XXIII.

# THE WATER-STRIDERS OF THE SUBFAMILY HALOBATINAE IN THE HUNGARIAN NATIONAL MUSEUM.

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# (With 12 figures.)

The present paper is based on the material of the Hungarian National Museum and worked out during my stay in Budapest, 1925—1926, with special allowance of Dr. G. HORVÁTH, ex-Director of the Zoological Department of the Museum. The larger part of the material was hitherto not studied, while the other part was already determined by Dr. HORVÁTH and some other hemipterologists, and, in fact, it contains a large number of interesting new forms which are to be described in the present paper. At present, the collection of the subfamily *Halobatinae* of the Hungarian National Museum contains 15 genera and 35 species, of which 3 genera and 16 species are now proved to be new to science. Of the other groups of the family *Gerridae*, there is also very rich material, which, however, I have no opportunity to study in details at present.

At the beginning of the paper, I wish to acknowledge my indebtedness to the following gentlemen: To Dr. G. HORVÁTH, for his extraordinary generosity and the valuable suggestions given to me not only for the present study but also in various ways during my stay in Budapest, as well as in publishing this paper in the Annals of the Museum. To Mr. E. CSIKI, Director of the Zoological Department of the Museum, to Baron Dr. G. J. DE FEJÉRVÁRY and Dr. J. SZABÓ-PATAY, curators of the Museum, to Mr. J. UJHELYI, and to many other zoologists of the Museum, for the interest they took in my work. To Dr. L. BIRÓ, honorary Curator of the Museum, for communicating some interesting data on the biology of the insects collected by him. My sincere thanks are also due to Dr. A. HANDLIRSCH, of the Natural History Museum in Vienna, for his kind assistance in forwarding some types and other valuable specimens of that museum, completing hereby the present study.

# Gen. Stenometra nov.

Apterous form. - Body fusiform, much elongated. Head much longer than broad between eyes, considerably protruded anteriorly from the anterior end of eyes. Vertex very broad, moderately consctricted near the middle, much widened near the base, posterior margin straight. Eyes much rounded exteriorly, a little protruded posteriorly from the posterior margin of vertex. Antennae shorter than body, first joint much the longest and stoutest, shorter than the other three joints put together, second joint longer than half the length of first, third and fourth joints subequal in length, a little shorter than half the length of first, fourth joint a little stouter than the third. Rostrum reaching the mesosternum, first joint stout and much longer than thick, second joint very short, shorter than half the length of first, third joint longest, much longer than first and second taken together, thickened and curved upwardly at the middle, fourth very short, shorter than half the length of third, strongly tapering towards the apex. Pronotum short, transverse, about as long as one half the length of head, anterior margin straight, posterior margin more or less sinuate posteriorly. Mesonotum very wide and long, widest at the posterior end, much longer than head and pronotum taken together, a little convex, anterior margin sinuate posteriorly, posterior margin sinuate anteriorly. Metanotum distinctly defined from mesonotum, nearly half the length of mesonotum at the middle, much narrower than mesonotum, more or less obscurely divided into two equal portions transversely. Posterior margin of mesosternum much sinuate anteriorly. Orifice of metathoracical gland at the anterior end of metasternum forming a very conspicuous tubercle. Anterior legs rather stout, femur moderately stout, slightly curved, tibia slightly shorter than femur, much flattened, blade-shaped, much widened towards the apex, broadest a little before the apex, tarsus large, longer than half the length of tibia, first joint very small, scarcely longer than thick, second joint about six times as long as first, claws small, inserted near the middle of second tarsal joint. Intermediate legs very long, femur nearly as long as body, tibia about one and a fourth times as long as femur, a little thinner than the latter slightly tapering towards the apex, tarsus about two-thirds the length of tibia, much thinner than the latter, first joint a little longer than second. Posterior legs much shorter than intermediate pair, femur a little longer but much thinner than intermediate femur, tibia very short, much shorter than half the length of femur, tarsus nearly half the length of tibia, second joint longer than first. Dorsal surface of abdomen longitudinal;

lateral margins nearly parallel, first dorsal segment longer than the others, anterior margin sinuate anteriorly, second and third segments equal in length, shorter than first, fourth longer than third, fifth and sixth segments equal in length, shorter than third. Male genital segments conspicuous dorsally, much similar to those of certain species of *Metrocoris*, first dorsal segment nearly as long as broad, second segment much shorter and narrower. Connexiva very narrow, vertically sloped inwardly. Female unknown.

Macropterous form. — Unknown.

# Genotype: Stenometra Birói n. sp.

Though some characters of this genus remind those of the *Ptilomera*-group of the family, while others recall those of the *Gerris*-group, it still belongs to the *Halobates*-group, differing from all the other genera in the structure of the anterior tibia and tarsus, intermediate and posterior legs, head, dorsal abdominal segments, etc.

# 1. Stenometra Birói n. sp. (Fig. 1.)

Apterous form. - Body black with pale brown markings above, light

vellowish brown beneath. Head black with a very conspicuous, somewhat irregular four-forked marking on vertex. Eyes dark brown. Antennae dark brown. Rostrum pale yellowish brown, with first joint, a line on the ventral side of third joint. and fourth joint black. Pronotum black with two pale brown spots along the anterior margin. Mesonotum black with four pale brown longitudinal fasciae, of which inner two being longer than the outer two and sometimes touching to each other. Pleural portions of mesonotum gravish pubescent. Metanotum black. Ventral surface of thorax light yellowish brown, the portion



Fig. 1. — Stenometra Birói n. sp. — a, apterous male; b, antenna; c, anterior femur, tibia and tarsus; d, intermediate tarsus; e, posterior tarsus.

surrounding the orifice of matethoracic gland tinged with dark orange. Anterior legs pale brown, with a conspicuous fascia on the underside of trochanter and femur, margins of flattened tibia and tarsus, blackish brown. Intermediate and posterior legs brown, apex of intermediate femur and of tibia, intermediate tarsus, posterior tibia and tarsus much darker. Dorsal abdominal segments and connexiva black, male dorsal genital segments pale brown, with the posterior margin, and sometimes the basal portion of the first segment, black. Ventral abdominal segments pale yellowish brown, with the basal margin of each segment black. Male ventral genital segments pale yellowish brown.

Structural characters are given in generic diagnoses.

Length of body: 7 4.2-4.3 mm. Breadth of body: 7 1.5 mm.

Macropterous form. — Unknown.

Habitat: Malay Peninsula.

Туреs: 3 ♂ ♂. — Singapore (1897, Віко́).

This curious insect is represented by only three apterous males in the collection.

# Gen. Amemboa Esaki.

Amemboa Esaki, Philipp. Journ. Sci. XXVI., p. 62. (1925).

Two species, of which one in new to science, are in the collection.

### 1. Amemboa Fumi Esaki.

Amemboa fumi Esaki, Philipp. Journ. Sci. XXVI., p. 63. tab. 2. fig. 22–29. (1925). Formosa: Kanshirei (3 7 7, 3 9 9, 1 larva, SAUTER).

This species is common on mountain streams throughout Formosa. Here I record two other habitats of the species, viz. Northern Mindanao: Tankulan, 1000 feet (one specimen in Mr. TAEUBER's collection, Munich) and Sumatra: O. K. Tandjong Paoh, Mahat (one specimen in the Zoological Museum in Petersburg). Types are in my collection.

# 2. Amemboa Horváthi n. sp. (Fig. 2.)

Apterous form. — Body pale brown. Head pale brown with somewhat M-shaped black marking on vertex, and two silvery spots on frons. Eyes dark blackish brown, shining. Antennae pale brown with apices of first and second joints, third and fourth joints entire much darker. Rostrum pale brown with a line on underside black. Pronotum pale brown with four longitudinal black fasciae, of which the two inner ones are much thicker than the two outer ones. Mesonotum pale brown, with two inner longitudinal fasciae, these being much thickened towards the middle, two lateral thin fasciae, which being bifurcated posteriorly at the middle,

and two subpleural fasciae black, the last adorned with a very handsome longitudinally percurrent silvery line. Metathorax black. Unterside of thorax much paler than dorsal surface, owing to silvery pubescence, with very conspicuous central fascia and two lateral fasciae, the latter ones not reaching the posterior margin of mesosternum, black. Intermediate acetabulae with a silvery fascia above, and a black lateral fascia. Posterior acetabulae with a silvery spot above. Legs pale brown with

tarsi much darker. Abdomen above dark brown with black markings, but much obscured by brown pubescence. Underside of abdomen pale yellowish brown as in sternum, with a conspicuous black central fascia, continuous to that on sternum.

Body fusiform, much thickend at the mesothorax. Head much longer than broad between eyes. Vertex moderately convex. Eyes much projecting laterally, almost hemispherical, inner margin straight, almost free from anterior margin of pronotum. Antennae very long and slender, nearly as long as body in female, first joint stouter than the rest, remarkably curved outwardly, a little longer than second, second and third nearly equal in length, fourth joint longest, curved, about one and a half times as long as third. Rostrum slightly passing the posterior margin of prosternum. Pronotum transverse, slightly shorter than head, anterior margin straight, posterior margin sinuate posteriorly. Mesonotum very large and convex, well-defined from metanotum. Anterior legs in females not armed, (male unknown,) femur a little stouter but a little shorter than tibia, tarsus shorter than half the length of tibia, first joint about one half the length of second. Intermediate legs very long, femur nearly as long as body in female, and as tibia and tarsus together, tibia about two-thirds the length of femur, tarsus about as long as half the length of tibia, first joint about twice as long as second. Posterior



Fig. 2. Amemboa Horváthi n. sp. — a, apterous female; b, antenna; c, anterior tarsus.

legs much shorter than intermediate ones, femur a little shorter than intermediate femur, tibia shorter than half the length of femur, tarsus much longer than half the length of tibia, first joint about twice as long as second. Abdomen shorter than meso- and metanotum together, connexivum very broad, nearly as broad as dorsal plate of abdomen, female dorsal genital segments very small. First five ventral abdominal segments very short, sixth segment longer than the first five segments together,

much narrowed posteriorly, genital segments not visible from the ventral side.

Length of body:  $\bigcirc$  4.5 mm. Breadth of body:  $\bigcirc$  1.7 mm.

Macropterous form. — Unknown.

Habitat: Annam.

Types: 2  $\bigcirc \bigcirc$ . — Annam: Laos.

This species is quite distinct from Amemboa Fumi ESAKI, differing from the latter in its paler coloration and much stouter shape of body and the structure of the genital segments, though it is rather difficult of find other morphological differences.

The genus Amemboa belongs to the Halobatinae, but in some points it has some resemblances to Onychotrechus KIRK. of the Gerrinae.

This species is named in honor of Dr. G. HORVÁTH, whom I heartily acknowledge my indebtedness for his extraordinary kindnesses and his generosity I enjoyed during my stay in Budapest.

# Gen. Naboandelus DIST.

Naboandelus Dist., Ann. Mag. Nat. Hist. (8) V. p. 151. (1910); Faun. Brit. Ind. Rhynch., V. p. 163. (1910).

# 1. Naboandelus Bergevini BERGR.

Naboandelus Bergevini BERGR., Bull. Soc. Ent. France, 1911, p. 256. (1911); HORV., Journ. Asia. Soc. Bengal, IX. p. 478. (1913).

Egypt: El Merg  $(2 \circ 7 \circ)$ , MONTANDON); Egyptian Sudan: Sennar  $(1 \circ 7, 1 \circ)$ , Ebner); Palestine: Plain of Gennesaret  $(1 \circ)$ , ANNANDALE), W. es Semakh Lake Tiberias  $(1 \circ)$ , ANNANDALE). There are also two specimens of this species in the collection of the Natural History Museum in Vienna (Egypt: Fayum,  $2 \circ \circ$ , REIMOSER).

Originally described from Egypt (Cairo and Alexandria).

### Gen. Metrocoris MAYR.

*Metrocoris* MAYR, Verh. zool.-bot. Gesel., Wien, XV. p. 445. (1865); Reise Freg. Novara, Zool. II. Hem. p. 178. (1868); MEINERT, Ent. Medd. I. p. 140. (1888); DIST., Faun. Brit. Ind. Rhynch. II. p. 188. (1904); KIRK., Entomologist, XXXVII. p. 61. (1904); OSHAN., Verz. Paläarkt. Hemip., I. p. 500. (1908); DIST., Faun. Brit. Ind. Rhynch. V. p. 158. (1910).

Halobatodes B. WHITE, Challenger Rep. Zool. VII. 19, p. 23 et 58. (1883).

Ventidius DIST., Ann. Mag. Nat. Hist. (8) V. p. 149. (1910); Faun. Brit. Ind. Rhynch. V. p. 156. (1910).

Metrocoropsis PAIVA, Records Ind. Mus. XVI. p. 365. (1919).

Six species, containing two new species, are found in the collection.

### 1. Metrocoris histrio (B. WHITE).

Halobatodes histrio B. WHITE, Challenger Rep. Zool. VII. 19. p. 66, tab. 2. fig. 5. (1883).

*Metrocoris histrio* DAHL, Plank. Exped. Humboldt-Stift. II. G. a. α. (1893); KIRK., Entomologist, XXXVII. p. 61 et 62. (1904); ΜΑΤΣUMURA, Thous. Ins. Japan, I. p. 186. tab. 14. fig. 13. (1904); OSHAN., Verz. Palaearkt. Hem. I. p. 500. (1808); ESAKI, Philipp. Journ. Sci. XXVI. p. 62. tab. 2. fig. 20 et 21. (1925).

Japan: Island of Tsushima  $(1 \circ 7, 1 \circ, FRUHSTORFER)$ , Mt. Masui, near Himeji  $(1 \circ, MATSUMURA)$ .

This species is common on mountain streams in Japan, and distributed from Hokkaido to Kyushu, and also in Corea (coll. ESAKI). B. WHITE's description of the species is based on two apterous females, one of which is now in the Zoological Museum, Berlin, Coll. No. 3350. The macropterous form is very rare.

# 2. Metrocoris Ståli (A. DOHRN). (Fig. 3. a-b.)

Halobates Ståli A. DOHRN, Stettin. Ent. Zeit. XXI. p. 408. (1860).

Metrocoris brevis MAXR, Verh. zool.-bot. Gesell., Wien, XV. p. 445. (1865); Reise Freg. Novara, Zool., II. Hem. p. 179. tab. 5. fig. 56. (1868); DAHL, Plank. Exped. Humboldt-Stift., II. G. a. α. p. 8. (1893).

Halobatodes (?) Ståli B. WHITE, Challenger Rep. Zool. VII. 19., p. 69. (1883).

*Metrocoris Ståli* DIST., Faun. Brit. Ind., Rhynch. II. p. 190. (1904); KIRK., Entomologist, XXXVII. p. 62. (1904); DIST., Faun. Brit. Ind. Rhynch. V. p. 158. (1910).

Ceylon: Pattipola, 2000 m.  $(4 \triangleleft \neg \neg, 2 \subsetneq \Diamond, 1 \text{ larva, Biró})$ ; India: Shembagamur (1  $\heartsuit$ , forma macroptera).

I am quite sure that Metrocoris Ståli (A. DOHRN), described in apterous form, and Metrocoris brevis MAYR, described in macropterous form, are belonging to the same species. The type of the former is a single male ("Ceylon, Nietner"), presently belonging to the Provincial Museum of Pommern, Stettin, and the types of the latter are two macropterous males ("Felder, Ceylon, 1861") to be found in the collection of the Natural History Museum, Vienna. All these types were carefully studied by me, and so I came now to the conclusion mentioned above. In a previous publication (Philipp. Journ. Sci. XXVI. 1925. p. 61.), I identified a Metrocoris from Formosa as brevis MAYR, but this was a mistake, and now I am inclined to identify it with Metrocoris lituratus (STÅL). The macropterous specimen from Shembagamur, India, mentioned above, is different from the other specimens in having the pronotum more strongly protruding posteriorly and ending in an acute point, but in other respects it fully agrees with other specimens. The shape of the pronotum in macropterous form, as well as the patterns of it, are more or less variable to some extent, a fact the occurrence of which I could presently establish in several species of the genus.

Through the courtesy of Dr. A. HANDLIRSCH all the specimens of this species of the Natural History Museum, Vienna, are now before me. Besides the two types of *Metroceris brevis* MAXE, there are specimens labelled as follows: "Ceylon, Coll. Signoret" (1  $\bigcirc$ , forma aptera, 1  $\bigcirc$ , forma macroptera), "Punduloya, Ceylon, E. E. Green" (1  $\bigcirc$ , 1  $\bigcirc$ , forma aptera), and an apterous female from unknown locality (?). Also in the collection of the Zoological Museum, Copenhagen, three specimens (1  $\bigcirc$ , 1  $\bigcirc$ , forma aptera, 1  $\bigcirc$ , forma macroptera) of this species are to be found.

OSHANIN states (Katal. Palaearkt. Hem. 1912, p. 86) that this species is found in Southern Persia, but this is an error. Many specimens from this locality and determined by him as Ståli are to be seen in the collection of the Zoological Museum in Petersburg. I examined these specimens which proved to be a different, and probably a new, species of the genus, though I had no opportunity to study them in details.

# 3. Metrocoris lituratus (STÅL).

Halobates lituratus STÅL, Öfv. Vet.-Akad. Förh., XI. p. 238. (1854); Eugenies Resa, Insekt. p. 264. (1858); MAYR, Reise Freg. Novara, Zool. II. Hem. p. 177. (1868). Halobatodes lituratus B. WHITE, Challenger Rep. Zool. VII. 19. p. 64. tab. II. fig. 4. (1883).

Metrocoris lituratus KIRK., Entomologist, XXXVII. p. 61 et 62 (1904).

Metrocoris brevis ESAKI (nec MAYR), Philipp. Journ. Sci. XXVI. p. 61. tab. 2. fig. 18 et 19. (1925).

There are specimens from Formosa in the collection.

Formosa: Shushu (= Chip Chip) ( $4 \oslash \oslash$ ,  $13 \heartsuit \heartsuit$ , 1 larva, SAUTER), Kosempo ( $3 \oslash \oslash$ ,  $4 \heartsuit \heartsuit$ , SAUTER).

I have identified the specimens from Formosa as *brevis* MAYR (loc. cit.), but now I am almost sure that the specimens belong to this species. I believed that the markings on the mesonotum are, in this species, of two colors, i. e. brown and black, as shown in B. WHITE's figure, but presently I stated that this is not always the case. The type of this species is in the Natural History Museum in Stockholm. Presently I have three specimens of this species before me from the Natural History Museum in Vienna, of which two were collected by the Novara Expedition, at Hongkong, and studied by MAYR, whilst the third individual originates from China, from the collection of SIGNORET. In the specimen from SIGNORET's collection the markings are distinctly two-colored, but in those from the Novara Expedition this character is more obscurely represented. Among the specimens from Formosa I have never seen an individual bearing two-colored markings, though I have examined a large number of specimens from there. In other respects, however, the Formosan

specimens are quite well referable to the description of *lituratus*, and such special structures of the male anterior legs and genital segments are also represented in the specimens in question.

# 4. Metrocoris tenuicornis n. sp. (Fig. 3. c-e.)

Much allied to M. Ståli (A. DOHRN) and to M. lituratus (STÅL) in general aspect.

Apterous form. — Body pale yellowish brown. Head pale yellowish brown with a longitudinal black spot at the anterior portion of vertex, which is not bifurcate posteriorly as in some allied species of the genus. Eyes black, a little shining. Antennae black, with the basal portion of first joint pale yellowish brown. Pronotum pale yellowish brown, with a black anterior margin, and a black fascia along the central median line. Meso- and metanotum pale yellowish brown, with black markings much like those in *Ståli*. Underside of thorax pale yellowsh brown. Anterior femur pale yellowish brown with two black lines along the anterior and posterior margins. Anterior tibia and tarsus black. Intermediate and posterior femora pale yellowish brown, with two obscure dark brown lines along their whole length. Intermediate and posterior tibiae and tarsi black. Dorsal surface of abdomen pale yellowish brown with the anterior margin of each segment slightly blackish. Underside of abdomen pale yellowish brown.

Head much longer than between eyes. Vertex moderately constricted at the middle. Eyes moderately projecting postero-laterally, convexly sinuate interiorly. Antennae very long and thin, first joint not longer than other three joints together, second joint much shorter than half the length of first, third joint much longer than second, fourth joint a little shorter than second and slightly longer than half the length of third. Pronotum much shorter than head, anterior margin slightly sinuate concavely, posterior margin straight. Mesonotum slightly convex, much less so than in *lituratus*. Legs rather slender, scarcely thicker but much longer in male than in female. (Apterous form of male unknown, and here I describe the legs and the genital segments of the male on a macropterous specimen.) Anterior femur in both sexes slightly thickened towards the middle, but there is no distinct difference between sexes. Anterior tibia slightly shorter than femur, anterior tarsus about as long as half the length of tibia, first joint very short, shorter than one-fourth of second. Intermediate legs in male very long and slender, a little shorter than twice the length of body [tibia and tarsus mutilated]. Posterior legs in male very long and slender, femur about as long as intermediate femur, much longer than tibia and tarsus together, tibia nearly as long as half the

length of femur, longer than six times the length of tarsus, tarsus very short, two joints nearly equal in length. Intermediate femur in female a little longer than body, tibia much longer than two-thirds of femur [tarsus mutilated]. Posterior legs, as well as intermediate pair, in female comparatively much shorter than in male, the proportion of respective parts being, however, the same as in male. Abdomen very small, male genital segments very small, first dorsal segment much shorter than broad, nearly as long as last dorsal abdominal segment, second dorsal genital segment very short and small. Female genital segments very small, much similar to those in other species of the genus.

*Macropterous form.* — Pronotum pale yellowish brown, slightly shining; anterior and antero-lateral margins, fascia along the central median line, and two londitudinal fasciae on lateral area — which meet with the central fascia near the apex of pronotum — black. Elytra gravish black, with veins black.

Pronotum slightly convex, anterior margin much sinuate concavely, antore-lateral margin nearly straight, postero-lateral margin slightly sinuate interiorly, apex rounded; much like that in *lituratus*. Elytra with veins very distinct (apical half mutilated).

Length of body:  $\bigcirc$  (forma macroptera) 6 mm.,  $\bigcirc$  (forma aptera) 4.5 mm. Breadth of body:  $\bigcirc$  (forma macroptera) 3 mm.,  $\bigcirc$  (forma aptera) 2.5 mm. Length of intermediate femora:  $\bigcirc$  10.5 mm,  $\bigcirc$  5 mm.

Habitat: Annam.

Types:  $1 \triangleleft^{\gamma}$  (forma macroptera),  $1 \supsetneq$  (forma aptera), 2 larvae. — Annam: Laos, without citation of the date and the collector.

This species is very much similar, as regards its general aspect, to M. *lituratus* (STÅL), but the structures of the antennae, head, anterior legs in male, and of the male genital segments, etc., are different.

# 5. Metrocoris nitidulus n. sp. (Fig. 3. f-g.)

Apterous form. — Body pale grayish yellow, shining. Head pale grayish yellow with a central and two posteriorly convergent lateral longitudinal spots on vertex black. The central spot is sometimes much obliterated. Lateral margins of vertex black. Eyes pale gray, much shining. Antennae pale grayish yellow, first joint with both extremities black, second, third and fourth joints much darker and rather pale grayish brown. Rostrum pale grayish yellow, with labrum, apex of third joint and entire fourth joint shining black. Pronotum pale grayish yellow, anterior margin black and projecting posteriorly at both the lateral ends and at the center. Meso- and metanotum pale grayish yellow, with black markings being somewhat similar to those in *natalensis* DIST., but generally more obliterated, and the longitudinal spot on antero-lateral portions of meso-

notum sometimes divided into two spots. The details of the markings are rather difficult to describe, but they are shown in the figure. Underside of thorax concolorous, pale gravish yellow, but lighter •than dorsal surface, not shining. Anterior legs gravish yellow, pale femur with apical extremity, longitudinal fascia at the middle of supero-exterior surface, and intero-posterior margin black; tibia and tarsus much darker, rather pale gravish brown. Intermediate and posterior legs pale gravish vellow with the apical extremity of femur and tibia pale gravish brown, (tarsus mutilated in all the specimens). Abdomen pale gravish vellow, with anterior margin. of each segment and lateral margins of connexiva black. Male dorsal genital segments paler than abdominal segment, concolorous or sometimes with two black longitudinal markings. Female dorsal genital segments black with a large round pale



Fig. 3. — a, Metrocoris Ståli (A. DOHRN), apterous male; b, the same, macropterous male, drawn from one of the types of Metrocoris brevis MAYR; c, Metrocoris tenuicornis n. sp., apterous female; d, the same, macropterous male; e, the same, antenna; f, Metrocoris nitidulus n. sp., apterous male; g, the same, antenna; h, Metrocoris natalensis DIST., apterous female; i, Metrocoris aethiops DIST., apterous female.

gravish yellow spot. Underside of abdomen with genital segments in both sexes concolorous, pale gravish yellow, not shining.

Body flattened, a little convex on dorsal surface. Head longer than broad between eyes. Vertex moderately constricted at the middle. Eyes moderately projecting postero-laterally, convexly sinuate interiorly. Antennae slightly longer than body, first joint stouter than the rest, curved, nearly as long as second and third joints taken together, second joint longer than half the length of first, third joint a little shorter than second, fourth joint about as long as the half of second. Rostrum a little passing over the anterior coxae, third joint very long. Pronotum a little shorter than head, anterior margin moderately sinuate posteriorly, posterior margin depressed anteriorly at the center, forming two arcs. Mesonotum a little convex, lateral margins diverging posteriorly. Anterior legs not well developed, femur in male a little stouter than tibia, tibia nearly as long as femur, slightly thickened towards the apex, tarsus very small, shorter than half the length of tibia, first joint very small not longer than onefourth of second. (Anterior legs in female specimens all mutilated.) Intermediate femur nearly as long as body, tibia much longer than half the length of femur, (tarsus mutilated). Posterior femur as long as, but thinner than intermediate femur, tibia very thin, longer than half the length of femur. Abdomen not very small, connexiva a little elevated inwardly. First male dorsal genital segment very large, nearly as long as broad, moderately convex, postero-lateral margin much rounded, second segment not visible dorsally. Female genital segments much narrowed towards the apex where they are rounded.

Length of body:  $\bigcirc$  4-4.5 mm.,  $\bigcirc$  4.5 mm. Breadth of body: 2-2.5 mm. Length of intermediate femur: 4 mm.

Macropterous form. — Unknown.

Habitat: Abyssinia.

This species is quite distinct from any other known species of the genus in its peculiar coloration and structural characters.

# 6. Metrocoris natalensis DIST. (Fig. 3. h.)

Metrocoris natalensis DIST., Ann. Mag. Nat. Hist. (7) XII. p. 473. (1903); BERGR., Meddel. Göteborgs Mus. Zool. Afdel., No. 4 (Göteborgs Kungl. Vetensk. Vitterhetssamh. Handl., XVI. pt. 2) p. 13. (1914).

Metrocoris distanti KIRK., Entomologist, XXXVII. p. 62. (1904).

East Africa: Kilimandjaro (1 7, BORNEMISSZA).

This species seems to be widely distributed in Tropical Africa, as is known from the following localities: Natal (DISTANT, BERGROTH, Natural History Museum in Vienna), Zoutpansberg (KIRKALDY), Membo, Usambara

(Natural History Museum, Stockholm), Kilimandjaro (Natural History Museum in Stockholm, Hungarian National Museum in Budapest), Rukwa-See, east of Ukimbu, Kibwezi (Zoological Museum, Berlin), etc.

KIRKALDY described this species comparing it with M. Ståli (DOHRN), though these two species are not so closely related to each other. The specimens in the Natural History Museum in Stockholm were identified by KIRKALDY as M. Distanti, which is with no doubt identical with natalensis. The description by DISTANT was very perplexing, and the species was redescribed by BERGROTH (loc. cit.). The macropterous form of this species is not yet described though there are four specimens  $(2 \ensuremath{ \circ 7 \ensurem$ 

With this species DISTANT described another species of the genus, Metrocoris aethiops DIST., from Africa. This species is not found in the collection of the Hungrian National Museum, but there are some specimens of it from the Natural History Museum, Vienna, before me, from which I give a figure in this paper (fig. 3. i.). This species is hitherto collected from the following localities: Nigeria: Abutsi River (British Museum, London), N. W. Kamerun: Wärmannshöhe (Zoological Museum, Berlin), Fernando Po (Natural History Museum, Vienna), Kai Bumba (Congo Museum, Tervueren). Thus known only from tropical West Africa. The three known African species of the genus, i. e. Metrocoris natalensis DIST. (= M. DistantiKIRK.) (fig. 3. h.), Metrocoris aethiops DIST. (fig. 3. i.), and Metrocoris nitidulus ESAKI (fig. 3. f.) are distinguished from all the other known species in having more flattened shape and shining dorsal surface of the body, and may be separated from the other species of the genus as a subgenus **Eurymetra** m. subg. nov. (Subgenotype M. natalensis DIST.)

PAIVA (Records Ind. Mus., XVI. p. 365. tab. 34. fig. 5. [1919]) described a new genus and species, *Metrocoropsis femorata* PAIVA, from Tura, Assam. He states that the genus is "allied to *Metrocoris*, but differing in the presence of teeth on the anterior femora." This character is limited only to the male sex as he also noted in the description of the genus, and is known to occur often among the species of *Metrocoris*, e. g., though not so conspicuous in the well-known species *Metrocoris lituratus* (STÅL), as shown in B. WHITE's figure (Challenger Rep., Zool., VII. 19. tab. 2. fig. 4. [1883]); and it is very well marked in *Metrocoris strangulator* BREDD. as described by the latter author: "Vorderschenkel sehr stark verdickt und gekrümmt, auf der Unterseite hinter der Mitte mit einem kräftigen, leicht abgestumpften Dorn und einer zweiten kürzeren aber dicken Dornenspitze nahe dem Endrand des Schenkels." (Mitt. Naturhist. Mus. Hamburg, XXII., p. 135. [1905]). Thus the genus *Metrocoropsis* is not at all separable from *Metrocoris*, and the figure given by PAIVA

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shows, indeed, that the species is with no doubt a typical *Metrocoris*. The species *Metrocoris femorata* (PAIVA) is described only in macropterous form, and it may be possible that the species is identical with *M. nigro-fasciatus* DIST. from Malay, though, according to the descriptions, the structure of the anterior femur is not quite the same. The latter species was described on a single apterous male specimen by DISTANT (Fasciculi Malayenses, Zool. I. p. 257. tab. 15. fig. 9. [1903]), and he described the macropterous form afterwards from Pahang and India (Faun. Brit. Ind. Rhynch. V. p. 160. [1910]), but it may be probable that the latter form does not belong to *Metrocoris nigrofasciatus* DIST. according to the figure given by him.

### Gen. Halobates ESCH.

Halobates Esch., Entomographien, p. 102. (1822); LAP., Essai Classif. Hém. p. 24. (1833); BURM., Handb. Entom. II. p. 208. (1835); TEMPELTON, Trans. Entom. Soc. London, I. p. 230. (1836); SPIN., Essai Hém. Hét. p. 13. (1840): BLANCH., Hist. Nat. Ins. III. p. 98. (1840); AM. et SERV., Hist. Nat. Ins., Hém. p. 411. (1843); H.-SCH., Wanz. Ins. VIII. p. 108. (1848); MAYR, Reise Freg. Novara, Zool. II. Hem. p. 169 et 177. (1868); B. WHITE, Challenger Rep. Zool. VII. 19. p. 23. (1883); DIST., Fauna Brit. Ind. Rhynch. II. p. 186. (1903); KIRK., Trans. Amer. Entom. Soc. XXXII. p. 156. (1906); OSHAN., Verz. Palaearkt. Hemip., I. p. 500. (1908); DIST., Faun. Brit. Ind. Rhynch., V. p. 152. (1910); VAN DUZEE, Cat. Amer. Hem. p. 431. (1917); HUNGERF., Bull. Univ. Kansas, XXI. pp. 116., 120. (1919); TORRE-BUENO, Connecticut Geol. & Nat. Hist. Survey, Bull. no. 34. p. 662. (1923).

There are six species of this genus in the collection, of which one species is new to science.

### 1. Halobates micans Esch.

Halobates micans Esch., Entomographien, I. p. 107. tab. 2. fig. 3. (1922); BURM., Handb. Ent., II. p. 208. (1835); BLANCH., Hist. Natur. Insect. III. p. 98. (1840); H.-Sch., Wanz. Ins. VIII. p. 110. (1848); FRAUENF., Verh. zool.-bot. Gesell. Wien, p. 458. tab. 12. fig. 5. (1867); B. WHITE, Challenger Rep., Zool. VII. 19. p. 43. tab. 1. fig. 2. (1883); DAHL, Plank. Exped., Humboldt-Stiftung, II. G. a.  $\alpha$ . p. 4. fig. 1, 2, 3, 6. (1893); DIST., Faun. Brit. Ind. Rhynch. II. p. 187. (1904); TORRE-BUENO, Trans. Amer. Ent. Soc., 1911. p. 251; BARBEE, Bull. Amer. Mus. Nat. Hist., XXXIII. p. 499. (1914); VAN DUZEE, Cat. Amer. Hem. p. 432. (1917); HUNGERF., Bull. Univ. Kansas, XXI. p. 116. (1919); TORRE-BUENO, Connecticut Geol. & Nat. Hist. Survey, Bull. no. 34. p. 663. (1923).

Halobates Wüllerstorf fi FRAUENF., Verh. zool.-bot. Gesell. Wien, XVII. p. 458. tab. 12. fig. 1, 2, 6, 8, 10. (1867); B. WHITE Challenger Rep. Zool. VII. 19. p. 40. tab. 1. fig. 1. (1883).

Formosa: Takao (1  $\checkmark$ , SAUTER). This species is recorded for the first time from this locality.

### 2. Halobates sericeus Esch.

Halobates sericeus Esch., Entomographien, p. 108. (1899); BURM., Handb. Entom. II. p. 209. (1835); BLANCH., Hist. Nat. Ins. III. p. 98. (1840); AM. et SERV., Hist. Nat. Ins., Hém. p. 412. (1843); H.-Sch., Wanz. Ins. VIII. p. 110. (1848); B. WHITE, Challenger Rep. Zool. VII. 19. p. 47. tab. 1. fig. 7. (1883); DAHL, Plank. Exped., Humboldt-Stiftung, II. G. a. α. p. 7. (1893); OSHAN., Verz. Palaearkt. Hem. I. p. 500. (1908); VAN DUZEE, Cat. Amer. Hem. p. 432. (1917); HUNGERF., Bull. Univ. Kansas, XXI. p. 116. (1919); ESAKI, Psyche, XXXI. p. 116. (1924).

Pacific Ocean: (1 , 3 , 2 , 2). There is no citation of the date and the more exact locality.

The type specimens of this species  $(1 \oslash, 1 \bigcirc)$  are in the Zoological Museum, Munich.

### 3. Halobates japonicus ESAKI.

Halobates japonicus Esaki, Psyche, XXXI. p. 115. tab. 5. fig. B. (1924). Japan : Misaki (3 77, 2  $\bigcirc$ , MATSUMURA).

The type specimens of this species are in my collection. This species is known only from the Pacific Coast of Japan.

# 4. Halobates rotundatus n. sp. (Fig. 4.).

Body ashy gray. Head ashy gray with two large oblique triangular brown spots on vertex which are touching the anterior margin of pronotum.

Underside of head dark brown. Eyes, antennae, and rostrum black. Pro-, meso- and metanotum ashy gray, prosternum, central portion of mesosternum, metasternum, and underside of intermediate acetabula pale yellowish brown. Legs black. Dorsal surface of abdomen ashy gray, with posterior margins of first two or three dorsal abdominal segments and corresponding parts of connexiva in female light brown. Also in two female specimens in the collection, there is a very distinct longitudinal brown fascia along the central median line of pro- and mesonotum. Underside of abdomen pale vellowish brown.

Body much rounded in shape. Males much smaller than females Head shorter than broad, mode-



Fig. 4. — Halobates rotundatus n. sp. a, male; b, female; c, antenna; d, anterior tarsus; e, male genital segments, dorsal view; f, the same, ventral view, showing the asymetrical structure.

rately convex. Eyes moderately projecting. Antennae nearly as long as body in both sexes, first joint subequal to the remaining three joints



together in length, second joint slightly shorter than half the length of first, third and fourth about equal in length. Rostrum not passing the posterior margin of prosternum. Pronotum much shorter than head. widened posteriorly, anterior margin moderately sinuate posteriorly. posterior margin nearly straight. Mesonotum slightly convex in male. and moderately convex in female. In dried specimens there is, in the male, a concave depression at the posterior margin which is protruding anteriorly at the central portion. Lateral margins of pronotum nearly parallel in male, a little divergent posteriorly in female. Anterior legs not well-developed; femur about as long as (male), or distinctly shorter than (female) tibia and tarsus together, slightly swollen at the middle in male; tibia much shorter than femur, widened at the apex forming a spine-like process interiorly; tarsus longer than half the length of tibia, first joint very short, shorter than half the length of second, claws inserted near the base of the latter. Intermediate femur slightly shorter than tibia and tarsus together, tibia much longer than half the length of femur, with a fringe of long hairs on inner side, tarsus much shorter than tibia, with first joint about three times as long as second. Posterior femur a little shorter than intermediate femur, much longer than tibia and tarsus together, tibia longer than half the length of femur, tarsus not longer than one-third of tibia. Male genital segments rather small, much protruded posteriorly, horn-like process on ventral side of the first segment showing a courious asymmetry, i. e. left process directed straightly posteriorly, white the right one directed inwardly which is thus not visible from the upperside of the body.

Length of body:  $7^3$  3-3.5 mm.,  $9^4$  4-4.5 mm. Breadth of body:  $7^3$  1.5 mm.,  $9^2$  2.5 mm.

Habitat: New Guinea.

Types: 76 ♂♂, 48 ♀♀. — New Guinea: Dregerhafen (BIRó, 1898).

This species is a very interesting one, differing from all the other species of the genus in its structures of antennae, anterior tarsi, and male genital segments. The brown anterior margin of first two or three dorsal abdominal segments in female is also never met with in any other species. This species is constituting a separate group of the genus with H. apicalis ESAKI, H. Shiranui ESAKI and H. Mjöbergi HALE, having the first anterior tarsal joint very short and the blackish area of the head much reduced.

# 5. Halobates hayanus B. WHITE.

Halobates hayanus B. WHITE, Challenger Rep. Zool. VII. 19. p. 52. tab. 1. fig. 8. (1883).

Halobates incanus WITLACZIL, Wien. Ent. Zeit. V. p. 179. fig. 2. (1886).

New Guinea: Seleo, Berlinhafen (82  $\checkmark$ , 36  $\bigcirc$ , Biró), Dregerhafen (1  $\checkmark$ , Biró); Malay Peninsula: Singapore (1  $\checkmark$ , Biró).

This species is hitherto known from the Red Sea and Arabian Sea. The type specimens are in the Zoological Museum, Berlin. The specimens from Seleo, a coral island, were captured on August 16th 1896, and Dr. BIRÓ, the collector, note that the insects were found on the surface of a small pool of rain-water.

# 6. Halobates Alluaudi BERGR.

Halobates Alluaudi BERGR., Rev. d'Entom. XII. p. 204. (1893).

New Guinea: Dregerhafen (2 77, 3 99, BIRÓ).

This species is originally described from the Indian Ocean. It is allied to H. Matsumurai ESAKI and H. princeps B. WHITE, having a similar structure of the antennae and of the anterior tarsi, as well as a comparatively large size.

# Gen. Telmatometra BERGR.

Telmatometra BERGR., Ohio Nat. VIII. p. 374. (1908).

This genus was described only on the macropterous form, and here I add some characters of the apterous form to the generic diagnosis.

Apterous form. — Pronotum much shorter and narrower than head, anterior and posterior margins straight, lateral margins much rounded. Mesonotum distinctly defined from metanotum, moderately convex, much widened posteriorly, anterior margin straight, with the lateral portions much protruded anteriorly as far as about the middle of pronotum and much approaching the posterior end of eyes, lateral margins slightly sinuate exteriorly, posterior margin nearly straight, but slightly depressed at the middle, lateral portions somewhat protruded posteriorly. Metanotum longer than half the length of mesonotum, flat; anterior margin nearly straight, but slightly projecting anteriorly at the middle, posterior margin moderately concave, distinctly divided into two parts (scutellum and postscutellum), whose boundary being much arcuate anteriorly, posterior portion much narrower than the anterior portion.

A new and the second species of the genus is in the collection.

# 1. Telmatmetra Ujhelyii n. sp. (Fig. 5.)

Apterous form. — Body dark yellow. Head dark yellow with two oblique longitudinal black fasciae on vertex, which touch the anterior angle of eye, but do not reach the posterior margin of vertex posteriorly, anteroocular portion black. Eyes black to dark gray, moderately shining. Antennae black, with the basal portion of first joint dark brown. Rostrum dark

yellow, with labrum (and probably apical joint which is not seen in the specimens mounted on a card) black. Pronotum dark vellow with margins black, anterior and posterior margins showing a tendency to be connected with each other at the central median line. Mesonotum dark vellow, anterior and posterior margins black, lateral margins very broadly bestowed with black, with three longitudinal fasciae along the whole length which diverge posteriorly and the median of which fasciae being much thinner than the lateral pair, the dark vellow areas between the lateral black fasciae and the lateral margins thickly pubescent with silvery white. Metanotum black with whitish pubescence. Sternum dark vellow with thick silvery white pubescence. Intermediate acetabula dark yellow, with two irregular black markings. Posterior acetabula dark yellow with a black longitudinal fascia. Anterior legs dark yellowish brown with tibia much darker, and two longitudinal fasciae on femur, base and inner side of tibia, and tarsus black. Intermediate and posterior legs pale vellowish brown with a spot on coxae, two longitudinal black fasciae along the femora, apical half of tibiae and tarsi much darker. Dorsal abdominal segments dark yellow or yellowish brown with sixth segment and posterior margin of first to fifth segments black. Male dorsal genital segments dark vellow with the apical half of first segment black. Female dorsal genital segments black with the basal portion of first segment vellowish brown.

Body elliptical, less robust in male than in female, longer than twice the breadth. Head much broader than long, moderately projecting and rounded anteriorly, posterior margin of vertex straight. Eyes much prolonged posteriorly, covering the antero-lateral portion of pronotum, inner margin slightly convexly sinuate. Antennae a little shorter than body, slender, basal two joints slightly thicker than the rest, first joint conspicuously curved outwardly a little before the middle, second joint shortest, slightly shorter than the half of first, third joint longest, about twice the length of second, fourth joint a little shorter than first, about two-thirds the length of third, tapering near the apex. Rostrum passing beyond the posterior margin of prosternum, third joint much longer than the others. Pronotum much shorter and narrower than head, a little broader than twice the length, anterior and posterior margins straight, lateral margins much rounded, forming a semicircle. Mesonotum nearly trapezoidal, moderately convex, anterior margin straight with the lateral portions much protruded anteriorly covering the postero-lateral margins of pronotum, and much approaching the postesior end of eyes; lateral margins slightly sinuate, posterior margin truncate, distinctly separating the mesonotum from metanotum. Metanotum longer than half the length of mesonotum, flat, anterior margin straight, slightly protruded anteriorly

at the middle, posterior margin moderately concave distinctly divided into two parts (scutellum and postscutellum), the boundary of which being much arcuate anteriorly, posterior portion about three-fifths the length of the anterior one. Anterior legs slender in both sexes, femur not incrassate, a little thicker than tibia, slightly curved near the base, tibia much shorter than femur, slightly thickened from the base to the apex, tarsus nearly as long as or slightly longer than half the length of tibia, first joint very short, about one-third the length of second, claws inserted about at the middle of the latter. Intermediate legs much longer than posterior pair, femur much longer than notum and thicker than anterior femur, tapering



Fig. 5. Telmatometra Ujhelyii n. sp. — a, apterous male; b, macropterous form; c, antenna; d, anterior tarsus.

from the base to the middle, tibia about one and a half times as long as and much thinner than femur, tapering towards the apex, tarsus longer than half the length of tibia, first joint much longer than second. Posterior legs much shorter than intermediate pair, femur longer but much thinner than intermediate femur, tibia much longer than half the length of femur, tarsus shorter than half the length of tibia, both joints of equal length. Dorsal surface of abdomen flat or a little depressed, first dorsal abdominal segment nearly as long as half the length of posterior portion of metanotum, anterior margin moderately arcuate anteriorly, second to sixth segments nearly equal in length. Connexiva broad, almost vertically situated, much tapering into a pointed tip posteriorly. First male dorsal genital segment nearly as long as sixth dorsal abdominal segment, but much narrower than the latter, narrowed posteriorly, anterior and posterior margins straight; second dorsal genital segment very small, slightly visible. First female dorsal genital segment

longer than sixth dorsal abdominal segment, much narrowed posteriorly, anterior margin moderately sinuate convexly, second dorsal segment very small, much shorter than broad, truncate posteriorly.

*Macropterous form.* — Pronotum dark yellow, with a conspicuous longitudinal fascia along the central median line, much thickened and rounded anteriorly, but interrupted very far from the anterior margin, much tapering posteriorly and scarcely touching the posterior margin; margins, excepting the apical portion and sometimes the anterior margin, black. Elytra black, with membrane slightly brownish.

Pronotum moderately extending posteriorly, much widened at humeral angles, anterior margin sraight between eyes, antero- and postero-lateral margins straight, apical portion moderately rounded. Elytra complete, very long, much protruding beyond the end of abdomen. Corium, clavus and membrane distinct, membrane about twice as long as corium.

Length of body:  $\bigcirc$  (forma aptera) 4 mm.,  $\bigcirc$  (forma aptera) 4.5 mm. Forma macroptera (to the apex of elytra) 5.3—5.8 mm. Breadth of body: 1.7—2 mm.

Habitat: Columbia.

Types:  $2 \supset 2 and 1 \subsetneq$  (forma aptera), 6 (forma macroptera, the sex is not determined owing te the specimens being mounted on cards and the genital segments not being visible from above).

Columbia: Aracataca, district of Santa Marta (February, 1912, UJHELYI).

This species is the second species of the genus, differing from the other one, *Telmatometra Whitei* BERGR. from Guatemala, by its smaller size, the different proportions of the antennal joints, and the different coloration of head, etc.

This species is named in honor of the collector of the species, Mr. J. UJHELYI, to whom I am much indebted for his kindnesses enjoyed during my stay in Budapest.

The apterous form of this insect has apparently a somewhat similar aspect to that of *Halobatopsis platensis* BERG, though, in details, both the species are quite different.

### Gen. Halobatopsis BIANCHI.

Halobatopsis BIANCHI, Ann. Mus. Zool. Acad. Imp. Sci., Pétersbourg, I. p. 70. (1896).

This genus was established by BIANCHI, referring to the description of the freshwater Gerrid *Halobates platensis* BERG. According to him the generic character distinguishing it from *Trepobates* UHLER consists only in the "first joint of the antennae" being "about one-fourth shorter than the

second and third combined", while in the latter the "first joint of the antennae not" being "shorter than the second and third combined". BERGROTH (Ohio Nat. VIII. p. 373. [1908]) pointed out the fact that "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*", and in the course of further discussions he concluded that both *Trebobates pictus* (H.-Sch.) and *Halobatopsis platensis* (BERG) may be generically identical.

Here, in the collection of the Hungarian National Museum, four specimens ( $3 \ Q \ Q$ , 1 larva) of BERG's types of this species are to be found. Many specimens from Uruguay, etc., partly determined by BERG as *platensis*, are in the collection of the Natural History Museum, Vienna. In careful examination of the types of *Halobatopsis platensis* (BERG), I stated that the species is generically quite different from *Trepobates pictus* (H.-SCH.) although no important generic character was referred to by BIANCHI in his original diagnoses. Thus I give here a new description of the genus.

Body polished, much longer than broad. Head much broader than long, and longer than between eyes, much rounded anteriorly, posterior margin straight. Eyes large and rounded exteriorly, inner margins of both eves considerably diverging posteriorly, posterior end reaching about anterior one-third of pronotum. Antennae not longer than body, first joint thicker than the others, slightly curved near the base, second joint shortest, nearly as long as a half of first, third subequal to or a little shorter than first, fourth subequal to first in length. Rostrum much protruding beyond prosternum. Pronotum much narrower and shorter than head, anterior margin straight, posterior margin slightly sinuate anteriorly. Mesonotum distinctly defined from metanotum, much widened posteriorly, lateral portions of anterior margin a little protruded anteriorly and covering the postero-lateral portions of pronotum, middle portion of anterior margin slightly sinuate convexly, posterior margin slightly sinuate anteriorly, not adorned with a spinous process. Metanotum subequal to mesonotum in length, clearly divided into two parts (scutellum and postscutellum), the posterior part not polished, much extending over first dorsal abdominal segment. Posterior margin of mesosternum moderately sinuate anteriorly. Anterior legs short and slender, tibia shorter than femur, tarsus about half the length tibia, first joint much shorter than second. Intermediate legs much the longest, femur nearly as long as body, much thicker than tibia and tarsus, tibia much longer than one and a half times the length of femur, tapering towards the apex, tarsus much longer than half the length of tibia, first joint much longer than

second. Posterior legs much shorter than intermediate pair, femur much longer but thinner than intermediate femur, tibia longer than half the length of femur, tarsus slightly longer than half the length of tibia, two joints of subequal length. Abdomen flat, dorsal surface very broad, dorsal abdominal segments slightly narrowed posteriorly, first dorsal segment, except the lateral areas, covered by the posterior portion of metanotum, first female dorsal genital segment longer than sixth dorsal abdominal segment, much narrowed posteriorly, second female dorsal genital segment very small. Connexiva very distinct, much elevated inwardly.

The genus *Halobatopsis* is distinguished from *Trepobates* in the following points: 1. The head between eyes seen from the front is narrower than the breadth of the eye, being contrary to *Trepobates*; 2. the vertex is considerably widened posteriorly; 3. the pronotum is comparatively narrower and shorter and the posterior margin is not perfectly straight as in *Trepobates*; 4. the mesonotum is less convex, the posterior margin nearly straight; 5. the metanotum is divided into two portions; 6. the intermediate trochanter is much protruding posteriorly beyond the apical end of the posterior acetabulum, while in *Trepobates* scarcely so; 7. the first five dorsal abdominal segments are scarcely narrowed in breadth towards the apex of the abdomen, white in *Trepobates*, they are considerably narrowed posteriorly.

I have not seen the macropterous form of this genus, but I believe that the characters enumerated above may be sufficient to separate the both as distinct genera.

# 1. Halobatopsis platensis (BERG). (Fig. 7. a).

Halobates platensis BERG, Hemip. Argentina, p. 183. (1879); B. WHITE, Challenger Rep. Zool. VII. 19. p. 79. et 80. (1883); BERG, Addenda et Emend., Hemip. Argentina, p. 118. et 193. (1884).

Halobatopsis platensis BIANCHI, Ann. Mus. Zool. Acad. Imp. Sci. Pétersbourg, I. p. 70. (1896).

Trepobates platensis BERGR., Ohio Nat., VII. p. 373. (1908).

Argentina:  $(3 \bigcirc \bigcirc, 1 \text{ larva})$ ; these are cotypes of BERG. No exact locality is cited.

Also there are several specimens of this species from Uruguay, etc., partly determined by BERG, in the collection of the Natural History Museum in Vienna. Some specimens of the mentioned Museum were determined by SIGNORET as *"pictus"*, which is, no doubt, an error.

Here I give a figure of the apterous female (fig. 7. a). The apterons male differs from the female in its smaller size and in the want of the central median black fascia on mesonotum.

Gen. Trepobates UHLER.

Stephania B. WHITE, Challenger Rep. Zool. VII. 19. p. 79. (1883), nom. praeocc. Trepobates UHLER, Proc. Zool. Soc. London, 1894. p. 213; BIANCHI, Ann. Mus.
Zool. Acad. Imp. Sci. Pétersbourg, I. p. 70. (1896); KIRK., Trans. Amer. Ent. Soc., XXXII.
p. 156. (1906); KIRK. et TORRE-BUENO, Proc. Ent. Soc. Washington, X. p. 212. (1908);
BERGR., Ohio Nat. VIII. p. 373. (1908); TORRE-BUENO, Trans. Amer. Ent. Soc.
XXXVII. p. 245. (1911); VAN DUZEE, Cat. Hem. Amer. p. 430. (1917); HUNGERF., Bull.
Univ. Kansas, XXI. p. 114. et 119. (1919); TORRE-BUENO, Connecticut Geol. & Nat.
Hist. Survey, Bull. no. 34. p. 662. (1923).

This genus is hitherto represented by a single species, *Trepobates pictus* (H.-SCH.), which is known to be widely distributed in North and Central America. After the careful examination of the specimens in the Hungarian National Museum I discovered that there are at least three species of this genus in the United States, which were hitherto confounded with one another.

UHLER (loc. cit.) states that the "anterior tarsi normally three-jointed (exceptionally two-jointed)" in Trepobates, but I have never seen a specimen of Trepobates with the anterior tarsi three-jointed, although I examined a large number of specimens from different localities. UHLER'S statement seems to be erroneous and, in fact, the three-jointedness of tarsi is normally never met with in the Gerridae except in the aberrant genus Hermatobates CARPENTER. UHLER states further that "in some specimens the acute tip of the scutellum projects from between the metanotal plates, in others it is atrophied", but this seems to be a specific and sexual difference; namely the process is present always in temales of Trepobates pictus (H.-SCH.), while in males of it and in both sexes of other species described in this paper it is always wanting. Trepobates pictus (H.-SCH.) was described as a Halobates on a single female specimen, and he figured and described the process in question as follows: "das Schildchen endigt in eine scharfe freistehende Spitze". (Wanz. Ins., VIII. 1848. p. 111). Afterwards, B. WHITE (loc. cit.) established the genus Stephania, to which the new name Trepobates was given by UHLER as the name had been praeoccupied, but also he examined a single female only at that time. The spine-like process was thus looked upon by B. WHITE as one of the important generic characters though it may be a character of merely specific significance. BERGROTH (loc. cit.) states that the antennae of Trepobates are really variable to a certain extent, some specimens agreeing with the diagnosis of *Halobatopsis*", but this may be regarded to be a specific difference, i. e. the proportions between the antennal joints is not variable in this case, within one species, and some species might be confounded by him as a single one.

Among the collection three species are distinguished.

# 1. Trepobates pictus (H.-SCH.) (Fig. 6, a-e.)

Halobates pictus H.-Sch., Wanz. Ins. VIII. p. 111. fig. 882 et 883. (1848); UHLER, Proc. Boston Soc. Nat. Hist. XIX. p. 437. (1878).

Stephania pictus B. WHITE, Challenger Rep. Zool. VII. 19. p. 79. (1883); UHLER, Stand. Nat. Hist. II. p. 270. (1883).

Trepobates pictus UHLER, Proc. Zool. Soc. London, 1894. p. 213; TORRE-BUENO, Journ. N. Y. Ent. Soc. XIII. p. 41. (1905); TORRE-BUENO, Journ. N. Y. Ent. Soc. XVI. 234. (1908); BERGR., Ohio Nat. VIII. p. 372. (1908); TORRE-BUENO, Ohio Nat. IX. p. 389. (1908); Trans. Amer. Ent. Soc. XXXVII. p. 251. (1911); PARSHLEY, Psyche, XXI. p. 144. (1914); VAN DUZEE, Cat. Hem. Amer., p. 430. (1917); HUNGERF., Bull. Univ. Kansas, XXI. pp. 115. et 119. (1919); TORRE-BUENO. Connecticut Geol. & Nat. Hist. Survey, Bull. no. 34. p. 663. (1923).

Halobatopsis beginii (partim) ASHMEAD, Canad. Ent. XXIX. p. 56. (1897).

North America: White Plains, N. Y., U. S. A. (16 ???, 29 QQ, 1 Q forma macroptera, HORVÁTH, August 31st 1907), Alabama, U. S. A. (2 ????, BAKER).

The species of the genus were hitherto all regarded as belonging to a single species, *pictus* H.-SCH., the genus containing, however, at least three species in reality. It is quite obvious that the species described by HERRICH-SCHÄFFER is that with a spine-like process on the posterior margin of the mesonotum in female.

In this species the markings on the dorsal surface are much variable. In some specimens the black area is much reduced and those on the centro-lateral portions of the mesonotum are practically quite obliterated.

# 2. Trepobates inermis n. sp. (Fig. 6. f-i.)

This species is much allied to *Trepobates pictus* (H.-SCH.) in general aspect, but it is well distinguishable from the latter in the following characters:

1. More slender in shape in both sexes.

2. Black markings in the middle of mesonotum parallel to the central median fascia and extended anteriorly to the anterior margin of it. In *pictus*, these black markings are connected with the central median fascia.

3. Anterior femur comparatively longer.

4. Posterior portion of mesonotum not modified in both sexes. In *pictus*, the portion is projected posteriorly forming a spine-like process in female.

5. Intermediate femur and basal one-third of intermediate tibia in male with a fringe of long hairs on inner side; the hairs are about as long as the breadth of the segment on which they occur. In males of *pictus*, the same portions are with a denser fringe of much shorter setose hairs. (Cf. fig. 6. c and q).

6. Posterior margin of last ventral abdominal segment in female without long hairs, while in *pictus* it is adorned with conspicuous long hairs. (Fig. 6. e and i).

7. Genital segments differing in both sexes from those in *pictus*, though not so remarkably; see figures.

Length of body:  $3^{\circ}3^{\circ}2-3^{\circ}5$  mm.,  $9^{\circ}3^{\circ}8-4$  mm. Breadth of body:  $3^{\circ}1^{\circ}3$  mm.,  $9^{\circ}1^{\circ}3$  mm.

Habitat: North America.

Types: 2 Jo, 2 QQ. — North America: Plummers Island, Md., U. S. A. (Новуа́ты, collected on September 5th, 1907).



Fig. 6. Trepobates pictus (H. SCH.), -a, apterous female; b, the same, antenna; c, the same, male intermediate femur; d, the same, male genital segments, ventral view; e, the same, female genital segments, ventral view; f, Trepobates inermis n. sp., apterous female; g, the same, male intermediate femur; h, the same, male genital segments, ventral view; i, the same, female genital segments, ventral view; j, Trepobates subnitidus n. sp., apterous female; k, the same, antenna; l, the same, female genital segments, ventral view; d, the same, female genital segments, ventral view.

# 3. Trepobates subnitidus n. sp. (Fig. 6. j-l).

In the collection, there are only two female specimens, which differ from the preceding two species in the following points:

1. Spindle shaped, dorsal side of body more or less shining.

2. Much darker in coloration.

3. Second joint of antennae as long as third, while in the others it is distinctly shorter than the third.

4. Pronotum more constricted anteriorly, making the eyes more prominent.

5. Genital segments of female different as shown in the figure.

From *pictus* this species also differs in the absence of the spinelike process at the posterior margin of mesonotum in female.

The male is unknown to me.

Length of body:  $\bigcirc$  3.5 mm. Breadth of body:  $\bigcirc$  1.8 mm.

Habitat: North America.

Types: 2 QQ. — North America: Clarke Junction, Ind., U. S. A. (GERHARD, collected on July 4th, 1904).

The species of this genus are known to be widely distributed from the United States southwards as far as Central America, and it is necessary to revise the genus on the specimens from various localities, as they may still contain some undescribed species.

# Gen. Rheumatometra KIRK.

Rheumatometra KIRK., Entomologist, XXXV. p. 281. (1902).

This curious genus was very insufficiently described by KIRKALDY and so I here give a new description of the genus.

Apterous form. - Male much smaller than female. Body suboval. Head much shorter than broad between the eyes, slightly rounded anteriorly. Vertex very broad, posterior margin straight, much widened posteriorly. Eves oval, much rounded, a little protruded posteriorly beyond the posterior margin of vertex, posterior end rounded. Antennae much shorter than body, first joint longest but shorter than any other two joints put together, stouter than the rest, moderately curved; second joint longer than half the length of first, third joint shorter than second, fourth joint nearly as long as second, fusiform. Rostrum passing over the anterior coxae, third joint longest. Pronotum shorter than head, about four times as broad as long, much broader than head between eyes, anterior and posterior margins nearly straight. Mesonotum distinctly defined from metanotum, very broad, slightly convex, much widened posteriorly, anterior margin straight, posterior margin a little sinuate anteriorly. Metanotum much shorter than mesothorax, more or less distinctly divided into two parts (scutellum and postscutellum) in male, while in female both the parts as well as the first dorsal abdominal seg-

ment confluent at the central portion; anterior and posterior margins, and the boundary between the two parts sinuate anteriorly, especially in male. Underside of thorax flat, slightly convex. Anterior legs short and stout, femur in male very stout and considerably curved inwardly; tibia in male thinner and shorter than femur, considerably curved, tarsus in male very short, much shorter than half the length of tibia, first joint very small, second joint about four times as long as first; femur in female comparatively less stout than in male, slightly tapering towards the apex, slightly curved, tibia in female slightly shorter than femur, scarcely curved, a little thinner than femur, tarsus in female comparatively much longer than in male, longer than half the length of tibia, first joint very short, second joint about four times as long as first, fusiform. Intermediate legs very long, much longer than posterior legs, trochanter and femur in male considerably thick, the latter slightly shorter than body, slightly tapering from the middle to the apex, tibia in male one and one-third the length of femur, much thinner than tibia, a little tapering towards the apex, tarsus in male long, about three-fourths the length of tibia, thinner than the last, first joint about twice the length of second; intermediate legs in female nearly same as in male, but femur comparatively much less stout than in male. Posterior legs much shorter and thinner than intermediate pair, femur a little longer than intermediate femur, much tapering from the middle to near the apex, tibia about twothirds the length of femur, much thinner than the latter, tarsus shorter than half the length of tibia. Abdomen in male much narrower than thorax, lateral margins inwardly sinuate; first dorsal segment much longer than second, anterior margin much arcuately sinuate anteriorly; second and third segments nearly equal in length; fourth and fifth segments nearly equal in length, a little longer than second or third; sixth segment much longer than fifth; genital segments very small, much shorter than sixth segment dorsally; connexiva narrow but distinct. Abdomen in female broad, gradually narrowed toward the apex, comparatively much broader than in male, lateral margins outwardly sinuate; first dorsal segment confluent with metanotum at the central portion, second to sixth segments nearly subequal in length, narrowed towards the apex; genital segments rather small, first dorsal segment much narrower but a little longer than sixth dorsal abdominal segment, second segment very small, somewhat bud-like from above; connexiva very distinct, slightly elevated inwardly, each segment about as long as broad.

*Macropterous form.* — The forms of pronotum and elytra bring to mind those in some species of the *Veliidae*. Pronotum nearly as long as broad in male, or distinctly shorter than broad in female, moderately

convex, anterior margin nearly straight, humeral angle more prominent in female than in male, posterior margin rounded. Elytra much protruded posteriorly boyond the end of abdomen, about equal to twice the length of pronotum in male, longer than twice the length of pronotum in female; veins distinct.

The cotypes of the unique and type species of the genus, *Rheuma*tometra *Philarete* KIRK. from Alexandra ("Alexandria" by KIRKALDY must be an error), Victoria, are in the collection, on which I made the description given above.

The allied genera to *Rheumatometra* are *Metrobates* UHLER and *Metrobatopsis* m., from which, however, it differs in many respects.

# 1. Rheumatometra Philarete KIRK. (Fig. 7. b-c).

Rheumatometra philarete KIRK., Entomologist, XXXV. p. 281. (1902).

Victoria (Australia): Alexandra  $(3 \heartsuit \heartsuit, 3 \heartsuit \heartsuit, 1 \heartsuit, 1 \heartsuit, 1$  forma macroptera, Billinghurst), cotypes of Kirkaldy.

There are also cotypes of this species in the collections of the Natural History Museum, Stockholm; the Natural History Museum, Bucarest; the German Entomological Institute of the Kaiser-Wilhelm Society, Berlin-Dahlem; the Natural History Museum, Vienna; and of the author.

# Gen. Metrobatopsis nov.

Apterous form. — Body oval, much globular; male much narrower than female. Head very large, nearly as long as broad between eves, vertex moderately convex, lateral and posterior margins nearly straight, anterior portion much protruded anteriorly. Eyes very large, much rounded exteriorly, moderately protruded posteriorly. Antennae nearly as long as body in male, or a little shorter than body in female; first joint longest but not longer than the other three joints taken together, thicker than the rest, conspicuously incrassate towards the middle in male; second joint longer than half the length of first, third joint shortest, slightly longer than half the length of second, fourth joint a little longer than third, fusiform. Rostrum slightly exceeding the anterior coxae, third joint longest. Pronotum much shorter than head, transverse, rounded laterally, anterior and posterior margins straight. Mesonotum very wide, broader than long, comparatively much broader in female than in male, much protruded anteriorly over the lateral portions of pronotum, distinctly separated from the metanotum. Metanotum more or less obscurely fused with first dorsal abdominal segment forming a large plate being nearly as long as mesonotum. Anterior legs short, femur much incrassate in male, scarcely so in female, tibia shorter than femur, with a distinct process on the

inner side of apex, tarsus short but not shorter than half the length of tibia, first joint very short, about one-third the length of second, second joint fusiform, claws inserted at the middle of the last. Intermediate legs very long, femur nearly as long as body, stouter than tibia, tibia about one and one-third the length of femur, tarsus about three-fourths the length of tibia, tapering towards the end, first joint much longer than

second, the last shorter than half the length of the former. Posterior legs much shorter than intermediate pair, femur thinner but much longer than intermediate femur, tibia and tarsus together nearly equal to half the length of femur, tibia thinner than femur, tarsus shorter than half the length of tibia, first joint longer than second. Abdomen rather small, first dorsal segments more or less obscurely fused with metanotum, connexiva distinct, but the segmentation much obscured. Male genital segments comparatively very large, nearly as long as the other abdominal segments taken together dorsally. Female genital segments very small.

*Macropterous form.* — Pronotum nearly as long as broad, more or less convex, anterior margin nearly straight, lateral and posterior margins much rounded, forming nearly a circle, humeral angles more or less distinct. Elytra much developed, much protruded beyond the end of abdomen, corium and membrane more or less distinct, the former nearly half the



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Fig. 7. — a, Halobatopsis platensis (BERG.), apterous female; b, Rheumatometra Philarete KIRK., apterous male; c, the same, apterous female. — All the figures were drawn from cotypes of the respective species.

length of the latter, the venation much allied to that of *Metrobates* UHL. Genotype: *Metrobatopsis flavonotatus* n. sp.

The nearest ally of the genus is probably *Metrobates* UHL., a nearctic genus, from which it is distinguished in the structures of head, antennae, and legs. Two new species are in the collection.

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# 1. Metrobatopsis flavonotatus n. sp. (Fig. 8.)

Apterous form. — Body black, velvety pubescent. Head black, posterolateral angles of vertex brown. Eves dark gray, a little shining. Antennae black with the basal portion of the first joint yellowish white. Rostrum black. Pronotum black, with the central portion broadly yellowish white, forming a rectangular marking. Metanotum black, with a central median marking which is triangular or sometimes rather quadrate, yellowish white to pale brown, and a posterior median marking which touches the posterior margin, rather triangular in shape, bluish grey; these two markings much variable in shape and size and sometimes quite obliterated. Metanotum bluish gray, central median area black, varying in its extent. Mesopleural portions black with a stripe bluish gray, sternum black, much pubescent with bluish gray. Intermediate acetabula and the upperside of posterior acetabula bluish gray. Anterior legs black with coxa, trochanter and the base of femur yellowish white. Intermediate and posterior legs black with coxae and trochanters pale brown. Abdomen above pubescent with bluish gray, posterior margins of the last two or three segments in female, and the exterior margin of connexiva sometimes brown. Genital segments in both sexes black.

Male genital segments very large, curiously constructed, upwardly directed, with a conspicuous spine-licke process on the underside as shown in the figure.

The other structural characters are given in the generic diagnoses.

*Macropterous form.* — Pronotum black, with a large marking at the middle of anterior area, the latter being pointed posteriorly at the middle, yellowish white. Elytra black, membrane much brownish, with a more or less obscure longitudinal fascia paler along the middle portion.

Length of body:  $\bigcirc^{7}$  (forma aptera) 2 mm.,  $\bigcirc$  (forma aptera) 2'3—2'5 mm.,  $\bigcirc^{7}$  (forma macroptera, to the apex of elytra) 3'1—3'3 mm.,  $\bigcirc$  (forma macroptera, to the apex of elytra) 3'5 mm. Breadth of body:  $\bigcirc^{7}$  (forma aptera) 0'8—1 mm.,  $\bigcirc$  (forma aptera) 1'3 mm.

Habitat : New Guinea.

Types : 10  $\checkmark \checkmark$ , 34  $\circlearrowright \diamondsuit$ , forma aptera; 5  $\checkmark \checkmark$ , 7  $\circlearrowright \circlearrowright$ , forma macroptera. — New Guinea : Erima, Astrolabe Bay (1896, Biró).

# 2. Metrobatopsis affinis n. sp.

This species is much allied to the preceding species, but distinctly separated from it by the tollowing characters:

Apterous form.

1. Much larger in size.

2. Metanotum longer, longer than head and pronotum together, contrary to the latter.

3. Intermediate and posterior legs comparatively much shorter, posterior femur not longer than body, while in the latter much longer.



Fig. 8. Metrobatopsis flavonotatus n. sp. -a, apterous male; b, macropterous male; c, apterous temale; d, antenna; e, anterior tarsus; f, male genital segments, lateral view.

4. Male genital segment comparatively smaller, less modified.

5. Vertex surrounded by a fair brown fascia, which is interrupted at the middle of anterior portion.

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Length of body:  $\bigcirc$  (forma aptera) 2.8 mm. Breadth of body:  $\bigcirc$  1.2 mm.

Habitat : New Guinea.

Type: 1 ♂, forma (aptera). — New Guinea : Erima, Astrolabe Bay (1896, BIRó).

A single apterous male specimen is found among the last species, collected at the same time, but the differences are quite distinct and no intermediate form is found. I can not venture to examine the genital segments more exactly, as the unique specimen is mounted on a card.

### Gen. Metrobates UHLER.

Metrobates UHLER, Proc. Boston Soc. Nat. Hist., XIV. p. 108. (1871) et XIX. p. 437. (1878); KIRK., Trans. Amer. Ent. Soc. XXXII. p. 155. (1906); KIRK. et TORRE-BUENO, Proc. Ent. Soc. Washington, X. p. 210. (1908); TORRE-BUENO, Trans. Amer. Ent. Soc., XXXVII. pp. 246 et 249. (1911); VAN DUZEE, Cat. Hem. Amer. p. 430. (1917); HUNGERF., Bull. Univ. Kansas, XXI. p. 113. (1919); TORRE-BUENO, Connecticut Geol. & Nat. Hist. Survey, Bull. 34. p. 662. (1923).

### 1. Metrobates hesperius UHLER.

Metrobates hesperius UHLER, Proc. Boston Soc. Nat. Hist., XIV. p. 109. (1871), UHLER, Proc. Boston Soc. Nat. Hist., XIX. p. 438. (1878); UHLER, Stand. Nat. Hist., II. p. 271. (1884); VAN DUZEE, Canad. Ent., XXI. p. 6. (1889); TORRE-BUENO, JOURN. N. Y. Ent. Soc. XIII. p. 41. (1905); Trans. Amer. Ent. Soc. XXXVII. p. 249. (1911); Canad. Ent. XLIII. p. 228. (1911); PARSHLEY, PSyche, XXI. p. 144. (1914); VAN DUZEE, Cat. Hem. Amer. p. 430. (1917); HUNGERF., Bull. Univ. Kansas, XXI. p. 114 et 119. (1919); TORRE-BUENO, Connecticut Geol. & Nat. Hist. Survey, Bull. 34. p. 662. (1923);

North America: Adirondacks, Long Lake, N. Y., U. S. A. (10  $\sigma^{\gamma}\sigma^{\gamma}$ , 20  $\varphi\varphi$ , many larvae, HORVÁTH); Plummers Island, Md., U. S. A. (4  $\sigma^{\gamma}\sigma^{\gamma}$ , 11  $\varphi\varphi$ , several larvae, HORVÁTH); Ithaca, N. Y., U. S. A. (1  $\varphi$ , BAKER); White Lake, N. Y., U. S. A. (1  $\sigma^{\gamma}$ , forma macroptera).

#### Gen. Rheumatobates BERGR.

Rheumatobates BERGR., Insect Life, Washington, IV. p. 321. (1892) (referring to the anonymous description and figures in the same journal, IV. p. 198.); KIRK., Trans. Amer. Ent. Soc. XXXII. p. 156. (1906); KIRK. et TORRE-BUENO, Proc. Ent. Soc. Washington, X. p. 212. (1908); BERGR., Ohio Natur. VIII. p. 379. (1908); TORRE-BUENO, Trans. Amer. Ent. Soc. XXXVIII. p. 245 et 246. (1911); VAN DUZEE, Cat. Hem. Amer., p. 431. (1917); HUNGERF., Bull. Univ. Kansas, XXI. p. 115. (1919); TORRE-BUENO. Connecticut Geol. & Nat. Hist. Survey, Bull. 34. p. 662, 663. (1923).

Hymenobates UHLER, Proc. Zool. Soc. London, 1894. p. 214. (1894).

Three species, including a new species, are in the collection.

## 1. Rheumatobates Rileyi BERGR.

(Without name), ZABRISKI, JOURN. N. Y. Micr. Soc., VII. p. 128. (1891); (Anonymous), Insect Life, Washington, IV. p. 198. (1892).

Rheumatobates Rileyi BERGR. Insect Life, Washington, IV. p. 321. (1892); (nomen nudum for preceding reference); TORRE-BUENO, JOURN. N. Y. Ent. Soc. XIII. p. 41. (1905) et XVI. p. 234. (1908); BERGR., Ohio Natur. VIII. p. 381. (1908); TORRE-BUENO, Ohio Natur. IX. p. 390. (1908); TORRE-BUENO, Trans. Amer. Ent. Soc. XXXVII. p. 250. (1911); TORRE-BUENO, Canad. Ent. XLIII. p. 228. (1911); TORRE-BUENO, Canad. Ent. XLIV. p. 212. (1912); VAN DUZEE, Cat. Hem. Amer., p. 431. (1917); HUNGERF., Bull. Univ. Kansas, XXI. pp. 116, 220. tab. 16. (1919); TORRE BUENO, Connecticut Geol. & Nat. Hist. Survey, Bull. 34. p. 663. (1923).

Halobatopsis beginini ASHMEAD, Canad. Ent. XXIX. p. 56. (1897).

# 2. Rheumatobates tenuipes MEINERT.

Rheumatobates tenuipes MEINERT, Ent. Meddel. V. p. 7. (1895); BERGR., Ohio Natur. VIII. p. 381. (1908); TORRE BUENO, Trans. Amer. Ent. Soc. XXXVII. p. 250. (1911); VAN DUZEE, Cat. Hem. Amer. p. 431. (1917). HUNGERF., Bull. Univ. Kansas, XXI. p. 116. (1919); TORRE-BUENO, Connecticut Geol. & Nat. Hist., Bull. 34. p. 663. (1923).

North America: Glen Echo, Md., U. S. A.  $(1_{\circ}, forma macroptera, 1_{\circ}, Heidemann; 1_{\circ}, forma aptera, Baker); Plummers Island, Md., U. S. A. <math>(1_{\circ}, Heidemann).$ 

The types  $(2 \circ \circ \circ)$  of this species now in the Zoological Museum, Copenhagen, were collected at the same time and in the same place with the female specimen cited above.

### 3. Rheumatobates crassifemur n. sp. (Fig. 9.).

Apterous form, male. — Body black or blackish brown. Head blackish brown with a bluish gray spot on vertex. Eyes dark gray. Antennae black, with first joint yellowish white. Pronotum black or blackish brown with the central portion broadly yellowish white. Mesonotum black or blackish brown with a large bluish gray spot at the center. Metanotum black or blackish brown, much suffused with bluish gray. Underside of thorax black, anterior and intermediate acetabulae yellowish white beneath. Anterior legs black with coxa, trochanter, and femur except the apex yellowish white. Intermediate legs black or dark brown, trochanter and the base of femur pale yellow. Posterior legs dark brown, coxa and basal half of trochanter yellowish white. Abdomen above black or blackish brown, suffused with bluish gray; genital segments, apical portion of connexiva, and posterior margin of dorsal abdominal segment yellowish white. Abdomen beneath black, with the sixth abdominal and the genital segments yellowish white.

Head nearly as long as broad between eyes. Eyes moderately prominent laterally. Antennae: first joint nearly as long as head, much thickened at the middle, not armed with long setae, second joint very short, third joint a little longer than second, but thinner than the latter, fourth joint the longest, a little constricted at about one-third from the base, and vertically dilated at the apex, with a tuft of long stout setae on the outer side at the base. Pronotum very short, comparatively much shorter than in Rileyi or in tenuipes. Anterior and posterior margins moderately sinuate. Mesonotum somewhat broader than long. Metanotum about two-thirds the length of mesonotum. Anterior legs small, trochanter about twice as long as coxa, femur not long, not incrassate, with a fringe of long hairs inwardly, though sometimes much obscure, tibia about equal to the half of femur in length, widened towards the apex, tarsus about two-thirds the length of tibia, flattened, first joint very small. Intermediate legs strongly developed, coxa very large, nearly as long as thick, with a conspicuous tubercle on the outer side near the apex, trochanter very large a little longer than coxa, femur very long and thick, nearly as long as body, club-shaped, much incrassate near the apex, not curved, not fringed; tibia much longer than femur, about one and a half times as long as femur, much thinner than the latter, moderately tapering towards the apex, not fringed; tarsus nearly equal to half the length of tibia in length, thinner than the latter, first joint about twice as long as second. Posterior legs comparatively very short, nearly as long as intermediate tibia; coxa nearly longer than thick, trochanter of curious form, almost globular at the base, with the apex outwardly directed, with a conspicuous tuft of long stout setae at the basal corner, which is curved inwardly near the middle, connected to femur at a little after the base of the latter: femur very short and curved inwardly, about one and a half times as long as trochanter, incrassated towards the base, with a fringe of 5 or 6 very stout setae on the apical half of the superior surface; tibia long and slender, about one and a half times as long as femur, not armed; tarsus very short, shorter than half the length of tibia, first joint a little shorter than the second. Dorsal surface of abdomen flat, dorsal abdominal segments very distinct, connexiva conspicuous, much elevated vertically near the basal portion of abdomen; first dorsal genital segment somewhat tube-like, a little shorter than twice the length of sixth dorsal abdominal segment, second dorsal genital segment much shorter and narrower than first.

Apterous form, female. — Body black. Head black, with the lateral and posterior margins of vertex light brown, and a round marking on vertex bluish gray. (This bluish gray pattern, as well as those of the same



Fig. 9. — *Rheumatobates crassifemur* n. sp. — *a*, Apterous male; *b*, macropterons female; *c*, male antenna; *d*, male anterior leg (coxa not delineated); *e*, male intermediate leg (tibia and tarsus not delineated); *f*, male posterior leg.

color on other parts, are very conspicuous in the specimens from Argentina, while in those from Paraguay they are practically lacking.) Eyes dark gray. Antennae black, with first joint yellowish white. Pronotum yellowish white with lateral portions black. Mesonotum black, with a broad longitudinal fascia at the center which is much widened at the middle, bluish gray. Metanotum bluish gray. Pleural portions of mesothorax bluish gray. Anterior legs yellowish with the apex of femur, basal extremity and apical half of tibia, and entire tarsus black. Intermediate legs black, with acetabulum, trochanter and basal one-third of femur yellowish white. Posterior legs black, with coxa, trochanter and basal half of femur yellowish white. Dorsal surface of abdomen black, much suffused with bluish gray, with the apex of connexiva and of first dorsal genital segment yellowish white.

Body comparatively flat. Head nearly as long as between eyes. Eves moderately prominent laterally. Antennae short and slender, first and second joints slightly stouter than the rest, second joint very short, about as long as one-third of first, third joint subequal to first in length, fourth a little longer than third, nearly as long as first and second taken together, slightly thickened towards the apex; third and fourth joints with a few long stout setae. Pronotum very short, anterior and posterior margins nearly straight. Mesonotum broader than long. Metanotum about half the length of mesonotum, anterior and posterior margins nearly straight. Anterior legs not modified, femur straight, tibia much shorter than femur, flat, strongly narrowed at the base, tarsus very short, about half the length of tibia, first joint very small. Intermediate legs long and slender, femur and tibia straight, nearly equal in length, but the former much stouter than the latter, tarsus much longer than half the length of tibia, first joint longer than twice the length of second. Posterior legs much shorter than intermediate pair, femur about as long as tibia and tarsus taken together, tibia longer than twice the length of tarsus, tarsus very short, first joint nearly as long as second. Dorsal surface of abdomen flat and broad, connexiva conspicuous, exterior margin moderately curved, first five dorsal abdominal segments nearly equal in length, sixth segment a little longer than the others, first dorsal genital segment somewhat triangular in shape, about twice as long as sixth dorsal abdominal segment, second dorsal genital segment rod-like, slightly longer than first.

*Macropterous form.* — Pronotum shining black, with the middle portion of the anterior area yellowish white. Elytra pale smoky brown, with the corium much darker, costal and median veins of corium black, veins of membrane smoky brown, suture between corium and membrane, and the same passing the middle of membrane white.

Pronotum longer than broad, anterior margin straight, lateral margins nearly straight, a little divergent posteriorly, posterior margin much arcuate, rounded at the apex. Anterior area flattened, middle and posterior portions more or less irregularly swollen with a longitudinal depression along the median line of the middle portion, humeral angles rather prominent. Scutellum scarcely visible. Elytra well-developed, membrane about one and a half times as long as and much wider than corium, passing the middle of posterior tibia.

Length of body:  $\bigcirc$  2.3 mm.,  $\bigcirc$  2.8-3 mm. Breadth of body:  $\bigcirc$  0.8 mm.,  $\bigcirc$  1 mm. Length to the end of membrane in the macropterous form:  $\bigcirc$ ,  $\bigcirc$  4 mm.

Habitat: Argentina and Paraguay.

Types: 1  $\heartsuit$ , 8  $\heartsuit$ , forma aptera, Argentina: Posadas (June 1900, SILVESTRI) in the Hungarian National Museum, Budapest; 2  $\Huge{?}{}$ , 3  $\Huge{?}{}$ , forma macroptera, 2  $\Huge{?}{}$ , 2  $\Huge{?}{}$ , forma aptera Paraguay: Chaco (FIEBRIG) in the Natural History Museum, Vienna. There are also some specimens of immature stages in the collections of both the museums.

This species is quite different from any other known species of the genus in the remarkable structures of the antennae, intermediate and posterior legs in male. The female is also easily distinguishable from the others in its characteristic coloration of the dorsal surface of mesothorax, though this is quite obliterated in the specimens form Paraguay, and also in the posterior tarsus being shorter than half the length of the posterior tibia. This species is the first representative of the genus from South America.

# Gen. Microbates nov.

Apterous form. — Body thickly covered with setose hairs, fusiform in male, oval in female. Head very large, longer than between eyes, vertex moderately convex, lateral and posterior margins nearly straight, anterior portion much protruded anteriorly. Eyes very large, globosely rounded exteriorly, not protruded posteriorly. Antennae much shorter than body, basal two joints stouter than the rest, first joint slightly curved outwardly, second joint the shortest, third joint nearly as long as first, fourth a little longer than third, claviform. Rostrum a little passing over the anterior coxae, third joint much the longest, fourth joint a little longer than half the length of the third. Pronotum transverse, shorter than half the length of head, anterior margin straight, posterior margin curved backwards at the lateral portions. Mesonotum very large and broad, much convex dorsally, more or lers obscurely fused with metanotum. Posterior margin of mesosternum much sinuate anteriorly, the same of metasternum less

sinuate anteriorly. Anterior legs rather slender, femur much longer and a little stouter than tibia, tibia a little thickened towards the apex, tarsus about half the length of tibia, first joint much smaller and shorter than the second, second joint fusiform, claws inserted near the middle. Intermediate legs much the longest, coxa very stout, nearly as long as broad, trochanter slender, about twice the length of coxa, femur a little shorter than body, incrassate towards the base especially in male, tibia a little shorter and more slender than femur, tarsus about two-thirds the length of tibia, first joint one and a half times as long as the second: intermediate femur, tibia and tarsus in female and femur of male adorned with a very coarse fringe of very long stout hairs along the exterior margin. Posterior legs much shorter than the intermediate pair, femur about half the length of the intermediate one, basal half much incrassated especially in male; tibia slightly shorter and much more slender than femur, tarsus shorter than half the length of tibia, first joint about half the length of the second. Abdomen comparatively large, much broader in female than in male, concave dorsally, conexivum very conspicuous, genital segments conspicuous in male, very small in female.

Macropterous form. — Unknown.

Genotype: Microbates seminulum n. sp.

This genus is placed closely to Strongylovelia ESAKI and to Halovelia BERGR., and some characters as well as its minute size bear to mind the Veliid forms, but in reality the genus belongs to the Gerridae. This genus is distinguished from the genera mentioned above, in the structure of the head, which is longer than broad between eyes, the structure of the abdomen, which is much broader in female in this genus than in the other genera, the remarkable fringe of long stout hairs on the exterior margin of the intermediate legs; as well as in some other less important characters.

# 1. Microbates seminulum n. sp. (Fig. 10.)

Apterous form. — Body dark brown. Head dark brown, with vertex light brown excepting the lateral margins and the portion along the central median line. Antennae dark brown, with the base of the first joint pale yellowish brown. Rostrum dark brown, with the apex much darker. Pronotum dark brown, with a conspicouous pale yellowish brown band which occupies the posterior half of the central portion of pronotum. Mesoand metanotum dark brown, central lateral portions of the former somewhat paler, and the setose hairs just on the inner side of these portions more or less bluish silvery, forming two more or less obscure spots. Underside of thorax pale brown. Legs dark brown, with coxae, trochanters and the basal two-thirds of anterior femur, very pale brown. Dorsal surface of

abdomen dark brown, finely pubescent with bluish silvery hairs, being more densely so on the basal segments. Underside of abdomen light brown, pubescent with white hairs.

The structural characters are given in the generic description. Length of body:  $\bigcirc^7 1.2 \text{ mm.}$ ,  $\bigcirc 1.3 \text{ mm.}$  Breadth of body:  $\bigcirc^7 0.6 \text{ mm.}$ ,  $\bigcirc 0.8 \text{ mm.}$ 

Macropterous form. --- Unknown. Habitat : New Guinea.



Fig. 10. — *Microbates seminulum* n. sp. — a, apterous male; b, apterous female; c, antenna; d, anterior tarsus; e, intermediate tarsus; f, posterior tarsus.

Types: 9  $\sigma^{\gamma}\sigma^{\gamma}$ , 6  $\varphi \varphi$ . — New Guinea: Friedrich-Wilhelmshafen (1896, Biró).

This species is really the smallest one of the *Gerridae* ever known to science. Owing to their small size and paler coloration, these insects were at first overlooked by me as immature forms. Dr. BIRÓ states on the capture of this curious insect that the specimens were found on March 12th 1896, on the surface of the Jomba River, which contains brackish water.

# Gen. Strongylovelia ESAKI.

Strongylovelia ESAKI, Ann. Ent. Soc. Amer. XVII. p. 228. (1924).

A new species of this interesting genus is in the collection.

The following characters of the macropterous form are added to the generic diagnosis:

*Macropterous form.* — Pronotum much broader than in apterous form, prolonged posteriorly, but not longer than broad, moderately convex. Elytra very long, much protruded from the end of abdomen.

# 1. Strongylovelia albicollis n. sp. (Fig. 11.)

Apterous form. — Body black. Head black. Eyes shining gray. Antennae black, with apical two joints brownish. Pronotum yellowish white with posterior margin and lateral extremities black. Meso- and metanota together black with two very distinct large spots yellowish white. Mesosternum black with a large longitudinal spot on the lateral side yellowish white. Anterior legs black, with femur, excepting the apex, yellowish white. Intermediate legs black with coxa yellowish white, tibia and tarsus brownish. Posterior legs black but much brownish, with coxa, trochanter, and base of femur yellowish white. Underside of thorax yellowish white.

Body much rounded, globular. Head transverse, moderately convex, setose. Eyes very large and prominent, much rounded laterally. Antennae long, much setose, first joint thicker than the others, slightly curved, second joint slightly longer than first, third joint longest and slender, about twice the length of first, fourth joint a little longer than second, slightly thickened. Pronotum narrow, anterior and posterior margins nearly parallel. Meso- and metanota together much convex, lateral margins forming an arc. Anterior legs short, femur and tibia subequal in length, the former a little stouter than the latter, the latter much widened towards the apex, tarsus shorter than half the length of tibia, first joint much shorter than second. Intermediate legs very long, femur thickened, shorter than tibia and tarsus together, tibia a little shorter and much thinner than femur, tarsus shorter than tibia, first joint about one and a half times as long as second. Posterior legs much shorter than intermediate pair, femur shorter than intermediate femur or posterior tibia and tarsus together, stout; tibia shorter and thinner than femur, tarsus very short, shorter than half the length of tibia, first joint distinctly shorter than second. Abdomen short, much narrowed posteriorly, connexiva elevated inwardly in female.

*Macropterous form.* — Pronotum black, with a very broad transverse band on the anterior margin yellowish white. Elytra black.

Pronotum well developed, convex,

moderately prolonged posteriorly, anterior margin straight, lateral angles prominent, posterior margin much arcuately convex. Elytra very long, much protruded beyond the end of abdomen, veins not distinct.

Length of body:  $\bigcirc$  (forma aptera) 1.5 mm.  $\bigcirc$  (?) (forma macroptera, to the end of elytra) 2 mm.

Habitat: New Guinea.

Types:  $1 \bigcirc$  (forma aptera),  $1 \bigcirc$  (?) (forma macroptera). — New Guinea: Erima, Astrotabe Bay (BIRó).

Not to venture to float these small insects from the cards on which they are mounted, I could not examine the underside of the body nor the structures of the coxae and trochanters, and determine the sex of the macropterous specimen. Quite distinct from the other species of the genus, *Strongylovelia formosa* ESAKI, by its characteristic whitish patterns on pronotum in both the macropterous and apterous forms, and on mesonotum in the latter form.

#### Gen. Halovelia BERGR.

Halovelia BERGR., Ent. Month. Magaz. (2) IV. p. 277. (1893); ESAKI, Bull. Brooklyn Ent. Soc., XIX. p. 29. (1924); HALE, Records South Austral. Mus., III. p. 202 et 203. (1926).

This genus is represented by five species in this collection, of which three species are here described as new.

The generic description of the genus seems to be made only from the female individuals. The males are always much smaller than the females



Fig. 11. — Strongylovelia albicollis n. sp. — a, apterous female; b, macropterous form; c, antenna; d, anterior tarsus; e, intermediate tarsus; f, posterior tarsus.

always much smaller than the females, and the connexiva are much

less erected, and the first joint of the antennae and all the femora are much stouter than in females. BERGROTH described the posterior tarsus as "tarsis posticis mediis multo brevioribus, articulo primo et secundo longitudine subaequalibus", but it seems to be an error of his observation. The first joint is about a half of the second in length in all the known species of the genus. I have discussed the familiar position of the genus (loc. cit.), and I removed the genus from the Veliidae to the Gerridae. Dr. BERGROTH personally wrote to me that, after the careful examination of the type specimens of the two known species of the genus, Halovelia maritima BERGR. and Halovelia amphibia BERGR., he still believes that the insects are belonging to the Veliidae. I, however, believe that besides the characters enumerated in my paper, the structure of the intermediate and posterior acetabulae and the large difference in length between the intermediate and posterior legs in this genus are to be regarded as characters of the Gerridae; and especially in the new Halovelia papuensis described below, the characters of the Gerridae are distinctly represented.

A large number of specimens of this genus is in the collection, but there is not a single specimen of the winged form among them, and it is presumably the case, as in *Halobates*, that the winged form never occurs in this genus, owing to its specialized adaptation to its marine habitat.

HALE (loc. cit.) newly gave some notes on Halovelia and H. maritima BERGR. from Australia, on which I make some discussions as follows. He discovered a remarkable comb-like structure on the inner side of the anterior tibiae in the males of Microvelia and Halovelia, and the character may really provide a good specific character for the genera in question. Of the familiar position of Halovelia, however, I believe that the genus is not to be placed in the Veliidae as already discussed above. After describing his specimens, HALE states that his specimens "agree well with BERGROTH's description, excepting that the segment of the posterior tarsi can scarcely be said to be "longitudine subaequalibus'". As I have noticed above, the first posterior tarsal joint in the genus is always about as long as half the length of the second, so far as known to me, and it may be an error of the observation of BERGROTH. The sex of the types of Halovelia maritima BERGR. is female, as supposed by HALE. The four specimens of this species in the Hungarian National Museum are also all female. Thus the male of this species was described by HALE for the first time. He described that the anterior tarsi are "composed of three segments, the first minute and almost invisible, the second short and one-third as long as the stout terminal segment", though in

his figure only two joints are delineated. I have carefully examined under a microscope in five species, but have failed to distinguish the threejointedness in question, and it may be almost sure, that the anterior tarsi in this genus are also two-jointed as in all the other genera of



Fig. 12. — a, Halovelia papuensis n. sp., female; b, the same, male; c, Halovelia Bergrothi n. sp., female; d, the same, male; e, the same, female, lateral view; f, Halovelia septentrionalis n. sp., female, lateral view.

the Gerridae, except Hermatobates CARPENTER. It may be, however necessary to examine on this point in the specimens in alcohol, which are not available to me for the present study, though I have a large material of Halovelia septentrionalis m. in alcohol at home.

# 1. Halovelia papuensis n. sp. (Fig. 12. a-b).

Body black, thickly pubescent with gray. Vertex, middle area of pronotum excepting the anterior margin, basal portion of the first joint of antenna, anterior coxa, trochanter, and basal portion of femur, intermediate and posterior coxae, and basal half of trochanters brown.

Body fusiform, a little convex dorsally, densely pubescent. Head nearly as long as broad between eyes, moderately produced anteriorly, lateral margins of vertex nearly straight, posterior margin moderately sinuate posteriorly. Eves not large, but much rounded and prominent. Antennae distinctly longer than half the length of body, first joint longest, a little thickened at the middle, distinctly curved outwardly, apical threefourths the length produced from the apex of head, little different in thickness between both sexes, second joint about three-fourths the length of first, third joint slightly longer than second, fourth joint a little longer than third, a little thickened, claviform, Rostrum reaching the anterior coxae, third joint longest. Pronotum very short, transverse, shorter than one-fourth of head in length at the middle, anterior margin nearly straight. Meso- and metanota together nearly as long as broad, a little convex. Anterior legs shortest, femur thicker than tibia, a little thickened from the middle towards the base in male, tibia a little shorter than femur, a little thickened near the apex, tarsus very small about one-third the length of tibia, first joint very small, not longer than one-fourth of second in length, second joint nearly claviform, much longer and thicker than first. Intermediate legs very long, trochanter much longer than coxa, femur much longer than body, much incrassated at the basal half, tibia about three-fourths the length of femur, much thinner than the latter, tarsus about three-fourths the length of tibia, thinner than the latter, first joint about one and a half times as long as second. Posterior legs much shorter than intermediate pair, femur a little longer than half the length of intermediate femur, much incrassated at the basal two-thirds, tibia slightly shorter and much thinner than femur, tarsus very short, shorter than half the length of tibia, first joint distinctly shorter than second. Abdomen much narrowed, posteriorly. Connexiva in male a little elevated inwardly, the same in female perpendicularly elevated.

Length of body:  $\bigcirc$  1.8 mm.,  $\bigcirc$  2 mm. Breadth of body:  $\bigcirc$  0.8 mm.,  $\bigcirc$  1 mm.

Habitat: New Guinea.

Types: 49 ♂♂, 393 ♀♀. — New Guinea: Dregerhafen (1898, BIRÓ). This species is much different from the other species of the genus in its comparatively much longer legs, and its less swollen mesonotum, etc.

# 2. Halovelia Bergrothi n. sp. (Fig. 12. c-e).

Body black, densely pubescent with gray. Central basal area of vertex, being much reduced in size in male, somewhat purplish brown.

Body fusiform, considerably convex dorsally, especially in female. Head nearly as long as broad between eyes, moderately produced anteriorly, vertex moderately convex, lateral margins straight, posterior margin moderately sinuate posteriorly. Eves small, much rounded and prominent. Antennae longer than half the length of body, first joint longest and much thicker than the others, apical two-thirds produced from the apex of head, distinctly curved outwardly near the base, considerably incrassate at the middle in male; second and third joints nearly equal in length, about three-fourths the length of first, fourth joint a little longer than third, claviform. Rostrum reaching the anterior coxae, third joint longest, fourth joint longer than half the length of third. Pronotum transverse, anterior margin moderately sinuate concavely. posterior margin nearly straight and somewhat curved posteriorly at the lateral portions in male, distinctly produced posteriorly at the middle in female. Meso- and metanota together longer than broad, widest at the middle, moderately convex in male, considerably swollen dorsally in female. Anterior legs rather short, femur moderately thick, incrassate near the base especially in male, tibia a little shorter than femur, tapering towards the base, tarsus not shorter than half the length of tibia, first joint very short and small, second joint fusiform, much thicker than and about four times as long as first, claws inserted at the middle of second. Intermediate legs much the longest, trochanter comparatively long, femur about three-fourths the length of body, slightly thickend towards the base in male, tibia nearly as long as but much thinner than femur, tarsus about three-fourths the length of tibia. thinner than the latter, first joint one and a half times as long as second. Posterior legs much shorter than intermediate pair, femur about half the length of intermediate femur, considerably incrassate at the middle in male, tibia nearly as long as femur, but much thinner than the latter, tarsus slightly longer than half the length of tibia, first joint distinctly shorter than second. Abdomen much narrowed posteriorly, connexiva a little sloped inwardly but much less so than in septentrionalis m. described below, even in female.

Length of body:  $\bigcirc$  1.6 mm.,  $\bigcirc$  2.7 mm. Breadth of body:  $\bigcirc$  0.8 mm.,  $\bigcirc$  1.3 mm.

Habitat: New Guinea.

Types: 52 ♂ ♂, 21 ♀♀. — New Guinea: Seleo, Berlinhafen (1896, BIRÓ).

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This species differs from H. maritima BERGR. and other species in its larger size, the structures of the antennae, tarsi, pro- and mesonota, and connexiva.

The species is named in honor of the late Dr. E. BERGROTH, to whom I am much indebted, especially with respect to the study of this genus.

It may be very interesting to mention the notes of Dr. BIRÓ, who captured these insects on August 16, 1896 on Seleo, a coral island, in Berlinhafen. He states that the insects were found in a mass on the surface of a few cupfuls of rain-water, which was accumulated on a very thick root of a tree which laid about a half meter high from the earth in the half-dark shade of a dense wood.

### 3. Halovelia maritima BERGR.

Halovelia maritima BERGR., Ent. Month. Magaz. (2) IV. p. 277. (1893); HALE, Record South Austral. Mus. III. p. 203. (1926).

New Guinea: Dregerhafen (4  $\bigcirc \bigcirc$ , Biró).

Four females were collected at the same time with *Halovelia papu*ensis ESAKI. The specimens agree well with the description of BERGROTH.

# 4. Halovelia amphibia BERGR.

Halovelia amphibia BERGR., Wien. Ent. Zeit., XXV. p. 70. (1906).

New Guinea: Dregerhafen (6 73, 3 99, Biró).

This species was described by BERGROTH from Zanzibar. The specimens agree very well with the description of BERGROTH. Dr. BERGROTH did not note, in his original descriptions, the sex of the type of this species, nor that of the types of maritima, but all the specimens studied by him are females, as I could establish when examining the types of maritima,  $3 \varphi \varphi$  and of amphibia,  $1 \varphi$  in his collection. The male of this species is much smaller than the female, and it has the posterior femur much stouter than in other species of the genus. The female is comparatively more slender in shape than the females of the other species. The specimens were also collected at the same time with Halovelia papuensis ESAKI.

### 5. Halovelia septentrionalis n. sp. (Fig. 12. f)

Metrocoris sp. YANO, Hakubutsu no Tomo (Naturalist's Companion), Tokyo, VII. p. 289. (1907).

Metrocoris (?) sp. MIYAKE, Konchugaku Hanron (General Treatise on Entomology), II. p. 502. fig. 299. B. (1919).

Halovelia maritima ESAKI (nec BERGR.), Bull. Brooklyn Ent. Soc. XIX. p. 30. figs. 1-5. (1924).

This species is much allied to *Halovelia maritima* BERGR. and to *Halovelia Bergrothi* ESAKI, but quite distinct from them in the following points:

1. Distinctly smaller in size, and male much more rounded im shape than in *Bergrothi*.

2. Dorsal surface (mesonotum) more convex in this species in male, the female of *Bergrothi* much more convexly swollen than in this species. (See fig. 10, e and f).

3. Pronotum black, no brownish marking as in maritima.

4, Legs comparatively much shorter and stouter.

5. Abdomen more narrowed porteriorly, connexiva much more strongly sloped inwardly, especially in the female, than in *Bergrothi*.

The full description and figures as well as some biological notes of this species were already given by me under the name *Halovelia maritima* (loc. cit.).

Length of body:  $\bigcirc$  1.5 mm.,  $\bigcirc 2-2.2$  mm. Breadth of body:  $\bigcirc$  1 mm.,  $\bigcirc 1.1$  mm.

Habitat: Japan, Loochoo Islands and Formosa.

Types : 46  $\bigcirc$   $\bigcirc$ , 39  $\bigcirc$   $\bigcirc$ . — Japan : Misaki. Prov. Sagami, near Tokyo (MATSUMURA) in the collection of the Museum. Also many type specimens from Misaki (ESAKI), Naha, Island of Okinawa, Loochoo Islands (SONAN), Tansui, N. Formosa (ESAKI) are in the author's collection. Also known from Koshun, S. Formosa; and Kashoto (Samasana Island), E. Formosa.

This species was at first determined by me as *Halovelia maritima* BERGR., but afterwards, through the courtesy of Dr. E. BERGROTH, I could examine the types ( $3 \ Q \ Q$ ) of the latter and found the species to be distinct from it, and Dr. BERGROTH himself, after comparing my description and figures with his types, told me that the Japanese species is quite different from *maritima*. From the latter species, this one differs in the shorter intermediate and posterior legs, in the want of brownish coloration on pronotum, as well as in some other details of structure. Afterwards he wrote to me that he was proposing a new name for the Japanese species, but it seems to be hitherto not yet published though more than a year has passed since that time. I personally inquired Dr. BERGROTH on this point, but before I could get the answer, his death was announced, and I am now describing the species above as a new one.

This species is very common at Misaki, where Marine Biological Station of the Tokyo Imperial University is situated. Some data on biology were already published by the author of the present paper (loc. cit.). In the collection of the Museum there are some specimens of young stages

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which are suggesting very interesting data on the systematical relation of the genus, and I hope to be able to make more detailed studies on this genus in future time.

The species of the genus *Halovelia* are generally very small in size, and apparently very closely allied to each other. It is somewhat difficult to describe the differences completely, though the species are quite disinct from one another. The following key to the species is of some use to determine them.

- Head nearly as long as broad between eyes, anterior coxa, trochanter, and basal portion of femur, intermediate and posterior coxae, and basal half of trochanter brown. Length of body, ♂ 1.8 mm.; Q 2 mm., breadth of body, ♂ 0.8 mm., Q 1 mm. New Guinea.
- 2 (1). Head much shorter than broad between eyes, legs entirely black.
- 3 (4). Pronotum with a distinct brown band on the posterior area. Length of body, Q 2·3 mm,; breadth of body, ♀ 1·1 mm., (male unknown to me). — Cartier Island in Timor Sea, New Guinea, Australia.
   2. maritima BERGR.
- 4 (3). Pronotum entirely black.
- 6 (5). Second and third joints of antennae subequal in length.
- 7 (8). Intermediate tibia and tarsus together distinctly longer than body. Male more
  slender in shape, female very large in size, mesonotum of the latter enormously convex dorsally. Length of body, ♂ 1.6 mm., ♀ 2.7 mm.; breadth of body, ♂ 0.8 mm., ♀ 1.3 mm. New Guinea.
  4. Bergrothi ESAKI.
- 8 (7). Intermediate tibia and tarsus together subequal to body in length (♂) or distinctly shorter than the latter (Q). Male more rounded in shape, female much smaller and less convex dorsally than in *Bergrothi*. Length of body, ♂ 1.5 mm., Q 2 mm.; breadth of body, ♂ 1 mm., Q 1.1 mm. Japan, Formosa.

5. septentrionalis ESAKI.

Besides the species enumerated above, there is in the Hungarian National Museum a single female specimen of a handsome species of an unknown genus, collected by the late Mr. E. Kovács in Abyssinia (Lake Dembel). In the present paper, however, I can not dare to describe it, as the antennae, anterior legs and the intermediate and posterior tibiae and tarsi are all mutilated in the unique specimen. The genus may be placed close to *Metrocoris* and *Naboandelus*.

There are also two immature specimens of a *Hermatobates*, collected in New Guinea (Seleo, Berlinhafen) by Dr. BIRÓ. These specimens originate from marine habitat, as in the known cases of the insects of this interesting genus.