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ART. VII.—*On the Pedipalpi of North America.**

By HORATIO C. WOOD, JR., M. D.

Ord. PEDIPALPI.

Respiratio pulmonaria. Maxillæ maximæ. Maxillarum palpi maximi a "manu" terminati.

Among the Pedipalpi the cephalothorax is always covered with a dorsal shield entirely separate from the abdominal scuta. In the Scorpionidæ the abdomen is continuous with the cephalothorax, whilst in the Thelyphonidæ and Phrynidæ they are united by a pedicle. In the first family the abdomen is prolonged posteriorly into a sting-bearing appendage or tail. In the second there exists merely a filiform prolongation, which is in the third, still further degenerated into a mere button. The Scorpionidæ have the foremost feet well developed as such. In the Thelyphonidæ they are very slender and strikingly elongate. Whilst in the Phrynidæ they are excessively long, filiform, and multiarticulate, indeed, almost moniliform. The Scorpionidæ are provided with the so-called "combs," which are wanting in the other families. These are situated just behind the legs, one on each side of the genital opening. Their function is not exactly known—but is probably connected with the sexual act.

The most anterior of the organs connected with the mouth, in the Pedipalpi are the mandibles, the "antennes pines" of Emile Blanchard. Their analogy and homology with the mandibles of Coleoptera are very obvious. In the Scorpionidæ they are formed of two corneous joints. Of these the posterior is very small; but the anterior is much larger and armed with both a moveable and fixed finger. The former is so articulated as to have its motion in a horizontal plane, and has its inner surface generally deeply grooved with denticulate margins. This channel receives into itself the dentate edge of the fixed finger. Among the Thelyphonidæ and Phrynidæ the first joint is wanting. The second is large and somewhat cuneate. Its lower edge as well as the fingers are generally hidden by very thick crests of long silky hairs. The movement of the upper finger is in a vertical plane. Their whole appearance re

*This paper is founded, almost entirely, on specimens belonging to the Smithsonian Institution. For the privilege of investigating them, we would offer our thanks to Profs. Henry and Baird. For the same reasons as before influenced us, we do not consider Mexico as included in our scope.

sembles that of the cheliceres of a mygale. The "foot jaws" are situated just posterior to these. Their aspect in each of the three families is somewhat characteristic. In the Scorpionidæ they are generally without spines and are provided with a conspicuous "hand" or swollen terminal joint. In the Thelyphonidæ they are very massive, generally rather short and armed with a moderate number of often very large and robust spines. In the Phrynidæ, they are slender, more or less elongate, and mostly provided with numerous long, acute spines. They appear to us to be the analogues of the maxillæ and maxillary palpi of Coleoptera. Their first joint in the Scorpionidæ is very moveable, and doubtless fulfils the functions of maxillæ. In the Thelyphonidæ, it is fixed, but serves as a "*piece de resistance*" to the mandibles. In the Phrynidæ its motion is not at all restricted, and on the inner side there is a well marked lobe. The remainder of the foot jaws, appear to represent the maxillary palpi. They are composed of the same number of articulations as is common among beetles. If these "foot jaws" are the maxillæ with their palpi, we ought to find some trace of the ligula, which in Coleoptera is generally placed between or a little posterior to the maxillæ. Now in the Scorpionidæ and Thelyphonidæ, this exists as a hairy, membranous, conical, body, placed between the basal joints of the maxillæ. The labium is not distinguishable. The labial palpi are almost entirely atrophied. But in the Scorpionidæ along the inner side of the first maxillary joint is a hairy membranous portion, which appears to represent that organ. It is also traceable in the Thelyphonidæ, but is lost in the Phrynidæ. In some of the Staphylinidæ the labial palpi degenerate into mere filamentous appendages. It is therefore not surprising to see them so degraded among the Pedipalpes.

In the Phrynidæ posterior to the maxillæ is a corneous styloid process—we think that this represents the ligula, although apparently articulated to the sternum. For the mentum is probably in this family coalesced with, and forming the anterior portion of the sternum. In the Scorpionidæ two large processes spring from the base of the anterior pair of feet. These form the posterior boundary of the mouth and *seem* to be the mentum. Two similar plates arise from the second pair of feet, these we take to be analogous with the gula. In the Thelyphonidæ these are all consolidated into a single plate.

It will be perceived that here there are represented all the more important cephalic organs of the Coleoptera, excepting the antennæ. Now is it not possible, that the first pair of legs are misplaced and altered antennæ? The excessively elongate and filamentous legs of the Phrynidæ can be of no use as organs of progression, and must apparently fulfil the functions of antennæ, from which they do not differ in form. And even those of the Thelyphonidæ, seem scarcely fit for progress. In both of these families, this first pair of legs articulates on a different plane from the others, and entirely in front of the posternum.

Fam. I. SCORPIONIDÆ.

Deus mandibularis horizonti in libella movens. Pedum par anticum haud elongatum, sed alteris simile. Abdominis appendix caudalis et crassis et longa.

The natural arrangement of this family is still enveloped in obscurity. De Geer in his *Memoires pour L' Hist. des Insectes* vol. vii. p. 337, divides them into "Des Scorpions de la premiere familie ou de ceux à six yeux" and "Des Scorpions de la seconde familié, ou de ceux à huit yeux." Linnæus recognized but one genus. Dr. Leach, in 1815, (*Linn. Trans.* vol. xi. p. 391,) founded a second, depending on the ocelli for his characters. Since then the list has been swelled by several authors, mostly, by the extension and development of these characters. In *Apteres*, vol. iii. 1844, (*Suites a Buffon*), M. Gervais acknowledged but one genus and various sub-genera. While Koch. (*Arachnid. Syst.*) in 1850, elevated the Scorpionidæ to the rank of an order, designating many of the *sub-genera* of Gervais, (genera of other authors,) as *families*, and indicating numerous new genera.

In 1861, Prof. Peters, (*Monatsberichte*, p. 508,) published an entirely new classification, basing it on hitherto unused characters. Whatever emanates from such authority, should be received with great deference. With our present supply of foreign specimens, we do not feel entitled to condemn it absolutely. But if we adopt it, we would necessarily propose several new sub-families and genera. This we certainly are not prepared to do, and have in this paper retained the number of ocelli as the genuine criterion.

Synopsis of the Scorpionidæ of North America.

Gen. I. SCORPIUS, Oculi 6.

S. ALLENI.

Gen. II. BUTHUS, Oculi 8.

* *Lateral eyes arranged in a straight series. Tail armed with a basal spine to the sting.*

B. BIACULIATUS.—Color cinnamon and nearly uniform. Abdomen very strongly granulate and tuberculate. Length $3\frac{1}{2}$ inches.

B. CAROLINIANUS.—Color fulvous, striped very dark brown. Cephalothorax maculate. Abdomen but moderately granulate and tuberculate. Length $2\frac{1}{4}$ inches.

B. CALIFORNICUS.—Color nearly the same as in the last; cephalothorax immaculate. Abdomen strongly granulate. Length 2 inches.

** *Lateral eyes arranged in a slightly curved series. Tail with a basal spine to sting.*

B. LESEUERI.—Hands very much swollen.

*** *Eyes in a straight or nearly straight series. Sting without the basal spine.*

B. EXILICAUDA.

*** *Lateral eyes arranged in a curved series. Sting without the basal spine.*

B. HIRSUTUS.—Body and tail very hairy. Cephalothorax with the anterior margin convex and not emarginate. Length $4\frac{1}{4}$ inches.

B. EMARGINATICEPS.—Body and tail very hairy. Cephalothorax with the anterior margin broadly and very deeply emarginate. Length $4\frac{1}{4}$ inches.

B. EUSTHENURA.—Body and tail moderately hairy. Hands very small and slender. Last caudal segment rather large and robust. Sting very short and robust, strongly curved.

B. BOREUS.—Body and tail scarcely at all pilose. Hand tumid. Superior crests of anterior caudal segments not terminating in a spine. Last article quite large and robust. Sting rather short and robust, but very slightly curved. Length 3 inches.

B. PUNCTIPALPI.—Hand tumid. Superior crests of anterior caudal segments terminating in a spine. Last article small and slender. Sting very long and slender, strongly curved.

B. SPINIGERUS.—Hand small, scarcely at all tumid. Superior crest of anterior caudal segments terminating in a spine. Last article large and robust. Sting short, robust, and rather strongly curved. Length $2\frac{1}{2}$ inches.

Gen. III. CENTRURUS, Oculi 10.

C. PILAIOCTYLUS, Hand very much swollen.

Species unknown to us.

S. PUNCTATUS, De Geer.

S. MACULATUS, De Geer.

S. TESTACEUS, De Geer.

S. AUSTRALIS, De Geer.

VÆJOVIS CAROLINUS, Koch.

Gen. I. SCORPIO.

Oculi 6. Oculi laterales utrinque 2.

Scorpio, De Geer, Mem. des Insect., vol. vii. p. 337. Haud *Scorpio*, Linnæus.

Scorpius, Ehrenberg, Symbolæ Physicæ.

"Fam. I. *Scorpionides*." Koch, Arachniden, Syst., p. 36.

S. ALLENI.—S. saturate brunneo-castaneus, levis, venuste politus; cephalothorace antico distincte emarginato; palpis modicis; manibus magnis, subquadrangulatis, latis, vix crenatis, sparse punctatis; digitis robustis, modice brevibus, fere rude punctatis, curvatis; oculis lateralibus fere æqualibus; cauda breve, valde crenulata; spiculo brevissimo, subuncinato, sine spiculo basali; pectinis dentibus fere 7.

S. Alleni, Wood, Proc. Acad. Nat. Sci. April, 1863.

The dorsum is beautifully polished, and not at all tuberculate. The palpi are of

medium size. The second joint has all of its borders, except the postero-inferior, crenulate. The third has only its supero-anterior crenate. Its anterior face is complanate; its posterior convex. The hands are rather thin, somewhat cordate, subquadrangular, and faintly marked with divisions between eight facets. The anterior border is thin and convex. The fingers are very robust, almost rudely punctate, rather short, and ornamented with a few long hairs. Their opposing margins are minutely denticulate. The tail is short; in the female not so long as the body. The first joint is broader than long. It has both the superior and the supero-lateral crests crenulate. The third and fourth have the infero-lateral also distinctly crenate. The inferior crests are crenulate on the fourth. The penultimate joint is elongate; its lower surface is tuberculate; its single median inferior and infero-lateral crests strongly dentate; the terminal joint is elongate; its superior surface is complanate and triangular; its inferior convex, and marked with a dark median stripe. The sternal plate is pentangular. It affords me great pleasure to dedicate this species to my friend and co-laborer, Dr. H. Allen, U. S. A.

Length of body, ♂ 6 lines, ♀ 9 lines: of tail, ♂ 8 lines, ♀ 8 lines.

Hab.—Lower California. Smithsonian Museum. J. Xantus de Vesey.

Gen. II. BUTHUS, Leach.

Oculi 8. Oculi laterales utrinque 3 in serie recta vel curvata dispositi.

Scorpio, Linn. Syst. Nat. Ed. 12, p. 1037. (Haud. *Scorpius*, Ehrenberg.)

Buthus, Leach, Linn. Trans. xi., p. 391.

Gen. "*Buthus*, Leach." Sub-gen. *Heterometrus*, *Isometrus*, Hemprich et Erhenberg, Symbolæ Physicæ, Animal, Evertebrat. Scorpiones.

Fam. *Buthides*. Gen. "*Buthus*, Leach.," *Opisthophthalmus*, *Brothous*, *Telegonus*, *Ischaurus*, Koch Ueber-sicht des Arachniden System, p. 36, 37.

Gen. *Scorpius*, (partim.) Sub. gen. *Atricus*, *Buthus*, *Telegonus*, *Gervais*, Apteres iii. p. 52, 57, 59.

The study of the species of the United States, might lead one to consider this group as consisting of two distinct genera. These would correspond in a great degree with the *Buthus* and *Telegonus* of some authors. But *S. squama*, Gervais, a native of Van Dieman's Land, and *B. lesueurii* seem to unite them together.

S. BIACULEATUS.—*B. saturate cinnamomeus*, pedibus dilute cinnamomeis: oculis lateralibus in serie recta dispositis; cephalothorace antice late sed haud profunde emarginato, abdomineque tuberculatis, valde asperatis; illo medio valde carinato; palpis modice gracilibus, leviter pilosis, marginibus valde crenulatis, superficie antica tuberculata; manibus brevibus, nonnihil tumidis; digitis valde elongatis, robustis; pedibus compressis, granulatis, marginibus crenulatis; cauda elongata, modice gracile, marginibus valde crenulatis, interdum denticulatis; spiculo spinulo basali armato; pectinis dentibus 20-32.

Scorpio biaculeatus Latreille Coll. de Muséum (sine description.)

Androctonus biaculeatus, Lucas. Hist. des Canaires par Webb et Barthelot Arach. p. 45 (according to Gervais.)

Scorpio (Atrous) biaculeatus, Gervais, Apteres, vol. iii. p. 54. vol. iv. pl. 23, f. 3. Exp. de l'Amerique du Sud. par M. Castelneau. Sept. part. (Myriap. et Scorp.) p. 43, pl. ii. fig. 4.

Scorpio (Atrous) Edwardsii, Gervais, Archiv. Mus. vol. iv. p. 216, pl. xi. fig. 13-15. Apteres, vol. iii. p. 53. Exp. dans l'Ameriq. du Sud. part. Sept. (Myriap. et Scorp.) p. 41, pl. i. fig. 1.

Scorpio (Atrous) De Geerii, Gervais, Archiv. Mus. vol. iv. p. 217, pl. xi. fig. 16-17. Apteres, vol. iii. p. 54. Exp. dans l'Ameriq. de Sud. part. Sept. (Myriap. et Scorp.) p.

Scorpio (Atrous) obscurus, Gervais, Archiv. Mus. vol. iv. p. 219, pl. xii. fig. 26. Apteres, vol. iii. p. 55.

The cephalothorax is shallowly emarginate in front. The median furrow is very deep in its posterior portion. The anterior margin is very rough and tuberculate. The median eyes are placed near to the junction of the anterior and middle third, and are surmounted by a strongly marked curved crest or brow. This extending some distance in front, becomes crenulate. The surface is very much roughened, by tubercles disposed in rows. The maxillary palpi are rather slender, with their margins strongly crenulate, or more rarely denticulate; on their anterior face are numerous spinous tubercles. The third joint has on its upper surface a very distinct, crenate ridge. But as is the case with the margins of this articulation also, the crenations are often feeble. The hand is irregularly sub-parallelopipedal with its anterior face very convex. Its postero-inferior, superior and antero-superior margins are provided with well-marked but not crenulate raised lines. The fingers are very long, but at the same time rather robust. Their opposing margins are armed with a series of central, obliquely longitudinal, imbricated rows of small teeth. On either side of these, larger ones are arranged similarly but irregularly. The abdominal scuta have their anterior surfaces minutely granulate. Their posterior roughened by numerous tubercles, which are arranged in curved series, presenting their concavities forward. The mesial keel is often crenulate. The posterior margins are provided with sub-spinous tubercles. The last true abdominal scutum presents superiorly a pair of strongly pronounced, nearly straight crenulate ridges. These, although convergent posteriorly, are generally not connected by any cross lines. In some specimens, however, reaching to the posterior margin, they are thus joined together. But near their proximal end a transverse row of crenations connects them with a more external ridge similar with and nearly parallel to themselves. The tail in the male is long and slender. In the female, both shorter and more robust. The median lateral crests exist only on the first joint. The four anterior joints have the superior, supero-lateral, the infero-lateral, and the inferior crests well developed. The inferior ridges of the fourth segment are often not crenulate. The penultimate articulation in the male is very often subcylindrical and without a crest. We have examined the young of this species from those a few lines in length to the adult. They are first of a dark purple color with a light median stripe. But they soon acquire the peculiar specific charac-

ters. They are perfectly distinct from "*Buthus vitatus*, Say," of Girard. The foregoing description is taken from Florida specimens. Those from more southern climes have the tails shorter and more massive. Their crests are more strongly pronounced and denticulate, and even serrate, and the penultimate joint shorter and less cylindrical in the male. Even in that sex it is indeed often irregularly parallelipedal, with well-marked crenulate or denticulate ridges. The last joint and sting are longer in the tropical specimens. The palpi are somewhat more hairy and more denticulate. But we have traced the gradations through all shades, from one extreme to the other. Mr. Gervais, in separating his species, seems to have relied to some extent on the number of teeth to the comb. But an extended examination has convinced us that, here, at least, this character is entirely unreliable. The geographical range is very extensive. We have seen numerous specimens from Florida, Cuba and Panama. Gervais describes it as coming from Guiana. His *S. De Geerii*, he states to be an inhabitant of Chili, Carthagena and Santa Fe de Bogota. *S. Edwardsii* of the two latter places. *S. obscurus*, of Columbia and Guiana. So it is likely that the species is common to most of the countries of tropical America. If it is identical with *Androctonus biaculeatus* of Lucas, as seems plausible, it is also an inhabitant of the Canary Islands. The facility of its carriage from one port to another, in cargoes of lumber, &c., may, in part, account for its wide distribution.

Length of body. ♂ unc. $1\frac{1}{4}$ ♀ $1\frac{3}{8}$ of tail ♂ unc. $2\frac{1}{4}$ ♀ 2.

B. CAROLINIANUS.—B. fulvus, vitis duabus, dorsalibus, fuscis, latis, interruptis, antice coalescentibus; cephalothorace late sed haud profunde emarginato, medio canaliculato; oculis lateralibus in serie recta positis; palpis gracilibus, superficie antica spinulis paucibus asperata, cristis leviter crenulatis; manibus vix tumidis, brevibus; digitis valde elongatis, gracilibus, curvatis; abdomine medio carinato, cauda gracile, infra vitata, minute crenulata; spiculo spinulo parvissimo instructo; pectinis dentibus 21-25; lateribus nigro-fusco.

Scorpio carolinianus, Palisot de Beauvois, Insect. Recu. en Afrique et en Ameriq. p. 190, pl. v. fig. 3, 1805.

Buthus vitatus, Say, Journ. Acad. Nat. Sci. 1. series, vol. ii. p. 61, haud *B. vitatus*, Guérin, Voy. du Coquille, vol. ii. part. ii. p. 50.

?? *Scorpio Americanus*, De Gerr, Mem. vol. vii. p. 135, pl. 41, figs. 9-10.

Scorpio (Aureus) vitatus. "*Buthus vitatus*, Say," Girard, Marcy's Report, p. 269, partim.

The cephalothorax is slightly emarginate in front. The anterior angles are rounded. The two dark stripes are so dilated and coalesced before the median eyes, as to form a well-marked triangle, with its apex directed posteriorly. The surface is very rough, uneven, and marked with lateral, oblique furrows. The lateral ocelli are of equal size, and arranged upon two converging straight lines. The median are placed a little in front of the middle of the cephalothorax. The mandibles, being light-yellow, are quite prominent. The maxillary palpi in the females scarcely equal, but in the males a little exceed the body in length. Their crests are very feebly crenulate.

The proximal end of the third joints is somewhat tumid, and has on its anterior face several tuberculoid spinules. The hands are but little larger than the preceding articulation. Their faintly pronounced crests are not crenulate. The movable finger is somewhat longer than the fixed. The opposing surfaces are armed, with both imbricated, obliquely longitudinal series of very minute tuberculoid teeth, and also a row of larger ones on either side. The sides of the body are generally fuscous, but in some specimens, perhaps from the action of alcohol, they are of a much lighter tint. The legs are light yellow, strongly compressed, more or less tuberculate, and provided with crenulate lines. The tail in both sexes is much longer than the body. The superior surface is broadly furrowed, but the penultimate segment, especially in the male, often has the upper surface rounded, and the furrow obsolete. The four anterior caudal joints are protected on each side by superior, supero-lateral, infero-lateral, and inferior minutely crenulate crests. The first has in addition to these a median lateral. The penultimate segment is much longer than either of the others, and has two supero and infero-lateral, with a single median inferior ridge. But in addition to these, it often has the rudiments of the median lateral and lateral inferior. The number of teeth composing the comb varies in the normal adult from 21-25. Beauvois originally described it as possessing only eighteen. We have seen one or two with that number, but think they are redeveloped appendages. Mr. Girard considered this species as the young of *S. biaculeatus*. Although this at the first glance appears somewhat plausible, yet the examination of a large suite of specimens has convinced us that he is mistaken. We have seen a number of immature individuals of *S. biaculeatus* all of which possessed the essential characters of the adult. The geographical range of this species is very great. From the Southern Atlantic States, it extends through Texas along that curious well-known belt of almost tropical animal life into Southern Kansas, and perhaps still farther north.

Length of body ♂ $\frac{3}{4}$ unc. ♀ unc. 1 tail ♂ unc. 1 $\frac{3}{8}$ ♀ unc. 1 $\frac{1}{4}$.

B. CALIFORNICUS.—*B.* dilute olivaceo-fulvus, fusco vitatus; cephalothoracæ antice late sed haud profunde emarginato, medio valde canaliculato; oculis lateralibus in serie recta positis; palpis modice gracilibus, marginibus distincte crenulatis; manibus modice tumidis; digitis nonnihil elongatis et curvatis; abdomine medio valde carinato, tuberculis parvis valde asperato; pedibus flavis, compressis, proximis lineis elevatis vel crenulatis vel denticulatis impressis, ultimis pilosis; pectinis dentibus 21; cauda nonnihil elongata, leviter crenulata; spiculo spinulo basali parvissimo armato.

Scorpio (Atreus) californicus, Girard, Marey's Report.

In our single specimen the cephalothorax is yellow and immaculate, with the exception of the eye spot. It is, however, bordered with black. Anteriorly it is slightly emarginate. The surface is very rough, with the lateral grooves indistinct, but is furnished posteriorly with a curved series of tubercles on each side. Each abdominal scutum, save the last, has a well-marked curved series of tubercles on each side. The

last is three-sided, and is protected by six denticulate lines, so placed as to form triangles with one another, as in *B. carolinianus*. The median keel is more or less crenulate. The first four joints of the tail are furnished with the usual superior, supero and infero-lateral and inferior crests. They are minutely serrulate. The first joint has a well-marked median lateral raised line; the second the rudiments of it. The fifth articulation is the longest, and has the ridges obsolete. The last joint is small, and is furnished with a rudimentary spine at the base of the sting. The palpi are rather slender, but their crests are strongly pronounced and crenulate. Their inner surface is furnished with small, thick, tuberculoid spines. The hands are rather small, with several obsolete crests. The fingers are nearly twice as long. Their opposing margins are armed with median, oblique, imbricated rows of minute teeth, with a series of larger ones on either side. This species is very closely allied to the preceding, and very possibly may prove identical with it. We have seen only the type of Mr. Girard's description. It appears to differ from *B. carolinianus*, in the greater roughness of the body, in the more strongly marked denticulate crests of the tail, in the maxillary palpi having their inner surface more spinous, and their ridges more crenulate, and finally in the color.

Hab.—California.

B. LESUEURII.—*B. brunneus*; cephalothorace antico distincte emarginato, medio valde canaliculato, utrinque postice sulco curvato; oculis lateralibus in serie fere recta dispositis; palpis gracilibus, tuberculatis, sed vix carinatis et cauda manibusque et venuste politis et aurantiis et leviter pilosis; illis valdissime tumidis, subeordiformibus, enormiter areolatis; digitis brevibus, robustis, nigro-fuscis, curvatis, marginibus opponentibus indistincte denticulatis; abdomine minutissime granulato, haud carinato; pedibus flavis, compressis; cauda breve, crasse; cristis valde crenulatis, interdum denticulatis; articulo ultimo magno, spiculo parvo sed spinulo basali armato; pectinis dentibus 8.

B. lesueurii, Gervais, Archiv. Mus. vol. iii. p. 226, pl. xi. fig. 27--29. Apteris, vol. iii. p. 61, 62.

The cephalothorax of this elegant scorpion has its surface polished, but very minutely granulate. The median furrow is very strongly pronounced. Posteriorly, on each side, there is a sulcus so curved that the inner portion of it is longitudinal, but the outer transverse. The crests of the palpi are not all well marked. The hands are furnished with but one raised line. This placed on their posterior border, although well pronounced, is not at all crenulate. The caudal joints are both broad and very short. Their superior surface is deeply sulcate. A more or less forcibly crenulate or denticulate median lateral crest exists on the first three; sometimes feebly pronounced on the third; rudiments only on the fourth and fifth. The first four joints are all provided with superior, supero and infero-lateral and inferior crests. The supero-lateral commences by a broad, thin, but not denticulate articular process. The penultimate segment has supero and infero-lateral ridges as in the others. It has,

however, no superior, and but a single median inferior crest. Its distal extremity is furnished on its lower aspect with two curved series of denticules. One of these is semi-elliptical; the other semi-circular. The last joint is large. Its superior surface is triangular, flat, or even depressed, and provided with well developed articular processes. Its inferior aspect is somewhat tuberculate, and is furnished with two obsolete grooves, and a row of denticules around its proximal extremity.

Length of body ♂ $\frac{5}{8}$ unc. ♀ $\frac{3}{4}$ tail ♂ $\frac{3}{4}$ ♀ $\frac{5}{8}$ unc.

The only specimens that we have seen were collected in Cuba, by Mr. Wright, and presented by him to the Academy. It is possible that this species is not a native of the United States. As our description is drawn up from a foreign specimen, we append the original one of M. Gervais.

“*Scorpion de Lesueur (S. Lesueurii).*”

“Troisième paire d’yeux latéraux sur la même ligne que les autres, plus petite; céphalothorax échancré en avant, lissé, ainsi que l’abdomen et le reste du corps sauf les carènes caudales; aneaux de la queue épais et courts; une carène médio latérale sur les premier, deuxième et troisième et en rudiment sur la quatrième; une seule latéro-supère au cinquième; vésicule plus grand que l’aiguillon, aplatie en dessus, rugueuse en dessous; aiguillon subitement courbé; une épine obtusé à sa base; 8 dents au peignes; main cordiforme à doigts courts, l’immobile le plus court; couleur fauve testacé en dessus et sous la queue; dessous de l’abdomen et pieds blonds; quelques poils au palpes, aux pieds et à la queue. Long. totale 0.050.”

BUTHUS EXILICAUDA.—*B. dilute aurantiaco-brunneus, interdum obscure maculatus; dorso tuberculis parvis, asperato; cephalothorace antico late sed haud profunde emarginato; palpis nonnihil gracilibus, subelongatis; manibus parvissimis; digitis valde elongatis, gracilibus, curvatis; cauda gracile, nonnihil subelougata; spiculo modice longo, valde curvato, sine spinulo basali; pectinis dentibus fere 18.*

B. exilicauda. Wood. Proc. Acad. Nat. Sci., April, 1863.

The cephalothorax is medianally canaliculate, and anteriorly broadly but very shallowly emarginate. The lateral eyes are arranged in a straight or nearly straight series. The palpi have their surface quite rough, and are somewhat elongate and slender. The second article has four minutely crenulated crests, besides minute tubercles on its anterior face. The third has five ridges, besides larger tubercles on its front surface. The anterior aspect of the hand is very convex. The posterior border is ornamented by an obsolete crenulate ridge. The opposing margins of the fingers are armed with obliquely longitudinal imbricated rows of minute teeth, with a series of distant larger ones on either side. The caudal surface is rough. The first joint has very minutely denticulate superior, supero-, median-, infero-lateral, and inferior ridges. The next three articles have the same crests, except the median lateral. There are generally no distinct ridges on the penultimate segment. The last joint is short, and very narrow, but quite thick. Its superior aspect is not complanate; its inferior is strongly convex. The lower surface of the tail is generally marked

with a median longitudinal stripe. The sternal plate is triangular, with its apex truncate.

Length of body, ♂ 7 lines, ♀ 8 lines: of tail, ♂ 13 lines, ♀ 12 lines.

Hab.—Lower California. Museum of Smithsonian Institution.

B. hirsutus.—*B. brunneus*: palpis, pedibus caudaque dilute aurantiacis, longe pilosis; cephalothorace lato, margine antico non solum haud emarginato sed etiam convexo; oculis lateralibus in serie valde curvata dispositis; palpis crassibus, marginibus nonnihil crenulatis; manibus modice tumidis, obsolete septemplicatis, marginibus posticis anticisque tuberculatis; digitis valde elongatis robustis, curvatis, obsolete plicatis; pectinis dentibus 25—30; abdomine nonnihil leve, haud carinato; spiculo sine spinulo basali. (Pl. 40, fig. 1, 1a, 1b, 1c.)

B. hirsutus, Wood. Proc. Acad. Nat. Sci., April, 1863.

The common tint of the dorsum is a very dark reddish-brown, but it varies greatly, in some specimens being as light as the legs, in others even olive. In the typical pattern, whilst the penultimate caudal segment is of the same reddish-brown as the body, the terminal is very light. The cephalothorax is broad, and has its surface minutely granulate. The median furrow is strongly pronounced, and is intersected by three transverse ones. The most anterior of these crosses it at the position of the median ocelli; the most posterior just in front of the hinder margin. Rarely these are somewhat obsolete, and sometimes they are slightly oblique. The opposing edges of the fingers are armed with obliquely longitudinal imbricated rows of small teeth, with a series of larger distant ones on each side. The surfaces of the abdominal scuta are quite smooth, but their posterior borders are tuberculate. Anteriorly they are impressed with two crescentic linear furrows. The legs are compressed and hairy; their edges are more or less crenulate. The tail is long, massive, rough and very hairy. At the proximal end of each of the first four joints, there is a pair of broad, thin, minutely denticulate articular processes. On the distal extremity of the fourth there is a nondenticulate pair. The superior, supero and median lateral crests of the first four articles are strongly but irregularly crenate. The median is evanescent, on each, anteriorly. The inferior and infero-lateral ridges are smooth on the two anterior joints, on the third they are slightly, on the fourth distinctly crenate. The supero and median lateral crests of the penultimate segment are strongly crenulate; the infero lateral and median inferior strongly denticulate. The last joint is short, swollen and very hairy. Its articular processes are large, but not dentate. Its superior surface is triangular, smooth and complanate, or even depressed; its inferior is tuberculate, and traversed by two grooves on each side.

Length of body, 1½ inches: of tail, 2½ inches.

Hab.—California. J. Xantus de Vesey. Smithsonian Museum.

B. EMARGINATICEPS.—*B. olivaceo-fulvus*; palpis, pedibus caudaque longe pilosis, cephalothorace antice late et profundissime emarginato, sed alibi *B. hirsuti* illo simillimo, palpis crassibus; margini-

bus nonnihil crenulatis; manibus modice tumidis, obsolete septemplicatis, marginibus anticis posticisque tuberculatis; pectinus dentibus 30; abdomine nonnihil leve, medio haud carinato; spiculo sine spinulo basali. (Pl. 40, fig. 4.)

B. emarginaticeps, Wood. Proc. Acad. Nat. Sci., April, 1863.

The color of our single specimen is an olive yellow tint, with a very dark crescentic blotch at the position of the median eyes. But in this pattern it does not differ from some individuals of the preceding species. The cephalothorax differs from that of *B. hirsutus* only in one character: In its anterior border is a very large emargination, which reaches about one-third of the distance to the median eyes. The abdomen is precisely like the preceding species. The tail is perhaps a little less massive. But it also so closely resembles that of *B. hirsutus* the description of one will answer for the other.

Length of body, 1 $\frac{1}{2}$ inches; of tail, 2 $\frac{1}{2}$ inches.

Hab.—Lower California. J. Xantus de Vesey. Smithsonian Museum.

B. EUSTHENURA.—*B. aurantiaco brunneus*; dorso tuberculis minimis asperato; cephalothorace haud emarginato, medio canaliculato; oculis lateralibus utrinque in serie curvata dispositis; palpis gracilibus longis, longe sparse pilosis; manibus parvis, haud tumidis, subeylindraceis; cauda modice longa, pererassa; spiculo brevissimo, valde curvato, sine spinulo basali; pectinis dentibus fere 17.

B. eusthenura, Wood. Proc. Acad. Nat. Sci., April, 1863.

The surface of the cephalothorax is rough and uneven. The hands are very small and smooth, with some traces of the eight facets so distinct in *B. punctipalpi*. The fingers are about as long as the hand, rather slender, with their opposing margins armed with a row of very sharp, minute teeth, and much larger ones placed at intervals on one side of their distal portion. The legs are somewhat compressed; very long and slender. The tail, when compared with the body, is very heavy. On the first four joints the superior and supero-lateral crests are alone serrulate. The superior terminates in a spine, feebly produced on the fourth article. The inferior and infero-lateral crests are distinct, but not crenulate. The penultimate segment has well-marked but not crenate, supero and infero-lateral ridges, besides a single median inferior and median lateral on their proximal portion. The terminal joint resembles that of *B. punctipalpi*, but is much larger and thicker, and not so prolonged posteriorly. Sternal plate pentangular.

Length of body, ♂ 7 lines; of tail, ♂ 13 lines.

Hab.—Cape St. Lucas. J. Xantus de Vesey. Smithsonian Museum.

B. BOREUS.—*B. fulvus*; cephalothorace antico haud emarginato; oculis lateralibus in serie curvata positus; palpis modice gracilibus, marginibus valde crenulatis; manibus tumidis, brevibus, lineis elevatis crenulatis 8; digitis nonnihil elongatis, curvatis; abdomine medio nonnihil carinata, fere leve; cauda nonnihil breve, denticulata, spiculo sine spinulo basali; pectinis dentibus 18; lateribus dilute flavis.

Scorpio (Telegonus) boreus, Girard, Marey's Report, p. 257, pl. 17, fig. 5—7 [partim.]

The surface of the cephalothorax is much less granular and with a less strongly pronounced median keel than in *B. carolinianus*. The median eyes are anterior to its middle. The lateral ocelli are arranged in the form of arcs, with their convexity looking forwards and outwards. Overhanging them is a pair of tumid swellings. The proximal three joints of the palpi are irregularly parallelopipedal, with their angles well marked and denticulate. The proximal portion of the inner surface of the third has several small tuberculoid spines similar to but larger than those of *B. carolinianus*. The hand is considerably larger than in that species. It is marked with eight raised, faintly crenulate lines, which separate as many facets. The fingers are somewhat elongate and rather stout. Their opposing margins have a wavy outline, and are armed with a continuous series of minute teeth, with larger ones anterior to them. The anterior joints of the tail are very short. The furrow on the superior surface is deeply excavated. The first four articulations are furnished each with two denticulate or strongly crenulate superior and supero-lateral crests. The median lateral exists only in a well marked degree on the first; it also is denticulate. Each of the four has two infero-lateral and two inferior ridges. These are often illy pronounced and not crenulate. The penultimate articulation has two superior and infero-lateral and a single median inferior raised line. Sometimes the rudiments of the supero-lateral also exist. The sting is long and slender. The legs are strongly compressed and pilose. The sternal plate is pentangular. The specimen referred to by Mr. Girard as coming from Eagle Pass we have examined, and do not think identical with this species.

Hab.—Utah. Smithsonian Museum.

B. PUNCTIPALPI.—*B. aurantiaco-brunneus*; dorso tuberculis minimis asperato; cephalothorace medio canaliculato, antice nonnihil emarginato; palpis dense minutissime punctatis, nonnihil robustis; manibus magnis, tumidis, octo faciebus indistincte instructis; cauda modice longa et crasse; articulo penultimo longo; ultimo parvo, supra complanato; spiculo gracilimo, valde elongato, gradatim curvato, sine spinulo basali; pectinis dentibus fere 20.

B. punctipalpi, Wood. Proc. Acad. Nat. Sci., April, 1863.

All of our specimens are immaculate; some of them shade off in color towards an olive. The lateral eyes, three in number, are generally arranged in a slightly, but occasionally in a strongly curved line. The cephalothorax, and, indeed, the whole dorsum is roughened by very numerous minute tubercles. The scuta are more or less distinctly medianly keeled. The joints of the palpi are irregularly parallelopipedal, with their margins mostly well defined and crenulate. The second joint has on its anterior face one or two crenate ridges; its posterior margin is

rounded off. The hands are large, and have only their superior and inferior edges distinctly crenate. The fingers are robust and moderately long, with their opposing margins armed with a single row of teeth, with larger ones at regular intervals on one side of their distal portion. The feet are compressed. The tail is rather robust. The first three joints have their superior and supero-lateral ridges sharply serrate, and terminating posteriorly in a spine. In the fourth they are the same, except that the terminal spinule of the supero-lateral crest is wanting. The first four joints have infero-lateral and inferior crests, the former mostly distinctly, the latter indistinctly, (except on the posterior segment,) serrulate. The penultimate articulation is long, and armed with distinctly serrulate supero-lateral, infero-lateral crests, as well as a single median inferior; and on its anterior half, central lateral ridges. Its form is that of a parallelepipedon thinned at its two extremities. The superior surface of the last joint is triangular and complanate; the inferior is convex. The sting is very long, slender and gracefully curved. The sternal plate is pentangular.

Length of body, ♂ 10 lines, ♀ 12 lines; of tail, ♂ 16 lines, ♀ 14 lines.

Hab.—Cape St. Lucas, J. Xantus de Vesey. Smithsonian Museum.

B. spinigerus.—*B. dilute olivaceo-fulvus, fusco vittatus*; cephalothorace antico haud emarginato, medio canaliculato; oculis lateralibus in serie curvata positis; palpis modice robustis, marginibus valde crenulatis; manibus nonnihil tumidis, lineis elevatis obsoletis; digitis nonnihil elongatis, modice curvatis, marginibus oppositibus et dentatis et crenulatis; abdominibus mediis nonnihil carinatis; cauda modice brevis, robustissima, lineis elevatis denticulatis; spiculo sine spinulo basali; pectinis dentibus 20—25. Pl. 40, fig. 2, 2a, 2b.

B. spinigerus, Wood. Proc. Acad. Nat. Sci., April, 1863.

The color of this species varies; generally each abdominal plate has a dark brown V or W-shaped marking, forming a continuous stripe on each side. This is obsolete on the cephalothorax. But this distinctness of pattern is often lost, and the whole body involved in an olive-brown tint. The palpi closely resembles those of *B. boreus*, but have the hand not so large, and the facets and elevated lines not so strongly pronounced. The opposing margins of the fingers resemble those of that species in their armature, but want the wavy outline. On each side of the abdominal median line are numerous small black tubercles, so arranged as to form more or less prominent ridges. There is also a series of these on the posterior border of each of the abdominal scuta. The legs and tail are of a dirty yellow color. The anterior four caudal joints are short and very robust, the breadth of the first three often equalling their length. These four joints are provided with denticulate superior and supero-lateral crests. In the anterior three these are of nearly the same length, and terminate distally in a small spine. In the fourth, the dorsal is

only two-thirds the length of the other raised line, and the joint is then scooped out to the level of the latter, which does not end in a spine. On the first four articulations the middle lateral crests are almost entirely obsolete. On the fifth they are more strongly pronounced. This joint is much more elongate than the others. Its supero-lateral crests are not so strongly denticulate as those of the others, and have no spine at their distal extremity. The infero-lateral and inferior crest exist on the first four joints as four black, occasionally somewhat obsolete, ridges, but are not crenulate. On the fifth both the inferior-lateral and the single median-inferior crests are denticulate. The sixth caudal joint is somewhat ovate, flattened above, and without ridges. On the lower surface there exists a faint mesial groove. The sting is slender and strongly curved.

Length of body ♂ ♀ one inch; of tail, ♀ one inch, two lines, ♂ one inch, four lines.

Hab.—Texas. Smithsonian Museum.

SCORPIO PUNCTATUS.—“Scorpio (punctatus) otonoculus, pectinibus 16-dentatis, manibus elongatis; digitis filiformibus; cauda corporis longitudine; aeuleo basi mucronato.”

“Enfin le troisieme caractere de ce scorpion, c'est que le dernier nœud de la queue, qui est le support de l'aigulon, est ovale & garni d'arrêtes formées par des points élevés; mais ce qu'on lui trouve de remarquable, c'est qu'il se prolonge en devant & en dessous de l'aigillon en une espee de éminence comme une pointe avancée, garnie de chaque côté d'une petite épine & tout près de l'origine de ce nœud on voit au bord extérieur un petit tubercule arrondi.”

Scorpio punctatus, De Géer, Mem. des Insect., vol. vii. p. 343, pl. 41, fig. 1.

With this species we are not at all acquainted, nor does it seem likely that we ever shall be. We think it scarcely probable that any identification will be established. *S. punctatus*, Gervais, Apteres, vol. iii. p. 36, is probably different.

S. MACULATUS, De Geer, Mem. Insect., vol. vii. p. 346, pl. 41, fig. 9.

We are not acquainted with this species, which also is scarcely recognizable. The describer says, “C'est a Surinam & en Pensylvanie qu'on trouve les scorpions de cette espee”!!

The species has certainly become extinct in the latter locality since 1778!

S. TESTACUS, De Geer, Mem. Insect., vol. vii. p. 347, pl. 41, fig. 11.

S. AUSTRALIS, De Geer, Mem. Insect., vol. vii. p. 348, pl. 41, fig. 5.

Gen. III. CENTRURUS.

Gen. *Scorpio* (partim) subgen. *Centrurus*, Gervais, Apteres, vol. iii. p. —.

Fam. *Centrurides*. Gen. *Centrurus*, *Vaejovis*, Koch, Uebers Arachnid. Syst., p. 38.

1. PHAIODACTYLUS.—*C. brunneo-fulvus*; cephalothorace sparse punctato, medio leviter caualiculato, antico et abbreviato et rotundato et nonnihil emarginato, postico transverse sulcato; manibus caudaque venuste politis et pedibus nonnihil pilosis; palpis robustis, angulis vel valde crenulatis vel denticulatis, articuli tertii superficie antica spinulo unico (interdum duobus); manibus valdissime tumidis, longis, indistincte octoplicatis; digitis latis, robustissimis, modice brevibus, curvatis, marginibus opponentibus acute denticulatis; pedibus flavis; abdomine læve; cauda breve, cristis superioribus obsoletis, superficie superiore nonnihil minute granulata; articulo quarto haud carinato; articulo ultimo maximo, spiculo parvo sine spinulo basali; pectinis dentibus 7—9. Pl. 40, fig. 3, 3a, 3b.

C. phaiodactylus, Wood. Proc. Acad. Nat. Sci., April, 1863.

The cephalothorax is not produced as far anteriorly as is commonly the case. It is impressed with a faint transverse groove at the position of the median ocelli, and with another, more distinctly defined, on its posterior third. These channels separate three pairs of slightly pronounced elevations, which successively decrease in size from the first. The first joint of the palpi has all of its margins armed with distinct obtuse denticules, excepting only the postero-inferior, which is rounded and concave, and crenate only on its proximal third. The third article is much larger than the second, and has only its anterior margins crenate. Its posterior surface as well as that of the hand, is sparsely and irregularly punctate. The anterior aspect of the hand is minutely tuberculate. The first joint of the mandibles is very long, almost always extending as far forward as the cephalothorax, and often much beyond it. The distal portion of these organs, with the "pincers," is black. The median eyes are placed upon a single black elevation in the middle third of the cephalothorax. The first two lateral ocelli are somewhat smaller than the median; the third is much smaller; the fourth is at right angles to the third, and is still less. The three anterior joints of the tail are short and rather broad. Their superior crests are entirely, and their supero-lateral almost, obsolete; their inferior and infero-lateral are well marked and broadly crenate. All of the ridges of the fourth segment are obsolete. The penultimate joint is elongate and slender. Its lower surface is rough, and has two strongly, but obtusely denticulate, infero-lateral, and a single median inferior crest. The last segment is immensely swollen. Its distal portion is suddenly and very strongly contracted, and then inflated slightly again, so as to form a knob, as it were, on the base of the sting.

Length of body, $1\frac{1}{4}$ inches; of tail, $1\frac{1}{2}$ inches.

Hab.—Utah Territory. Smithsonian Museum. M. McCarthy, Esq.

VÆJJOVIS CAROLINUS.—"Gelbraun, dunkelbraun gefleckt; die Taster rostfarbig mit rundrippigen Händen; der Schwanz ziemlich dick, oben und unten mit gezähnten Kielen.

"Läng des Vorder- und Hinterleibes $4\frac{1}{4}$ ", des schwanzes $6\frac{1}{2}$ ".

"Der Vorderleib hinten breit, im Ganzen nieder, oben etwas flach und schwielig, fast glanzlos; die Mittelfurche vom Vorderrande bis zum Hinterrande durchziehend, ziemlich tief, die zwei Kiele auf dem

Augenhügel etwas geglättet, letzter sich vorn und hinten gleichmassig ausspizend; die Beulen am Hinterkopfe hinten etwas gerundet; die Seitenfalten geschwungen und ziemlich tief, vom Hinterwinkel der Beulen bis an die breiten Seitenumschläge ziehend; die Fläche des Vorderleibes bei guter Vergrößerung fein geriebelt. Die Augen in ganz geregelter Stellung.

“Die Ringschilde des Hinterleibes flach gewölbt, ohne Glanz, die Vorderrandsumschläge etwas glatt und mattglänzend, auf dem Rücken ein seichter Eindruck mit einem niederen Längskiele, am Hinterrande eine Reihe sehr feiner Körnchen; das Endschild von gewöhnlicher Gestalt; deutlich feinkörnig, hinten beiderseits mit zwei schiefen gezähnelten Längsrippen, den Vorrandschlag nicht erreichend. Der Schwanz mattglänzend, von oben gesehen bis in die Hälfte des fünften Gliedes gleichbreit, und mit etwas tief ausgehöhlter Fläche, das fünfte Glied gegen die Spitze etwas schmaler, die Kiele aller fünf Glieder etwas hoch und geschärft, und alle fein gezähnt oder gekörnt, die untern des ersten und zweiten weinger deutlich als die andern; das Endglied länglich eiförmig, oben flach und etwas glänzend, unten bauchig mit sehr seichter aber ziemlich breiter Längsvertiefung und fein gekörnten Zwischenerhöhungen; der Stachel mässig lang und sanft gebogen. Die Taster von mässiger Länge, Vorder- und Hinterarm flach seitig mit sehr fein gekörnten Kielen des Hinterarms; die Hände am Ballen aufgetrieben, merklich dicker als der Vorderarm, etwas glänzend, mit niedern, abgerundeten Längsrippen in der gewöhnlichen Lage und mit ziemlich stark gebogenen dünnen Fingern. Die Unterseite und die Beine wie bei der vorhergehenden Art, mit welcher die gegenwärtige überhaupt viel Aehnlichkeit hat.”

“Der Kopf, die Ringschilde des Hinterleibes und der Schwanz gelbbraunlich, erster dunkelbraun gefleckt, auf letzterm vor dem Hinterrande ein dunkelbrauner Querstreif und überdiess mit dunkelbrauner Mischung; die Kiele des Schwanzes etwas dunkler als die übrige Fläche, das Endglied des letztern rostroth, mit dunkler rostrother Spitze des Stachels. Die Taster gelbbraunlich mit dunklern Kielen an den Gliedern bis zur Hand; die Hände dunkler, aufs Rostbraune ziehend, die Finger an der Wurzel dunkler als die Handfarbe, an der Endhälfte ins Gelbe übergehend. Unterseite des Vorder- und Hinterleibes gelb, mit olivengelbem Anstriche, die Brustkämme hellgelb, die Beine gelb, etwas heller als die Bauchfarbe.”

“Vaterland, Nord Amerika, Carolina.”

This description is copied from Hoch's *Arachniden*, Bd. x. s. 7, f. 759. It probably refers to *Scorpio carolinianus*.

Fam. II. *THELYPHONIDÆ*.

Dens mandibularis in plana verticale movens. Pedum par anticum valde elongatum, sed haud antenniforme. Abdominis appendix caudalis elongata, gracillima.

Gen. I. *THELYPHONUS*.

Oculi 8. Oculi medii 2, in cephalothoracis fronte positi. Oculi laterales utrinque 3 in serie triangulare dispositi.

Thelyphonus, Latreille, Histoire Naturelle des Crust., tome vii. p. 130. 1804. Gervais, Aptères, vol. iii. p. 9.

In this genus the cephalothorax has its carapace or dorsal shield more or less irregular, minutely tuberculate or granulate, and very generally medianly canaliculate.

Posteriorly, in the median line, there exists a depression, mostly well-marked, from which radiate obsolete grooves. Anteriorly the carapace is rapidly narrowed, but is possessed of a vertical aspect elsewhere wanting, having a sharp edge between it and the upper surface. The median pair of eyes are situated on a tubercle. They are sensibly larger than the lateral. At the hinder end of the edge formed by the folding down of the dorsal shield, spoken of above, are the posterior or lateral eyes, arranged in the form of a triangle, three on each side. The upper surface of the abdomen is generally roughened, like the cephalothorax. The lower surface smooth. The specific characters are principally founded on the aspect and armature of the maxillary palpi. There has as yet only a single species been found in the United States.

T. GIGANTEUS.—*T. saturate rubro-castaneo; cephalothorace enormiter subrude punctato; palpis crassis, maximis, rude punctatis, in femina longis, in mare longissimis; articulo secundo supra quinque spinoso, infra bispinoso; tertio et supra et infra unispinoso; quarto supra spina maxima longissimaque, spinæ marginibus antico et postico denticulato; quinto extra spina maxima et crassissima, spinæ marginibus et antico et postico denticulato; digito crassissimo, infra et supra valde denticulato.*

Thelyphonus giganteus, Lucas, *Magazin de Zoologie* (Guerin) 1835, cl. viii. pl. 8. Gervais, *Apteres*, iii. p. 12. Koch *Arachniden*. Bd. x. p. 21, *Fab.* 331, fig. 767, et *Fab.* 332, fig. 768.

Thelyp. excubitor, Girard, *Marcy's Report of Explorations of Red River*, p. 265, fig. xvii. 1-4.

The general color of this species is very deep reddish-chestnut. The ventral surface is much lighter than the dorsal. The sides of the abdomen of the female when distended with eggs, are of a fawn tint, spotted with black. The cephalothorax is very rough, with its surface irregularly rudely punctate, or perhaps more properly excavated. It has an interrupted mesial groove. The maxillary palpi are very massive and long. In the female they are much longer than in the male. The former sex is the *Thelyp. excubitor* of Girard. This we have proven by the dissection of a number of individuals; a figure of each sex is given by Koch. The first or immovable joint of the palpi has its anterior spine large and curved. The second has its superior surface expanded anteriorly into a broad, spine-like process. The curved margin of this is armed with five short stout spines. The third joint, superiorly, is provided with a robust spine, inferiorly with one generally fully a line in length. The legs are stout, tuberculate, and sparingly pilose. The abdomen is distantly, coarsely, and thickly minutely punctate. The larger punctations on the superior surface are often quite peculiar, appearing somewhat like the teeth of a rasp, as if they had been punched out.

Hab.—South Western United States, Mexico.

Fam. III. *PHRYNIDÆ*.

Dens mandibularis in plana verticale moveus. Abdominis sine appendice. Pedum par anticum elongatissimum, antenniforme.

Gen. *PHRYNUS*.

Oculi 8. Oculi laterales utrinque, 3, in serie triangulare dispositi.

The cephalothorax in this genus is very broad and more or less reniform. It is perhaps not quite so rough as in the genus *Phrynus*. The important specific characters are mostly drawn from the maxillary palpi. There is as yet no species known to exist within the United States; but we append the description of an unknown form brought from Lower California by Mr. Xantus.

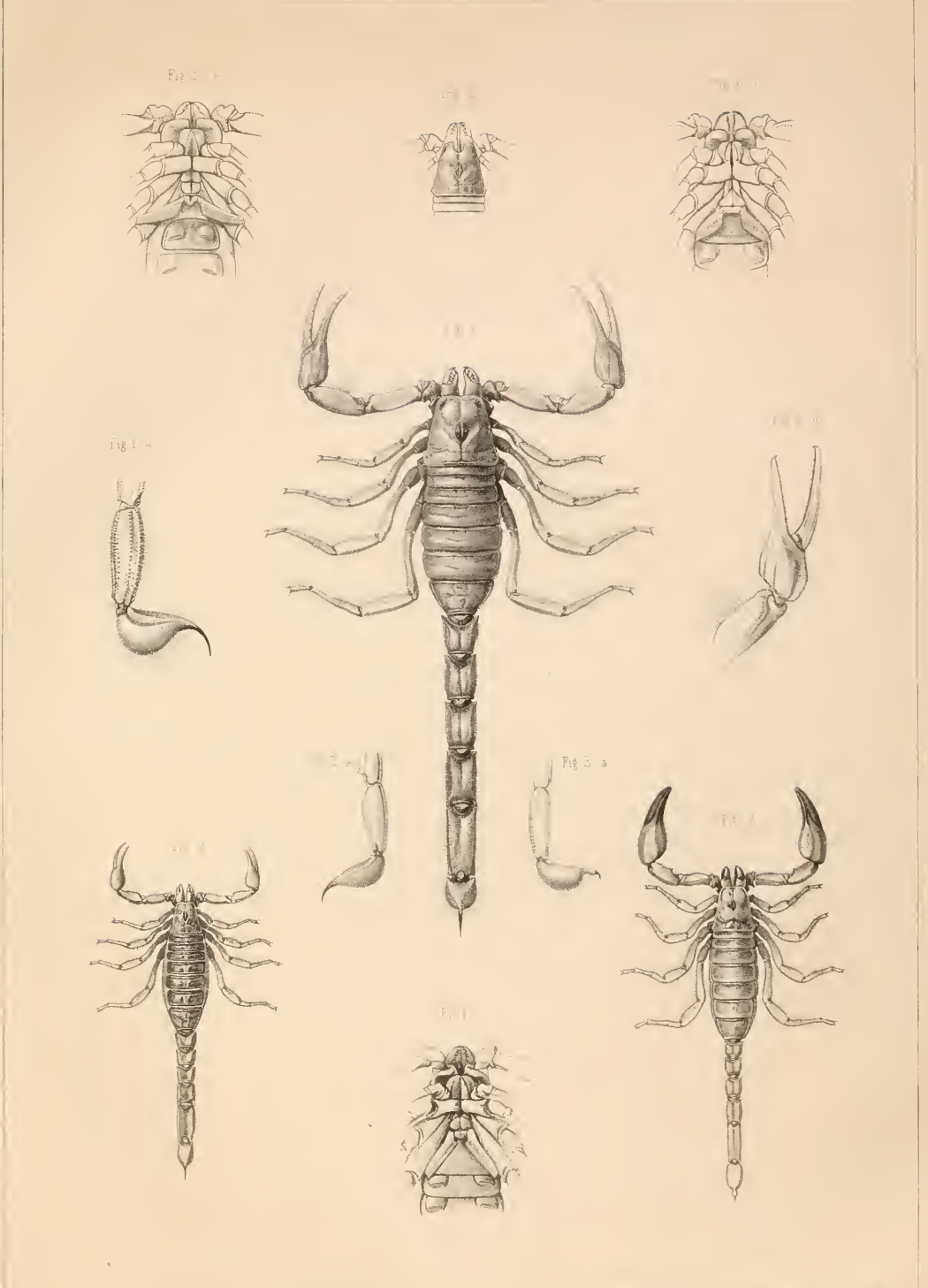
P. ASPERATIPES.—*P.* dilute aurantiacus saturate rubido-brunneo maculatus; cephalothorace lato, reniforme, abdomineque tuberculis parvis sparsis et granulis minutis numerosis asperatis; palpis magnis, latis, nonnihil semi-cylindratis; articuli secundi superficie antica et spinulis parvis numerosis et uno vel duobus majoribus armata; articuli tertii margine superiore spinis 4, inferiore spinis 5; articuli tertio quartique superficiebus posticis tuberculis parvis spinosis in seriebus rectis dispositis armatis; illius margine superiore ultimo spinis maximis 3 et 2—3 modicis instructo; margine inferiore spinis magnis 2 et 2—3 parvis armato; articulo quinto spina maxima unica et spinulis modicis duobus instructo; femoribus tuberculis spinosis numerosis asperatis.

P. asperatipes, Wood. Proc. Acad. Nat. Sci., April, 1863.

The color of our single specimen is a very light orange. The cephalothorax has a median longitudinal sulcus distinct anteriorly, but evanescent posteriorly. A short distance behind the centre of the cephalothorax is a well defined transverse groove, extending nearly across one-third of its breadth. Posterior to this, and connected with it by the median sulcus (here very well marked), is a transverse furrow similar to the other, but only about one-third its length. The three sulci are of a dark-brown tint. Besides these, there are on each side of the cephalothorax four dark, but more or less obsolete grooves. At the position of the lateral eyes on each side there exists a dark-brown spot, and between them and the anterior transverse groove is a pair of similarly colored round depressions. The maxillary palpi are of a more decided orange than the body. The second joint has its anterior face armed with eight or ten very small spines or spinous tubercles, and one or two larger ones. The spines on the lower margin of the third joint are longer than those on the upper. On each, the two nearest the body are much larger and more closely approximated than the others. Between the margins are a few very small spinules. The spinous tubercles on the upper portion of the posterior surface are more numerous than those on the lower. The fourth joint is

dilated superiorly in its distal portion; where on the upper margin are placed three very long acute spines, with two or three much smaller ones. The lower margin has five spines, three of them being much smaller than the other two. The moveable finger is very long and acute. The upper surface of the abdomen has along the mesial line a double row of dark-brown spots, and on either side a series of blotches of the same color,—one on each scutum. The legs and sides of the abdomen are very rough. The under surface of the abdomen is smooth.

Hab.—Lower California. Smithsonian Museum. J. Xantus de Vesey.



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Observations on the Pedipalpi of North A