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- I. EDWARD NORTON. Description of Mexican Ants noticed in the American Naturalist, April, 1868. Illustrated by 11 cuts. [Communicated April 6, 1868. Author's copies issued July, 1868. Regular issue, March, 1870]. pp. 1-10.
- II. HORATIO C. WOOD, Jr. On the Phalangeæ of the United States of America. Illustrated by 16 cuts. [Communicated Dec. 9, 1867. Author's copies issued Aug., 1868. Regular issue, March, 1870]. pp. 10-40.
- III. A. S. PACKARD, Jr. On Insects Inhabiting Salt Water. Illustrated by 6 cuts. [Communicated Dec. 7, 1867. Author's copies issued April, 1869. Regular issue, March, 1870]. pp. 41-51.
- IV. A. E. VERRILL. Synopsis of the Polyps and Corals of the North Pacific Exploring Expedition, under Commodore C. Ringgold and Capt. John Rogers, U. S. N., from 1853 to 1856. Collected by Dr. Wm. Stimpson, Naturalist to the Expedition. Part IV, Actinaria. Illustrated by 2 plates. [Concluded from Vol. V, p. 330, etc. Author's copies issued Nov., 1869. Regular issue, March, 1870]. pp. 51-104. Plates. 1-2.
- V. HORACE MANN. Flora of the Hawaiian Islands. [Concluded from Vol. V, p. 248. See Editorial Note on p. 112. Regular issue March, 1871]. pp. 105-112.
- VI. T. MARTIN TRIPPE. Notes on the Birds of Minnesota. [Communicated Jan., 1871. Regular issue, March, 1871]. pp. 118-119.
- VII. R. T. KNIGHT. Note on the Earth Worm. [Communicated 1870. Regular issue March, 1871]. p. 120.
- VIII. THEODORE GILL. Synopsis of the Primary Subdivisions of the Cetaceans. [Communicated December, 1870. Author's copies and Regular issue, March, 1871]. pp. 121-127.
- IX. ELLIOTT COUES. On the Myology of the Ornithorhynchus. [Communicated December, 1870. Author's copies and regular issue, May, 1871]. pp. 128-173.

NOTICE.

With this volume of the PROCEEDINGS AND COMMUNICATIONS OF THE ESSEX INSTITUTE the publication is brought to a close.

The proceedings at the meetings of the Institute since the close of the year 1868 have been published in the monthly BULLETIN of the Institute, in which journal the communications made at the meetings have also been printed in full or by abstract.

The Bulletin of the Institute is a monthly sheet of about 16 pages and is distributed free to members, or mailed to any address on the receipt of the subscription of \$1.00 per annum. — EDITOR.

short blunt spine on each side of middle lobe; metathorax contracted behind, with a strong angle at its upper corners, its concavity without setæ; each node transverse, with a sharp spine, curving backward on each side, those on second node longest. Abdomen subcordate. Legs short, stout, black; tips of femora, tibiæ, and final tarsal joint testaceous, or yellowish horn-color.

Worker minor. Length, 0.20 in. This has the tubercles on occiput subobsolete, and the declivity behind less abrupt; the anterior angles of thorax nearly coincident, with no transverse connection.

II. On the Phalangeæ of the United States of America.

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

[Communicated December 9, 1867.]

INTRODUCTION.

THE PHALANGÆ, or Opilionina, as they are sometimes called, are a suborder of the Trachean Arachnids of the same rank as the Pedipalpi of the Pulmonary Arachnids.

The external skeleton, the *tegument*, contains chitine, as does indeed that of all the arachnids, remaining firm although becoming transparent, when the animal is soaked in a solution of caustic potash. It is variously ornamented with tubercles or spines, and more rarely punctated or excavated. Good specific characters can frequently be drawn from it.

The cephalothorax and abdomen are closely fused together, although in most cases the line of separation is more or less distinct. The cephalothorax is never, at least in any species the author has seen, at all segmented; it is generally smaller than the abdomen, but in the family Gonyleptidæ, it is expanded into a broad plate, entirely overshadowing the very small abdomen. The latter is in all the Phalangeæ more or less distinctly segmented.

Near the centre of the cephalothorax is a more or less prominent abrupt elevation or large tubercle, upon which the eyes are situated. This tubercle, or as I have called

it, *eye eminence*, in our species is mostly dark-colored, and more or less spinate or tuberculate. The eyes are two in number, rather large, simple. Near the anterior margin of the cephalothorax, on each side is an oblique stigmata. These have been mistaken for eyes, but are openings through the dermal skeleton.

The spiracles from which proceed the principal trachean trunks in the "Harvest-men" are placed between the posterior pair of coxæ and the abdomen.

All of the Arachnida have four pairs of feet, which in the Phalangidæ are chiefly remarkable for their length, and the number of their tarsal joints. The coxæ are large, conical, and converging towards the sternum. They are almost completely hid by the body of the animal. The next article, the trochanter, forms with the coxa a sort of ginglymoid joint. The trochanters are small, but often afford good specific characters. The femora are long and slender, and are distally connected with the shorter tibiæ, which in turn give attachment to the numerous series of short tarsal articles. In the Gonyleptidæ, the last pair of feet are the longest. In the Phalangidæ proper, the first and third pairs are about the same length and much shorter than the others; the fourth pair is not quite so long as the second.

The question here naturally presents itself, are the most anterior pair of feet true feet, *i. e.* sternal appendages, or in other words are the so called *octopodous* insects really eight-footed. The use of these organs as feet is of course no argument at all as to their homologies. Besides, in many Arachnids, such as the Phrynidæ and Thelyphnidæ, they are used almost exclusively as feelers, almost replacing the antennæ in function, and probably in very many other genera and families they answer the double purpose of limb and palpus. If a true spider be examined, the anterior pair of feet will be seen to be articulated to the sternum, and in all respects similar to the others. Nevertheless, I cannot think they are true sternal appendages, for the following reasons. If they be so, the thorax must consist of four segments instead of three, as in the true insects. In the Spiders, in Scorpions, Harvest-men, etc., the segments of the cephalo-

thorax are so fused together, that it is impossible to find any distinct sutures; but in the genus *Galeodes*, which in respect to the separateness of the head, thorax, and abdomen approaches somewhat the hexapods, the thorax is pretty distinctly divided into three segments. Again, although the attachment of the first pair of legs in many arachnids is apparently to the sternum, yet in others it is very distinctly not so. Thus in the *Thelyphonidæ*, it is placed on an entirely different plane from that of the truly sternal legs and the bases of the first pair of legs are indeed partially covered by the base of the maxillæ. In the *Phrynidæ* this is even more marked.

For these reasons, it would seem that the anterior legs of octopodous insects are really appendages of the cephalic segments.

In the mouth of a rapacious arachnid the most anterior organs are the so-called cheliceres, which project forwards or downwards from immediately under the labrum, or anterior edge of the cephalothorax. Latreille was, I believe, the first to regard these organs as modified antennæ. Siebold, who follows him in this, assigns as his reasons, the cerebral origin of their nerves, and the fact that they never act like the mandibles of the other *Arthropoda* in a horizontal direction.* The first of these reasons is not at all conclusive; for if the antennæ were absent, it would seem, *a priori*, most probable that the cerebral ganglion, not being called on to supply them with nerve power, would send a nerve to some of the mouth organs, and to which more naturally than to the most anterior? It is very doubtful whether such anatomical facts are of any aid whatever in tracing homologies; are the arms of man any the less appendages of the occipital vertebra, because they do not receive their nervous supplies from it? Again, the cheliceres of some arachnids do act in a horizontal direction, in the true *Scorpions* for example. The value of such a character is shown by the fact, that in one order, the *Pedipalpi*, the *Scorpions* have their cheliceres acting horizontally, whilst amongst the *Phrynids* they are vertical. Farther, the

* *Anatomy of the Invertebrates*. American edition by Burnett, p. 378.

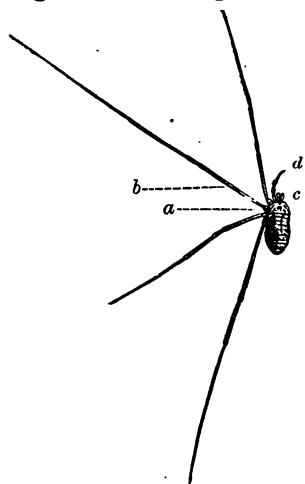
cheliceres occupy the same place and perform the same functions as the anterior maxillæ or mandibles of Coleoptera, so that the burden of proof certainly rests very strongly on those who assign them as the homologues of the antennæ. If, as stated by Professor Owen, some species of *Galeodes* have the rudiments of the antennæ attached to the cheliceres, it will strengthen the position that the latter are the homologues of the mandibles rather than weaken it. No such rudiments exist in the North American species, *Galeodes subulata* Say, which is the only one that I have seen specimens of; but in certain of the Harvest-men, there are two small processes placed superiorly and anteriorly to the mandibles, which must be regarded as the rudiments of the antennæ.

The mandibles or cheliceres in the Phalangidæ are two-jointed, the distal, larger article, being vertical and armed with a pair of forceps, one finger of which is fixed, the other movable.

The ligula is scarcely perceptible in the Phalangiæ.

The second prominent mouth-organs of the rapacious arachnids are those which form the large arm like weapons of the Scorpions. They are the homologues of the maxillæ and their palpi of the Coleoptera. Among the Harvest-men they have much more resemblance to the corresponding hexapod organs than is general. Their basal-joints, the representative of the maxillæ proper, are large, and so opposed as to act as jaws. The palpi are four-jointed, and strictly retain the form and use of palpi.

Such are the organs, which are most obviously parts of the mouth. Professor Owen suggests in his anatomy of the Invertebrates that the anterior pair of feet are modified labial palpi. This seems to be the most probable view



Phalangium ventricosum.
a, trochanter; b, femora; c, palpus;
d, mandibles.

of the subject. They appear to be cephalic appendages, for the reasons before given, and, if so, can hardly be other except labial palpi or antennæ. The presence of the rudiments of the latter on the cheliceres of certain Galeodes, and the total absence of any proof, are sufficient reasons for not considering them as misplaced antennæ. Again in certain arachnids, they not only perform solely the tactile function of both of these organs, but occupy very closely the position of the former. Thus in the Phrynidæ, they are placed just posteriorly and superiorly to the maxillæ. No distinct labium is acknowledged as existing among the arachnids, but if these organs are the labial palpi, in the Scorpions the two processes, which project forward from their bases, may be looked upon as a split labium. Such appears to me the most probable view of the homologies of these parts, but embryological studies can alone settle these completely. Among the Phalangææ the anterior pairs of legs are attached just in front and on the same plane as the others.

HABITS. The *Phalangidæ*, Harvest-men, "Daddy Long Legs," or "Grab for Gray Bears," as they are called in northern New York, appear to live equally well about the habitations of men and in the most lonely forests. I have seen hundreds of them running over the bushes and ground amongst the recesses of the Alleghanies, and every country lad has noticed them with wonder about out-buildings. I believe they are most active in the very early morning and evening, preferring twilight to the bright sun-glare. They are carnivorous, feeding on small insects, and are said to be especially addicted to aphids eating. The true spiders, and, indeed, nearly all of the rapacious arachnids, content themselves with sucking out the juices of their victims, but the Harvest-men appear to devour them, for which the opposing maxillæ seem to fit their mouths. I have seen one running with a half-devoured insect in its mouth; and Tulk, according to Siebold, has found fragments of insects in their alimentary canal.

The eyes of the Harvest-men, placed as they are on a prominence near the centre of cephalothorax, cannot enable them to see beneath them, or in fact to discern any near object much below their own level. The Phalan-

gium, however, when he walks, does not generally raise his body much above the ground, but so bends his long legs that their extremities are near the surface, whilst their central portion is high in the air. As a consequence of this the body of the animal is almost in the same plane as his prey, which he is thus enabled to watch during his approach. I have never seen a Harvest-man seize his victim, but, according to Herbert, "Sie springen und stürzen auf die Beute wie die Katze auf die Maus und halten sie mit den Palpen wie mit Händen selbst."*

Mr. A. Tulk,† speaking of the habits of *Phalangium Opilio*, says, "The harvest-spiders, at least the present species, are nocturnal in their habits and capture their prey, consisting of flies, mosquitoes, and small lepidoptera, by stealing cautiously towards it, and making a gliding spring upon the victim when within reach. I have repeatedly seen individuals of *P. cornutum*, when in confinement, pursue each other with the utmost pertinacity, the larger generally pouncing upon the former, and having brought them within reach of the chelicerae and palpi by grappling them with their long legs, proceed to devour the body, leaving the extremities untouched. They use one of their legs occasionally to support the food to their mouth." In our northern climates, probably but few Phalangians survive the winter. Dr. Linnæus writes that large numbers winter in Texas, in the long moss (*Tillandsia usneoides*). In the spring, all of the specimens to be found in this neighborhood are evidently very young, just hatched. They are small, very soft and tender, and have not the coloration and other specific characters well pronounced. Towards the close of summer no more young specimens are to be met with. All of the females are then full of eggs. The eggs are said to be laid in the autumn in protected crevices, under dry stones, etc., hatching out in the spring.

CLASSIFICATION. In regard to the classification of this group, there is no doubt but that its value is that of a suborder, and that is naturally divided into two families,

*They spring and pounce upon their victim as the cat upon the mouse, and seize it with their palpi as if with hands.

† Annals and Mag. Nat. Hist. 1843, p. 246.

the *Phalangidæ* proper and the *Gonyleptidæ*, and that each of these groups is composed of several genera. A large number of so-called genera have been named by Koch in the work "Ueber sicht des Arachniden systems;" but have nowhere been described by that writer, at least in no place that I have been able to find. A careful study of the diagnoses of these genera as given by Meade,* has produced grave doubts as to their distinctness; and, certainly, it is impossible to rely upon the characters given as separating natural, or even artificial groups. *Phalangium cornutum* may be taken as the type of the Linnæan genus *Phalangium*, since the only species preceding it, in the 12th edition, is not well known. Most of our Phalangidæ are members of one large generic group, and for this the name *Phalangium* has been retained, since, in the absence of specimens of *P. cornutum*, I have not been able to find any characters distinguishing its members generically from that species, although it is very possible such characters exist.

There has come under my notice but a single North American species of the Gonyleptidæ, which appears to be a member of the genus *Gonyleptes* of Kirby.

The specific characters are drawn from the spines, tubercles, etc., on the surface of skin;—from the pattern of coloration; peculiarities of eye eminence; of legs, especially the trochanters; from the size; comparative lengths of the body and legs; and in the males, from the genital appendage. There appears to be something peculiar in the male organ of each species. For this reason, although not proposing here to discuss the internal anatomy of the Phalangeæ, it seems necessary to say a few words as to the genitalia. The rather long, slit-like genital openings in both sexes exist just posteriorly to the point of attachment of the last pair of legs. The penis, inclosed in a very pronounced sheath, extends along the median line for nearly the whole length of the abdomen. It is best exposed by slitting open the under surface of the abdomen at the sides and turning back the tegument like a flap. The sheath will then appear, and

* Annals and Mag. Nat. Hist., 1855.

must be cut open before the organ itself will come into view. In the genus *Phalangium* the penis is made up of two portions, the body and a second piece, generally very small, and ending in a sharp point. The body of the male organ is traversed by the continuation of the spermatic duct or the ductus ejaculatorius, which opens at or near the distal end of the smaller article. In the latter part of summer many male Harvest-men may be found, in which the organ, with its sheath massed about its base, is extruded from the body.

Occupying a corresponding position with the last, in the female is a long, firm, almost cartilaginous, more or less annulated tube, the ovipositor, into the base of which opens the oviduct. This, like the penis, is capable of extrusion, and is provided with a sheath.

SUBORDER PHALANGÆ.

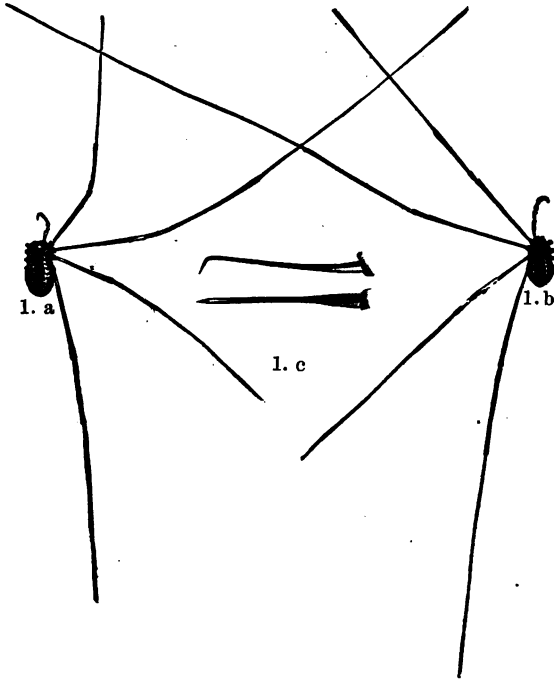
Respiration trachean. Thorax not distinctly articulated. Mandibles very conspicuous, free, terminated by a didactyle forceps. Abdomen annulate; no metamorphosis.

FAMILY PHALANGIDÆ.

Abdomen distinct superiorly. Coxæ of posterior pair of feet not more developed than the others, and radiating at about the same angle as the others. Tarsi multiarticulate.

Genus I. PHALANGIUM LINN.

Palpi without spines. Eyes two on a tubercle.

1. *Phalangium dorsatum* SAY.

1 a, female (natural size); 1 b, male (nat. size); 1 c, penis; anterior and lateral view.

P. DORSATUM Say. Journ. Phila. Acad. Nat. Sci., 1st se., Vol. 2, p. 66.

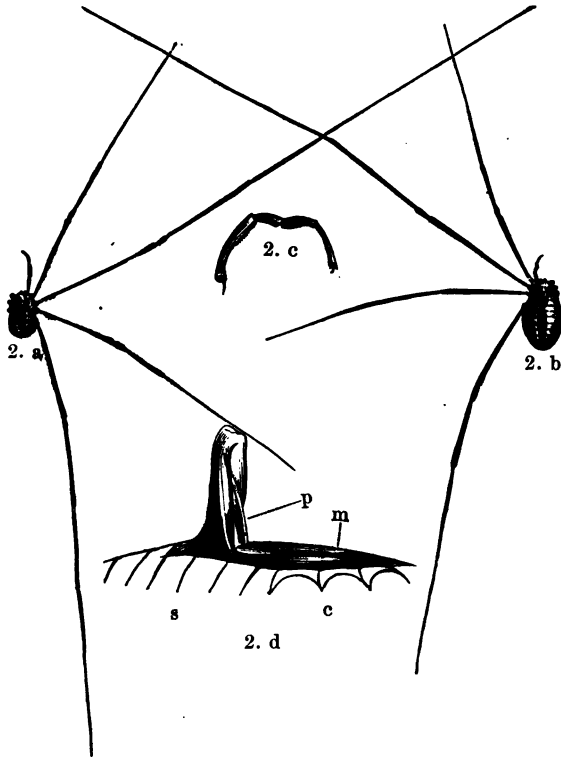
Dorsum minutely granulate; its general color grayish brown, with often a sort of a golden tint; anterior to the eye-spot, ornamented with a somewhat v-shaped or irregularly parallelogrammatic black marking on each side. At the eye eminence commences a dark blackish central marking, which is at first quickly expanded, then very much contracted, and afterwards gradually somewhat expanded, and then similarly again contracted, so as to form a strongly pronounced central vase-shaped marking extending from the eye-spot to the posterior extremity; besides, there is on the flanks a more or less distinct blackish band, and the surface of the abdomen is more or less spotted with black. Segmentation of the abdominal scutum well marked. *Eye eminence* prominent, scarcely at all crenulate. *Palpi* long, slender, grayish or reddish brown, more or less pubescent in the male with their under surface and lateral edges furnished with rows

of small black spinous tubercles. *Ventral surface* a grayish brown, tuberculate, with the abdominal segmentation strongly pronounced. *Coxæ* smooth or slightly tuberculate, grayish. *Trochanters* black. *Legs* brownish, darker in the male, with blackish rings at the articulations generally relieved by a whitish tipping. Spines on the feet small, not very numerous. *Penis* very slender, not very much flattened, distally bent nearly at right angles to itself, and ending in a long, thin, very acute point.

Length of Body, ♀, 0.3; ♂, 0.2. Length of Legs, ♀, (1) 1.4, (2) 3, (3) 1.4, (4) 1.9; ♂, (1) 1.4, (2) 2.4, (3) 1.4, (4) 1.9.

REMARKS. I have seen a number of specimens of this form collected in various localities near Philadelphia. It appears to be an outdoor species; most of the specimens in my possession were, if I am correctly informed, taken on black and raspberry bushes in gardens. The male and females are quite different. There are not only the usual differences of size and form, but the female is lighter in general color with little or none of the reddish hue so general in the male, the flank markings more distinct, the palpi grayish (rarely reddish), and the feet of a lighter brown; the crenations of the palpi are also less strongly pronounced and often not easily made out from their grayish tint. I have never seen these two forms actually *in coitu*, but am led to refer them to the same species by their general agreement of characters, and the facts that they have been found together, and the one are always male, the other female specimens. I have a single specimen from Elizabethtown in Northern New York, collected by my brother, George B. Wood, Jr. Also a large number caught near Washington, by Mr. Austin.

Mr. J. H. B. Bland, of Philadelphia, has given some small Harvest-men taken by him early in the spring, which appear to be the young of this species. In these the gray color of the adult is almost a milk-white; the eye eminence is also white.

2. *Phalangium vittatum* SAY.

2 a, male (natural size); 2 b, female (natural size); 2 c, palpus (magnified); 2 d, a portion of the under surface of the abdomen dissected off, and raised up so as to show the position of the penis (magnified); p, penis; m, muscles; c, first joints of legs; s, abdominal segments.

P. VITTATUM Say. Journ. Phila. Acad. Nat. Sci. 1st se. Vol. 2, p. 66.

MALE. — *Dorsum* varying from a rich yellowish brown to a strongly reddish brown, with a central dark vase-shaped marking, commencing at the eye eminence, as in the preceding species, but without any well pronounced black marginal markings; very hard, covered with closely placed, numerous, moderately small granules. *Cephalothorax* marked with dark brown. *Eye eminence* pronounced, brownish with a central dark band, furnished with a row of rather distant, but pretty well pronounced spinous tubercles over each eye. *Palpi* very long, light brown, with numerous spinous tubercles, similar to, but rather

more pronounced than in *P. dorsatum*, distally pubescent. Segmentation of the abdominal scutum pretty well marked, especially posteriorly. *Ventral surface* light brown, with the abdominal segments very distinct, without tubercles, save a few anteriorly. *Coxæ* of the same color as the belly, but covered with numerous close tubercles, tipped with white. *Trochanters*, light brown. *Legs* very slender, light brown, with black annuli at the distal femoral and tibial joints, which in some specimens involve the whole article, furnished with numerous small, black, spinous tubercles. *Penis* very slender, not flattened, distally bent at right angles to itself, into a moderately short, very sharp point.

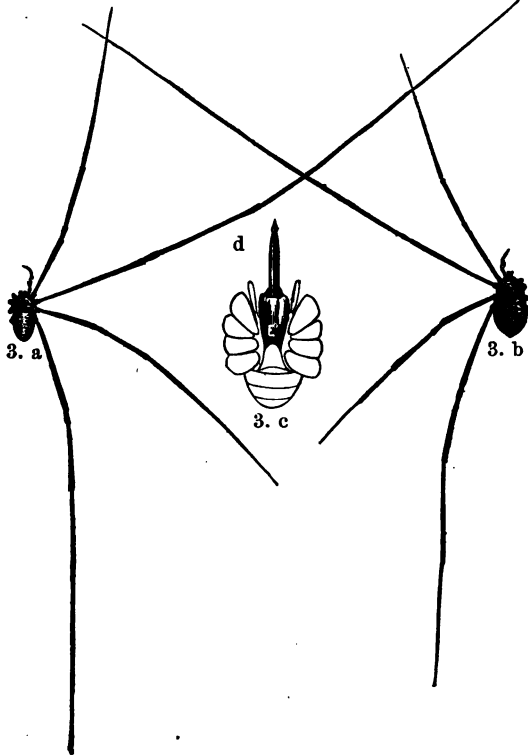
FEMALE. — With the general characters of the male, but much larger, and the palpi much shorter. The dorsal stripe not nearly so pronounced as in the male, and very often interrupted posteriorly. The legs not so dark.

Length of Body, ♀, 0.4; ♂, 0.25. Length of Legs, ♀, (1) 1.7, (2) 3.2, (3) 1.6, (4) 2.3; ♂, (1) 1.7, (2) 3.2, (3) 1.6, (4) 2.1.

REMARKS. This species is closely related to *P. dorsatum*, the principal characters separating the two are to be found in the differences in coloration of the dorsum and legs, the trochanter not being black in *P. vittatum*, and the much greater hardness and roughness of the upper surface of the southern species.

The color varies considerably. Some two or three specimens are nearly white.

This species was originally described by Mr. Say as an inhabitant of the Southern States, and may be looked upon as the southern representative of its nearest ally, *P. dorsatum*, of which I have never seen any specimens from farther south than Washington City. Most of the specimens of *P. vittatum*, which have come under my notice, were collected by Dr. G. Linneecum in Texas, where it appears to be abundant. Like many other animals of the Neo-tropical fauna of North America, its range extends up into Nebraska, for I have a number of specimens collected last summer by Prof. F. V. Hayden, during his geological explorations of that State.

3. *Phalangium nigropalpi* WOOD (nov. sp.).

3 a, male (natural size); 3 b, female (natural size); 3 c, under surface of body, showing the penis protruded (magnified), d, body of penis, e, its sheath.

Dorsum reddish brown; in the males of a nearly uniform tint, with some obscure grayish specks; in the females of a darker color, with a more or less obsolete central vase-shaped marking, and some grayish specks; with very minute tubercles, giving rather a velvety than rough appearance to the unaided eye. Segmentation of the abdominal scutum not marked. *Eye eminence* prominent, black, with a double row of rather small and distant spinous tubercles. *Palpi* rather long; in the male black, excepting the distal article, which is mostly brownish, with very few spinous tubercles, save a row on the inner side of the distal article, very pilose, with none of the angles prolonged; in the female brown, without the row of spinous tubercles on the distal article, but with the others perhaps more pronounced

than in the male, and with the distal angle of the second article prolonged into a more or less prominent blunt process. *Ventral surface* mostly of a similar, but little lighter color than the dorsum. *Coaxæ* of the same color as the ventral surface, tipped with white. *Trochanters* blackish. *Legs* in the males black; in the female dark brown. *Penis* rather stout, flattened, at its distal extremity contracted and bent upwards, ending in a short acute point.

Length of body, ♂, 0.2; ♀, 0.3. Length of Legs, ♂, (1) 1.6, (2) 3.1, (3) 1.6, (4) 2.1; ♀, (1) 1.6, (2) 3.6, (3) 1.6, (4) 2.2.

REMARKS. I have a large number of specimens of this species captured by myself in the woods in Huntingdon Co., Pennsylvania. They were in great numbers running over the dried leaves, stones, bushes, &c. The males were much more numerous than the females, in fact I saw six times as many of them as of the latter. I was not so fortunate as to find any *in coitu*, but believe the two forms to be different sexes of the same species on the same grounds as mentioned in the remarks on a former species. The females are to be distinguished by their larger size, the brown color of their legs and palpi, as well as the darker and less uniform color of the dorsum, which also frequently loses almost all of the reddish tint.

4. *Phalangium exilipes* WOOD (nov. sp.).

Dorsum very closely, minutely granulate, of a dark blackish or a golden brown; with a pair of longitudinal, whitish, irregular bands commencing at the eye eminence and running anteriorly to the margin of the cephalothorax, where they are bent at right angles and prolonged into a narrow marginal band; each abdominal scutum with a more or less regular transverse series of very distinct whitish dots, which are often placed at equal distances from one another so as to form longitudinal as well as transverse series, but on other specimens the distance between those of the posterior scuta is only half that between those on the anterior scuta. *Cephalothorax* with a pair of grooves on each side anteriorly, somewhat parallel to the margin, behind the eyes with four very distinct transverse straight impressed lines and corresponding ridges. *Eye eminence* pronounced, remarkably smooth, slightly constricted at the

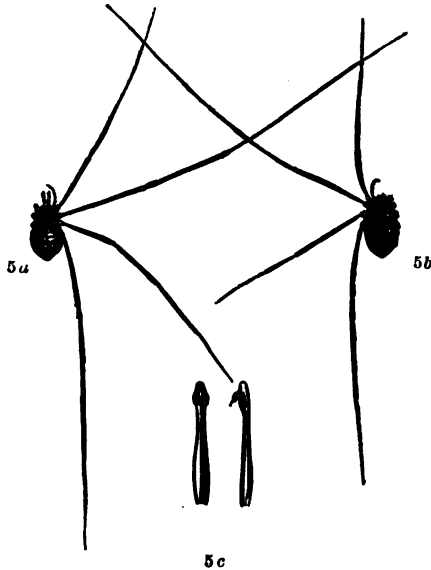


Penis, lateral and anterior views (magnified).

base, grooved above, with the somewhat conical eyes so placed as to give the appearance of two eye eminences joined together rather than of a single one. *Palpi* with none of their angles prolonged, rather short, proximally dark, distally light brown, with their proximal articles densely beset with very numerous spinules and with their maxillary portion furnished with two lobe-like processes. *Abdomen* very distinctly separated from the cephalothorax, distinctly segmented. *Venter proper* smoothish, light grayish brown. *Pectus* and *coxae* with very numerous small spines, of the same color as venter. *Trochanters* dark brown with their inferior angles prolonged into a small inconspicuous spinous process. *Legs* very slender, proximally light brown, distally somewhat darker, beset with numerous small blackish spinules. *Penis* robust; distally rapidly expanded into a broad portion whose very thin margins are bent upwards, so that with an equally thin central keel they form a pair of grooves on the upper surface; afterwards contracted into a robust but finally slender acute point placed at a slight angle to the main body of the organ.

Length of Body, ♂?, 0.25. Length of Legs, ♂?, (1) 1.8, (2) 2.7, (3) 1.8, (4) 2.1.

REMARKS. Of this species I have seen one specimen, taken by Dr. Leconte on the coast of California, Lat. 30°, 33'; also two collected by Mr. William M. Gabb, of the California State Geological Survey, in Nevada. The measurements given above are taken from Dr. Leconte's specimen, which was in such a condition that I could not determine the sex positively. The other individuals were males.

5. *Phalangium cinereum* WOOD (nov. sp.).

5 a, male (natural size); 5 b, female (natural size); 5 c, penis, lateral and anterior views (magnified).

Body large. Dorsum with small, acute spinous tubercles on the abdomen arranged in transverse series generally one row to each segment; the base of these little tubercles are whitish, their acute apices blackish; color of dorsum grayish with a central darker vase-shaped marking commencing at the head; the flanks more or less mottled. *Cephalothorax* not distinctly separated from the abdomen. Segmentation of the abdominal scutum distinct. *Eye eminence* not very prominent, light-colored, with a row of tubercles similar to those on the dorsum surmounting each of the black eyes. *Palpi* light brown, moderately long, with numerous, short, rigid, black hairs, which are more pronounced in the male than in the female. *Legs* very long and slender, with numerous black spines arranged in rows, which are more pronounced in the male than female, light brown with darker annuli, which are, however, often obsolete especially in the male. *Coxæ* as well as ventral surface smooth, grayish brown, with darker irregular spots. *Trochanters* grayish, with small spines. *Pents* broad, rather thick, with distally two lateral oval openings, and immediately contracted into a short, blunt, obtuse process, which is bent at an

acute angle to the main process, and has projecting from it a very slender, acute point.

Length of body, ♀, 0.35; ♂, 0.3. Length of Legs, ♀, (1) 1.2, (2) 2, (3) 1.2, (4) 1.5; ♂, (1) 1.6, (2) 2.6, (3) 1.6, (4) 1.9.

REMARKS. I have a large number of specimens of this species, collected by my brother, George B. Wood, jr., at Elizabethtown, in Northern New York; they were found in outhouses.

The males differ from the females in their more uniform and darker tint, and in the absence, or faintness, of the annuli on the limbs.

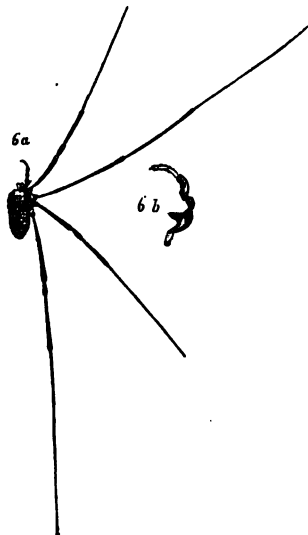
6. *Phalangium calcar* WOOD (nov. sp.).

MALE.—*Dorsum* dark reddish brown with minute spots of light brown, densely covered with small obtuse blunt black tubercles.

Cephalothorax with two impressed lines posteriorly. *Eye eminence* well pronounced, black, with two rows of acute robust spines. *Palpi* very robust and crooked, the second and third joints making an arch, the fourth joint another; these three, blackish, pilose and very much roughened by acute robust spines; the second joint armed near the middle of its inferior surface with a very large obtuse spur-like process; the distal article slender, light brown, very hairy, but without spines.

Abdomen very distinctly separated from the cephalothorax by a curved impressed line, the segmentation not well marked anteriorly. *Ventral surface* reddish, with a few scattered granules on the pectus, none elsewhere. *Legs* very long and slender with rows of small spines. *Coxæ* reddish, the first two on each side with a row of spinous tubercles on their anterior margins. *Trochanters* reddish brown. *Penis* robust, flattened, very strongly curved, distally somewhat expanded and then abruptly contracted into a slender hook with a very acute point.

6a, male, upper view (nat. size); 6b, palpus, showing spur (magnified).



Length of body, ♂, 0.25 inches. Length of legs, ♂, (1) 1.2, (2) 2.2, (3) 1.3, (4) 1.3.

REMARKS. I have seen but a single male of this species, which was received from Prof. E. D. Cope, who found it among the mountains of South-western Virginia. It is, I believe, an out door species living in the woods, and may possibly prove to be the southern representative of *P. nigropalpi*; bearing the same relation to it that *P. vittatum* Say does to *P. dorsatum* of the same author.

I have also received from the same source as the last two female Harvest-men, which I refer, with a good deal doubt, to the same species. They were taken in the same locality as the last, at a different time. They differ from the male especially in the absence of the spur-like processes on the palpi, as well as in the color of the trochanters. They may represent an undescribed species. The following is a description of them :

PHALANGIUM sp.?

Dorsum darkish or very dark brown, with lighter spots especially upon the sides, and with a more or less obscure central vase-shaped marking extending throughout its whole length, covered with small tubercles. *Cephalothorax* with two impressed lines posteriorly. *Eye eminence* very prominent, blackish, with two more or less irregular rows of spines. *Abdomen* distinctly separated from cephalothorax, its segmentation rather distinct. *Palpi* light brown, their basal joints roughened with numerous rather large robust spinules, aggregated, scattered or in rows. *Ventral surface* reddish brown, smooth. *Coxæ* reddish brown, distally tipped with whitish, their basal ends areolated, their anterior inferior borders each with a row of small tubercles, more or less obsolete on the posterior two pairs. *Trochanters* black, roughened with numerous small black spines. *Legs* light or dark brown, roughened with very numerous small black spines.

Length of body, 0.35. Length of Legs, (1) 1, (2) 1.8, (3) 1, (4) ?

7. *Phalangium bicolor* WOOD (nov. sp.).

FEMALE.—*Dorsum* blackish, of a nearly uniform tint, with an obscure lighter central line; furnished with a triangular patch of close, small, black tubercles on the cephalothorax, the base of the triangle being at the eye prominence; posterior to and separated from this by an intervening comparatively smooth space, is a transverse linear patch of similar tubercles, posterior to which is still another broad, large patch covering the central portion of the abdominal scutum, and posterior to this again are two or three transverse raised patches. *Cephalothorax* not at all distinct from the abdomen. Segmentation of the abdominal scutum not distinct. *Eye eminence* prominent with a double row of rather distant and well pronounced spinous tubercles. *Palpi* very light brown, somewhat pilose, with rather numerous scattered spinous tubercles on their basal articles. *Ventral surface* a whitish brown, granulate. *Coxæ* of the same color as the ventral surface, closely tuberculate, not tipped with black. *Trochanters* grayish. *Legs* very slender, brownish, with more or less pronounced blackish rings at the joints.

Female (natural size). The third leg was off the specimen.

Length of body, ♀, 0.2. Length of legs, ♀, (1)?, (2) 2.1, (3)?, (4) 1.5.

REMARKS. I have seen but two specimens, both females, for which I am indebted to Prof. Cope, who captured them near Haverford College, Delaware Co., Pa.

8. *Phalangium favosum* WOOD (nov. sp.).

FEMALE.—*Dorsum* almost a square level surface, with a sharp projecting angle at the sides; grayish brown with blackish spots, and the indications of a central vase-like marking; coarsely rudely punctate so as to have a worm-eaten, almost honey-combed appearance. *Cephalothorax* with two dark converging lines anterior to the eye eminence, and a short central one on its most anterior portion. *Eye*

eminence slender, rather high, light brown, with several robust acute spines, which are at their bases gray, but are tipped with black. *Palpi* rather slender, moderately long, without processes, but roughened by numerous small blackish spines. *Ventral surface* light gray, roughened by numerous small obtuse tubercles. *Coxæ* very large, gray, laterally dotted with black, very strongly roughened with large, obtuse tubercles. *Trochanters* blackish, often mottled with gray, with rather large spines, similar to those on the eye eminences. *Feet* proximally blackish, distally often grayish, sometimes tipped with blackish, roughened by numerous small acute spines.

Length of body, ♀, 0.3. Length of legs, ♀, (1) 1, (2) 1.7, (3) 1.1, (4) 1.3.

REMARKS. I have seen but a single specimen, a female, caught by Prof. F. V. Hayden, in Nebraska.

9. *Phalangium verrucosum* WOOD (nov. sp.).

MALE.—*Dorsum* hard, of a nearly uniform golden tint, with indications of a blackish central marking behind the eye spot, thickly covered with small tubercles. Eye eminence prominent, blackish on top, with a row of prominent, spinous tubercles surmounting each black eye. *Cephalothorax* with a slight



Penis, and line to show the angle at which the point is set on the body (magnified).

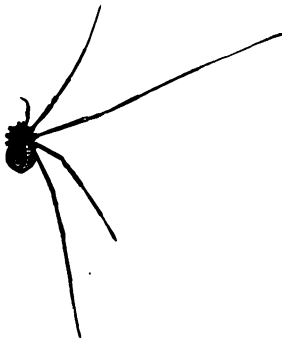
impressed line immediately behind the eye eminence, and a second very strongly marked one posterior to this, very distinctly separated from abdomen by a curved impressed line. Segmentation of the abdominal scutum very marked posteriorly, not so much so anteriorly. *Palpi* slender, grayish, with none of their angles prolonged, beset on their upper surface with numerous small spines irregularly arranged in rows. *Ventral surface* light gray, with the *coxæ* closely studded with large prominent tubercles, giving under the glass a sort of warty appearance. *Trochanters* blackish, more or less covered with similar tubercles. *Legs* reddish brown, rather long and slender, armed with series of small blackish spines. *Penis* of the male very broad, rather short, nearly straight, thickened and somewhat dilated distally where it is alate, abruptly contracted into a rather robust end, which finally terminates in a very acute point, which is bent at an angle to the shaft, and furnished with two pairs of small lateral hooked spines at the base of the slender portion.

Length of body, ♂, 0.2. Length of legs, ♂, (1)? (2) 1, 5, (3) 1.7, (4) 1.3.

REMARKS. I have seen only some males, in the collection of Essex Institute. Locality unknown.

10. *Phalangium formosum* WOOD (nov. sp.).

FEMALE.—*Dorsum* perfectly smooth, grayish, more or less obscurely margined with dark brown, and ornamented with a broad vase-shaped central, dark marking, which commences on the anterior portion of the cephalothorax, and terminates abruptly near the junction of the middle and posterior third of the abdomen; the whole of the dorsum which is anterior to the posterior third of the abdomen has more or less of this peculiar brownish tint. *Eye eminence* moderately prominent, smooth. *Palpi* slender, without spines, distally minutely pubescent. Segmentation of the abdominal scutum not pronounced, except posteriorly. *Ventral surface* grayish brown not tuberculate.



Female (natural size).

Coxæ of the same color. *Trochanters* black. *Legs* light brown, annulate with dark brown, provided with very minute spinous tubercles, especially on their femora.

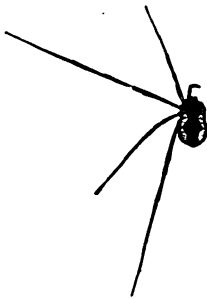
Length of body, ♀, 0.3. Length of legs, ♀, (1) 0.6, (2) 1.3, (3) 0.6, (4) ?.

REMARKS. I have seen four specimens of this handsome species from the District of Columbia, collected by Mr. Austin, and have received a number from Mr. J. H. Bland, collected in the vicinity of Philadelphia. The latter, with the exception of a single female, are very immature; the former are all females. All the individuals which have come under my notice are remarkable for their softness and fragility.

11. *Phalangium pictum* WOOD (nov. sp.).

FEMALE.—*Dorsum* light gray, with a strongly pronounced central dark marking, which is broadest anteriorly, involving almost the whole of the cephalothorax, at the posterior edge of which it is rapidly contracted, then sharply expanded and again contracted into a nearly square space on the abdomen, finally running as a stripe to the anus; the surface smooth generally, furnished before the eye eminence with a curved series of acute, black, very small spines on elevated bases, and a similar short transverse row; behind the eye

eminence, with a rather pronounced transverse series, and several more or less obsolete ones on the abdominal surface, also with a few similar scattered spines. *Eye eminence* light brown, with a couple of more or less irregular series of spines similar to those on the body. *Palpi* hispid, mottled, with their femoral joint somewhat enlarged at its inner distal angle, and the next two articles short and swollen. *Cephalothorax* not at all distinctly separated from the abdomen. *Segmentation* of the abdominal scutum not at all marked. *Ventral surface* a light grayish brown, hispid. *Coxæ* covered with spinous hairs. *Trochanters* light brown. *Legs* short, moderately robust, roughened with rows of small sharp black spines.



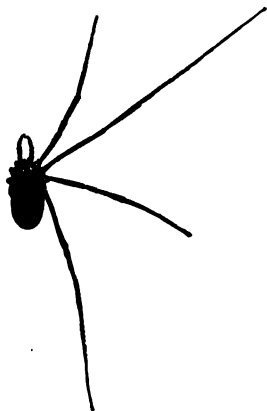
Female (natural size).

Length of body, ♀, 0.2. Length of legs, ♀, (1) 0.6, (2) 1.1, (3) 0.7, (4) 1.

REMARKS. I have seen but a single specimen, a female, in the collection of the Essex Institute, which was taken near Salem, Massachusetts.

12. *Phalangium maculosum* WOOD (nov. sp.).

Body large. *Dorsum* dark ferruginous brown, with an often obscure central vase-shaped darker marking, and numerous very small light spots arranged on the abdomen, more or less irregularly, in transverse series, closely granulate; in some specimens the dorsum is grayish, with a well pronounced vase-shaped marking and dark transverse bands in which are the light spots. *Cephalothorax* not very distinctly separated from the abdomen. *Segmentation* of the abdominal scutum not very distinct anteriorly, posteriorly more so. *Eye eminence* black, with a double crest of small more or less obsolete crenulations. *Palpi* brownish, mottled and tinged with black; with the inner angles of their second and third joints slightly prolonged; with not very numerous very small black spiny tubercles, more pronounced at the joints; distally pilose. *Ventral surface* light brown, obscurely tuberculate. *Coxæ* light brown, tuberculate, frequently with a little black spine on their distal



Female (natural size).

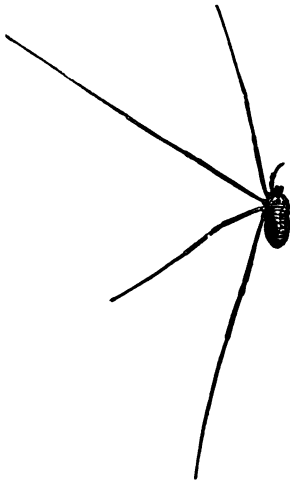
end. *Trochanters* black. *Legs* dark brown. *Penis* robust, somewhat flattened, distally alate, bent through its entire length with a double bow-like curve; at its distal extremity blunt, not bent, with a sharp, slender, straight, projecting point.

Length of body, ♀, 4. Length of legs, ♀, (1) 1, (2) 1.6, (3) 1, (4) 1.3.

REMARKS. In this species there are no marked differences between the males and females. I have found them in the woods in different parts of Pennsylvania. I also have specimens collected in Western Virginia, by Prof. E. D. Cope.

13. *Phalangium ventricosum* WOOD (nov. sp.).

FEMALE.—*Body* large. *Dorsum* reddish brown, with a blackish, vase-shaped central marking, sometimes strongly pronounced, sometimes obsolete, and minute lightish spots, which, on the abdomen are more or less irregularly arranged in transverse series; closely granulate. *Cephalothorax* about as distinctly separated from abdomen as in previous species. *Eye eminence* moderately pronounced, black with a double crest of rather small black acute tubercles. *Palpi* light brown, rather long and slender, furnished with minute spiny tubercles, which are more pronounced at the joints and on their proximal portion, pilose, not branched, their angles not prolonged. Segmentation of the abdominal scutum not very marked, more so posteriorly than in *P. maculosum*. *Ventral surface* smooth, light brown with abdominal segments often bordered posteriorly with a lighter, and anteriorly with a darker tint. *Coxæ* light



7. Supposed male (natural size).

brown tipped with white, tubercular, furnished at each lateral inferior margin with a row of minute spiny tubercles. *Trochanters* light brown, spiny. *Legs* long and slender, light brown, furnished with rows



7a. Penis, front and lateral views (magnified).

Length.—Pennsylvania specimen, ♀, body, 0.4; legs, (1) 1.3, (2) 2.5, (3) 1.3, (4) 2.

Nebraska specimen, ♀, body, 0.4. Legs, (1) 1.2, (2) 2.1, (3) 1.2, (4) 1.7.

REMARKS. I have seen a single female of this species, taken near this city, from which the above description has been drawn up. In the collection made by Dr. Hayden, in Nebraska, were a number of female Harvest-men, which present apparently the same specific characters as the former, except that the legs are a little shorter. Suites of specimens from the two localities would, however, probably show them to be distinct. The processes, which I believe to be the rudiments of the antennæ, are in the Nebraska specimens remarkably large. I have never received any males in the same collection as the females, but append a description of a male Phalangium, which may be referable to this species. Prof. E. D. Cope collected two specimens in Western Virginia, and a third has been received from the Essex Institute, from an unknown locality.

P. VENTRICOSUM?

MALE.—*Dorsum* ferruginous brown, covered with numerous tubercles, with a very obscure central marking. *Eye eminence* moderately pronounced, blackish, smooth, with a faint, median, brown line, without crenulations or with very obscure ones. *Cephalothorax*, with a very deep, transverse line behind the eye eminence. *Abdomen* very distinctly separated from the cephalothorax by a strongly pronounced, curved, impressed line, remarkably conical. *Ventral surface* light brown, covered with small tubercles. *Coxæ* of the same color, distally tipped with white, much roughened on the inferior surface with small spinous tubercles, with a row of the same on the lateral borders. *Trochanters* brownish. *Legs* very slender, of the same color as the dorsum but darker, with very small blackish spines. *Palpi* slender, moderately long, roughened with small spinous tubercles, their angles not prolonged. *Penis* flat, nearly straight, slender at the basal portion, gradually widening, and distally rather quickly expanded into a broad alate portion, and then abruptly contracted into a moderately robust slightly curved point, which is placed at an angle to the rest of the shaft; at the base of the point a marked notch in the end of the shaft.

Length of body, 0.25. Length of legs, (1) 1.3, (2) 2.2, (3) 1.2, (4) 1.7.

14. *Phalangium grande* SAY.

"Body oval, covered with short spines; ocular tubercle spinous; feet rather short.

"Body oblong oval, scabrous, with approximated, robust, short acute spinules; rufo-ferruginous, two impressed transverse lines before the middle; ocular tubercle prominent, slightly contracted at base, crowned with numerous, robust, acute spinules; clypeus hardly elevated; feet rather short; pectus with numerous, minute acute granules; venter with but few.

"Length of female, nearly seven-twentieths of an inch. Inhabits the Southern States."

REMARKS. I have never seen any specimens of this species. The description given is the original one of Say. See "The Complete Writings of Thomas Say, on the Entomology of North America, ed. by Dr. J. L. Leconte." New York, 1859, vol. ii, p. 14.

15. *Phalangium nigrum* SAY.

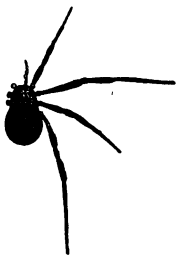
P. NIGRUM Say. Journ. Acad. Nat. Sciences, 1st Series, vol. 2, p. 66.

Dorsum very firm and hard, its general tint brown, with lighter spots, covered with small black tubercles. Segmentation of the abdom-

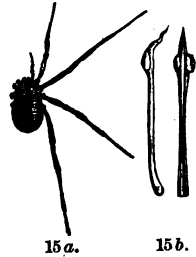
inal scutum not very well marked. *Eye eminence* moderately prominent, covered with tubercles like those on the dorsum, brownish. *Ralpi* moderate, distally pubescent, not very spiny, their distal joints in the male with rows of small spinous tubercles on their inner surface, which

tubercles are obsolete in the female in whom the prox-

imal joints are more spiny than in the male. *Ventral surface* reddish brown. *Coxæ*, with the proximal portion of the femora, of the same color; distal end of the femora with the next two articles, blackish brown. *Legs* granulatè, without spines, save very



15, Female (natural size).



15a, Variety. Male (natural size); 15b, Penis, anterior and lateral views (magnified).

small ones on their distal portion, especially at the metatarsal joints. *Penis* slender, proximally subcylindrical, then flattened, and slightly expanded, then rapidly expanded into a broad, somewhat circular, very thin, alate portion, then suddenly contracted and bent at an obtuse angle, ending in a very fine point.

Length of body, ♂, 0.25; ♀, 0.3. Length of legs, ♂; (1) 0.5, (2) 0.8, (3) 0.5, (4) 0.7; ♀, (1) 0.6, (2) 0.9, (3) 0.6, (4) 0.8.

The ground color of the dorsum of this species is a rather light brown, but the numerous black tubercles give it a much darker appearance; where these are wanting, the light brown appears as little dots or spots. The sexes do not differ materially, except in point of size.

REMARKS. I have received a large number of specimens of this Harvest-man, collected by Dr. Lincecum, in South Texas, also two or three specimens taken in Nebraska, by Prof. F. V. Hayden. With the Texan specimens were three phalangia of very different appearance, which, however, appear not to be specifically distinct. The size is much less than in the others, and the dorsum and proximal portions of the palpi and legs are of a deep uniform black; otherwise, the characters are as in the preceding.

The form just described has been recognized as *P. nigrum* Say, but as there are some slight disagreements with the description of that authority, and the localities are widely separated, it is possible that it is a distinct species. For this reason the essential portion of the original description of Say is appended.

"*Body* ovate, a little dilated each side behind the posterior feet, blackish, with a few obsolete paler spots, above and beneath granulated, granules spherical, irregularly placed in somewhat reticulated lines; ocular tubercle destitute of spines, with obtuse granules; *clypeus* prominent, somewhat elevated; *feet* short, fuscous, whitish at the base; *second pair* hardly four times as long as the body, and, with the first pair, armed with a prominent, cylindrical, obtuse spine behind the basal joint; *third pair* with a similar spine before; *pectus* whitish; *venter* blackish.

"Length, female nearly one-fifth of an inch. Not uncommon in the Carolinas and Georgia."

Genus II. ACANTHOCHIEIR LUCAS.

PHALANGODES *Tellkampf*. Archive für Naturgeschichte. 1844, p. 320. Non Gervais.

Palpi spiny. Eyes none.

Under the name of *Phalangodes armata* Dr. T. Tellkampf has described a Phalangium from the Mammoth Cave, Kentucky, which is evidently generically distinct from our ordinary species. Unfortunately the generic name had been previously applied by Gervais to a genus of the Gonyleptidæ, and hence Lucas* has substituted the name which is here adopted.

16. *Acanthocheir armata* Lucas.

“Diese spinne unterscheidet sich von den mir bekannten Phalangern durch die armirten Fühlerfüsse (palpi) und durch den Mangel der Augen.

Brust und Hinterleib sind nicht getrennt, letzterer deutlich geringelt.

Oberkiefer (mandibula) scheerenförmig, vorn behaart, Unterkiefer nicht stark hervorragend. Fühlerfüsse 5 gliedrig mit langen zum Theil gegliederten, dornförmigen Fäden bewaffnet. Das letzte Glied in eine scharfe Spitze auslaufend. Augen fehlen.

Beine 4 mal so lang als der Körper; am vorderen Fusspaare ein einfaches Häkchen, an den beiden letzten Fusspaaren (die 2^{ten} fehlten an unserm Exemplare) drei Häkchen, durch eine Membran verbunden, welche bei der Stellung einen hohlen Beutel bildet; die hinterste Klaue ist aber beweglich, wie ich bei einigen Füßen sah, wo dieselbe nach vorn, zwischen den beiden seitlichen Häkchen eingeschlagen war, wodurch dann die dazwischen liegende Membran eine Fläche bildete.

Bei dieser Anordnung kann die Membran, nach Analogie der Saugwarzen wirken, wenn nämlich die drei Häkchen in einer Ebene aufgelegt und dann das hintere erhoben wird; liegt der Rand der Membran fest, so entsteht dadurch ein luftleerer Raum.

Körper kurz eiförmig, unten ziemlich stark behaart. Farbe weiss. Länge des Körpers $\frac{1}{4}$ ''' . Länge der Beine 2''' .

Die Länge der Beine differirt wenig, die vordersten sind zwar etwas kürzer als die beiden hintersten Paare, aber die Differenz ist doch nur 195 : 205. Obwohl die Kleinheit des Thieres die Vermuthung erwecken

* Ann. Soc. Entomol., vol. viii, 1830, p. 977.

könnte, dass die Augen übersehen sind, so bin ich doch von deren Mangel überzeugt, da die helle Farbe des Thieres eine sehr gute Beleuchtung von oben gestattete, so dass eine Vergrösserung von 100 mal im Durchmesser mit grosser Deutlichkeit angewandt werden konnte."— *Tellkampff*.

FAMILY GONYLEPTIDÆ.

Cephalothorax very much enlarged, and more or less completely overshadowing the abdomen. Coxæ of the posterior pair of feet directed backwards, very much enlarged. Tarsi not multiarticulate.

Genus I. GONYLEPTES KIRBY.

GONYLEPTES Kirby. Trans. Linn. Soc., vol. xii, p. 452.

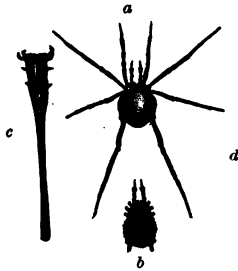
"Mandibles chelate. Palpi unguiculate. Tarsi 6-10 articulate."

The characters of this genus here given are those of Mr. Kirby.

17. *Gonyleptes ornatum* SAY.

G. ORNATUM Say. Journ. Acad. Nat. Sciences, 1st Series, vol. 2, p. 68.

Dorsum smooth, of a dark ferruginous color, darker in the central portions and at the position of the eyes, and often with a pair of nearly black spots on the posterior third of the cephalothoracic portion. *Cephalothoracic scutum* bordered with small spines, which are more or less obsolete anteriorly, also furnished with an irregular transverse series near its posterior edge, and with two central, widely separated, pairs of obtuse spines or tubercles in its middle and posterior thirds respectively. *Abdominal segments* bordered with equidistant, tuberculous spines. *Eye eminence* scarcely perceptible, without spines. *Eyes* widely separated, black. *Palpi* of the same color as the body, or a little lighter, without spines, but with the margins of their third and fifth joints with obtuse crenulations, besides scattered ones on other joints; third and fifth joints widely dilated. *Legs* dark brown, roughened with more or less pronounced, small, obtuse spines; their metatarsal joints



16, Male; a, under surface (natural size); b, upper surface (natural size); c, penis (magnified.)

roughly pubescent. *Ventral surface* smooth. *Penis* straight, cylindrical, distally much enlarged and abruptly truncated, its end furnished on each side with three curved, hook-like spines.

Length of body, 0.2. Length of legs, (1) 0.45 (2) 0.55, (3) 0.45, (4) 0.7.

REMARKS. The specimens which I have agree in most respects well with Mr. Say's description, but are all of a uniform ferruginous color. Of the two pairs of spines on the dorsum, the posterior are the larger. They were collected by Dr. Lincecum, in Texas. It is possible that a comparison with Florida specimens might show them to be distinct. As Mr. Say's description may not be accessible to some entomologists, and the identification is somewhat doubtful, I append the original description of *G. ornatum*.

"*Ocular tubercle* hardly elevated, unarmed; hind feet remote; two erect spines behind. *Body* ovate, reddish ferruginous, destitute of granules; edge slightly contracted over the insertion of the fourth and fifth pairs of feet; two small acute tubercles on the middle of the disk, and two large, prominent, erect, acute spines on the hind margin; no impressed line before the middle; an anterior arcuated yellow transverse line connected to a posterior undulated one by a yellow line, which is crossed near the middle by two obsolete yellow bands. *Ocular tubercle* slightly raised, unarmed; distance between the eyes much greater than their diameters, orbits black. *Clypeus* abruptly somewhat acute in the middle of the tip. *Mandibles* rather small, the fingers subequal, and crossing each other at the tip. *Palpi* robust, and when at rest concealing the mandibles. *Penultimate* articulation dilated on the exterior side, and elongated and depressed. *Terminal joint* half as long as the preceding, cylindrical. *Terminal nail* elongated, movable, capable of being inflected. *Feet* short, not three times as long as the body, three anterior pairs before the middle, posterior ones behind the middle, and remote from the others; fourth and fifth pairs with double nails. *Abdomen*, segments with a series of equidistant, minute tubercles.

"Length one-fifth of an inch.

"This remarkably distinct species, we first discovered on Cumberland Island, Géorgia, and subsequently many specimens occurred in East Florida, where it appears to be common. It is not an inhabitant of the Northern States."

SYNOPSIS OF THE KNOWN NORTH AMERICAN
PHALANGÆ.

Family PHALANGIDÆ.

GENUS I. PHALANGIUM Linn.

Cephalothorax with two eyes.

* Second pair of legs over 2.25 inches long.

1. *P. DORSATUM* Say. Dorsum somewhat tuberculate, reddish brown or grayish with a strongly pronounced blackish central marking. Palpi reddish brown, with edges strongly crenulate. Trochanters black. Length of body, ♀, 0.3; ♂, 0.2. Length of second pair of legs, ♀, 3; ♂, 2.4.

2. *P. VITTATUM* Say. Dorsum as in last, more tuberculate, harder. Palpi very long, reddish brown, edges strongly crenulate. Trochanters reddish brown. Length of body, ♀, 0.4; ♂, 0.25. Length of second pair of legs, ♀, 3.2; ♂, 3.2.

3. *P. NIGROPALPI* Wood. Dorsum reddish brown, in male uniform; in female with an illy pronounced central marking. Palpi, in male, blackish; in female brownish, not strongly crenulate. Length of body, ♀, 0.3; ♂, 0.2. Length of second pair of legs, ♀, 3.1; ♂, 3.1.

4. *P. EXILIPES* Wood, ♂. Dorsum reddish brown, uniform, or with light spots, minutely tuberculate. Palpi light grayish brown, with very small blackish tubercles. Trochanters dark reddish brown. Length of body, 0.25. Length of second pair of legs, 2.7.

5. *P. CINEREUM* Wood. Dorsum with spinous tubercles, grayish, with a central dark vase-shaped marking. Palpi light brown, with numerous short rigid black hairs. Trochanters grayish. Length of body, ♀, 0.35; ♂, 0.3. Length of second pair of legs, ♀, 2.00; ♂, 2.6.

** Second pair of legs not more than 2.25 inches long.

6. *P. CALCAR* Wood, ♂. Second joint of palpi with a long robust spur-like process. Dorsum reddish brown. Length of body, 0.25. Length of second pair of legs, 2.20.

7. *P. BICOLOR* Wood, ♀. Dorsum blackish, uniform. Ventral surface whitish. Palpi with scattered tubercles. Length of body, 0.2. Length of second pair of legs, 2.1.

13. *P. VENTRICOSUM* Wood, ♀. Dorsum reddish brown, with an obscure central marking. Trochanters light brown. Length of body, 0.4. Length of second pair of legs, 2.2.

14. *P. GRANDE* Say. Body covered with spines.†

*** Second pair of legs less than 1.75 inches in length.

8. *P. FAVOSUM* Wood, ♀. Dorsum grayish, deeply punctated or pitted, flat. Length of body, 0.8. Length of second pair of legs, 1.7.

9. *P. VERRUCOSUM* Wood, ♂. Dorsum golden or reddish, densely tuberculate, with an obscure central marking. Trochanters blackish. Length of body, 0.2. Length of second pair of legs, 1.7.

10. *P. FORMOSUM* Wood, ♀. Dorsum smooth, with a dark central marking involving more or less the whole anterior surface, terminating abruptly near the junction of the middle and posterior third of the abdomen. Trochanters black. Length of body, 0.8. Length of second pair of legs, 1.8.

11. *P. PICTUM* Wood. Dorsum smooth, with some spinous tubercles, grayish with a strongly pronounced dark marking, extending to the end of the abdomen. Trochanters light brown. Length of body, 0.2. Length of second pair of legs, 1.1.

12. *P. MACULOSUM* Wood. Dorsum dark brown, with an obscure darker marking. Trochanters black. Palpi sharply tuberculate. Length of body, ♀, 0.4. Length of second pair of legs, 1.6.

15. *P. NIGRUM* Say. Dorsum black. Var.; dorsum dark brown, with minute grayish brown spots. Trochanters black. Palpi sharply tuberculate. Length of body, ♀, 0.8. Length of second pair of legs, 0.9.

GENUS II. ACANTHOCHEIR Lucas.

Cephalothorax without eyes.

16. *A. ARMATA* Lucas.

Family GONYLEPTIDÆ.

GENUS III. GONYLEPTES Kirby.

17. *G. ORNATUM* Say.

†I am uncertain whether this species belongs in this or some other of these artificial groups.

ERRATA.—In explanation of figure on page 18, read *c*, mandibles (not palpus), and *d* palpus (not mandibles).