three tergites coarsely, closely punctate save for a narrow transverse band of finer closer punctures just before the beaded caudal margins; fourth tergite rather coarsely punctate on basal two-thirds; remaining tergites finely punctulate; ultimate tergite short, transverse, almost impunctate, without a pygidial area, not bisected by a sulcus, the apical margin sinuate laterally on each side. Sternites finely, microscopically punctulate.

This distinctive species is known only from the unique male described above.

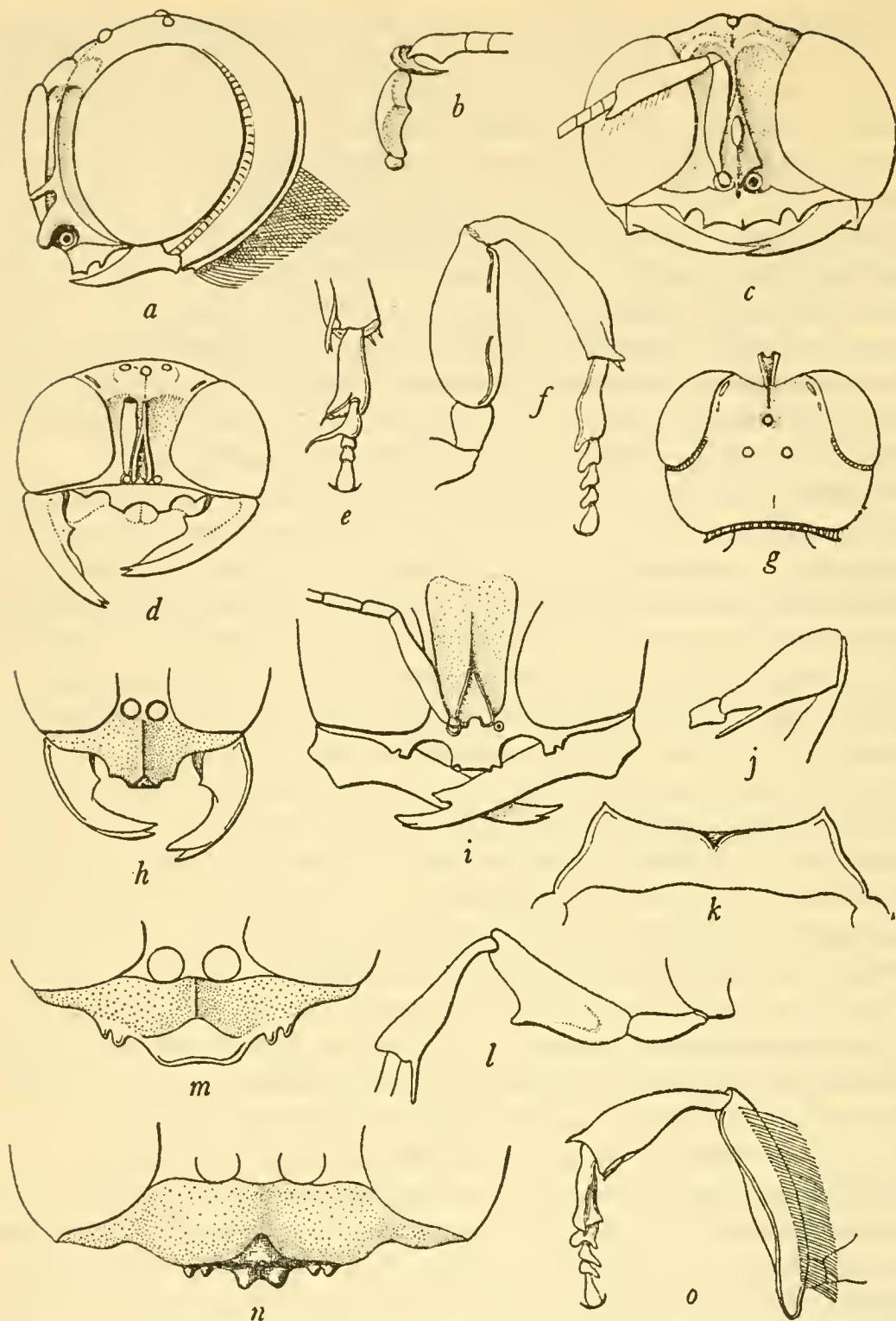


FIGURE 16.—*a*, *Arnoldita senex* (Arnold): Anterolateral aspect of head; *b*, *Encopognathus* (*E.*) *acanthomerus*, new species: Scape and basal flagellar articles; *c*, *Arnoldita senex* (Arnold): Anterior aspect of head; *d*, *A. canalifera* (Arnold): Anterior aspect of head; *e*, *Lestica dasymerus*, new species: Anterior aspect of fore tarsus; *f*, *L. dasymerus*: Posterior aspect of middle leg; *g*, *Arnoldita canalifera* (Arnold): Dorsal aspect of head; *h*, *Lestica dasymerus*, new species: Anterior aspect of clypeal region of head; *i*, *Arnoldita perarmata* (Arnold): Anterior aspect of lower portion of head; *j*, *Encopognathus* (*E.*) *acanthomerus*, new species: Lateral aspect of fore femur; *k*, *Lestica dasymerus*, new species: Dorsal aspect of pronotum; *l*, *Arnoldita perarmata* (Arnold): Lateral aspect of foreleg; *m*, *Encopognathus* (*E.*) *bridwelli*, new species: Anterior aspect of clypeal region of head; *n*, *E. (E.) acanthomerus*, new species: Anterior aspect of head of male; *o*, *Lestica dasymerus*, new species: Outer lateral aspect of foreleg.