

DESCRIPTIONS OF FOURTEEN NEW SPECIES OF NORTH AMERICAN MYRIAPODS.

By CHARLES H. BOLLMAN.

The present paper contains descriptions of fourteen species of myriapods which I believe to be new.

The types of all have been presented to the U. S. National Museum.

I take pleasure in acknowledging my indebtedness for specimens to Prof. George F. Atkinson, of the University of South Carolina; to Dr. Richard D. Owen, of New Harmony, Ind.; to Mr. Charles B. Branner, of Mossy Creek, Tenn.; to Mr. and Mrs. Carl H. Eigenmann, of San Diego, Cal.; to Mr. Charles L. Edwards, of Johns Hopkins University; to Mr. James H. Burke, of Ukiah, Cal., and to Mr. Frederick C. Test, of Westfield, Ind.

1. *Parajulus ectenes*, sp. nov.

*Diagnosis*.—Allied to *Parajulus pennsylvanicus* (Brandt), but the form of body much more slender, the repugnatorial pore not touching transverse suture, which is straight, and the male genitalia entirely different.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Chapel Hill, Orange County, N. C.

*Description of type*.—Very dark brown, almost black, light spots more or less confluent and indistinct, joints of antennæ tipped with white; legs brown, slender; segments pilose and sulcate, as in *pennsylvanicus*. Vertex not sulcate, setigerous foveolæ present. Antennæ scarcely subclavate, longer than width of body. Ocelli distinct, ♂ 70-9, ♀ 60-8, arranged in a subtrapezoidal patch. Last segment not passing beyond anal valves, which are pilose and not marginate; anal scale obtuse-angled.

Number of segments, ♂ and ♀ 67.

Pairs of legs of female, 120.

Length of body: ♂ 46<sup>mm</sup>, width 1.6<sup>mm</sup>, antennæ 2.7<sup>mm</sup>; ♀ length 54<sup>mm</sup>, width 1.8<sup>mm</sup>, antennæ 1.9<sup>mm</sup>.

I have a single pair of this species, collected by Prof. George F. Atkinson. In the same collection there is a young *Parajulus* that probably belongs to this species. This species differs from any other by the slender body and peculiar form of the male genitalia, which I have not described here, but will do so in a paper relating to the genus. It may be worthy of remark that at present I consider the *Julus piloscutis* of Wood as identical with *P. pennsylvanicus* (Brandt). His descriptions seem to apply more to the younger stages of the latter. Concerning the status of *Julus montanus* Cope, I have regarded it as identical with *P. pennsylvanicus*, but it may represent a geographical form, as those from farther south have more segments and attain a larger size.

2. *Parajulus zonatus*, sp. nov.

*Diagnosis*.—Related to *Parajulus fureifur* (Harger), but the anal segment produced into a strong spine, which passes considerably beyond anal valves; segments with short, deep sulcations; color dark brown, posterior border of segments pale.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Chehalis, Lewis County, Wash. Terr.

*Description of type*.—Brown, posterior border of segments pale, usual yellow lines and spots absent, legs dark. Robust, segments with numerous short sulcations, not pilose. Vertex rough, a distinct median sulcus, setigerous foveolæ present. Antennæ equaling width of body. Ocelli 46-7 to 56-8, arranged in a triangular patch. Segments, 52 to 53. Last segment produced into a large, straight, robust spine, passing beyond anal valves; anal valves slightly marginate, sparsely pilose; anal scale large, not passing beyond anal valves, pilose. Repugnatorial pore large, more deeply impressed than in *fureifur*, placed near transverse suture, which is nearly straight.

Pairs of legs, 93 to 95, moderately long. Length of body, 25 to 40<sup>mm</sup>; width, 2 to 2.5<sup>mm</sup>.

This species differs most strikingly from *P. fureifur* by having the last segment produced considerably beyond anal valves, and also by the plain color. In *P. fureifur* the last segment does not pass beyond the anal valves, and the yellow lines and spots, which are absent in *zonatus* and generally present in other species, are very bright; in fact, much more than in any other species.

The male genitalia, of which I have said nothing, differ very remarkably from that of *P. fureifur* or *P. oregonensis*.

I have examined two males of this species. They were collected by Mr. George Gregg, of Chehalis, Wash. Terr.

3. *Craspedosoma atrolineatum*, sp. nov.

*Diagnosis*.—Light brown, lateral carinæ and a median dorsal line dark. Male: Femur of fourth pair of legs produced at the middle into a knob-like process armed with a few rather large tubercles; femur of ninth pair with a cylindrical, tapering basal lobe, which is slightly tuberculate.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Glacier, British Columbia.

*Description of type*.—Light brown, lateral carinæ and a median dorsal line black; legs pale. Robust, attenuated anteriorly and posteriorly, back not flattened. Ocelli very distinct, arranged in a subtriangular patch, 20-4 to 23-5. Dorsal plates finely reticulated. Antennæ and legs long.

Male: 3, 4, 5, 6, 7 pairs of legs crassate, rest slender; about the first fifteen pairs, excepting the first two, with the tarsal joint armed on the under side with an elongate patch of short tubercles extending from the middle to claw, coxa not tuberculate; femur of fourth pair of legs produced into a knob-like appendage on the under side near the middle and armed with three or four moderately large sharp tubercles; femur of ninth pair with an inward projecting, cylindrical, tapering, basal lobe, which is indistinctly tuberculate on the upper side.

Length of body: ♂ 16 to 18.5<sup>mm</sup>, width 1.2 to 1.5<sup>mm</sup>; ♀ length 13 to 16<sup>mm</sup>, width .9 to 1.2<sup>mm</sup>, antennæ 2<sup>mm</sup>.

This new species is more related to the cave form *Craspedosoma bollmani*, the male of which has the same peculiar knobs, but the tuberculation is different. From Harger's description of *C. glomeratum* this species seems to differ in having a dark median dorsal line, besides being of a larger size.

I have examined over a dozen specimens collected by Mr. Carl H. Eigenmann.

#### 4. *Paradesmus dasys*, sp. nov.

*Diagnosis.*—Very similar to *Paradesmus gracilis* (Koch), but the tibia and tarsi of male tuberculate beneath; vertex pilose on each side of sulcus, first and penultimate segments with two rows of setæ, rest with one; copulation foot resembling that of *gracilis*.

*Type.*—U. S. Nat. Museum.

*Habitat.*—Baltimore, Md.

This species is very closely related to *Paradesmus gracilis*, as shown by the character of male genitalia, but is at once recognized by the characters given in the diagnosis. The following differences were also observed, which, except the characters of male genitalia, are not of much importance:

Dorsal plates somewhat wrinkled; repugnatorial pore (as compared with Saussure's figure of *P. coarctatus* = *P. gracilis*) not placed so far back nor the lateral carinæ so swollen; the end of the sheath inclosing the flagellum finely serrate as well as its branch; the other lobe widely three or four toothed; length of body, ♂ 15.5 to 20<sup>mm</sup>, ♀ 17 to 22.5<sup>mm</sup>.

I have examined three males and a number of females collected by Mr. Charles L. Edwards, of Johns Hopkins University.

#### 5. *Polydesmus testi*, sp. nov.

*Diagnosis.*—Tuberculation as in *P. moniliaris* Koch,\* but the lateral carinæ not finely serrated; tubercles setæ-tipped; male genitalia very similar to *Polydesmus inconstans* Latzeil.†

*Type.*—U. S. Nat. Museum.

\* *Polydesmus moniliaris* Koch, Syst. d. Myr., 135, 1847 (Pennsylvania). = *Polydesmus serratus* Wood, Trans. Amer. Philos. Soc., 215, 1865 (Pennsylvania).

† *Polydesmus inconstans* Latzeil, Les Myr. Normandie, 21, 1883.

*Habitat*.—Indianapolis, Ind.

*Description of type*.—Brown, legs and under parts paler. Slender, scarcely attenuated anteriorly, moderately shining. First dorsal plate transversely suboval, tubercles 10-6-8, setæ tipped; lateral margin one-toothed. Tuberculation of anterior segments rather indistinct, 4-4-6; posteriorly the first row is more obliterated, the second is usually composed of six tubercles, and those of the last row are acute and project beyond posterior border of segment; lateral margins three or four toothed. Legs long.

Male: Legs strongly crassate, last four joints tuberculate beneath; coxa of second pair much produced and the end of lobe pitted; femur not much swollen above; genitalia very similar to *P. inconstans* Latzel.

Length of ♂ 11.6<sup>mm</sup>, width of first segment 1.1<sup>mm</sup>, width of tenth 1.3<sup>mm</sup>; ♀, length 8.5<sup>mm</sup>, width of first segment .8<sup>mm</sup>, width of tenth segment 1<sup>mm</sup>.

This species is very closely related to the European *Polydesmus inconstans* Latzel, as is shown by the tuberculation and the form of male copulation foot, while it only resembles *P. moniliaris* Koch in tuberculation.

I have examined a male and a female, collected by Mr. Frederick C. Test, my friend and fellow-student, for whom the species is named.

#### 6. *Polydesmus branneri*, sp. nov.

?? *Polydesmus pennsylvanicus* Koch, Syst. d. Myr., 133, 1847 (Pennsylvania); Koch, Die Myriopoden, ii, 18, pl. 69, fig. 142, 1863.

*Diagnosis*.—Very similar to *Polydesmus serratus* Say,\* but body more depressed and attenuate anteriorly; antennæ and legs more slender and in the male less crassate.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Mossy Creek, Jefferson County, Tenn.

As the characters of *P. serratus* vary exceedingly in respect to size and form, I have had considerable trouble in using characters exact enough to distinguish *P. branneri* from the various forms of *P. serratus*. The most important differences by which *P. branneri* is separated from *P. serratus* are those of the male genitalia; but as it is almost impossible to give a good definition of these characters, I have thought it best to say nothing now, but wait until I can have good figures made.

Concerning the male genitalia of *P. serratus*, I may say that in all the specimens I have examined from Minnesota, Illinois, Indiana, Pennsylvania, and North Carolina, I find that the characters are essentially similar, the only important variation being in the number of plate-like spines. I have thought that *P. branneri* may be identical with

\* *Polydesmus serratus* Say, Journ. Phila. Acad. Nat. Sci., 106, 1820. = *P. canadensis* Newport, Ann. and Mag. Nat. Hist., 205, 1844 (Hudson's Bay). = *P. glaucescens* Koch, Syst. d. Myr., 133, 1847 (North America). ? *P. pennsylvanicus* Koch, Syst. d. Myr., 133, 1847 (Pennsylvania).

Koch's *pennsylvanicus*, concerning which he says: "*Der Körper im Verhältniss zur Länge ziemlich breit, \* \* \* die Seitenkanten der Seitenlappen glattrandig.*"

This is all of his description that is of any value; the first will fit both species, while the last will only suit *P. serratus*, for the serratures are present in *P. branneri*, although they are small.

I have never seen a specimen of *P. serratus* with the serratures obliterated, but, concerning this, Dr. Wood says: \* "The serratures in the lateral margins of the side plates are very minute and frequently obsolete;" and Professor Saussure: † "*Ils le sont en effet, mais si finement qu'on ne distingue les dentelures qu'au moyen du microscope ou d'une forte loupe.*" Judging from these quotations, I am inclined to believe that *P. pennsylvanicus* is identical with *serratus*, or, at any rate, a species distinct from my *branneri*.

I have examined a number of specimens collected by Mr. Charles B. Branner, but most of them are broken. All the females in the collection are much smaller than the male, as the following measurements will show:

*Measurements of Polydesmus branneri.*

Sex.	Length of body.	Breadth of first segment.	Breadth of tenth segment.	Length of antennæ.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
♂	25.3	2.6	3.5	4.6
♂	24.8	2.9	3	4.3
♀	18.6	2.6	2.9	3.2

7. *Fontaria evides*, sp. nov.

*Diagnosis.*—Coxa of second pair of legs produced into a blunt, cylindrical lobe; only lateral carinæ distinctly red.

*Type.*—U. S. Nat. Museum.

*Habitat.*—Mossy Creek, Jefferson County, Tenn.

*Description of type.*—Black, lateral carinæ, a spot on anterior border of first and on posterior border of penultimate segments red, antennæ brown, legs yellow, tarsal joints reddish, an indistinct row of reddish brown spots above lateral carinæ. Body depressed, anterior segments of male not attenuated, those of female very noticeable; first four segments moderately smooth, rest rough except along middle of back. Vertex, sulcus shallow, setigerous foveolæ present. Antennæ of male somewhat clavate, female filiform. First segment as in *Fontaria virginensis*. Lateral carinæ large and moderately produced. Repugnatorial pore rather large and placed on the upper edge of posterior third of carinæ. Ventral plate and coxa unarmed. Male: Coxa of first pair of feet produced into a blunt, cylindrical lobe, coxa of fourth pair moder-

\* Trans. Amer. Philos. Soc., 216, 1865.

† Essai d. Fauu., Myr. Mex., 68, 1860.

ately; femur of anterior legs swollen above; genitalia loosely coiled, expanded at middle third and slightly lobed; basal spine cylindrical. Length of body: ♂ 33<sup>mm</sup>, height 5<sup>mm</sup>, width of first segment 7.8<sup>mm</sup>, width of tenth 9.5<sup>mm</sup>, antennæ 7.7<sup>mm</sup>; ♀, length of body 36.8<sup>mm</sup>, height 6.3<sup>mm</sup>, width of first segment 8<sup>mm</sup>, width of tenth 10<sup>mm</sup>, antennæ 7.1<sup>mm</sup>.

This species is closely allied to the next, but differs very much in color and in the characters of the anterior segments, and male genitalia. I have seen a male and a female, which were collected by Mr. Charles B. Branner. The female has a browner pattern of coloration and the red is not so vivid as in the male.

### 8. *Fontaria rubromarginata*, sp. nov.

*Diagnosis*.—Very similar to *Fontaria evides*, but the first three segments of male attenuated; vertex, sulcus deeper; femur more swollen; anterior border of first and posterior of other segments red.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Balsam, Jackson County, N. C.

This species is closely related to the preceding. It differs, however, much in color and in the character of male genitalia. As compared with the male of *F. evides* the following points may be worthy of note:

Browner, legs yellow; lateral plates not so sharp; legs of male more crassate; distal fourth of genitalia very much expanded near the end; basal spine stout, *bifid*; two lateral lobes, the first trifid, the other bifid; length of body, 38<sup>mm</sup>; height, 5<sup>mm</sup>; width of segment, 6.3<sup>mm</sup>; width of tenth, 10<sup>mm</sup>; antennæ, 8.3<sup>mm</sup>.

The characters of ventral plates and coxæ are the same as in *F. evides*.

These notes are based upon a male collected by Prof. George T. Atkinson, which only has the right leg changed into a copulatory organ.

### 9. *Fontaria montana*, sp. nov.

*Diagnosis*.—Similar to *Fontaria trimaculata* (Wood) but larger, especially the breadth; dorsal plates less convex, lateral carinæ larger and more produced; legs of male less crassate, shining black, yellow spots very distinct, legs light brown.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Wolf Creek, Cooke County, Tenn.

This species is very closely related to *F. trimaculata*, as is shown by the coloration and genitalia, but the latter are more strongly coiled and with the basal spine larger. Comparing the males of the two species, it may be said that in *F. montana* the different parts are larger, but more slender.

I have examined a male collected by Mr. Charles B. Branner. This species is the southern representative of *F. trimaculata*, but it is not probable that they will merge into one as the characters of the male genitalia are too much unlike.

*Measurements of Fontaria montana.*

Sex.	Length of body.	Width of first segment.	Width of tenth segment.	Length of antennæ.	Habitat.
♂	mm. 45	mm. 8.9	mm. 12.5	mm. 7.8	Wolf Creek, Tenn.

*Measurements of Fontaria trimaculata (Wood).*

♂	38.2	6.3	7.8	7	Syracuse, N. Y.
♀	38.8	6.4	7.6	5.4	Do.

10. *Geophilus oweni*, sp. nov.

*Diagnosis.*—(Frontal plate present, anal pores absent); coxal pores present, large and small, placed along and partly concealed by last ventral plate; pairs of legs, ♂ 67, ♀ 71.

*Type.*—U. S. Nat. Museum.

*Habitat.*—New Harmony, Posey County, Ind.

*Description of type.*—Orange, head darkest. Slender, slightly attenuated posteriorly, smooth, legs sparsely pilose. Prehensorial legs sparsely pilose and punctate, swollen; sternum wider than long (8:7); coxa a little longer than wide (3.5:3), unarmed; tooth small, acute. Cephalic plate quadrate, scarcely narrowed anteriorly; posterior end broadly truncate, slightly emarginate, and concealing part of basal plate; basal plate nearly thrice as wide as long.

Antennæ short, joints moderately long, penult. and antepenult. subequal. Dorsal plates sparsely punctate, bisulcate; anterior predorsal plates short; median, one and a half times as long, posterior twice. Spiracles round, anterior moderately large, median and posterior small.

First pair of feet short, robust, anterior and posterior subequal, but former stouter; anal legs armed. Coxa of anal legs considerably swollen, posterior border densely pilose; pores about ten, large and small and mostly concealed by last ventral plate; last ventral plate, wide, (3:2), side barely rounded and converging, pilose.

Pairs of legs: ♂, 67, slightly crassate, densely pilose; ♀ 71, slender and sparsely pilose. Length of ♂ 30<sup>mm</sup>, width 1<sup>mm</sup>; ♀, length 43.5<sup>mm</sup>, width 1.2<sup>mm</sup>.

This species is described from a male and female collected by Dr. Richard D. Owen, of New Harmony, Ind., and to whom I have the pleasure of dedicating it. I have thought it best to introduce the following analytical key in order to show the relations of *G. oweni* as well as those of some others recently described, belonging to that section of *Geophilus* which has the last ventral plate wide.

Last ventral plate wide.

a. Frontal plate present.

b. Anal pores absent.

- c. Coxal pores two; anal legs of male strongly crassate; pairs of legs, ♂ 47 to 49, ♀ 51 to 53; dorsal plates with a broad, double, black median line.....*cephalicus* WOOD.
- cc. Coxal pores more than two.
- d. Pairs of legs, ♀ 51; coxa of anal leg not strongly inflated, pores large, ten or twelve, subseriate.....*mordax* MEINERT.
- ād. Pairs of legs, ♀ 71, ♂ 67; coxa of anal legs strongly inflated; pores about same number, large and small, partly concealed by ventral plate.....*oweni* BOLLMAN.
- aa. Frontal plate absent.
- b. Anal pores absent.
- c. Coxal pores absent; coxa of prehensorial legs armed; pairs of legs, ♂ 67 to 69, ♀ 61 to 65.....*bipuncticeps* WOOD.
- cc. Coxal pores present.
- d. Coxal pores one, concealed; prebasal plate concealed; coxa of prehensorial feet twice as long as wide; pairs of feet, ♀ 61.....*georgianus* MEINERT.
- dd. Coxal pores two.
- e. Prebasal plate concealed; anterior coxal pore hidden by ventral plate; teeth of prehensorial legs distinct; pairs of legs, ♂ 67 to 69, ♀ 61 to 66.....*perforatus* (MCNEILL).\*
- cc. Prebasal plate exposed as in *cephalicus*; coxal pores like *perforatus*; teeth of prehensorial legs very indistinct; pairs of legs, ♂ 61, ♀ 63.....*okoloue* BOLLMAN.†
- bb. Anal pores present; coxal pores arranged in two partly covered series; pairs of legs, ♀ 61.....*latro* MEINERT.

11. *Geophilus californiensis*, sp. nov.

*Diagnosis*.—(Frontal plate absent; anal pores present); attenuated from head backwards; coxa of prehensorial legs unarmed; antennæ long; coxal pores rather large, over 30; pairs of legs, ♀ 64 to 67.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Ukiah, Cal.

This species may be easily separated from those which have the "frontal plate absent and anal pores present" by the characters assigned in the diagnosis.

The following is a complete description of type:

Reddish orange, head darkest, rather robust, widest before, moderately smooth, sparsely pilose. Prehensorial legs reaching to base of second antennal joint; coxa longer than wide (4.5:3), unarmed; tooth small. Cephalic plate sparsely pilose and punctate, the latter forming two sulcations, longer than wide (7:5); basal plate partly concealed, thrice as wide as long; prebasal not exposed. Antennæ long, joints long, penult. and antepenult. shortened.

Dorsal plates distinctly bisulcate; anterior predorsal plates short, posterior longest; ventral plates with an indistinct median depression. Spiracles round, anterior large, median and posterior small. First pair of legs short, anterior and posterior subequal, former stouter.

Coxa of anal legs strongly swollen, pores rather large, over 30; last ventral plate moderately wide (1.5:2), sides converging.

\* *Schendyla* ? *perforatus* McNeill, Proc. U. S. Nat. Mus., 325, 1887. (Pensacola, Fla.)

† *Geophilus okoloue* Bollman. Ent. Amer., 5, 1888. (Okalona, Ark.)



Pairs of legs, ♀ 64 to 67. Length of body, ♀ 36<sup>mm</sup>; width 1.2<sup>mm</sup>.

I have examined a number of specimens collected by Mr. J. H. Burke, of Ukiah, Cal. This species should be placed near *G. occidentalis* Meinert, although it seems to bear little relation to the latter.

12. *Lithobius eigenmanni*, sp. nov.

*Diagnosis*.—Allied to *Lithobius obesus* Stuxberg, but the claw of female genitalia tripartite; spines of anal feet 1, 3, 3, 0; coxal pores more numerous.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Glacier, British Columbia.

*Description of type*.—Brown, feet paler, slender, moderately rough posteriorly; head scarcely wider than long. Antennæ short, articles 20, short. Ocelli 8 to 12, arranged in 4 or 5 series. Prosternal teeth 2 + 2. Coxæ of 13, 14, 15 pairs of legs laterally armed. Coxal pores 3, 4, 4, 3 to 4, 5, 5, 5, large and round. Spines of first pair of feet 1, 2, 1; penultimate pair 1, 3, 3, 0 to 1, 3, 3, 1; anal pair 1, 3, 3, 0. Claw of female genitalia tripartite; spines (2 + 2) stout and short, inner shortest.

Length of body 7.5 to 9<sup>mm</sup>, width 1.1 to 1.5<sup>mm</sup>; antennæ 3 to 3.5<sup>mm</sup>; anal legs 3.2 to 3.8<sup>mm</sup>.

I have examined a number of specimens collected by Mr. Carl H. Eigenmann, to whom I take great pleasure in dedicating this species.

13. *Lithobius atkinsoni*, sp. nov.

*Diagnosis*.—Anal and penultimate pairs of legs each armed with a single claw; joints of antennæ 26, color chestnut.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Balsam, Jackson County, N. C.

*Description of type*.—Chestnut, head and antennæ of a deeper shade, legs orange. Slender, dorsal plates moderately smooth, especially anteriorly, very sparsely pilose; head obcordate, length and width subequal. Antennæ short, reaching to fifth segment, joints 26, small. Ocelli 14-5. Prosternal teeth 5 + 5, small. Coxa of the (?) pairs of feet laterally armed. Coxal pores 4, 5, 5, 4, small and round. Spines of first pair of legs 2, 1, 1; penultimate and anal pairs 1, 3, 3, 2. Anal legs somewhat swollen, tarsæ of anal and penultimate pairs of legs sulcate on inner side. Claw of female genitalia short, tripartite; spines 2 + 2, inner shortest.

Length of body 12.5<sup>mm</sup>, width 1.8<sup>mm</sup>; antennæ 4<sup>mm</sup>; anal legs 5<sup>mm</sup>.

This species bears no relation to any known from North America; in fact, it is the only one of the subgenus *Lithobius* with the penultimate pair of legs armed with a single claw.

I have examined one specimen collected by Prof. George F. Atkinson, of the University of North Carolina, to whom I have the honor of dedicating this species.

14. *Lithobius tyrannicus*, sp. nov.

*Diagnosis*.—Related to *Lithobius latzeli* Meinert, but the coxal pores transverse; claw of female genitalia much longer and indistinctly tripartite; size larger.

*Type*.—U. S. Nat. Museum.

*Habitat*.—Greencastle, Bloomington, Salem, and New Providence, Ind.

*Description of type*.—Brown, more chestnut than *L. latzeli*; legs fulvous. Robust, rough, especially posteriorly; head wider than long (6:5). Antennæ moderately long, attenuate, joints 31 to 36, short. Ocelli 32-7 to 45-9. Prosternal teeth 6+6 to 8+8. Coxa of anal legs unarmed beneath, those of the 13, 14, 15 legs laterally armed. Spines of first pair of legs 2, 2, 1; penultimate and anal pairs 1, 3, 3, 1 or 1, 3, 3, 2. Coxal pores: ♂, 6, 7, 7, 5 to 8, 8, 8, 6; ♀, 7, 8, 8, 7 to 8, 9, 9, 7.

Male: Femur, tibia, and first tarsal joints of anal legs sulcate beneath, last two tarsal joints sulcate on inner side, tibia depressed and sulcate above; penultimate pair of legs the same, but tibia not flattened and sulcate above.

Female: Anal and penultimate pairs of legs similar to the penultimate pair of male; claw of genitalia long and stout, indistinctly tripartite, middle lobe much longer, inner smallest.

Length of body 18.5 to 26<sup>mm</sup>, width 2.5 to 3.8 <sup>mm</sup>; antennæ 8 to 12<sup>mm</sup>; anal legs 9 to 12<sup>mm</sup>.

I have compared this species with a series of *L. latzeli* from Chapel Hill, N. C., and find in the latter the following differences worthy of notice: Coxal pores ♂, 4, 5, 5, 4 to 6, 6, 6, 5; ♀, 5, 5, 6, 5, to 5, 7, 6, 5; of female genitalia rather short and wide, distinctly tripartite, middle claw lobe somewhat the longest.

Length of body 16 to 22<sup>mm</sup>, width 1.8 to 2.6<sup>mm</sup>; antennæ 8 to 11<sup>mm</sup>, anal legs 7.8 to 10<sup>mm</sup>.

My description of *Lithobius mordax*, Proc. U. S. Nat. Mus. 262, 1887, applies in part to this species.

As several other species belonging to the subgenus *Neolithobius* have been recently described, I have compiled the following analytical key to help elucidate a few points as well as to correct some errors:

## ANALYSIS OF THE SPECIES OF NEOLITHOBIUS.

- a. Anal legs armed with a single claw, coxæ not armed beneath.
  - b. Coxal pores in a single series, round.
    - c. Penultimate pair of feet armed with a single claw; antennæ 30 to 40, jointed; prosternal teeth 5+5 or 6+6; last two tarsal joints of anal legs sulcate on inner side ..... *transmarinus* KOCH.
    - cc. Penultimate pair of feet armed with a double claw.
      - d. Prosternal teeth 4+4 or 5+5; antennæ 26 to 34, jointed; tarsal joints of anal legs not sulcate; orange or light chestnut..... *clarus* McNIELL.
      - dd. Prosternal teeth 6+6 to 8+8; antennæ 32 to 35, jointed; tarsal joints of anal legs sulcate on inner side, brown..... *latzeli* MEINERT.

- bb.* Coxal pores in a single series, transverse.
- c.* Penultimate pair of legs armed with a single claw; antennæ 30 to 33, jointed; prosternal teeth 6+6 or 7+7; last two tarsal joints of anal legs distinctly or not sulcate.....*mordax* KOCH.
- cc.* Penultimate pair of legs armed with a double claw.
- d.* Last two tarsal joints of anal legs sulcate on inner side, likewise the penultimate pair; antennæ 31 to 36, jointed; prosternal teeth 6+6 to 8+8; length of body 18 to 26<sup>mm</sup>.....*tyranicus* BOLLMAN.
- dd.* Last two tarsal joints of anal and penultimate pairs of legs not sulcate; antennæ 49 to 49, jointed; prosternal teeth 6+6 to 11+11; length of body 20 to 37<sup>mm</sup>.....*vorax* MEINERT.
- bbb.* Coxal pores in several series; claws of penultimate pair of feet two; joints of antennæ 40 to 47; ocelli 13-4 to 26-5; prosternal teeth 8+8 to 10+10; claw of female genitalia not divided.....*terreus* FEDRIZZI.
- aa.* Anal and penultimate pairs of legs each armed with two claws; coxal pores in a single series, round; coxa not armed beneath; antennæ 31 or 32, jointed; prosternal teeth 2+2; spines of first pair of feet 1, 1, 1.  
*juventus* BOLLMAN.

In the above key I have introduced the European species, *Lithobius terreus* Fedrizzi; I can not find any true specific characters to separate *Lithobius leptopus* Latzel from it.

Concerning the geographical distribution of these species I may say that *transmarinus* has been found in Louisiana, Arkansas, and Indian Territory; *clarus* in Florida; *latzeli* in Virginia and North Carolina; *mordax* from Florida to Indian Territory, then north to Minnesota; *tyranicus* in Indiana; *vorax* from Mississippi to Indian Territory; and *juventus* in Indiana and Tennessee.

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