ART. XXI.—*Brief Contributions to Zoölogy, from the Museum of Yale College.* No. XXIII.—*Descriptions of New North American Myriopods;* by O. HARGER.

THE Museum has lately received a number of interesting Myriopods from various parts of the country, collected in part by the writer while traveling across the continent as a member of Prof. Marsh's Geological Expedition to the Rocky Mountains and Pacific Coast. Owing to the comparative neglect of this group by entomologists, a large proportion of these species are new, and in the following article a few of the most interesting and characteristic forms are described.

Lithobius pinetorum, sp. nov.

Ferruginous, head and sometimes a few of the anterior segments of deeper color. Cephalic segment polished, its posterior margin elevated. Ocelli on each side ten to fourteen. Antennæ polished, smooth, except a few scattered hairs near the base, segments gradually decreasing distally, but the terminal segment is usually elongated. Labium with a median groove, a few hairs about the dental lamina; teeth two on each side, acute and spreading; there is sometimes a third smaller external tooth on each side. Mandibles sparsely hairy. Alternate larger scuta polished, with the posterior and lateral margins elevated, except in the last two scuta, where the lateral margins only are elevated, emarginate behind, especially on the posterior segments. Excavations on the coxæ small, nearly circular. Length 15^{mm}.

This species resembles *L. paucidens* Wood, but is easily distinguished by its smaller size, less number of ocelli, and by the smooth and polished antennæ. It was collected in considerable abundance under the bark of decaying pine logs, by Prof. G. H. Collier and the writer, in the valley of the John Day river, Oregon, in October, 1871.

Geophilus gracilis, sp. nov.

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, thirty-nine or forty-one pairs, occasionally forty, last pair thickened and elongated. Sterno-episternal sutures distinct. Body slightly hairy throughout. Length, 15^{mm}.

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

Trichopetalum,* gen. nov.

Sterna not closely united with scuta; third and fifth joints of antennæ elongated; scuta furnished with bristles; no lateral pores; eyes present.

This genus belongs to the family *Lysiopetalidæ*, and is closely related to *Pseudotremia* of Cope (Proc. Am. Phil. Soc., vol. xi, p. 179, 1869). It differs from that genus in having no pores, instead of having the "annuli with two pores on each side of the median line." The species further differ from *P. cavernarum* and *P. Vudii* Cope in having seven only, instead of eight, joints in the antennæ. In this point they also differ from *Spirostrephon Copei* Packard, from the Mammoth Cave (Am.

* From θρίξ, a bristle, and πέταλον, a leaf or plate.

Naturalist, p. 748, Dec., 1871). It may be remarked that, in the descriptions above referred to, Prof. Cope, in stating the relative lengths of the joints of the antennæ in each of the two species, omits all mention of the 6th joint; and, in the same manner, Prof. Packard omits the second. Prof. Packard's figures also represent only seven joints in the antennæ. *Craspedosoma*, as defined and figured by Gervais (Aptères, vol. iv, p. 119, plate 45, fig. 5), has the sterna and scuta consolidated into a complete ring as in *Polydesmus* and *Iulus*, and therefore differs from this genus, as shown in plate II, fig. 4, by a character considered of family importance.*

Trichopetalum lunatum, sp. nov. Pl. II, figs. 1–4.

Dirty white, banded transversely and mottled with light brown anteriorly. Segments 28; males with 45, females with 46 pairs of legs. Head large, dilated laterally, covered with short, erect, bristly hairs. Eyes (fig. 2) of 10 ocelli, in a lunate group, convex toward the bases of the antennæ. Antennæ (fig. 2) pilose, seven-jointed; the joints measure, the first ·07^{mm}, second ·10^{mm}, third ·23^{mm}, fourth ·11^{mm}, fifth ·22^{mm}, sixth ·09^{mm}, seventh ·07^{mm}. First scutum semicircular, with the posterior margin slightly concave. Near the outer angles of this scutum are two small tubercles on each side, each bearing a stout bristle, and higher up a third tubercle on each side bears also a bristle. The remaining scuta (fig. 4) throughout are furnished with three bristles on each side, springing from tubercles, the two lower being approximate and situated on the upper surface of the short lateral processes, and the third higher up on the scutum. On a few of the posterior segments these bristles are in a transverse row, and on the last scutum, which is broad and truncate, the two inner ones are thickened at their bases. There is an impressed dorsal line. Legs slender, white, hairy, with the penultimate joint lengthened. The under side of the seventh segment of the male (fig. 3) is furnished anteriorly with a pair of appendages directed backward and curved upward; and posteriorly with a pair of cylindrical jointed organs, directed horizontally outward, tipped with a short bristle, and appearing like modified legs of the posterior subsegment. In crawling these organs have a motion similar to that of the basal joints of the adjacent legs. Length 6^{mm}.

This species is not uncommon under or among decaying leaves in moist woods about New Haven.

* Since the above was in type Prof. Cope, in an article on the Wyandotte Cave and its Fauna (Am. Naturalist, July, 1872, p. 414), has referred *Spirostrephon* (*Pseudotremia*) *Copei* Packard to a new genus *Scoterpes*, which he characterizes as destitute of eyes and lateral pores. Agreeing with Dr. Packard, he also doubts the validity of his own genus *Pseudotremia*, and refers *P. cavernarum* to *Spirostrephon*. The lateral pores of *P. Vudii* are thus left somewhat doubtful, and without actual examination it is impossible to decide whether or not it is congeneric with the species of *Trichopetalum*.

Trichopetalum glomeratum, sp. nov.

This species is somewhat larger than the preceding, but closely resembles it, except in the following points. The general color is somewhat darker. The eyes (pl. II, fig. 5) of 19 ocelli in a subtriangular patch. There are 31 segments, and the fifth joint of the antennæ (fig. 5) is much shorter than the third. These joints, except the first, measure: second, ·20^{mm}, third ·40^{mm}, fourth ·24^{mm}, fifth ·33^{mm}, sixth ·18^{mm}, seventh ·12^{mm}. Length of animal, 10^{mm}.

A single specimen of this species was collected by the writer in the valley of the John Day river, Oregon, in October, 1871.

Trichopetalum iuloides, sp. nov.

Animal with the aspect of an Iulus, being destitute of lateral processes. Light chestnut, with a dorsal yellow line, and along the sides nearly obsolete yellowish spots. Segments 30. Head somewhat dilated laterally, sparsely bristly, hairy. Eyes triangular. Antennæ (pl. II, fig. 6) sparsely hairy, filiform, seven-jointed, fifth joint longest. The joints measure respectively, first ·10^{mm}, second ·12^{mm}, third ·21^{mm}, fourth ·12^{mm}, fifth ·22^{mm}, sixth ·08^{mm}, seventh ·05^{mm}. First scutum nearly semi-circular, but with the lateral angles acute, furnished with a transverse row of six short bristles, as are the other scuta; these bristles are much stronger on the posterior segments, and on the anal segment two of them are thickened at their bases. Under a high power, the scuta are seen to be minutely wrinkled transversely across the back, and longitudinally along the sides. Legs hairy. Length 8^{mm}.

This species was collected under stones at Simmons' Harbor, on the north shore of Lake Superior, by Sidney I. Smith, Naturalist to the U. S. Lake Survey.

Iulus furcifer, sp. nov.

Dark chestnut brown, beautifully ornamented with a black dorsal line, a lateral row of black spots and transverse bright yellow bands, which are very narrow and interrupted across the back. Feet and under part of body much lighter; segments about 55. Eyes triangular, connected by an impressed line along the upper margin of a dark band, which is encroached upon below by yellowish spots. Antennæ filiform, pilose and nearly black at tip, last joint very short; scuta with impressed lines on the sides, and under a lens the surface of the back is seen to be covered with minute oblong pits; anal scutum not mucronate. Male organs (pl. II, fig. 7) of three pieces on each side directed backward, the outer (fig. 7, *a*) cylindrical and distally hairy on the inner side; within this is a much larger piece (fig. 7, *b*) in the form of an elongated narrow plate bent around a robust spine (fig. 7, *c*), which is the inner and at its base the

upper of the three pieces, and is unequally forked at the tip, where it is inclosed by the larger piece. Length 35mm.

This beautiful species was collected by Prof. G. H. Collier and the writer in the John Day valley, Oregon, in October, 1871.

Polydesmus armatus, sp. nov.

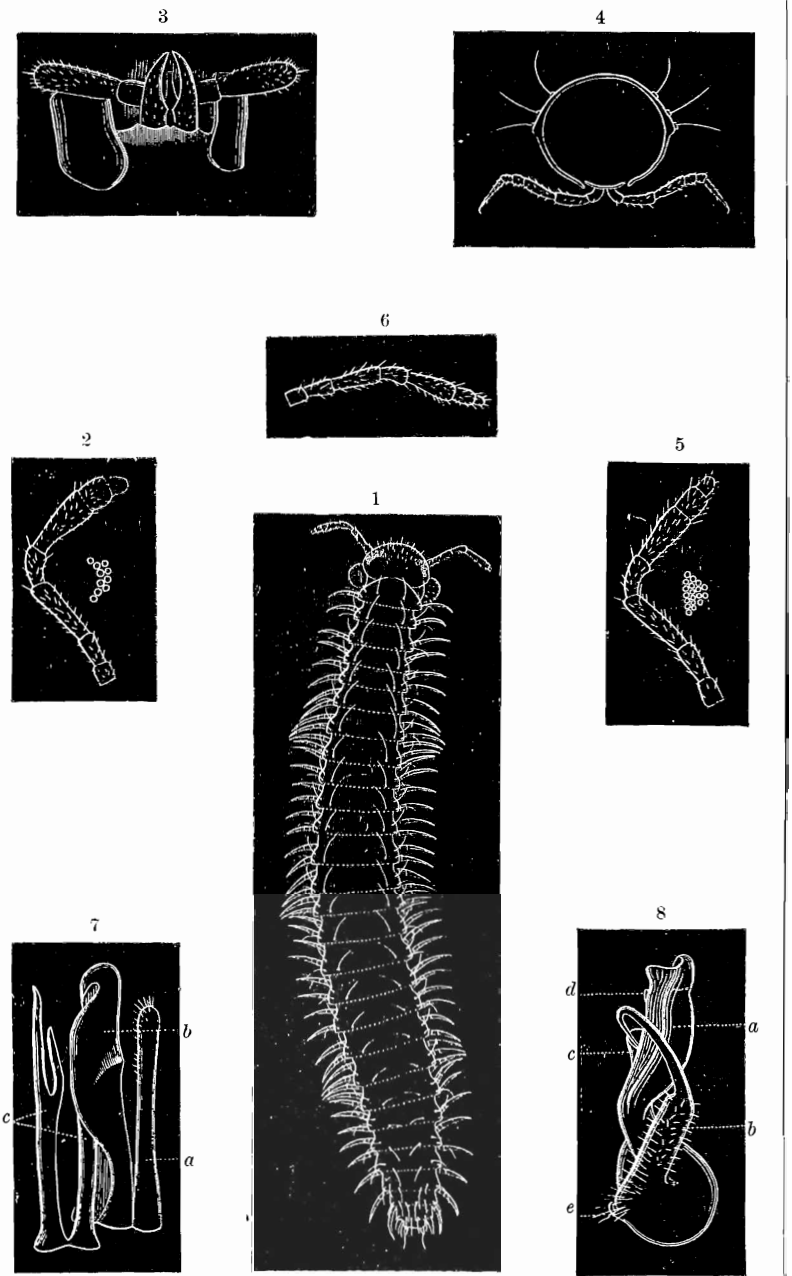
Color various shades of chestnut brown or sometimes olivaceous, with the lateral laminæ and tip of anal scutum yellow; a few of the posterior scuta are sometimes lighter colored than the others. The inferior border of the face, and the basal joints of the antennæ are yellow; distally the antennæ are much darker. The anal scutum is much prolonged into a truncated spine. The large male appendages (pl. II, fig. 8) are hairy at their base, and consist of two principal portions; the larger and inner (fig. 8, *a*) is cylindrical for the first third of its course, and directed downward, inward, and forward; it then becomes lamelliform, and sends inward and upward a much excavated process (fig. 8, *c*), distally a smaller and less excavated one (fig. 8, *d*), and is at this point contracted, but expands so as to terminate in a much bent plate. The other portion (fig. 8, *b*) is a long curved spine on a bristly cylindrical base, arising a little behind and outside of the former, and curving spirally around it, so that its attenuated tip is received in the excavated process. A small stout hooked spine (fig. 8, *e*) is nearly concealed by the bristles that spring from the base of the larger spine. Length 28mm.

This species resembles *P. Haydenianus* Wood, but may be at once distinguished by the much produced anal scutum, and by the male organs. It was collected in the John Day valley, Oregon, by Prof. G. H. Collier and the writer, in October, 1871.

Yale College, New Haven, Conn., June 27, 1872.

EXPLANATION OF PLATE II.

Figure 1. *Trichopetalum lunatum*, female, magnified 15 diameters.
" 2. Antenna and right eye of the same, magnified 40 diameters.
" 3. Inferior view of seventh segment of male of the same, magnified 40 diameters.
" 4. Diagram of transverse section of segment of the same, magnified 30 diameters.
" 5. *Trichopetalum glomeratum*. Antenna and right eye, magnified 25 diameters.
" 6. *Trichopetalum iuloides*. Antenna, magnified 25 diameters.
" 7. *Iulus furcifer*. Male appendages of left side, magnified 20 diameters, seen from above; *a*, outer cylindrical process; *b*, bent plate: *c*, inner forked process. The distal portion of this process being concealed by the bent plate, the corresponding process on the right side is figured in position.
" 8. *Polydesmus armatus*. Male appendages of left side magnified 20 diameters, seen from below; *a*, larger process; *b*, spine-like process; *c* and *d*, processes from the upper surface of *a*; *e*, curved basal spine.



O. H. from nature and on wood.