BIOLOGIA CENTRALI-AMERICANA.

ARACHNIDA ACARIDEA.

BY

Prof. OTTO STOLL, M.D.

1886-1893.
INTRODUCTION.

Compared with the work that has been done in Europe upon the Arachnida Acaridea from the time of the classical writers, Linnaeus, De Geer, Hermann, and Latreille, up to that of Dugès, Koch, Nicolet, P. Kramer, Méglin, Michael, Neuman, Berlese, Canestrini, Nalepa, and many others, the American literature of this group of animals is exceedingly scanty. Thomas Say (1821), one of the first entomologists in the United States, paid some attention to this neglected group. Later on (1836), Dana and Whelpley, as well as Haldeman (1842), described and figured some North-American species of Hydrachnidae. In our times we meet with the well-known names of Riley and Packard in connection with North-American Acarids of various groups, and Mr. Harry Garman has published a paper on the Phytoptidae. In 1886, Messrs. Herbert Osborn and Lucien M. Underwood gave a "Preliminary List of the Species of Acarina of North America" in the 'Canadian Entomologist.' In Mexico, M. Alfred Dugès has published several valuable articles on various species of Acarids inhabiting that country, and M. Conil in Buenos Ayres has done the same for some species of the Argentine Republic.

A certain number of American Acaridea have been described by European authors, and some of the larger and more conspicuous species were already known to the founders of Entomology, to Linnaeus, De Geer, and Fabricius. In modern times C. L. Koch has described several Ixodidae from various parts of America, and Trouessart and Méglin have studied some forms of Dermaleichidae which live on American birds. To Antonio Berlese and R. Canestrini we are indebted for some most valuable papers on Acaridea from the La Plata region and from Brazil.

But nevertheless we are far from possessing a knowledge of the American Acarid fauna comparable to that which we have long had of the European forms.

In the following pages an attempt has been made to fill, to some extent, the gap which at present separates the forms known from North America and those described by
BIOLOGIA CENTRALI-AMERICANA.

ZOLOGIA.

Class ARACHNIDA.

Order ACARIDAE.

Suborder I. ACARINA-TRACHEATA, Kramer.

Fam. TROMBIDIDÆ.

[Alfredo, Grundzüge zur Systematik der Milben, in Arch. für Naturg, xliii. p. 226 (1877).]

TROMBIDIUM.


1. Trombidium mexicanum, sp. n. (Tab. i. figg. 1-1 d.)

Corpus oblongum, pyriforme, depressum, postice rotundatum, tomentoso-hirsutissimum; tomentum e pilis quadrifidis sistens, colore uniforme coecino, ex sericeo nitente; superficies dorsalis impressionibus transversalibus induta. Pedes brevissimi, coecino-sericei, tomentosi; subitus (exceptis tarsiis) pilis longis pinnatis in seriem dispositis instructi. Palpi longi, marginem corporis anteriorem superantes; pilis tomentosis pinnatis induti; appendicula lobiformi lanceolata, haud lata, longo pilosa. Mandibulae fusiformes, ungues falciformes acuto armati. Ocelli coecini, in tomento fere absconditi.

Long. 5-6, lat. max. 4 millim.

Hab. Mexico, Presidio (Forrer). Two examples.

Body oblong, pyriform, depressed from above and below; shoulders protracted between the coxae of the second and third pairs of legs; posterior part of the body cylindrical, its hind margin rounded; dorsal surface with a few transverse impressions; colour uniform, a bright scarlet; the whole body thickly covered with velvety, quadrifid hairs. Coxae of the second and third pairs of legs separated by the protracted shoulders. Legs rather short, when compared to the mass of the body, of about equal length, the anterior ones a trifle thinner and longer than the others; slightly compressed, higher than broad, thickly covered with short red hairs which give them a whitish silky lustre; beneath bearing brushes of long, straight, pinnate hairs, which in the fore legs are but imperfectly developed and limited to the first three joints (counting from the coxa); the brushes are wanting from all the tarsi; front tarsi obliquely truncate at the top, their lower surface covered with very short hairs which are arranged into a sort of tactile brush, their claws much smaller than those.

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of the other pairs; the tarsi of the second, third, and fourth pairs bearing long pinnate hairs. Palpi long, extending far beyond the front margin of the body; covered with velvety, pinnate hairs, which on the surface of the appendicula form long fringes. The fusiform mandibles are terminated by a broad, falciform, sharply pointed claw, which is much shorter than the mandible itself.

The description of this beautiful species is drawn from two dried and pinned specimens, which were collected by Mr. Forrer.

2. **Trombidium hispidum**, sp. n.  (Tab. II. figg. 1–1 d.)

Corpus ovato-trigonum, margine anteriori in apicum trigonum protracto; immaculatum, tomentoso-hirsutum, uniformiter coecinum; pilis variobus, disseminatis, elongatis, pinnatis, ex tomento externo indutum, praecipue in regione humerali et versus margine posteriorem. Pedes inaequalis, in paribus 1o et 4o longiores; tarsi primi parvis fusiformis, unguibus minimis. Palpi exserti, pilis elongatis induti; appendicula pyriformi, latiuscula. Mandibulae breves, ungue elongate, anguste, falciforme, subtilissime denticulato, apice obtusulo.

Long. 2, lat. 1 millim.

*Hab. GUATEMALA, Retalhueu (Stoll).*

Body triangular, its anterior margin protracted into a sort of triangular clypeus; colour uniform, scarlet. Body and legs thickly covered with a short velvety pile, out of which spring long, disseminate, pinnate, and slightly curved hairs, which on the shoulders and towards the end of the body are longer and more thickly set than on the remaining parts of the dorsum. The legs are comparatively longer than in *T. mexicanum*, and without brushes on the lower surface. The front tarsus is fusiform, its claws considerably smaller than in the others; the latter are truncate at their top, and bear pinnate hairs, each of which is inserted on an elevation of the integument. The palpi bear elongate, pinnate hairs, which on the second and third joints are arranged in a row; the appendicula is broader than in *T. mexicanum* and bears much shorter hairs. Mandibles short, with a rather cylindrical body, and a long, narrow, slightly curved claw; the concave edge of the latter is, almost imperceptibly, denticulated.

The description and figures are made from living specimens, which were found running amongst dead leaves in the cacao-plantations near Retalhueu.

3. **Trombidium nasutum**, sp. n.  (Tab. III. figg. 1–1 g.)

Corpus fere rhomboideum, depressulum, postice rotundatum, latitudinem maximum inter coxas secundii et terti j pedum paris exhibens, coccinum, tomentoso-hirsutum; tomentum et pilis brevibus quadrididibus constantes; pars cephalothoracis frontalis in apicum carnosum prodacta, clypei instar bases palporum obtusae; coxae lateribus corporis indatae; utrinque interius coxae anteriores inter se valde approximatae, ab coxis posterioribus (inter se approximatis) eundem laterem valde distantes; dorsum impressiones plures transversales exhibens. Primum et quartum pedum par secundo et tertio paululum longiora; tarsi primi parvis fusiformis, unguibus duobus minimis armatas. Palpi marginem clypei superantes; appendicula lanceolata, setas longiores pinnatas gerente. Mandibulae breves, faeci brevi, lata, intus subtilissime denticulata armata.

Long. 1, lat. 0.5 millim.

*Hab. GUATEMALA, Retalhueu (Stoll).*
TROMBIDIUM.

Body rhomboidal, broadest between the coxae of the second and third pairs of legs; scarlet, velvety; the frontal part of the cephalothorax forming a sort of fleshy clypeus, which covers the basis of the palpi; a few transverse furrows run across the dorsal surface of the living animal. The coxae are inserted on the sides of the body; the first and second pairs, which are grouped near together, widely separated from the posterior coxae formed by the third and fourth pairs of legs. The first and fourth (?) pairs of legs are longer than the second (?) and third, each thickly covered with short velvety hairs. Front tarsi spindle-shaped, bearing two very small claws on the top; the other tarsi obliquely truncate, their claws almost simple. The palpi bear long pinnate hairs, which on the third and fourth joints are arranged into rows; the appendicula is lancet-shaped and bears on its surface several long setaceous hairs, which, however, are rather shorter than in T. mexicanum. The mandibles are short and terminated by a short, broad, falciform claw, the inner edge of which is denticulate.

This species is found amongst dead leaves in the forests round Retahuleu. The description and figures were made from the living animal.

4. Trombidiun quinque-maculatum, sp. n. (Tab. IV. figg. 1–1 c.)

Corpus oblongo-ovoidum, depressulum, tomentosum; nigrum, maculis quinque albis dorsalis; harum anteriores pares, magne, triangulares, regionem humeralium utriusque corporis lateris occupantes; reliqua tres maculae imparae, seriem formantes longitudinali in dorso medii; ex his anterior parvula, rotunda, in dorsi centro sita; huic proxima macula impar magna, ovalis, in abdomine medio sita; in abdominis apice macula magna transversa impar. Apex frontalis cephalothoracis linealem longitudinali, brevem, flavulum insupra exhibens. Pedum par primum et quartum longa, crassiuscula, secundo et tertiis pari multo longiora, flavescens, ab articulo tertia usque ad sextum nigrescentia. Palpi flavescentes, pilis nigris sparsis induti; appendicula lata, late inerta. Mandibulae?

Hab. Guatemala, near the city (Stoll).

Body oblong, a little depressed, with a longitudinal furrow on each side; velvety from closely-set, short, thick, quadrifid hairs: colour deep black, with five white spots; these spots are arranged as follows—two, lateral, large and triangular, occupying the region between the bases of the second and third coxae; a small round one nearly in the centre of the dorsal surface between the apices of these; a larger ovoid one, placed between the centre and the end of the dorsal surface; and a large transverse one on the posterior end. The first and fourth pairs of legs are very long, about the length of the body, considerably longer and stouter than the second and third pairs; their colour is ochraceous-yellow, which from joints 3–6 merges into blackish, owing to the short, pinnate, black hairs by which this part is clothed. Palpi ochraceous.

I found one specimen of this richly-coloured species amongst shrubs in a ravine near the city of Guatemala; it was running about in the bright sunshine. Unfortunately, I accidentally lost the mounted preparation of the mandibles before I had drawn and described them.
5. *Trombidium guayavicola*, sp. n.  (Tab. II. figg. 2–2 c.)
Corpus oblongum, tenebrosum; nigrum, maculis duo albis; anterior in medio dorso sita semilunari, imparsi, posteriori anali, triangulari. Oculi rubri. Pedes ochraceo-rufescentes; par primum et quartum secundo atque tertio longiora, crassiora; tarsorum unguis valde recurvi, ad basin serrati. Palporum articuli cylindrici; appendicula brevis, recta, apice rotundata. Mandibulae?
Long. 1, pedibus extensis 4, lat. 0.5 millim.

*Hab.* Guatemala, Retalhuleu (*Stoll*).

Body oblong; velvety-black, with two large white spots—a semilunar one on the dorsum between the coxae of the third pair of legs, and a triangular one at the posterior margin of the body. Eyes red; the palpi and legs of a clear reddish-brown colour. The first and fourth pairs of legs longer and thicker than the second and third pairs; front tarsi spindle-shaped; claws of the tarsi strongly curvate, with some indentations at the basis of their concave edge. Palpi straight, slender, with almost cylindrical joints; the fourth joint with a short claw, and a short, straight appendicula, the latter rounded, very broadly inserted, and bearing several long hairs on the top. The fourth pair of tarsi bear a sort of brush beneath, formed of long, oblique, slightly pinnate hairs; these hairs do not fall off so easily as from the other tarsi, and undoubtedly help the animal in running up the trees.

This species is not rare in the forests near Retalhuleu, where it is to be found running up and down the smooth trunks of the guayava trees (palo volador).

6. *Trombidium trilineatum*, sp. n.  (Tab. I. figg. 2–2 c.)
Corpus oblongum, postice rotundato-truncate, depressiusculum, cocineum, tenebrosum, hirsutio brevi, canescenti; pseudo-prothorax alboscentus, sulco profundo transverso post oculos ab abdomen separatus; dorsum abdominis hirsutio alboscenti, per sulcos duo longitudinales, laterales, parallelos, serpentes in partes tres distinctas separatam. Pedes, palpi et mandibulae rufescentes. Palpi elongati; tertio articulo cylindrico; appendicula brevi, basi lata inserta, apice rotundata.
Long. 1:25, lat. 0:75 millim.

*Hab.* Guatemala, Antigua (*Stoll*).

Body oblong, with almost parallel sides; the dorsal surface divided into a pseudo-prothorax and an abdomen by a deep transverse furrow, from which two lateral longitudinal furrows take their origin; these latter divide the back of the abdomen into three separate, whitish areas. Legs long, slender, reddish-brown. Palpi slender, clothed with long, stiff, dispersed hairs; their third joint long, almost cylindrical; the appendicula short, rounded at its end, and with a few stiff hairs on the top.

This species lives in the hedges and gardens of the valleys of Antigua and Guatemala city. It is commonly found on the leaves of bushes, where it seems to feed on Aphides. When the specimens, by rubbing themselves against the leaves, &c., begin to lose their whitish velvety pile, their colour appears much redder than in the specimen figured.
TROMBIDIUM.

7. Trombidium albicolle, sp. n. (Tab. I figg. 3, 3 a.)

Corpus oblongum, humeri protractis, apice anali rotundatam; coecineum, hirsutulum, maculis aetereaeae stris albis indutum; in apicem frontalem pseudo-prothoracis macula alba; stria transversa lata inter humeros, postice lignam latam medianam in abdomenis dorsum emittens; apex analis albus; due maculae albi lateral-marginales ante corporis apicem sitae, parvae. Coxae lateribus corporis infixa. Pedes longi, graciles, rufescen- centes, inter se fere aequales. Palpi gracies, pilis longis rarioribus instructi; tertio articulo elongato, cylindrico; quarti uque unidentato, appendicula recta, apice rotundata, ad apicem piligera.

Long. 0:75–1 millim.

Hab. GuATEMALA, Antigua (Stoll).

Body oblong, rounded behind, the shoulders protruding; pseudo-prothorax triangular; colour scarlet, with white spots formed by white, thickly-set, velvety hairs; these spots are arranged as follows—a round white one on the frontal surface of the pseudo-prothorax, a large T-shaped one on the middle of the dorsal surface behind the eyes, an anal one at the end of the body, and two small round lateral ones near the margins of the posterior part of the abdomen. Legs, palpi, and mandibles of a clear reddish colour. Legs long, slender, the first and fourth pairs a trifle longer than the second and third. Third joint of the palpi long, cylindrical; the fourth joint with a small tooth on the concave side of its claw, the appendicula straight, parallelsided, rounded at the end, where some stiff hairs are inserted.

This species is found with the preceding, on bushes in hedges and gardens in the valley of Antigua.

8. Trombidium muricola, sp. n. (Tab. II figg. 3–3 b.)

Corpus breve, obovooideum, convexum, humeri rotundatis, apice frontali rotundata; cuticula lavis, sericeo- nitida, nigra, maculis et striis albis, variabilibus figura. Pedes, palpi et mandibulae rufescentes. Pedes longi, graciles; primum par ceteris longius.

Hab. GuATEMALA, Antigua (Stoll).

Body short, ovoid, convex, with the shoulders and the frontal and anal apex rounded; smooth, silky-black, with white spots and stripes varying in form in the different specimens: in some the dorsal surface of the abdomen bears a white triangular spot on its posterior third, and from the acute angle of this, which is directed forwards, two narrow stripes proceed obliquely towards the humeri; in others there only remains a small white spot at the anal end, and a narrow white streak running across the dorsum at a short distance behind the middle, the streak in its centre forming a large angle (sometimes connected with the anal spot by a narrow white line) which opens towards the frontal apex; finally, there occur specimens in which the whole body is black, except a small white border along the posterior margin. The legs are long and slender, the front pair a little longer than the others. Legs, palpi, and mandibles light reddish-brown.

This species is found in the rainy season on the adobe-walls of the nopal-gardens
(small plantations of *Opuntia*, upon which the cochineal insects are reared) round the city of Antigua. It runs busily about in the open sunshine.

**RHYNCHOLOPHUS.**


1. *Rhynchophlus erinaceus*, sp. n. (Tab. IV. figg. 2–2 d.)

Corpus oblongum, convexum; humeris rotundatis, paululum prominentibus; cuticula molli, non refuggente, ex fusco cinerea, pilis clavatulis brevibus, quadrilabis, nigris haud sparse induto; subitus macula alba prope anum. Palpi, mandibulæ atque pedes rutescentes, piligeri. Palpi articulo extremo longo, curvo; appendicula longa, lanceolata atque apice rotundata. Epimera primi et secundi pedum paria utriusque lateris in medio corpore valde approximata, per labium facie contigua, ab epimero posteriorum parium valde distans; margo corporis anterior desuper insipienti globulam piligerum praebens.

Long. 3, lat. 1·6 millim.

**Hab. Guatemala, Antigua (Stoll).**

Body oblong, not depressed, with somewhat prominent shoulders, the skin not shining, greyish-brown; with short, black, quadridif, thick and slightly curved hairs, which are not very thickly set, so that the skin can be easily seen between them; the under surface bearing a whitish spot in the anal region. The palpi, mandibles, and legs are reddish-brown, and bear short, black, appressed, obtuse, quadridif hairs on their upper surface, and longer, imperceptibly pinnate, acute setae beneath. The fourth joint of the palpi forms a curved tooth, and bears long setæ like the preceding joints and the appendicula; the latter is obtusely lanceolate in form. When looked at from above, the anterior margin of the body appears to be prolonged into a reddish globe, the latter bearing some long black hairs. The apex of the labium forms a sort of flat cup with many marginal fringes.

Two specimens, both of which were found under stones in the neighbourhood of Antigua.

**Fam. ACTINEDIDÆ.**

*Acaridae tracheatae corpore subtrianguli angulis rotundatis, brevi, minimo longiore quam latiore, integro. Oculi duo laterales, a margine corporis anteriore valde distantes, facillime parasipi. Cuticula mollis, setis ruxoris acutis, subtilissime pinnatis, induta. Pedes laterales, articulorum senorum, epimeris pedum in quoque lateri valde approximatis. Pedes inter se ferre aequales longitudines, setis ruxis erectis et hirsutis brevi, spissa, appressa induti. Articulüs pedum tarsalis gracieleens, acute terminans, unguisbus duobus curvus armatus; ad eorum basi unguis tertius spatulatus insertus est. Palpi quaternorum articulorum; articulis basalibus brevis, secundus longus, quam eateri longior, subcylindricus, tertius brevissimus, ad apicem interdum tubularis trinis, rectis, obtusis arnatus, ultimus quam secundus brevis atque angustior, apice rotundatus, setiger. Mandibulæ longae, ex basi late sensis apicis versus gracielecen, in apices ungualibus falciformi armatae. Inter mandibularum bases in utroque lateri corporis nascitur orixinum longum tubuliforme, angustum, in apices clavatum, quod horizontaliter palpi basi transgressiens marginem frontalem juxta palporum basin ina superat, ut ad supra insipienti distincte et facillime discernatur. Epistoma triangulare, acutum, apice buido.
ACTINEDA.

ACTINEDA.

Actineda, Koch, Uebersicht d. Arachn. Syst. 3<sup>ve</sup> Heft, 2<sup>oe</sup> Abth. p. 57 (1837).

1. Actineda flaveola, sp. n. (Tab. V. figg. 1–1 b.)
Corpus rotundo-ovoideum, supra convexum, hand longius quam latius; colore citrino, intestinis albide translucentibus.
Long. 0.5 millim.

Hab. Guatemala, Antigua (Stoll).

Body globose, the dorsal surface convex; vivid yellow in colour, with some indistinct whitish spots in the middle of the dorsum, caused by the intestinal contents shining through the semi-transparent skin.

This species occurs on the hills round Antigua, amongst the grass.

2. Actineda antiquensis, sp. n. (Tab. V. figg. 2–2 e.)
Corpus breve, subtriangular vel subpentagonum, paullulum depressum, minime longius quam latius; cocineum, maculis albidos indistinctis ex intestinis translucentibus; in dorsi sube tres transversi breves inaequitidantes perspicul; corporis margines laterales antice convergentes, ante oculos angulatim flectentes ad marginem frontalem formandum; margo posterior late truncatus, angulis rotundatis; hirsutics alba corporis et pedum ita ac in specie precedentii disposita. Tarsorum unguiculae stylo elongato insertae, curvae, integrae, ad earum basis utrinque sola plana oblique inserta; unguis tertius spatius apice in carunculam imbutiformem dilatatus.
Long. 0.75 millim.

Hab. Guatemala, near the city, Antigua (Stoll).

Body short, obtusely pentagonal, slightly depressed from above, a little longer than broad; carmine-red, with a few indistinct whitish spots on the dorsum; on the latter are three short, transverse furrows, the anterior of which is situated somewhat behind the eyes, the two hinder ones very near each other in the posterior third of the abdomen; the anterior part from the eyes forward triangular; the front margin rounded; the side margins not parallel, slowly diverging towards the hind one, which is broadly truncate, with rounded angles; on the dorsum are several rows of impinate white shining hairs. Legs covered with short, thinly set, appressed hairs, amongst which many long, stiff, squarrose setæ are conspicuous; the claws are inserted on a sort of petiole, and bear on each side at their base a fringed short seta; false claw forming a cup-like caruncle.

This species is found on shrubs in the vicinity of Antigua and the city of Guatemala; it has a habit of running rapidly up and down the branches of small trees.

3. Actineda retalteca, sp. n. (Tab. V. figg. 3–3 c.)
Corpus breve, subtrigonium, antice rotundatum, postice truncatum, angulis lateribus obtusis, paullulum depressum; colore rufo, maculis dorsalisibus brunnecis ab intestinis translucentibus; in medio dorse inter oculos latere-marginales macula trigona; post oculum utrinque lateris stria brunea longa, antice bifurcata, oblique ad marginem analem tendens. Tarsorum petiolus unguiculis nodulis tribus dorsalisibus.
Long. 0.75–1 millim.
Hab. Guatemala, Retalhuleu (Stoll).

Body, legs, palpi, and epistoma reddish-yellow. Body short, indistinctly triangular; anterior margin rounded, the posterior one truncate but with rounded angles; on the middle of the dorsum between the eyes is a triangular brown spot, and behind each eye another long and narrow one which goes obliquely to the poster or margin; these three spots are caused by the intestinal contents shining through the soft and semi-transparent skin. The petiole which bears the claws has three nodules on its back. This species lives in the woods of the low country about Retalhuleu.

Fam. TETRANYCHIDÆ, Kramer.

TETRANYCHUS.

Tetranychus, Dufour, Annales des Sciences nat. xxv. p. 276 (1832).

1. Tetranychus guatemalae-novae, sp. n. (Tab. VI. figg. 1–1 c.)
Corpus oblongum, antice late rotundatum, postice sensim attenuatum; humeris rotundatis, hand protractis; oculi latero-anteriores; cuticula mollis, semipellucida, subtillissime dense pleatula. Palpi consoides, crassi, trinorum articulorum. Mandibularum in unum concretarum unguicula in setas longes antice convergentes transformatae sunt, basi recurvæ. Tarsi ungubus duobus, inter ambulacra quattuor sitis.

Hab. Guatemala, near the city (Stoll).

Body oblong, its anterior margin broadly rounded; shoulders not or very little protruding; skin semi-transparent, whitish, very finely wrinkled, with some long, regularly disposed setæ amongst many short ones. Palpi short, rather thick, three-jointed, the last joint with a sort of short double claw. The claws of the mandibles transformed into two thin setæ which converge anteriorly. Labium short, bifurcate. Tarsi with two claws amongst four setæ (‘ambulacula’ of authors), which bear on the top a small, globose bulb.

This species lives in the vicinity of the city of Guatemala, on a common shrub of the genus Cassia; it covers the lower surface of the leaves with its silky webs; the yellowish, comparatively large eggs are protected under circular, transparent covers.

N.B.—I regret that I am unable to offer the reader a more exact and complete description of this species, but I discovered it when preparing to leave Guatemala. I had no time left then for the further study of this interesting species, and I would not have reproduced here the above hasty notes and figures, were it not to prove the existence of the genus Tetranychus in Guatemala.
Fam. HYDRACHNIDÆ.


ATAX.

1. **Atax alticola**, sp. n. (Tab. VII. figg. 1–1 g.)

2. Corpus obovatum, satia altum, vix depressulum, antice et postice rotundatum, postice tuberculis duobus setigeris prominentibus, albo-flavescens, cuticula transparente; macula dorsalis magna, nigra, marginem lobato, valde distincta, per glandulam dorsalem biebriciatam in maculas quinque desuera inapicente divisa; glandula dorsalis antice brunnea, albo marginata, postice flavescens, striam latam medium longitudinalem formans, ex qua antice et postice rami bini laterales nascuntur, ita ut glandula biebriciatam apparet; rami antici latices, postici angustiores, ramuli irregularres lobi formos emittentes. Pedos et palpi longi, pedum par primum ceteris paullo crassius; palporum articulus extremus tridentatus. Lamine genitales subovales, lata; stigmatibus circum tricosis instructis.

*Long*. 1 millim.; *Lat*. 0.75 millim.

*Mas* later.

**Hab.** GUATEMALA, near the city (*Stoll*).

Body ovoid, very little depressed, transparent, whitish-yellow; the middle of the back occupied by a large black patch which is divided by the dorsal gland into five distinct spots; the dorsal gland forming a broad longitudinal stripe, brown with whitish margins in its anterior half, yellowish behind; this stripe emitting two lateral branches from its anterior third and two also from its posterior third, the anterior of which are comparatively broad and offer several ramifications, whilst the posterior branches are narrow and bear but a few ramifications. Legs and palpi long, slender, transparent, light greenish. The front legs, which are only a little thicker than the rest, bear a few pairs of long stiff spines (these spines being obliquely serrate towards the apex), and their tarsal joint is furnished with a row of short, acute spines; the second pair has only a few short hairs on the dorsal surface, the lower surface showing several pairs of long spines like those of the first pair; the third pair has on the lower surface numerous pairs of squarrose spines and a short pinnate bristle at the apical end of the fifth joint, whilst the apex of the fourth joint bears a tuft of long swimming-hairs; the fourth pair shows on the lower surface of the fourth, fifth, and sixth joints a row of short broad spines, like the teeth of a comb, and the apices of the joints bear, except in the sixth, a more prominent pinnate bristle and tufts of long swimming-hairs. The palpi bear a few stiff spines; and the obtuse top of their fifth joint is tridentate.

This species lives in ponds in the vicinity of the city of Guatemala.

2. **Atax septem-maculatus**, sp. n. (Tab. VIII. figg. 1–1 e.)

Corpus ovatum, convexum, pellucidum exceptis maculis dorsaliibus, cum pedibus et palpis ex brunneo albescens; macula dorsalis nigro-fusca, magna, per glandulam dorsalem in maculas septem disjunctas.


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ACARIDEA.

Glandula dorsalis lutea, antica lata, quadrifurcata, postico ramulos duos angostos laterales emitentes. Pedum par primum ceteris haud crassius, par ultimum ceteris longius. Laminae genitales parvae, se invicem angulis internis tangentes, obtusae pentagonae; stigmatibus majoribus quinis, minoribus binis instructae.

Long. 0.5 millim.

Hab. GUATEMALA, near the city (Stoll).

Body ovoid, convex, transparent; brownish-white, like the legs and palpi; the dorsal patch large, blackish-brown, separated into seven single spots by the orange-coloured dorsal gland; the latter divided in its anterior half into two bifurcate branches, whilst at its posterior end it emits two small and narrow lateral branches. The first and second pairs of legs bear on their lower surface a few pairs of long, squarroso spines, which are indistinctly serrate at the end and inserted behind tooth-like elevations of the epidermis; the third pair with a pinnate bristle at the apical end of the fifth joint, and also with several swimming-hairs beneath; the fourth pair with a few short spines beneath, the spines gradually becoming longer towards the apex of the joints, and the apical end of the third, fourth, and fifth joints with a short, pinnate bristle, and towards the apices of the same joints some tufts of long swimming-hairs. The genital plates are small, situated in the middle between the epimera of the fourth pair of legs and the abdominal margin, and touch each other at their inner angles; each plate bearing five large and two small stigmata.

Found in ponds in the vicinity of the city of Guatemala.

Var. ypsilon. (Tab. IX. figg. 1–1 c.)

Corpus ovatum, pellucidum; macula dorsali magna nigro-fusca, granulosa; glandula dorsalis lutea, Y-formis, integra. Laminae genitales pentagonae, parvulae, angulis internis se invicem tangentes, stigmatibus quinis vel semis instructae. Pedes atque palpi siunt in typo.

Long. 0.25 millim.

Hab. GUATEMALA, near the city (Stoll).

Body ovoid, transparent, with a large brown dorsal patch, which is divided by an orange-coloured Y-shaped dorsal gland into three distinct spots. Genital plates pentagonal, touching each other at their anterior angles, each bearing five or six large and two small stigmata. Legs and palpi as in the type.

Found in the same pond with the type in the vicinity of the city of Guatemala.

I cannot consider this little Atax specifically distinct from A. septem-maculatus, with which it agrees in the colouring, in the shape of the legs and palpi, and in the character and size of the genital laminae. It differs from typical A. septem-maculatus in being a trifle smaller, and in the form of the sharply marked, non-ramified dorsal gland.

3. Atax dentipalpis, sp. n. (Tab. X. figg. 1–1 d.)

Corpus ovatum, fere rotundum, depressulum, pellucidum, flavo-albescens, postice tuberculis duobus setigeris; macula dorsalis nigra, lata, per glandulam dorsalem brunneam, albo-marginatam, longam, antice bifur-
1.1a TROMBIDIUM HISPIDUM  2-2b TROMBIDIUM GUAYAVICOLA
3-3b TROMBIDIUM MURICOLA.