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ART. I.—*On the Chilopoda of North America, with a catalogue of all the specimens in the Collection of the Smithsonian Institution.**

By HORATIO C. WOOD, Jr.

The body among the Chilopoda is composed of a variable number of segments, each of which is formed by the junction of two subsegments, one of them being very much atrophied and without appendages. Each subsegment is divisible into a dorsal and ventral portion; the former comprising the scutum or dorsal shield and the superior portion of the sides with the spiracles, the latter the sternum or ventral shield and the inferior portion of the sides with the legs. The scutum is originally formed by the conjunction of two central and two lateral pieces, the former we have called the primitive scuta, the latter are the episcuta of Newport. The sternum is in like man-

* It will be seen that the principal portion of our material consists of the collection of the Smithsonian Institution, which was placed at our disposal, in accordance with the liberal constitution of that Institution. And we are especially indebted to Prof. Baird for many facilities afforded us by him. We would also acknowledge our obligation to Samuel H. Seudder, Esq., of Cambridge, for the trouble incurred in sending the specimens belonging to the Museum of Comparative Zoology, kindly loaned us by Prof. Agassiz.

We doubt not there are still unknown species scattered throughout the country, specimens of which we have been unable to obtain. We think that they will more especially be found among the Geophilidae. And if Naturalists would send us suites from their own neighborhoods, we would be very happy to label and return them, retaining duplicate specimens of forms unknown to us.

The West Indies, of course, are not included in our domain. Mexico forms geographically a portion of N. America, but its fauna is much more closely allied to that of S. America.

ner formed from four pieces—the primitive sternum (fig. 1, *a*) and episternum, (fig. 1, *b*.)

Fig. 1.

Close to the spiracles, and belonging to the dorsal section, are two osseous points, the rudiments of the parapera, which attain to some importance among the Hexapoda. At the insertion of the legs are several small plates, the epimera (fig. 1, *c*.) They afford points of origin to the retrac-

tor muscles of the legs. The posterior of the two subsegments forms the mass of the segment; but the scutum of the anterior is represented by a raised band on the front of the main scutum. The ventral portions of it are, however, much more distinct. We will find a series of small plates anterior to the sternum representing two primitive sterna (fig. 1, *s*) and episterna (fig. 1, *e*) as well as epimeral plates.

The legs contain each a coxa (fig. 1, *d*) a femur, *b*, a tibia, *t*, a tarsus, *g*, and metatarsal joints, *m*, *n*. The coxæ are generally small, except those of the posterior pair of legs, which are often of immense size and are known as the lateral anal appendages. Among the Cermatiidæ and Lithobiidæ, however, they attain to a considerable size. The metatarsal joints vary very much; in the genus *Scolopendra* there are but two to each leg, whilst among the Cermatiidæ there are a great number.

The head in the Chilopoda is composed of eight subsegments consolidated into two or more segments, as was first shown by Mr. Newport. The first segment is styled the cephalic. It reaches its maximum size in the Cermatiidæ, in which it is the most prominent part of the body, supporting a pair of very large compound eyes and almost completely concealing the strikingly atrophied basilar segment. Traces of the division into the four subsegments, that existed during embryonic life, are occasionally met with, especially among the Lithobiidæ, but the embryological labors of Mr. Newport have shown conclusively that it is so formed; to whose invaluable papers, in the XIX. volume of the Linnean Transactions, we would here acknowledge our indebtedness. The head in the Scolopendridæ has, in addition to the cephalic segment, another one of variable size; this is the basilar. It is also found well developed in all the other families except the Cermatiidæ. Near its anterior border there is often found a deep crescentic groove; the portion separated by this from the main body, is called the prebasilar fold or subsegment. In the genus *Mecistocephalus* this subsegment is entirely separated from the rest, its scutum existing as a small plate immediately posterior to the cephalic, and is here called the prebasilar. In the other genera of the Geophilidæ this is wanting, but there exists posteriorly another segment, answering to the posterior portion of the basilar of the Scolopendridæ. It is the subbasilar of Newport. The under surface of the head, comprising as it does the organs of

nutrition, is much more complicated than the upper, and, in order to show the relations of parts more clearly, we will first trace them out minutely in the genus *Scolopendra*, where perhaps their analogy is most easily discovered.

On examining the under side of the head of a specimen of the genus *Scolopendra*, we will find a band constituting the most anterior portion, with which the antennae partially articulate; this band we take to be the anchylosed primitive sterna and episterna of the first cephalic subsegment, of which the antennae are the appendages. Just posterior and inferior to the eyes, we will see what is apparently an inversion of the cephalic scutum, but closer examination shows it to consist of two small plates, the superior exterior, (fig. 2, *e*.) uniting with the scutum by suture, the inferior interior (fig. 2, *h*) approximating to the other plate; the first of these is the atrophied episternum, the other the primitive sternum of the second cephalic subsegment. United with this sternum by suture we will find posteriorly a larger plate (fig. 2, *d*) which articulate on its inner side with another obliquely transverse plate, (*b*.) which also is conjoined on its inner side by another, (*c*.) and that too by another, and finally in the centre there is a small tooth, as it were. These plates are respectively the coxa, femur, tibia, tarsus, and the rudimentary metatarsal (the central tooth) of the atrophied and misplaced appendages of the second cephalic subsegment. The tibia and tarsus are generally anchylosed together, but we

Fig. 2.

have seen them separate. Conjoined and posterior to the coxa of the second cephalic subsegment we will find a large plate (*a*) articulating with the cephalic scutum by suture; this we take to be the primitive sternum and episternum of the third cephalic subsegment atrophied and fused together; to it the true maxillae are articulated. These consist each of, first an elongated crooked plate (the coxa) articulating with two plates, the exterior of which (the femur) is armed with a tubercle, as in the mandibles, posterior legs, &c.; the inner plate is the tibia; these two plates articulate at their distal end with a third, the tarsus and metatarsus coalescent, but with the line of their junction very apparent. The maxillae we believe to be the appendages of the third cephalic subsegment. Just anterior to the primitive sternum of the first, and posterior to that of the third, are often found some small plates which we believe to be epimeral. But the largest of the latter is probably the episternum

of the fourth cephalic subsegment, which is scarcely to be found elsewhere. Proceeding still posteriorly we come to the maxillary palpi, (fig. 3,) which are possessed each of a distinct femur, (*f*.) tibia, (*x*.) and tarso-metatarsal joint, (*m*.) They are the appendages of the fourth cephalic sub-

Fig. 3.

segment. Between them are two small plates—the lingua—(fig. 3, *l*) which we think are the primitive sterna, not episterna, (as Mr. Newport believed,) of the fourth cephalic subsegment. Posterior to the sterno-episternal plate of the third subsegment is a subtriangular plate, one of the episterna of the first basilar subsegment; interior

Fig. 4.

to this is a large irregularly four-sided one, forming a portion of the palpus, (fig. 4, *a*;) this is one of the primitive sterna of the first basilar subsegment; still within this is an elongated plate, (*e*), the exoia of the palpus. With these two last the femur (*b*) of the palpus is articulated at its proximate end, while to its distal end is fitted the tibia (*x*) and to it the tarsus, (*m*.) The sterna and appendages of the second and third are very much coalesced and difficult to distinguish clearly; but we think that the dental lamina are probably the appendages of the second basilar subsegment, the anterior portion of the labium, which we have frequently seen separated by a suture, being composed of the episterna and primitive sterna of the same subsegment. The mandibles are probably the appendages of the third basilar subsegment, the posterior portion of the labium being composed of the sterna of the same subsegment. Two plates, which are bent round the sides of the posterior portion of the labium, we take to be the episterna. The sternal portions of the fourth basilar subsegment are similar to those of the segments of the body. Among the Lithobiidæ the structure of the under portion of the head is almost identical with that described above.

Among the Geophilidæ the parts of the mouth are so consolidated and confused that it is impossible to recognize in the adult the original plan of construction and development. On examining the under surface of the head of a *Meesiocephalus*, we will find the labium very large, as are also the mandibles, while the maxillæ are apparently wanting, but the maxillary palpi are recognizable. Among the Cermatiidæ the labium is moderate, cleft in the middle, the two lateral halves being moveable on one another, so as to form as it were an additional joint to the mandibles; otherwise enormously developed, especially as to length. The palpi are very long. The maxillæ and maxillary palpi well developed.

Fam. I. CERMATIIDÆ, *Leach*.

Scuta dorsalia 8. Segmenta 16. Sterna 15. Scutorum stomata mediana. Pedes antennæque multiaarticulati.

In the Cermatiidæ the head is large, more or less truncate anteriorly, having its surface rough and uneven. The eyes are compound and very prominent. The palpi much elongate and spinous. The antennæ very long and composed of a multitude of joints. The mandibles are elongate and distant. The scuta (eight in number) are rounded and deeply emarginate posteriorly, where they are furnished with a longitudinal, slit-like orifice or stoma. Their surface is more or less roughened with minute

tubercles or spines. Their border is everted, and generally crenulate and spinous. The legs are very long and serrated by parallel rows of spinulae. They are also furnished with rings, of long slender spines, encircling the joints. The sides have nine pairs of spiracles,—the openings into the tracheal vessels. The anal segment in the female is elongate, and the external organs of generation are furnished with a pair of forceps, replaced in the male by a pair of styliform appendages. The sterna (fifteen in number) are small. It is very evident that the number of segments is fifteen, and that each scutum, except the last, is formed by the coalition of two neighboring ones. The pattern of coloration is peculiar to this family; it consists of longitudinal stripes on the body and annuli on the appendages. Green predominates. There has as yet only one genus been found in this family, among which so great a uniformity exists as to make the distinguishing of species a task of considerable difficulty.

The color is probably a good specific character, but is seldom, if ever, preserved. We have seen specimens of *S. forceps* changed almost immediately to green or blue, or, more commonly, bright purple, by alcohol.

All our descriptions of new species are drawn up from alcoholic specimens, and therefore proper allowance should be made in estimating their accuracy as regards coloration.

Any anatomical characters are very obscure; but Mr. Newport considers the proportionate lengths of the metatarsal joints as constant, and we have found them so, as far as our limited observations have gone.

The lengths of the antennae and posterior pair of legs, as compared with the body, are also probably good characters, but very liable to misinterpretation; for it is difficult, often impossible, to tell when the former are broken and when the latter are imperfect, reproduced, appendages. Mr. Templeton, who first suggested these points, also makes use of the size of the marginal spines of the scuta in his descriptions. The peculiarities of the surface of the scuta also appear to be good secondary characters.

Gen. I. CERMATIA, Illiger.

Caput magnum. Oculi prominentes. Stomata dorsalia lateribus inerassata.

Scutigera, Lamarck, Anim. Sans. Verté.

Sclista, Rafinesque, Annals of Nature.

- C. FORCEPS.—C. viridi-brunnea, fasciis tribus longitudinalibus saturate viridibus; capite dense minute punctato, antice breviter piloso, et linea depressa longitudinale mediana et ante oculum utrinque altera curvata, et altera transversa inter oculos, et postice depressione lata insculpto; antennis mandibulisque ferrugineis; scutis dense minute punctatis, spinulis numerosis asperatis, valde imbricatis, angulis rotundatis, marginibus elevatis sed tenuibus et "spinis quam in Cernu. coleoprata evidentioribus;" lateribus plerumque rufescenti tinetis; femoribus singulo annulo unico saturate viridi; tibiis et tarsis biannulatis; pedum pari postremo in mare corpore vix 4 longiore (in femina bis longiore;) articulo

metatarsali primo secundo fere quater longiore, sequentibus quinque conjunctis fere æquali; superficie ventrali flavescente; sternis medii canaliculatis.

Selista foreeps, Rafinesque, Annals of Nature, 1st No., 1820, p. 7.

Cerm. coleoptrata, Say, Journ. Acad. Nat. Sci., 1st series, ii.

" " Lucas.

" " var. *Floridensis*, Newp., Ann. and Mag. Nat. Hist. xiii. p. 95.

" *Floridana*, Newp., Linn. Trans. xix. p. 353.

Scutigera Floridana, Gerv., Apt. iv. p. 225, et. Tabl. Myriap. (Exp. dans L'Ameriquedu Sud part. Sept.)

In specimens preserved for some time in alcohol, all traces of the original color are lost, the whole animal turning to a testaceous hue. The coloration of a very large fresh female before me is as follows:—

General tint is a very light olive-brown; median stripe is black, continuous, strongly defined, and extending from between the eyes to the posterior border of the penultimate scutum, where it abruptly terminates. Lateral stripes are black, strongly defined, interrupted, and extending from the eyes to the posterior border of the last scutum. The interruptions are so arranged that most of the scuta present three blotches on each side. Anterior portion of the head with two stripes converging anteriorly to the median line. In front of these there is a sub-round marking prolonged anteriorly. Most of the femora are provided with a very incomplete greenish black annulus, which is, however, complete on the last pair. Tibia and tarsi biannulated. Dorsal stomata bordered with brilliant white.

Authorities differ as to the validity of this species. We have never seen *C. coleoptrata*, and therefore cannot offer an opinion.

Specimens belonging to the Smithsonian Institution.

Catalogue number.	Number of Specimens.	Locality.	From whom received.	By whom collected.	Length.	Remarks.
72	1	St. Louis.	Dr. Engelmann.	*	Unc. 1	
206	7	Tamaulipas.	Lieut. L. Couch.		Unc. 1½	
366	3	Washington, D.C.	?	?	Unc. 1	

There are in the collection of the Smithsonian Institution the following foreign specimens of this genus:—

C. CLUNIFERA, n. sp.—*C. brunnea*, robusta, maxima; capite breve, antice breve piloso, linea longitudinali mediana et utrinque altera indistincta curvata ante oculum, et inter oculos unica transversa obsoleta, insculpto, postice marginibus elevatis et depressione lata; mandibulis magnis, crassis; scutis (postremo excepto) valde carinatis et vix emarginatis, spinulis numerosis asperatis, postice tuberi magno, marginibus elevatis, undulatis, minute crenulatis; scuto postremo medio canaliculato, postice valde emarginato; pedibus robustis, articulorum spinis modice brevibus, robustis; metatarsis pubescentibus, articulo primo quinque sequentibus conjunctis fere æquale, his inter se fere æqualibus; sternis profunde canaliculatis.

Color of the specimen is at present brown, of an obscure olivaceous tint. When alive, it was probably more decidedly greenish. The tuberosities on the posterior

*Where not stated the donor is believed to be the collector.

portions of the scuta are a very light brown. The scutal stomata are very large and look upward, but scarcely at all backward. But one of the antennæ is preserved; it appears to be one and a half times the length of the body. Distal portion of the legs a rather bright ferruginous. The distal metatarsi are scarcely one-half the length of the proximal. The rows of spines, that commonly serrate the legs in this genus, are obsolete, and the metatarsal joints have none. The ventral surface is a very light olive.

[255 | 1 | Hong Kong. | North Pacific Expl. Exp. | Wm. Stimpson, M. D. | Unc. 13. |]

C. STRABA, n. sp.—*C. ferruginea*, fascia mediana unica indistincta; capite lato, minute dense punctato appendicibusque sparse pilosis, depressione lato et linea longitudinale mediana et utrinque altera curvata ante oculum et altera transversa indistincta inter oculos insculpto; sentis spinulis parvis asperatis, minute dense punctatis, vix imbricatis, postice emarginatis, marginibus valde elevatis et spinosis et crenulatis; pedibus ferrugineis, articulo metatarsali primo sequentibus septem conjunctis in longitudine aequali.

As our specimen has been preserved for some time in alcohol, the original color may have been lost. The very prominent eyes in this species contrast strangely with the almost livid hue of the animal. The median fascia is rather lighter than the remainder of the body, but is very indistinct. The posterior border of the scuta is furnished with two small approximate gibbosities, and is of a lighter shade than the remainder. The dorsal stomata look upwards and a little backwards. Spines of the genual articulations are long and slender: those of tibio-tarsal not so long; those surrounding metatarsal very small. Distal portion of the leg pubescent. The spines that serrate the numerous ridges on the legs are uncommonly large and of a red color. Sterna furnished with the usual central groove.

[252 | 1 | Oahu. | N. Pacific Expl. Exp. | W. Stimpson, M. D. | Unc. 14. |]

C. ———, n. sp.?—*C. dilute viridis*, fascia media et altera utrinque saturatoribus; capite breve, antice sparse piloso, postice depressione lata, sulco medio longitudinale et altero transverso inter oculos, et utrinque altero longitudinale curvato ante oculum; mandibulis lutescentibus, spinis armatis, antennis vix corpore longioribus?; sentis asperatis, vix subcarinatis, leviter imbricatis, postice emarginatis, minute dense punctatis, marginibus valde elevatis sed tenuibus et vix aut spinosis aut crenulatis; pedibus (anticis exceptis) saturate viridibus annulatis, pubescentibus, articulo metatarsali primo sequentibus quatuor conjunctis longiore, secundo fere quater longiore; superficie ventrali brunnea; sternis mediis sulcatis, postice leviter emarginatis.

Head marked very similarly to *C. straba*. Legs with the usual complement of spines. The anterior apparently destitute of annuli, the posterior equalling if not exceeding the antennæ in length. Are the antennæ broken in our specimen? The femur is provided with one, rarely two, incomplete rings of dark green, the tibia and tarsus each with two complete annuli. The general color of the legs is a light yellowish green, their distal extremity inclining to rufous. The scuta have the median fascia better marked than the lateral, and are furnished posteriorly with two smooth

but densely and minutely punctate, closely approximate, gibbosities. The stomata are so placed as to look upwards and backwards.

Whether this is a new species or not we are unable to say. We certainly can discover scarcely any differences between it and similar alcoholic specimens of *C. forceps*. And where it does differ, it appears to approximate to *C. coleoptrata*. We have given a description of it to aid any one who may be more fortunate than ourselves in his material.

| 253 | 1 | Japan. | N. Pacific Expl. Exp. | W. Stimpson, M. D. | unc. 2. |

C. TUBERCULATA, n. sp.—*C. saturata* viridis, obsoletissime trifasciata; capite brunneo, sicut in *C. forceps* notato, antice piloso; scutis tuberculis minutissimis asperatis, utrinque tuberculis duobus obscuris, postice altero mediano dilute brunneo; margiibus postice rotundatis, minute crenulatis, rarissime spinosis; scuto postremo parvissimo, vix asperato, haud emarginato; pedibus saturate viridibus annulatis, spinis gracillimis curvatis; articulo metatarsali primo secundo fere quater longiore, et sequentibus quatuor conjunctis fere equali.

Eyes very prominent. Ventral surface a light, slightly greenish, brown. Legs with usual complement of spines, which are, however, more curved and slender than they are commonly found. Antennæ apparently not quite twice as long as the body. Femur with a single very dark complete annulus, tibia and tarsus with two each. Metatarsæ pubescent. Sterna with the usual median groove. The coloring of our specimen is essentially different from that of *C. forceps*, from which it further differs in the following particulars: Firstly, in the surface of the scuta; secondly, in the spines on the legs; thirdly, in the proportions of metatarsæ.

| 254 | 1 | Hong Kong. | North Pacific Expl. Exp. | W. Stimpson, M. D. | Unc. 1. |

Fam. II. LITHOBIIDÆ, Newp.*

Scuta dorsalia 15, inæqualia. Pedum posteriorum coxæ excavationibus in facie depressa. Antennæ elongatæ, setacæ. Ocelli numerosi vel paucæ.

The Lithobiidæ have the head large and well armed. The antennæ setaceous, elongate. The eyes stemmatous. In two of the genera, they are small and numerous, but in the third large and but two in number. The mandibular teeth are strong, very acute, and probably provided with a poison gland at their base, although it has never been anatomically demonstrated in this family, that we are aware of. The scuta are of two kinds,—a large one alternating with a small one. The females have the anal segment somewhat elongate inferiorly and provided with a pair of forceps on each side. In the males these are replaced by a pair of minute styli-form appendages. The posterior coxæ have a plain depressed surface with indentations, or, as we have called them, excavations on it. We have never seen a specimen of the type of the

* Linn., Trans. xix. p. 275.

genus *Lithobius*; but Mr. Newport says, that in all his specimens of the family the larger depressed surface is a deep elongate oval, whilst the smaller excavations are transverse, oval and furrow-like. We find, among the American species of the *Lithobiidae*, a group in which the larger surface is scarcely depressed, with the smaller excavations round and almost punctiform. This we have indicated as a distinct genus, with the name of *Bothropolys*.

The specific characters of the *Lithobiidae* are derived from the number of ocelli, the shape of the dental lamina with the number of teeth, the shape, color and structure of the scuta, &c. The number of the eyes in the adult is fixed within narrow limits for each species. But when the young *Lithobiid* emerges from the egg, it possesses but a single pair of eyes, besides wanting some of its segments. In the genus *Henicops*, (not yet discovered in this country,) the single pair of ocelli remain as a permanent character; but in the other genera the number of eyes are gradually increased until adult life. Mr. Newport seems to think the number of labial teeth a good specific character, but we have found it to vary considerably.

Fig. 5.

Gen. 1. LITHOBIUS, Leach.*

Antennae multiarticulatae. Caput latum, emplanatum. Labium antice denticulatum, medium sulcatum, emarginatum. Coxae excavationibus magnis, ovatis, serie unico in facie depressa dispositis. (Fig. 5.)

L. MULTIDENTATUS, Newp.—*L. brunneus*, segmento cephalico margine postico elevato; antennis elongatis, sparse pilosis, subsegumento impunctato; laminis dentalibus distinctis, margine antice fere recto, angulis externis anticis vix subproductis, denticulis 12—19 armatis; ocellis utrinque 32—37; scutorum anteriorum marginibus et posticis et lateralibus sed scutorum posteriorum lateralibus solum elevatis.

L. multidentatus, Newp., Linn. Trans. xix. p. 365; Catal. Brit. Mus. Myriapoda, p. 17.

L. multidentatus, P. Gervais, Apteres, iv. p. 236; et Tabl. des Myriap. (Exp. dans L'Amerique du Sud part. sept.) p. 29.

This species is very similar to *Bothropolys nobilis*. Indeed the only specific differences noticeable are that this species attains a rather larger size, and has the anterior margin of the dental lamina straighter, with the anterior external angle scarcely subproduced. The geographical distribution appears to be identical. Our Arkansas specimen differs slightly from the others, having the external anterior angle of the dental lamina slightly subproduced. The Texan individual has but twenty-six pairs of eyes, but is probably the young of the species.

Specimens belonging to the Smithsonian Institution.

345	10	South Illinois.	R. Kennicott.	Lin. 10—16
271	3	St. Louis, Missouri.	D. Geo. Engelmann.	" 10—12
282	2	Cook Co., Illinois.	R. Kennicott.	" 11—13
277	1	Ft. Towson, Red River, Ark.	Dr. L. A. Edwards, U. S. A.	" 12
275	1	En route from N. Orleans to Galveston.	E. B. Andrews.	" 9

* Linn. Trans. xi. p. 381.

L. AMERICANUS, Newp.—“*L. ferrugineus*, capite magno subquadrato margine postico elevato; subsegmento antennali sparse profunde punctato, antennis pubescentibus, ocellis nigris utrinque 25—26, labio complanato, polito, margine fere recto: denticulis 10, parvis, nigris, subapproximatis, scutis dorsalibus levibus, convexis, subquadratis postice rectis; segmento præanali piloso, pedibus validis flavis spinis validis armatis.”

L. Americanus, Newp., Linn. Trans. xix. p. 305; Catalogue of British Museum, (Myriapoda,) p. 17.

L. Americanus, P. Gervais, Apteres, iv. p. 236; et Tabl. des Myriap. (Exp. Amerique du Sud,) p. 29.

?*L. spinipes*, Say, Journ. A. N. S. 1st series, vol. ii. p. 108; et in Œuvr. Entom. Ed. M. A. Gory, 1, p. 21.

?*L. spinipes*, Lucas, Hist. Nat. Anim. Art. iv. p. 543.

In the Smithsonian individual that we refer to this species, the anterior scuta have the posterior margin raised with the angles rounded; whilst in the posterior scuta the lateral margins are alone thickened, and in the smaller scuta the angles are produced and acute. The sterna and head are punctate. The preanal segment is not hairy. A specimen from Massachusetts, belonging to the Museum of Comparative Zoology, agrees with the former very well, with the exception that the posterior margin of the posterior scuta is more curvilinear, thus differing more from Mr. Newport's description.

Specimens belonging to the Smithsonian Institution.

341 | 1 | Between Pike Lake and Ft. Union. | Gov. I. I. Stevens. | Lt. Grocer, U. S. A. | Liu. 11. |

L. PAUCIDENS, n. sp.—*L. ferrugineus*, pedibus flavis; segmento-cephalico polito, postice margine elevato; antennis elongatis, pilosis, subsegmento impunctato; laminis dentalibus indistinctis, singula denticulis duobus valde sejunctis armata; ocellorum paribus 17; scutis alternis majoribus politis, vix asperatis, margine postico fere recto; scutis alternis minoribus margine postico recto et angulis externis productis; coxæ excavationibus parvis, vix ovalis; segmento præanali haud piloso.

The color of the only adult specimen that we have seen approaches an orange. The mandibles are rather large. The dental lamina are almost wanting, their margin somewhat rounded and armed each with two acute widely separated teeth. The color of the three or four posterior sterna is darker than that of the rest of the body. The excavations of the posterior coxæ are small, few and nearly round. The feet are yellowish, hairy, and with well developed articular spines.

Specimens belonging to the Smithsonian Institution.

300 | 1 | Fort Tejon, Cal. | J. Xantus de Vesey. | Liu. 6—13.
343 | 1 | ?St. Louis, Mo. | ?Dr. Geo. Engelmann. | " 12. | Locality probably incorrect.

L. PLANUS, Newp.—“*L. ferrugineo-variegatus*, capite magno subquadrato polito postice ad marginem elevato incrassato, antennis brevibus pubescentibus ocellis utrinque 23, labio, polito, pilis raris; laminis dentalibus lunatis angulis externis antice elongatis profunde emarginatis; denticulis 14 acutis, nigris, scutis dorsalibus complanatis rugosis marginibus elevatis, pedibus nudis spinis articularibus parvis.”
Species mihi ignota.

L. planus, Newp., Linn. Trans. xix. p. 366; Catalogue of British Museum, (Myriapoda,) p. 18.

L. planus, P. Gervais, Apt. iv. p. 236; et Tabl. des Myriap. (Exp. Amer. du Sud, part. Sept.) p. 29.

Gen. 2. BOTHROPOLYS,* (n. g.)

Antennæ multiarticulatae. Caput latum. Ocelli numerosi. Labium antice denticulatum, medio sulcatum, emarginatum. Coxarum excavationes, parvi, fere rotundi punctiformesque, in seriebus 3—4 dispositæ. (Fig. 6.)

B. NOBILIS, n. sp.—*B. brunneus*, segmento cephalico postice margine elevato; antennis elongatis, sparse pilosis, subsegmento impunctato, articulis basalibus 4 longitudine fere æqualibus; laminis dentalibus distinctis, margine antice subrotundato, angulis anticis externis subproductis, denticulis 12—19; ocellis utrinque 32—37; scutorum anticorum marginibus et posticis et lateralibus elevatis sed scutorum posteriorum lateralibus solum.

The anterior scuta have their posterior margins almost straight and elevated. The labial teeth are generally large and acute, but rarely coaduate. The number of pairs of eyes appears to vary, even in the adult, from 32—37; perhaps 35 is the most common number. The feet are in most individuals of the same color as the body, but they are occasionally yellow. The posterior portions of the sterna are often furnished with stiff hairs. The articular spines are of moderate size. To show the variations in number of the labial teeth, we append the following list of the numbers in one lot from South Illinois:—

6 specimens	with 14 teeth each.
3 " "	13 " "
1 specimen	19 " "
1 " "	15 " "

The geographical range of this species is extensive. We have found it around Philadelphia; and it is in the Smithsonian collection, from Illinois and Missouri.

Specimens belonging to Smithsonian Institution.

265	12	South Illinois.	R. Kennicott.	Lin. 8—12.
344	1	St. Louis, Mo.	Dr. Engelmann.	" 7—11.

B. XANTI, n. sp.—*B. brunneus*, segmento cephalico polito aurantiaco, margine postico elevato; antennis pilosis; ocellis utrinque 18; laminis dentalibus margine antice rotundato, denticulis 16—18, nigris, acutis; scutis valde asperatis, alternis majoribus postice valde emarginatis,—alternis minoribus margine postico fere recto sed angulis posticis acutis et valde productis.

The head is rather large, with a curved suture running transversely from one set of ocelli to the other, having its convexity directed posteriorly. The first scuta approximates the head in color, has its posterior margin strongly raised, and is only slightly roughened. The other large scuta are very rough, with (sometimes indistinct but generally well marked) rugæ, converging towards the median line anteriorly. The last scuta is, however, without rugæ, and but slightly roughened. It is much narrowed anteriorly and posteriorly, and somewhat elongate. Preanal sterna almost circular, with two lateral curved impressions and a central shorter straight one, which

* βεθρρε, fovea; πειλος, multus.

are probably the remains of the sutures between the plates of which it was composed during embryonic life. The articular spines are rather strong. The smallest specimen has only twelve pairs of eyes. It affords us great pleasure to dedicate this species to Mr. Xantus, through whose "exhaustive collections" the rich fauna, of what has been a veritable "terra incognita," is being rapidly developed. Owing to mutilation, it is impossible to say with certainty that our specimen from Oregon belongs to this species; but from the extensive geographical range of the species east of the Rocky Mountains, we should infer that it did.

Specimens belonging to Smithsonian Institution.

346	2	Ft. Tejon, Cal.	J. Xantus de Vesey.	Lin. 8—10.	A doubtful spec., owing to mutilation.
280	1	Oregon.	?		

B. BIFUNCTATUS, n. sp.—*B. brunneus*, segmento cephalico polito margine postico elevato; labio et sparse profunde et dense minute punctato; ocellis utrinque 18; antennis punctatis, sparse pilosis, laminis dentalibus brevibus, latis, denticulis nigris acutis 18 armatis, margine subrotundato; scutis alternis majoribus capite simillime punctatis, politis, vix asperatis, postice emarginatis, scutis alternis minoribus postice margine recto et angulis haud productis; sternis politis; pedibus punctatis, subrobustis.

The head is of moderate size, with the posterior margin slightly emarginate and not elevated in the centre. The larger scuta are not deeply emarginate, but somewhat roughened, with a suture on each side; the anterior portion of the latter is longitudinal, but the posterior transverse. The transverse suture, running from one set of eyes to the other, is not as well marked as in *Xanti*. Posterior scuta rather deeply emarginate behind. Preanal sterna not as circular as in *Xanti*, but with the same markings.

Specimens belonging to Smithsonian Institution.

67	1	West of Rocky Mountains.	Gov. I. I. Stevens.	Dr. Geo. Suckley, U. S. A.	Lin. 10.
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Gen. 3. *HENICOPS*, *Newp.**

"Caput latum, depressum, ocello magno utrinque unico. Labium lamelliforme."

Not as yet found in North America.

Fam. III. *SCOLOPENDRELLIDÆ*, *Newp.*†

"Corpus pedesque breves, appendicibus styliformibus. Segmenta inæqualia; scutis dorsalibus imbricatis. Antennæ elongatæ, articulis ultra 16."

This family is not known to be represented in America, and we have never seen a member of it. The diagnosis above is that of Newport.

Gen. 1. *SCOLOPENDRELLA*, *Gervais.*‖

"Antennæ moniliformes, pilosæ. Corpus e segmentis 14. Pedum paria 12. Caput depressum segmento basilari brevissimo."

* Linn. Trans. xix. p. 372.

† Linn. Trans. xix. p. 275.

‡ Although this family, and various genera described elsewhere, are hardly entitled to a place in this paper, we have thought it best to give their diagnoses, in order that in case representatives of them shall be found in this country, the observer may, without difficulty, recognize to which genus his specimen belongs.

‖ Comptes Rendus de l'Acad. des Sciences.

Fam. IV. SCOLOPENDRIDÆ, Leach.*

Segmenta podophora 21—23. *Oculi paucos vel nulli.* *Pedes postremi inerassatæ plerumque spinosi.*

In this family the principal generic characters are founded upon the number of segments of the body, the shape of the head, the number and form of the spiracles, the absence or presence of eyes, and the form of the terminal segment and its appendages. In some cases the number of joints of the antennæ seems to be a constant generic subcharacter. In the large genus *Scolopendra*—the Titans of the Myriapoda—the principal specific characters are founded upon, first, the number of segments to the antennæ; secondly, the number and arrangement of the labial teeth; thirdly, the peculiarities of the posterior feet; fourthly, the shape and comparative size of the head. We have no doubt that the number of joints to the antennæ is fixed for most species, but it serves more generally to distinguish groups than single species; yet it occasionally is the most reliable character separating closely allied forms. Unfortunately it must be used with great caution in the identification of individuals, for, owing to the ease with which portions of the antennæ are lost, the want of a certain number is a very indefinite negative character. After detaching a few of the distal joints, no trace of their former presence is left. For the same reason much caution is also necessary in assigning the number in a description. M. Saussure has found so much variation in this character that he considers it worthless. It is possible that it may vary in certain species; but the differences generally consist in there being too few joints, which, as we have shown above, is to be looked for, and reproduced antennæ probably have occasionally an abnormally great number of very small ones. The number and arrangement of the labial teeth are a good character, but there is often an agreement between distinct forms, and on examining large suites of individuals, we have found more variance in the same species than our reading would lead us to look for. The posterior legs furnish the best criteria in the distinguishing of species. Most species have peculiarities either in the shape or relative size of the joints, or in the number or arrangement of spines on them. In order to show the amount of constancy that these characters possess, we have drawn up a series of tables, which may aid in establishing their value. The color, we think, is not to be depended upon, although Mr. Newport seems to attach some importance to it. In the preservation of specimens it is very liable to be altered or destroyed; besides this fact, our studies of these animals, both in museums and, to a limited extent, in the Tropics, lead us to the opinion that the color varies exceedingly, even during life. Size is often a good distinguishing character of a species, although scarcely available for the identification of an individual.

If we consider a species as the expression of a preconceived idea, there must be, as it were, a type of every species around which the individuals cluster, restrained from departing beyond a certain limit from the central nucleus. We can see then how

* Linn. Trans. xi.

there may be species perfectly distinct, but the individuals of which may so approximate that there may be difficulty in placing some of them. Does the mere difficulty or impossibility of placing an individual necessarily invalidate the claims of the species? The moss *Leucobryum glaucum*, Hampe, is acknowledged by all botanists (we believe) as distinct from *L. minus*, Hampe, the most tangible difference being that the former fruits in October, the latter in May. Now we have found fruiting specimens in April, which are undoubtedly referable to *L. glaucum*; but had they been found a month or two later, would any botanist have hesitated in labelling them *L. minus*? Indeed, one of the best American authorities told us, that had we so found our specimen, he would have pronounced it to be *L. minus*.

In the other genera of the Scolopendridæ the specific characters are pretty much the same as in the true Scolopendra. But some characters specific in the latter, elsewhere become generic subcharacters.

Subfam. I. SCOLOPENDRINÆ, Newp.*

Spiracula valvularia in paribus 9.

Gen. 1. SCOLOPENDRA, Linn.

Segmentum cephalicum imbricatum. Oculi stemmatosi, utrinque 4. Antennæ attenuatæ. Pedum paria 21.

S. HEROS, Girard.—S. testacea, segmento cephalico subovato, minute punctato; antennis 25 articulatis; dente mandibulari producto, gracile; dentibus labialibus 8—10, duobus intimis utrinque plerumque eoadunatis; pedibus plerumque luteolis; paris postremi articulo basali, intus 5—7 spinis,† subtus 7—10 spinis in serie triplici dispositis, processu angulari 3—10 spinis; appendicibus analibus lateralibus elongatis minute profunde punctatis, spinis apicalibus utrinque 5—7-et altero marginali.

S. heros, Girard, Marey's Report of Explorations on the Red River, p. 272, pl. xviii.

Var. *Castaneiceps*, Wood, Proc. A. N. S. 1861, p. 11.

S. viridis, capite antennisque rubro-castaneis; pedibus plerumque luteolis interdum viridibus, paris postremi articulis basalibus saturate viridibus.

Prebasilar fold connate with the basilar segment, the suture generally, however, well marked, existing as a deep groove. Cephalic segment slightly emarginate between the antennæ. Labial teeth from 8—10 in number; there will sometimes be four on one side and five on the other, the external tooth apparently being the missing one. Antennæ 25-jointed. Out of nearly a hundred specimens that we have examined, only two or three had one or two supernumerary joints developed. Scuta polished, generally minutely and sparsely punctate, often obscurely bicarinate, the posterior with their lateral margins elevated. Last pair of legs rather robust, with the basal joint longer than the tibial. Scuto-episcutal sutures apparent, the sterno-episternal very well marked. We have seen a number of specimens from Alabama and Georgia in the cabinet of the Museum of Comparative Zoology.

* Linn. Trans. vol. xix. p. 377.

† When giving the spines on the inner edge of a leg, we do not (as some do) include those on the terminal angular process, which are afterwards given separately.

Number of specimen.	Labial teeth.	Spines on inner side of basilar joint of last pair of legs.	Spines on under surface of basilar surface of last pair of legs.	Spines on terminal angular process.	Spines on anal appendages.	Number of specimen.	Labial teeth.	Spines on inner side of basilar joint of last pair of legs.	Spines on under surface of basilar surface of last pair of legs.	Spines on terminal angular process.	Spines on anal appendages.
					Apical. Marginal.						Apical. Marginal.
319	{ 4	6	2 3 3	8	5 1		{ 6	0	2 6 3	8	9 1
	{ 4	6	2 3 3	6	7 1		{ 4	9	3 5 3	6	5 2
	{ 4	8	3 3 3	7	6 0		{ 3	7	3 4 3	8	7 1
	{ 4	8	2 3 3	6	6 1		{ 3	7	2 4 3	8	8 0
197	{ 5	leg want- ing.		6	6 ?		{ 4	8	2 4 3	8	9 1
	{ 4	4	3 4 2	11	5 1		{ 4	9	3 4 3	7	8 1
	{ 4	6	2 3 3	6	6 0		{ 4	6	3 4 3	6	7 0
	{ 4	6	2 2 2	6	5 0	98	{ 4	7	2 3 3	6	10 1
	{ 4	6	2 4 2	7	6 1		{ 4	9	3 4 3	3	6 1
	{ 5	5	2 4 3	7	6 1		{ 4	8	3 4 4	3	5 1
322	{ 5	6	2 4 3	7	6 1		{ 4	7	2 4 4	8	7 1
	{ 5	6	2 4 3	7	6 1		{ 4	8	2 4 4	6	0 1
	{ 5	5	3 4 3	6	6 1		{ 4	6	2 4 3	8	8 1
	{ 5	7	3 4 3	6	5 1		{ 4	7	3 4 3	5	8 1
	{ 6	6	1 3 3	6	6 1		{ 4	7	3 3 3	6	8 1
	{ 6	6	2 3 2	6	6 1		{ 4	8	2 4 3	6	7 1
	{ 3	6	3 4 3	7	7 1	233	{ 5	7	2 4 3	8	8 1
36	{ 4	6	3 4 3	7	5 0	170	{ 4	8	2 4 2	8	8 1
	{ 5	7	2 4 3	6	5 1		{ 4	7	2 3 3	8	8 1
	{ 4	5	2 3 3	6	5 1	150	{ 4	5	2 5 3	6	7 1
	{ 4	6	3 3 3	7	6 1		{ 4	5	2 5 3	8	7 1
180	{ 4	6	2 4 3	7	7 0	Type of C. lanceolatus.	{ 5	5	2 4 3	5	5 0
	{ 4	6	2 3 3	5	6 2		{ 4	5	2 4 3	5	7 1
	{ 4	6	2 3 3	4	6 3	30	{ 5	6	3 3 3	6	6 1
	{ 4	7	1 2 3	11	7 1		{ 5	6	2 4 3	5	8 1
	{ 4	7	2 3 2	7	7 1	62	{ 4	7	3 3 3	6	5 0
	{ 4	6	2 3 3	6	5 1		{ 4	6	3 3 3	5	5 1
101	{ 4	a repro- duced leg.		5	5 1	38	{ 4	6	3 4 3	7	6 2
	{ 4	5	3 2 2	2	4 0	130	{ 4	7	3 3 4	8	6 1
*313	{ 4	a repro- duced leg.		3	0		{ 4	leg want- ing.			4 1
	{ 4	4	6	about 30	8 1		{ 4	6	4 1 4 2	4	5 1
	{ 4	5	2	about 25	9 1		{ 4	6	2 4 3	6	6 1
	{ 4	6	2 3 3	6	8 ?		{ 4	6	2 4 3	6	8 1
	{ 3	6	2 4 3	7	8 1	290	{ 4	6	2 4 3	9	5 1
	{ 4	6	2 4 3	8	8 1		{ 4	7	2 4 3	8	5 2
	{ 4	7	2 4 3	7	8 1		{ 5	7	2 3 1	7	8 1
107	{ 5	8	3 4 3	6	9 1		{ 4	7	2 4 3	0	6 1
	{ 4	a repro- duced leg.		7	7 1		{ 4	a repro- duced leg.			6 1
	{ 5	?	?	?	8 1	94	{ 4	6	3 3 3	6	5 1
	{ 4	9	2 3 2	9	8 1		{ 4	6	3 3 3	6	5 1
	{ 4	?	?	12	8 1		{ 4	12	3 3 3	7	5 0
	{ 4	6	2 3 3	7	8 1		{ 4	11	4 3 2 2	8	6 1
	{ 4	?	?	?	9 1		{ 4	6	2 4 3	6	6 1
	{ 4	7	2 4 3	8	9 1	201	{ 4	5	2 2 3	7	7 1
113	{ 5	6	3 4 3	4	7 1		{ 5	6	2 4 3	8	7 1
	{ 4	?	?	?	7 1		{ 5	6	2 4 3	8	7 1
	{ 4	4	2 2 1	6	?		{ 5	7	2 3 4	4	6 1
	{ 4	?	?	?	6						

* This is probably a very young individual of this species.

† The last legs of this specimen are evidently a reproduced pair.

‡ Apparently a reproduced pair of dental lamina, as the teeth are not developed.

§ The spines on this individual are smaller than common. It is a curious variation.

Specimens belonging to the Smithsonian Institution.

197	1	Brownsville, Texas, 1853.	Lieut. Couch, U. S. A.	Unc.	5½	Labelled by Mr. Girard.
315	8	?	?	"	4—5½	Var. <i>Castaneiceps</i> Wood.
317	1	?	?	"	6	Var. <i>Castaneiceps</i> "
36	2	Ringgold Barracks.		R. Schott.	4½	Var. <i>Castaneiceps</i> "
103	1	Western Texas.	S. Hayes.	"	4	Var. <i>Castaneiceps</i> "
290	3	Northern Texas.		"	4½—4¾	Var. <i>Castaneiceps</i> "
101	1	Texas.	Dr. Jones.	"	4½	Var. <i>Castaneiceps</i> "
180	3	Fort Bliss, New Mexico.	Dr. S. W. Crawford, U. S. A.	"	4½—6	
30	1	West of San Antonio.	R. G.	"	4½	
150		New Weid, Texas.	Prof. Ervendberg.	"	5½	
98	11			"	2½—5½	
107	8	Fort McKavit, Texas,	Capt. Plummer.	"	3½—6½	
66	1			"	4	
29	4	Red River, Ark.	Capt. Marcy.	"	3—4½	Labelled by Mr. Girard.
318	2	Eagle Pass.	R. G. Schott.	"	3½—4	
319	2	Fort Chadbourne, Texas.	Dr. Swift.	"	4½—5½	
201	3	Matamoras, Tamaulipas.	Lieut. Couch, U. S. A.	"	4—4½	
142	3	Eagle Pass.	R. G. Schott.	"	3½—4	
233	1	Monterey, New Leon.	Lt. Couch, U. S. A.	"	5½	
320	1	Sonora and Chihuahua.	Major W. H. Emory, U. S. A.	A. Schott.	4	
322	5	Fort Towson, Red River, Ark.	Dr. L. A. Edwards, U. S. A.	"	4—4	Not well marked Var. <i>Castaneiceps</i> .
324	4	New Orleans to Galveston.	E. B. Andrews.	"	1¾—5½	Var. <i>Castaneiceps</i> .
170	1	Hermes, Sonora.	Dr. T. H. Webb.	"	7½	
42	3	Chihuahua Trip.	Dr. T. H. Webb.	"	4—4½	
38	1	Bet. San Antonio and El Paso.	T. D. Graham.	"	4½	
62	1	New Brunfels, Texas.	Mr. Ludheimer.	"	5½	Labelled by Mr. Girard.
91	1	Fort Smith, Ark.	Mr. Shumard.	"	5	Var. <i>Castaneiceps</i> .
124	1	Red River, Ark.	Capt. Marcy.	"	4	Labelled by Mr. Girard.
234	1	Santa Fe.	Mr. Howard.	"	3½	
325	5	Fort McKavit.	Dr. W. H. Anderson.	"	4½—5½	
150	1	Southeastern Texas.		"	4½	Var. <i>Castaneiceps</i> .
327	2	Fort Buchanan, Arizona.	Dr. Irvin.	"	5½	
130	1	Near 38° L.	Lt. E. G. Beckwith, U. S. A.	"	2½	
328	1	?Texas.		"	5¾	Var. <i>Castaneiceps</i> .
331	1	Fort Mason, Texas.	Major J. H. Thomas.	"	5	Var. <i>Castaneiceps</i> .
113	1	Calcasieu Pass, La.	G. Wurd-man.	"	3½—5	
314	1	Ringgold Barracks.	R. G. Schott.	"	4½	
315	1	En route from N. O. to Galveston.	E. B. Andrews.	"	1½	

S. POLYMORPHA, Wood.—*S. olivaceo brunnea*, capite dilute castaneo; segmento cephalico subovato, postice subtruncato fere impunctato, antennis 30 articulatis; dente mandibulari tuberculo basali magno; dentibus labialibus 8 maximis, duobus intimis utrinque coadunatis, exterius sejunctis; scutis interdum margine posteriore nigro-viride, marginibus lateralibus plerumque liberis; pedibus postremis robustis, supra subcomplanatis; articulo basali, et medio subdepresso, intus 3—7 spinis, subtus 10—18 spinis in serie quadruplici (interdum inordinatiu) dispositis, processu angulari aut bifido aut trifido aut quadrifido; appendicibus analibus lateralibus singula 4—8 spinis apicalibus et altera marginali.

S. polymorpha, Wood, Proc. A. N. S. 1861, p. 11.

The prebasilar fold is apparent but connate with the rather large basilar segment. The first segment of the body is very small; the scuto-episcutal suture barely traceable, but the sterno-episternal much more distinct. In a few individuals the labial teeth are small and coadunate. The color shades off from that given above to a testaceous chestnut. This species is closely allied to *S. heros*, and perhaps a differential diagnosis would not be amiss. The most important difference is in the number of joints to the antennæ. Owing to the ease with which these animals lose portions of these organs, the want of the typical number is not to be relied on in the identification of individuals. Another character which also is often not available for individual identification, but which characterizes this species, is the small size attained to. The

spines of the lower surface, of basal articulations of last pair of legs, are more numerous than in *S. heros*, and arranged in four rows instead of three. The difference in arrangement is, perhaps, more apparent than real; the homologue of the first row of spines existing in some specimens of *S. heros*, but being placed a little higher up, they are thrown with those on the inner side of the limb. The angular process has fewer spines than in *S. heros*. Finally, a glance at the tables will show that, though the species exist on common ground, yet that *heros* is a more tropical and *polymorpha* a more boreal animal.

Table showing the variations in some of the more important specific characters.

	Number of specimens.	Labial teeth.	Spines on inner side of basal joint of last pair of legs.	Spines on lower surface of basal joint of last pair of legs.	Spines on internal angular process.	Spines on lateral and apical pectigera.	Number of specimens.	Labial teeth.	Spines on inner side of basal joint of last pair of legs.	Spines on lower surface of basal joint of last pair of legs.	Spines on internal angular process.	Spines of lateral and apical pectigera.		
						Apical.	Marginal.					Apical.	Marginal.	
Type spec. in Coll. of A. N. S.	4	4	4	12	2	4	1	338	4	4	4	6	1	
	4	5	12	3	1	4	1		4	3	12	3	5	2
	4	5	13	3	2	6	0		4	5	12	3	6	0
	4	6	12	3	3	5	1		4	4	12	3	7	1
	4	5	3	3	4	3	4		4	5	3	4	1	0
	4	6	12	1	2	4	1		4	5	3	4	6	0
	3	5	12	1	2	3	3		4	5	3	5	6	1
	4	5	12	3	3	2	2		4	5	4	2	5	1
	4	4	3	3	3	3	4		4	5	4	3	5	1
	4	5	12	3	4	1	2		5	7	2	6	1	1
	4	5	12	3	5	1	3		4	6	2	6	1	1
	4	5	3	3	2	4	4		4	6	2	4	7	1
310	4	5	2	3	3	1	1	339	4	5	?	?	1	
	4	5	12	3	3	5	1		4	5	3	5	6	1
	5	11	12	3	4	0	1		4	6	3	1	6	1
	4	?	?	?	?	0	1		4	5	3	1	6	1
	4	1	2	2	1	7	1		4	6	3	3	7	1
	4	3	4	3	3	7	1		4	7	2	3	8	1
	4	6	12	4	3	6	1		4	5	3	3	8	1
	4	5	2	3	5	4	1		4	10	3	4	7	1
	4	6	4	2	4	7	1		4	5	3	2	6	1
	4	5	1	3	5	6	1		4	5	5	3	8	1
	4	7	3	2	3	6	1		4	7	3	3	8	0
	4	5	4	3	4	5	1		4	4	3	4	7	0

Specimens belonging to the Smithsonian Institution.

135	2	Aripe Trip.	Dr. T. H. Webb.	Unc. 2 3—3 1
326	5	Sonora.	Dr. Graham.	" 2 4—3 3
210	1	Fort Riley, Kansas.	Mr. Bravat.	" 2 4—3 3
334	1	? Texas.		" 3 1—3 1
227	4	Fort Buchanan, Arizona.	Dr. Irvin.	" 1 1—3 3
242	1	Fort Riley, Kansas.	H. Brandt.	" 3 4—3 4
337	1	Fort McKavitt, Texas.	Capt. Plummer.	" 3 4—3 4
339	2	Sonora and Chihuahua.	Major W. H. Emory.	" 3 3—3 3
342	2	?	?	" 3 1—3 3
338		Fort Buchanan, Arizona.	Dr. Irvin.	" 4
324	1	Santa Fe	Mr. Howard.	" 2 1
211	5	? Santa Cruz.	Dr. Webb.	" 2 1

* The typical number of rows is four. The variations from this are caused by some of the spines being a fraction of a line from their normal position; they generally may be placed in four crooked rows.

† Are the hind legs with the anal appendages the original ones, or are they reproduced?

S. VIRIDIS, Say.—*S. viridi-brunnea*; segmento cephalico late ovato, sparse leviter punctato; pedibus flavis; antennis 23 articulatis, plerumque haud pubescentibus; dentibus labialibus 8, duobus intimis utrinque arcuato coadunatis, externo acuto, sejuncto; laminis dentalibus elongatis; pedibus prostremis subcylindricis, modice robustis; articulo basali tibiali longiore, supra subconvexo, margine haud elevato, intus 2—5 spinis, subtus 7—12 spinis in serie vel triplici vel quadruplici dispositis, processu angulari 1—2 spinis; appendicibus analibus lateralibus profunde denseque punctatis, interdum elongatis, singula spinis apicalibus 2—5, et interdum altero marginale armata.

S. viridis, Say, Proc. A. N. S. 1821, p. 110; Œuvr. Entom. Ed. Lequien t. i. p. 23.

S. punctiventris, Newp., Ann. and Mag. Nat. Hist. xiii. p. 100; Linn. Traus. xix. p. 386; Catal. Brit. Mus. Myriap. p. 33.

S. punctiventris, P. Gervais, Aptères t. iv. p. 277.

S. viridis, P. Gervais, Aptères t. iv. p. 277; et Tabl. des Myriap. (Exp. Amer. du Sud, part. sept.) p. 30.

S. parva, Wood, Proc. A. N. S. 1861, p. 10.

The antennæ are generally, but not invariably, without pubescence. The first segment of the body is the smallest, the third the next. The sutures between the true sterna and episterna are well marked, those between scuta and episcuta barely traceable. The cephalic segment is slightly depressed. The dental lamina have their margins rounded in some specimens. The scuta are frequently bordered with very dark green posteriorly. The dorsum in some individuals has a dark central stripe, vanishing posteriorly. This is, without doubt, the species intended to be indicated by Mr. Say, although his description is exceedingly indefinite and scarcely agreeing with the facts. We have, however, seen one specimen with its posterior feet tipped with blue, and another in which the posterior margination was yellowish. Neither have we any doubt in referring Mr. Newport's *S. punctiventris* to this species, although the number and arrangement of the spines on the posterior feet differ somewhat from those given by that author. One specimen (No. 329) approximates to his description. Besides the specimens of the Smithsonian Museum, we have the types of *S. parva* in the collection of the Academy, brought from the mountains of Georgia by Dr. Le Conte.

Table showing variations in specific characters.

Number of specimen.	Labial teeth.	Spines on inner surface of basal joint of posterior pair of legs.	Spines on inferior surface of basal joint of posterior pair of legs.	Spines on terminal angular process.	Spines on lateral anal appendages.	
					Marginal.	Apical.
116	4	5	2 2 2 2	2	3	
	4	6	2 3 2	2	3	
	4	4	2 1 2 2	2	4	1
	4	?	? ? ?	?	5	1
	?	5	2 2 3 2	2	3	0
	4	4	2 1 2 2	2	3	1
336	4	5	3 2 4 3	2	3	1
	4	5	3 2 3 3	2	5	1
	4	?	? ? ? ?	?	3	0
332	4	5	2 3 3 2	2	3	0
	5*	5	2 2 2 3 2	2	3	1
170	7		a reproduced leg.		4	1
	4	5	3 2 2 2	2	3	1
	4		a reproduced leg.		5	1
329	4	5	2 2 2	1	3	0
	4	?	? ? ?		2	0

* The labial teeth in this specimen are very small and much coadunate.

Specimens belonging to the Smithsonian Institution.

329	1	Florida.	G. Wurdeman.*	Unc. 2
170	1	Florida.	G. Wurdeman.	" 24
336	1	Garden Key, Tortugas.	Dr. D. D. Whitehouse.	" 24
115	3	Pensacola.	Dr. Hammond, U.S.A.	" 24—24
332	2	Palatka, East Florida.	F. Glover.	" 24

S. morsitans, Linn.—*S. flavescens*, scutis plerumque postice viridi marginatis; segmento cephalico postice subtruncato, basali magno; antennis 20 articulatis; lamineis dentalibus, margine antice leviter rotundato; dentibus 8—10 brevibus, obtusis; pedibus compressis; pedibus postremis brevibus, robustis, supra emplanatis, subtus valde convexis; articulis basali et tibiali marginibus superioribus elevatis et fere rectangulis; articulo basali intus 5 spinis, subtus spinis 7—9 triseriatis alternantibus, processu angulari valde elongato, spinis 3—5; appendicibus analibus lateralibus, dense punctatis, apice brevis, spinis 3—4; squama preanali longitudine latiori.

"*Sol. morsitans*, Linn., Syst. Nat. i. p. 1063; Newp. Linn. Trans. xix. p. 378.

Sol. marginata, Say, in Journ. Acad. Nat. Sci. Philad. 1821, p. 9; et in Gouv. Entom. Ed. Gory livr. i. p. 22.

Sol. Brandtiana, Gervais, in Ann. Sc. Nat. Janv. 1837, p. 50; et Apt. iv. p. 280.

Sol. platypus, Brandt., Reueil, p. 61; Newp. in Ann. and Mag. Nat. Hist. xiii. p. 98."

S. otomita, Saussure, Mem. Soc. Phys. de Genev. 1860, xv. p. 383, f. 42.

"This species closely resembles *S. cingulata* in its general appearance. The spinulae on the inferior surface of the posterior legs are arranged in three series which alternate with one another, so that, as remarked by Mr. Brandt, who first correctly described this species, they form with each other a succession of triangles. The pre-anal scale is very short, somewhat quadrate, with the posterior margin very slightly rounded. The lateral appendages also are short, with a slightly produced apex bifid."

Notwithstanding the labor devoted by different naturalists to this species, we think it possible that it will be hereafter found that its history as now accepted is incorrect. The geographical range, as given by Mr. Newport, extends over those portions of South, Central and North America which lie in or near the tropics, as well as over the whole of the West Indies and an unknown extent of China. Verily, it must be the cosmopolite of the Scolopendridæ. We have an individual from Japan which we believe to be the var. β of Newport. It very closely resembles the North American specimens, but a suite may show that it is distinct. We have quite a number of Scolopendræ from Georgia and East Florida, but there is not a specimen of *S. morsitans* amongst them. We suspect that *S. marginata* and *S. viridis* of Say are identical species, and that *S. morsitans* is not an inhabitant of the United States. Say's descriptions are absolutely no guides to the species intended. P. Gervais adopts Say's species as good, and gives the following synonymy. (See Apteres, t. iv. p. 276; et Tabl. des Myriap. Americ. (Exp. Amer. Sud, sept. part.) p. 30.)

"*S. marginata*, Say, Journ. Acad. Nat. Sci., t. ii. p. 100, &c.

S. morsitans, partem, Newp., Trans. Linn. Soc. London, t. xix. p. 379."

* Where it is not stated differently, the donor is believed to be the collector.

We have a specimen from Mexico, which perfectly agrees with Saussure's description of his *S. otomita*, and also with our other specimens of *S. morsitans*.

Specimens belonging to the Smithsonian Institution.

360	1	?Halifax, N. S.	Dr. J. B. Gilpin.	Unc. 2½	Probably incorrectly labelled.
352	1	La Union.	Capt. Dow.	" 3½	<i>S. otomita</i> , Saussure.
333	1	Miuititlan.	?	" 4	

Var. β.—*S. luteo-castanea*, gracillis, pedibus flavis compressis; capite leve, impunctato, segmento-cephalico elongato, ovato, subsegmento prebasali nullo, segmento basali magno; labio mandibulisque sparse minute punctatis; scutis (postremo excepto) plerumque postice truncatis et margine postico saturate viridi; antennis 22? articulatis, flavis; laminis dentalibus margine antico rotundato; dentibus 19 parvis, utrinque tribus intimis arctissime coadunatis, externo sejuncto; pedibus postremis magnis, robustis, supra complanatis, subtus valde convexis, articulo basali marginibus superioribus acutis sed haud elevatis, intus 4—5 spinis, subtus 8—9 spinis in serie triplici dispositis, processu angulari elongato 3—4 spinis; articulo tibiali marginibus superioribus subelevatis; appendicibus analibus lateralibus profunde punctatis, brevibus, singula spinis 3—4 apicalibus et altero marginale.

Length of cephalic segment rather great in proportion to its width. Basilar segment large. Lateral margins of most of the scuta straight; only those of the last five or six elevated. Throughout the whole length of the body there is a tendency to the alternation of a larger with a smaller scutum. Preterminal scutum large, with its lateral margins strongly arched, but its posterior straight. Terminal scutum large, marked with a median line; its breadth one-third greater than its length, equalling that of the basal joint of the last pair of legs. Sterno, episternal and scuto episternal sutures well marked. Inferior surface of basal joint of posterior pair of legs with from 8—9 spines in three rows, the external of which (in our specimen) is composed of two spines. Mr. Newport was at a loss to decide whether this was a distinct species, or merely a variety of *S. morsitans*. We are disposed to believe it different but have not seen enough specimens to decide. The principal differences between our specimen and those from this continent are, firstly, the margins of the basal joints are not elevated; secondly, the labial teeth are much smaller.

Specimens belonging to the Smithsonian Institution.

250 | 1 | Simoda, Japan. | North Pacific Expl. Exp. | W. Stimpson, M. D. | Unc. 2½ |

S. INÆQUIDENS, Gervais.—*S. viridi-brunnea*; segmento-cephalico punctato, parvo, basali magno postice subtruncato; antennis interdum viridibus, pubescentibus, 17 articulatis; labio mandibulisque sparse subprofunde punctatis; laminis dentalibus elongatis; dentibus 6—8, utrinque intimis duobus arete coadunatis, duobus externis sejunctis, acutis; scutis interdum postice saturate viridi aut cæruleo marginatis; pedibus luteolis, gracilibus, longis; postremis robustis, articulo basali supra subconvexo, intus 3—8, subtus 7—10 spinis; processu angulari 2—6 spinis; appendicibus analibus lateralibus dense profundeque punctatis, elongatis, spinis apicalibus 3—5.

S. inæquidens, Gerv., Apt. iv. p. 277.

The cephalic segment is small, truncate posteriorly, and has its sides remarkably straight. The basal segment is very large, fully half again as broad as the cephalic.

The antennæ are sometimes green or blue, and in all of our specimens pubescent on their distal portion. Their joints are short and almost globose. The scuto-episcutal sutures are well marked, but not so strongly as the sterno-episternal. The legs are slightly compressed. The basal joint has all of its margins well defined, so that it is scarcely subcylindrical, but rather subparallelopipedal. The spines are arranged in rows on elevated bases, so as to give the appearance of being on an interrupted crest or raised line. The apices of the lateral anal appendages are much prolonged, slightly curved upwards, impunctate and almost diaphanous. This species is separated from its southern representative, by the more rectangular and smaller cephalic segment and the larger basilar, by the more moniliform and fewer jointed antennæ, as well as by the differences in the structure of the lateral teeth and posterior pair of feet. We were at first disposed to consider our specimen as representing a species distinct from *M. Gervaisi*, but further examination has convinced us that that naturalist had a specimen with reproduced hind feet; yet we think it worth while to append his description, so that the correctness or incorrectness of our opinion may be more easily shown.* Besides the Smithsonian specimens, we have an individual from Massachusetts belonging to the collection of the Museum of Comparative Zoology.

Table showing variations in specific characters.

Number of specimen.	Labial teeth.	Spines on inner surface of basal articulation of posterior pair of legs.	Spines on lower surface of basal articulation of posterior pair of legs.	Spines on terminal angular process.	Spines on lateral anal appendages.
267	{ A reprod. lam.	3	10	2	3
		5	8	2	3
		5	8	1	3
		1	8	2	3
268	{	5	7	2	4
		?	?	?	5
		5	7	6	4
		8	9	6	4

Specimens belonging to the Smithsonian Institution.

267	3	Illinois.	R. Kennicott.	Une. 2
268	2	"	"	" 2½

* "*S. INEQUIDENTU* (*S. INEQUIDENS*).—"Tête subeordiforme un peu élargie; doubles stries dorsales parallèles continues en dessus, assez peu marquées; bord postérieur du dernier segment triangulaire obtus; stries inférieurs faiblement divergentes; plaques des segments subarrondies à leur bord postérieur; plaque préanale quadrilatère étroite à bord postérieur plus étroit que l'antérieur, droit; angles subarrondies; pièces latérales terminées en épine multifide très-finement ponctuées; antennes longues nues; saillies dentifères finement ponctuées, à trois dents inégales, l'interne large, à bord libre rectiligne, la moyenne peu distincte, subarrondie, l'externe séparée par un espace plus grand; pieds de derrière assez longs, forts, subarrondis, épineux en dessous et à la face interne; 6 épines environs en dessous; et a peu près 14 au bord interne, la dernière multifide, à sept petites pointes inégales en couronne. Couleur ferrugineuse un peu nuancée de verdâtre; antennes pâles; tête, segment forcipulaire et partie postérieure plus ferrugineuse. Longueur de corps, 0.190; plus grande largeur, 0.022. Antennes, 0.035; pieds de derrière, 0.035."

"Des Etats Unis, à New-York, par M. Milbert, (Museum de Paris, 1824.)"

S. inequidens, Gervais, Tableau des Myriapodes Américains, (Exp. dans L'Amérique du Sud, sept. part.) p. 30.

S. LONGIPES, n. sp.—*S. castanea*, robusta; capite castaneo, magno, seguento cephalico ovato, sparse minute punctato, segmento basali maximo; antennis 17 articulatis; mandibulorum dente tuberculoque magnis; laminis dentalibus margine antico fere recto; dentibus 6, nigris, magnis, utrinque duobus intimis coadunatis, externo sejuncto, conico; scutis interdum postice viridi marginatis; spiraculis anticis maximis; pedibus luteolis, longis, compressis, paris penultimi articulo basali spinis 5 in processu angulari terminali alterisque 1—2 armato; pari postremo valde elongato, subcylindrico, haud compresso, articulo basali tibiali multo longiore, 30—45 spinis longitudinaliter seriatis armato, processu angulari magno, spinis 6—8; appendicibus analibus lateralibus deuse punctatis, elongatis, singula spinis apicalibus 8—12 et interdum alteris marginalibus 1—4.

This species is closely allied to *S. alternans*, Leach, but differs from the characters given by Mr. Newport; first, in the mandibular tubercle (mandibular tooth of Newp.) being very large and having the lesser tubercle near to its base; secondly, in the number of spines on the basal joint of last pair of legs being from 30—45 instead of from 45—60, and finally by the roughness of the lateral anal appendages. Besides, our specimens agree in possessing important characters not mentioned by Mr. Newport, and which it is fair to conclude do not exist in his species.

The head and its appendages are very large and stout. The antennæ are generally lighter in color than the body. The first scuta is much the smallest. The lateral margins of anterior scuta are straighter than those of the posterior, which are elevated. The posterior margin of the terminal scutum is very strongly arcuate. The scuto-episcutal sutures are traceable, but not so well marked as the sterno-episternal. The femur of the nineteenth pair of legs is furnished with two small spines on its distal extremity; that of the twentieth with one or two on its upper surface, and a well marked terminal angular process supporting five small spines. The femur of the last pair is rather depressed than compressed, and armed with 30—45 small spines, irregularly arranged in rows on its upper, inner and lower surfaces. Preanal scale somewhat elongate, narrowed posteriorly. The specimen from "Halifax (?)" is probably incorrectly labelled; possibly it may have been carried there in a cargo of timber.

Specimens belonging to the Smithsonian Institution.

330	1	Ft. Jefferson, Garden Key, Tortugas.	Dr. D. D. Whitehouse.	Unc. 4½	Probably incorrectly labelled as to locality.
209	2	Florida.	Mr. Wurdeman.	" 3¾—4	
194	2	Halifax, N. S.	Dr. J. B. Gilpin.	" 5	

S. BYSSINA, Wood.—*S. sautrate viridis* aut *brunnea*, capite dilute castaneo, et labio mandibulisque sparse punctatis; segmento cephalico late ovato, antice leviter emarginato, segmento prebasali nullo; antennis luteolis, 18 articulatis, pubescentibus; dente mandibulari gracile; laminis dentalibus latis; dentibus labialibus 10, parvis, nigris, utrinque tribus intimis coadunatis; pedibus gracilibus, luteolis, modice compressis; pari postremo supra complanato, subtus valde convexo, marginibus superioribus et externo et interno acutis; articulo basali tibiali longiore et intus et subtus bi vel tri spinoso, processu angulari

bitido vel trifido; superficie ventrali brunneo-olivacea; appendicibus analibus lateralibus profunde dense punctatis, modice elongatis, singula spinis apicalibus 2—3, apicibus haud incurvatis.

S. lyssina, Wood, Proc. Acad. Nat. Sci. 1861, p. 10.

The head is of moderate size. The dental lamina are rather broad, their teeth small, almost tuberculiform. The scuto-episcutal sutures are traceable, but not so distinct as the sterno-episternal. The first scutum is very short, the penultimate very large, with its sides strongly arched. The legs are slightly compressed. Our brown specimen has some of its scuta margined posteriorly with green. We formerly described this species as doubtfully coming from Florida; we now believe it to be a native of California. This species differs from *subspinipes* in the shape of hind pair of legs, which are parallelopipedal, and have the margins much more acute, as well as in the proportionate length of the basal and tibial joints.

Specimen belonging to the Smithsonian Institution.

333 | 1 | California. | ? | | Unc. 2½ |

S. COPEIANA, n. sp.—S. luteolo-castanea prasino sparsa; capite sparse minute punctato, segmento cephalico parvo, subrotundo, convexo, basali magno; antennis 25 articulatis; labio rubri-castaneo; laminis deutalibus subelongatis, margine antico fere recto; dentibus 8, nigris, utrinque duobus intimis coadunatis, externis duobus majoribus, conicis, sejunctis; pedibus luteolis modice compressis; pari postremo robusto, articulo basali tibiali vix longiore, supra complanato, intus 4—6 spinis, infra 9—17 spinis in serie quadruplici (interdum inordinationi) dispositis, processu angulari spinis 2—5; appendicibus analibus lateralibus dense profundeque punctatis, singula spinis apicalibus 3—5, et marginalibus 1—3; superficie ventrali sordide luteola.

The head is somewhat peculiar; it is not so broad as the posterior portion of the body. The cephalic segment is convex, subround, sometimes somewhat truncate posteriorly. Its breadth is just about equal to its length, but owing to the convexity appears less. The basilar segment is much larger than the cephalic, and has the prebasilar fold well marked. The posterior portion of the scuta are often margined with green, and, in some specimens, the anterior part of the body is mottled with this color. In one individual the antennæ are of a pea-green tint, generally they correspond in color with the feet. The preterminal scutum is large, with its lateral margins strongly arched. The terminal scutum is medianly slightly subearinate. The sterno-episternal sutures are better marked than the scuto-episcutal, which are, however, quite evident. It is noticeable that the terminal scutum has a single median, instead of two lateral sutures. Preanal scale rather large, much narrowed and very slightly emarginate posteriorly. Where the marginal spines of the lateral anal appendages exceed two in number, some of them are generally very small and situated at or near the base of the terminal process. I have named this species in honor of Edward D. Cope, Esq., with whom it has been my good fortune to have been associated since the earliest dawn of our tastes for natural history.

Table showing variations in specific characters.

Number of specimen.	Labial teeth.	Spines on inner side of basal joint of last pair of legs.	Spines on lower surface of basal joint of last pair of legs.				Spines on angular process.	Spines on anal appendages.	
								Apical.	Marginal.
39	4	4	2	2	3	2	2	4	2
	4	5	2	2	2	4	3	4	2
	4	6	4	4	5	4	5	5	2
309	4	6	3	3	4	3	5	3	1
	4	4	2	3	5	3	2	4	1
	4	4	2	3	5	3	2	5	3
	4	6	3	3	1	5	3	5	3
	4	5	1	3	2	3	3	5	3
	4	6	3	2	3	3	3	6	1
	4	6	2	2	3	4	2	4	2
	4	5	2	3	4	3	3	3	1
	4	5	2	3	3	3	3	4	1
	4	5	1	2	4	3	3	4	1
	4	5	2	2	3	3	3	3	2

39	1	California.	?	?	Unc.	3½
309	3	California.	?	?	"	2—2½
361	4				"	3—4½

S. BISPINIPES, n. sp.—*S. olivacea*, *polita*; capite olivacco-castaneo, cum mandibulis magnis et labio, minute punctato; segmento cephalico late ovato, antice leviter emarginato, basali magno, prebasali nullo; antennis 19 articulatis, antice pubescentibus; labio leviter convexo sine suturis; laminis dentalibus, latis, brevibus, marginibus anticis rectis, angulis posticis externis productis; denticulis 10, conicis, parvis sed acutibus et distinctis, utrinque intimis tribus arete coadunatis, duobus externis sejunctis; suturis scuto-episcutalibus inconspicuis, sed sterno-episternalibus modice conspicuis; pedibus luteolis, leviter compressis; pari postremo gracile, articulo basali supra complanatis, subtus valde convexo et sine spina, intus bispinoso, margine superiore externo acuto, processu angulari valde elongato, simplice vel bifido; articulo tibiali basali fere aequale, sed subcylindrico et graciliore; appendicibus analibus lateralibus longis, dense minute profunde punctatis, utrinque spinis apicalibus 1—3.

The length of cephalic segment is equal to its breadth. The mandibles are thick. Breadth of the dental lamina much exceeds their length. The teeth are small, but very distinct. The penultimate scutum is large, with its lateral margins strongly arched; the terminal large, with its lateral margins arched, very strongly elevated, and its posterior very areuate. The preanal scale is not canaliculate, but much narrowed posteriorly, with its margins very nearly straight. The spines on the basal articulation of the last pair of feet are very large; the anterior is situated above the other. This species is closely allied to *S. Newportii*, Lucas, (originally described by Mr. Newport as *S. Gervaisii*). Mr. Newport, in his latin diagnosis, both in the Linnaean Transactions and the Catalogue of the British Museum, says "*dentibus conspicuis*," but in the former work he says, "The most marked character of this species is the *indistinctness* of the labial teeth, which in some specimens are *entirely wanting*!" What does he mean? Our species also is allied to *S. ornata*, Newp. That author states, "pedum paris postremi articulo basali *spinis tribus acutis*," but does not state the form of the head. Afterwards he says, "This is a very beautiful species, very distinct in

every respect of form, size and shape of the head from *S. subspinipes*, but *precisely similar* as regards the shape and *armature* of posterior pair of legs," &c. Now, *S. subspinipes* is furnished with *five spines* on its posterior pair of legs! The specimens before us may belong to *S. ornata*, but their heads do not differ from those of *S. subspinipes*, and we cannot understand what the armature of *S. ornata* really consists of. We have seen two specimens from San Francisco, belonging to the Museum of Comparative Zoology.

Besides the North American Species, the collection of the Smithsonian Institution contains the following:

S. VIRIDICORNIS, Newp., Ann. and Mag. N. H., p. 97, sp. 12; et Linn. Trans. xix. p. 397, pl. 3, f. 1, 3, 4, 5, et pl. 40, f. 5, 6; et Catal. Brit. Mus., Myriapoda, p. 45.

S. Hopei, Newp., MSS.

S. viridicornis, P. Gervais, Apteres, iv. p. 287.

169 | 1 | Paraguay. | Capt. T. J. Page, U. S. N. | | Unc. 6 |

S. AZTECA, Saussure, Mem. Societ. Phys. Genev. 1860, xv. p. 332, f. 41.

We think that *S. maya* is probably the young of this species, although we have never seen a specimen of it. We would also call attention to the close relationship (if they are not identical) between *S. azteca* and *S. varia*, Newp.

306 | 2 | La Union. | Capt. Dow. | | Unc. 3 |

S. MODESTA, n. sp.—*S. brunnea*; capite modico, leve, segmento-cephalico postice subtruncato, magno, prebasali nullo, basali magno; antennis 21 articulatis; labio impunctato; laminis dentalibus antice angustatis; dentibus labialibus 8—10, utrinque duobus aut tribus intimis leviter coadunatis, uno aut duobus extimis sejunctis; pedibus compressis; pedibus postremis subrobustis, elongatis, supra complanatis, subtus valde convexis; articulo basali, marginibus superioris et externo et interno subacutis sed haud elevatis, intus 4—6 spinis in serie duplici, subtus spinis 8—9 in serie triplici, processu angulari quadriduo; articulo tibiali basali fere æquali, marginibus superioribus interdum subelevatis; appendicibus analibus lateralibus brevibus, punctatis, singula spinulis apicalibus 2—3 et interdum marginale altero.

That part of the cephalic segment which is anterior to the eyes is generally of a lighter color than the remainder. The internal labial tooth on each side is sometimes obsolete. The scuto-episcutal and sterno-episternal sutures are well marked. The anterior scuta have the lateral margins straight and not elevated, whilst the posterior five or six have them arched and elevated. Most of the scuta are abruptly truncate posteriorly. The penultimate is very large and broad, and, like the corresponding sternum, has a circular shape, but is truncate anteriorly and posteriorly. The breadth posteriorly of the terminal scuta is nearly twice its length. The preanal scale is subquadrate and very much narrowed. This species is closely allied to *S. varia*, Newp., but differs from Mr. Newport's description, in not having the cephalic segment small, in the labial teeth not being minute, in the color, in the size, and, finally, in the

arrangement of spines on the inner superior margin. If a comparison of specimens were practicable, other differences would doubtless be detected.

249 | 3 | Porto Praya, Cape de Verde Isl. | N. Pacific Expl. Exp. | Wm. Stimpson, M. D. | Unc. 2½ |

?*S. subspinipes*, Leach — *S. castanea*; scutorum marginibus lateralibus posterioribusque viridibus, pedibus flavis; capite punctato; segmento-cephalico ovato, haud cordato, prebasali nullo, basali magno, lato; antennis 18 articulatis; labio convexo, leviter punctato, medio canaliculato; laminis dentalibus brevibus, latis, margine antico subrotundato; denticulis 10, parvis, indistinctis, valde coadunatis; pedibus postremis gracilibus, subcomplanatis; articulo basali intus subtusque bispinoso, processu angulari elongato, curvato, bispinoso; articulo tibiali basali fere æquali; appendicibus analibus lateralibus modice brevibus, valde punctatis, apice excurvato, lævi, bispinoso; squama preanali subquadrata, media canaliculata, margine posteriore rotundato.

S. subspinipes, Leach, Linn. Trans. xi. p. 383; Zool. Misc. iii. p. 41; Enc. Brit. Suppl. p. 440.

S. subspinipes, Newp., Linn. Trans. xix. p. 389.

Not *S. subspinipes* of Gervais, Ann. Soc. Entom., 2d series, vol. ii. part 2d, p. 21, nor *S. subspinipes* of Gervais, Apteres, iv. p. 262, which are probably different species, neither, apparently, agreeing with *S. subspinipes* of Gervais, Ann. Sci. Nat. 1837, p. 50, which also is not *S. subspinipes* of Leach, but is *S. Gervaisii*, Newp., Linn. Trans. xix. p. 390, which is *S. Newportii*, Lucas, Alger. p. 343, (note;) Gervais, Apteres, iv. p. 281; Newp. Catal. British Museum, (Myriapoda,) p. 36.

Not *S. subspinipes*. Brandt, Mem. Ins. Myriap. p. 59; Lucas, Hist. Nat. Anim. art. iv. p. 544, sp. 5, which is *S. Newportii*, Lucas.*

We refer our individual to *S. subspinipes*, Leach with great doubt. On comparing it with the description of Newport, we find it differs in the following particulars:—The head is not at all cordate; the labium is punctate and furnished with ten teeth; the lateral anal appendages have their apices somewhat everted; the preanal scale is not triangular. Our diagnosis is not one of *S. subspinipes* of Leach, but of the individual before us, drawn up to aid some future naturalist in identifying or separating the species. We have never seen an undoubted specimen of *S. subspinipes*, Leach.

286 | 1 | Aspinwall. | Mr. Rivell. | | Unc. 4 |

?*S. SANDWICHIANA*, Gervais, Apt. iv. p. 276.

Owing to the meagreness of M. Gervais' description, we refer this animal to his species with very many doubts. It seems to us that the practice of describing species in any department of natural history, in two or three lines ought to be reprobated, but especially so, in those branches where the various characters have not as yet received their proper specific interpretation. In this, as in other cases, we have had to depend to a considerable extent on the locality in the identification. It would have been well if succeeding authors had availed themselves more fully of the light thrown on this class of animals by Mr. Newport, whose descriptions much exceed those of any

* For authority of much of the synonymy given, see note in Explor. Scient. de L'Algerie, p. 343. A slight comparison of M. Gervais' descriptions shows that they differ inter se.

antecedent or subsequent naturalist. If this should prove a new species, we would propose the name *nesuphila*. We subjoin the following description:—

S. brunnea, robusta; capite magno, sparse minute punctato, segmento basali maximo; mandibulis magnis, punctatis, singulo dente magno et tuberculo minimo; labio lato, valde convexo, punctato; laminis dentalibus longitudine fere bis-latoribus, singula dentibus 5, obtusis, coadunatis armata; antennis antice pubescentibus; pedibus robustis; pedibus postremis gracilibus, supra complanatis, articulo basali tibiali vix longiore, margine interiore superiore spina 1, superficiebus interiore et inferiore singula spinis duobus, processu angulari, elongato, spinis duobus armato; appendicibus analibus lateralibus dense rude punctatis, obtusis, apice decurvato aliquando spina obtusa; squama preanali media leviter canaliculata; steruis punctatis.

As our specimen has been preserved for some years in alcohol, the color may differ materially from that of the living animal. The antennae both being broken, we are unable to give the number of joints composing them. The scuto-episcutal sutures are distinct, as are also the sterno-episternal. The lateral margins of the scuta are much thickened; the posterior angles of some of the hinder ones rounded. The last pair of feet are very slender when compared with the body. The lateral anal appendages have a corroded appearance and are very dark colored. Their apices are very obtuse and strongly curved downwards, one of them being armed with a small and very blunt spine, which is indeed more of a tubercle than a spine. The preanal scale is somewhat elongate, narrowed, and with its angles rounded posteriorly.

164 | 1 | Oahu or Maui. | U. S. Explor. Exped. | C. P. | Unc. 7 |

S. COMPRESSIPES, n. sp.—*S. olivacea*; capite magno, minutissime sparse punctato, segmento cephalico elongato, ovato, prebasali nullo, basali maximo; antennis 20 articulatis; laminis dentalibus latis, margine antico rotundato; dentibus 10, magnis, conicis, acutis, utrinque tribus intimis coadunatis, duobus externis sejunctis; pedibus valde compressis; pari postremo luteolo, robusto, supra complanato, subtus valde convexo, articulis basali tibialique supra marginibus elevatis subacutis; basali margine interno superiore quinque-spinoso, superficie inferiore spinis 8—10 triseriatis alternantibus; processu angulari elongato, spinis 4; articulo tarsali supra complanato, marginibus superioribus subacutis sed haud elevatis; appendicibus analibus lateralibus brevibus, apicibus acutis, singulo spinis 4—6; squama preanali breve.

The scuta have apparently been bordered posteriorly with green and the antennae light-yellow, but long preservation in spirits has rendered the color indefinite. Scuto-episcutal sutures traceable, divergent posteriorly; sterno-episternal very well marked. Terminal scutum large, its posterior margin slightly arched, its breadth nearly twice its length. Preanal scale short, much narrowed posteriorly, and with its posterior angles slightly rounded. This may be *S. Tongana*, Gervais, Apt. iv. 276. but we cannot decide from M. Gervais' description.

161 | 1 | Feejee Islands. | U. S. Expl. Exp. | | Unc. 3 |

S. REPENS, n. sp.—*S. brunnea*; capite modico, sparse minute punctato, segmento cephalico ovato, lato; antennis 19? articulatis; dente mandibulari modico; laminis dentalibus longitudine bis latoribus, et labio sparse punctatis; dentibus labialibus 10, distinctis, utrinque tribus intimis coadunatis, duobus

extimis sejunctis; pedibus compressis; pari postremo subcylindrico, gracili; articulo basali tibiali longiore, supra subcomplanato, intus subtusque bis vel trispinoso, processu angulari elongato, curvato, quadrispinoso, articulis tibiali et tarsali fere aequalibus; appendicibus analibus rude punctatis, apicibus elongatis, acutis, bispinosis; squama preanali elongata, fere subtriangulari, medio canaliculato.

Scuto-episcutal sutures traceable, sterno-episternal well marked. This species differs from the preceding in the head not being so large; the mandibles and their teeth are also smaller, whilst the labial teeth are larger and more distinct. The lateral anal appendages are likewise very different, their apices being prolonged, acute and scarcely curved downward at all. The three spines on the inferior aspect of basal joint of posterior legs are arranged in a single row on its exterior portion. It is barely possible that a suite of specimens would show that we have confounded two species.

179	1	Sandwich Islands.	U. S. Expl. Exp.	Unc. 4
176	3	Oahu, or Kainu.	" " "	" 3 $\frac{1}{2}$

S. DINODON, Wood, Proc. Acad. Nat. Sc. 1861, p. 12.

185	1	Singapore.	U. S. Expl. Exped.	Unc. 5 $\frac{1}{2}$
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S. INSIGNIS, Gervais, Ann. Soc. Entom. 1844, p. 29; Apteres, iv. p. 298, pl. 43, f. 4; Tabl. des Myriap. (Exp. Amer. de l'Sud sept. part.) p. 32, pl. v. fig. 1.

S. insignis, Newp., Catal. British Mus. Myriap. p. 50.

S. epileptica, Wood, Proc. Acad. Nat. Sc. 1861, p. 11.

151	1	?	?	?	?	?	Unc. 10
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S. SEPTEMSPINOSA, Brandt, Recueil p. 60; Newp., Linn. Trans. xix. p. 391; Gervais, Apter. iv. p. 269.

S. sexspinosa, Newp. in Ann. and Mag. Nat. Hist. xiii. p. 96; Linn. Trans. xix. p. 392; Gervais, Apteres iv. p. 287.

S. parvidens, Wood, Proc. Acad. Nat. Sci. 1861, p. 13.

We think that there is scarcely a doubt that *S. septemspinosa* and *S. sexspinosa* are identical species. To show our reasons as fully and briefly as possible, we throw the principal specific characters of our specimens into a tabular form, followed by a table of the characters of the two species as given by Mr. Newport.

No. of labial teeth.	No. of spines on supero-internal margin.	No. of spines on internal surface.	No. of spines on inferior surface.	Spines on angular process.	Spines on lateral anal appendages.	Remarks.
5	1	1	2	2	3	Type specimens of <i>S. parvidens</i> .
5	1	2	2	2	3	
5	1	1	1	4	2	
5?	0	1	2	4	1	No. 36 Smithsonian collection.
5	1	2	2	4	2	
5	2	2	3	4	2	
6	1	1	2	2	2	No. 248 Smithsonian Collection.
5	2	1	2	3	2	
5	2	2	1 2	2	2	
5	1	1	2	2	3	<i>S. septemspinosa</i> , Brandt, according to Mr. Newport.
5	2	2	2	1	?	
5	2	2	2	1	?	
5	1	2	2	2	?	<i>S. sexspinosa</i> , according to Mr. Newport.
5	1	2	2	2	?	

As to the less important characters given by Mr. Newport in his diagnosis. We find in our specimens almost every shade of variation between the two.

248	2	Simoda, Japan.	N. Pacific Expl. Exp.	Wm. Stimpson, M. D.	Unc. $4\frac{1}{2}$
361	1	Niphou.	" " "	"	" $4\frac{1}{3}$

Gen. 2. CORMOCEPHALUS, Newp.*

Segmenta podophora 21. Segmentum cephalicum breve, abrupte truncatum, haud imbricatum. Spiraeorum valvularium paria 9.

Mr. Gervais does not recognize this genus as distinct. But it seems to us perfectly so. It has not as yet been found in North America, but there are several specimens of the genus from foreign countries, in the collection of the Smithsonian Institution. They are as follows :

C. RUBRICEPS, Newp. Linn. Trans. xix. p. 420, et Catal. of Brit. Museum, Myriapoda, p. 72.

Scolopendra rubriceps, Newp., Ann. Mag. Nat. Hist. xiii. p. 99; Dieffenb. New Zealand, ii. p. 270; Gervais, Aptères iv. p. 274.

145 | 9 | New Zealand. | U. S. Expl. Exp. | ? | Unc. 2—4 $\frac{1}{3}$ | In very good condition.

C. VIRIDIS, n. sp.—C. viridis; pedibus antennisque dilute viridibus; capite obscure minute punctato, subsegmento prebasali conspicuo, segmento basali modico magno; antennis pubescentibus; dentibus labialibus 4, latis sed acutis, utrinque intimo obscure bifido; scuto postremo postice valde areuato, marginibus lateralibus valde elevatis; pedibus postremis gracilibus, valde elongatis, articulo basali multispinoso, tibiali subequali; appendicibus analibus lateralibus rude punctatis, elongatis, singula spinulis apicalibus 4—5 minutis et altero marginale armata.

Sterno-episternal and scuto-episcutal sutures well marked. Scuta obscurely bordered posteriorly by a light band. Lateral margins of many of them slightly raised. Feet somewhat compressed.

251 | 1 | Hong Kong. | N. Pacific Expl. Exp. | Wm. Stimpson, M. D. | Unc. 1 $\frac{1}{2}$ |

C. FECUNDUS, Newp., Linn. Trans. xix. p. 421, et Catal. Brit. Mus. Myriap. p. 74.

Our specimen differs from the description in the length of the tibia of posterior legs not equalling that of the femur.

S. fecunda, Gervais, Aptères, iv. p. 272.

362 | 2 | New Holland. | U. S. Expl. Exp. | ? | Unc. 2 $\frac{1}{2}$ | In bad condition.

C. MONILICORNIS, n. sp.—C. brunneus, capite polito; antennarum articulis brevibus, distalibus fere globosis et leviter pubescentibus; lamiis dentalibus modice elongatis, antice leviter angustatis; dentibus 8, tribus intimis utrinque arete coadunatis, externo sejuncto; labio leviter punctato; scutis quadratis, postice abrupte truncatis, posteriorum lateribus elevatis; pedibus compressis; pari postremo robusto, articulo femorali tibiali vix aequali, superficie superiore spinula unica, inferiore 3—4, inferiore 5—6 in serie triplici dispositis, processu angulari bifido, articulo tarsali tibiali fere aequali; appendicibus analibus lateralibus rude punctatis, brevibus, obtusis, spina apicali unica.

* Linn. Trans. xix. p. 419.

The antennæ, owing to the shape of their joints have a peculiar beaded appearance. The sterno-episternal and scuto-episcutal sutures are very distinct. The labium has two indistinct (? sutural) markings, diverging from the anterior median portion. The distal portions of the femora and tibiæ of the last pair of legs are furnished with a well marked median groove on the superior surface.

354 | 1 | Choco, New Grenada. | A. Schott. | | Unc. 1 |

C. AMBIGUUS? Newp., Linn. Trans. xix. 423.

Our specimens are in a very bad state of preservation, and there is but a single posterior leg remaining. It has five spines arranged in two rows on the inferior internal as well as external margin; yet we feel confident that a suite of specimens would show that it belongs to *C. ambiguus*, Newp.

? *Scolopendra ambigua*, Brandt.

363 | 2 | Cape of Good Hope. | N. Pacific Explor. Exped. | Wm. Stimpson, M. D. | Unc. 2½ |

There is in the collection of the Smithsonian, besides the above, a *Cormocephalus* brought from Samoa by the United States Exploring Expedition. It belongs most probably to an undescribed species, but as the posterior pair of legs is lost, we will not describe it. There are also three specimens, brought from Nicaragua by the North Pacific Exploring Expedition, similarly mutilated, likewise probably undescribed.

Gen. 3. RHOMBOCEPHALUS, Newp.*

"Segmentum cephalicum elongatum, subtriangulare; subbasilare labiumque angustissima."

Not as yet found in this country.

Gen. 4. CRYPTOPS, Leach.†

Segmenta podophora 21. Antennæ 17 articulatæ. Oculi nulli vel inconspicui. Labium edentulum. Scutum postremum Scolopendræ verè illo simillimum. Pedum postremorum articulus basalis plerumque inermis. Appendices anales laterales obtusæ.

"*CRYPTOPS HYALINA*, pallida, laevis, lineis 2 longitudinalibus saturatoribus, capite antennisque ferrugineis, pedibus postremis brunneis spinulis 5 in articulo tertio tarsalive. Long. lin. 7."

"*Crypt. hyalina*, Say, Journ. Acad. Nat. Sci. 1st series, vol. ii.; id. Œuvr. Entom. 1, sp. 23; Gerv. in Ann. Sci. Nat., Janv. 1837, sp. 3; Lucas, Hist. Nat. Anim. Artic. p. 546, sp. 3."

"*Hab.* In Georgiâ et Floridâ."

Species mihi ignota.

"*C. MILBERTII*, Gervais.—Point d'yeux; 22 segments, en comptant la tête d'un brun marron. Tête arrondie, non engagée dans le second segment. Plaques convexes non arrondies à leurs bords postérieurs, bordées. Segments très inégaux entre eux, les 1, 3, 5, 6, 8, 10, 12, 14, 16, 18, sont les moins allongés; le dernier est plus étroit et cylindroïde. En dessous, ces plaques sont un peu bombées et presque égales. Les deux paires de pattes postérieures sont plus allongées que les autres et terminées par une

* Linn. Trans. xix. p. 423.

† Linn. Trans. xi. p. 384.

petite griffe; mais les cuisses ne sont point renflées ni beaucoup plus grosses que celles des autres pattes, et celles des pattes postérieures n'ont ni épines ni tubercules. Les mâchoires (ou les mandibules des auteurs) sont brunes, comme le menton ou la lèvre qui supporte les crochets des mandibules. Cette lèvre n'est point bifide, mais arrondie à son extrémité; elle n'a point de dents, mais seulement deux enfoncements latéraux. Les mandibules ou palpes ont leurs articles cylindriques et rougeâtres; le dernier article est comme tronqué et terminé par une pointe ou ongle. Les antennes sont allongées et quand on les renverse en arrière, elles atteignent le milieu du cinquième segment; leurs articles courts, renflés, moniliformes, très-réguliers, presque égaux, sont au nombre de 17.

“Apporte de Jersey dans l'Amérique du Nord par M. Milbert. Cette espèce diffère de l'Hortensis par des pattes beaucoup plus courtes et une tête plus arrondie.”

Species mihi ignota.

C. Milberti, Gervais, Apt. iv. p. 592.

Gen. 5. OPISTHEMEGA,* n. g.

Segmenta podophora 21. Ocelli nulli. Labium plerumque dentatum. Scutum postremum maximum, quadratum, alteris multo majore; pedes postremi crassi, breves. Appendices anales laterales obtusæ. (Figs. 7, 8.)

O. postica, n. sp.—*O. aurantiaea*, capite polito punctato; segmento basali depressione triangulari mediana; labio antice elongato, mandibulisque punctatis; laminis dentalibus subelongatis, margine antice fere recto; denticulis 6, distinctis, acutis; antennis haud pubescentibus, 17 articulis; scutis sternisque politis; scuto postremo subprofunde punctato, postice abrupte truncato, medio canaliculato, lateribus rotundatis, marginibus lateralibus valde elevatis; pedibus postremis brevissimis, subprofunde punctatis, subcylindricis; articulis basali tibialique sine spinis, supra subcomplanatis, intus complanatis, margine interiore superiore acuto, alteris rotundatis; appendicibus analibus lateralibus angustis, dense profunde punctatis, postice abrupte truncatis, sine spinis; squama preanali elongata, media vix canaliculata.

From the triangular depression on the basilar segment two sutures diverge posteriorly. The scuto-episcutal sutures are very distinct, the sterno-episternal wanting. The sterna are, however, provided with a mesian marking, the line of coalescence of the two primitive sterna. The last pair of feet are rather shorter than in the following species, more cylindrical and smoother, especially on their inner surface. The basal joint is rather shorter than the tibial, which is about twice as long as the tarsal. Can this be the same species as *Cryptops postica*, Say? It agrees with Mr. Newport's description of his *Theatops postica*, (*C. postica*, Say,) except as to the eyes and teeth. Is it possible that Mr. Newport is mistaken as to the possession of eyes? Say certainly did not see them.

Specimen belonging to Smithsonian Institution.

287 | 1 | Goldsboro, N. C. | Wm. Stimpson, M. D. | | Unc. 14³ |

* *Oπίσθημεγα*, postice, *μεγας*.

O. SPINICAUDA, n. sp. (figs. 7, 8.)—O. aurantiaca, capite polito, punctato; segmento basali depressione magna triangulari mediana; antennis ? 16 articulatis, antice pubescentibus; laminis dentalibus, labio mandibulisque subprofunde punctatis, margine autico rotundato; deuticulis labialibus 4, parvis, arcte coadunatis, indistinctissimis; labio medio antice subearinato; scuto postremo maximo, subprofunde punctato, alteris fere bis majore, lateribus rotundatis, marginibus lateralibus valde elevatis; pedibus postremis robustis, supra complanatis, iutus complanatis et rude punctatis, articulo basali tibiali fere æquali; femora, tibia, tarsisque margine interiore superiore acuto et serrulato, femora tibiaque margine interiore inferiore quoque acuto et serrulato; processu angulari parvo, spina unica robusta acuta; appendicibus analibus lateralibus angustis, postice truncatis, dense profunde punctatis, singula spina unica apicali minutissima; squama preanali elongata, subprofunde punctata, media leviter canaliculata.

The color varies greatly in depth of shade, but the two ends are almost always darker than the intermediate portion of the body; the feet, with the exception of last pair, are generally lighter. The cephalic segment is slightly emarginate in front. The suture between the true basilar segment and the prebasilar fold is very deep, formed by two lines rapidly divergent from the centre, and at the central portion there is quite a large triangular depression. In some the scuto-episcutal sutures are well marked. The posterior border of the scuta is straight. The terminal scutum is nearly twice as large as any of the others, deeply punctate, and without a sulcus or any traces of the sutures. The last pair of legs are dark in color, short and very robust; their basilar joint, besides the terminal spine, is often furnished with one or two small ones on either the inferior or superior internal margin. They present the peculiar crossing of the nails found in the other species. The other legs are somewhat compressed.

Specimens belonging to Smithsonian Institution.

264	10	South Illinois.	R. Kennicott.	Unc. 1—2 $\frac{1}{2}$
347	1	Cook Co., Ill.	R. Kennicott.	" 2

Gen. 6. THEATOPS, Newp.*

"Ocelli distincti. Antennæ breves, subulatæ, 17—articulatæ. Segmentum cephalicum truncatum subimbricatum; margine labiali-denticulato. Pedum postremorum articulo magno, obconico, abbreviato. Pedum paria 21. Appendices anales laterales obtuse."

T. POSTICA, Newp.—"T. aurantiaca, ocellis inconspicuis lateralibus, dentibus 8 minutis, segmento postremo maximo elongato quadrato lateribus rotundato medio profunde sulcato margine posteriore transverso, pedibus postremis brevibus crassis rotundatis attenuatis; articulo basali brevissimo. Long. unc. 8–10."

Crypt. postica, Say, Journ. A. N. S. Philad. ii. p. 112; Œuvr. Entom. i. p. 24; Gervais, Ann. Sci. Nat. Janv. 1837, p. 51, sp. 5; Apt. iv. p. 294; Lucas, Hist. Nat. Aum. Artic. p. 547, sp. 5; Newp. Ann. Mag. Nat. Hist. xiii. p. 110."

Theatops postica, Newp., Linn. Trans. xix. p. 410; Catal. British Mus. (Myriap.) p. 61.

"*Hab.*—In Georgia, Floridaque Orientali."

* Linn. Trans. xix. p. 410.

"The mandibles are short, thick, and have a distinct basal tooth; the dental plates are elongated and widely separated; the teeth 8, minute but distinct. The basal joint of the posterior pair of legs much shorter than the second, which is twice as long as the succeeding joints. The lateral anal appendages deeply punctured. Preanal scale flat, with a median longitudinal sulcus and scattered punctures, with the margin straight."

We have never seen a specimen of this species.

Gen. 7. *SCOLOPENDROPSIS*, Brandt.*

"Des yeux au nombre de 4 paires; 23 paires de pieds; stigmates peut-etre eribriformes?"

Not yet found in N. America.

Gen. 8. *SCOLOPOCRYPTOPS*, Newp.†

Ocelli nulli, segmenta podophora 23, postremum angustum; segmentum cephalicum imbricatum. Labium edentulum. Antennae 17 articulatæ.

S. sexspinosus, Newp.—*S. saturate aurantiaea*; pedibus flavis, subcompressis; antennis flavis, interdum aurantiaeis, pubescentibus; capite labio mandibulis scutis sternisque punctatis; segmento cephalico subovato; labii margine antico fere recto; seuto postremo angusto, longo; pedibus postremis elongatis, haud pilosis, articulo basali tibiali longiore, spina unica magna in superficie inferiore et altera minore mediana in margine superiore interno et rare altera articulari minutissima; appendicibus analibus lateralibus valde elongatis, profunde dense punctatis, singula spina apicali unica, alteraque minutissima in angulo superiore posteriore; squama preanali postice vix emarginata.

Cryptops sexspinosus, Say, Jouru. Acad. Nat. Sci. ii. p. 112, 1821, id (Lequien ed.) Œuvres Entom. i. p. 24; Gervais, Ann. Sc. Nat. Janv. 1837, p. 51; Lucas, Hist. Nat. Anim. Art. p. 547; Newp., in Ann. and Mag. Nat. Hist. xiii. p. 100.

Scolopocrypt. sexspinosus, Newp., Linn. Trans. xix. p. 407; Gervais, Apt. iv. p. 297, et Tabl. Myriap. Amer. (Exp. Ameriq. du Sud, part. sept.) p. 36.

In this species the superior spine of the lateral anal appendages is very minute and occasionally present only on one side. The color varies from milk-white to a dark reddish orange. The lighter shades are found in those individuals which have recently shed their skins. The color given in our diagnosis may be considered as that which characterizes the species, being the one at which it finally arrives. The inferior surface of the posterior legs is marked with an elongate whitish blotch. The preanal scale is rather short and much narrowed posteriorly. We have examined a number of specimens, and have found the articular spine but in a few. We recently observed an individual just completing the operation of shedding his skin. This was crowded back so as to cover only the last two or three segments, giving the animal a very peculiar appearance. He soon, however, drew himself out of the old garment with

* Recueil, p. 177, 1840.

† Linn. Trans. xix. pp. 275, 405.

many contortions. On examining it, we found that it contained the derm of the head and all its appendages, even to the maxillæ and maxillary palpi. The anterior portion of the skin was so torn as to show that the process of shedding probably commenced by the creature's withdrawing its head from its case, and then thrusting it out between some of the anterior sterna, completing the process by pushing the skin back with its legs aiding them by a peculiar wriggling motion. The exuvia has most of the posterior segments entire, showing that the occupant has been withdrawn from it like a hand from a glove. The animal is of a milk-white color, with the antennæ pubescent, and the lateral anal appendages not elongate and without spines. The lower spine on basal joint of last pair of legs is very small, and the upper one scarcely perceptible. We once had the pleasure of observing a female guarding the young. Being on her side, with her body coiled around them, she, by a rapid, cilia-like action of her feet, would pass them along and arrange them to suit her. This species is one of the most common chilopods around Philadelphia. The southern specimens are much larger, stouter and more highly colored than those from colder regions.

Specimens belonging to the Smithsonian Institution.

273	4	Salem, N. C.	J. T. Linneback.	Unc. $1\frac{1}{2}$ —2
281	5	Cook Co., Illinois.	R. Kennicott.	" $1\frac{1}{4}$ —1 $\frac{3}{4}$
263	27	South Illinois.	R. Kennicott.	" $1\frac{1}{4}$ —2
81	6	Mississippi.	Mr. Wailes.	
21	3	Carlisle, Pa.	Prof. Baird.	
284	3	Charleston.	?	
32	1	St. Louis.	Dr. Engelmann.	" $1\frac{1}{2}$
274	1	En route from N. Orleans to Galveston.	E. B. Andrews.	

S. GRACILIS, n. sp.—*S. ferruginea*; capite labioque leviter punctato, segmento-cephalico subovato; antennis pubescentibus; labii margine antico modice angusto, lateribus obliquis apice emarginato et angulis acutis; pedibus flavis subcompressis; scutis sternisque vix punctatis; pedibus postremis gracilibus, elongatis, singula spinis duobus *S. sexspinose* illis simillimis, articulo basali tibiali longiore, articulis tribus ultimis pubescentibus; appendicibus analibus lateralibus elongatis, rude punctatis, singula spina apicali unica (interdum bifida) alteraque minutissima in angulo superiore posteriore; squama preanali elongata, punctata, postice late emarginata.

Color in all of our specimens lighter and more ferruginous than the typical color of *S. sexspinosa*, but further investigations may show that that of this form also darkens with age. Prebasilar fold generally well marked. Scuto-episcutal sutures distinct; sterno-episternal absent, but a suture marking the line of coalescence of the primitive sterna is often very apparent. This species is closely allied to the preceding as well as to the following. It differs from both in the shape of the anterior margin of the labium, in the scarcity of punctations on the body, and in the pubescence of distal portion of the last pair of feet. The superior spine of the lateral anal appendages is perhaps a little larger than in *S. sexspinosa*, but certainly smaller than in *S. spinicincta*. The white blotches beneath the posterior feet are common to all the North American species.

Specimens belonging to the Smithsonian Institution.

301 | 18 | Fort Tejon, California. | J. Xantus de Vesey. | | Une. 4—2 |

S. SPINICAUDA, n. sp.—*S. aurantiaca*, polita; capite labio mandibulis sternisque profunde punctatis; segmento-cephalico subovato; antennis pubescentibus; labii margine antice lato, fere recto, medio vix emarginato; sentis modice rugosis, punctatis, marginibus lateralibus elevatis; pedibus postremis elongatis, gracilibus, spinis duobus *S. sexspinosæ* illis simillimis, articulo basali tibiali longiore; appendicibus analibus lateralibus valde elongatis, rufæ punctatis, singula spina apicali unica alteraque in angulo posteriore superiore; squama preanali modice breve, postice rotundata, vix emarginata.

The head is deeply punctate. The scuta somewhat rugous with the sento-episcutal sutures traceable. The sterna are without any traces of sutures. The whole body is more or less deeply punctate. The superior posterior angle of the lateral anal appendages is slightly prolonged and armed with a rather small black spine, which is, however, considerably larger than in any other species known to us. The posterior legs are exactly like those of *S. sexspinosæ*, Newp.

Specimens belonging to Smithsonian Institution.

283	2	Shoal Water Bay, W. T.	Gov. L. I. Stevens.	Dr. J. Cooper.	Une. 1½—2
153	6	Oregon.	?	?	" 1½—1¾
189	1	N. Western U. S.	A. Campbell.	Dr. Kennerly.	" 2

S. LANATIPES, n. sp.—*S. aurantiaca*, pedibus compressis, flavis; capite mandibulis labio sternisque minute punctatis; segmento cephalico subovato; labio medio emarginato fere sicut in *S. gracile*, margine antice rotundato; pedibus postremis modice robustis, singula spinis duobus *S. sexspinosæ* illis simillimis, articulo tibiali basali fere æquali, tibia tarso metatarsoque pubescentibus; appendicibus analibus brevibus, rufæ punctatis, singula spina apicali alteraque minutissima in angulo superiore posteriore; squama preanali modice lata, subtus convexa, margine postice interdum late emarginata.

This species is closely allied to *S. gracilis*, and it is possible that further specimens may show that the characters on which we rely in separating them vary. The differences are as follows: The labium closely resembles that of the first described species, but has the character perhaps not so well marked. The posterior pair of legs are more robust, with the tibia about equal to the femur in length, and pubescent. The lateral anal appendages are shorter and separated inferiorly by a much narrower space. The preanal scale is rather broader and more bent over the lateral anal appendages; and, finally, judging from our specimens, this species seems to attain to a larger size.

Specimen belonging to the Smithsonian Institution.

308 | 5 | California. | | ? | | ? | | Une. 1½—2½ |

Besides the above described species, there is in the collection the following foreign specimen:

S. QUADRATICEPS, n. sp.—*S. brunnea*, venuste polita; capite saturate rubro, profunde punctato; segmento cephalico quadrato, antice haud angustato, medio emarginato, angulis rotundatis; antennis antice pubescentibus; labio profunde punctato, margine antice lato, medio leviter emarginato; mandibulis profunde

punctatis, singula tuberculo magno; scutis rare punctatis, posterioribus marginibus lateralibus elevatis; pedibus postremis valde elongatis, gracillimis, asperis, singulo spinis duobus *S. sexspinosæ* illis similibus sed multo elongatioribus, articulo tibiali basali fere æquali; appendicibus analibus lateralibus valde elongatis, rude punctatis, singula spina apicali unica longa alteraque minutissima in angulo superiore posteriore; squama preanali antice et postice angustata, postice truncata sed haud emarginata.

The color of the body approximates to a dark bronze. Both the dorsum and the belly are very highly polished. The scuto-episcutal sutures apparent, the sterno-episternal absent. The posterior pair of legs are more than half an inch in length, very slender and have their distal portion tinged with green. The sterna are impunctate.

355 | 1 | Choco, N. Grenada. | A. Schott. | | Unc. 2½ |

Gen. 9. NEWPORTIA, Gervais.*

"Pedes posteriores longissimi articulis 14, characteres cæteri ut in genere præcedente."

Not yet found in N. America.

Subfamilia II. HETEROSTOMINÆ, Newp.†

Spiracula magna, circularia, haud valvularia, in paribus 10.

Gen. 10. RHYSIDA.‡

"Antennæ pedesque elongati. Dentes triangulares acuti, mandibularis maximus. Spiracula circularia, membranâ branchiiformi corrugata intus vestita. Pedes postremes graciles, spinis minutis, articulari plerumque obsoletâ."

Branchiostoma, Newp., Linn. Trans. xix. p. 411.

As the name given by Mr. Newport is preoccupied, having been used by Costa for a genus of fishes, we would suggest the one above. This genus has not as yet been found in N. America.

Gen. 11. HETEROSTOMA, Newp.§

"Antennæ elongatæ, 20 articulatæ. Segmentum cephalicum parvum, antice rotundatum; basilare latum, margine anteriore transverso. Dentes maximi, lanceolati, acuti. Spiracula magna cribriformia, in paribus 10. Pedes postremi spinis validis armati."

Not as yet found in N. America.

Gen. 12. EUCORYBAS, Gerstæcker.

"Antennæ 19 articulatæ. Caput primo thoracis annulo receptum. Pedum paria 21, posterioribus longioribus; pedes ultimi paris articulo primo sub-cylindrico haud dentato, altero intus excavato, cæteris in laminas foliaceas perversis."§

Not yet found in N. America.

* Apt. iv. p. 298. † Linn. Trans. vol. xix. p. 410.

‡ *pusæ*, corrugatis. In allusion to the structure of the mouth.

§ Linn. Trans. vol. xix. p. 413. ¶ Gerstæcker, Stettin Entom. Zeit. 1854, p. 310.

Fam. V. GEOPHILIDÆ, Leach.*

Segmenta numerosa, singula subsegmentis duobus completis sed inæqualibus efformata, et pedum par unicum gerentia. Oculi nulli. Antennæ 14 articulatæ. Pedes anales breves, styliformes.

The family character of this group, which first attracts attention, is the large number of segments, each of which is composed of two unequal subsegments. The boundaries of the respective scuta of each pair of the latter are well marked by sutures, &c., but the sterna are completely consolidated. The head varies in form, size, &c., and furnishes the principal generic characters. The number of joints of the antennæ is fixed for the family, but nevertheless good specific, and even generic, characters are derivable from these organs. The most important specific characters besides those before alluded to are founded upon, firstly, the peculiarities as to size, shape, proportion, &c., of the component portions of the head and its appendages; secondly, the color and form of the body and the number of segments composing it; thirdly, the structure of legs, especially of the last pair; and, finally, the markings and sutures of the scuta and sterna. We have never had an opportunity of examining large suites of specimens, so as to determine as to the constancy of the various characters enumerated, but they probably do not vary a great deal.

Gen. I. MECISTOCEPHALUS, Newp.†

Segmentum cephalicum elongatum, angustum, latitudinæ plus duplo longius. Antennæ approximatæ, articulis oboeonicis. Subsegmentum prebasale sejunctum sed basale subbasaleque coalita. Mandibulæ magnæ, intus denticulatæ. (Fig. 9.)

M. FULVUS, n. sp.—*M. fulvus*, politus; capite dilute aurantiaco, punctato, pilis longis rigidis paucis; segmento cephalico antice truncate, postice illico angustato et vix truncate; antennis longis, pilis longis rigidis multis; labio profunde punctato, antice emarginato, medio sulco impresso; mandibulis distincte punctatis, pilis rigidis paucis, quadridentatis; segmento anali piloso; pedibus pilis longis, paribus 57.

?*Geophilus attenuatus*, Say, Jour. Acad. Nat. Sci. 1st series, vol. ii.

Cephalic segment scarcely narrowed at all, except at the posterior end, where it is rapidly contracted, being indeed rounded off. Body slender and polished. Scuto-episcutal and sterno-episternal sutures very distinct, as well as those between the primitive sterna. We have found this species around Philadelphia, although not very abundantly. They appear to affect the inner bark or liber of decaying logs, especially that of the locust, (*Robinia pseudacacia*, L.) We have, however, occasionally observed them under stones. It may possibly be *Geophilus attenuatus*, but that species can never be determined from Say's description.

Fig. 9.

M. MELANONOTUS, n. sp.—*M. parvus*, gracillius, dilute aurantiacus; lineis duobus dorsalibus, latis, nigris, c. capite ad segmentum penultimum ductis; capite dense minutissime punctato, sparse brevis pilosis;

* Linn. Trans. xi.

† Proc. Zool. Soc., Dec., 1842, p. 179.

antennis sparse pilosis; labio dense minutissime punctato, medio valde canaliculato, utrinque uaculis tribus nigris; mandibulis intus vix deuteulatis; lateribus nigro maculatis; scuto postremo dilute aurantiaeo; suturis scuto episcutalibus indistinctis; pedibus compressis, utrinque fere 50, pari postremo gracille; sternis suturis sterno-episternalibus et sulco mediano impressis.

The two black bands are somewhat irregular and so broad that it would, perhaps, be correct to describe the dorsum as black, with a single median and two longitudinal light stripes. The labium has, in our specimen, three black dots on each side, but we suspect that these are not constant. The mandibles have, on their inner edge, the rudiments of a denticle. We have had great difficulty in determining the number of feet in our specimen, but think that fifty pairs are very near the mark.

There is in the Museum of the Academy a single specimen, collected in Georgia by Dr. John Le Conte. The length is about an inch.

M. LIMATUS, n. sp., (fig. 9).—*M. ? aurantiacus*, venuste politus; capite appeudieibusque saturate rubris, segmento cephalico ordinatim punctato, a fronte ordinatim angustato, segmento basali labioque laevibus; antennis sparse longe pilosis; labio valde emarginato, medio leviter canaliculato; mandibulis magnis, pilis longissimis, singula deuteulationibus magnis, obtusis, 4; pedibus flavis?, pilosis, utrinque 43—44, postremis valde elongatis; scuto postremo elongato.

The alcohol, in which our specimens were preserved, having evaporated, they are in such a condition that we can only guess at the original color of the body and feet. The scuto-episcutal sutures are very distinct, as well as the subsegmental sutures of each fully-formed segment. The sterna are furnished with a median sulcus deeply marked on the posterior, but obsolescent on the anterior portion of most of them.

Specimens belonging to the Smithsonian Institution.

310		3		California.		?		?		Unc. 2½	
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Of foreign species there are in the collection of the Smithsonian the following specimens:

M. RUBRICEPS, n. sp.—*M. flavus*, aut dilute aurantiacus; capite rubro, magno; segmento cephalico postice illico angustato, haud rotundato, basaliq. et labio mandibulisque punctatis; antennis proximis valde pilosis, ultimis pubescentibus; mandibulis crassis, pilis paucis, singula denticulis magnis obtusis 5; corpore supra subtusque linea media obscura; pedibus pilosis, utrinque 48, paribus postremis valde elongatis, gracillibus.

Color of the antennæ between that of the head and body, being a shade of orange. Cephalic segment with the posterior third rapidly narrowed and subtruncate. Labium scarcely emarginate in front, and with the median sulcus scarcely apparent. Dorsum, as well as the belly, with a central dark stripe, that on the lower surface much narrower but more distinct than the other. Scuto-episcutal sutures not very distinct. This species resembles *M. punctifrons*, but besides the difference in the teeth the head does not agree with Mr. Newport's figure, nor does he make any mention of the

stripes; which so accurate an observer could scarcely fail to have noticed if they had existed. As we have never seen a specimen of *M. punctifrons*, it is out of our power to make a minute comparative diagnosis.

259 | 2 | Bonin Islands. | N. Pacific Expl. Exp. | Wm. Stimpson, M. D. | Unc. 24 |

M. PILOSUS, n. sp.—*M. flavus*, capite rubro; segmento cephalico antice emarginato, profunde punctato, a fronte ordinatim angustato; capite mandibulis pedibus scutisque pilosis; mandibulis distincte tridentatis; pedum paribus proxime 38.

The coloration of this species is almost identical with *M. rubriceps*. The punctations on the cephalic segment resemble those on *M. punctifrons*. The cephalic segment narrows more gradually from the front, with its anterior angles more rounded and the emargination deeper than in *M. rubriceps*. The number of feet given above is unfortunately only approximate, as the alcohol having dried off the specimen, it is in a condition hardly fit to describe from.

262 | 1 | Hong Kong. | N. Pacific. Expl. Exp. | Wm. Stimpson, M. D. | Unc. 14 |

M. TAHITIENSIS, n. sp.—*M. aurantiacus*, capite saturate rubido-brunneo; segmento cephalico, sparse profunde punctato, a fronte sed postice illicius angustato, antice posticeque truncato; mandibulis pilosis indistincte quadridenticulatis; labio leviter punctato, vix emarginato, haud canaliculato; antennis proximis pilosis, ultimis pubescentibus; pedibus elongatis, utrinque 47, pilosis, et superficie ventrali dilute aurantiaci; suturis sterno-episternalibus scuto-episcutalibusque indistinctis; sternis sulco medio leviter impressis; pedum pari postremo elongato, gracilli.

361 | 1 | Tahiti. | N. Pacific Expl. Exp. | Wm. Stimpson, M. D. | Unc. 12. |

M. SPISSUS, n. sp.—*M. dilute aurantiacus*, robustus; capite saturate aurantiaco, punctato; segmento cephalico magno, copiose profunde punctato, a fronte sed postice illicius angustato; mandibulis punctatis, maximis, crassis, intus pilosis, singula denticulationibus 4 magnis obtusis; labio copiose profunde punctato, sparse piloso, antice valde anguste emarginato, bidentato, medio valde canaliculato; antennis brevibus subacuminatis, sparsissime pilosis; scutis irregulariter rugosis; suturis scuto-episcutalibus indistinctis; sternis mediis canaliculatis; pedibus gracilibus subcompressis, breve pilosis, utrinque 44.

348 | 1 | Oahu or Kauai. | Commodore Perry. | | Unc. |

Gen. 2. GEOPHILUS, Leach.*

Geophilus longicornes, Gervais, Apt. iv. p. 313.

Necrophilaophagus, Newp., Proc. Zool. Soc. 1842, p. 180.

Arthronomatus, Newp., Linn. Trans. xix. p. 430; et Catal. Brit. Mus. Myriap. p. 83; haud *Geophilus* Newport et imitatores.

Segmentum cephalicum subquadratum. Segmentum prebasale haud sejunctum, sed basali absolute coalitum. Segmenti basalis margo posticus antico multo latior. Segmentum subbasale sejunctum. Mandibulae modice, interdum denticulae. Antennae capite multo longiores, subapproximate articulis inaequalibus. Labium plerumque emarginatum. (Fig. 10.)

* Linn. Trans. xi. p. 384.

Since *Geophilus carpophagus* is the type of the original genus as instituted by Dr. Leach, the name *Geophilus* must be used for this section, to which *G. carpophagus* belongs, and not for that to which Mr. Newport applies it. Mr. Gervais does not adopt any of these genera, much to our surprise, for they appear to us as clearly and even beautifully defined as almost any that we have ever seen in any department of nature.

G. CEPHALICUS, n. sp.—G. antice obscure aurantiaeus, postice saturate olivaceus; capite magno, latissimo, saturate aurantiaeo; segmento cephalico antice haud emarginato, sparse inordinate punctato, marginibus lateralibus arcuatis; antennis modice longis, valde pilosis; labio sparse inordinate punctato, medio canaliculato, antice emarginato; pedibus longis, flavescens, pilosis, utrinque 48; suturis seuto-episcutalibus conspicuis; superficie ventrali, antice aurantiaea, postice saturate olivacea; sternis suturis sterno-episternalibus et depressione mediana impressis.

The body is very wide, as is also the head; the prebasilar segment of the latter is very strongly widened posteriorly. The mandibles have on the inner side one or two excessively minute denticulations. The anterior portion of the body is a dilute orange, but a short distance from the head a dark stripe commences, which, gradually widening, soon involves the whole surface in a very dark olive tint. The scuta are uneven and variously wrinkled. This form differs from the following in having the head very much broader, and the cephalic segment not emarginate anteriorly; the labium much more deeply canaliculate, and the number of segments not so great. Still it is possible that the differences are only sexual, and having but one specimen of each, we cannot decide this point. The creature was caught in this neighborhood by my friend Dr. Horn. We append a description of what may be the female of this species.

G. ———?—G. saturate aurantiaeus, robustus, politus; capite parvo, segmento cephalico parvo, antice leviter emarginato, marginibus lateralibus rotundatis; antennis modice longis, postice pilosis, antice fere pubescentibus; mandibulis parvis, indistinctissime tridentatis; labio medio leviter canaliculato, antice leviter emarginato, sparse subprofunde punctato; pedibus brevibus, sparsissime pilosis, utrinque 51.

Sterno-episternal sutures well marked, but not as deeply as the seuto-episcutal. Surface of the most of the scuta quite uneven, sometimes almost coarsely rugose. Dorsum with a very indistinct dark median stripe, more apparent on the posterior portion.

Specimen belonging to the Smithsonian Institution.

27		1		Cumberland, Md.		?		?		Unc. 1?	
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G. LEVIS, n. sp.—G. aurantiaeus, modice robustus; linea mediana dorsali, duplice, nigra, passim obsoleta, ad segmentum penultimum dueta; capite modice magno, leviter punctato, segmento basali breve; antennis sparse pilosis; labio saturate aurantiaeo, leviter convexo, sparse leviter punctato, medio valde canaliculato, antice emarginato; mandibulis haud denticulatis; suturis seuto-episcutalibus modice distinctis; pedibus utrinque 53; superficie ventrali linea mediana unica, obsoleta, nigra; sternis suturis et depressione mediana impressis.

The cephalic segment has the sides moderately arched, with the anterior angles very strongly rounded. The dorsal median line is entirely wanting on the anterior portion of the body. The feet generally are without any hairs, but there are a few on some of them. There are two specimens in the museum of the Academy, collected in Georgia by Dr. J. Le Conte.

G. BREVICORNIS, n. sp.—*G. saturate aurantiacus*, robustus, venuste politus; capite aurantiaco; segmento cephalico parvo, sparse subprofunde punctato; antennis pilosis, brevibus; mandibulis sparsissime pilosis, indistincte quadridentatis, utrinque denticulo unico (interdum duobus) modice magno; labio subprofunde punctato, antice emarginato, medio canaliculato; pedibus compressis utrinque (? in mare) 55, (? in femina.)?

Scuto-episcutal sutures very distinct, as are also the sterno-episternal. Scuta generally quite smooth. Body of each of our specimens subcylindrical. We were at first disposed to consider these as the males of the following species, but it seems to us most probable that they are distinct. The principal differences are found, first, in the size of the cephalic segment and length of antennæ; second, in the punctations of the head; and finally, in the number of segments and robustness of body.

Specimens belonging to the Smithsonian Institution.

276	1	On the route from New Orleans to Galveston.	E. B. Andrews.	Une. 2.
350	1	S. Illinois.	R. Kenicott.	" "

G. BIPUNCTICEUS, n. sp.—*G. dilute aurantiacus*, gracilis, venuste politus; segmento cephalico saturate aurantiaco, magno, antice leviter emarginato, et labio mandibulisque et copiose profunde et dense minutissime punctatis; antennis modice longis, dense pilosis, antice fere pubescentibus; labio leviter emarginato, medio canaliculato; mandibulis magnis, crassis, indistincte quadridentatis, utrinque denticulo unico (interdum duobus) modice magno; pedibus brevibus, sparsissime pilosis, utrinque (in mare?) 61 (in femina?) 63.

The general arrangement of the larger punctations on the cephalic segment is as follows: On each side of the posterior mesian portion there is a longitudinal series of punctations; on each side of the latter is a broad patch of the same, and anteriorly they are disposed in transverse series. No such method is discoverable in the preceding species. The color in all the specimens we have seen is somewhat lighter, and the body less robust and perhaps more uniform than in *G. brevicornis*. The labium is of the same shade as the cephalic segment, but the basilar and subbasilar are colored like the body. The dorsum has occasionally an indistinct dark median stripe. The scuto-episcutal and sterno-episternal sutures are very distinct. The sterna have a median groove. We have seen an individual belonging to the collection of the Museum of Comparative Zoology, which has 65 pairs of feet on each side, but yet in other respects agree entirely with the others.

Specimens belonging to the Smithsonian Institution.

266	3	South Illinois.	R. Kenicott.	Une. 1½—2½
285	1	Charleston.	?	" 1½
279	5	Sonora.	T. D. Graham.	" 1½—1¾

Gen. 3. GONIBREGMATUS, Newp.*

"Antennæ filiformes, subapproximatæ. Segmentum cephalicum breve, transversum, eordiforme, antice acute triangulare; basilar cephalico latius, subbasilari brevius. Mandibulæ magnæ, arcuatæ, prominentes, contortæ. Labium brevissimum, transversum, margine integro prominente. Corpus subconvexum elongatum æquale; segmentis numerosis, posterioribus 2 vel 3 incrassatis tuberosis."

This genus has not as yet been found on the North American Continent.

Gen. 4. STRIGAMIA, Sæger†.

Antennæ approximatæ. Segmentum cephalicum parvum, breve plerumque subtriangulare, antice angustatum. Corpus depressum antice attenuatum. Segmenta pedesque numerosæ. Styli anales breves, antenniformes. (Fig. 11.)

Geophilus, Leach, p.

Strigamia, Gray, p.

Geophilus, Newp., et imitatores.

As we have before shown, the type of Leach's genus *Geophilus* belongs to the section *Arthronomalus* of Newp.; and *Arthronomalus* must be replaced by *Geophilus*, and a new name given to *Geophilus*, Newp.

Fig. 11.

S. BOTHERIOPUS, n. sp.—*S. kete rubens*, robusta; segmento cephalico rare punctato, piloso; antennis pilosis, modice longis, haud acuminatis; mandibulis pilosis, intus dente magno, conico, acuto armatis; labio piloso, antice profunde emarginato, medio canaliculato; scutis pilosis, latis, brevibus, sine suturis; pedibus plerumque flavis, dense pilosis, utrinque 50; paris postremi coxis magnis, foveis minutis multis impressis; sternis suturis sterno-episternalibus et sulco medio obsoleto signatis.

The body is widest in the middle, but is much narrower at the anterior than at the posterior extremity. The last pair of feet are scarcely longer than the preceding. This species closely resembles *E. rubens*, Say, and may possibly prove identical with it, as the descriptions of that form are as usual quite meagre. We have in our possession two specimens from Broad Top Mountain, Huntingdon Co., Pa., and one from Montgomery Co., collected by Mr. E. D. Cope. The largest is about an inch in length.

S. RUBENS.—*S. "saturate aurantiaca; linea mediana duplici nigra e segmento corporis primo ad penultimum ducta, segmento cephalico subcordato, antennis pilosis, labio mandibulisque lævigatis punctis raris, mandibulis nigris pedum paribus 50. Long. une. 1½."*

Geophilus rubens, Say, Journ. Acad. Nat. Sci. Philada. 1st series, vol. ii.; Œuvr. Entom. i. p. 25; Gerv. in Ann. Sci. Nat. 1837, p. 52; Apt. iv. p. 320; Lucas, Hist. Nat. Anim. Art. p. 549; Newp. Ann. and Mag. Nat. Hist. xiii. p. 101; Linn. Trans. xix. p. 435; Catal. Brit. Mus. Myriapoda, p. 87.

"*Hab.*—In America boreali."

Species mihi ignota.

* Proc. Zool. Soc. 1842, p. 181

† Proc. Acad. vol. viii.

S. FULVA, Sæger.—*S. fulvo-aurantiaca*, polita; corpore antice attenuato; capite parvo; segmento cephalico subtriangulare, impunctato; antennis modice longis, filiformibus, haud acuminatis, sparse pilosis, articulis oboenicis; mandibulis brevibus, crassis, singula denticulo modice magno conico; labio breve, antice medio valde emarginato, impunctato; sentis interdum linea media obsoletissima; pedibus modice longis, pilosis, gracilibus, cylindricis, utrinque 47, pari postremo (in mare?) robusto, breve acuminato articulis oboenicis, (in femina?); sternis suturis sterno-episternalibus et sulco mediano lato impressis. *Strigamia fulva*, Sæger, Proc. Acad. Nat. Scien. vol. viii. p. 109.

The color of this graceful little animal is an orange, approaching somewhat to fulvous. The antennæ are very thread-like; but the posterior feet, in our only specimen, are very thick, being more so in the middle than at either end. The median linear depressions in the sterna are often dilated in their centre. The type of this species is in the Museum of the Academy.

Specimen belonging to the Smithsonian Institution.

349 | 1 | South Illinois. | R. Kennicott. | Une. 1 | • |

S. BIDENS, n. sp.—*S. aurantiaca*, venuste polita; segmento cephalico triangulare, antice truncato, sparse late punctato, margine antice postice nonnihil latiore; antennis brevibus, filiformibus, articulis oboenicis; labio sparse late punctato, sulco obsoleto, margine antice denticulis duobus obsoletis obtusis armato; mandibulis intus minute unidenticulatis; suturis scuto-episternalibus nullis; pedibus utrinque 76, cylindricis, paris postremi coxis magnis, foveis signatis; sternis suturis sterno-episternalibus et sulco mediani impressis; squama preanali infra convexa.

The coxæ of the last pair of feet are very large. Their inferior surface is convex, and indented with from twenty to thirty small, round pits, irregularly arranged in rows. The remainder of the feet are, in our specimen, slender. We presume that the above character is persistent in both sexes, but cannot be certain on this point. There is a single specimen in the Museum of the Academy, labelled as having been found near Philadelphia by Joseph Leidy, M. D. We have never met with it whilst collecting. The length is about an inch and a half.

S. WHITEI.—*S.* "capite aurantiaco, corpore flavo-virente, segmento cephalico brevi subcordato, antennis nudis, moniliformibus, labio leviter longitudinaliter cristato, utrinque oblique sulcato, pedum paribus 74. Long. unc. 1½."

Geophilus Whitei, Newp., Linn. Trans. xix. p. 436; Gervais, Aptères iv. p. 321.

"*Hab.*—In America Boreali."

Species mihi ignota.

S. bidens is closely allied to this species, but almost the only point of agreement is the number of pairs of legs. Mr. Newport's description is, however, meagre, and we have never seen a specimen entirely corresponding with it.

G. ATTENUATUS, Say, Journ. Acad. Nat. Sci. 1st series, vol. ii. p. 114.

We have not been able to learn any thing as to what species Mr. Say referred in his description, which throws no light on the subject; possibly it belonged to the genus *Mecistocephalus*.

S. LEVIPES, n. sp.—*S. aurantiaca*, robusta; capite modice magno, rare obsolete punctato, sparse piloso; segmento basilari margine antio postico nonnihil latiore; mandibulis magnis, singula intus denticulo magno acuto armata; dente mandibulari, gracile, longo; scutis latis, brevibus, suturis scuto-episternalibus nullis; pedibus modice longis, utrinque 69, pari postremo (in mare?) longo, valde incrassato, illico acuminato, articulis obconicis, (in femina?) parvo, gracile, articulis subcylindricis; suturis sterno-episternalibus distinctis; squama preanali postice valde angustata.

One of the specimens has the last pair of legs very thick and long and vertically compressed. They are composed of eight joints, all of which are obconic except the last, which is very short and rapidly acuminate. This individual we believe to be the male. The other, the female, has the hindmost legs very slender, with the coxal joint proportionally very much larger than in the male.

Hab.—Georgia. Museum of Academy; Dr. J. Le Conte.

S. TENIOPSIS, n. sp.—*S. dilute fulva*; corpore valde depresso, modice lato, antice leviter angustato; capite magno; segmento cephalico subtriangulare; antennis brevibus, mouiliformibus, postice leviter depressis, crassis, antice cylindricis, haud acuminatis, pilis brevissimis mollibus paucis; labio breve, lato, antice obsolete bidentato, sulco mediano leviter impresso; mandibulis crassis; scutis brevissimis, sine suturis sed interdum linea media obscura; sternis brevissimis, singulo depressione submediana ovata, in corpore antio conspicuissima; pedibus brevibus, crassis, cylindricis, haud pilosis, utrinque 141, pari postremo (in femina?) gracile, breve, (in mare?) ? Long. unc. 4½.

In our specimen the color is very light, but originally may possibly have been an orange. The body is almost destitute of polish. The epimeral plates are very large. We are indebted to Dr. J. L. Le Conte for the specimen, which he captured in the mountains of Georgia.

S. MACULATICEPS, n. sp.—*S. sordide aurantiaca*, polita; corpore robusto, subsemicylindrico, antice modice attenuato; capite modice parvo, obscure saturate rubro, minute albomaculato, in lateribus sparse piloso; antennis longis, leviter pubescentibus, haud acuminatis; mandibulis crassis, obscure quadridentatis, pilis paucis, denticulo antio utrinque magno, conico; labio impunctato, antice vix emarginato, medio canaliculato; pedibus modice longis, gracilibus, subcompressis, utrinque 77, et superficie ventrali sordide flavis; scutis lævibus sine suturis; sternis lævibus, suturis sterno-episternalibus valde impressis et plerumque postice depressionum irregulariter ovatorum transversarum pari; pedibus postremis ("stylis analibus") (in mare solum?) robustissimis, supra subcomplanatis, subtus convexis, acuminatis.

The cephalic segment is slightly narrowed anteriorly, and the upper surface of the whole head is marked with very small whitish dots. The anterior and posterior extremities of the body are perhaps a little darker in color than the intervening portion. The inferior aspect of the head is of the same color as the superior, contrasting with the under surface of the body. Near the posterior border of each sterna there is a pair of subequal oval transverse depressions. The legs are almost destitute of hair, having occasionally, however, a few very short ones.

Specimen belonging to the Smithsonian Institution.

294 | 1 | Upper Colorado. | Lieut. J. C. Ives, U. S. A. | H. B. Mollhausen. | Unc. 2½ |

S. LATICEPS, n. sp.—*S. dilute aurantiaea*; capite magno, impunctato; segmento cephalico lato, breve, transverso, quinqueangulato, segmentis basali subbasalique marginibus curvatis et angulis anticis prolongatis; antennis brevibus, erassis, cylindricis, antice pubescentibus; labio breve, nonnihil convexo, haud canaliculato; mandibulis parvis, singula intus denticulo obtuso indistincto; pedibus subcompressis, gracilibus, utrinque 81, pari postremo (in mare solum?) nonnihil crasso, cylindrico, haud acuminato eoxis magis; sternis depressione lineari-ovata transversa et suturis sterno-episternalibus signatis; squama preanali valde canaliculata, postice valde emarginata, angulis posticis subaeutis. Long. unc. 3.

The anterior of the two scuta covering each segment is very distinct from the other, and is much wider at its posterior than at its anterior margin. The posterior has its lateral margins arcuate but not elevated. The scuto-episcutal sutures are very distinct. Posteriorly there is an obsolete dark median dorsal line.

Hub.—Texas. Museum of Comparative Zoology; Geo. Stolley, Esq.

S. CEPHALICA, n. sp.—*S. sordide dilute brunnea*, superficie dorsali lineis pullis duabus, obsoletis; corpore modice robusto, antice leviter sed postice illico valdeque angustato; capite magno; segmento cephalico subtriangulare, impunctato, basali postice leviter dilatato; antennis brevissimis, latis, depressis, haud pilosis, articulis brevissimis, elongate quadratis; labio impunctato, medio canaliculato, antice leviter emarginato; mandibulis erassis, haud denticulatis; scutis suturis scuto-episcutalibus leviter impressis; pedibus gracilibus, modice brevibus, haud pilosis, utrinque 75, pari postremo (in femina solum?) parvo, gracile; sternis suturis sterno-episternalibus et sulco mediano impressis.

The two dark lines on the dorsum are very obscure and are evanescent anteriorly. The cephalic segment is quite acute anteriorly. The legs are rather lighter in color than the body, and are shorter than in the preceding species.

Specimen belonging to the Smithsonian Institution.

129 | 1 | California. | ? | ? | Unc. 2½ |

S. PARVICEPS, n. sp.—*S. saturate aurantiaea*, polita; corpore modice robusto, antice valde sed postice leviter angustato; capite parvo, segmento cephalico suborbiculare, impunctato; antennis modice longis, filiformibus, haud acuminatis, sparse pilosis, articulis vix obconicis; mandibulis erassis, sparse breves pilosis, obscure tridenticulatis, denticulo antice utrinque magno conico acuto; labio lato, breve impunctato, antice vix emarginato, sulco mediano obscure impresso; scutis sine suturis; pedibus modice longis, gracilibus, pilis brevibus paucis, et superficie ventrali sordide aurantiacis, utrinque 71, pari postremo (in femina solum?) parvo, gracile; sternis suturis sterno-episternalibus et sulco mediano impresso.

In the only specimen that we have seen the mandibles are perfect, with the exception that they lack the mandibular tooth, probably the result of an accident; but it is rather curious that both should be lost and the remainder of mandibles be injured. The head appears to be destitute of punctations.

Specimen belonging to the Smithsonian Institution.

311 | 1 | California. | ? | ? | Unc. 2½ |

S. EPILEPTICA, n. sp.—*S. polita*; corpore antice valde sed postice modice angustato, supra saturate sed subtus dilute aurantiaea; capite parvo; segmento cephalico suborbiculare, sparse minute albomaculato;

segment basali subbasali longiore; antennis longis, filiformibus, haud acuminatis, partim pubescentibus, articulis vix obconicis; mandibulis crassis, distincte tridenticulatis, denticulo antico magno, conico, acuto; labio convexo, copiose minute albomaculato, antice leviter emarginato, sulco mediano impresso; scutis longis, latis, sine suturis; pedibus gracilibus, modice longis, dilute aurantiacis, utrinque 81, pari postremo (in femina solum?) parvo, gracile, haud antenniforme; sternis suturis sterno-episternalibus et sulco mediano impressis.

This is much the largest Geophilid as yet found within our limits. The greatest breadth of the scuta is about two lines. The white dots on its head are very minute, resembling punctations.

Specimen belonging to the Smithsonian Institution.

297 | 1 | Puget's Sound. | A. Campbell, Com. N. W. B. S. | Dr. C. B. Kennerly. | Unc. 5½ |

S. CHONOPHILA, n. sp.—*S. aurautiaca* gracilis, parva, venuste polita; segmento cephalico fere subquadrato, postice medio caualiculato; antennis pilosis haud acuminatis, articulis (ultimo excepto) obconicis; mandibulis dente modico in margine interno armatis; suturis scuto-episcutalibus interdum obsoletis sed plerumque distinctis; pedibus pilosis utrinque 43, pari postremo (in femina solum?) gracile, parvo; sternis et vel canaliculatis vel depressione subcirculare notatis et suturis sterno-episternalibus valde impressis.

The distal joint of the filiform antennæ is large and cylindrical, causing them to appear somewhat clavate. This species is a very interesting one, from the fact of its inhabiting a region so near the Arctic circle. Its diminutiveness shows that the Myriapoda form no exception to the general decrease in size observable among the lower animals as we leave the Equator.

Specimens belonging to the Smithsonian Institution.

258 | 3 | Fort Simpson, Red River. | R. Kennicott. | | Unc. ½—¾ |

Besides the American species, there are the following foreign ones in the collection of the Smithsonian Institution:—

S. TENIOPHERA, n. sp.—*S. incana*, superficie dorsali lineis duabus subnigris, confertim approximatis, antice evanescentibus; corpore robusto, et antice et postice modice angustato; segmento cephalico breve, subtriangulare, sordide albo, impunctato; antennis cylindricis, modice crassis brevibusque; labio convexo, impunctato, antice vix emarginato, sine sulco; mandibulis haud denticulatis; suturis scuto-episcutalibus distinctis; superficie ventrali fere albida; sternis suturis sterno-episternalibus et sulco mediano impressis; pedibus brevibus, gracilibus, anticis sordide albidis, utrinque 81, pari postremo (in femina solum?) parvissimo, gracile.

The color of this animal is a light grey; that of the head, the anterior feet and the belly approaches a dirty white. The median dark stripe is composed of two closely-approximated lines, and is evanescent anteriorly, but posteriorly ends rather abruptly at the anal scutum. It is much more apparent in some portions of the body than in others. The median sulci of the sterna are very short, not extending through the whole length of each sternum.

260 | 1 | Loo Choo Islands. | N. Pacific Expl. Exp. | W. Stimpson, M. D. |, Unc. 2½ |

S. LINEATA.—*S.* griseo-brunnea; capite magno; segmentis cephalico et basali appendicibusque saturate rubris; segmento anali obscure flavo (interdum "subeordato"); corpore antice leviter sed postice modice angustato; superficie dorsali lateribusque singula lineis duabus obscuris subnigris interruptis approximatis; segmento cephalico lato, breve, quinqueangulato, postice abrupte truncato (aut "saturate rubro"); antennis brevissimis et crassissimis, latis, depressis, haud cylindricis, sensim acuminatis, sparse brevissime pilosis; labio convexo, saturate rubro, antice vix emarginato, sulco mediano obscure impresso; mandibulis haud denticulatis; scutis longitudinaliter trisulcatis, et interdum depressione obscura utrinque impressis, suturis scuto-episcutalibus nullis, marginibus lateralibus elevatis; pedibus brevibus, gracilibus, flavis, utrinque 77, pari postremo (in femina solum?) parvo et gracile; sternis suturis sterno-episternalibus et sulco obscuro mediano impressis.

G. lineatus, Newp., Linn. Trans. xix. p. 436; Catal. British Mus. Myriap. p. 89; Gervais, Apteres iv. p. 321.

The subbasilar segment is of the same color as the body. The two median dark lines anteriorly are scarcely separable and less interrupted than other portions. One of the lateral lines is situated on the edge of the scuta, and the other just above the spiracles; they are composed of a series of dots. The three median sulci of the scuta are closely approximate. Our specimen differs from Mr. Newport's diagnosis both in the color of the anal segment, the shape of the cephalic subsegment, and the markings of the labium, but otherwise agrees very well.

356 | 1 | Choco, New Grenada. | A. Schott. | | Unc. 2 |

S. TROPICA, n. sp.—*S.* dilute brunnea, capite antennisque aurantiacis, segmento anali obscure flavo, corpore antice modice sed postice illico valdeque angustato; superficie dorsali lateribusque singula lineis duabus approximatis, interruptis, subnigris; segmento cephalico subtriangulare, breve, modice angusto; antennis filiformibus, modice brevibus, nec acuminatis nec pilosis; labio convexo, antice haud emarginato, sulco mediano multo; mandibulis haud denticulatis; scutis longitudinaliter trisulcatis, et plerumque depressione utrinque impressis; suturis scuto-episcutalibus nullis; pedibus modice brevibus, gracilibus, obscure flavis, utrinque 77, pari postremo (in femina solum?) parvo, gracile; sternis dense punctatis, suturis sterno-episternalibus et depressione centrali suborbiculare impressis.

The subbasilar segment agrees with the rest of the head in color. The dark lines are almost exactly like those of the preceding species. The median sulci are perhaps not quite so sharply cut. The head is proportionally considerably smaller than that of *E. lineatus*. The antennae are also essentially different from those of that species. We have a specimen which is of a very light yellow and with traces of the dark lines, even the head being of a very light shade. We have no hesitation in referring it to this form, believing it to be an individual that has just changed its skin or shell; the skins of all species probably being white, or nearly so, when just assumed, and gradually darkening and gaining their peculiarities with age.

358 | 2 | Nicaragua. | Capt. Rodgers. | E Wright. | Unc. 2½ |

S. FILICORNIS, n. sp.—*S. brunnea*, corpore robusto, antice modice valde et postice abrupte angustato; superficie dorsali lineis duobus subapproximatis obscuris, pallis; segmento cephalico breve, subtriangulare, obscure minute albomaculato; antennis modice longis, filiformibus, partim subpubescentibus, haud sensim acuminatis; labio breve, convexo, antice leviter late emarginato; mandibulis haud denticulatis; scutis sulcis duobus, obscuris, subapproximatis et suturis scuto-episcutalibus impressis; pedibus brevibus, gracilibus, utrinque 81, pari postremo parvo; sternis suturis sterno-episternalibus et aut sulco mediano aut depressione centrali impressis.

The whitish dots on the head are very minute as well as obscure. Many of the scuta are quite rough; the two lines are more separate and distinct on the posterior ones, and correspond with the sulci in position. The sterna, besides the sterno-episternal sutures, have a central round impression, occasionally replaced by a longitudinal median sulcus.

238 | 1 | Near La Union, Costa Rica. | Lieut. D. D. Porter, U. S. N. |

| Unc. 3 |

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