

GENERIC & SPECIFIC KEYS FOR GERRIDS OF NORTH AMERICA
NORTH OF MEXICO. WITH MONOGRAPHIC WORK ON GENUS METROBATES

By

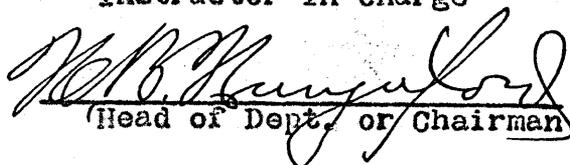
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GENERIC & SPECIFIC KEYS FOR GERRIDS OF NORTH AMERICA
NORTH OF MEXICO. WITH MONOGRAPHIC WORK ON GENUS METROBATES

This family (Gerridae) comprises semi-aquatic, predacious insects of the order Hemiptera. They are fairly conspicuous insects having the body usually narrow, elongate, widest behind pronotum, and covered with a short, dense water-proof velvety pile; head shorter than pro- and mesonota united, subconical, inserted in thorax to eyes; ocelli present, but usually very small and obscure; eyes large, rounded, prominent; antennae short, rather stout, four segmented, inserted on sides of head usually some distance in front of eyes; beak stout, four segmented, segment one and two very short; scutellum and elytra usually absent, the later, when present, without distinct clavus or membrane and usually reaching nearly to tip of abdomen; tarsi two segmented; legs very long and slender, hind femora much surpassing apex of abdomen; middle and hind coxae approximate, distant from front ones; the terminal segment of the tarsi, at least of the fore tarsi, is more or less bifid, and the claws are inserted before the apex.

Gerridae and Veliidae are separated from other families of Hemiptera by the presence of exposed antennae, four segmented antennae, and claws of at least the front tarsi distinctly anteapical, the apex of the last tarsal

segment more or less cleft or bifid. Gerridae and Veliidae are separated as follows:--

a. Hind femora much surpassing apex of abdomen; middle and hind coxae approximate, distant from front ones.

Gerridae

aa. Hind femora but little if at all surpassing tip of abdomen; middle coxae (except Rhagovelia) equally distant from front and hind ones.

Veliidae

KEY TO GENERA OF GERRIDAE N. AMERICA N. OF MEXICO

1. Inner margins of the eyes sinuate or concave behind the middle. Body comparatively long and narrow.

Sub-family Gerrinae-----2.

1. Inner margins of eyes convexly rounded. Body comparatively short and broad.

Sub-family Halobatinae-----3.

2.(1). Pronotum sericeous, and fused with mesonotum, antennae comparatively short and stout. Gerris

2.(1). Pronotum glabrous, not fused with mesonotum, antennae comparatively long & slender. Tenagogonus

3.(1). First antennal segment as long as the other three united, hind femur twice length of hind tibia.

Metrobates

3.(1). First antennal not as long as the other three united, hind femur not twice length of hind tibia.--4.

4.(3). Fourth antennal equal to or shorter than third, hind femur equal to or shorter than hind tibia and tarsus united, abdomen as long as remainder of body.

Rheumatobates

4.(3). Fourth antennal longer than third, abdomen much shorter than remainder of body.-----5.

5.(4). Black & yellow, eyes large and fairly prominent;

lacustrine. Trepobates

5.(4). Leaden-gray, eyes small and widely separated;

oceanic. Halobates

Genus Metrobates Uhler 1871

Uhler, Proc. Bost. Soc. Nat. Hist., XIV, p. 108, 1871
 Uhler, Proc. Bost. Soc. Nat. Hist., XIX, p. 437, 1878
 Kirkaldy, Trans. Amer. Ent. Soc., XXXII, p. 155, 1906
 Bueno, Trans. Am. Ent. Soc., XXXVII, pp. 246, 249, 1911
 Tess- Esaki, Nat. Museum Hungaria 1926

Metrobates Uhler 1871 Vs Trepobatopsis Champ. 1898

I have before me copies of the original descriptions of Metrobates Uhler 1871, and Trepobatopsis Champ. 1898. After careful comparison of the descriptions, both generic and specific, and also comparing specimens of each, I am convinced that there is not a generic difference between the two. So I am placing Trepobatopsis in synonymy as Metrobates is the older name.

Specimens of T. denticornis Champion, and T. trux Bueno will fit into Uhler's description of Metrobates with only minor differences, such as a very slight difference in length of the antennal segments and segments of the legs, and degree of dorso-ventral thickness of the thorax (Trepobatopsis being the thinner). Winged specimens of T. trux Bueno and T. denticornis Champion are unknown at present.

Specimens of M. hesperius Uhler will fit into Champion's description of Trepobatopsis with only minor

differences, such as a greater extension of the pleura forward towards the eyes in Trepobatopsis than in Metrobates hesperius Uhler, and a slightly longer genital segment in Trepobatopsis Champion. The tooth on the femur of T.denticornis Champion should hardly be used as a generic character as it seems to be only a male character as Champion suggests, also T. trux Bueno does not have the tooth on the femur.

To further confirm the placing of T. trux Bueno and T. denticornis Champion in the genus Metrobates, and casting Trepobatopsis Champion into synonymy, I am describing two new species, M. artus and M. tumidus that serve as very good intervening forms between Metrobates Uhler and Trepobatopsis Champion.

Lastly I place Trepobatopsis Champion in Metrobates Uhler because of the similarity of the male claspers, a character I find very constant and of great value in specific determinations.

The following generic descriptions Metrobates Uhler and Trepobatopsis Champion, are copies of the original descriptions that were used in the above comparison.

METROBATES UHLER 1871

Proc. of Bost. Soc. Nat. History. Vol. XIV p. 108, 1871.

"Similar to Halobates Esch. (autor.) Robust and broad. Antennae stout, almost as long as the entire body,

the basal segment nearly as long as the three others united, curved at base, narrowing in that direction, much stouter in the male and expanded at the tip, the underside with erect hairs; second segment about one-third the length of the basal, greatly enlarged at tip, the third shortest, also enlarged at tip, fourth very stout, fusiform, almost as long as the second. Pronotum ample (in the unwinged form narrow and short, the mesothorax forming the stoutest and largest part of the body), a very little wider than long, the posterior lobe large, and extending back in the form of a broad triangle with the sides nearly straight and the tip a little rounded; the lateral margins, including the humeri, forming high, broad ridges. Anterior legs stout, the tibiae a little curved at tip, with the process small and almost in continuous contact with the surface on which it stands; the basal joint of tarsi about one-fourth the length of the second, the second having the unguicule placed about one-third from the tip. Intermediate femora about two-thirds the length of the posterior, the tibia not quite as long as the posterior femur and tibia conjoined; the tarsus equal in length to the posterior tibia and tarsus conjoined. Corium of hemelytra short, with two elongate cells occupying nearly the whole width; membrane more than twice as long as the corium, the looped nervule running parallel to the entire margin."

TREPOBATOPSIS CHAMPION 1893

1898, *Biol. C.-Am., Hem.-Het.*, II, p. 157.

"Head very broad, short, convex, produced and declivous in front, angularly dilated on each side above the insertion of the antennae, broadly emarginate behind for the reception of the pronotum; the eyes finely faceted, large, oblique, and widely separated; rostrum short, reaching the front of the mesosternum; antennae nearly as long as the body (exclusive of the genital segments), four segmented, one very elongate, curved at base, longer than the others united, two and three (male) furnished with dentiform processes at the apex beneath. Pronotum very short, much narrower than the head (with eyes), subtruncate in front and behind, rounded at the sides, and depressed in the middle; the propleura vertical, narrowing downwards, and not visible from above. Mesonotum trapezoidal, sinuate at the sides, and trisinuate behind, not distinctly separated laterally from the pleura; the latter very broad, rounded at the sides in front, extending forward as far as the eyes and backwards to beneath the metapleura. Metanotum with a deep oblique groove on each side; metapleura broad, extending backwards to as far as the apex of the second dorsal abdominal segment. Abdomen very short, with moderately broad, flattened connexivum, the six segments united shorter than the mesonotum; first genital segment (male) very broad, parallel, as long as the three preceding

segments united, covering two small terminal segments, which are not visible from above. Anterior coxae narrowly separated, the ante-coxal pieces received in the cavity beneath the eyes; anterior femora (male) slender, about one-third longer than the tibia, armed with a stout tooth on the lower edge; anterior tibiae armed with a strong curved tooth at the inner apical angle; anterior tarsi two segmented, about half the length of the tibia, joint one short, two about three times as long as one, with two claws inserted at about the middle beneath. Intermediate femora a little stouter than, and about two thirds the length of the tibiae of the same pair of legs. Mesosternum separated from the mesopleura by a well-defined groove, which extends forwards to beyond the middle. Body short, broad, depressed, apterous.

The remarkable insect from which the above characters are taken is perhaps nearest allied to Trepobates, Uhler (= Stephania, Buch. White). The greatly developed mesonotum, with the broad pleura extending forwards as far as the eyes, gives it a peculiar facies. The armature of the second and third joint of the antennae, and also that of the anterior femora, is probably a male-character. The hind femora, as in Trepobates and Metrobates are very much longer than the intermediate femora. (In the unique examples seen the intermediate tibiae and tarsi are broken off.) In Bianchi's arrangement of the Halobatini it would come near Metrobates, Uhler, this genus having a similar elongate

basal joint to the antennae."

The following is a description of Metrobates given in H.B.Hungerford's paper 1919, which I believe to be a good generic description of this groupe of gerrids because the description still holds good with the four species added besides M. hesperius Uhler. This description being written mainly for winged forms, it might be well to add that the pronotum is sub-rectangular, and narrower than head with eyes, in the wingless forms.

METROBATES Uhler 1871.

(Hungerford, Kans. U. Sci. Bull. XI, p.113, 1919)

"Robust and broad. Winged form; head very convex, a little slanting forwards, between the eyes narrower than long, much narrower than the pronotum; eyes very large, viewed from above placed obliquely, subglobose, moderately prominent, their upper surface below the line of the vertex, projecting widely over the sides of the pronotum; with one or two impressed lines running across near the middle. Antennae stout, almost as long as the entire body, the basal joint nearly as long as the three other conjoined, curved at base, and narrowing in that direction, much stouter in the male, and a little expanded at tip, the under side with erect hairs; second joint about one-third the length of the basal one, greatly enlarged at tip; the third shortest, enlarged at tip; fourth very stout,

fusiform, almost as long as the second. Rostrum stout, hairy, extending beyond the basal line of the prosternum. Pronotum ample (in the unwinged form narrow and short, with the mesothorax forming the largest division of the body), a very little wider than long, the posterior lobe larger and extending back in the form of a broad triangle, with the sides nearly straight and the tip a little rounded; lateral margins (including the humeri) constituting high, broad ridges. Anterior lobe much narrower than the head across the eyes, the lateral margins and submargins lobately elevated. Anterior legs stout, the tibiae a little curved at tip, with the process small and almost in contact with the surface on which it is situated; basal joint of tarsi about one-fourth the length of the second, the second carrying the unguicule about one-third of its length from the tip. Intermediate femur about two-thirds the length of the posterior; the tibia not quite as long as the posterior femur and tibia conjoined, but equal in length to the distance from the base of head to the tip of the intermediate femur; tarsus equal in length to the posterior mesothorax, but much longer than the body; corium short, having two elongate cells occupying nearly the whole width; the nervures very prominent, membrane more than twice as long as the corium, having a submarginal nervure running around the entire circumference, following

equally the curve of the tip, a longitudinal suture extends along the middle quite to the tip. Abdomen broad and short; the penultimate ventral segment of female concavely curved on the posterior margin."

KEY TO SPECIES OF METROBATES

1. Second segment of antennae yellow-----2.
 1. Second segment of antennae not yellow-----3.
- 2.(1) Front femur of male with prominent median spine on inner margin. Clasper Pl. I, Fig. 5. denticornis
 2.(1) Front femur not so armed. Clasper Pl. I, Fig. 2. artus
- 3.(1) Lateral margins of prothorax angulate. Sharp spine on distal end of tibia-----4.
 3.(1) Lateral margins of prothorax parallel. Spine on tibia indistinct, only a swollen area. Clasper Pl. I, Fig. 1. hesperius
- 4.(3) Body half as wide as long. Light in color. Claspers Pl. I, Fig. 4. High Colorado country. trux
 4.(3) Body less than half as wide as long. Dark in color. Claspers Pl. I, Fig. 3. Cuban form. tumidus

Metrobates artus n.sp.

Size--With genital segments; male 3 mm. long and 1.1 mm. wide; female 3 mm. long and 1.8 mm. wide.

Color--Opaque, velvety, lead-gray, and black, with yellow and orange markings on the appendages, head and prothorax. First antennal segment amber at base with the rest black, second all amber except the tip which is black, third and fourth black. On the head there are two diverging orange spots on the posterior margin between the eyes, and four distinct black spots in a line parallel to the inner margin of the eyes. The pronotum has a slightly depressed orange area in the center. The mesonotum with a gray median band, darker on either side, fading to gray laterally. Genital segments black.

Structural characteristics--The fore tibia armed on the inner angle of the distal end with a prominent spine (a male character), and one to several long hairs. The relative average length of the antennal segments; male, 1st. 25.7, 2nd. 9.6, 3rd. 5.8, 4th. 7; female, 1st. 25, 2nd. 9.8, 3rd. 6, 4th. 7. Second and third antennal segments armed with a double fine toothed comb at the distal end. Head (with eyes) robust, wider than prothorax. Pronotum sub-rectangular, flat, small and set in mesonotum. Mesothorax broad, latero-

anterior margins projecting along sides of the pronotum, dorso-mesially divided, dorso-posterior margin with a median v shaped notch. Metanotum, sub-rectangular, about twice as wide as long, with posterior margin slightly sinuate, and crossed by a median transverse, antero-mesially curved sulcus. Abdomen, without genital segments, one half as long as the thorax, nearly as wide as long, bent downwards in middle, genital segment (male) truncate; female genital segment short, usually withdrawn in sixth abdominal.

Male claspers, flat, about one half mm. long, one twelfth mm. at widest place, and has a restricted right angle bend two thirds the distance back from the distal point, the distal two thirds is lance like, tapering to a sharp point. Clasper of M. trux (Bueno) and M. denticornis (Champion) are about the same length, but much wider and more swollen and have a very blunt point. Claspers of M. hesperius Uhler and M. tumidus n.sp. are only half as long and are very plump, almost club like. See plate I. Fig. 2.

Holotype, wingless male, Allotype, wingless female, Paratypes, wingless, 12 males, 20 females, Cameron Co. Tex. Dr. R.H.Beamer collector, Aug. 3, 1928, 1 male, 2 females, Kendall Co. Tex., Dr. R.H.Beamer collector, Aug. 7, 1928, 2 females Brazoria Co. Tex., Aug. 12, 1928, and 1 female Bowie Co. Tex., Aug. 16,

1928, Mrs. L.D. Beamer collector. Types in Entomology Museum University of Kansas, Lawrence, Kansas.

Notes--Arranging the species of Metrobates Uhler according to the dorso-ventral thickness of the thorax, M. trux (Bueno) and M. denticornis (Champion) would be dorso-ventrally flattened and M. hesperius Uhler more upright, with M. tumidus n.sp. and M. artus as the intervening steps, the latter being the thinner. M. artus is readily separated from the other four by having the second antennal segment amber color, absence of a heavy spine on the fore femur, and a very characteristic male clasper.

Artus is a Latin adjective meaning narrow, which partly describes the form of the male claspers.

Metrobates denticornis (Champion) 1898

Champion, Biol. C.-Am., Hem.-Het., II, p. 157, 1898

Drake & Harris, Ohio Jl. Sci. XXVIII, p. 273, 1928

"Male. Black, opaque; a broad sinuous stripe on the mesopleura, a stripe down the middle of the mesonotum, two spots on the metanotum, as well as the sides, the middle and sides of the dorsum of the abdomen, and the metapleura, gray; the head with two oblique ferruginous spots at the base; the pronotum with a rounded ochraceous spot in the center; the under surface bluish-gray, the

apex of the abdomen and a spot on the ante-coxal pieces of the mesopleura ferruginous or ochraceous; the first antennal joint at the base beneath, and the second joint to near the tip, ochraceous; above and beneath, the legs, and antennae clothed with short pubescence, the pubescence on the under surface whitish, the basal joint of the antennae with a few long projecting hairs beneath. Antennae not very slender, joint one about three and one-half times as long as two, two and four subequal in length, three shorter than two, four fusiform; joint two armed with two, and three with four, blunt, downwardly projecting teeth at the apex beneath. Anterior femora armed with a stout projecting tooth on the lower edge a little beyond the middle. Terminal ventral segment deeply arcuate-emarginate at the apex. Length $3\frac{1}{2}$, breadth 2 mm. (millim.)

Hab. Mexico (Salle, in Mus. Holm.). "

Drake & Hottes report this species from Texas, U.S.A. There are specimens of M. denticornis (Champion) in the Kansas U. Ent. Museum from Guatemala C.A. Determined by Champion.

Claspers on Plate I, Fig. 5.

Metrobates hesperius Uhler 1871

Uhler, Proc. Bost. Soc. Nat. Hist., XIV, p. 109, 1871

Uhler, Proc. Bost. Soc. Nat. Hist., XIX, p. 437, 1878

Uhler, Stand. Nat. Hist., II, p. 271, 1884

Van Duzee, Can. Ent., XXI, p. 6, 1889

Bueno, Jl. N.Y. Ent. Soc., XIII, p. 41, 1905

Bueno, Can. Ent., XLIII, p. 226, 1911

Parshley, Psyche, XXI, p. 144, 1914

Parshley, Brooklyn Ent. Soc. XXIV, No. 3, June 1929

Bianchi, Ann. Petersburg, 1896, p. 71

Bueno(Halobatopsis beginii Ash) Can. Ent. XXIX,
p. 56, 1897

Hungerford, U. Kans. Sc. Bull. XI, p. 143, No.
17, 1919

Blatchley, Heteroptera of N. America(Eastern)

(Proc. of Bost. Soc. Nat. Hist. Vol. XIV, 1871, p. 109)

"Opaque, velvety blue- or brown-black,
densely pubescent. Head robust, convex, brown at base
and each side of it rufous or orange, minutely, densely
pubescent, the face blackish. Rostrum black, beneath
shining, above densely grayish pubescent, at base more
or less orange. Antennae black, pubescent, the basal
one-fourth of the basal joint orange. Pronotum very
small in the unwinged specimens, and less than one-

half as long as wide, having the anterior margin a little concave, the surface finely, closely pubescent, the middle line broadly depressed, yellow, invaded by gray or whitish lead color, which expands in running black and covers the whole width of the tergum to its tip, omitting only a few black streaks on the disks and margins of the segments. The whole pectus, venter and two spots on the pleura lead color with a sericeous gloss.

The winged form has the pronotum blackish-brown, densely pubescent, the middle of the anterior lobe broadly depressed, covered by an orange spot, but lacking the bluish stripe. Coxae yellow beneath, legs brownish-black, the anterior pair yellow at base, the yellow color continued further on the under side. Sternum blackish, each side of it yellowish. Hemelytra dark brown, with a faint, paler streak on the median suture, at base and on the costal margin pubescent. Venter cinereous, the disk of the penultimate and base of the last segment yellow.

Length to tip of hemelytra 5 millims.
 Extreme width of mesothorax 2 millims. Unwinged, length, 3-4 millims. Mesothoracic width $1\frac{3}{4}$ - $2\frac{1}{4}$ millims.
 No. 29. Harris Collection."

Distribution:--N. York, Md., N. Carolina, Miss., Alabama, Florida, Tenn., Louisiana, Ark., Kans., Minn.

Two immature specimens from Indio Calif. that are probably M. hesperius Uhler are in the Kansas. U. Ent. Museum.

Claspers of Male on Plate I, Fig. 1.

Metrobates trux (Bueno)

Bueno, Ent. News, 32, p. 274, 1921

Hungerford & Moore, K.U. Sci. Bull., XIV, p.420

(Bueno, Ent. News, 32, P. 274, 1921)

"Head: Broader (including eyes), and longer than prothorax; tumid and as long as broad between the eyes. Eyes moderately large, quite oblique, shorter axis (breadth), four-fifth of the longer. Three large black shining setigerous loci in a line near each eye. Antennae slender (first two joints only present in type); basal joint curved at base; second joint one-fourth length of first, slightly enlarged at tip. Rostrum short, stout, three visible joints covered with long silvery gray hairs.

Thorax: All three thoracic segments distinct dorsally. Pronotum about three times as wide as long, narrower than head with eyes, set in deep emargination in mesonotum. Prosternum with deep acetabula under eyes for anterior coxae. Mesonotum twice as wide as long, divided medially by a deep longitudinal linear suture; anteriorly deeply roundedly emarginate to

receive the pronotum; posteriorly sinuate. Mesopleurae extended backward to level of posterior margin of metanotum, simple, without sutures. Mesosternum simple, a simple, , a deep submarginal suture dividing off the pleurae for about one-half their length. Metanotum about one-half length of pronotum, sinuate posteriorly and divided in two by a sinuate cross suture; anterior part longer than posterior; lateral pieces (acetabula) for the coxae running back half way of the second abdominal segment. Metasternum concealed.

Abdomen:- slightly longer including genital segment, than wide; Male; not quite as long (including genital segments) as wide; Female; connexivum wide, so reflexed as to be practically verticle; six abdominal segments visible dorsally and seven sternally, exclusive of the genital segment; 6th abdominal segment male beneath emarginate, trapezoidally posteriorly to receive the 7th segment; 7th segment twice as long as any of the others, roundedly emarginate to receive cylindrical genital segment; all other segments short and ringlike and subequal in length. Genital segment male cylindrical, rounded terminally, slightly longer than broad, as long as the four terminal abdominal segments taken together; beneath with a rounded operculum through which the genitalia show as two rounded protuberances, one in front of the other. Seventh abdominal segment female long and broad, beneath emarginate

trapezoidally posteriorly to receive genital segment; all other segments short and ringlike and subequal in length. Genital segment female narrow, roundedly triangular with a keel-like longitudinal slit and a knob like apex.

Legs; Anterior femora moderately stout, unarmed, tibiae one-quarter longer, more slender. Intermediate femora to tibiae as seven to nine in length, slightly stouter than tibiae, covered with stout hairs, spine-like in middle of leg, longer spinous bristles at ends of joints. Two stout spines at distal end of femur. Anterior femora only present in type; other joints of legs described from the type series specimens.

Color: Head somewhat flavous or darker with blackish pattern, covered with long silvery gray pubescence, the sixsetigerous loci shining black. Prothorax black, middle flavous and anterior margins broadly slate gray. Mesothorax black, a broad-slate-gray stripe, and pleura and sterna all slate gray; a double line of black spots running down the tergum, rather linear on the posterior margin of abdominal segments; male genital segment, the extreme knob of which is piceous. Abdomen beneath the same color, except that the black margins are more linear and placed on the posterior margin of each segment,

widest on the sixth and disappearing on the first and second; the last (7th) segment is broadly roundedly black in male and subtriangularly black medially in female. Edges of genital segment black in female, black in male.

The general ground color is black, body pubescence silvery gray and long particularly on the rostrum, or slaty gray and velvety.

Dimensions: Type--long 4.4 mm.; lat., 2.2 mm. Allotype long 5 mm. ; lat., 2.7 mm.

Type--Apterous male, Yampa River, N.W. Colo., Aug. 20, 1920; Allotype, same data; Paratypes, 2 males and 5 females, same data. H.C. Moore, collector. Type, Allotype, 1 male and 4 females Paratypes in collection of University of Kansas; 1 male and 1 female Paratype in Bueno collection.

This species differs generically from Trepobates Uhler in the size and proportion of head; proportion of first two antennal joints; pronotal proportions, and structure of abdomen. The color and the proportions of the leg segments and the absence of teeth on the anterior femora and the intermediate tibia at once separate it from Trepobatopsis denticornis Champion."

One female from Idaho, collected by C.J. Drake 1926 has been added to the Kansas U. Ent. Museum.

Male claspers of M. trux (Bueno) Pl. I. Fig. 4.

Metrobates tumidus n. sp.

Size--With genital segments; male 4 mm. long and 1.4 mm. wide; female 4 mm. long and 1.9 mm. wide.

Color--Opaque, velvety, lead-gray, and black, with yellow and orange markings on the appendages, head, and prothorax. First antennal segments amber at base with the rest dark, second, third, and fourth dark. Head with two diverging orange spots on the posterior margin between the eyes, otherwise black. Pronotum with slightly depressed orange area in the center. Mesonotum with gray median band, darker on either side fading to gray at the lateral margins. Abdominal segments lead-gray with dark margins. Genital segments dark.

Structural characteristics--The fore tibia armed on the inner angle of the distal end with a prominent spine (a male character) and one to several long hairs. The relative average length of the antennal segments; male, 1st. 24, 2nd. 7.4, 3rd. 5, 4th. 7; female, 1st. 23, 2nd. 7, 3rd. 5, 4th. 7. Second and third antennal segments armed with a double fine toothed comb at the distal end. Head (with eyes) robust, wider than prothorax. Pronotum sub-rectangular, flat, small and set in mesonotum. Mesothorax broad, latero-anterior margins projecting along sides of

the pronotum (not so noticeable as in artus, denticornis, and trux), dorso-mesially divided, dorso-posterior margin with a median V shaped notch. Metanotum, sub-rectangular, about twice as wide as long, with posterior margin slightly sinuate, and crossed by a median transverse, antero-mesially curved sulcus. Abdomen, without genital segment, one-half as long as the thorax, nearly as wide as long, bent downward in middle. Genital segment male truncate; female genital segment short, not withdrawn in sixth abdominal.

Male claspers are the best character in distinguishing this species. The claspers are the smallest of the claspers found in the genus Metrobates Uhler, they are less than one-fourth of a millimeter long, the distal portion is flat and disk-like, attached to the main body by a relatively slender stalk. Differs from M. artus nsp., M. denticornis (Champion), and M. trux (Bueno), by the latter's greater length and size, and differs from M. hesperius Uhler/in that it is some smaller, and does not have the incurved margins that M. hesperius has. Plate I, Fig. 3.

Holotype, wingless male, Allotype, wingless female, one Paratype, wingless male, Spanish Town, St. Cathrine, Jamaica, March, 1899. Paratypes wingless one male and three females from Mina Carlota, Trinidad Mts. Cuba, March 22, 1925, Collected by J.G. Myers. Types in Kansas U. collection, Lawrence, Kansas.

Notes--Arranging the species of Metrobates according to the dorso-ventral thickness of the thorax, M. trux (Bueno) and M. denticornis (Champion) would be dorso-ventrally flattened and M. hesperius Uhler more upright, with M. artus n. sp. and M. tumidus n.sp. as the intervening steps, the latter being the nearer to hesperius, tumidus is readily separated from the other four by having such a characteristic clasper, and form of mesothorax, and slightly longer length of body, and narrower, and darker color.

Tumidus is a Latin adjective meaning swollen, which partly describes the form of the male claspers.

Genus Gerris Fabricius 1794

This genus is our largest in the family. It contains 18 species. The following key is made from a comparison of specimens of 16 species (G. uhleri Drake & Hottes, and G. nyctalis Drake & Hottes, are not represented in the Kansas Entomological Museum), and 2 original descriptions. Following the key are original descriptions of each species.

KEY TO GERRIS

1. Large species, 11.5 mm. to 16 mm. long-----12
 Small species, 7.4 mm. to 10.5 mm. long-----2
2. (1) With horizontal yellow line on pleura of pronotum--3
 (1) Without such marks-----8
3. (2) Connexival posterior prolongation longer than 1st.
 genital segment, very slender and spine like.
 Slender species usually apterous----G. canaliculatus
- (2) Connexival prolongation shorter, stouter, and not
 spine like. Robust species, apterous or winged-----4
4. (3) With median ventral keel on the first genital
 segment (male) and hairs laterad of keel-----
- G. incognitus
- (3) Without median keel-----5

- 5.(4) A ventral median depressed area running the length
of the abdomen-----6
- (4) Without such a depressed area-----7
- 6.(5) With the last abdominal segment and the genital
segments dorso-ventrally flattened-----G. gillettei
- (5) Without last segments so flattened, body as viewed
from above, canoe shaped-----G. pingreensis
- 7.(5) Notch on sixth venter with corners rounded-----
G. argenticolis
- (5) Notch on sixth venter with corners angulate-----
G. buenoi
- 8.(2) Males with a prominent omphalium, females with
short spines only slightly surpassing middle of the
first genital segment-----G. alacris
- (2) Males without prominent omphalium-----9
- 9.(8) Without a median keel on first genital segment-----
G. ^{insoperatus} insoperatus
- (8) With a median ventral keel-----10
- 10.(9) Hairs laterad of keel-----G. comatus
- (9) No hairs laterad of keel-----11
- 11.(10) Corners of sixth venter notch rounded, female
spines incurved till they meet-----G. incurvatus
- (10) Corners of sixth venter notch angulate, female
spines not as above-----G. marginatus

- 12.(1) First genital segment of male without median
ventral keel-----13
- (1) First genital segment with a median ventral keel--14
- 13.(12) Larger, 15.5 - 16.1 mm. long; range western, from
about the Miss. R. west-----G. notabilis
- (12) Smaller, 12-14 mm. long; range eastern, from
about Miss. R. east-----G. dissortis
- 14.(12) Posterior margin of 6th venter roundly curved,
without notch-----15
- (12) Posterior margin of 6th venter with distinct
notch-----16
- 15.(14) Depressed area in median portion of 6th venter---
G. nebularis
- (14) No depressed area-----G. conformis
- 16.(14) With connexival spine longer than genital
segment-----G. uhleri
- (14) Connexival spine not longer-----17
- 17.(16) Notch in 6th venter deep with corners angulate,
and spines of connexiva nearly reaching end of
first genital segment-----G. romigis
- (16) Notch shallower with corners rounded, spines
not more than one-half length of 1st genital
segment-----G. nyctalis

Drawings of the above species Plate II.

(genital drawings)

Gerris alacris Hussey 1921

(Psyche V. 28, No. 1, p. 10, 1921)

"Facies of G. marginatus Say, a little smaller than that species, females larger and more robust than the males; commonly brachypterous. Males readily distinguished from the other N. A. species by the prominent omphalium of the metasternum; female easily distinguished from G. marginatus by the shorter spines of the sixth abdominal segment, which only slightly surpass the middle of the first genital segment.

Black above, the pronotum and the veins of the hemielytra with fine sparse golden pubescence, anterior lobe of the pronotum with a yellow median line, two small oblique yellowish marks on the base of the vertex. Bacculae yellow, throat slate-gray, prosternum yellow, the coxal cavities with a black spot outside. Mesosternum blackish, often yellow posteriorly, commonly with two diverging yellow lines extending backward from between the anterior coxae. Metasternum and venter yellowish, median line obsoletely carinate, the sides of the abdomen below and the region about the metasternal orifice (omphalium Bergroth 1902) blackish. The color of the venter surface is variable; sometimes it is entirely black. Connexivum narrowly yellow outside.

Antennae dark testaceous, first and second joints with a narrow piceous apical ring, middle of the first joint

darker; apical half of the third and the entire fourth joint piceous. Relative lengths of the segments, 43: 21: 20: 30: (average of 15 specimens). These ratios vary within narrow limits: sometimes the third segment is very slightly longer than the second, and sometimes the first is slightly shorter than the second and the third together.

Legs colored as in marginatus, the middle and hind legs slightly longer than in that species. In the brachypterous form the hemielytra commonly reach to about the middle of the third abdominal segment.

Male: sinus of the sixth ventral segment similar to that of marginatus, but with the sides of the median emargination somewhat more parallel. Female: genital segment broad at the base, more narrowed apically than in marginatus; the spines of the sixth ventral segment rather blunt, barely surpassing the middle of the genital segment.

Length, male, 7-8 mm., female, 9-10 mm.; greatest width (across the middle of coxae), male, 2.1-2.3 mm., female, 2.7-2.9 mm. Holotype, macropterous male, allotype, macropterous female, in coll. Museum of Zoology U. of Mich. Paratypes 12, there also. Michigan."

Gerris argenticollis Parshley 1916

(Ent. News, Vol. 27, 1916, p. 103.)

"Dark velvety brown above with fine sericeous pubescence. Anterior lobe of the pronotum with median and marginal yellow stripes, the former faint, the latter clothed with thick silvery pubescence; posterior lobe with yellow margins. Inner margins of hemielytra marked at base with white between the veins. Under surface black or silvery depending on the direction of the light; acetabula, base of anterior legs and margins of abdomen marked conspicuously with yellow; omphalium and legs variable, black to pale brown.

Relative proportions: of antennal segments, 1st. 26, 2nd. 13, 3rd. 12, 4th. 10; of intermediate legs, femur 50, tibia 43, 1st. tarsal segment 20, 2nd. 10. Thorax comparatively robust; abdomen spines not reaching apex of abdomen.

Male fifth abdominal sternite notched at middle of posterior margin; sixth abdominal sternite not carinate, ventral surface of abdomen not distinctly depressed just anterior to genital segment (as it is in buanoi), median ventral (second) emargination narrow, semicircular; genital segment narrow.

Female lateral plates of genital segment together very slightly wider than long, widest at middle, carinate ventrally.

Length from tip of tylus to apex of abdominal spines, male 7.5-8 mm.; female 8-8.5 mm.

Holotype male and allotype taken in copulation. In Parshley coll. Paratypes in Museum Comp. Zoo. Cambridge Mass."

Gerris canaliculatus Say 1832

(Say Ent. of N. Am. Edited by J.L. Le Conte, M.D. In two volumes. Vol. I. p. 363)

Above brownish; beneath yellowish, with a pectoral groove extending to the venter. Inhabits Georgia.

Head dark brown, with a silvery line from the eye to the antennae; antennae honey-yellowish and feet of the same color, the tarsi dusky; thorax dull yellowish or dull fulvous, darker each side, with a dorsal dull fulvous line and lateral margin, beneath which is a double black line enclosing a silvery one; hemelytra brown with black nervures; tergum fulvous with a black lateral line and yellowish margin; terminal spines even with the tip of the tail; beneath yellowish fulvous; pectus with an obvious groove, extending to the venter, and in which behind is a blackish line. Length less than two-fifth of an inch.

Differs from marginatus nov. in having an obvious groove beneath extending the venter. The whole inferior (surface) also is yellowish, with the usual silvery reflection; the posterior depressed margin of the thorax is not so wide as in that species, and has no raised line."

Gerris buenoi Kirkaldy 1911

(Ent. News Vol. 22, No. 6, p. 246, 1911)

"Belongs to sub-genus *Gerris*. Middle tarsi moderately slender with the first segment three times as long as the second; hind tibiae and tarsi together scarcely as long as their femur.

Sternites in the male flattened, not carinate, the seventh doubly emarginate at the apical margin, the middle (2nd) emargination broad and somewhat roundedly angular; not produced into a spine at the angles of the sternite; eighth sternite in the female transverse. Metasternal tubercle small, black; pronotum not suffused on the disc with reddish or yellowish but with the fore lobe with a marginal flavescent line. Length, males, macropterous form, 7 to $7\frac{1}{2}$ mm.; apterous form, 7 mm. Length, females, macropterous form, $7\frac{1}{2}$ -8 mm.; apterous form, $7\frac{1}{4}$."

"Note by J.R.T.B.--" This species is a very near neighbor of *G. marginatus* Say, with which it has often been confounded in collections. Aside from the correlated structural characters, however, the flavescent margin of the anterior lobe of the pronotum serves to distinguish it at once. It can also be separated by its smaller size, pronounced sutures between the abdominal segments, and more or less flattened abdomen in the male.

Van Duzee sent specimens of this species labelled "*Gerris sulcatus* Uhler", but neither he, Kirkaldy, nor J.R. T.B. succeeded in finding a description by this author

anywhere, hence Kirkaldy concluded that it was merely a manuscript name and decided to describe it, naming it as is.

The species is widely distributed and ranges from British Columbia to the Atlantic States.

Gerris comatus Drake & Hottes 1925

(Ohio J. Sci. V. 25, 1925, p. 48.)

" Size and general aspect very similar to G. marginatus Say and G. remigis Hussey; male readily distinguished from either of these by the two prominent tufts of long hairs, one on each side of the first genital segment; the omphalium of the metasternum is prominent, but not as large as in alacris. The female is rather hard to distinguish from females of marginatus, but the first genital segment above is a little broader, and the ~~xy~~ terminal spine of the connexivum is a little more blunt, the tips of the spines usually darker and clothed with longer hairs. Length, male, 7.3-8.2 mm.; female, 8-9.9 mm.; width, male, 2.3-2.5 mm.; female, 2.6-2.8 mm.

General color of body, legs and antennae very similar to G. marginatus; in the macropterous form hemelytra slightly variable in length and either reach almost to, or more or less cover the first genital segment. The hemelytra in the brachypterous form do not completely cover the fifth abdominal segment. The apterous form is unknown. The proportional lengths of the antennal segments are almost identical with G. marginatus.

Male: The sixth dorsal segment deeply, broadly and roundly emarginated, terminating in very short spines. Venter indistinctly carinate, the third, fourth, fifth, and sixth segments somewhat depressed; sixth segment deeply and roundly excavated. First genital segment with the sides deeply depressed and with a prominent tuft of long hairs in each depression.

Female: Very closely allied to the female of G. marginatus, the terminal spines of the sixth segment slightly shorter, a little more blunt and clothed with long hairs; first genital segment above slightly shorter and broader than in marginatus.

Holotype, macropterous male, and allotype, macropterous female. Estes Park, Colorado, 1924. Ohio, Iowa, Wisconsin, and Maine distribution."

G. comatus var. mickeli Drake & Harris 1925

(Biol. Soc. Wash. V. 38, 1925, p. 72.)

"This variety is represented by five specimens, short winged females. It may be distinguished from the typical G. comatus D. & H. by the rufous-brown marginal stripe on each side of the anterior lobe of the pronotum. Other characteristics are almost identical with females of G. comatus. However, male specimens may prove this variety to be a distinct species. The hairs on spines of the connexiva are very long as in the short winged forms of G. comatus. In two of the paratypes, the marginal stripes of the pronotum

are not very distinct.

Holotype, female, Rochester, Minn. Paratypes in North Branch, Minnesota.

In addition to the type localities the writers have examined specimens of G. Gomatus D. & H. from Canada, Montana, N.Y., N. Jersey, Ill., Montreal, Wyoming, and Minn."

Gerris conformis (Uhler) 1878

(Hydrometridae. Hydrotrechus conformis Uhler 1878, Proc. Bost. Soc. Nat. History, XIX, p. 435)

"Velia collaris Say, MSS., named by himself. On water, Sept. 30".

Dull olivaceous-fuscous, occasionally a little reddish brown on the base of the pronotum; form rather more slender than that of H. remigis; the eyes more prominent. Pronotum invested with short, dense, olivaceous pubescence, the middle line of the anterior impressed, orange; the posterior lobe coarsely, deeply, in places confluent punctation with a slender elevated longitudinal line running along the whole length; lateral edge narrowly yellow. Antepectus pale yellow, powdered with white; undersides of the anterior and intermediate coxae and outside of posterior coxae pale yellow. Medio- and post-pectus grayish sericeous. Hemelytra blackish brown, not reaching to the top of the ante-genital segment; tergum black, minutely transversely wrinkled, the connexivum

minutely punctured, lateral raised margin yellow, the apical process slender, acuminate, as long as the segment to which they are attached. Venter cinerous, sericeous minutely pubescent, the posterior margin of the last segment deeply concave, and together with the underside of the genital segments rufescent. Male. length to tip of venter, 15-16 mm. Greatest breadth of pronotum, $2\frac{1}{2}$ millims.

The lateral margins of pronotum has a stout ridge terminating in a knob on the humerus, and between the humeri are two small protuberances, which are sometimes obsolete.

No. 14, Harris Collection, male "Sept 20, 1821. Charles River".

"P.R.Uhler worked over T.W. Harris Collection. Bost. Nat. Hist. Soc. only one in this country which contains original and authentic types of the Hemiptera described by Mr. Say, and other early Am. Entomologists"

Gerris dissortis Drake & Harris 1930

(Bull. Brooklyn Ent. Soc. V. 25, No. 3, p. 145)

"Size, form, color and markings very similar to G. rufoscutelatus Latr. but readily separated from it by the plump first genital segment of the male which lacks a distinct keel. In G. rufoscutellatus the first genital segment is strongly, transversely, depressed at the base and possesses a prominent median keel on the apical portion,

on each side of which there is a strongly depressed area giving the terminal portion of the segment a somewhat pinched appearance. The first genital of the male of notabilis is quite similar to that of dissortis but differs in having the apex almost truncate (Ohio Jl. Sci. Vol. 28, 1928, p. 271, fig. 1, f and d.)

Legs much shorter than in G. notabilis; body as a rule considerably shorter and less robust, spines at the end of connexivum slenderer than in that species. Male genital segment slenderer; antennae proportionally shorter. Female generally slightly larger than male with a little shorter legs.

Length, 12-14 mm. ; width, 1.6-2 mm. Holotype, male, Tiffin, Ohio, Aug. 26, 1916, C.J. Drake, collector and allotype, female, taken with type, both in Drake collection. Paratypes from Ohio, Ill., Iowa, N. York, and Eastern Canada.

Both species are known to occur only in macropterous form.

Gerris gillettei (Gerris) Lethierry et Severin

(G. gillettei (Gerris) L. & S. 1896, Cat. Gen. Hem., III, p. 60. productus (Limnotrechus) Uhler, 1895, Bul. Colo. Agr. Exp. Sta., 31, p. 61 (preoc.).)

"Larger and somewhat more robust than L. marginatus Say, with long, somewhat flattened, anal processes of a yellow color forming the prolonged ends of the flat broad connexivium, and is of the same color as the last

three segments. Color of the upper surface dark brown with a tinge of fuscous on the pronotum. Head of medium length, fuscous, covered with silvery, scaly pubescence on the lower sides and beneath. The antennae short and stout, rusty brown, the second and third joints a little thicker and darker at tip, the second shorter than the apical, but longer than the third, the basal one a little longer than the superior line of head, the fourth a little shorter, darker in color and tapering towards the tip. Rostrum swollen at base, reaching a little behind the anterior coxae, with the tip black. Pronotum with the anterior lobe quadrangular and flat, a very little shorter than wide, the anterior border a little thickened and raised, the middle line behind this depressed and marked with a short, yellow stripe, the posterior lobe evenly rounded off, a little flattened, destitute of a carinate line, lateral margins narrowly yellow; underside all silvery white. Legs of medium length, pale rusty beneath, the posterior femora as long as from the base of posterior coxae to the end of venter. Veins of corium prominent, two of the oval medio-apical areoles pale. Sutures of connexivum pale, outer half of the connexivum of the last three ventral segments including most of the segments themselves and the cerci, yellow, the middle line of venter with four indented spots.

Length to end of anal segment 10 mm. Width of pronotum 2 mm. A single female was sent to me from Colo. Ft. Collins, April 13th (Gillette) (1895 ?)"

Gerris incognitus Drake & Harris 1925

(Biol. Soc. of Wash. V. 38, 1925. p. 73.)

"Size and form somewhat similar to G. pingreensis D. & H., but with the color pattern and antennae more like G. gillettei. Pronotum with a distinct longitudinal carina, the anterior lobe with a short, median and the marginal stripes yellowish or russet-brown. Antennae reddish-brown, the basal segment, except the tips, brownish black; first segment slightly curved, a little longer than the fourth and shorter than the second and third conjoined; second and third segments almost equal in length. Wings varying considerably in length, reaching to the middle of the last abdominal segment or a little beyond the first genital segment. Wingless female with a large, tumid area near the base of the abdomen. In G. pingreensis the first abdominal segment of the female has only a moderately large tubercle. Short winged forms unknown.

Male:--Venter strongly depressed posteriorly, especially the last segment; last three segments with a median, yellowish brown or russet line and with a faint median carina. Posterior margin of the last segment yellowish brown, deeply, widely and roundly notched; connexiva margined with yellowish brown, and terminating in short spines. First genital segment long, becoming smaller posteriorly, beneath strongly depressed on each side, with a raised median ridge, basal half (on each side) margined with long hairs.

Female:-- In the wingless form the connexiva terminates in moderately stout, obliquely and upward projecting spines, the tips of which are blunt. The first genital segment becoming narrower posteriorly, truncate at apex. Genital segments yellowish brown to brownish. In the winged form the terminal spines of the connexiva do not project quite so strongly upward. Length, 8.6-9.5 mm.; width, 2.6-2.82 mm.

Holotype, winged female, Kaslo, B.C. Now from Calif., and Montana."

Gerris incurvatus Drake & Harris 1925

(Biol. Soc. of Wash. V. 38, 1925. p. 72)

"Form size and color similar to G. marginatus Say, but different from it in having the terminal spines of the connexiva (female) very strongly curved inwardly. The notch on the posterior margin of the last ventral segment of the male is deeper, narrower at base, and more rounded than in marginatus. The apex of the connexivum is also shorter and slightly more inwardly curved. Markings on the head and thorax, and proportion of the antennal segments as in marginatus. Hemelytra reaching almost to or a little beyond the base of the first genital segment. Omphalium not strongly developed. Length, 7.6-8.7 mm.; width, 2.3-2.5 mm.

Holotype, male, and allotype, female from Montana, in Drake collection. Washington and Montana.

Although very closely related to marginatus, the genitalia and spines of the connexiva readily separate the two forms. The wingless and short winged forms are unknown."

inoperatus
Gerris(Gerris) inseparatus Drake & Harris
 (Biol. Soc. Wash. V. 38. 1925)

"Color markings, form and size very similar to G. marginatus Say. Hemelytra reaching almost to or a little beyond the base of the first genital segment. Antennae slightly variable in color, proportional length of segments about the same as in G. marginatus. Wingless and short winged forms unknown.

Male:- The median carina of venter more prominent on the last two segments than in G. marginatus. Omphalium not prominent. Posterior genital segment very plump, without a distinct median keel, roundly projecting in the middle. Connexiva, except outer margins, also the median portion and the posterior margin of the last segment of the venter, golden yellow. The median stripe of venter varies from golden yellow to brown.

Female:- Spines of the connexiva a little shorter, broader and thicker than in marginatus. Coloration of connexiva as in male. Genital segments beneath the outer margin of first genital segments above golden yellow. Length, 7.4-8.6 mm.; width, 2.3-2.5 mm.

Holotype, male, and allotype, female, Mexico(2308) collected by F.C.Baker, in U.S. Nat. Museum. Also from Delaware, Ohio, N.Y., Ontario, N. Quebec, Ill., N. Jersey, Va.

The notch of the last segment of the venter and the plump genital segments without a keel readily distinguish the males of this species from the males of marginatus. The females of the two species are rather hard to separate. G. inseparatus ranges from Ottawa(Canada), and N.y. to Ohio and Ill., and then South into Mexico."

Gerris marginatus Say 1832

In Complete Writings of Thomas Say on the Entomology of North America, Edited by John L. Le Conte, M.D. In two volumes. Vol. I. p. 362. 1859.

" Thorax with an elevated line: behind with an obvious depressed margin; abdominal margin dull rufous. Inhabits U.S. Body blackish, more or less tinged with olivaceous. Thorax with a raised line, more elevated behind; lateral indented edge dull rufous; posterior depressed margin rather wide and very obvious; abdomen with the margin dull rufous; feet dull rufous; anterior thighs with a blackish line on both sides; coxae dull rufous beneath; beneath with a slightly elevated line, terminating anteriorly in a depressed one; blackish, with a silvery reflection. Length over seven-twentieth of an inch.

Much smaller than the preceding (G. remigis), and more slender; of a darker color; abdominal margin of a different color, and the posterior margin of the thorax is broadly depressed. I obtained an individual, and Nuttall gave (me) one which he took in Missouri."

Gerris nebularis Drake & Harris 1925

(Biol. Soc. Wash. V. 38, 1925. p. 70.)

"Akin to G. conformis Uhler and G. uhleri D. & H. but readily separated from them by its larger size, longer legs, and the deeply sulcated last segment (male) of the venter. General color, markings, and proportional lengths of the antennal segments very similar to G. conformis. In the long winged form the first pair of wings reach almost to or a little beyond the base of the first genital segment. In the short winged form the hemelytra extend from the middle of the second to the middle of the third segments. Length, 15.4-16 mm.; width, 2.35 mm.

Male:- Terminal spines of connexiva reaching a little beyond the first genital segment. Venter, except terminal segment, with a narrow median ridge; last segment deeply, broadly and roundly excavated on the posterior margin, the median furrow broad and deep. Genital segments distinctly broader than in conformis; median ridge long and prominent, with a large, strongly depressed area on each side.

Female:- Venter with a narrow, median ridge. Apical spines of connexiva almost reaching to the tip of the last genital segment. In both male and female the median ridge of venter varies from yellowish to russet brown in color.

Holotype macropterous male, and allotype, macropterous female, Florida. In Drake collection. Ohio, N. Jersey, Ill.

In the long winged form the hemelytra show considerable variation in length. This species has been confused in collections with G. conformis. The specimens from Gainesville, Florida, were taken on small stream about two miles west of the University. A damaged specimen from A. & M. College, Miss. Seems to belong to this species. The wings of the holotype and allotype are broken off."

Gerris (Limnophorus) notabilis, Drake & Harris 1925
(Ohio J. of Sci. V. 25, 1925, p. 46)

"Very closely related to G. rufoscutellatus Latr. but separated from it by its much larger size, longer legs, the more prominent carina of the pronotum, and the difference in the proportional lengths of the antennal segments. In rufoscutellatus (now dissortis) the posterior margin of the sixth segment is more truncate and widely excavated and the apical spines do not usually reach the

end of the second genital segment; in notabilis the last dorsal segment and connexivum of the abdomen are more roundly excavated and the apical spines are stouter, longer, and generally reach to the tip, or a little beyond the tip of the last genital segment. Length, male, 15-16 mm. female, 15.5-16.1 mm.; width, male, 2.2.; female, 2-2.32 mm.

Very elongate, moderately robust, fuscous or ferruginous; head, a large spot on each side of the pronotum in front, sides of pronotum and nervures of hemelytra blackish brown; body beneath densely clothed with long silvery hair. Antennae brown at base, growing blackish brown towards the tips; first segment considerably longer than any of the others, second segment much shorter than the first and longer than the third or fourth, the fourth a little shorter than the second and a little longer than the third; other characters about the same as in rufoscutellatus.

Male:- The intermediate and posterior legs much longer than in rufoscutellatus, the posterior margin of the first genital segment beneath nearly truncate; antennae longer than in the female.

Female:- Very similar to the female of rufoscutellatus, but larger, with longer legs; the connexivum terminating in a stouter and longer spine.

Holotype, macropterous male, allotype, macropterous female, and paratypes from Colo. Pingree Park, 1924."

Gerris (Aquarius) nyctalis Drake & Harris 1925

(Ohio J. Sci. V. 25, 1925, p. 47)

"Differs from G. remigis Say by its darker color and shorter body, legs and antennae, especially the first segment. Length, male, 11.9-12.4 mm.; female, 11.5-13 mm.; Width, 2.6-3.2 mm.

Apterous form:- Pronotum blackish, sparsely pubescent, with the posterior margin broadly rounded, the median carina distinct, the median anterior stripe yellowish brown. Antennae moderately long, blackish; first segment distinctly shorter than in remigis, twice the length of the second, the second very slightly longer than the third, fourth a little longer than the second. Abdomen above blackish, the pubescence sparse and extremely short, each of the last four segments usually with a longitudinal, discal, bluish gray streak; connexivum broad, with a very small, brownish spot along the outer margins between each segment; terminating in a broad, stout, moderately spine, the tip of which projects slightly inwardly and upwardly. Legs moderately long, blackish above, the tips of intermediate and hind femora extending a little beyond the tip of the abdomen. Body beneath brownish black, prosternum, coxae and part of the trochanters yellowish or brownish.

Male:- Venter broadly flattened; sixth segment distinctly depressed in the middle, the posterior

margin raised and very deeply, broadly and roundly notched, fringed with rather long, yellowish hairs. Genital segments blackish, the first segment with the median ridge narrower than in remigis.

Female:- Venter distinctly broader than in remigis; genital segments blackish; pronotum very broadly rounded posteriorly.

Macropterous form:- Pronotum with anterior lobe depressed, especially in the middle; humeri large and prominent; posterior margin not so broadly rounded as in the apterous form. hemelytra reaching almost to tip of first genital segment, the nervures brownish black and sparsely pubescent.

Holotype, apterous male, and allotype, apterous female. Near Estes Park, Colo. 1924. In collections of Iowa State College."

Gerris (Gerris) pingreensis Drake & Harris 1925

(Ohio J. Sci. V. 25, 1925, p. 49.)

"Allied to G. buenoi Kirk. and with similar color markings on the pronotum, but readily separated from it by the shorter basal segment of the antennae, the distinct median carina of the pronotum and the much differently formed sixth ventral and genital segments of the male. Length, male, 9-9.85 mm., female, 9-10 mm.; width, male, 2-2.2 mm., female, 2.1-2.5 mm.

Antennae moderately long, brownish black; first segment a little longer than the fourth and

subequal to the second and third conjoined, third segment slightly shorter than the second. Legs moderately long, blackish above and brownish beneath. Pronotum broader, more deeply pitted and more roughened than in G. buenoi, the posterior margin very broadly rounded; sparsely clothed with extremely short, golden pubescence; anterior lobe with the short discal and the marginal stripes brownish; body beneath blackish, with rather short, silvery hairs; genital segments brownish or brownish black. Rostrum reaching to the mesosternum, the apical segment smooth and blackish.

Macropterous form:- Humeri prominent, the margin beneath brownish. Hemelytra not completely covering the genital segments; nervures blackish brown, the pubescence sparse and extremely short.

Apterous form:- Pronotum much more flattened, and the carina more prominent than in winged specimens; anterior lobe strongly depressed on each side of median line; posterior margin very broadly rounded and slightly carinate.

Male:- Venter broadly, concavely depressed, with a median, longitudinal carina; sixth segment with the deep, broad furrow becoming wider and deeper posteriorly, as deeply but not as widely notched as buenoi. Genital segments and ventral projection of first segment narrower than in buenoi. Connexivum terminating in a broad and very short spine.

Female:- Venter somewhat flattened; in the apterous female, first abdominal segment above with a prominent tubercle. Connexivum terminating in a broad, moderately long, upward projecting spine, the tip of which is black.

Holotype, macropterous male, and allotype, macropterous female, Pingree Park, Colorado, 1924."

Gerris remigis Say 1832

In Complete writings of Thomas Say on the Entomology of North America, Edited by John L. Le Conte, M.D. In two volumes. Vol. I. p. 362. 1859.

" Dark olivaceous; thorax rounded behind, without an elevated line. Inhabits U.S.

Body dark brownish-olivaceous; thorax transversely rugulose without much appearance of a dorsal raised line; a dull ochraceous and indented line before; posterior margin regularly and obtusely rounded with but a very narrow depressed margin; obsolete gray lines; lateral margin with a series of grayish points or short transverse lines; beneath with a silvery sericeous reflection, an impressed line on the anterior part of the pectus behind the anterior feet. Length one-half an inch.

A great similarity exists between some of the species of this genus, and I have ventured to separate this species from the paladum F., which is said to have

an elevated line on the thorax and another on the pectus and postpectus.

The thorax on the posterior segment is generally obtusely tinged with dull yellowish, with a blackish longitudinal line in the middle.

Var. a. thoracic elevated line rather more obvious; gray lines on the middle of the tergum more distinct. Inhabits "exico. "

Gerris remigis Say 1832

Say, Thomas, Heter. N. Harm., pl 35, 1832

Stal, C., Frey, Eugene. Resa, Ins. p. 264,

1859 (Gerris orba)

Uhler, P.R., Am. Jl. Sc., ser 3, I, p. 105,

1871 (Hygrotrechus robusta)

"The writers feel that both G. orba Stall and G. robusta Uhler must stand as synonyms of Gerris remigis Say" This statement taken from Drake & Harris, their article appearing in Ohio J. Sci. Vol. XXVIII, no. 5, p. 269, 1928.

The writer has examined some 1500 specimens of G. remigis Say in the Kansas Ent. Museum, and many were labeled as G. orba, and G. robusta, however they all seem to be the same.

Gerris (Aquarius) Uhleri Drake & Harris 1925

(Biol. Soc. Wash. V. 38, p. 69, 1925)

Allied to G. conformis Uhler, But easily distinguished from it by (male) narrower, shorter and differently formed genital segments, much longer terminal spines of the connexiva, shorter antennae; (female) by shorter genital segments and longer and more slender spines of the connexiva. In G. nebularis the last segment of the male is distinctly sulcate. Length 14.5 mm.; width, 2.26 mm.

Moderately robust, elongate, brownish black. Head, pronotum and nervures of hemelytra rather densely clothed with very short, somewhat flattened, recurved, grayish pubescence. Head on each side with silvery gray pubescence, the basal stripe varying in color from yellow brown to russed brown. Antennae brownish black; first segment slightly curved, longest, subequal to second and fourth conjoined; second segment very slightly shorter than the fourth and distinctly longer than the third. Body beneath densely clothed with moderately long, silvery pubescence, the prosternum golden yellow. Rostrum brownish black, clothed with silvery hairs, reaching to the middle of anterior coxae. The apical segment smooth, shining and black. Hemelytra covering or only extending to the last genital segment. Pronotum with median carina distinct, the lateral margins beneath (humerus to anterior lobe) golden yellow, posterior margin rounded and distinctly depressed in the middle;

anterior lobe, except front, broadly depressed in the middle and with a yellowish brown, median stripe, the pubescence on the sides of the anterior lobe interspersed with grayish hairs. Apterous or brachypterous forms unknown. Connexiva bordered with yellowish brown, the spines dark brown and extending a little beyond the tip of last genital segment. Legs a little shorter than in conformis or nebularis.

Male:- Venter broad and somewhat raised along the median line; last segment deeply, broadly and somewhat roundly excavated behind, distinctly depressed on each side in front of the posterior margin; posterior margin yellowish brown, beset with numerous silvery hairs, and truncate in the middle; first genital segment with keel much shorter and triangular in shape, also nearer the base and much more raised than in nebularis; sides of keel and depressed area on each side clothed with silvery pubescence; posterior margin of first and last segments clothed with numerous silvery hairs.

Female:- Genital segments smaller and more plump than in nebularis, only faintly depressed on each side. Terminal spines of connexiva long, slightly curved and extending distinctly beyond the apex of last genital segment.

Holotype, male and allotype female, from Arizona in the Uhler coll. U.S. Nat. Museum Washington D.C."

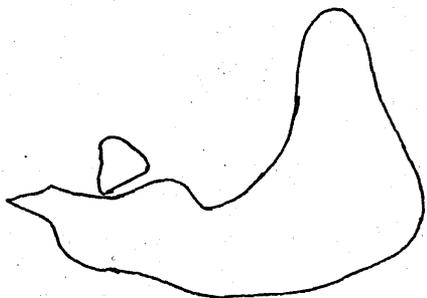
PLATE IMale Genital Claspers180 X

Fig. 1. M. hesperius Uhler
(slide No. 1.)

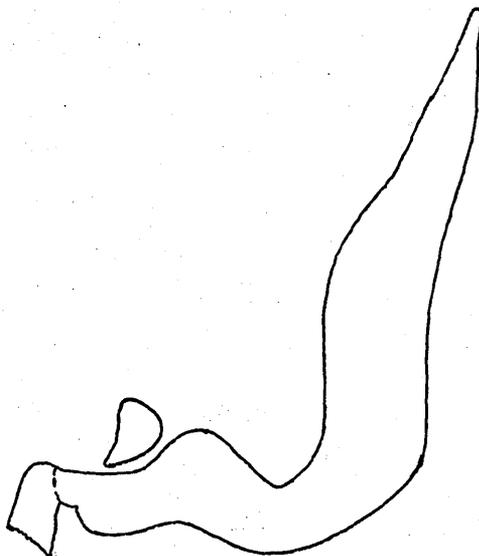


Fig. 2. M. artus n. sp.
(slide No. 2.)

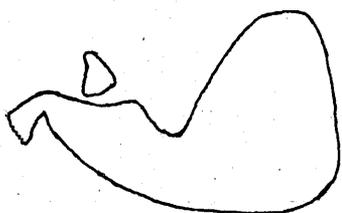


Fig. 3. M. tumidus n. sp.
(slide No. 14.)

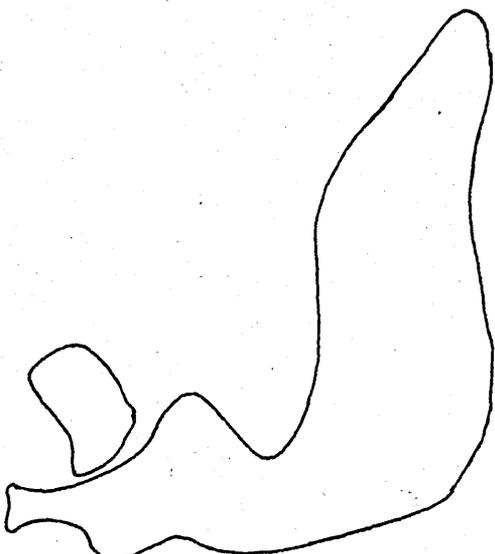


Fig. 4. M. trux (Bueno)
(slide No. 7.)

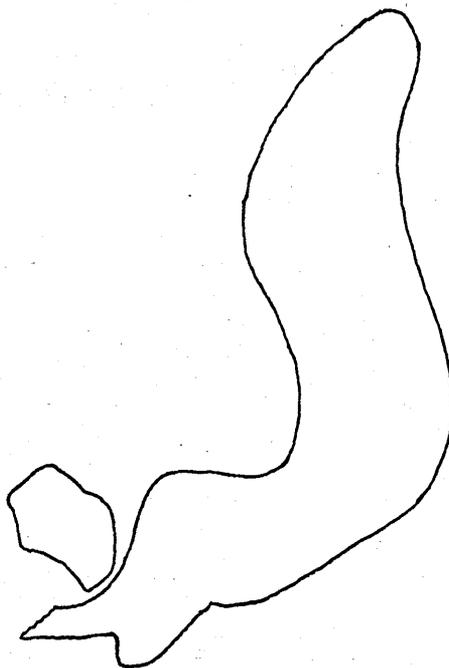


Fig. 5. M. denticornis (Champion)
(slide No. 8.)

External Male Genitalia

PLATE II

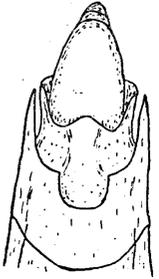


Fig.1 G. remigis

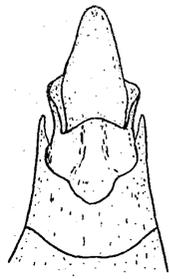


Fig.2 G. nyctalis

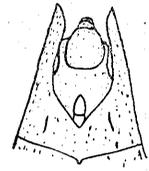


Fig.3 G. Guhleri

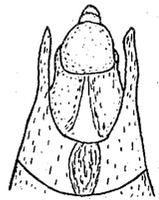


Fig.4 G. canebularis

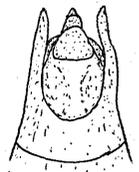


Fig.5 G. conformis



Fig.6 G. discorsitis

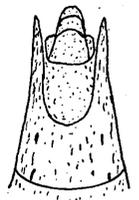


Fig.7 G. notabilis

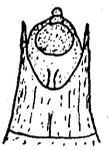


Fig.8 G. canaliculatus

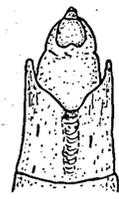


Fig.9 G. gillettei

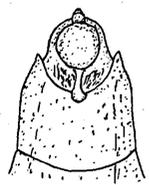


Fig.10 G. comatus

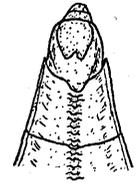
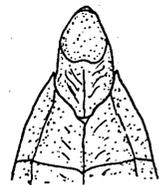


Fig.11 G. pingreensis



Fig.12 G. buenoi



*Fig.13 G. inaequalis
insperatus*

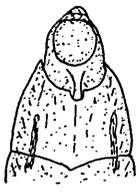


Fig.14 G. marginatus



Fig.15 G. galacris

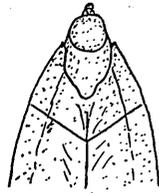


Fig.16 G. gorgenticolis

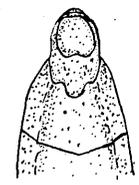


Fig.17 G. incurvatus