

NOTES ON NORTH AMERICAN MYRIAPODA OF THE FAMILY
GEOPHILIDÆ, WITH DESCRIPTIONS OF THREE GENERA.

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(With Plates XXXIII-XXXV.)

When, in 1814, Leach erected the family *Geophilidæ*, he proposed but the one genus, *Geophilus*. From that time until 1866 thirteen genera were described, four by Newport, one by Gray, and eight by C. Koch. The characters employed by these writers were external and extremely variable, and the genera established upon them did not, for the most part, represent natural groups. The character of the work done on this family previous to 1866 may be inferred from the fact that the investigators were not sufficiently careful to count the legs accurately, at least half the species described being credited with an even number of pairs. At that date Bergsøe and Meinert published a revision of the classification of the family, and among other things announced, having counted the legs of some six hundred specimens, that the number of pairs of legs is always uneven, and since that time writers conversant with the work of these authorities have not been reporting an even number of pairs of legs. Indeed, there is no well authenticated case of a Chilopod being possessed of an even number of pairs, and Latzel* remarks in his characterization of that order:

All accounts of an even number of pairs of feet, which one can find in so many works on Myriapoda, are false, and occur either through mistakes in counting or through the fact that the last pair of feet has been separated from the others as anal appendages, and not counted with them, which is unreasonable.

But the writers on *Geophilidæ* can not be acquitted of miscounting, for if the last pair were omitted the number would invariably be even, while the earlier writers are continually mentioning species with both odd and even numbers of pairs.

American writers, with the exception of Mr. McNeill, have continued to describe species with an even number of pairs of legs, and the last paper mentioning species of this family, published during the present year, mentions *Himantarium tæniopse* as having one hundred and forty-eight pairs.

* Die Myr. d. Öst.-Ung. Monarchie, Erste Hälfte, s. 11.

The characters of the mouth parts were put forward by Bergsøe and Meinert as the principal means of separating genera, external characters being largely disregarded in generic descriptions. The genera of previous writers, with the exception of *Geophilus* Leach, *Mecistocephalus* Newport, and *Himantarium* C. Koch, were ignored. This may appear to have been a very summary method of disposing of them, but the characters on which they were based were too unimportant to have warranted their establishment in the first place, and any attempt at adapting the old names to the new classification would have resulted in wholesale confusion. Recent European writers have adopted this new classification, but as no characterization of the genera as at present defined has appeared in the English language, we have thought best to present a tabulation of the more salient characters of all the now recognized genera, as an introduction to some notes on American forms.

	Pectinate lamellæ.	Dentate lamellæ.	Parts of labrum.	Labrum.	Pleural pores.	Anal pores.	Jnts of anal legs.	Claw of anal feet.
<i>Mecistocephalus</i>	0	Many.	3	Free.....	Many...	1	6	0
<i>Geophilus</i>	1	0	3	Free.....	0-Many.	0-1	6	0-1
<i>Chaetechelyne</i>	1	0	(*)	(*)	Many...	0-1	6	0-1
<i>Scotophilus</i>	1	0	3	Free.....	1-Many.	0	5	0
<i>Dignathodon</i>	1	0	3	Free.....	Many...	0	5-6	0-1
<i>Stigmatogaster</i>	Many.	1	1	Free.....	Many...	0	6	0
<i>Himantarium</i>	Many.	1	1	Free.....	Many...	0	6	0
<i>Scolioplanes</i>	1	0	3	Free.....	Many...	1	6	1
<i>Bothriogaster</i>	Many.	1	1	Free(?)...	Many...	0	6	0
<i>Mesocanthus</i>	†5	0	1	Free.....	0	0	†6	0
<i>Orphnæus</i>	4-5	0	1	Free.....	0	0	†6	0
<i>Orya</i>	7-8	0	2	Coalesced.	0	0	†6	0
<i>Notiphilides</i>	4	0	1	Coalesced.	0	0	†5	0
<i>Chomatobius</i>	Many.	1	1	Free.....	Many...	0	6	1
<i>Schendyla</i> §.....	1	1	1	Coalesced.	2	0	6	0-1
<i>Pectiniunguis</i>	1	3	1	Coalesced.	2	0	6	0
<i>Escaryus</i>	1	3	1	Free 	Many...	1	6	1
<i>Stylolemus</i> ¶.....

* With regard to this genus, Meinert says (Nat. Tidsskr., vii, 44): "Labrum free, entire, sinuate, armed with long hairs." Latzel (*op. cit.*, 201) expressly contradicts this statement, declaring that a labrum is not distinguishable, and that Meinert's labral hairs are on the cephalic lamina; his generic characterization is "*Labrum evanidum*."

† We tabulate them as pectinate lamellæ, out of deference to Meinert's statement (*op. cit.*, 34). In his diagram they appear to be very similar in structure and shape to the *dentate* lamellæ of *Himantarium* and its allied genera; but they do not bear any apparent resemblance to what have been called pectinate lamellæ in any other genus.

‡ In these genera the so-called "pleuræ of the last segment" are not enlarged or provided with pores, and do not apparently differ from the joints of the legs. In such cases, legs with five or six joints are said to be, respectively, pseudo-six- or seven-jointed.

§ In *Schendyla eximia* Meinert the labrum is free in the middle, and the anal legs five-jointed.

|| Or slightly coalesced at the lateral angles.

¶ The description of *Stylolemus* Karsch (Troschel, Archiv. f. Naturgesch. XLVII, 9, und Taf. 1, fig. 3, a, b) is so meager as not to give even the characters covered in the tabulation. From the diagram it would appear that the prehensorial feet are more different from those of other *Geophilidæ* than the latter are from those of the other families of Chilopoda, and the configuration of the posterior segments is not less remarkable.

Meinert's terminology of parts has, with very unimportant exceptions, been used in the descriptions of genera and species; not, however, with any intention of implying that we can indorse all of the views of that writer in regard to the development of the various organs and their homologies with corresponding parts in Hexapods, in which matters he and Latzel differ so widely. But Meinert has made important contributions to the literature of the North American species, and it would seem that until these questions meet with some generally recognized settlement, the convenience arising from uniformity in descriptions should be a greater consideration for continuing Meinert's terms and methods than any advantage to be gained by changes in accordance with the momentary probability which may attach to the views of successive investigators.

While the characters drawn from the mouth parts are of most importance, it may nevertheless be occasionally convenient to separate genera without dissection. The following synoptic table is based on the least variable external characters; it is a translation from the Russian of Sseliwanoff's "*Geophilidæ museja imperatorskoi Akademii nauk*," so amended as to contain the new American genera.

1. Ventral pores in definite areas	2
not in definite areas	10
2. Antennæ short, tapering	3
filiform	7
3. Ventral pores in four areas	<i>Orphnæus</i>
one central area	4
4. Anal legs pseudo-seven-jointed	<i>Mesocanthus</i>
six-jointed	5
5. Sterna without pronounced depressions	<i>Himantarium</i>
with pronounced depressions	6
6. A deep, horse-shoe-shaped depression on the anterior margin of some of the sterna	<i>Bothriogaster</i>
A deep, stigmatelike depression near lateral margin of some of the sterna	<i>Stigmatogaster</i>
7. Anal legs five-jointed	<i>Scotophilus</i>
six-jointed	8
8. Pleuræ of last segment enlarged	6
not enlarged	<i>Chaetechelyne</i>
9. Spiracle-bearing scutellum adjacent to the scutum	<i>Pectiniunguis</i>
separated from the scutum by another scutel- lum	<i>Chomatobius</i>
10. Ventral pores wanting	11
present	12
11. Claw of prehensorial feet simple at apex	<i>Escaryus</i>
divided at apex into three teeth	<i>Dignathodon</i>
12. Antennæ short, tapering	13
filiform	14
13. Anal legs six (pseudo-seven)-jointed	<i>Orya</i>
five (pseudo-six)-jointed	<i>Notiphilides</i>
14. Claw of prehensorial feet with a large tooth at base	15
unarmed, or with a small tooth	16

15. Cephalic lamina not narrowed anteriorly.....*Scolioplanes*
much narrowed anteriorly.....*Strigamia**
16. Cephalic lamina narrowed posteriorly.....*Mecistocephalus*
broad, narrowed anteriorly..... 17
17. Ventral pores on posterior part of sterna.....*Geophilus*
middle of sterna.....*Schendyla*

Schendyla Bergsoe and Meinert.

Nat. Tidsskr., 4 Bd., p. 103.

Body subdepressed, fusiform or elongate.

Antennæ rather short, subfiliform.

Frontal lamina coalesced; cephalic lamina not entirely covering the sides of the prehensorial feet; prebasal lamina exposed; basal lamina broad, the sides converging anteriorly.

Labrum more or less united with the frontal lamina, entire, sinuate, medianly dentate.

Mandibles with one dentate and one pectinate lamella; condylus large.

Labial sternum entire; interior labial processes conic; palpi two-jointed, the basal joint with a small process.

Claw of maxillary palpus large, simple or pectinate.

Sternum of prehensorial feet without chitinous lines, anteriorly medianly emarginate; claw with a tooth at base, or unarmed.

Scuta bisulcate, prescuta rather large.

Spiracles small, round; spiracle-bearing scutellum rather small, about half as large as the prescutellum; post scutellum large and separate; median and episternal scutella and prescutella nearly obsolete.

Ventral pores small, situated in the middle of the anterior sterna.

Pleural pores two on each side, unpigmented; last ventral plate large, triangular, obtuse, its presternum large and distinct.

Anal legs five to six jointed, enlarged in both sexes, but especially in the male, unarmed, first joint small.

Genital palpi of male simple or two-jointed.

Anal pores wanting.

Schendyla nemorensis (C. Koch).

Geophilus nemorensis C. Koch, Deutschl. Crust, etc. (1837).

Poabius bistriatus C. Koch, Syst. d. Myr., p. 183 (1847).

Linotaenia nemorensis C. Koch, Die Myr., II Bd., p. 26, f. 148 (1863).

Schendyla nemorensis Bergs. et Mein., Nat. Tidssk., IV Bd., p. 105 (1866).

Geophilus tyrolensis Bergs. et Mein., *ibid.*

Body slender, yellowish or wax-colored, head light brown, sparsely pilose with short rigid hairs.

Cephalic lamina of nearly equal length and breadth; prebasal lamina scarcely visible; basal lamina nearly twice as broad as long (3:5), nearly half as long as the first scutum.

*Sseliwanoff divides *Scolioplanes* Meinert and resurrects *Strigamia* Gray for one of the divisions. The differences do not seem to us of sufficient importance to justify the separation.

Labrum entirely coalesced with frontal lamina; labral teeth 13-20.

Labial palpi with a small transparent process on the basal joint.

Claw of maxillary palpus simple.

Prehensorial feet scarcely attaining the frontal margin; sternum broader than long (8:5), longer than coxa (5:3), moderately sinuate in front, unarmed; coxa unarmed or with an obtuse tooth; claw, with a small tooth at base.

Scuta smooth, manifestly bisulcate; prescuta of moderate length, the median longest.

Spiracles small, round, smaller posteriorly.

Sterna elongate, the anterior trifoveolate, the posterior obsoletely bisulcate.

Pleuræ of last segment but little enlarged, with two large pores on each side; last sternum large, concealing the pores, its sides converging posteriorly.

Legs short and slender, the first pair scarcely shorter than the second; anal legs longer than the preceding pair, six-jointed, more strongly hirsute, enlarged in both sexes, but especially in the males, unarmed or with a very small and slender claw.

Genital palpi of male two-jointed.

Anal pores wanting.

Pairs of feet 39-47 in European specimens; Algerian specimens are recorded by Meinert with as high as fifty-five pairs; all the American specimens which we have collected have forty-one pairs.

Length, 25 millimetres and under.

HABITAT.—Clyde, New York, December, 1889, one specimen; Clyde, New York, July 1890, five specimens; Staten Island, New York, April, 1890, Dr. L. M. Underwood, three specimens.

The specimen found in December was under a board; those taken in July were in the same location, but were six or eight inches underground. The Staten Island specimens were in sandy soil among *Hepaticæ*.

The American specimens resemble, in every important particular, Swedish specimens communicated by Stuxberg to Dr. Underwood.

Meinert (*op. cit.*, 56) says that the labial palpi are simple, and Latzel (*op. cit.*, 198) declares that they are without a trace of processes, but all the specimens which we have examined, both European and American, have a process attached to the exterior edge of the basal joint of the palpus. It may be that the species varies in this regard, but we think it more probable that the writers above cited have overlooked the structure in question as it is very thin and transparent and usually lies folded close upon the dorsal side of the palpus. We have therefore modified both the generic and specific descriptions in accordance with this view. According to Meinert's description the palpus of *S. eximia* has a small process, and hence this character is common to both species of the genus.

Meinert and Latzel have both figured this species, but their diagrams show some very noticeable differences. The labrum in our specimens resembles Latzel's figure much more than that of Meinert, but the teeth are proportionally shorter, and the exterior ones are slender and appressed to the edge of the labrum.

The teeth of the dentate lamella of the mandible differ from those of Latzel's diagram in being of the same structure as their common base, and in tapering slightly toward a broad rounded apex; the arrangement of the teeth is more like that of Meinert's figure, but the teeth are not so sharp pointed, and this diagram does not represent the common base of the teeth as distinct from the mandibular stipe.

In 1872 Harger* described *Geophilus gracilis* as follows:

Very light orange, head much darker, slender, small. Cephalic segment nearly quadrate. Antennæ hairy, filiform, joints short obconic. Mandibles unarmed. Scuto-episcutal sutures distinct posteriorly. Feet pilose, 39 or 41 pairs, occasionally 40, last pair thickened and elongated. Sterno-episternal sutures distinct. Body slightly hairy throughout. Length, 15 millimeters.

This species is not uncommon under stones and rubbish in moist places about New Haven.

This description agrees with the species under discussion except in the character "mandibles unarmed." In *S. nemorensis* the claw of the prehensorial feet is armed, but the teeth vary greatly in size, and are frequently so small and so close to the base of the claw as not to be noticeable except on very close examination.

As the species was "not uncommon" it is reasonable to suppose that individuals of both sexes were under examination, but *Schendyla* is the only genus known north of Mexico to which the character "last pair of legs thickened" would apply in both sexes. That the number of pairs of feet was "occasionally forty" also corroborates our view, indicating both that several specimens were examined and that the examination was not so careful as to make it improbable that the tooth on the claw of the prehensorial feet was overlooked.

PECTINIUNGUIS Bollman.

Proc. U. S. Nat. Museum, XII, 212 (1889).

Body depressed, narrowed posteriorly.

Antennæ filiform.

Frontal lamina coalesced; cephalic lamina not covering the sides of the prehensorial feet; prebasal lamina exposed; basal lamina broad, its sides converging anteriorly.

Labrum entire, united to the frontal lamina, deeply sinuate, medianly dentate.

Mandibles with one pectinate and three dentate lamellæ.

Labial sternum entire, coalesced with the maxillary sternum, a large process attached to its exterior edge; interior labial process sharply

* Am. Journal of Science and Arts, VI, 117.

conic; palpi broadly conic, rounded, with two processes, one of which is large and attached to the exterior edge of the basal joint.

Claw of maxillary palpus broad, spoon-shaped, the concave side facing inward, margin fringed with a pectinate row of spines.

Sternum of prehensorial feet without chitinous lines, anteriorly medianly emarginate; claw unarmed at base.

Scuta bisulcate.

Spiracles long elliptic to nearly circular; spiracle-bearing scutellum of moderate size, considerably larger than the postscutellum and about half as large as the elliptical prescutellum; middle and interior scutella and prescutella present.

Ventral pores in suboval median areas.

Pleural pores two on each side, large, unpigmented.

Last ventral plate large, broad, its presternum large, undivided.

Anal legs six-jointed, all the joints well developed, enlarged in male, unarmed.

Genital palpi of male two-jointed.

Anal pores wanting.

This genus differs from *Schendyla* in the three dentate lamellæ, the coalesced labial and maxillary sterna, the large processes, the excavate claw of the maxillary palpus, and the elliptical spiracles.

On account of these and other points of difference this genus can not possibly include *Schendyla eximia* Meinert, which Mr. Bollman placed here, evidently not being aware that his genus possessed the above characters. According to Meinert's description, *eximia* differs from *nemorensis* in having the labrum free in the middle, the claw of the maxillary palpus pectinate, and the anal legs five-jointed. This last character is, by reason of its constancy in other genera, a most important one. Meinert's diagram would make it appear that the labrum is free along nearly its whole anterior margin.

In his generic characterization of *Schendyla*, Latzel gives the genital palpi as simple or two-jointed, and those of *S. nemorensis* being two-jointed, without recorded variation, we can only infer that in *eximia* they are simple. If our information and inferences are correct and well drawn, *eximia* differs from *nemorensis* in at least three particulars which are each greater than any corresponding difference known to exist between the species of any genus of the family, and there is most sufficient warrant for the elevation of Mr. Bollman's subgenus *Nannopus* to generic rank. But without specimens we can not give the question a final discussion.

Pectiniunguis Americanus Bollman.

Plate xxxiii, Figs. 1-5, and Plate xxxiv, Figs. 6-8.

Body depressed, narrowed slightly anteriorly, moderately posteriorly; brownish-yellow, with a line of medianly divided dorsal dark spots, extending from the second to the penultimate segments, after the manner of *Geophilus cephalicus*.

Antennæ with the last joint equalling in length the two preceding taken together.

Frontal lamina coalesced; cephalic lamina of equal length and breadth, anterior margin forming a semicircle, sides nearly straight, converging posteriorly, posterior margin slightly incurved; prebasal lamina exposed; basal lamina three times as broad as long.

Labrum obtusely notched at the points of support; median teeth short and blunt; those of the margins outside the sinus long and slender, closely appressed to the edge of the labrum.

Mandibles with the two dentate lamellæ next the pectinate with three teeth each, the other with two; the last is coalesced with the edge of the mandibulary stipe, while the others have no chitinized connection.

Labial sternum entire, coalesced with the maxillary sternum for the middle third of its breadth; interior processes conic, coalesced on the basal portion of the exterior side with the basal joint of the palpus. This joint bears on the apical exterior angle a small process, while attached to its exterior side, and perhaps also to the labial sternum, is another process half as broad as the palpus, and nearly as long, which lies folded on the dorsal side of the palpus. To the lateral edge of the labial sternum, is attached a still larger long-oval process, folded back on the labial sternum, and reaching to the apical edge of the basal joint of the palpus. Both these large processes are of thin, transparent structure.

Prehensorial feet attaining the frontal margin of the head; sternum nearly twice as broad as long (5:3), longer than the coxa (7:5), slightly sinuate anteriorly; coxa unarmed; claw unarmed at base.

Scuta of moderate length, slightly more than twice as long as the prescuta, both becoming longer posteriorly.

Spiracles large, elliptical, longitudinal diameter of the anterior 0.095 millimetres, which is about twice the transverse; gradually smaller and rounder posteriorly, diameter of last spiracle 0.055.

Sterna bisulcate, anteriorly with a slight median foveola, which soon becomes obsolete; ventral pores in a transversely oval median area which lies nearer to the posterior margin. The anterior areas are about one-third as broad as the space between the sulcations; the areas increase in size until about the fifteenth segment, and then gradually decrease, until on the penultimate segment there are but four pores in the specimen examined.

Pleuræ of last segment moderately enlarged, pilose, with two large pores concealed under the ultimate sternum, which is very hairy and nearly twice as broad as long (7:4).

Legs with very sparse short hairs, the first pair much shorter than the second, from which the length gradually increases to beyond the middle, where it again decreases. Anal legs longest, very densely hirsute with short hairs, enlarged in the male.

Pairs of feet in the male, sixty-five; length of body 50 millimetres, width 1.55 millimetres.

This species is described from an apparently adult male collected by the *Albatross* expedition of 1887-'88, at Pichiliugue Bay, Gulf of California. Through the kindness of the curators of the department of insects of the National Museum, we have had opportunity to dissect and study the type and only specimen, No. 958.

A comparison of our description with the original of Mr. Bollman will show that we differ from him in saying that the labrum is entirely coalesced, that the claw of the maxillary palpus is excavate, that the prehensorial feet attain the frontal margin of the head, that the sterna are bisulcate, and that the specimen is a male.

The condylus in this species is very similar in shape to that of *Schendyla nemorensis*, and is correspondingly larger.

The completely coalesced condition of the labial and maxillary sterna is, as far as we have been able to ascertain, entirely unique in *Geophilidæ*. The sides of the anterior margin of the maxillary sternum are strongly defined, almost chitinized, but the margin is transparent next the coalesced portion. The coalescence is complete; no trace of a divisural line being apparent in the reticulated integument.

The only species of the family which we can suggest as having structures at all likely to be homologous with the large lateral processes of the labium is *Orya barbarica*, as figured by Meinert.

The spoon-shaped claw of the maxillary palpus, being fringed with spines all around its margin, appears to have two rows of spines until its true shape is made out.

The claws of all the feet are, like those of the maxillary palpi, excavate, or rather grooved, on the under side, and the ends of the claws appear blunt or truncate. This character is more prominent in the feet of the posterior end of the body.

Escaryus, gen. nov.

Body scarcely depressed, moderately narrowed posteriorly.

Antennæ filiform.

Frontal lamina coalesced; cephalic lamina not covering the sides of the prehensorial feet; prebasal lamina exposed; basal lamina broad, sides converging anteriorly.

Labrum entirely free, or slightly joined at the lateral angles, medianly deeply emarginate and dentate.

Mandibles with one pectinate and three dentate lamellæ; condylus present.

Labial sternum entire; interior labial processes and labial palpi obtusely conic, the latter with a small process on the basal joint.

Maxillary sternum obtusely notched in the middle, claw of maxillary palpus with an interior thin edge which is provided with one row of spines.

Sternum of prehensorial feet with chitinous lines, anteriorly scarcely emarginate; claw with a small tooth at base.

Scuta strongly convex, not sulcate.

Spiracles round, decreasing posteriorly; spiracle-bearing scutellum one-third as large as the prescutellum and about equal in size with the post and middle scutella, and between two and three times as large as the episternal scutella; episternal prescutellum very small.

Ventral pores wanting.

Pleuræ of last segment with many pigmented pores; last sternum oblong, its presternum divided.

Anal legs six-jointed; armed with a large claw, sparsely clothed with long hairs; not enlarged in the female.

Anal pores present.

From *Schendyla* this genus differs in the free or nearly free labrum, the three dentate lamellæ, the chitinous lines, the ventral pores wanting, the divided presterna, the numerous pigmented pleural pores, the anal pores, and the large claw of the anal feet.

From *Pectiniunguis* it is distinct in the free or nearly free labrum, the free labial and maxillary sterna, the large processes wanting, the claw of the maxillary palpus not excavate, the chitinous lines, the round spiracles, the ventral pores wanting, the numerous pigmented pleural pores, the divided presterna, the anal pores, and the large claw of the anal feet.

The teeth of each of the dentate lamellæ are graded in size, the one toward the pectinate lamella being in every case the largest; their number varies from three to five.

The condylus is rounded conic, similar to that of *Schendyla*, but broader, its base also extending considerably beyond its sides.

The interior labial processes are not coalesced with the basal joint of the palpus, except possibly a very little at base.

The process of the basal joint of the palpus is covered with fine, hair-like papillæ.

The claw of the maxillary palpus is not fringed on the basal third, nor does the fringe extend quite to the apex. There may be other spines on the base of the claw, and not in line with the fringe. The number of hair-like spines which compose the fringe varies from three to seven, the usual number being six.

Escaryus phyllophilus, sp. nov.

Plate xxxiv, Figs. 9-11, and Pl. xxxv, Figs. 12-15.

Moderately robust, slightly attenuate anteriorly, strongly posteriorly; pale yellowish-brown; feet and body sparsely hirsute.

Antennæ of moderate length, the last joint equaling the two preceding joints taken together.

Cephalic lamina subquadrate, slightly longer than broad (13:11), the

anterior corners considerably rounded, the posterior edge slightly emarginate; basal lamina scarcely three times as broad as long.

Labrum joined at its lateral angles to the frontal lamina, anterior and posterior edges convex outwardly on each side of the middle; ends of the labrum deeply and acutely notched at the point where they meet the supports (*laminae fulciantes*). The anterior margin has two deep notches which run behind the arch of teeth. Teeth about fifteen; starting from the posterior edge of the labrum are several transverse wrinkles which run across to near the anterior edge, where there are a few long transverse wrinkles.

Mandibulary stipe with a few spines beyond the last dentate lamella, giving the appearance of another small pectinate lamella. Teeth of dentate lamellæ sharp-pointed, especially those distant from the pectinate lamella.

Prehensorial feet not reaching the frontal margin of head; sternum broader than long (9:7), nearly twice as long as coxa (7:4); anterior margin medianly broadly sinuate, with nearly obsolete concealed teeth; coxa and two succeeding joints each with an acute tooth; claw strongly curved, with a nodiform tooth at base.

Scuta not sulcate; anterior prescuta moderately long, the middle and posterior very long, except the last three.

Spiracles largest in front, 0.045 millimetres in diameter, gradually decreasing posteriorly to 0.03 millimetres.

Sterna, anterior, deeply bisulcate, and with a deep median foveola; these depressions become gradually less pronounced posteriorly. The foveola becomes obsolete on the middle segments, but shows a tendency to reappear near the end of the body.

Pleuræ of last segment moderately inflated, with about twenty-five pores, which differ much in size (0.01 to 0.04 millimetres in diameter). Last sternum narrow, oblong, the posterior angles rounded, the sides scarcely converging.

First pair of legs shorter than the second; anal legs longer than the penultimate, sparsely clothed with longer hairs, strongly decurved, as are all the legs, armed with a large claw, not enlarged in the female.

Anal pores present.

Pairs of legs in the female forty-one; length of body 32 millimetres, greatest breadth 1.3 millimetres.

Described from two females found among fallen leaves near Oakwood Cemetery, Syracuse, New York, January, 1890.

The considerable number of characters which this species has in common with *Geophilus urbicus* Meinert* makes it appear probable that that species belongs under the present genus. There is nothing to indicate that Meinert dissected the mouth parts of the single specimen in the Cambridge collection. Should our suspicion prove to be well

* Myr. Mus. Cantabrigensis, 218.

founded, Meinert's species, as he describes it, will be distinct in the possession of the following characters:

Claw of prehensorial feet reaching beyond the frontal margin of the head.

Cephalic lamina transversely sulcate near its posterior margin.

The anterior corners of the basal lamina covered by the cœphalic lamina.

The basal lamina four times broader than long.

The dorsal laminae sulcate.

The first pair of legs equal to second pair.

Anal legs shortened and thickened in the female.

Anal pores wanting.

Escaryus liber, sp. nov.

Body slender, slightly narrowed anteriorly and posteriorly, waxy white, sparsely hirsute.

Antennæ of moderate length, the last joint scarcely as long as the two preceding.

Cephalic lamina considerably longer than broad (4:3), posterior corners much rounded; basal lamina more than twice as broad as long (7:3).

Labrum entirely free, the anterior and posterior margins nearly straight, subparallel except at the sinus; transverse wrinkles run from the ends to the middle. The ends notched, and two notches on the anterior margin run behind the teeth, which number about thirteen.

Mandibulary stipe with one or two spines beyond the dentate lamellæ. Teeth of dentate lamellæ with rounded points.

Labial sternum not different from that of *E. phyllophilus*, except that the processes of the palpi are more deeply divided into papillæ.

Prehensorial feet not attaining the frontal margin of the head; sternum much broader than long (3:2), longer than coxa (3:2), moderately sinuate in front, without prosternal teeth; coxa with a small, obtuse tooth, or unarmed; other joints armed; claw strongly curved, with a small, obtuse tooth at base.

Scuta not sulcate; prescuta long, increasing posteriorly, where they become more than half as long as the scuta (3:5).

Spiracles round, largest in front (0.04 millimetres), decreasing posteriorly, the last measuring 0.02 millimetres.

Sterna short in front, becoming very long caudad, bisulcate, the anterior ones medianly foveolate.

Pleuræ of last segment moderately inflated, with about seventeen pores of different sizes on each side; last ventral plate narrow, oblong, the posterior corners rounded, the sides scarcely converging.

Feet gradually longer posteriorly, the first and penultimate pairs shorter than the others; anal legs slightly longer than the penultimate, armed with a large claw.

Anal pore small.

Pairs of legs in the female forty-nine; length of body 26 millimetres, greatest breadth 0.9 millimetres.

Described from one female found among leaves and rotten wood at Kirkville, Onondaga county, N. Y., April, 1890.

Pl. XXXIII, Fig. 16-17.

SYRACUSE UNIVERSITY, September, 1890.

EXPLANATION OF PLATES.

PLATE XXXIII.

Pectiniunguis Americanus Bollman.

FIG. 1. Dorsal aspect of head: B, cephalic lamina; C, prebasal lamina; D, basal lamina; E, first scutum; *d*, pleura; *e*, coxa of prehensorial feet; *f*, claw of same.

FIG. 2. Ventral aspect of head, showing prehensorial feet: *a*, sternum; *b*, prosternal teeth; *d*, *e*, *f*, as in Fig. 1.

FIG. 3. Scuta, sterna and pleura of the thirty-first and thirty-second segments: L, scutum; M, prescutum; O, sternum; P, presternum; *a*, spiracle-bearing scutellum; *b*, spiracle; *c*, post-scutellum; *d*, median scutellum; *e*, episternal scutellum; *f*, pre-scutellum; *g*, median prescutellum; *h*, episternal prescutellum; *i*, anterior part of episternum; *j*, posterior part of episternum; *k, k*, parts of coxa; *l*, second joint of leg; *p*, ventral pores.

FIG. 4. Ultimate segments and anal legs, ventral view: O, penultimate sternum; P, presternum; Q, pleurae of last segment; the pores are concealed under the ventral plate; R, last sternum; *m*, first joint of genital palpi; *n*, second joint of same.

FIG. 5. Labrum, ventral view: *b, b*, laminae fulciantes.

PLATE XXXIV.

Pectiniunguis Americanus (continued).

FIG. 6. Labium and maxillae, ventral view: *a*, labial sternum; *b, b*, interior labial processes; *c*, labial palpus, basal joint; *d*, apical joint of same; *i*, small process of basal joint; *j*, large process of same; *m*, maxillary sternum; *n*, basal joint of maxillary palpus; *o*, claw of same.

FIG. 7. Labium and maxillae, dorsal view: *k*, large process of the lateral edge of the maxillary sternum; other letters as in Fig. 6.

FIG. 8. Mandible: *a*, cardo; *b*, mandibular stipe; *c*, condylus; *d*, dentate lamellae; *e*, pectinate lamellae.

Escaryus phyllophilus, sp. nov.

FIG. 9. Dorsal aspect of head. Letters as in Fig. 1.

FIG. 10. Ventral aspect of head. Letters as in Fig. 2.

FIG. 11. Mandible and half of tongue (H). Other letters as in Fig. 8.

PLATE XXXV.

Escaryus phyllophilus, (continued).

FIG. 12. Scuta, sterna, and pleura of the sixth and seventh segments. Letters as in Fig. 3.

FIG. 13. Ultimate segment and anal legs, ventral view: *o*, anal pores. Other letters as in Fig. 4.

FIG. 14. Labium and maxilla, ventral view. Letters as in Fig. 6.

FIG. 15. Labrum, ventral view. Letters as in Fig. 5.

Escaryus liber, sp. nov.

FIG. 16. Ventral aspect of head. Letters as in Fig. 2.

FIG. 17. Labrum, *dorsal view*. Letters as in Fig. 5. The edge of the "Gaumenplatte" of Latzel, adhering to the dorsal side, is represented by the fringed line. The areolated integument of the head anterior to the labrum in this figure and in Fig. 15 is, of course, not confined to the amount represented. Only enough is drawn to show that labrum is free in Fig. 17, but joined to the head-integument at the anterior lateral angles in Fig. 15.



Cook, O. F. 1890. "Notes on some North American Myriapoda of the family Geophilidae with descriptions of three genera." *Proceedings of the United States National Museum* 13, 383–396.

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