

DESCRIPTIONS OF TWELVE NEW SPECIES OF MYRIAPODA,
CHIEFLY FROM INDIANA.

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[With one plate.]

The types of all but two of the species of Myriapods described in the following paper were furnished by a collection made by Mr. Charles H. Bollman and the writer in the vicinity of Bloomington, Monroe County, Indiana, in the fall and winter of 1885-1886. This collection contains about three thousand specimens, and is in the museum of Indiana University. Of the forty species represented in this collection, twelve appear to be new to science. Types of each of these have been sent to the U. S. National Museum. I take pleasure in acknowledging my indebtedness for specimens to Prof. Henry L. Osborne, of Purdue University, to Miss Rosa Smith, of San Diego, Cal., to Mr. Justus M. T. Myers, of Fort Madison, Iowa, and to Mr. A. E. Brunn, of Garfield, Kans.

HEXAGLENA,* gen. nov.

Eyes six, arranged in two divergent lines, close to the bases of the antennæ. The head conical, minute, concealed beneath the first scutum; spiracles in one row on each side of the body. This genus belongs to the family *Polyzonide* and occupies a position between *Octoglena* (Hood) and *Petaserpes* (Cope). It differs from *Octoglena* in having six instead of eight eyes; in the size and shape of the first scutum, and particularly in the position of the head, being entirely exposed, in the dorsal aspect in *Octoglena*; wholly concealed in the new genus. It differs from *Petaserpes* in having six eyes instead of two and in the position of the head, which in *Petaserpes* is concealed beneath the first scutum as far as the bases of the antennæ, and in the spiracles which are arranged in one row on each side of the body in *Hexaglena* and in two rows in *Petaserpes*.

1. *Hexaglena cryptocephala*, spec. nov. Plate xii.

Light brown or parchment colored above, dirty white below. Dorsum moderately convex. Venter plainly concave. Head conical, as long as wide, very minute and entirely concealed in the dorsal aspect. Eyes six, in two divergent straight black lines near the bases of the antennæ, circular in outline and very convex. Antennæ very large in proportion to the head, densely pilose, separated at the base by a space equal to width of the proximal joint of the antennæ; the joints of the antennæ are of varying lengths, subcylindrical, scarcely larger distad. Legs almost transparent and colorless, about 85 pp. when extended, not

* $\xi\xi$, six: $\gamma\eta\nu\eta$, pupil of the eye.

reaching beyond the body. Segments not more than 46. Scuta thickly marked with small longitudinal depressions (under a half-inch glass). Spiracles two to each segment in one line on either side of the body. In some specimens the subsegments are some of them furnished with spiracles so that scuta may have four spiracles, but never in more than two rows. The scuta decrease in width very rapidly cephalad and caudad; the first scuta is one-half and the last one-tenth the width of the body.

Length, 18^{mm}; width, 3^{mm}.

Twenty specimens are in the collection, all from Bloomington Township, Monroe County, Indiana.

2. *Polydesmus castaneus*, spec. nov. Plate xii.

Dark chestnut to olive-gray with a very indistinct black mesodorsal line and pinkish lateral laminae. Vertex chestnut or concolorous with the body; vertex furrow strongly pronounced and in the dark variety piceous; cephalic margin of the labrum broadly and deeply emarginate and thickly fringed with hairs; four long setae are arranged in a curved line half way between the cephalic margin of the labrum and the bases of the antennae. Antennae much less approximate than in *P. erythropygus*, pilose and concolorous with the body, a ring of lighter color distad of each joint; basal joints yellowish white, each bearing one or two long setae. First scutum nearly semicircular. Anal scutum triangular, very acute behind, with ten long hairs on the anal valves, two-thirds to three-fourths the length of anal scutum. Feet pilose, dirty white and concolorous with the ventral side of the body. The genital appendages of the male are of the *P. erythropygus* type, but very different in detail. They are composed of two smooth subconical tumuli, to which are articulated two long curved spinous processes, which cross each other at two-thirds their length from the proximal end. The tumuli are pilose mesad with long setae, which are thickly interlaced with each other. The spinous processes are also pilose mesad with long hairs to a point just beyond their crossing. The spinous processes each bear lateral processes which project cephalo-mesad and end in two spines, one short and acute, the other long, slender, curved, and very acute. The spinous processes are deeply bifid distad, and the space between the forks is filled with a thin transparent membrane.

There are three specimens in the collection, all from Bloomington Township, Monroe County, Indiana.

3. *Polydesmus erythropygus*, var. Plate xii.

This variety is very distinct in general appearance from the typical *P. erythropygus*, but does not deserve to rank as a species.

Salmon pink, deeper on the caudal margin of the scuta and on the lateral laminae, an indistinct dark mesodorsal line. Lateral laminae separated by a space nearly equal to their width. The male genitalia are formed as in *erythropygus*, but have nothing of the "swan-neck curve," being straight, upright, and approximate.

4. *Trichopetalum bollmani*, spec. nov. Plate xii.

This species resembles *T. glomeratum*, but differs in the following respects:

Light horn color; leg bearing segments about forty-five. Legs 46 to 50. Antennæ relatively more slender. The third joint of the antennæ is .84^{mm} long and .085^{mm} wide at proximal end, and .119^{mm} distad, being therefore about eight times as long as wide. *T. glomeratum* has the corresponding joint about four times as long as wide. The other joints are proportionally slender. The fourth and fifth joints of *T. bollmani* are more nearly equal than the corresponding joints are in *T. glomeratum*. In the former the length is, respectively, .63^{mm} and .72^{mm}, in the latter .24^{mm} and .33^{mm}. The former has the fourth joint straight instead of kneed as in the latter. The length of the joints of the antennæ, except the first, is, 2nd, .34^{mm}, 3rd .84^{mm}, 4th .63^{mm}, 5th .72^{mm}, 6th .41^{mm}, 7th, .24^{mm}. The caudal subsegments are swollen and give the body of the animal a ridged appearance. Length, 17^{mm}; diameter, 1.5^{mm}.

During the months of November and December, 1885, this species was found in small numbers, in May fold's cave, 5 miles northwest of Bloomington, Ind. This cave is about a fourth of a mile in length, and is simply the outlet of an underground stream. Ten feet high at the entrance, it gradually decreases in size to a slit in the rock too small to admit the body of a man. The floor is covered with fragments of rock fallen from the ceiling under which the specimens furnishing this description were found. There are seven specimens in the museum.

5. *Lisiopetalum eudasym*, spec. nov.

Body and head deep brown, almost black, with lighter mesodorsal and laterodorsal stripes. Each scutum, except a few nearest to the head, has twenty-six ridges situated upon the caudal two-thirds of its dorsal surface. Fourteen of these ridges are comparatively small and twelve larger. Each of the larger ridges extends caudad in an acutely-conical bristle-tipped point, which projects over the following scutum. Two small ridges are placed in the mesodorsal stripe; laterad to these on either side six larger ridges alternate with six smaller; three larger ridges lie between the mesodorsal and laterodorsal stripes, one lies in the laterodorsal stripe and two ventrad. Immediately below the anal scutum and on either side of the meson are situated two very coarse setæ, out of which two fine setæ grow. The eye-patches are triangular with convex margins and each contains forty-six ocelli. Antennæ concolorous with the body and pilose except the first joint, which is lighter and not pilose. All the joints distad of the first have a ring of lighter color distad; the four joints distad of the first are moderately clavate and subequal; the sixth is more decidedly clavate and a little more than half as long as the fifth; the distal joint is a convex cone. The antennæ are kneed at the junction of the third and fourth joints. Head punctate and densely pilose. Labrum deeply emarginate. Legs pilose, yellowish white, darker distad. Leg bearing segments, 58. Legs, 102. Length,

55^{mm}; diameter, 3^{mm}. There are seven specimens in the collection, all found in Bloomington Township, Monroe County, Indiana.

6. *Inlus multiannulatus*, spec. nov.

This is the largest species of *Inlus* yet described as belonging to North America. Black annulate with brown. Cephalic subsegments smooth, polished, and black; caudal subsegments variegated with brown and closely and deeply canaliculate dorsad and ventrad. Segments, 76. Body and head nowhere pilose. Mucro very small. Eyes brown, 48 in number, arranged in a linear patch close to the base of each antenna. Antennæ pilose and moderately long and slender. Legs pilose and equal in length to the diameter of the body. Length, 165^{mm}; diameter, 8.5^{mm}.

The specimen which furnished this description was found by the children of Mr. Justus M. T. Myers, near Fort Madison, Iowa.

7. *Geophilus brunneus*, spec. nov.

Olive-brown, cephalic segment deep orange, caudal segment and caudal legs light orange, the remaining legs concolorous with the body. Cephalic scutum irregularly punctate, nearly as broad as long, and slightly broader proportionally in the female than in the male, slightly abruptly narrowed cephalad. Cephalic scutum in the male is .86^{mm} long, .77^{mm} wide; in the female .94^{mm} long by .86^{mm} wide. Antennæ moderately pilose, 2.66^{mm} long. Labium plainly canaliculate, punctate, and emarginate cephalad. Mandibles sparsely pilose, with one very small tooth. Scuta pilose; scuta-episcutal sutures very plain, with a greener tinge than the other parts of the dorsum; cephalad parallel caudad divergent. Sterna punctate; sterna-episternal sutures plain, with small mesal depressions of elliptical shape. Legs pilose, in the male 47 pp., in the female 49 pp.; caudal legs of the female little modified, 1.23^{mm}, pair cephalad to these 1^{mm} long; caudal legs of the male greatly enlarged and more pilose; tibial .19^{mm} thick, .26^{mm} long. Coxæ of caudal legs plainly pitted. Body 23^{mm} long, 1.16^{mm} wide.

This species is rare in Bloomington Township, Monroe County, Indiana. There are three specimens in the collection.

8. *Geophilus indianæ*, spec. nov.

Fuscous, cephalic segment reddish orange, caudal extremity of the body light orange. Cephalic plate .96^{mm} long, .94^{mm} wide; cephalic half semicircular; caudal margin truncate, .54^{mm} in length; cephalic margin very slightly emarginate. A row of setæ projects laterad from the lateral margins of the cephalic plate and mesad to these two parallel rows of setæ; the surface is unevenly and sparsely punctate. Antennæ moderately pilose, 2.14^{mm} long. Mandibles very slightly pilose, with one almost obsolete tooth. Labium evenly and deeply punctate, indistinctly canaliculate, and scarcely emarginate. Scuta-episcutal sutures very plain. Sterna-episternal sutures and mesal depressions very plain.

Legs 47 pp., scarcely pilose. Caudal legs much swollen and pubescent, with a very few long hairs; tibial joint $.19^{\text{mm}}$, $.15^{\text{mm}}$. Pits on caudal coxæ distinct. Length, 17.14^{mm} ; width, $.93^{\text{mm}}$.

The single specimen which furnished this description was found near La Fayette, Ind., by Prof. Henry L. Osborne.

9. *Geophilus varians*.

Obscure orange or yellow, deeper and bright toward the head. Cephalic segment orange, $.77^{\text{mm}}$ long, $.60^{\text{mm}}$ wide. Cephalic and caudal margins straight and equal, lateral margins evenly curved. Antennæ pilose, 1.9^{mm} long. Labium lightly punctate, pilose, and slightly emarginate. Mandibles sparsely pilose, each with one small tooth. Scuta hardly at all pilose. Scuta-episcutal sutures moderately plain cephalad, obsolete caudad. Sterna-episternal sutures plain; mesal depressions plainer cephalad and caudad than mesiad. Legs 53 to 55 pp. Caudal pair swollen slightly; 1.3^{mm} long; scarcely at all pilose; tibial joint $.26^{\text{mm}}$ by $.12^{\text{mm}}$. The pair just cephalad $.6^{\text{mm}}$ long. Length, 18.85^{mm} ; width, $.73^{\text{mm}}$.

There are twelve specimens in the collection, all found near Bloomington, Ind.

10. *Mecistocephalus umbraticus*.

Light orange cephalad and caudad, fuscous mesiad. Head deep orange. Cephalic plate irregularly punctate, 1.11^{mm} long, $.78^{\text{mm}}$ wide. Antennæ 2.4^{mm} long, pilose. Mandibles pilose, with longer hairs mesad, deeply punctate, each with four teeth, the two outer larger than the two inner. Labium deeply punctate, pilose, canaliculate and emarginate. Scuta very pilose for this genus. Scuta-episcutal sutures less distinct and wider apart caudad than cephalad. Sterna-episternal sutures plain. Legs, 49 pairs, pilose, with long hairs. Caudal legs slender, scarcely modified, 1.1^{mm} long, the pair just cephalad $.9^{\text{mm}}$ long. Length, 21.25^{mm} ; width, $.9^{\text{mm}}$.

Found near Bloomington, Ind. Eight specimens in the collection.

11. *Mecistocephalus strigosus*, spec. nov.

Light orange cephalad, yellow caudad, head deep orange. Cephalic plate 1.1^{mm} by $.67^{\text{mm}}$; cephalic margin truncate, caudal margin rounded and as long as the cephalic. Antennæ 2.7^{mm} long, sparsely pilose, almost bare proximad. Mandibles sparsely pilose, each with two very minute teeth. Labium sparsely pilose, lightly punctate, obsoletely canaliculate, scarcely emarginate. Scuta-episcutal sutures plain cephalad, becoming obsolete caudad. Sterna-episternal sutures plain; mesal depressions elongate and distinct cephalad, caudad, and mesiad, forming a shallow oval. Legs, 55 pp., sparsely pilose. Caudal legs minutely pubescent, with a very few longer hairs, 1.11^{mm} long, the pair just cephalad $.68^{\text{mm}}$. Length, 23.5^{mm} ; width, $.8^{\text{mm}}$.

Found near Bloomington, Ind. One specimen in the collection.

12. *Mecistocephalus foveatus*, spec. nov.

Orange, polished, with an interrupted fuscous band on the caudal two-thirds of the dorsum. Head orange. Cephalic plate 1.19^{mm} by .77^{mm}, deeply punctate, pilose, caudad; the lateral margins are contracted abruptly, and the cephalic plate is extended into a very short neck, with the caudal margin truncate, and marked with very closely set impressed lines. Antennæ 2.6^{mm} long, pilose, the hairs distad longer than in allied species. Labium very profoundly punctate, plainly canaliculate, pilose, and very sharply emarginate, the labium cephalad extending into two sharp teeth. Mandibles pilose, less deeply punctate than the labium, two-toothed, the cephalic black, the caudal one orange, and therefore inconspicuous. Sterna-episternal sutures and elongate mesal depressions plain. Scuta-episcutal sutures plain. Legs, 43 pairs, very long, pilose. Caudal legs not modified except in length, the former being 1.08^{mm} long, the pair just cephalad .86^{mm}. Many hairs on all the legs as long as the joints. Length, 23.31^{mm}; width, .94^{mm}.

Found near Bloomington, Ind. Two specimens in the collection.

13. *Scolopocryptops nigradius*, spec. nov.

Olive-brown, cephalic and caudal segments and appendages reddish brown. Cephalic margin of the labium straight and very slightly emarginate. Caudal legs with the first tarsal joint sparsely and second and third densely villose. Tarsal joints of the three or four pairs of legs cephalad to the caudal pair more or less villose. Apex of the caudal scutum depressed, giving it the appearance of being slightly emarginate. Dorsum smoothly rounded, without any indication of laterodorsal carina. Length, 26.5^{mm} to 29.5^{mm}. The thirty-five specimens I have examined are very constant in size, colors, and other characteristics. This species evidently occupies a position intermediate between *S. serpinosa* and *S. gracilis*, having the straight, slightly emarginate labium of the first and the villose tarsi of the second. In general appearance it strongly resembles a large *Lithobius*, and its habits are those of *Lithobius* rather than of *Scolopocryptops*.

Found near Bloomington, Ind.

14. *Cryptotrichus cæsiannulatus* (Wood). Plate xii.

I have examined seventy specimens taken without selection from the two hundred or more found in Monroe County, and about one in ten proved to be males. The eight pairs of legs are modified as follows: Joints six, *i. e.*, femur and tibia, and four tarsal joints united to form a hook. The basal joint is slightly lengthened and curved upward nearly parallel to the body. The tibia is compressed, and gradually enlarged to a point one-third its length from the distal end; from this point it is abruptly constricted so that the diameter of the proximal and distal ends is about the same. The enlargement of the tibia is on its ventral side and ends in a tubercle which does not bear a seta. The four tarsal joints (with the distal third of the tibia) form a semicircular hook tipped with a normal claw. The two proximal joints of the hook are equal in

size, cylindrical, length equal to the diameter. The last joints are conical and very small. The length of the four tarsal joints is equal to the greatest diameter of the tibia. The femur and tibia are white and not pilose, the hook is brown and pilose.

I have recently examined seventy-four specimens of that group of *Strigamia* which is characterized by pits on the coxæ of the caudal legs. I placed those together which had the same number of legs and the caudal legs alike.

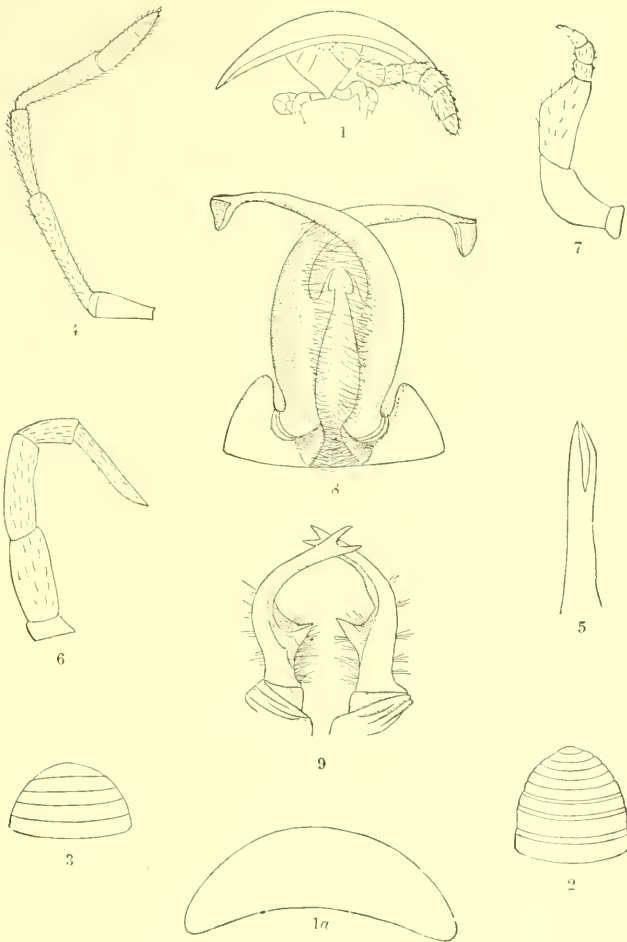
The result was as follows:

	Specimens.
1. Legs 37 pairs; caudal legs, stout	1
2. Legs 39 pairs; caudal legs, stout	5
3. Legs 37 pairs; caudal legs, slender	1
4. Legs 39 pairs; caudal legs, slender	1
5. Legs 41 pairs; caudal legs, slender	2
6. Legs 47 pairs; caudal legs, slender	1
7. Legs 49 pairs; caudal legs, slender	10
8. Legs 51 pairs; caudal legs, slender	12
9. Legs 47 pairs; caudal legs, stout	8
10. Legs 49 pairs; caudal legs, stout	3
11. Legs 67 pairs; caudal legs, stout	1
12. Legs 69 pairs; caudal legs, stout	6
13. Legs 71 pairs; caudal legs, stout	2
14. Legs 71 pairs; caudal legs, slender	12
15. Legs 73 pairs; caudal legs, slender	9

It will be observed that these easily divide into three groups, Nos. 1-5 having 37-41 pairs of legs; Nos. 6-10 having 47-51 pairs of legs, and Nos. 11-15 with 67 to 73 pairs of legs. It is a striking fact that not one specimen out of the seventy-four has an even number of pairs of legs. It will be noticed that in each group the difference in the number of pairs of legs is 2 or 4. Assuming that the specimens with slender caudal legs are females and those with stout caudal legs males, it will be seen that in the first group the females have 41, 39, or 37 pairs of legs; the males have 39 or 37 pairs of legs. In the second group the females have 51, 49, or 47 pairs of legs; the males have 49 or 47 pairs of legs. In the third group the females have 73 or 71 pairs of legs; the males have 71, 69, or 67 pairs of legs.

In each group the specimens with the largest number of legs are females, those with the smallest number males. But in the first and second groups there seem to be females that have as few pairs of legs as the males that have the fewest; a glance at the first table will show that there is but one specimen of this kind in each of the groups (Nos. 3 and 6). It would appear then that adult females have two more pairs of legs than adult males and that these animals grow by the addition of two pairs of legs, and therefore two segments at one time. Whether these conditions will hold good for the whole genus or the whole family I do not know, but I have reason to believe that it is the rule for males to have fewer legs, by two pairs, than the females.

INDIANA UNIVERSITY, *March 10, 1886.*



- 1-3.—*Hexaglena cryptocephala*: Dorsal aspect of head; transverse section of body; dorsal aspect of caudal and cephalic ends of body. (p. 328.)
 4.—*Trichopetalum bollmani*: Dextral antenna, except first joint. (p. 330.)
 5-7.—*Cryptotrichus casioannulatus*: Sinistral aspect of genital appendages of male; normal leg; modified right leg of male. (p. 333.)
 8.—*Polydesmus castaneus*: Caudal aspect of genital appendages. (p. 329.)
 9.—*Polydesmus erythropygus*: Caudal aspect of genital appendages. (p. 329.)