

ON THE AQUATIC AND SEMI-AQUATIC HEMIPTERA  
COLLECTED BY PROF. JAMES S. HINE IN  
GUATEMALA.

(First Paper.)

J. R. DE LA TORRE BUENO.

When Professor James S. Hine made his trip to Guatemala in the winter of 1905, he was good enough to permit me to secure his collections of Aquatic and Semi-Aquatic Hemiptera, and I gladly availed myself of the opportunity. As a consequence, I received one of the most notable single collections of waterbugs that has been made. This collection has been in my hands for study for the last three years, but owing to the breaking-down of my health and to other reasons no less imperative, my work on it has been so slow that it has seemed to me convenient to publish what results are in shape at present, and the remainder as shortly after as may be done.

When Mr. G. C. Champion made his protracted stay in Central America in 1879-83, his efforts yielded 72 species in 32 genera, for the whole region treated of in *Biologia Centrali Americana*, of which 53 species in 24 genera were captured in Guatemala. The total number of species recorded from that region and noted in the work cited numbered 136 in 32 genera, two being new, of which records 53 species, 23 of them new, in 25 genera, were found in Guatemala.

Prof. Hine's collecting was far more successful, both as to number of specimens and new and unrecorded forms, and undescribed genera. All the families of waterbugs are well represented, although no examples of eight genera were secured, these being *Merragata* (*Hebridae*), *Velia* and *Platygerris* (*Gerridae*), *Mononyx* (*Nerthridae*), *Curicta* (*Nepidae*), *Cryphocricos* (*Naucoridae*), *Plea* and *Notonecta* (*Notonectidae*), and *Corixa* (*Corixidae*). On the other hand, Prof. Hine adds to the fauna three heretofore unrecorded genera and two new ones, as well as a large number of undescribed species, exceeding 18. The three genera new to the fauna are *Rheumatobates* and *Trepobates* (*Geridae*) and *Martarega* (*Notonectidae*). Appropriate comment will be made on all these in the proper place.

It is my intention to present three papers on this material, this being the first, the other two to follow as quickly as may be. The paper here given is the work of Dr. E. Bergroth to whom I submitted an unrecognized *Rheumatobates* and another obscure *Gerrid*, which he kindly describes in the following pages. The other two papers will be devoted to the *Trochalopodous* and *Pagiopodous* forms respectively.

To make any comment on Dr. Bergroth's finished work "were to paint the lily," nevertheless a few remarks for greater clearness may not be out of place. The paper in question, while based on some of the Guatemalan material does not cover all the specimens, nor give all the records, since only a few of the *Trepobates* were sent, with others from Arizona. The other localities will appear in the systematic part of the list.

In reference to *Rheumatobates*, the brush at the inner end of the fore tibia is also to be found in other Gerridae and its use appears to be for cleaning the antennae at least, an operation repeatedly observed by me in *Microvelia americana* Uhler. While their apparently preferred habitat is in running waters, in my experience *Rh. rileyi* appears to prefer coves and slack waters along the banks of the streams it frequents. Nevertheless, I have found it abundant in a lake in New Jersey, in places where there was *no current*, so it would appear to me that it is not altogether impossible to breed them. Dr. Bergroth also very fully described the winged form of *Rh. tenuipes* Meinert, of which and also of *rileyi*, I possess specimens. But I have also taken a *brachypterous* form in this latitude, in which the hemelytra do not reach the end of the abdomen, being apparently truncate. In some subsequent paper, I hope to be able to more fully elucidate these points.

#### FAMILY GERRIDAE. SUBFAMILY HALOBATINAE.

E. BERGROTH.

To this subfamily I refer only the genera having the inner margin of the eyes convexly rounded. In the subfamily Gerrinae the ocular orbita is arcuately sinuate behind the middle. Mayr (Reise d. Novara, Hem., p. 169) was the first who based the primary subdivision of the Gerridae on this character. But little attention has been paid to it by Bianchi and Champion, and none at all by Distant in his Fauna of British India, but it is carefully indicated in Kirkaldy's generic descriptions. As character for the two subfamilies Bianchi solely gave (in which he was followed by Distant) the breadth of the body compared to its length, a feature entirely unsatisfactory as justly observed by Champion who does not accept the subfamilies. Of the genera included in the Halobatinae by Bianchi at least one—*Potamometra* Bianchi—really belongs to the Gerrinae. I may be mistaken, but I believe that the character derived from the form of the eyes, slight as it may seem, is indicative of a real affinity between the genera having these organs similarly built and I also believe that this rather trivial character could be supported by others when these polymorphous, as yet little known and little understood insects have undergone a thorough and much needed

revision in the hands of a competent hemipterist disposing of ample materials. But from our present scanty knowledge of them to this desideratum is a long step.

### **Trepobates pictus** H. Sch.

Several specimens of the apterous form from Amatitlan, Agua Caliente and Mazatenango, and two macropterous specimens from Gualan.

This is a very variable insect. Most of the Guatemalan apterous specimens have the mesonotum black with two longitudinal curved yellow bands turning their convexity outwards. Specimens from Phoenix, Arizona, and Sligo Glen, Maryland, are similarly colored. In a few of the Guatemalan specimens the mesonotum is entirely black or nearly so, and of this variety I have a specimen from Florida. In specimens from Glen Echo, Maryland, there are four curved bands forming on either side of the mesonotum a rather irregular yellow O which sometimes is incomplete with the ends open, and there is also an oblique yellow streak near the apical angles. I am unable to find any reliable plastic differences between these varieties.

The hemelytra of the winged form have been described by Uhler in Proc. Zool. Soc. London, 1894, p. 213-214. In this form the posterior triangular process of the pronotum is margined with yellow and the whole antehumeral part of the pronotum has an intralateral yellow vitta which usually joins the yellow margin of the process but which in some specimens is abbreviated posteriorly; sometimes there is also an oblong median yellow spot near the apical pronotal margin. The sooty black wings are shorter than the hemelytra but considerably longer than the abdomen and are not folded under the hemelytra. The apical margin of the corium is well marked, except at the inner angle, and placed at right angles to the costal margin and to the longitudinal axis of the body when the hemelytra are closed. The inner vein of the corium is shortly furcate at the apex. The pale longitudinal vitta of the membrane, mentioned by Uhler, is very obscurely indicated in most specimens. The median vein of the membrane is fold-like and usually reaches the apex of the loop formed by the elevated outer and inner vein.

*Trepobates pictus* exactly agrees with the short generic description<sup>1</sup> of *Callistometra* Kirk. According to Kirkaldy this genus differs from *Trepobates* Uhl., "in the incrassation of the anterior femora, in the straightness of the posterior margin of the mesonotum, etc." The incrassation of the anterior femora is,

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1. In the statement, "suture between meso- and meta-sternum straight," metanotum is apparently to be read instead of metasternum; this confusion of the sterna and the nota is frequently met with in the descriptions of this author.

however, in some Gerrid genera only of specific importance and the posterior margin of the mesonotum is perfectly straight also in *Trepobates*. Kirkaldy further adds: "The length of the abdomen, moreover, will distinguish it from any of the smaller Halobatitae." Unfortunately the author in his description gives no statement whatever as to the length of the abdomen. But as the genus *Rheumatometra* Kirk. (of which I have cotypes) differs from the allied genera by a multitude of characters not mentioned in the description, I think that this also may be the case with *Callistometra*. In point of fact Kirkaldy states in the specific description of *C. Taylora* that the last ventral segment of the female is "roundly emarginate." This would indicate a genus more nearly allied to *Metrobates* Uhl. and *Telmatometra* Bergr. than to *Trepobates* in which the apex of the last female ventral segment is truncate. The posterior femora of *C. Taylora* are said to be "about seven and one-half times longer than the tibiae." If this statement is correct the posterior tibiae are exceedingly short.

The genus *Halobatopsis* was founded by Bianchi on the description of the fresh water Gerrid *Halobates platensis* Berg and is said to have the "first joint of the antennae about one-fourth shorter than the second and third combined" whilst *Trepobates* is stated to have the "first joint of the antennae not shorter than the second and third combined." This would be a very slight difference, unsupported as it is by other characters, and the antennae of *Trepobates* are really variable to a certain extent, some specimens agreeing with the diagnosis of *Halobatopsis*. According to Bianchi *Trepobates* has the "second joint of the antennae about two-thirds of the third" and the "fourth joint of the antennae distinctly longer than the third." "The mutual length of the last three antennal joints of *Trepobates* is, however, also somewhat variable and on the whole they can be said to be of sub-equal length. The hemelytra of *Halobates platensis* are thus described by Berg: "Hemelytra basi biareolata, deinde venis tribus longitudinalibus (vena media pliciformi) instructa." This exactly fits *Trepobates* and there is nothing in Berg's description indicating that *Halobates platensis* is generically distinct from *Trepobates pictus*. Ashmead has described a Canadian species under the name *Halobatopsis Begini*. I am at a loss to make out why he has placed it in the genus *Halobatopsis* Bianchi as the first antennal joint, in direct opposition to the only generic character given by Bianchi, is described as "distinctly longer than joints 2 and 3 combined." The second joint, too, is said to be "longer than the third, the latter being about three-fourths the length of the second," whereas *platensis*, the type of the pretended genus, is described by Berg as having "articulo secundo

tertio brevior." Judging from the description *Halobatopsis Begini* Ashm. belongs to a new genus.

*Trepobates pictus* is not recorded from Central America in the "Biologia" but it was recorded from Tamaulipas, Mexico, by Uhler in 1884, and is distributed southwards at least to Venezuela from where I have winged specimens.

#### **Telmatometra** Bergr., n. gen.

Body about two and one-half times longer than broad. Head subtriangular, much broader than long, rounded in front, antocular part much shorter than the eye; seen in profile the apex of the head is subangularly rounded and distinctly projecting beyond the base of the rostrum; eyes prolonged backward beyond the basal margin of the head by nearly one-fourth their length, the prolonged part touching the lateral margins of the prothorax, the upper inner margin of the eyes rounded; the parallel-sided, at the base somewhat dilated clypeus not visible from above, bent back towards the underside of the head, giving the head a somewhat "homopterous" appearance when seen in profile; labrum almost reaching the apex of the first rostral joint; rostrum extending considerably beyond the anterior margin of the mesosternum but not reaching its middle; second joint very short, ring-like, third joint long; antennae inserted immediately before the eyes a little above the level of their lower margin, long and thin, in the female distinctly passing the base of the venter, in the male (owing to the shorter abdomen) almost reaching the tip of the abdomen, third joint longest, even longer than the basal joint and more than twice as long as the second joint, fourth joint almost twice the length of the second, the two basal joints a little thicker than the two thread-like apical joints. Thorax widening from the apex to the middle acetabula, sides very slightly rounded, more distinctly so towards the apex. Pronotum in the winged form extending backwards over the mesonotum, widening from the apex to the humeral angles, then gradually tapering to the rather narrowly rounded end, the apical margin straight between the eyes. Mesosternum convex without rostral furrow, broadly arcuately sinuate posteriorly. Mesopleurae bent over to the dorsal side of the thorax, a narrow posteriorly broadening part of them being visible from above. Metasternum very short, of the same size and appearance as the first ventral segment, orificium not visible, apparently hidden under the posterior margin of the mesosternum. Metapleurae visible only from above, separated from the dorsal part of the mesopleurae by a deep oblique suture. Hemelytra complete in the winged form, membrane well separated from corium except at the inner part where it is subconfluent with the endocorium and the claval area; corium with the subcostal vein usually obliterated towards the

end, median vein forked a little before the apex, the outer branch merged in the apical margin of the corium, the inner branch running some distance into the membrane where it joins the inner (claval) vein, forming a loop emitting a vein from its apex; apical margin of corium extending from the median vein to the costal margin; apical angle of corium acute. Wings folded under the hemelytra in such a way that they scarcely reach the middle of the abdomen. Abdomen about as broad as the pronotum between the humeri, the dorsal side in the male a little shorter, in the female a little longer than the pronotum, venter in the male shorter, in the female longer than half the length of the mesosternum; the last segment of the connexivum tapering from the base to the pointed tip, in the female projecting backwards and reaching the middle of the first dorsal genital segment to the margin of which it is closely attached; the first five ventral segments short, of equal length, the sixth ventral segment in the female as long as the three preceding segments together, in the male a little shorter, arcuately sinuate behind, more profoundly so in the female; genital segments symmetrical, two such segments being visible in either sex from above and from beneath; first dorsal genital segment very much shorter in the male than in the female; first ventral genital segment entire in the male, in the female made up of two lobes contiguous along their whole length; apical genital segment in the male cleft in the middle when seen from the side, knob-like in the female. Legs slender, middle pair much the longest and inserted immediately under and a little in front of the hind pair, their trochanters passing the apical margin of the hind acetabula by half their length. Fore femora reaching the last fourth of the mesosternum, scarcely incrassated, slightly curved at the base; tibiae considerably shorter than the femora; tarsi shorter than half the length of the tibiae, first joint a little variable in length, second joint three or four times longer than first. Middle femora longer than the mesosternum, a little thicker than the fore femora, tapering from the base to the middle; tibiae longer than the femora; tarsi a little longer than half the length of the tibiae, two-jointed, first joint longer than second. Hind femora longer and conspicuously thinner than the middle femora; tibiae a little longer than half the length of the femora and more than twice shorter than the middle tibiae; tarsi about thrice shorter than the tibiae, two-jointed, joints of equal length.

Apterous form unknown.

Allied to *Trepobates* but at once distinguished by the structure of the head, antennae, corium and genital segments. The hemelytra seem to be exceedingly brittle in this insect. They are no doubt much longer than the abdomen but in all the six specimens before me the membrane is broken off near its basal margin making it impossible to give a complete description of its veins.

**Telmatometra Whitei** Bergr., n. sp.

Elliptical, ground color yellow. Head with a round apical spot and two rather irregular longitudinal fasciae above black, these fasciae touch the anterior angle of the eyes, are widening behind and do not reach the base of the head; antennae and last rostral joint blackish. Pronotum margined with black, except at the apex of the posterior process, and with two short apical vittae and a large oblong discal patch black, this patch being broadly rounded anteriorly, tapering and pointed posteriorly. Mesosternum with a longitudinal lateral line (interrupted a little behind the middle), an angular vitta in front of the middle coxae and a long slightly curved pleural vitta black. Suture between meso- and meta-pleurae and a vitta on the outer side of the hind acetabula black. Basal and apical margin of the dorsal abdominal segments, lateral margin of connexivum and the sutures between its segments black. Legs black, the femora usually with two pale testaceous streaks along their whole length and the middle femora with a pale subapical ring. First dorsal genital segment in the male shorter than the last dorsal abdominal segment, angularly emarginate at apex, in the female longer than said segment, arcuately sinuate at apex; first ventral genital segment in the male shorter than the last ventral segment, roundedly sinuate at apex, in the female as long as the last ventral segment, truncate at apex. Second female genital segment black. Length, ♂ 5 mm., ♀ 5.3-5.6 mm.

1 ♂ and 5 ♀ from Escuintla.

Named in memory of the late Dr. F. Buchanan White.

**Rheumatobates praeposterus** Bergr., n. sp.

Above plumbeous black, head, pronotum, sides of mesonotum (broadly) and connexivum velvety black, pronotum with a median quadrate or usually transversely rectangular whitish spot occupying the whole length of the pronotum, middle acetabula with a small round whitish or yellow spot at their base, basal part of the female dorsal genital segment often with a small yellowish spot; underside brownish black, mesosternum with a median crescent-shaped or triangular yellow spot and a large lateral whitish patch, fore acetabula, prosternum between them, the underside of the middle acetabula and the last female ventral segment whitish, the basal part of the female ventral genital segment tinged with whitish on the sides; antennae black, third joint in the male broadly whitish at apex, basal joint in the female, except at apex, fusco-luteous above, whitish beneath; rostrum brownish black, shining; legs black, fore and hind coxae, all trochanters and fore femora from the base to near the apex whitish, middle coxae fuscous or ob-

scurely luteous. Head with a few outstanding hairs on the lateral margins; eyes seen from the side reaching the mesopleura with one or two curved outstanding hairs near their posterior angle; second antennal joint very short. Pronotum more than three times broader than long, not reaching the lateral margins of the body, being separated from them by a short prominence of the mesopleura touching the backwardly prolonged eyes. Mesonotum almost one-half broader than long. Fore-legs: femora a little longer than the tibiae and tarsi together,

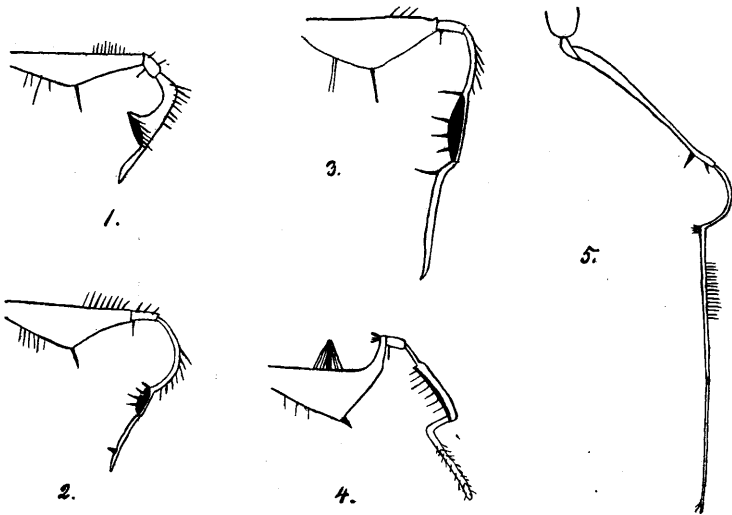


FIG. 1. Male antenna of *Rheumatobates imitator* Uhl.  
 FIG. 2. Male antenna of *Rheumatobates Rileyi* Bergr.  
 FIG. 3. Male antenna of *Rheumatobates tenuipes* Mein.  
 FIG. 4. Male antenna of *Rheumatobates praeposterus* Bergr.  
 FIG. 5. Right male middle leg of *Rh. praeposterus*.

In the Figures 2, 3 and 4, the antenna is figured from the outside and a little from behind in order to show the spongy pit of the third joint. Figure 1 shows the antenna from the inside, the spongy pit in this species not being visible from the outer side.

as long as the distance between the eyes and the middle coxae, fringed beneath with moderately long hairs; tibiae with two long hairs on the underside; tarsi distinctly shorter than the tibiae, claws very fine, hair-like. Middle legs: coxae considerably thicker than the hind coxae, especially in the male; trochantera convex, thicker than the linear hind trochantera; femora with a series of exceedingly short and fine colorless bristles on the underside; mutual length of tarsal joints a little variable, first joint three to four times longer than second. Hind legs: femora with



similar bristles on the underside as the middle femora, about one third longer than tibiae, these about two and a half times as long again as the tarsi; first tarsal joint usually a little longer than second. Length, ♂ 2-2, 2 mm., ♀ 2, 6-2, 9 mm.

Male: head, pronotum and mesonotum together longer than the rest of the body; first antennal joint as long as head, incrassated and compressed and with a submedian spine on the upper and under side, the apical part upturned with a tuft of hairs on the inner side of the tip, the upper margin of the joint almost straight from the base to beyond the middle, the lower margin angularly dilated, second joint inserted at right angles to the fore side of the apex of the first joint, third joint shorter than first with the short basal part narrower than the second joint, straight and linear, then moderately and suddenly incrassated but not dilated and proceeding in a gentle curve to the apex, the curved apical part occupying more than two-thirds of the joint and provided on the posterior side with a very shallowly impressed spongy surface with some stiff hairs on the lower margin and a tooth-like projection at the base, fourth joint a little longer than third, inserted at right angles to the backside of the apex of the third joint, unarmed, shortly pilose, rectangularly curved not far from the base (fig. 4); fore femora very slightly thickened towards the base; middle femora as long as hind femora, slightly curved and incrassated towards the base and with a spine on the inner side not far from the apex and a very short acute spur on the same side immediately before the apex, middle tibiae subsemicircularly curved at the base, turning the convexity of the curve outward, with a tuft of short hairs on the inner side of the tip of the curve, from which point to the apex the tibiae are straight with some rather short straight hairs on the outer side of the middle part (fig. 5); hind legs straight, simple, three fourths longer than the body, the tip of the abdomen slightly passing the base of the hind femora when they are stretched straightly backwards.

Female: head, pronotum and mesonotum together shorter than the rest of the body; antennae simple, linear, first joint a little shorter than the head, third joint a little longer than first with a few rather long and stiff hairs on the inner side near the base and apex, fourth joint as long as third; fore femora linear; middle legs straight, simple, femora longer than hind femora, tibiae a little shorter than femora and longer than tarsi; hind legs as long as the body, the tip of the abdomen reaching the apical fourth of the hind femora when they are stretched straightly backwards.

Four males, numerous females and some larvae from Puerto Barrios. No winged specimens were taken. The genus *Rheumatobates* was not previously known from Central America.

The median yellow spot of the mesosternum is sometimes almost lacking and in one specimen the whole body, including antennae and legs, is almost entirely sooty black with scarcely any traces of lighter markings.

To the upper spine of the first antennal joint in the male are attached a few hairs uniting its apical half with the surface of the joint. These hairs are never free, always glued on to or coalescing with the spine.

In the larva the mesonotum has a median yellow spot touching the anterior margin, as in the imagines of the other species, but this spot entirely disappears in the imago.

In two of the three previously described species of this genus the hind legs of the male are incrassated, curved and deformed in a curious way with singular chitinous processes, making them unique in their monstrousness among all known Heteroptera. In the male of *Rh. praeposterus* the hind legs are normal, it being the *middle* pair of legs which is misshapen and this only in a moderate degree.

The male antennae afford good specific characters for the different species of this genus and their structure is very remarkable and unprecedented among other Heteroptera. They much remind of the male antennae in the Collembolan genus *Sminthurides* and it would be interesting to know if they are used in the same manner as in *Sminthurides*, the male of which winds them round the antennae of the female during the copulation. They seem at least admirably adapted to this purpose. Or else could they be of use in clinging to stones, etc., when the insects are drifting down on swiftly running water. This is, however, less probable as the females have simple antennae. An other point of interest is that some of the spines and chitinous processes of the male antennae and legs seem to be composed of hairs cemented together by some viscous fluid. These insects probably have some glands secreting such a fluid. Under the microscope the last antennal joint shows several sense-organs and at the very tip an excavation bearing a short brush. A brush is also situated at the inner end of the fore tibiae. The spongy pit at the apical part of the third antennal joint may also be a sense-organ or possibly a suctorial organ. Unfortunately little is known of the biology of these insects although two species are common at certain points near the Atlantic coast, for instance at Glen Echo, Maryland. As they thrive only on running water it would be difficult if not impossible to rear and study them in aquaria. No species of the genus has hitherto been found far from the seashore and none is known from the Pacific Coast. Entomologists in Southern California should keep a lookout for them.

Riley made a strange mistake in regarding *Rh. Rileyi* Bergr. and *Rh. tenuipes* Mein. as the "abnormal" and "normal" form of one and the same species and thus they are generally designated in American collections. There cannot be the faintest doubt

that they are quite different species, as pointed out by Meinert in his magnificently illustrated paper on this genus. Riley was evidently led astray by the fact that the females of the two species are very much alike and that they often live together. Even the females are, however, readily distinguished by a glance at the underside. In *Rh. Rileyi* the mesosternum is yellow, unicolorous; in *Rh. tenuipes* it is yellow with the anterior margin and two backwardly diverging bands brownish black. By comparing numerous specimens I have found that this color-difference, although not mentioned by Meinert, is perfectly constant. Moreover, the breadth of the mesonotum as compared with its length is different in the two species. Riley also overlooked the different structure of the male antennae.

I quite agree with Heidemann that the genus *Hymenobates* Uhl. (1894) is founded on the winged form of *Rheumatobates* Bergr. (1892), *Rh. Bergrothi* Mein. (1895) from the island of Grenada, being the apterous form of *H. imitator* Uhl. (1894) described from the same island. What Uhler describes as the "long thick coxa" of the hind legs is really the trochanter which in this species is enormously incassated, forming a much greater mass than the coxa.

As the previously known species of the genus are inadequately described in several points I here append a key to the species. Knowing the winged form of but one species, I refer below only to the apterous forms. I have not seen the female of *Rh. imitator* and possessing a single carded male I do not know if the yellow mesosternum in this species is unicolorous or spotted.

- 1 (6) Mesonotum with a median yellow spot. Connexivum bright yellow, sometimes more or less infuscated. Eyes not reaching the mesopleura. The three last ♂ antennal joints inserted in the apex of the preceding joint in the usual normal way, first joint with a slender spine beneath near the middle, unarmed above, its upper margin straight, third joint with the basal part more or less strongly curved, the apical part straight with a shallow spongy pit on the posterior side. Middle femora in the ♂ straight, unarmed, fringed with long hairs on the inner side, tibiae also fringed with hairs on the inner side.
- 2 (3) Mesonotum much broader than long. Second ♂ antennal joint with a slender spine beneath near the base, third joint with a strong triangular tooth at the basal end of the not dilated spongy pit, the lower margin of the pit beset with stiff hairs, fourth joint much shorter than third, straight, unarmed. Middle coxae in the ♂ not thicker than the hind coxae, trochantera many times smaller than the hind trochantera, femora fringed with long hairs on the inner margin near the base and apex, the remaining part glabrous, tibiae somewhat curved in the middle where they are thickest, from the base to near the middle fringed on the inner side with short curved hairs, then along a shorter space with long hairs. Hind trochantera in the ♂ excessively incassated, much broader and thicker than the coxae and femora, armed with a stout spine on the upper side, longly and thickly pilose on the inner side, femora incassated and curved with a strong tooth on the upper side before the middle and a curved chitinous process on the inner side behind the tooth, near the apex on the

same side with an other linear chitinous process (apparently made up of hairs glued together), tibiae rather stout, slightly curved, the inner margin with scattered hairs from the base to the middle, behind the middle fringed with long hairs.

*imitator* Uhl.

- 3 (2) The spongy pit of the third ♂ antennal joint dilated on the under side, its lower margin studded with spinules, fourth joint armed with a spine. Middle coxae in the ♂ thicker than the hind coxae, trochantera not or scarcely smaller than the hind trochantera, femora fringed with long hairs along the whole inner margin, the longest hairs being in the middle, tibiae straight, their basal half thicker than the apical half. Hind trochantera not incrassated, unarmed.
- 4 (5) Mesonotum conspicuously broader than long in both sexes, the median yellow spot not or scarcely narrower than the pronotal spot. Mesosternum yellow, unicolorous. Second ♂ antennal joint beneath with a slender spine at the base, the curved basal part of the third joint three-fourths the length of the whole joint, the spongy pit occupying only the apical fourth with a short spinule at its base, fourth joint about half the length of the third, curved from the base to the apex with the spine in the apical half. Middle tibiae in the ♂ fringed with rather short hooked hairs on the inner side of the basal half. Hind trochantera in the ♂ rather thickly pilose above, femora incrassated and strongly curved, fringed with moderately long hairs on the inner side near the base, the apex with two bunches of long hairs glued together, tibiae rather stout, a little curved, attenuated at the base and inserted before the apex of the femora in their outer side, fringed with rather short and stiff straight hairs on the upper inner side and emitting a backwardly directed fascicle of very long hairs glued together from a point somewhat behind the base on the inner side.
- Rilevi* Berer.
- 5 (4) Mesonotum scarcely (♂) or slightly (♀) broader than long, the median yellow spot distinctly narrower than the pronotal spot. Mesosternum yellow with the anterior margin and two posteriorly diverging bands brownish black, these bands not reaching the posterior margin, dilated near the anterior margin. Second ♂ antennal joint beneath at the base with a small tubercle bearing a fine hair (not visible when the joint is strongly deflected), the curved basal part of the third joint one-half the length of the whole joint, the spongy pit occupying the apical half with a long slender spine at its base, fourth joint scarcely shorter than third, curved near the base and at the extreme apex with the curved spine in the basal half. Middle tibiae in the ♂ fringed with short hooked hairs on the inner side from the base almost right to the apex. Hind legs in both sexes simple, straight and hairless.
- tenuipes* Mein.
- 6 (1) Mesonotum much broader than long in either sex, without a median yellow spot. Connexivum velvety black. Eyes reaching the mesopleura. Second and fourth antennal joint in the ♂ inserted rectangularly in the side of the apex of the preceding joint, first joint with a submedian spine above and beneath, its upper margin sinuate behind the middle owing to the apical part of the joint being strongly upturned, second joint beneath at the base with a stiff hair (not visible when the joint is deflected), third joint with the short basal part straight, the curved apical part considerably thicker than the basal part and more than two thirds the length of the joint with a very shallowly impressed almost flat spongy pit, the lower margin of the pit with some stiff hairs and its base with a short tooth-like projection, fourth joint a little longer than third, unarmed, rectangularly curved

not far from the base. Middle coxae in the ♂ much thicker than the hind coxae, trochantera convex and thicker than the linear hind trochantera, femora hairless, slightly curved, incrassated towards the base, on the inner side with a spine a little before the apex and a short spur just by the apex, tibiae very strongly curved at the base with a tuft of short hairs on the inner side of the end of the curve, between which point and the apex the tibiae are straight and fringed with rather short straight hairs on the outer side of the middle part. Hind legs in both sexes simple, straight and hairless. *praeoposterus* Berg.

The genital segments show much the same structure in all the species.

The following are the salient characters of the macropterous form as represented by two winged specimens (♂ ♀) of *Rh. tenuipes* in my collection: Pronotum prolonged backward, covering the mesonotum, the posthumeral part forming a subtriangular process with slightly rounded sides and rounded apex; a blunt transversal keel between the humeri but not reaching them and a median longitudinal impression between this keel and the pale apical spot; an impressed line inside the lateral and posterior margins. Scutellum half-concealed under the posterior end of the pronotal process, blunt and callous at apex. Hemelytra very much longer (♂) or moderately longer (♀) than the abdomen; corium membranous but well separated from the membrane, greyish white, with brown veins, costal margin thickened, subcostal vein very fine, abbreviated towards the base, in the female not discernible or coalescing with the costa, discal vein furcate at apex, the short outer branch joining the costa a little before its apex, the long inner branch running straight to the inner apical angle joining the base of the inner vein of the membrane, apical margin a little oblique, the outer apical angle slightly obtuse, the inner slightly acute; clavus narrow but distinct throughout its length, greyish white with a short brown basal vein barely passing the apex of the scutellum; membrane distinctly (♂) or slightly (♀) longer than the corium, smoky, with an outer and inner vein forming a loop and a median fold-like greyish white vein. Wings considerably (♂) or a little (♀) longer than the abdomen, shorter than the hemelytra, smoky, the veins arranged and colored as in the membrane.

The veins of the corium are thus arranged much on the same plan as in the genus *Trepobates* and those of the membrane are practically identical in the two genera and very different from the veins in the subfamily Gerrinae.

I have not seen the winged form of *Rh. Rileyi*; a figure of it is given as a frontispiece to the last parts of the Proc. Ent. Soc., Washington.

What Uhler describes as the "narrow, almost linear corium" in the winged form of *Rh. imitator* is evidently not the whole corium, but only the space between the discal vein and the costa.