A REVISION OF GRYON HALIDAY IN NORTH AMERICA (HYMENOPTERA: PROCTOTRUPOIDA: SCELIONIDAE)

LUBOMIR MASNER
Biosystematics Research Institute, Agriculture Canada, Ottawa K1A 0C6

Abstract

The genus Gryon Haliday in North America is revised. Twenty-seven species are recognized, 12 of them new to science: G. aculeator, G. acutiventre, G. atrum, G. chelinideae, G. elatior, G. longipenne, G. obesum, G. radiculare, G. stewarti, G. triangulum, G. vitripenne, and G. xanthosoma. The tribe Gryonini is discussed, and a key to North American genera of the tribe is included. A generic diagnosis of Gryon is given, and seven species-groups are discussed and/or proposed. A key, diagnoses, relationships, and bionomics of species in North America are given. New terms for additional characters found on the posterior surfaces of the head are defined and figured.

Résumé

Nous révisons les espèces nord-américaines du genre Gryon Haliday. Nous reconnaissons 27 espèces dont 12 nouvelles: G. aculeator, G. acutiventre, G. atrum, G. chelinideae, G. elatior, G. longipenne, G. obesum, G. radiculare, G. stewarti, G. triangulum, G. vitripenne, et G. xanthosoma. Nous discutons de la tribu des Gryonini et incluons une clef des genres nord-américains de cette tribu. Nous pourvoyons une diagnose du genre Gryon et de chacun de ses sept groupes dont quelques uns sont proposés pour la première fois. De plus, nous présentons une clef des espèces et pour chaque espèce une diagnose, leurs affinités et leurs bionomiques. Finalement, nous désignons de nouvelles structures se trouvant sur l’aire postérieure de la tête.

The genus Gryon has not previously been revised for North American species. Muesebeck (in K. V. Krombein et al. 1979) listed 17 names in North America, of which four are considered junior synonyms in the present paper. Previous to this revision most of the species in North America were described before or around the turn of the century. Only a few species were correctly identified in collections. Generally, lack of material, and inadequate descriptions and keys, inhibited taxonomic progress in the past 100 years; therefore, considerable effort was made to amass fresh material. This has resulted in an almost doubling of the number of species in North America; however, only a part of the existing fauna is believed to be covered here. This is largely due to insufficient collecting in many areas of Canada and the USA. The southern belt from Florida to California in particular is anticipated to harbour numerous undescribed species.

Seven species-groups of Gryon are recognized in North America (Table I). Of these, three are considered to be centred in the Neotropical region and to reach their northern limits of distribution in the Austral zone of the North American continent (floridanum, variicorne, and xanthogaster groups). Three species of the floridanum-group, viz. G. pennsylvanicum, G. carinatifrons, and G. anasae, also occur in the Neotropical region. G. rothi and G. stewartii of the variicorne-group are considered the northernmost offshoots of this Neotropical group as are both G. xanthogaster and G. xanthosoma of the xanthogaster-group. The pantropical insulare-group is represented in the North American fauna by G. insulare, a widespread Neotropical species. Two groups, viz. misellum and muscaeforme, seem to be well represented in the temperate zones of both the Old and New Worlds. G. misellum of the former and G. leptocorisae of the latter group are the only two Holarctic species in the North American fauna of Gryon. The myrmecophilum-group with four species in North America has members in both temperate and tropical zones of the Old World. The distributional patterns of all species-
Table I. Species-groups of *Gryon* Hal. represented in North America

| Floridaum-group        | Varicorne-group | Muscaeforne-group | Insulare-group |
|------------------------|-----------------|-------------------|----------------|
| 1 floridanum (Ashm.)   | 7 rothi Msn.    | 9 leptocorisae (How.) | 17 insulare (Ashm.) |
| 2 atrum n. sp.         | 8 stewarti n. sp. | 10 rugiceps (Ashm.) |
| 3 anasae (Ashm.)       | 11 longipenne n. sp. |
| 4 carinatifrons (Ashm.)| 12 aculeator n. sp. |
| 5 pennsylvanicum       | 13 acutiventre n. sp. |
| (Ashm.)                | 14 obesum n. sp. |
| 6 vitripenne n. sp.    | 15 cheliniidae n. sp. |
| Xanthogaster-group     | Misellum-group  | Myrmecophilum-group |
| 18 xanthogaster (Ashm.)| 20 misellum Hal. | 24 myrmecophilum (Ashm.) |
| 19 xanthosoma n. sp.   | 21 brevipenne (Harr.) | 25 triangulum n. sp. |
|                        | 22 parkeri (Fouts) | 26 coracinum (Fouts) |
|                        | 23 largi (Ashm.) | 27 elatior n. sp. |

Groups and their members are naturally determined by those of the respective hosts. Generally, the numbers of species increase towards warmer zones.

The members of *Gryon* are important agents in the biological control of some heteropteran pests. By killing the host in its egg stage they represent the most efficient strategy in pest management. Serious pests of crops and trees such as *Nezara viridula* (L.), *Anasa tristis* (DeG.), *Leptoglossus* spp., as well as vectors of human diseases such as *Triatoma* spp., are successfully controlled by *Gryon* egg parasites. More work is needed in studies of members of *Gryon* involving parasite–host relationships, host specificity, fecundity, and other aspects of practical application in pest management.

**MATERIALS AND METHODS**

The relatively small size of members of *Gryon* presents some difficult problems for the student. Recognition of species often depends on minute differences in microsculpture or minute details of such structures as the mouthparts (mandibles, clypeus, labrum, palpi), parts of pleura, etc. Clean specimens are hence imperative for the successful use of keys and descriptions. Use of a critical point drier for processing of specimens from alcohol is strongly recommended. This technique produces reasonably relaxed specimens, permitting turning of appendages (antennae, legs) that may obscure views of other parts of the body. Specimens processed by this method will retain the body pilosity of the living condition. Specimens should be mounted, preferably on points, thus permitting examination of mouthparts and full view of the pleural region. Wherever possible, mandibles should be opened to examine the exact shape of the teeth. For better observation of the posterior surface of head and the corresponding concealed part of pronotum (e.g. epominal carina), the head should be severed and mounted separately. To avoid glare and light reflections on smooth surfaces of the body a sheet to disperse light (e.g. tracing paper) should be placed between the source of light and the specimen. For best results the specimen should be as close to the disperser as safely possible.

Specimens of *Gryon* can be obtained by sweeping, trapping, and rearing. Both Malaise traps and pan traps proved to be productive; however, the polyester fabric in the former should not have openings larger than 0.5 mm. Specimens should be stored in 70% ethyl alcohol and briefly washed in surfactant (e.g. Extran-300) before processing in the critical point drier.

Material was borrowed from the following institutions (with curators’ names in parentheses):

AMNH—American Museum of Natural History, New York NY (M. Favreau)
MORPHOLOGY AND MEASUREMENTS

General morphological terms (and their respective abbreviations) used in the present paper follow those in Masner (1980). Special terms pertaining to cephalic and pleural regions were proposed by Masner (1979a,b) and Mineo (1980b).

The new term venal formula, expressed by three figures, refers to relative lengths of the marginal (mg), stigmal (st), and postmarginal (pm) veins of the fore wing (Fig. 41). The marginal vein (first figure) is measured from junction of the submarginal vein (sm) and the fore margin of the fore wing (point “a”) to innermost point of angle formed by stigmal and postmarginal veins (point “b”). In some species the point “a” does not exactly merge with the fore margin of the wing but is indicated by the first major bristle arising from the break point between submarginal and marginal veins. The stigmal vein (second figure) is measured between points “b” and “d” and the postmarginal vein (third figure) between points “b” and “c”. The apex of the postmarginal vein may be rather vague in some species. In diagnoses and in the keys the venal formula may be expressed by more general symbols such as >, <, and =. The most usual formula in Gryon is mg < st < pm, or mg = st < pm, rarely mg < st > pm.

The new term genual spines (genu in Latin = knee) refers to a pair of long as well as several shorter spines situated on the knee region of the tibial base of hind legs (Fig. 40b,c). The spines are usually pale, almost transparent and apparently brittle as several individuals with incomplete sets of spines were observed. Genual spines were encountered among the members of the myrmecophilum-group only. All Nearctic as well as exotic species examined show one general pattern in placement of these spines, with only minor differences on the specific level. Potential function of genual spines in locomotion (jumping) of members of the myrmecophilum-group is anticipated.

The posterior surface of head (occipital and hypostomal regions) was re-examined in search of additional characters. Some of the character states have bearing on classification of either species or species-group levels. For each of the following characters a definition is given followed by a short discussion. The following new (*), or modified, cephalic terms are proposed (Fig. 42):

*Hypostomal pits (hp)—A pair of pits situated on hypostoma approximately between fossa (fs) and oral cavity (orc). Note: The pits were observed in members of only two species-groups (misellum and myrmecophilum). A sensory function of the pits is anticipated; similar pits of presumed sensory function were described by Bin (1977, 1979) on the frons of various Telenominae (Scelionidae).

*Hypostomal line (hl)—Median vertical line on hypostoma connecting foramen magnum capitis (fm) with midpoint of arc of the oral cavity (orc). Note: The line may be formed by a ridge (muscaforme-group), a row of dense spines (misellum-group), or scattered cupules (xanthogaster/Ashm.), or a narrow band of specialized microsculpture (floridanum-group). The line is absent in two species-groups viz. insulare and myrmecophilum.

*Hypostomal carinae (ihc and ohc)—Two parallel carinae flanking hypostoma, viz. inner hypostomal carina (ihc) and a usually weaker outer hypostomal carina (ohc). Together the two carinae form the hypostomal sulcus (hs).

*Hypostomal sulcus (hs)—A pair of longitudinal declivities bordered by inner (ihc) and outer (ohc) hypostomal carinae. Note: The sulcus may be well defined and either merge with base of occipital
carina (occ) (floridanum-group) or not to reach the latter (muscaeforme-group), or the sulcus may be generally weakly defined (misellum and myrmecophilum groups).

*Vertical part of occipital carina* (vpoc)—Part of occipital carina between mandibular base and the angular point (ap). Note: This part of occipital carina is always developed in all species.

*Horizontal part of occipital carina* (hpoc)—Part of occipital carina between angular points (ap). Note: This part of occipital carina may be either complete or nearly complete (floridanum-group), abbreviated (muscaeforme-group), not differentiated from the vertical part due to absence of angular points (ap) (insulare-group), or absent (myrmecophilum-group).

*Angular points* (ap)—A pair of points on occiput behind eyes formed by a sharp angle between vertical (vpoc) and horizontal (hpoc) parts of occipital carina (occ). Note: The points are well defined in floridanum, muscaeforme, and xanthogaster groups, not differentiated in variicorne and insulare groups, rudimentary or entirely absent in misellum and myrmecophilum groups respectively.

Postoccipital carina (poc)—Carina paralleling below or behind occipital carina. Note: It may parallel only the horizontal part of occipital carina (hpoc) and merge into vertical part of occipital carina (vpoc) below angular points (ap) (floridanum-group), or parallel the occipital carina along its entire course (muscaeforme-group, part.), or not developed at all (e.g. insulare, misellum, and myrmecophilum groups.)

Hyperoccipital carina (hyo)—Carina above the occipital carina. Note: It may continue from angular points (ap) across occiput (misellum-group part., pubescens-group), or run behind posterior ocelli, merging into outer orbit of eye without meeting occipital carina (insulare and variicorne groups), or become a direct continuation of the occipital carina if angular points (ap) are not differentiated (e.g. myrmecophilum-group), or is not developed at all (floridanum-group).

Marginal carina (mc) (Mineo 1980b)—Short carina stemming inward from hyperoccipital carina (hpo).

Fossa (fs)—Circular depression around foramen magnum capitis (fm), usually not sharply delimited.

The relative measurements of all parts of the body (160×) were obtained by tilting the specimen for each individual measurement, thereby taking into consideration the convexity of the surface (e.g. in cephalic and mesosomatic characters).

**Subfamily Scelioninae Foerster**

**Tribe Gryonini Szabo**

1966, Gryoninae Szabo, Acto Zool. Acad. Sci. Hung. 12: 419–422.

1970, Gryonini: Kozlov, Rev. Ent. USSR 49: 213.

1976, Gryonini: Masner, Mem. ent. Soc. Canada 97: 57.

Most taxa short and robust, reminiscent of members of subfamily Telenominae; head transverse in most species, globose in some; palpal formula 2–1 or 2–2; antennal formula 12–12; skaphion and netrion not developed; notauli absent; hind wings (except in Eremioscelio) with complete submarginal vein; tibial spur formula 1–1–1; metasoma broad in most taxa, short, subsessile, with T2 almost always the longest, with 7 visible tergites and 6 visible sternites in females and 8 visible tergites and 7 visible sternites in males; T7 in females external, fully sclerotized, not exserted with ovipositor but articulating with T6 instead.

Included genera in North America: *Gryon* (27 spp.), *Epigryon* (1 sp.), and *Mirotelenomus* (1 undescribed sp.).

**Hosts.** The North American species of *Gryon* are egg parasites of variety of families of Heteroptera, e.g. Coreidae, Alydidae, Pentatomidae, Lygaeidae, Largidae, Reduviidae. The phoretic *Epigryon* Msn. is most probably parasitic in eggs of Phymatidae.

Gryonini is a rather homogeneous tribe of scelionine wasps. It appears to be related to the derived tribes Embidobiini (in eggs of Embioptera) and Baeini s.l. (in eggs of spiders). The external T7 in females, not exserted with the ovipositor, is the main shared
derived character common to these three tribes and in distinction to other scelionine tribes. Other character states underlying this relationship are the palpal formula, absence of skapheion, trends in antennal structures as well as a strong tendency towards brachyptery and reduction of wing venation. Gryonini are present in all major geographic regions of the world. Exotic genera of Gryonini not discussed in this paper are: Breviscelio Sundholm, Encyrtoscelio Dodd, Ereimioscelio Priesner, Hadronotoides Dodd, and Platyscelidris Szabo (Masner 1976).

**KEY TO GENERA OF GRYONINI IN NORTH AMERICA**

1. Posterior ocelli at least as far from inner orbits as from anterior ocellus (i.e. OOL ≥ LOL); metanotal bulge pointed or spinose ...........................................Mirotelenomus Dodd

   - Posterior ocelli much closer to inner orbits than to anterior ocellus (i.e. OOL < LOL); metanotal bulge rounded, rarely sub-bidentate, or undeveloped ..........................2

2. Marginal vein in fore wing 3 times as long as short, almost perpendicular stigmal vein; postmarginal vein rudimentary, distinctly shorter than marginal vein; antennal clava in female distinctly 5-segmented; tarsi slender, with apical tarsomere distinctly enlarged; no short-winged forms (members phoretic on Phymatidae) ...............................Epigryon Masner

   - Marginal vein in fore wing at most as long as slanted stigmal vein; postmarginal vein in almost all species longer than marginal vein; antennal clava in female 6-segmented; tarsi not particularly slender with apical tarsomere not enlarged; shortwinged forms occur (no phoretic members) .........................................................................................Gryon Haliday

_Gryon Haliday*

_Gryon Haliday_ 1833, Ent. Mag. 1: 271.

Type-species: _Gryon misellum_ Haliday, by monotypy.

Synonymy: See Masner 1976.

Predominantly short, robust forms, with transverse head, sharply sloping occipital region, and broadly sessile metasoma; frontal depression in most species unmarginated laterally, frequently differentiated from frons by specialized sculpture or at least by shallow declivity bisected by longitudinal keel ascending from antennal insertion towards anterior ocellus; OOL considerably shorter than both LOL and POL; cheeks at most with minute fan-like striae adjacent to mandibular condyles, often with small smooth area next to condyles; clypeus narrow, only slightly wider than long (measured from anterior margin to toruli), with or without distinct anterolateral corners; labrum exposed or partly covered by clypeus; mandibles short in most species, shortly overlapping at tips, tridentate or bidentate, rarely pointed-unidentate; palpal formula 2–2 or 2–1, palpal segments short, second segment of labial palpi rudimentary; antennal formula 12–12, clava in females more or less 6-segmented, A5 in males modified (sexsegment); mesosoma short and broad, subcylindrical; epomial carina strong, reduced or absent; netrion not differentiated; skapheion not developed; notauli absent; metanotal bulge in most species bluntly prominent, rarely sub-bidentate, or not developed at all; propodeum unarmed, with posterolateral corners not prominent; mesopleural carina and mesopleural depression either well developed, rudimentary, or absent; venal formula in most species mg < st < pm, or mg = st < pm, rarely mg < st > pm, in some groups venation rudimentary, with indistinct veins, or the wings almost veinless; wings often shortened to stumps; tibial formula 1–1–1; tarsal formula 5–5–5, tarsomeres not specialized, with claws simple; metasoma in many species broad, only slightly longer than wide, rarely more elongate, wider than high, with distinct submarginal ridge and narrow laterotergites; first three tergites larger, T2 almost always the largest of all; metasoma with 7 visible tergites and 6 sternites in females, with 8 visible

*Note: Mineo (1980b) correctly pointed out that the name _Gryon_ (in Greek) is neuter in gender, thereby having necessitated declension changes in some specific names dealt with in the present paper.
tergites and 7 sternites in males; T7 in females completely external, fully sclerotized, not extruded with ovipositor but articulating with T6 instead, with 2 pairs of long upcurved bristles.

Species-group concepts in North American Gryon

The cosmopolitan genus *Gryon* is represented by a large number of species in all main geographic regions (Masner 1976). Unfortunately, only a relatively small number of species are as yet recognized and described, particularly in the tropical fauna. The present picture of the genus, however, indicates that *Gryon* is apparently a relatively young and dynamically evolving conglomerate of species clusters. These clusters were recognized in the past as subgenera or genera (Szabo 1966), a tendency that eventually gave way to the concept of species-groups (Masner 1975, 1976, 1979a; Mineo 1980b, 1981). In the present paper, the species of *Gryon* of North America are arranged in species-groups on the principle of shared derived character states (synapomorphies). The character states were analyzed and interpreted as to their probable evolution (trends) by comparison of the world fauna of the entire tribe Gryonini. Considerable effort was made to discover and use new sets of characters, such as those on mouthparts, posterior surface of head, pleural part of mesosoma, legs, as well as ratios of veins in the fore wing. By plotting the above characters, the species of *Gryon* in North America were arranged in seven species-groups. Possible affinities with exotic species-groups of *Gryon* are considered and discussed. Taking into account the early stage of taxonomic research in this group the present classification should be looked upon only as a first, modest step, forward.

The seven species-groups in North America seem to be divided naturally into two major complexes with respect to the clypeus structure, sculpture and shape of the frontal depression, type of mandibles and general sculpturing of the body. The absence or presence of the hypostomal pits on the posterior surface of head also follows the presumed division of the above two groups. Five groups, viz. *floridanum*, *variicorne*, *muscaeforme*, *insulare*, and *xanthogaster*, appear to form one complex while the *misellum* and *myrmecophilum* groups form the other. The division between the two complexes is not very discrete, the *xanthogaster*-group being near the “missing link” between the two. In the following discussion I attempt to illustrate the possible place of origin, evolution and interrelationship among the seven species-groups in North America. The formal diagnoses of individual species-groups follow this discussion, with data pertaining predominantly to North American fauna. The term subgroup is used informally to express trends within larger species-groups (e.g. *muscaeforme*). Generic junior synonyms are assigned to the appropriate species-group. Similarly, recognized generic names representing related taxa are discussed in the respective species-groups.

The *floridanum*-group comprises in North America the largest and most robust members of *Gryon*. The group is most probably centred in tropics of the New World, where numerous species are known to me and only a fragment of them has been described. Members of this group are unknown outside of the New World. The six species in North America either also occur in New World tropics or have closely related species in the Caribbean, Mexico, Central and South America. *G. carinatifrons* and *G. pennsylvanicum* form a subgroup of their own, characterized by unusually long T2 (in relation to T3). This subgroup, too, is well represented in New World tropics. *G. floridanum* does not seem to be present outside North America but seems to be closely related to species in Mexico. *G. vitripenne* is the most peripheral species in this group, being closely related to several Neotropical species. *Hadrophanurus* Kieffer is a junior generic synonym and corresponds with the *pennsylvanicum*-subgroup. *Notilena* Bréthes is another junior generic synonym that belongs here. Members of the Australian genus *Hadronotoides* Dodd exhibit similar structures in occipital and postoccipital carinae as in the *floridanum*-group.
The phoretic *Epigryon* Masner, peculiar to the New World, is most probably related to the *floridanum*-group.

**The variicorne-group** is a specialized cluster of Neotropical species (Masner 1979a). The two North American species, viz. *G. rothi* and *G. stewarti*, are considered to be of southern origin, as extreme offshoots penetrating North America via Mexico and Florida respectively. There seem to be two subgroups differentiated by structure of the occipital carina and the sculpturing of head and mesosoma. The *variicorne*-subgroup is typified by generally larger members, with complete occipital carina, larger polygons of reticulate sculpturing on the head and a very sharp, almost blade-like hyperoccipital carina; here belong all Neotropical species dealt with by Masner (1979a) except *G. atrocoxale* (Ashm.), but including the Nearctic *G. rothi*. The *atrocoxale*-subgroup is typified by generally smaller members, with horizontal part of occipital carina missing, with finer head sculpture, and with rather delicate hyperocippital carina; here belong two species viz. the Neotropical *G. atrocoxale* and the Nearctic *G. stewarti*. The entire *variicorne*-group could be perhaps derived from the less specialized *floridanum*-group; however, the relationship is rather remote and no borderline species seem to exist.

**The muscaeforme-group** is well represented in North America, mainly by its subgroup typified by *G. leptocorisae*, i.e. species with the marginal vein in the fore wing about as long as the stigmal vein, with postocippital carina absent, and with the body more or less elongate (*G. leptocorisae*, *G. rugiceps*, *G. longipenne*, *G. aculeator*, *G. acutiventre*, *G. obesum*, *G. chelinideae*); however, the last two species, with a rather short, stocky body, form a transition between this subgroup and the nominal subgroup, *muscaeforme* s. str., represented in North America by a single species, *G. radiculare*. The latter species has its closest relatives in Old World in such robust species as the Palearctic *G. muscaeforme* (Nees), *G. excultatum* (Foerst.), *G. boselli* Mineo et Szabo, etc. The *muscaeforme*-group, as a whole, appears to be more diverse in the Old World, in the Ethiopian and Palearctic regions in particular. In the New World tropics this group is represented only by members of the *leptocorisae*-subgroup. Foerster’s (1856) concept of *Hadronotus* corresponds perfectly with the *muscaeforme*-group, while *Muscidea* Motchulski falls into Mineo’s (1980b) concept of the *pubescens*-group, not represented in the New World.

**The insulare-group** in North America is represented by its nominal species only, *G. insulare*. The latter species is apparently of southern origin being widespread all over the tropical part of the New World. This group is represented by relatively few species in all major geographic regions (Masner 1975; Mineo 1980b). Some of its members are the largest individuals in the whole genus. Unique cephalic character states isolate this group from other groups in the genus. *Austroscelio* Dodd is a junior generic synonym belonging here, represented in Africa by species like *G. coum* (Nixon).

**The xanthogaster-group** is represented in North America by two species of presumed southern origin, viz. *G. xanthogaster* and *G. xanthesoma*. The members are the smallest in the lineage of the above five species groups of North American *Gryon*. The striking xanthinism, better developed clypeus, and some longitudinal sculpturing near the mandibular base are reminiscent of the *misellum*-group. However, the form and sculpture of frontal depression, the presence of a strong epomial carina, a strong mesopleural carina, the sculpturing of the head and mesopleural depression, as well as the absence of the hypostomal pits suggest affinities of the *xanthogaster*-group with the above four species-groups. Members of this group were also found in the Neotropical region, indicating the possible continuity of the group in the New World tropics. The name *Psilacolus* Kieffer belongs to this group.
The **misellum-group** in some ways appears to be intermediate between the preceding group and the **myrmecophilum-group**. Specimens of species in the misellum-group are the smallest in the whole genus. It is also in this group that wing polymorphism and wing reduction reach their extremes. The group seems to be better represented in temperate rather than tropical regions. It is related to the myrmecophilum-group in the structure of clypeus, frontal depression as well as the presence of the hypostomal pits, yet differs from the latter in the structure of scutellum and metanotum, with the metanotal bulge prominently projecting, also by the presence of hypostomal line, absence of genual spines, etc. There are four species recognized in North America, viz. *G. misellum, G. brevipenne, G. parkeri,* and *G. largi*. The following junior generic synonyms belong here: *Heterogryon* Kieff., *Plastogryon* Kieff., *Holacolus* Kieff., *Plesiobaeus* Kieff., *Sundholmia* Szabo, and *Exon* Ms. The highly derived genus *Hungarogryon* Szabo and the peculiar genus *Mirotelenormus* Dodd may be distantly related to this species-group.

The **myrmecophilum-group** represents perhaps the most derived segment of the genus *Gryon*. Some of the trends involve gradual reduction of forewing venation, reduction of wings in general, extreme development of clypeus and mandibles, etc. The presence of genual spines on hind legs makes this species-group unique among all North American species of *Gryon*. The four species of the myrmecophilum-group in North America seem to be closely related to several species in Europe, Africa, Asia, and Australia. Junior generic synonyms that belong here are: *Hadronotellus* Kieffer, *Pannongryon* Szabo, *Masneria* Szabo, and *Synteleia* Fouts. The following highly specialized Old World genera of Gryonini seem to be related to this species-group: *Eremioscelio* Priesner, *Encyrtoscelio* Dodd, and *Breviscelio* Sundholm. It is interesting to note that members of the above genera have genual spines on hind legs.

### Species-Groups of *Gryon* in North America

#### DESCRIPTIVE PART

**The floridanum-group** (present designation)

**Diagnosis**

- Eyes glabrous; mandibles bidentate or tridentate, with upper tooth largest; clypeus short, with anterolateral corners either converging or not differentiated; labrum exposed; smooth triangular plate flanks base of mandible; frontal depression with coarse transverse polygons or ridges; frons, vertex and occiput with coarse rugae or polygons; hyperoccipital carina not developed; temples behind eyes well developed; occipital carina strong, with sharp angular points, with horizontal part at meson undulate or crenulate in some species; postoccipital carina subparallel under horizontal part of occipital carina, usually interrupted above the fossa of foramen magnum, not descending along the vertical part of occipital carina but merging in latter below angular points; hypostomal carinae sharp, forming deep hypostomal sulcus, merging with base of occipital carina; hypostomal pits absent; hypostomal line very fine, in form of narrow band of specialized microsculpture; epomial carina strong, entire, reaching to upper margin of pronotum and here angled (in front of tegula); mesopleural carina well developed, with its upper part directed towards midpoint of pronoatal suture; mesopleural depression distinct, usually with transverse ridges; venal formula mg < st < pm (except in *G. vitripenne*); genual spines on hind tibiae not developed; no brachypterous forms.

**Included species.** *G. floridanum* (Ashm.), *G. atrum* n. sp., *G. anasae* (Ashm.), *G. vitripenne* n. sp., *G. carinatifrons* (Ashm.), *G. pennsylvanicum* (Ashm.).

**Hosts:** Coreidae, rarely Pentatomidae.

**Distribution.** Southern part of United States.

**The variicorne-group** (Masner 1979a)

**Diagnosis**

- Eyes glabrous; mandibles bidentate (tridentate in *G. stewarti*); clypeus small, with anterolateral corners not prominent; labrum exposed; cheeks near mandibular base with small smooth area, with no longitudinal striae; frontal depression very shallow, indicated by special sculpturing rather than by imprint; sculpture of frons coarse, with polygons; hyperoccipital carina sharp and

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complete, situated uninterrupted behind posterior ocelli and merging into outer orbits of eyes, without meeting occipital carina; angular points not developed; occipital carina with horizontal part either rounded and then positioned close to foramen magnum, or with horizontal part not developed; however, in neither case meeting the hyperoccipital carina; postoccipital carina absent or very weak; hypostomal carinae rather strong, with hypostomal sulcus deep, directed towards base of occipital carina; no hypostomal pits; hypostomal line formed by a low ridge of longitudinal sculpture; head very narrow in dorsal view, with frons convex and occiput concave; epomial carina strong, entire, usually reaching to upper margin of pronotum, not angulate but rounded in front of tegula; mesosoma short and highly arched dorsally, with front and middle coxae strongly approximated; acutabular carina often blade-like projecting between fore and middle coxae; mesopleural carina usually developed, directed to lower half of pronotal suture; mesopleural pit well defined; venal formula \( m_g < s_t < p_m \); genual spines on hind tibiae not developed; no brachypterous forms.

**Included species.** *G. rothi* Msn., *G. stewarti* n. sp.

**Hosts.** Unknown.

**Distribution.** Arizona, Florida.

### The muscaeforme-group (Mineo, 1981)

**Diagnosis.** Eyes densely to sparsely hairy; mandibles tridentate or subtridentate; clypeus short, with anterolateral corners either converging or not differentiated; labrum fully exposed; cheeks near mandibular base with small smooth area, with no longitudinal striae; frontal depression rather shallow, better indicated by specialized transverse sculpture; frons, vertex, and occiput with coarse sculpture consisting of rugosities, or net-like reticulate polygons; hyperoccipital carina not developed; temples behind eyes well developed; angular points sharp; occipital carina with horizontal part usually short, incomplete, its median sector (above foramen magnum) replaced by rugosities; postoccipital carina either almost complete, paralleling occipital carina to its base, or undeveloped; hypostomal carinae usually delicate, hypostomal sulcus shallow or almost absent, not merging with base of occipital carina; hypostomal line well defined as a ridge; hypostomal pits absent; epomiacarina strong in lower half, absent in upper half of pronotum; mesopleural carina usually well developed (rarely absent), subparallel to acutabular carina, directed at apex towards the lower half of pronotal suture; mesopleural depression not defined since mesopleuron above mesopleural carina slightly convex, with generally rugulose sculpture and some transverse ridges only in its upper part; mesopleural pit present; venal formula either \( m_g < s_t < p_m \), or \( m_g = s_t < p_m \); genual spines on hind tibiae not developed; no brachypterous forms.

**Included species.** *G. leptocorisae* (How.), *G. rugiceps* (Ashm.), *G. aculeator* n. sp., *G. acutiventre* n. sp., *G. obesum* n. sp., *G. chelinideae* n. sp., *G. radiculare* n. sp.

**Hosts.** Reduviidae, Pentatomidae.

**Distribution.** Entire Nearctic region (except Arctic).

**Remarks.** I prefer to recognize here two subgroups viz. *muscaeforme* s. str. with venal formula \( m_g < s_t < p_m \) and with well developed postoccipital carina, and the *leptocorisae*-subgroup with venal formula \( m_g = s_t < p_m \) and with postoccipital carina absent. *G. radiculare* is the only representative of the *muscaeforme*-subgroup in North America.

### The insulare-group (Masner 1975)

**Diagnosis.** Eyes densely hairy; mandibles bidentate, with upper tooth much larger than lower one; clypeus small, with anterolateral corners not differentiated; labrum completely exposed; cheeks near mandibular base with small smooth plate, with no longitudinal striae; frontal depression rather shallow, often topped by arched carina, with coarse polygons or transverse striae; sculpture of frons, vertex and occiput with coarse polygons or rugae; hyperoccipital carina sharp, blade-like, complete, situated behind posterior ocelli and bending there slightly before merging into outer orbit of eye without meeting occipital carina; angular points not developed; occipital carina strong, complete, rounded before turning into its horizontal part, the latter situated close to the foramen magnum; postoccipital carina not developed; hypostomal carinae well developed, hypostomal sulcus deep,
directed towards the lower part of occipital carina; hypostomal pits absent; hypostomal line not
developed; head in frontal view almost circular, in lateral view very narrow, in dorsal view almost
lenticular, concave in the occipital region; epomial carina massive, entire, reaching almost to upper
margin of pronotum and here rounded in front of tegula; mesosoma short and highly arched, with
front and middle coxae strongly approximated; mesopleural carina absent; venal formula mg < st
< pm; tibial spurs long and stout; genual spines on hind tibiae not developed; no brachypterous
forms.

Included species. G. insulare (Ashm.).

Hosts. No Nearctic records (? Reduviidae).

Distribution. From Florida to New York City; Missouri and Texas in the Midwest.

The xanthogaster-group (present designation)

Diagnosis. Eyes with minute hairs; mandibles rather narrow, tridentate; clypeus with
anterolateral corners not protruding; labrum partly exposed; cheeks near mandibular base
with small smooth area and some longitudinal rugae; frontal depression rather deep, with
transverse ridges; sculpture of frons, vertex, and occiput reticulate; hyperoccipital carina
not developed; angular points present; occipital carina well developed in its vertical part,
with only very short indication of its horizontal part; postoccipital carina absent; hypostomal
carinae rather weak, with very shallow hypostomal sulcus directed towards lower
part of occipital carina; hypostomal pits absent; hypostomal line represented by scattered
cupules or absent; posterior ocelli remote from inner orbits by about two diameters; epomial
carina sharp reaching almost to upper margin of pronotum, neither angled nor rounded
in front of tegula; mesopleural carina strong and complete, directed towards midpoint of
pronotal suture; mesopleural depression well defined, with transverse ridges and with small
mesopleural pit; venal formula mg < st < pm; body at least partly xanthic; genual spines
on hind tibiae not developed; brachypterous forms may occur in female sex.

Included species. G. xanthogaster (Ashm.), G. xanthosoma n. sp.

Hosts. No records.

Distribution. Southeastern United States.

The misellum-group (present designation)

Diagnosis. Eyes hairy or almost glabrous; mandibles usually bidentate, rarely subtriden-
tate; clypeus with anterolateral corners prominent and divergent; labrum almost concealed
under clypeus; cheeks near mandibular base with short fan of striae, with no particular
smooth plate; frontal depression rather shallow, unmargined, with fine granulose or cori-
aceous sculpture as on rest of head; hyperoccipital carina usually situated on sloping part
of occiput in form of direct continuation of occipital carina; angular points absent or weak;
occipital carina usually better developed than hyperoccipital carina, with horizontal part
absent (above foramen magnum); postoccipital carina not developed; hypostomal carinae
usually delicate, the outer hypostomal carina indistinct, hypostomal sulcus shallow, di-
rected towards lower third of occipital carina; hypostomal pits well developed; hypostomal
line formed by row of spines; epomial carina rudimentary, restricted only to its base;
mesopleural carina not well developed, usually indicated only immediately above midcoxa
and again near junction with pronotal suture; mesopleural depression rather deep, with
large mesopleural pit; venal formula mg < st < pm; body often partly xanthic; genual
spines on hind tibiae not developed; brachypterous forms common, both in female and
male sex.

Included species. G. misellum Hal., G. brevipenne (Harr.), G. largi (Ashm.), G.
parkeri (Fouts).

Hosts. Largidae, Lygaeidae.
**Distribution.** Entire Nearctic region (except Arctic).

**The myrmecophilum-group** (present designation)

**Diagnosis.** Eyes glabrous; mandibles short and wide, deeply bidentate, teeth equal in size and shape; clypeus with anterior lateral corners prominent and divergent; labrum concealed under clypeus; cheeks near mandibular base with fan of short longitudinal striae, with no particular smooth plate; frontal depression very shallow, unmargin, with fine coriaceous sculpture as on rest of head; hyperoccipital carina represented as direct continuation of occipital carina high on occiput; angular points not developed; occipital carina delicate but complete in its vertical part, with the horizontal part entirely absent; postoccipital carina not developed; hypostomal carinae weak, the outer hypostomal carina in particular, hypostomal sulcus shallow, not well defined; hypostomal pits well developed; hypostomal line absent; epomial carina not developed; mesopleural carina complete and strong, directed towards midpoint of pronotal suture; mesopleural depression rather deep, with distinct mesopleural pit; scutellum with posterior margin reaching over metanotum which has no specialized median bulge; venal formula $mg < st < pm$; no xanthic forms; shortwinged forms occur, in both female and male sex; genual spines present on hind tibiae.

**Included species.** *G. myrmecophilum* (Ashm.), *G. triangulum* n. sp., *G. coracinum* (Fouts), *G. elatiior* n. sp.

**Hosts.** Alydidae.

**Distribution.** Entire Nearctic region (except Arctic).

### KEY TO SPECIES OF *Gryon* IN NORTH AMERICA ($♀ ♂$)

1. Frontal depression differentiated from frons by transverse sculpture (ridges, striae, polygons), depression often deep and partly margined (Figs. 1–12); anterolateral corners of clypeus not protruding, rounded (Fig. 21), or convergent (Figs. 20, 22, 24); mandibles usually tridentate (Figs. 19, 21), subtridentate (Fig. 20), rarely bidentate (Fig. 23), with upper tooth the largest; no brachypterous forms except in females of *G. xanthosoma* .......................... 2
   - Frontal depression not differentiated from frons, with no transverse sculpture, depression usually shallow and never margined (Figs. 14, 39); anterolateral corners of clypeus protruding, distinctly divergent (Figs. 25–28); mandibles usually bidentate, with equal teeth (Figs. 25–28), rarely subtridentate; brachypterous forms common ........................................ 20

2. Body partly or predominantly bright golden-yellow, with at least major part of metasoma (T1 and T2) xanthic; small individuals, 0.7–0.8 mm long ........................................ 3
   - Body entirely black or at most uniformly dark brown; larger individuals, 1.0 mm or longer ........................................ 4

3. Frontal depression margined laterally with a more or less distinct keel; marginal vein in macropterous individuals as long as stigmal vein; mesosoma in female xanthic; wings sometimes shortened in females, stump-like, reaching base of T2 .... 19 *G. xanthosoma* n. sp. $♀ ♂$
   - Frontal depression with no keels laterally; marginal vein shorter than stigmal vein; mesosoma in female black; no brachypterous forms .................................. 18. *G. xanthogaster* (Ashmead) $♀ ♂$

4. Marginal vein as long as stigmal vein (slightly shorter in some species) or even longer; body elongate in all but two species .................................................. 5
   - Marginal vein moderately to distinctly shorter than stigmal vein; body usually short and robust .................................................. 11

5. Metasoma in both sexes broad, almost subcircular, as long as wide; T2 almost 4 times as wide as long; head strongly transverse, slightly more than twice as wide as long ........ 6
   - Metasoma in both sexes moderately to distinctly elongate, at least 1.4 times longer than wide; T2 at most 2.8 times as wide as long; head at most twice as wide as long ............ 7

6. Occiput with distinct marginal carina merging into inner orbits (above occipital carina) (Figs. 3, 55); frontal depression with transverse wrinkles terminating above in distinctly arched carina; mesopleuron above mesopleural carina with transverse ridges .................................................. 15. *G. chelinideae* n. sp. $♀ ♂$
Occiput with no marginal carina above occipital carina (Figs. 15, 52); frontal depression with transverse wrinkles gradually fading away upwards, not terminating in arched carina; mesopleuron above mesopleural carina with irregular rugosities 14. G. obesum n. sp. ♀♂

Frons medially with narrow zone of transverse ridges reaching up almost to apex of scape (in retracted position) (Fig. 5), often terminating in arched carina below anterior ocellus (Fig. 6) .................................................. 8

Frons medially with transverse ridges or wrinkles better indicated in its lower half, gradually disappearing upwards, never reaching to level of apex of scape (in retracted position) and here terminating in rather smooth area below anterior ocellus (e.g. Fig. 8) ...................................... 10

Sculpturing of T2 with predominantly longitudinal elements (wrinkles, rugae) extending beyond the middle of the tergite in its median sector (Fig. 34) .................................................. 10. G. rugiceps (Ashmead) ♀♂

Sculpturing of T2 with evenly net-like reticulate polygons, and with only very short costae along the anterior margin of the tergite (e.g. Fig. 33) .................................................. 9

Metasoma in female distinctly elongate, fully twice as long as wide, sharply pointed apically, T4 and T5 only 3 times wider than long ................................. 13. G. acutiventris n. sp. ♀♂

Metasoma in female shorter, only 1.5—1.7 times as long as wide, rather obtuse apically, T4 and T5 fully 5 times wider than long ................................. 9. G. leptocorisae (Howard) ♀♂

Metasoma in female distinctly pointed apically, i.e. T7 triangular, T6 only 3 times as wide as long at meson; wings only shortly surpassing apex of metasoma .................................................. 12. G. aculeator n. sp. ♀♂

Metasoma in female rather obtuse apically, i.e. T7 wart like, T6 very narrow, fully 6 times as wide as long at meson; wings greatly surpassing apex of metasoma .................................................. 11. G. longipenne n. sp. ♀♂

Head in dorsal view with no temples behind eyes (Figs. 9, 10), with hyperoccpitital carina running continuously behind posterior ocelli and merging in outer orbits of eyes (carina somewhat weaker in G. stewarti) .................................................. 12

Head in dorsal view with distinct temples behind eyes, and no hyperoccpitital carina as above .................................................. 14

Eyes densely hairy (Fig. 10); mandibles bidentate at apices (Fig. 24) and with short accessory tooth on lower edge near base; postmarginal vein much shorter than stigmal vein; T2 about 4 times as long as T3 (Fig. 31) .................................................. 17. G. insulare (Ashmead) ♀♂

Eyes glabrous (e.g. Fig. 9); mandibles tridentate at apices, with no accessory tooth on lower edge near the base; postmarginal vein much longer than stigmal vein; T2 at most twice as long as T3 .................................................. 13

T2 fully twice as long as T3, with only very short costae along its anterior margin, otherwise net-like reticulate; occipital carina developed only at sides, absent at meson; interocellar space with polygons smaller than the diameter of anterior ocellus ........................... 8. G. stewarti n. sp. ♀♂

T2 only 1.3 times as long as T3, irregularly longitudinally rugoso-reticulate at meson, reticulate at sides; occipital carina complete and crenulate (cf. Fig. 9); interocellar space with polygons about as large as the diameter of anterior ocellus ........................... 7. G. rothi Masner ♀♂

Mesopleural carina not developed; eyes distinctly hairy (Fig. 12); radicle remarkably elongate, as long as 1/4 of the scape length .................................................. 16. G. radiculare n. sp. ♀♂

Mesopleural carina well developed, directed apically towards midpoint of suture between tegula and fore coxa; eyes glabrous (e.g. Fig. 13); radicle distinctly shorter than 1/4 of the scape length .................................................. 15

T2 remarkably long, about 4 times as long as T3 .................................................. 16

T2 shorter, less than twice as long as T3 .................................................. 17

All coxae bright orange-yellow, concolorous with rest of legs .................................................. 4. G. carinaifrons (Ashmead) ♀♂

All coxae dark brown or black, contrasting to orange-yellow rest of legs .................................................. 5. G. pennsylvanicum (Ashmead) ♀♂

Legs, including coxae, antennae (except for clava in female), mandibles and labrum bright orange-yellow; frontal depression with large transverse polygons, topped above with irregular carina (Fig. 4) .................................................. 3. G. anasae (Ashmead) ♀♂
- Legs predominantly pitch dark, with coxae black or dark brown, with femora mostly dark brown, entire antennae or at least scape, mandibles and labrum dark brown or black; frontal depression with dense transverse ridges topped above with arched carina (Figs. 1, 2) ... 18

18. Intercellular space with two (rarely one) large cells formed by raised carinae; wings glassy transparent, with whitish hairs; T6 in male with long spikes posterolaterally (Fig. 35); postmarginal vein rather vague, hardly as long as stigmales ... 6. G. vitripennne n. sp. ?

- Intercellular space with irregular regularity (e.g. Fig. 13); wings not glassy transparent, with yellowish hairs; T6 in male unarmed posterolaterally; postmarginal vein well developed, almost twice as long as stigma vein

19. In dorsal view vertex between inner orbits at least twice as wide as the width of an eye; smooth triangular area adjacent to mandibular base not reaching the midpoint towards the lower orbit; mesoscutum in posterior half with no furrow-like structure (to be viewed from behind at an angle of 45°); 1. G. floridanum (Ashmead) ?

- In dorsal view vertex between inner orbits slightly less than twice as wide as the width of an eye; smooth triangular area adjacent to mandibular base extends to midpoint towards lower orbit (Fig. 29); mesoscutum in posterior half with two furrow-like depressions (to be viewed from behind at an angle of 45°)

20. In lateral aspect posterior rim of scutellum protruding more or less over metanotum which is not bulged medially (Figs. 39, 40a); in dorsal aspect posterior margin of scutellum concealing metanotum and midsection of propodeum; mesopleural carina sharp and complete (Figs. 39, 40a); genual spines well developed on hind knees (Fig. 40b, c)

- In lateral aspect posterior rim of scutellum does not reach over metanotal bulge (Figs. 37, 38); in dorsal aspect metanotal bulge not concealed under scutellum; mesopleural carina not well developed (Figs. 37, 38); no genual spines on hind knees

21. Metasoma distinctly elongate, at least 1.5 times as long as wide

- Metasoma broad, almost as long as wide or only slightly longer than wide

22. T2 net-like reticulate, with only short costae along anterior margin; posterior ocelli distant from inner orbits by more than 1 diameter; individuals \( \leq 1 \text{ mm} \) ... 27. G. elatior n. sp.

- T2 with longitudinal striation reaching at meson to about half of tergite, otherwise reticulate; posterior ocelli distant from inner orbits by less than 1 diameter; individuals around 1.5 mm

23. Posterior margin of scutellum blade-like sharp (lateral aspect), almost pointed (dorsal aspect); scutellum in dorsal view nearly triangular; head 2.2 times as wide as long

- Posterior margin of scutellum bluntly rounded; scutellum in dorsal view rounded posteriorly; head only twice as wide as long

24. Posterior half of mesoscutum with distinct longitudinal rugae (Fig. 18) in contrast to finely granular scutellum (to be viewed at angle from behind); A6-A12 in males strongly transverse

- Posterior half of mesoscutum as well as scutellum coriaceous, with no longitudinal sculpture; A6-A12 in males as wide as long or slightly elongate

25. Mesopleuron in front of mesopleural suture with complete row of deep foveolae; metapleuron above the pit with fine coriaceous sculpture; (metasoma mostly orange-yellow; wings usually short in females, reaching to T2) ... 21. G. brevipenne (Harrington)

- Mesopleuron in front of mesopleural suture at most with weak indication of foveolae; metapleuron above the pit smooth

26. Mesoscutum in posterior half with minute pustulæ (Fig. 30) (to be viewed at angle from behind at 160× magnification); mandibles bidentate (Fig. 28); metasoma uniformly dark brown or black; hyperoccipital carina usually well developed, crenulate (Figs. 30, 60); no brachypterous forms

- Mesoscutum in posterior half without pustulæ; mandibles subtridentate; metasoma usually xanthic in posterior 2/3; hyperoccipital carina not developed (Fig. 62); brachypterous forms common in both sexes

20. G. misellum Haliday ?

26. Mesoscutum in posterior half with minute pustulæ (Fig. 30) (to be viewed at angle from behind at 160× magnification); mandibles bidentate (Fig. 28); metasoma uniformly dark brown or black; hyperoccipital carina usually well developed, crenulate (Figs. 30, 60); no brachypterous forms

- Mesoscutum in posterior half without pustulæ; mandibles subtridentate; metasoma usually xanthic in posterior 2/3; hyperoccipital carina not developed (Fig. 62); brachypterous forms common in both sexes

20. G. misellum Haliday ?
1. *Gryon floridanum* (Ashmead)
Figs. 1, 13, 23, 32, 43

1887, *Hadronotus floridanus* Ashmead, Entomologica am. 3: 118.
1893, *Hadronotus floridanus*: Ashmead, Bull. U.S. natn. Mus. 45: 232, 233.
1907, *Hadronotus robustus* Brues, Bull. Wis. nat. Hist. Soc. 5: 156. **New synonym.**
1926, *Hadronotus floridanus*: Kieffer, Das Tierreich 48: 463.

Figs. 1–6 (SEM gold-coated). 1, *G. floridanum* (Ashm.) frons 145×; 2, *G. carinatifrons* (Ashm.) frons 200×; 3, *G. cheliniideae* n. sp. occiput 250×; 4, *G. anasae* (Ashm.) frons 170×; 5, *G. leptocorisae* (How.) frons 300×; 6, *G. rugiceps* (Ashm.) frons 210×.
Figs. 7–12 (SEM gold-coated). 7. *G. insulare* (Ashm.) frons 150×; 8. *G. longipedne* n. sp. frons 220×; 9. *G. variipenne* (Fouts) head 133×; hyo, hyperoccipital carina; occ, occipital carina; 10. *G. insulare* (Ashm.) head 90×; 11. *G. leptocorisae* (How.) eye 480×; 12. *G. radiculare* n. sp., eye 340×.

1951. *Hadronotus floridanus*: Muesebeck and Walkley, in C.F.W. Muesebeck *et al.*, Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 704.
1967, *Gryon floridanus*: Muesebeck and Masner, in K.V. Krombein, B.D. Burks et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.

1968, *Gryon floridanus*: Masner and Muesebeck, Bull. U.S. natn. Mus. 270: 35.

1979, *Gryon floridanus*: Muesebeck in K.V. Krombein et al., Catalog of Hymenoptera in America north of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

**Female.** Black; trochanters, apices of femora, all tibiae and tarsi reddish yellow, femora mostly brown, scape dark chestnut brown.

Head transverse, twice as wide as long; frontal depression fairly deep, shining, with dense transverse striae, not keeled laterally but with strong arched carina at the top; short keel running up from antennal insertion to about middle of the depression; frons along inner orbits, cheeks, and vertex with rough polygons; malar space (from base of mandibles towards lower eye orbit) with mirror-like smooth triangular field stretching slightly less than halfway to lower eye orbit; malar groove partly obscured by rough sculpture; clypeus strongly receding, almost absent, labrum clearly visible; mandibles small, tapering towards apex, bidentate, upper tooth markedly longer; vertex not carinate, rounded, polygons between posterior ocelli transverse, space between inner orbits fully twice as wide as width of an eye; occipital carina complete, crenulate at meson; postoccipital carina strong, partly interrupted at meson; posterior ocelli distant from inner orbits by their full diameter; eyes appearing glabrous, under high magnification (160×) with scattered short hairs; eye orbit margined by sharp carina; temples behind eyes well developed; antennal club not too distinctly abrupt as A6 not markedly differentiated from A7.

Mesosoma dorsally fairly arched; mesoscutum and scutellum with rough polygons similar to those on head, covered with dense yellowish hairs; metanotal bulge bidentate, protruding further backwards than apex of scutellum; submarginal vein with long semierect bristles surpassing the front margin of wing; venal formula 11:19:40; tibia1 spurs very long but slender, spur on midtibia slightly longer than half of basitarsus.

Metasoma broad, only slightly longer than wide; T2 slightly less than twice as long as T3, with distinctly longitudinal wavy rugulosity at meson, with somewhat finer chain-reticulation at sides; T3 and T4 with longitudinal chains of rugulae; edges of T4–T6 finely serrate; T7 small, wart-like, the 2 pairs of bristles rather short.

**Male.** Similar to female except for filiform antennae, with A4–A11 almost square; metasoma slightly more elongate than in female, T2 only 1.5 times as long as T3; posterolateral corners of T6 slightly pointed.

**Variability.** Total body length varies from 1.7 mm to 2.3 mm, males being usually smaller than females. The colour of legs and antennae varies also, lighter specimens have scape and A2–A6 lighter than club, with legs markedly reddish orange, while darker specimens have appendages predominantly piceous. In one series from Florida (Lakeland) the legs, excluding dark coxae, are uniformly orange-yellow. Serration on sides of T4–T6 is more pronounced in some individuals, less in others.

**Biology.** Described from a series reared from eggs of *Acanthocephala femoratus* (F.) (Coreidae) (Ashmead 1893).

**Distribution.** Published records only from Florida (Muesebeck and Walkley 1951). The present paper extends the distribution to most of the south-east and midwest of United States with Illinois and Maryland as most northern points. *Gryon floridanum* seem to be restricted to the Nearctic region as no specimens were seen in our extensive Neotropical material of *Gryon*.

**Material examined.** Arkansas: ♀ Garland Co., May 1–17 1972, G. Heinrich, Malaise trap (CNC). Florida: ♀ Mount Pleasant, May 1 1952, O. Peck (CNC); ♀ (Lectotype of *Hadronotus floridanus* Ashmead), and 2♂♂ ♀ (Paralectotypes), Jacksonville (USNM); 3♀♀ ♀ and ♂ Lakeland, August 3 1953, ex hemipterous eggs on *Podocarpus*, Pettigrew-Poucher (USNM). Georgia: ♀ Pine Mountain, Rabun Co., 450 m, May 14 1957, J.R.
Vockeroth (CNC). Illinois: ♀ Algonquin, May 25 1895 (USNM). Kansas: ♀ Riley Co., May 1894, Marlett (Ashmead collection) (USNM). Maryland: ♀ Laurel, May 26 1965, Malaise trap (CNC). Missouri: 13 ♀ ♂ Williamsville, May 26–July 5 1969, J.T. Becker, Malaise trap (CNC). North Carolina: ♀ Mt. Mitchell, 2300 m, July 12 1957, J.G. Chillcott (CNC). South Carolina: ♀ Greenwood, Long Cane Cr., July 21 1957, W.R. Richards (CNC). Tennessee: 3 ♀ ♀ and ♂ Lexington, Natchez Trace State Park, June 9–15 1972, G. Heinrich, Malaise trap (CNC). Texas: 2 ♀ ♀ Navasota, April 7 1959, W.R. Mason (CNC); ♀ Kerrville, April 19 1959, W.R. Mason (CNC); ♀ (Holotype of *Hadronotus robustus* Brues, No. 31017) Austin (MCZ). Virginia: ♂ Vienna, July 17 1935, J.C. Bridwell (USNM).

2. *Gryon atrum* n. sp.

Figs. 29, 46

Closely related to *G. florianum* from which it differs only in following few characters:

**Female.** Length 1.75 mm. Head slightly less than twice as wide as long; hypostomal line not developed; mirror-like smooth triangular field on malar space wider and longer than in *florianum*, extending past midway between base of mandibles and lower orbit; space on vertex between inner orbits slightly shorter than double width of an eye; occiput with rough rugulosities merging into horizontal part of occipital carina; occipital carina complete, postoccipital carina shortly interrupted at meson; mesosoma in lateral aspect distinctly more flattened than in *florianum*, particularly on mesoscutum-scutełllum, the two being almost perfectly level; mesoscutum viewed from behind at 45° angle shows indication of false notauli formed by broad chains of longitudinal sculpture in posterior half of mesoscutum.

**Male.** Differing from female only in antennal characters which are identical with those in *florianum*.

**Variability.** More constant in body length than *florianum*. Sculpture on posterior half of mesoscutum forming the false notauli is better developed in some, less in other individuals. Transverse sculpture on occiput also varies but is always more distinct than in *florianum*.

**Biology.** Reared several times from eggs of unidentified coreid bugs (Hem. Coreidae) laid on leaves and twigs.

**Distribution.** *G. atrum* appears to be restricted to the southwestern United States and adjacent northern Mexico.

**Type material.** Holotype ♀ Carlsbad Caves National Park, Slaughter Canyon, Eddy Co. (NEW MEXICO), July 20 1975, S.B. Peck, Malaise trap (CNC No. 17012). Allotype ♂, same data as holotype (CNC, USNM). Other paratypes: ARIZONA: 11 ♀ ♀ Portal, July 4 1956, ex coreid eggs, F.D. Young (USNM); 2 ♀ ♀ Ramsey Canyon, Huachuca Mts., 1800 m, June and August 1967, Sternitzky (CNC); NEW MEXICO: ♀ San Juan Co., 35 km S. Shiprock, August 14 1972, J.G. Rozen & R. McGinley (AMNH); 11 ♀ ♀ Karr Canyon, Lincoln National Forest nr. Cloudcroft, 2200 m, July 30 1977, L. Masner (CNC); TEXAS: 11 ♀ ♀ Eagle Pass, May 27 1945, ex coreid eggs on *Feijoa sellowiana* (USNM); 10 ♀ ♀ Salt Lake nr. Hwy. 54, July 23 1977, L. Masner (CNC); 7 ♀ ♀ Mercedes, June 1958 (USNM); 4 ♀ ♀ Laredo, September 5 1961, coreid eggs on citrus (USNM); 2 ♀ ♀ Waco, June 24 and 30 1949, on cotton, P.A. Glick (USNM); 5 ♀ ♀ Eagle Pass, June 19 1933, ex eggs on leaf from Mexico, W.C. Goolsby (USNM); ♂ Ft. Davis, Limpia Canyon, 1650 m, May 23 1959, W.R. Mason (CNC); ♂ Big Bend National Park, The Basin, May 29 1959, W.R. Mason (CNC).

**Remarks.** The name of this new species refers to its generally dark coloured appendages.

3. *Gryon anasae* (Ashmead)

Figs. 4, 45

1887, *Telenomus anasae* Ashmead, U.S. Dep. Agric. Div. Ent. Bull. 14: 23.
1893, *Hadronotus anasae*: Ashmead, Bull. U.S. natn. Mus. 45: 233.
1889, *Hadronotus rugosus* Howard, U.S. Dep. Agric. Insect Life 1: 242. **New synonym.**
Hymanoporia of America north of Mexico, Synoptic Catalog, USDA, Agriculture

1971, Hadronus gracilis, Muscock and Willey, in C. W. Muscock et al.

1972, Hadronus gracilis, Kieffer, Das Tierreich 48: 464.

Fig. 13-18 (SEM gold-coated). 13, G. horridum (ASHM) head 110 x; 14, G. laevis (ASHM) head 170 x; 15, G. texanum (sp. occident.) head 110 x; 16, G. texanum (sp. occident.) mesosome 110 x. 17, G. texanum (sp. occident.) mesosome 110 x; 18, G. texanum (ASHM) larva 170 x.
FIGS 19-24 (SEM gold-coated). 19, *G. carinatitrons* (Ashm.) mandibles 340×; 20, *G. leptocorisa* (How.) mandibles 500×; 21, *G. radiculae* n. sp, mandibles 500×; 22, *G. rugiceps* (Ashm.) mouth 500×, tr. toruli; cl, clypeus; la, labrum; md, mandibles; 23 *G. floridanum* (Ashm.) mandibles 450×; 24, *G. insulare* (Ashm.) mandibles 500×.
1967, *Gryon anasae*: Muesebeck and Masner, in K.V. Krombein, B.D. Burks et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.

1968, *Gryon anasae*: Masner and Muesebeck, Bull, U.S. natn. Mus. 270: 34.

1979, *Gryon anasae*: Muesebeck, in K.V. Krombein et al., Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

**Female.** Black; legs including coxae, mandibles, radicle, scape, and some funicular segments bright orange-yellow; tegulae and apical part of club dark brown; wings nearly clear.

Head transverse, twice as wide as long; frontal depression remarkably shallow (dorsal aspect), margined laterally and above by irregular wavy keels, i.e. without distinct arched carina above, with long central keel ascending from antennal insertion; area of depression with large transverse polygons; frons along inner orbits, cheeks, temples and vertex with rough circular polygons; vertex rounded not carinate; occiput with dense transverse sculpture; occipital carina strong, partly irregular at meson; angular points distinct; posterior ocelli distant from inner orbits at least by their own diameter; eyes large, appearing glabrous, with scattered microscopic hairs; eye orbit less sharp and less prominent than in *G. floridanum*; clypeus small yet slightly prominent, with blunt corners, not concealing labrum which is clearly visible; mandibles short, subtridentate, two lower teeth not well differentiated, much shorter than upper tooth; smooth triangular field on malar space extending to midway between base of mandibles and lower orbit; antennal clava not too abrupt, as A6 not markedly differentiated from A7.

Mesosoma fairly arched dorsally (lateral aspect); mesoscutum rugose, with rough irregular polygons; seen from behind at angle of 45° the rugae form a V-shaped false notauli in posterior half of mesoscutum; scutellar polygons smaller, subcircular; metanotal bulge prominent, slightly subbidentate; venal formula 7:15:20, submarginal vein with long semierect setae; spurs on mid and hind tibiae not too long, shorter than half of the corresponding basitarsi.

Metasoma broad, only slightly longer than wide; T2 only 1.3 times as long as T3, with chains of longitudinal rugae interconnected with transverse anastomoses; T3 with similar yet finer type of sculpture; edges of T4-T6 not serrate; T7 small, wart-like, unarmed.

**Male.** Similar to female except for filiform antennae which are golden-yellow except for a few darker apical segments; A4–A11 almost square.

**Variability.** The species varies only a little in total body length. The colour of legs seems to be constant; all specimens examined had bright orange-yellow legs, including coxae. Ashmead’s (1893: 233) note on a variety with black coxae from Kirkwood (Mo.) is possibly a mistake for a lightcoloured variety of *G. floridanum*. Moreover, in the USA *G. anasae* seems to be restricted to south-east only (see Distribution).

**Biology.** Positive host records list *Anasa tristis* (DeGeer) and *Euthochtha galeator* (Fabricius) (Hem. Coreidae). *Dysdercus suturellus* (Herrich-Schaeffer) (Pyrrhocoridae) is a doubtful record (cf. Ashmead 1893: 232).

**Distribution.** *G. anasae* was only known from Florida. This paper extends its distribution to both north and south, namely to South Carolina and Panama respectively. In the USA no specimens were seen from outside the southeastern corner.

**Material examined. Florida:** ♀ (Lectotype of *Hadronotus anasae* Ashmead) and 11 ♀ ♂ (Paralectotypes), Jacksonville, ex eggs *Anasa tristis* (USNM); 7 ♀ ♂ Orlando, May 23 1908, ex eggs *Anasa tristis*, Russell coll. (USNM); 2 ♀ ♀ Fort George, May 20 1880, ex eggs *Anasa tristis*, R.S. Turner (USNM); 4 ♀ ♀, ♂ Tampa, August 19 1926, ex eggs *Euthochtha galeator*, C.O. Barre (USNM); ♀ Marion Co., February 15 1929, Florida fruit fly trap survey, (USNM); ♀ (Lectotype of *Hadronotus rugosus* Howard) and 2 ♀ ♀ (Paralectotypes), Rockledge, April 1880, ex eggs *Dysdercus suturellus* (USNM); 6 ♀ ♂ Coconut Grove, May 16 1887, ex unknown heteropterous eggs (USNM);
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Lake Worth (USNM); 39♀ ♂ Sarasota Co., Sarasota, July 27 1975, ex eggs on leaves, H.L. King (FSCA, CNC). South Carolina: 2♂ ♀ Hilton Head Is., July 11–23 1965, H.F. Howden (CNC). Note: Male specimen was examined from El Valle, Panama (USNM).

4. *Gryon carinatifrons* (Ashmead)

Figs. 2, 17, 19, 48

1894, *Hadronotus carinatifrons* Ashmead, J. Linn. Soc. London 25: 229, 230.

1926, *Hadronotus carinatifrons*: Kieffer, Das Tierreich 48: 467, 468.

1951, *Hadronotus carinatifrons*: Muesebeck and Walkley, in C.F.W. Muesebeck et al., Hymenoptera of America north of Mexico, synoptic Catalog, USDA, Agriculture Monogr. 2: 704.

1967, *Gryon carinatifrons*: Muesebeck and Masner, in K.V. Krombein, B.D. Burks et al., Hymenoptera of America north of Mexico, Agriculture Monogr. 2, 2nd suppl., p. 299.

1979, *Gryon carinatifrons*: Muesebeck, in K.V. Krombein et al., Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

**Female.** Black; legs including coxae, mandibles, labrum, radicle and scape bright orange-yellow; A2–A7 brownish red, A8–A12 dark brown; wings almost clear.

Head transverse, twice as wide as long; frontal depression not too deep if viewed from above; in frontal view not keeled at sides but with strong carina above from orbit to orbit; space of depression with dense transverse striation; frons along inner orbits, genae, temples, and vertex with rough net-like rugulosity, polygons large and deep; vertex between lateral ocelli with two large polygons margined by strong keels; vertex not carinate, rather flat between frontal depression and ocellar space; occiput with some transverse sculpture, occipital carina complete; posterior ocelli distant from inner orbits by less than own diameter; eyes appearing glabrous, with scattered microscopic hairs; clypeus small, nearly rectangular but with blunt corners, not concealing labrum; mandibles subtridentate; smooth triangular field on malar space not extending the basal 1/3 towards lower orbit; antennal clava not too distinct, A6 not too noticeably wider than A7.

Mesosoma highly arched on profile; mesoscutum with deep subcircular rough polygons in anterior half, with predominantly larger subrectangular polygons posteromedially; scutellum with deep subcircular polygons; metanotal bulge entire, not too prominent; venal formula 9:14:28, submarginal vein with semierect setae reaching well over front margin of wing; spurs on mid- and hind tibiae slender.

Metasoma broad, only slightly longer than wide; T2 remarkably long, 1.7 times as long as T3–T6 combined, 4 times longer than T3, with dense even reticulation generally and some longitudinal rugulosity anteromedially; T3–T6 with much finer, coriaceous sculpture; edges of T3–T6 not serrate; T7 unarmed, wart-like.

**Male.** Differing from female principally in antennal structure; A5–A11 almost square.

**Variability.** No substantial variability in body size was observed. The colouration of legs seems to be constant. The two large polygons between lateral ocelli are sometimes less distinct due to additional sculpture. In some specimens the head is remarkably flattened between the frontal depression and the ocellar space (see note "Variability" in *G. pennsylvanicum*).

**Biology.** Reared from eggs of *Anasa tristis* (De Geer) and *Leptoglossus gonagra* (Fabricius) (Coreidae) (Muesebeck and Walkley 1951).

**Distribution.** Described from St. Vincent (W.I.) and probably distributed throughout the Caribbean and adjacent mainland of Central and South America. In USA recorded from Florida and Texas (Muesebeck and Walkley 1951).

**Material examined.** Alabama: ♀ Birmingham, 1922, from eggs of *Anasa tristis* (Douglass coll.) (USNM). Florida: 13♂ ♀ Fort George, from heteropterous eggs on
FIGS 25-30 (SEM gold-coated). 26, *G. myrmecophilum* (Ashm.) mandibles 500×; 26, *G. parkeri* (Fouts) clypeus 850×; 27, *G. largi* (Ashm.) mouth 500×; tr, toruli, cl, clypeus; la, labrum, md, mandibles; 28, *G. parkeri* (Fouts) mandibles 1000×; 29, *G. atrum n. sp.* cheek 240×; 30, *G. parkeri* (Fouts) head and mesosoma 210×.
squash, May 20 1880 (USNM); ♀ Highland Co., Archbold Biol. Station, April 23 1967, Malaise trap (CNC); ♀ Tampa, December 6 1960, J.W. Patton (FSCA); ♀ Punta Gorda, April 12 1952, O. Peck (CNC); ♀ ♀ Lake Alfred, December 10 1950 ex eggs Leptoglossus gonagra (USNM); ♀ ♀ Orlando, August 14 1947, in coreid eggs on weed leaf; J.F. Childs (USNM); ♀ ♀ Orlando, May 27 1908, ex eggs Anasa tristis, Russell coll. (USNM). Specimens from exotic localities (Cuba, Puerto Rico, St. Vincent, W.I.) were also examined. The holotype of Hadronotus carinatifrons Ashmead was also examined (USNM).
5. *Gryon pennsylvanicum* (Ashmead)

Fig. 44

1893, *Telenomus (?) pennsylvanicus* Ashmead, Bull, U.S. natn. Mus. 45: 160. 1920, *Hadronotus ajax* Girault, Proc. U.S. natn. Mus. 58: 181. New synonym.
1926, Hadrophanurus pennsylvanicus: Kieffer, Das Tierreich 48: 130, 131.
1927, Hadronotus atriscapus Gahan, Proc. U.S. natn. Mus. 71: 37. New synonym.
1951, Hadrophanurus pennsylvanicus: Muesebeck and Walkley, in C.F.W. Muesebeck et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 694.
1961, Gryon pennsylvanicus: Masner, Acta soc. ent. Cechosl. 58: 162, 163.
1979, Gryon pennsylvanicus: Muesebeck in K.V. Krombein et al., Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.
1980a, Gryon ajax: Mineo, Boll. Ist. Ent. agr. Ott. Fisiotap. Palermo 10: 189, 190.

Morphology. The holotype and unique specimen of Telenomus pennsylvanicus Ashmead (Zoologisches Museum, Berlin) was redescribed by Masner (1961) and compared with G. floridanum. Although G. pennsylvanicum belongs to the floridanum-group it differs from its nominal species distinctly by proportions of T2 and T3. The unusually long T2 in G. pennsylvanicum and G. carinatifrons makes these two species very distinct in the floridanum-group. There are several undescribed Neotropical species closely related to G. pennsylvanicum and G. carinatifrons.

Variability. Hadronotus ajax Girault and Hadronotus atriscapus Gahan are considered as mere colour variations of G. pennsylvanicum. It seems that the colouration of appendages is considerably variable in G. pennsylvanicum. While in some darker individuals (i.e. atriscapus) scape and femora are mostly brown, in lighter individuals (i.e. ajax) A1–A7 and legs, excluding coxae, may be bright orange-yellow. There are also all kinds of transitions between these two extremes. The coxae are, however, always distinctly darker than the rest of the legs, usually black or dark brown. The colour of coxae seems to be the only reliable character to distinguish G. pennsylvanicum from G. carinatifrons. The sculpture of the vertex also varies; the two large polygons between posterior ocelli are better developed in some individuals, whereas in others it is obscured by a secondary rugulosity or is not developed at all. The shape of head in general and that of vertex in particular seems to vary remarkably. Similarly, as in G. carinatifrons and in G. pennsylvanicum, the head in some individuals is more flattened between the frontal depression and the occellar space (in lateral view). A series of such specimens from Carmichael, Cal. (see Material examined) was reared from eggs of an unidentified coreid bug. The host eggs have both ends cut off straight, thus probably shaping the head of pupa to the above conditions. Similarly, individuals of G. pennsylvanicum reared from larger eggs of Leptoglossus corculus (Say) are more robust than those reared from smaller eggs of Leptoglossus phyllopus (L.). For similar variations caused by the size and shape of the host egg see data in G. leptocorisae.

Biology. G. pennsylvanicum is a polyphagous species. The hosts comprise miscellaneous larger members of the family Coreidae such as Anasa tristis (De G.) (Schell 1943), Narnia pallidicornis Stål, Marnia femorata Stål, Leptoglossus phyllopus (L.), Leptoglossus corculus (Say), Chelinidea sp., etc.

Distribution. I have some doubts about the exact locality of the holotype of G. pennsylvanicum (coll. Zimmermann, Zool. Mus. Berlin). Except for the above specimen I did not see any individuals of this species in the eastern USA north of Maryland. However, G. pennsylvanicum is quite common and widely distributed in the southern part and midwest of the United States. It is probably also widely distributed in the New World tropics as specimens were examined from the Dominican Republic, Colombia, and Brazil.

Material examined. Alabama: 10♀♂ Birmingham, June 1922, J.R. Douglass, ex eggs of Anasa tristis (USNM). Arizona: 3♀♂ Douglas, July 1932, ex eggs Anasa tristis (USNM); 9♀♂ Yuma, July 8 1909, A. McLachlan, from hemipterous eggs
Figs. 41-42. 41, Gryon sp., venation of fore wing: sm, submarginal vein; mg, marginal vein; st, stigmal vein; pm, postmarginal vein. 42, hypothetical Gryon sp., posterior surface of head: ap, angular points; fm, foramen magnum capitis; fs, fossa; hl, hypostomal line; hp, hypostomal pit; hpoc, horizontal part of occipital carina; hs, hypostomal sulcus; hyo, hyperoccipital carina; ihc, inner hypostomal carina; mc, marginal carina; ohc, outer hypostomal carina; orc, oral cavity; poc, postoccipital carina; vpoc, vertical part of occipital carina.

Arkansas: 5 ♀ ♂ Washington Co., July 26 1932 (USNM). California: 12 ♀ ♂ Carmichael, Sacramento Co., June 25 1960, ex eggs of a heteropteron (? Coreidae) on Almond fruit, R.F. Wilkey (DFAS). District of Columbia: 11 ♀ ♂ August 23 1898, ex eggs Anasa tristis (USNM). Florida: ♀ Orlando, May 27 1908, ex eggs Anasa tristis; 2 ♀ ♂ Newman’s Lake, Gainesville, April 26 1952, O. Peck (CNC); 30 ♀ ♂ Gainesville, June–September 1973, A.W. Mead, black light trap (FSCA). Georgia: 80 ♀ ♂ Oglethorpe Co., emerged September 30 to October 4 1971, G.L. DeBarr, ex eggs Leptoglossus fulvicornis (Westw.) on Magnolia grandiflora L. (CNC); 7 ♀ ♂ Clarke Co., Athens, July 15 1971, G.L. DeBarr, ex eggs Leptoglossus corculus (Say) in shortleaf pine.
(CNC); 16♀♂ as above but emerged August 26 1971 ex eggs L. corculus on loblolly pine (CNC). **Louisiana:** ♀ (Lectotype of Hadronotus ajax Girault) and ♀♂ (Paralectotypes), Baton Rouge, September 1915, T.H. Jones, ex eggs *Anasa tristis* (USNM). **Maryland:** ♀♀ Marshall Hall, August 16 1898, ex eggs *Anasa tristis* (USNM). **Missouri:** ♀ Kirkwood, ex eggs *Anasa tristis* (USNM); ♀ Williamsville, August 15—September 10 1969, T.J. Becker, Malaise trap (CNC). **North Carolina:** ♀ Raleigh, August 1939, ex eggs *Anasa tristis* (USNM). **Pennsylvania:** ♀ (Holotype of Telenomus pennsylvanicus Ashmead), no further data, coll. Zimmermann (Zool. Mus. Berlin). **South Carolina:** ♀ Aiken, June 13 1957, J.R. Vockeroth (CNC); ♀ McClellanville, May 6 1971 and October 27 1972, Malaise trap (CNC). **Tennessee:** ♀ Nashville, ex eggs *Anasa tristis*, G.G. Ainslie coll. (USNM). **Texas:** ♀♀ College State, July 21 1942, ex eggs *Anasa tristis*, H.J. Reinhard (USNM); ♀ (Holotype of Hadronotus atriscapus Gahan), ♂ (Allotype) and 2♀♂ (Paratypes), Uvalde, August 1923, J.C. Hamlin, ex eggs *Narnia pallidicornis* (USNM); 2♀♀ (Paratypes of *H. atriscapus*), Brownsville, August 1922, T.C. Barber (USNM); 4♀♀ Uvalde, September 1930, R.C. Mundell, ex eggs *Chelinidea* sp. (USNM); 4♀ Fredericksburg, April 18 1939, J.F. McAlpine (CNC); 3♀ Brownwood, August 10 1928, ex eggs *Leptoglossus phylopus*, H.S. Adair (USNM); ♀ Waco (no further data) (USNM); 2♀♂ Kenney, ex eggs *Anasa tristis* (USNM).

6. *Gryon vitripenne* n. sp.  
**Figs. 16, 35, 47**

**Female.** Length 1.85 mm. Black; femora and antennae dark chestnut brown, tibiae light brown, tarsi dirty yellow; wings clear, glassy transparent.

Head almost twice as wide as long; frontal depression as in *floridanum* but slightly larger, leaving a more narrow space along inner orbits; cephalic sculpture distinctly coarser than in *floridanum*, polygons larger therefore less numerous; smooth field on malar space distinctly smaller than in *floridanum*, not exceeding basal 1/3 of distance between base of mandibles and lower orbit; malar groove broad but shallow, bordered below by shiny carina; clypeus considerably protruding, covering most of labrum above, its lateral corners blunt; mandibles tapering towards apex, unequally bidentate, upper tooth much longer; vertex rounded, with two large polygons formed by keels between posterior ocelli; occiput with several rough transverse keels; occipital carina sharp and prominent; posterior ocelli distant from inner orbits by their own full diameter; eyes appearing glabrous, with few microscopic hairs (high magnification); temples behind eyes well developed; antennal club not too abrupt as A6 not markedly differentiated from A7.

Mesosoma dorsally moderately arched (lateral aspect); mesoscutum with polygons much rougher, larger, and deeper than in *floridanum*; posterior half of mesoscutum with wide longitudinal rugae giving impression of notauli; scuto-scutellar suture deep and wide, forming almost two deep pits; scutellum medially with deep polygons; metanotal bulge sub-bidentate; wings with whitish hairs, venation rather pale; submarginal vein with semierect bristles; venal formula 5:15:15, marginalis very short, postmarginalis rather vague and indistinct; mid and hind tibial spurs shorter than in *floridanum*.

Metasoma short and broad, only slightly longer than wide; T2 fully twice as wide as T3, with chains of longitudinal rugae rougher at meson than at sides; T3 and following tergites with longitudinal sculpture as on sides of T2; lateral edge of T4–T6 finely serrate; T7 with 2 short but distinct spikes posterolaterally.

**Male.** Differing from female in a few characters. Wings even more glassy in appearance, postmarginalis more vague than in female; T2 less than twice as long as T3; spikes on T6 much longer and more conspicuous than in female.

**Variability.** The septum between the two large polygons on vertex is weak in some specimens so that only one large polygon appears between the posterior ocelli. Wings appear more glassy in some individuals, mainly the males.
Biology. A part of the type series was reared from eggs of unidentified coreid bug (Het. Coreidae), similar to those in *G. atrum*.

Distribution. So far the species is restricted to Texas; a series representing a closely related undescribed species from Mexico (no locality) was reared from eggs on leaves of *Chameadora elegans* (intercepted at St. Antonio airport; USNM).

Type material. Holotype ♀ Brownsville (TEXAS), June 29 1955 (USNM). Allotype ♂ and Paratypes, 4 ♂ ♀ and two ♂ ♂, same data as holotype (USNM CNC). Other paratypes: TEXAS: ♀ Brownsville, February 4 1945, E.D. Hardy (USNM); ♂ Laguna Madre, 35 km SE Harlingen, February 17 1945, D.E. Hardy (USNM).
Remarks. *G. vitripenne* is unique among all North American species because of its bispinose apex of the metasoma and glassy transparent wings. The latter character state was chosen for the species name.

7. *Gryon rothi* Masner

1979, *Gryon rothi* Masner, Can. Ent. 111: 797–798.

**Female.** Black; radicle, scape, and legs (except for coxae and fore tibiae) bright orange-yellow; antenna brown, clava only slightly darker than A2–A7; wings perfectly clear.

Head less than 3 times as wide as long; frontal depression very shallow and relatively short, consisting of transverse polygons semibisected by median keel and closed by irregular lateral and upper keels; frons and vertex rugoso-reticulate, shining, with polygons rather large; posterior ocelli distant from inner margins by 1 diameter; hyperoccipital carina blade-like, sharp; occiput below hyperoccipital carina finely coriaceous; occipital carina complete, angular points not developed; subocular suture broad but rather shallow; interorbital space unusually wide, much larger than eye height (41:30); A2 longer than A3 (10:6), clava rather slender, not spindle-like, A8 almost square.

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**Figs. 49–56.** Posterior surfaces of heads of *Gryon* spp. (drawn to scale 100×). 49, *G. leptocorisae* (How.); 50, *G. rugiceps* (Ashm.); 51, *G. acutiventre* n. sp.; 52, *G. aculeator* n. sp.; 53, *G. obesum* n. sp.; 54, *G. longipenne* n. sp.; 55, *G. chelinideae* n. sp.; 56, *G. radiculare* n. sp.
Mesoscutum in anterior 3/4 with polygons similar to those on frons, with a zone of longitudinal rugae in posterior 1/4; scutellum with polygons similar to those in anterior part of mesoscutum; metanotal bulge wide but not too prominent; stigmal vein more than twice as long as marginal vein, postmarginal vein rather pale, less than twice as long as stigmal vein.

T1 strongly transverse, 5 times as wide as long, longitudinally costate; T2 only 1.3 times as long as T3, irregularly rugoso-reticulate at meson, reticulate at sides; T3 and following tergites with rugoso-reticulate sculpture becoming gradually finer.

**Male.** Unknown.

**Material examined.** Arizona: Cochise Co., South West Research Station, 8 km W. Portal, 1650 m, October 21 1964, V. Roth, 1 ♀ (Holotype in AMNH).

**Distribution.** Arizona.

**Biology.** Unknown.

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**8. **_Gryon stewarti_ n. sp.

*Fig. 58*

**Female.** Length 1.0 mm. Black; femora dark brown except for lighter apices; tibiae brown; tarsi, radicle and scape yellowish brown, A2–A12 brownish; wings slightly tinted.

Head transverse, slightly more than twice as wide as long; frontal depression very shallow, unmarginated, indicated only by specialized sculpture consisting of transverse ridges bisected in its lower half by central keel ascending from antennal insertion; cheeks, frons and vertex with net-like reticulate sculpture, with polygons on frons larger than those in interocellar space; occiput below hyperocippital carina and the temples coriaceous; hyperocippital carina rather delicate, complete, merging in outer orbits of eyes; temples behind eyes not developed; short marginal carina stems from junction point of hyperocippital carina and inner orbit, without touching occipital carina; occipital carina fine but complete in its vertical part, its horizontal part entirely missing; postocippital carina slightly indicated in its vertical part only; hypostomal carinae developed, directed towards the base of mandibles; hypostomal sulcus rather shallow; hypostomal pits absent; posterior ocelli distant from inner orbits by about their diameter; eyes large, appearing glabrous, however, under higher magnification (160 ×) with scattered minute hairs; interorbital space distinctly shorter than eye height (28:33); malar sulcus rather deep, margined ventrally by sharp carina continuing from lower eye orbit; clypeus short, with anterolateral corners rounded; labrum exposed; mandibles tridentate, with subequal teeth; palpal formula 2–2; antennal segments in relative proportions 30:4; 8:3; 5.5:2.5; 3.5:3.5; 3:4; 3:5; 4:6; 5:6.5; 3:6; 3:5.5; 6:4.5; clava not too abrupt.

Mesosoma short, as long as high, considerably arched dorsally; mesoscutum and scutellum with rather fine reticulate-rugulose sculpture; scuto-scutellar suture rather deep and wide; metanotal bulge moderately protruding (dorsal aspect); epomial carina on pronotum sharp, space between it and pronotal suture with chain of large deep foveae; mesopleural carina strong, though incomplete, not reaching the pronotal suture; mesopleural depression not developed, area around mesopleural carina coriaceous, with strong transverse ridges between apex of carina and tegula; venal formula 4:11:20; fore wings considerably surpassing tip of metasoma.

Metasoma short and stout, slightly wider than long (50:47); T1 broadly transverse, 5 times wider than long (50:10), with strong longitudinal costae; T2 strongly transverse (20:50), with very short costae along anterior margin, otherwise with rough net-like reticulation, twice as long as T3, the latter with somewhat finer sculpture than in T2; T4–T7 with sculpture becoming gradually finer than in T3.

**Male.** Unknown.

**Biology.** Unknown.

**Distribution.** Florida.

**Type material.** Holotype ♀ (CNC No. 17013), FLORIDA: Monroe Co., Big Pine Key (Watson’s Hammock), July 1981, Malaise trap, S.B. Peck. Paratypes: 4 ♀ ♀, with same data as in holotype (CNC).
Figs. 57-66. Posterior surfaces of heads of *Gryon* spp. (drawn to scale 100×). 57, *G. insulare* (Ashm.); 58, *G. stewarti* n. sp.; 59, *G. largi* (Ashm.); 60, *G. parkeri* (Fouts); 61, *G. brevipenne* (Harr.); 62, *G. misellum* Hal.; 63, *G. xanthogaster* (Ashm.); 64, *G. xanthosoma* n. sp.; 65, *G. myrmecophilum* (Ashm.); 66, *G. coracinum* (Fouts).
Remarks. *G. stewarti* appears to be closely related to the Neotropical *G. atrocoxale* (Ashm.) from which it differs by tridentate mandibles, non-infuscate base of fore wings, absence of longitudinal sculpture on T2, finely hairy eyes, etc. From the Neotropical *G. tridentatum* Msn. this new species differs both by much finer sculpture of head in general and the interocellar space in particular, by the short interorbital space and shorter marginal vein. The difference between *G. stewarti* and the other Nearctic member of the *variicorne*-group, viz. *G. rothi*, is amply figured in the key to species. It is my pleasure to name this new species after its collector, Dr. Stewart Peck.

9. *Gryon leptocorisae* (Howard)  
Figs. 5, 11, 20, 33, 49

1885, *Hadronotus leptocorisae* Howard, in Hubbard, Orange Ins., App., p. 215.
1926, *Hadronotus leptocorisae*: Kieffer, Das Tierreich 48: 462.
1951, *Hadronotus leptocorisae*: Muesebeck and Walkley, in C.F.W. Muesebeck et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 705.
1966, *Hadronotus hungaricus* Szabo, Acta Zool. Hung. 12: 430, 433 (synonymy by Mineo 1980a)
1967, *Gryon leptocorisae*: Muesebeck and Masner, in K.V. Krombein, B.D. Burks et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.
1968, *Gryon leptocorisae*: Masner and Muesebeck, Bull. U.S. natn. Mus. 270: 36.
1971, *Gryon reduviophagus* Kozlov, Horae Soc. ent. U. Soviet. 54: 48 (synonymy by Mineo 1979).
1979, *Gryon leptocorisae*: Muesebeck in K.V. Krombein et al., Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.
1979, *Gryon leptocorisae*: Mineo, Boll. Lab. Ent. Agr. Portici 36: 257.
1980a, *Gryon leptocorisae*: Mineo, Boll. Ist. Ent. agr. Oss. Fitopat. Palermo 10: 197.

Female. Length 1.5 mm. Black. Legs mostly brown; trochanters, apices of femora, most of tibiae and tarsi lighter; mandibles reddish yellow; wings clear.

Head slightly less than twice as wide as long (1.7 times); frontal depression shallow, with distinct transverse ridges, not particularly margined above; frons along inner orbits and cheeks reticulate-rugose; vertex goes roundly into occiput; occipital carina not particularly angulate behind eyes; posterior ocelli distant from inner orbits by about one diameter; eyes densely pubescent, hairs long and dense; clypeus short, not covering labrum which is clearly visible; mandibles rather slender, subtridentate, upper tooth the largest; antenna1 club almost indistinct, slender and not differentiated as A6 is only slightly smaller than A7.

Mesosoma in profile arched dorsally; mesoscutum reticulate-punctate; scuto-scutellar suture deep; scutellum finely coriaceous; metanotal bulge indistinct; submarginal vein with bristles surpassing the wing margin; venal formula 11:12:30.

Metasoma elongate, 1.7 times as long as wide, slightly pointed apically, only slightly surpassed by fore wings; T2 evenly net-like reticulate, without longitudinal elements; following tergites with same sculpture as T2 but becoming finer gradually.

Male. Differing from female only in dimorphic characters.

Variability. Colour of legs may vary from predominantly yellowish to darker brown. Metasoma may be lighter, dark chestnut brown. G. Mineo (personal communication) observed considerable variation in length/width ratio of metasoma between populations of *G. leptocorisae* reared from eggs of two species of *Rhinocoris* (Reduviidae) in Sicily. Individuals reared from more elongate eggs of *R. costae* Picco had the metasoma more elongate, while those from shorter eggs of *R. erythropus* L. were generally shorter. When
the two populations of *G. leptocorisae* were offered the alternate hosts the resulting generations matched the size of the host eggs.

**Biology.** In North America reared from eggs of *Zelus bilobus* Say, *Apiomerus crassipes* (Fab.), *A. spissipes* (Say), and *Apiomerus* sp. In Europe recorded from eggs of *Rhinocoris* spp.

**Distribution.** Predominantly southern species, rarely extending to Canada.

**Material examined.**
- **California:** δ, Alpine Lake, Marin Co., September 1961, Thornsteinson heliothermal trap, E.P. Catts (UCD).
- **Florida:** ♀, (Lectotype of *Hadronotus leptocorisae* Howard) and 12 ♀ ♀, (Paralaectotypes), Crescent City (USNM); 3 ♀ ♀, δ Olustee Experimental Forest, Baker Co., ex eggs *Apiomerus crassipes* (Fab.) (USNM).
- **Idaho:** ♀, Fremont Co., St. Anthony Dunes, 5400', July 11 1980, W. Wasbauer, Malaise trap (DFAS).
- **Maryland:** 5 ♀ ♀ Patuxent Wildlife Center nr. Laurel, May–June 1965, Malaise trap (CNC).
- **Missouri:** 10 ♀ δ Williamsville, June–September 1969, T.J. Becker, Malaise trap (CNC).
- **Quebec:** δ Mt. Ste. Marie, 600 m, September 20 1965, J.R. Vockeroth (CNC); δ Ramsey Lake in Gatineau Park, July 1 1970, L. Masner (CNC).
- **Tennessee:** ♀ Lexington, Natchez Trace State Park, June 20–30 1972, G. Heinrich, Malaise trap (CNC).
- **Texas:** ♀ Dallas, September 19 1905, A.C. Morgan, ex eggs of *Apiomerus spissipes* (Say) (USNM); 12 ♀ δ Brownsville, July 7 1952, *Apiomerus* sp. eggs, Japanese beetle trap (USNM); 25 ♀ ♀ Brownsville, May and August 1957 (May material from fruit fly trap) (USNM); ♀ Kerrville, March 31 1957, J.F. McAlpine (CNC); 2 ♀ ♀ S. Patricio Co., Welder Preserve, 7 mi NE Sinton, April 25 1977, M. Wasbauer, Malaise trap (DFAS).

10. **Gryon rugiceps** (Ashmead)

**Figs.** 6, 22, 34, 50

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1893, *Hadronotus rugiceps* Ashmead, Bull. U.S. natn. Mus. 45: 231, 233.
1926, *Hadronotus rugiceps*: Kieffer, Das Tierreich 48: 463.
1951, *Hadronotus rugiceps*: Musebeck and Walkley, in C.F.W. Musebeck et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 705.
1967, *Gryon rugiceps*: Musebeck and Masner in K.V. Krombein, B.D. Burks et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.
1968, *Gryon rugiceps*: Masner and Musebeck, Bull. U.S. natn. Mus. 270: 36.
1979, *Gryon rugiceps*: Musebeck, in K.V. Krombein et al., Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

**Female.** Length 1.5 mm. Black. Legs (excluding the brown coxae) bright golden-yellow; mandibles, palpi, radicle, and extreme base of scape orange-yellow; antennae brown, metasoma brown; wings clear.

Head twice as wide as long; frontal depression shallow, with wide transverse polygons ("honey comb"), margined above by arched keel, the space under the latter usually wider than between transverse polygons beneath; frons along inner orbits and around ocelli and cheeks reticulate rugose; vertex goes roundly into occiput; occipital carina not too distinctly angulate behind eyes; posterior ocelli almost contiguous with inner orbits; eyes large, with only sparse short hairs; clypeus short and hence labrum clearly visible, truncate-excavate at apex; mandibles short, bluntly subreticulate, the middle tooth diminished; carina margining malar groove not too prominent; antennal club slender, not well differentiated.

Mesosoma in profile arched dorsally; mesoscutum scaly- reticulate anteriorly, with some longitudinal elements in front of scutellum; scutocutellar suture deep; scutellum finely reticulate-rugose; metanotal bulge only slightly prominent; submarginal vein with bristles only moderately surpassing wing margin; venal formula 13:11:28.
Metasoma elongate, 1.5 times as long as wide, rather obtuse apically; T2 less than 1.5 times as long as T3, with distinct longitudinal rugulosity anteromedially, the longitudinal sculpture less distinct at sides of T2 where it becomes more irregularly rugose; T3 and the following tergites with finer net-like reticulate rugulosity.

**Male** (hitherto unknown.). Differing from female in dimorphic characters (antennae, tip of metasoma), furthermore by having eyes more distinctly hairy and wings surpassing the tip of metasoma to a greater extent than in female.

**Variability.** The colour of legs seems to vary considerably from bright golden-yellow to predominantly brownish with at least middle of femora darkened. Tarsi and apices of tibiae and femora are often lighter. Sculpture of frontal depression and T2 seems to be rather constant.

**Biology.** Unknown.

**Distribution.** Described from Washington, D.C., in 1893 but not recorded since. I examined specimens from along eastern coast (Maine to South Carolina) and also from Ontario and the midwest to Texas.

**Material examined.** Arkansas: ♀ Garland Co., May 1–17 1972, G. Heinrich, Malaise trap (CNC). District of Columbia: ♀ (Holotype of Hadronotus rugiceps Ashmead), April 30 (♀ year) (USNM). Georgia: ♀ Forsyth, June 23–30 1970, F.T. Naumann, Malaise trap (CNC). Maine: ♀ Dryden, July 14 1970, G. Heinrich (CNC). Maryland: ♀ ♀ and ♂ Patuxent Wildlife Center nr. Laurel, May–June 1965, Malaise trap (CNC). Massachusetts: ♂ Cape Cod, Wellfleet, Audubon Bird Sanctuary, September 9 1970, L. Masner (CNC). Missouri: 13 ♀ ♂ Williamsville, April–November 1969 and 1970, T.J. Becker, Malaise trap (CNC). Nebraska: 2 ♀ ♂ Halsey, July 29 1957, R.E. Henzlik (USNM). New York: 12 ♀ ♂ Long Island, Huntington, Kalbfleisch Field Station, July 19–August 31 1962, Malaise trap (AMNH, CNC). Ontario: ♂ North Bay, July 19 1973, C.M. Yoshimoto (CNC). South Carolina: ♀ Aiken, June 13 1957, J.R. Vockeroth (CNC). Tennessee: ♂ Lexington, Natchez Trace State Park, June 11–15 1972, G. Heinrich, Malaise trap (CNC). Texas: ♂ Kerrville, April 2 1959, W.R. Mason (CNC).

**Remarks.** G. rugiceps could be conveniently distinguished from G. leptocorisae by the longitudinal ruguloses on T2.

11. **Gryon longipenne** n. sp.  
Figs. 8, 36, 54

**Female.** Length 1.3 mm. Black. Legs (except for brown coxae), mandibles (except for darker tips) and radicle bright orange-yellow; scape light brown, following segments slightly darker; wings clear.

Head slightly less than twice as wide as long; frontal depression in dorsal aspect shallow, not margined laterally or apically, with transverse ridges from antennal insertion gradually weakening upwards, eventually disappearing below anterior ocellus; no arched carina topping the depression; frons along inner orbits and vertex reticulate rugose; vertex rounded, gradually sloping into occiput; occiput cheeks and temples with finer sculpture than vertex, finely coriaceous; occipital carina with fine angular points; dense pilosity covers vertex and particularly upper parts of frons along inner orbits; posterior ocelli distant from inner orbits by approximately one diameter; eyes densely pilose, as high as the shortest distance between inner orbits; clypeus small, slightly protruding, labrum therefore well visible; mandibles subtridentate, upper tooth the largest; malar groove margined by carina; antennal club slender, not abrupt.

Mesosoma in profile arched dorsally; mesoscutum scaly reticulate anteriorly, with some longitudinal elements in posterior 1/3 (in front of scutellum); scuto-scutellar suture deep and rather wide; scutellum coriaceous but with longitudinal elements at meson; metanotal bulge entire, moderately protruding; submarginal vein with semirect bristles slightly surpassing fore margin of wing; venal formula 12:13:30; mid- and hind tibial spurs slender and short.
Metasoma longer than wide (70:50), greatly surpassed by wings; T2 only slightly longer than T3 (21:16), net-like reticulate, without any longitudinal elements; T3 and following tergites of the same but gradually finer sculpture; T7 wart-like, almost as long as wide.

**Male.** Generally smaller than female (1.0 mm); frontal depression with much finer transverse ridges leaving larger smoother area below anterior ocellus; wings surpassing tip of metasoma even more than in female; antennae with usual dimorphic characters, with all flagellomeres except A12 square or slightly transverse.

**Variability.** Sculpture of frontal depression may vary in that smaller individuals tend to have ridges less developed than the larger ones.

**Biology.** Unknown.

**Distribution.** Rare species; seems to be restricted to southern part of Nearctic region.

**Type material.** Holotype ♀, Williamsville (MISSOURI), September 25 1969, J.T. Becker, Malaise trap (CNC No. 17014). Allotype ♂, same data as holotype but caught June 29–July 5 1969 (CNC). Paratypes: 38 ♀, and 3 ♂, same data as holotype but caught from April to November (1969–1971) (CNC, USNM). Other paratypes: CALIFORNIA: ♀, Riverside Co., San Timoteo Canyon, September 13 1972, M. Wasbauer, Malaise trap (DFAS); GEORGIA: ♀, Tybee I., August 4 1974, J.R. Vockeroth (CNC); MARYLAND: 2♀, Patuxent Wildlife Center nr. Laurel, May–June 1965, Malaise trap (CNC); NEW YORK: ♂, Long Island, Huntington, Kalbfleisch Field Station, August 16–31 1962, P. Arnaud, Malaise trap (AMNH); TEXAS: ♀, Uvalde Co., Speir Rch., 3 mi NW Uvalde, May 6 1977, M. Wasbauer, Malaise trap (DFAS).

**Remarks.** *G. longipenne* is quite distinct among members of the *leptocorisae*-subgroup, mainly because of the unusually long wings, largely surpassing the tip of metasoma. Its name refers also to this peculiar character state.

12. *Gryon aculeator* n. sp.

*Fig. 52*

This new species is very close to *G. longipenne* n. sp. from which it differs in the following few characters:

**Female.** Length 1.1 mm. Legs including coxae almost concolorous. light brown, coxae slightly darker; frontal depression with only a few fine transverse ridges in its lower half; sculpture of frons along inner orbits, vertex and occiput much finer, almost coriaceous; posterior ocelli distant from inner orbits by less than 1 diameter; eyes distinctly less hairy, pilosity sparser and shorter; longitudinal elements in sculpture of posterior part of mesoscutum and scutellum almost absent; wings surpassing apex of metasoma by only a narrow margin; venal formula 10:9:30; metasoma appearing more elongate (65:40), gradually pointed apically, T7 sharply triangular, slightly longer than wide; T6 only 3 times as wide as long.

**Male.** Unknown.

**Biology.** Unknown. The series from Kansas is said to have been reared from a strawberry leafroller, an obvious misrecord.

**Distribution.** Kansas, Texas, Idaho, California.

**Type material.** Holotype ♀, Blair (KANSAS), July 1937, P.G. Lamerson (USNM). Paratype: ♀, same data as holotype (USNM). Other paratypes: CALIFORNIA: ♀, San Diego Co., Warner Spring, Agua Caliente Cr., 3100' August 23–25 1980, M. Wasbauer, Malaise trap (DFAS); IDAHO: 2♀, Gooding Co., Wood R., 1 mi NE Gooding, July 6–7 1980, M. Wasbauer, Malaise trap (DFAS); KANSAS: 2♀, Washtena, July 1937, P.G. Lamerson (USNM); TEXAS: ♀, Fort Davis, Point of Rocks, May 29 1959, W.R. Mason (CNC No. 17020); ♀, Kerrville, April 2 1959, W.R. Mason (CNC No. 17020).

**Remarks.** The name of this new species refers to the sharply pointed apex of metasoma.
13. Gryon acutiventre n. sp.

Female. Length 1.6 mm. Black. Trochanters, proximal and distal tips of femora, all tibiae and tarsi yellow, middle part of femora brown, coxae dark brown or black, mandibles, radicle and extreme base of scape orange-yellow, rest of antennae dark brown or black; wings clear.

Head transverse, 1.7 times as wide as long; frontal depression shallow (dorsal aspect), not margined laterally but with distinct transverse polygons terminated above by distinctly arched keels; frons along inner orbits and cheeks reticulate rugose; vertex goes roundly into occiput, area around and behind ocelli net-like reticulate; occipital carina with distinct angular points but with rather short horizontal part; posterior ocelli distant from inner orbits by less than 1 diameter; eyes remarkably hairy, hairs dense and rather long; clypeus short, not prominent, shorter than labrum which is strongly projecting in between mandibles; mandibles slender, subtridentate, upper tooth the longest; antennal segments 3, 4, 5 short, as long as wide or slightly transverse, A6 indistinctly smaller than A7 hence club not abrupt, slender.

Mesosoma distinctly arched dorsally; mesoscutum finely scaly-reticulate, becoming slightly reticulate-striate in front of scutellum; scutellum with same sculpture as mesoscutum; metanotal bulge quite indistinct; submarginal vein with semierect bristles slightly surpassing wing margin; venal formula 9:11:25.

Metasoma distinctly elongate, fully twice as long as wide, pointed apically; T2 1.4 times as long as T3, net-like reticulate, with extremely short costae along anterior margin; T3 and following tergites net-like reticulate; T4 and T5 only 3 times wider than long.

Male. Unknown.

Biology. Reared from eggs of Apiomerus flaviventris H.S. (Reduviidae).

Distribution. Arizona.

Type material. Holotype ♀, 12 km E. Pena Blanca Lake, Santa Cruz Co. (ARIZONA), August 3 1974, S. Szerlip (CNC No. 17015). Paratypes: 13 ♀♂, same data as holotype (CNC, USNM).

Remarks. Closely related to G. leptocorisae from which it may be distinguished primarily by more elongate metasoma with distinctly pointed T7. The name of this new species refers to the sharp point of the metasoma.

14. Gryon obesum n. sp.

Female. Length 1.15 mm. Black. Coxae dark brown, femora brownish, tibiae and tarsi lighter, reddish brown; antennae dark brown, radicle lighter; wings clear.

Head slightly less than twice as wide as long; frontal depression shallow if viewed from above, not margined laterally or apically, with transverse rugae better indicated in its lower half, rugae becoming gradually finer and finer, not topped by arched carina; frons along inner orbits, around anterior ocellus and vertex reticulate-rugose; genae and temples coriaceous; vertex rounded; occiput with distinct angular points; posterior ocelli distant from inner orbits by one diameter; eyes densely hairy; clypeus considerably reduced to expose whole labrum; mandibles tridentate, with upper tooth the largest; malar carina sharp and prominent; radicle short, as long as 1/7 of scape; antennae without abrupt club.

Mesosoma considerably arched dorsally; mesoscutum finely scaly-reticulate in anterior 2/3, with distinct longitudinal rugosity in posterior 1/3; no V-shaped ridge between these two types of sculpture; scutellum coriaceous laterally, with longitudinal rugae at meson; metanotal bulge only moderately prominent; submarginalis with semierect bristles surpassing the fore margin of the wing; venal formula 11:11:28; mid- and hind tibial spurs short and slender.

Metasoma short, almost circular, slightly wider than long (52:55), distinctly surpassed by wings; T2 transverse, slightly less than 3 times wider than long, twice as long as T3, distinctly net-like reticulate with almost no longitudinal elements in sculpture; following tergites with similar sculpture; T7 minute, wider than long.
Male. Differs from female only in dimorphic antennae, sculpture of frons which is more coarsely rugose-reticulate and by metasoma which is slightly longer than wide.

Variability. A relatively stable species. Legs may be lighter than in the type series, to orange-yellow (except coxae). Transverse rugae of frontal depression may be both less or more developed than in the holotype but never topped by arched carina.

Biology. Unlike most species of the leptocorisae-subgroup, *G. obesum* is restricted in its choice of hosts to pentatomids rather than reduviids.

Distribution. A predominantly southern species recorded from Florida to California, with Missouri as the northernmost point in its distribution.

Type material. Holotype ♀, Placerville (CALIFORNIA), June 21 1950, H. Madson, ex eggs *Euschistus conspersus* Uhler (CAS). Allotype ♂, with same data as holotype but reared in August 1952 (CAS). Paratypes 40 ♀♂, same data as holotype but reared from June to August 1950–1952, H. Madson and A. Retan, ex eggs of *Euschistus conspersus* and *Thyanta* sp. (Pentatomidae) (CAS; CNC No. 17021). Other paratypes: CALIFORNIA: 5 ♀♂ Robbins, Sutter Co., August 11 1954, K.S. Hagen, ex bug eggs (CAS); 19 ♀♂ Davis, September 9–19 1953, J.J. Drea, ex heteropterous eggs (CAS); ♀ 1.6 km N. Alpine Lake, Marin Co., September 1961, E.P. Cats, Thorsteinson heliothermal trap (CAS); 2 ♀♂ San Diego Co., Warner Springs, Agua Caliente Cr., elev. 3100’, August 23–25 1980, M. Wasbauer, Malaise trap (DFAS); 10 ♀♂ Placer Co., 4 mi S. Rocklin, May 27–31 1979, M. Wasbauer, Malaise trap (DFAS); FLORIDA: 12 ♀♂ Lake City, October 1 1974, ex eggs *Euschistus servus* (Say) on *Desmodium* sp. in corn field; also reared in laboratory from *E. servus* eggs in October and November 1974 (FSCA, CNC No. 17021); LOUISIANA: 15 ♀♂ Tallulah, June 1948, from (?) pentatomid eggs on cotton squares, R.C. Gaines (USNM); MISSOURI: 4 ♀♂ Williamsville, from June to November of 1969 and 1971, J.T. Becker, Malaise trap (CNC No. 17021); TEXAS: 9 Waco, February 7 1949, on cotton, P.A. Glick (USNM); ♀ Point of Rocks, Davis Mts., May 30 1959, W.R. Mason (CNC); 3 ♀♂ Uvalde Co., Speir Rch., 3 mi N.W. Uvalde, May 7 1977, M. Wasbauer, Malaise trap (DFAS).

Remarks. *G. obesum* holds a special place in the leptocorisae-subgroup mainly because of its short and stout body. It could be distinguished from the other stout member of this subgroup, viz *G. chelinideae*, mainly by the absence of marginal carinae on occiput as well as by different sculpture of mesopleuron above the mesopleural carina. The name of this new species refers to its chubby habitus.

15. *Gryon chelinideae* n. sp.

Figs. 3, 55

Female. Length 1.2 mm. Black. Coxae, femora and antennae brown, tibiae, tarsi and radicle lighter, brownish yellow; wings clear.

Head twice as wide as long; frontal depression quite shallow (dorsal aspect), not margined by particular keels, yet well defined by its own transverse rugae which are clearly formed from the antennal insertion up, terminating in an arched carina below anterior ocellus; frons along inner orbits and around anterior ocellus reticulate rugose, polygons rather large and irregularly shaped; vertex rounded, with sculpture finer than on frons; occiput with fine transverse sculpture in its upper part, with distinct marginal carinae merging into inner orbits (above occipital carina); posterior ocelli distant from inner orbits by less than 1 diameter; eyes finely hairy, hairs short and rather scattered; malar groove margined by distinct carina ventrally; clypeus strongly reduced to expose the entire labrum; mandibles tridentate, upper tooth the longest; antennal club indistinct.

Mesosoma arched dorsally; mesoscutum anteriorly with scaly reticulate sculpture, medially with a broad V-shaped ridge from which longitudinal rugae run down to scuto-scutellar suture; scutellum reticulate-rugose at sides, with longitudinal sculpture medially; mesopleuron above mesopleural carina with transverse ridges; bulge of metasoma almost indistinct; submarginal vein with
semierect bristles surpassing the fore margin of wing; venal formula 9:9:23; mid- and hind tibial spurs short and slender.

Metasoma short and broad, subcircular, slightly wider than long (55:57), only slightly surpassed by fore wings; T2 only slightly longer than T3 (18:13) fully 3 times as wide as long, rugose-reticulate with some longitudinal elements anteromedially; following tergites with finer reticulation; T7 wart-like, wider than long.

**Male.** Similar to female except for dimorphic antennae, metasoma which is slightly longer than wide (53:50), and T2 which has more longitudinal rugae than the female.

**Variability.** The marginal carinae appear better developed in some individuals, almost percurrent at meson, interrupted in others. T2 and following tergites may be more distinctly longitudinally rugose in some females than in the holotype.

**Biology.** Type series reared from eggs of the coreid bug *Chelinidea vittiger* Uhler.

**Distribution.** Texas, New Mexico.

**Type material.** Holotype ♀ Uvalde (TEXAS), September 14 1930, R.C. Mundell, ex eggs of *Chelinidea vittiger* (det. H.G. Barber) (USNM). Allotype ♂ and Paratypes, 15♀♂, with same data as holotype but some specimens reared on September 22 and 26 respectively (USNM and CNC). Paratype: ♀ Eddy Co., Carlsbad Caves Nat. Park, Slaughter Canyon (NEW MEXICO), July 20 1975, S.B. Peck (CNC No. 17022).

**Remarks.** *G. chelinideae* is a rather unusual species among other members of the *leptocorisae*-subgroup (*muscaeforme*-group). It is classified here primarily because of the elongate marginal vein, however the sculpture of mesopleuron above mesopleural carina as well as the presence of a distinct marginal carina on occiput underline its unique position. Similarly, the choice of a coreid rather than reduviid host is also peculiar. I prefer to keep its position in the *leptocorisae*-subgroup only as tentative. The name of the species refers to its coreid host.

16. *Gryon radiculare* n. sp.

**Figs.** 12, 21, 56

**Female.** Length 1.3 mm. Black; legs (excluding coxae), mandibles (except for darker tips) and basal half of scape bright orange-yellow; coxae dark brown; radicle remarkably black (contrasting with adjacent light base of scape); upper part of scape and A7–A12 brown; wings almost clear, not infuscate.

Head transverse, slightly more than twice as wide as long; frontal depression very shallow (dorsal view), not margined laterally or above, with strong transverse sculpture and a short median keel ascending from antennal insertion; cheeks, frons along inner orbits, around anterior ocellus and vertex between ocelli rugose reticulate, with irregular polygons; vertex not carinate, goes roundly into occiput which has transverse sculpturing; angular points well developed; postoccipital carina almost complete, paralleling th vertical part of occipital carina down to mandibular base; posterior ocelli distant from inner orbits by slightly more than a diameter; eyes large, densely hairy; malar groove margined by strong carina; clypeus rather prominent but with rounded corners, partly covering labrum which is mainly concealed; mandibles rather strong, subtridentate, upper tooth the largest; radicle straight, strikingly smooth and shining, very elongate, as long as a quarter of scape; club not abrupt, A6 not too differentiated in size from A7.

Mesosoma remarkably arched dorsally; mesoscutum fine scaly-reticulate, the sculpture becoming more longitudinal in front of scutellum; scuto-scutellar suture fairly deep and wide; scutellum with predominantly longitudinal rugulosity; metanotal bulge rather prominent; mesopleural carina not developed; submarginal vein with semierect bristles surpassing fore margin particularly in proximal half of vein; venal formula 7:15:22; hind tibial spur short and weak reaching only to basal quarter of hind basitarsus.

Metasoma stout, short, only slightly longer than wide; T2 twice as long as T3, densely reticulate but with strong short costae and some longitudinal sculpture basally; following tergites very finely reticulate; T7 small, wart-like.
Male. Similar to female from which it differs in following few points. Scape almost entirely dark so that the colour contrast between it and radicle is less distinct; legs generally darker, particularly hind femora and tibiae which are light brown; eyes distinctly shorter than in female, shortest distance between inner orbits slightly longer than height of an eye; also temples behind eyes are wider than in female; pilosity of eyes is distinctly longer and denser than in female.

Variability. Individuals vary in total body length, 1.0–1.3 mm, with males generally smaller than females. In some specimens the pilosity of eyes is distinctly sparser than in the type series. Also colour of appendages vary; scape may be almost entirely dark even in females. The distinctly elongate radicle is more clearly seen in larger than in smaller individuals.

Biology. Host unknown; in Alberta, individuals were swept from alfalfa, oats, barley, and wheat.

Distribution. From coast to coast in USA and Canada. Present range indicates that G. radiculare is predominantly a northern species, not represented in the Caribbean or Mexico.

Type material. Holotype ♀ Williamsville (MISSOURI), September 25 1969, J.T. Becker, Malaise trap (CNC No. 17016). Allotype ♂, same data as holotype but caught in June 1971 (CNC). Paratypes: ALBERTA: ♀ and ♂ Elkwater Lake, July 19 and 21 1956, O. Peck (CNC); 5 ♀ ♂ Lethbridge, June 22–August 5 1956, O. Peck (CNC); 3 ♀ ♂ Gilchrist Ranch, Aden, June 28 1956, O. Peck, swept from alfalfa crested wheat grass (CNC); ♀ Milk River, June 28 1956, O. Peck, swept from oats (CNC); 15 ♀ ♂ Scandia, July 2 1956, O. Peck, swept from alfalfa (CNC); ARKANSAS: ♂ Garland Co., May 1–17, G. Heinrich, Malaise trap (CNC); CALIFORNIA: ♀ Lone Pine, Inyo Co., July 8 1961, G. Stage (UCD); 18 ♀ ♂ Placer Co., 4 mi S. Rocklin, May 26–29 1979, M. Wambauer, Malaise trap (DFAS); COLORADO: ♂ Doolittle Ranch, July 24, 1961, W.R. Mason (CNC); MARYLAND: 24 ♀ ♂ Patuxent Wildlife Center near Laurel, May–June 1965, Malaise trap (CNC); MICHIGAN: ♀ and ♂ Edwin S. George Reserve, Livingston Co., September 13 1973, G. Gibson (CNC); NEW YORK: ♀ and ♂ Long Island, Huntington, Kalfbleisch Field Station, July 27 1962 and August 1–15 1962, P.H. Arnaud, Malaise trap (AMNH); ONTARIO: 3 ♀ ♂ nr. Belleville, July 31 1962, A.L. Turnbull, pitfall trap (CNC); ♀ Burnstown, August 27, 1969, J. Robillard (CNC); QUEBEC: ♀ Gatineau Park, July 29 1965, P. Corbet, Malaise trap (CNC); ♀ Hull, August 30 1965, Malaise trap (CNC); SASKATCHEWAN: 2 ♀ ♂ Snowden, July 26 and 28 1944, O. Peck (CNC); ♀ Big Muddy Lake, August 10 1973, L. Masner (CNC); ♂ Fife Lake, August 9–11 1973, L. Masner (CNC); TENNESSEE: ♂ Lexington, Natchez Trace State Park, June 11–15 1972, G. Heinrich, Malaise trap (CNC).

Remarks. G. radiculare is the only Nearctic member of the muscaeforme-subgroup, typified by very short marginal vein and a complete postoccipital carina. The absence of mesopleural carina and the unique shape of the radicle make G. radiculare a very distinct species. The name of this species refers to its unusual radicle.

17. Gryon insulare (Ashmead)

Figs. 7, 10, 24, 31, 57

1893, Hadronotus insularis Ashmead, Bull. U.S. natn. Mus. 45: 461, pl. 10: 4; no description (!).

1894, Hadronotus insularis Ashmead, J. Linn. Soc. London 25: 230.

1926, Hadronotus insularis: Kieffer, Das Tierreich 48: 465, 466.

1975, Gryon insularis: Masner, Bull. ent. Res. 65: 209–213.

1976, Gryon insularis: Masner, Mem. ent. Soc. Canada 97: 58.
1979, *Gryon insularis*: Mineo, Boll. Lab. ent. agr. Portici 36: 251, 252.

1980b, *Gryon insulare*: Mineo, Boll. Ist. Ent. agr. Oss. Fitopat. Palermo 10: 216–218.

**Female.** Black; tibiae, tarsi, and apices of femora orange-yellow, radicle, scape and funicle light to dark brown, club dark brown; wings slightly infuscate.

Head in lateral and frontal views almost lens-like, thin, strongly transverse, slightly more than twice as wide as long, and slightly more than twice as high as long; frontal depression shallow, almost non-existent, not margined by keel laterally but with fine, short, slightly arched carina above; frons along inner orbits, cheeks and vertex with rough net-like polygons in contrast to transverse polygons of the depression; malar groove deep, bordered by strong, shining carina connecting base of mandible with lower orbit of eye; elytra strongly receding, almost absent, hence labrum clearly visible; mandibles relatively small, tapering towards apex, bidentate, lower tooth distinctly shorter than the upper one; small basal tooth near lower condyle of the mandible (visible only if mandibles wide open) vertex with blade-like carina cresting between lateral ocelli; occiput abruptly falling off in perpendicular line from hyperoccipital carina; occipital carina complete but without angular points; posterior ocelli squeezed between the hyperoccipital carina and inner orbit of eye, distant from the latter by less than their own diameter; eyes densely pubescent, in dorsal view expending backwards so that temples are reduced to mere hind orbits of eyes; antennae with remarkably abrupt and compact spindle-like club, as A6 distinctly smaller than A7.

Mesosoma short, high, considerably arched dorsally; mesoscutum and scutellum rugose, with irregular rough polygons, covered with sparse appressed rufous hairs; scuto-scutellar suture deep and straight; metanotal bulge deeply bidentate, in lateral aspect dents protruding backwards above midpropodeum; submarginal vein in fore wing with semidecumbent bristles surpassing forewing margin only in basal half of the vein; venal formula 5:12:5, marginals almost point-like, postmarginalis remarkably shortened; tibial spurs long and unusually strong for the genus, spur on midtibia as long as half of basitarsus.

Metasoma broad, only slightly longer than wide; T2 remarkably long, almost 4 times as long as T3, with chains of predominantly longitudinal rugulae; following tergites very narrow, with finer rugulosities; T7 tiny, almost wart-like.

**Male.** Similar to female but differing in antennae which are filiform, A4–A11 almost square, A3 and A12 slightly elongate. Eyes are smaller than in female.

**Variability.** Individuals vary in total body length regardless of sex, from 1.2 mm to 2 mm. Nearctic populations differ from Caribbean, Mexican, and South American ones in having legs (excluding the black coxae) uniformly orange-yellow; Neotropical populations show various degree of darkening of femora. Postmarginalis is generally vague, very short, in some individuals it is clearer than in others. In some South American specimens the crest on vertex is less elevated than in all Nearctic and Caribbean individuals. The arched carina topping the shallow frontal depression is better developed in some, less in other specimens. The two dents of the metanotal bulge vary slightly in general shape. Sculpture of T2 is more distinctly elongate-chained in some larger individuals.

**Biology.** Unknown. Numerous specimens were caught in yellow pan traps in Trinidad (W.I.) indicating that the host (? hemipteron) may lay the eggs near to the ground. However, large numbers of individuals predominantly males were caught in Malaise traps.

**Distribution.** Originally described from St. Vincent (W.I.). The present paper extends its distribution to other localities in the Caribbean, Central and South America, and North America. In the Nearctic it seems restricted to the south-east and midwest of United States, the northernmost point being Long Island (N.Y.). In spite of its wide distribution *G. insulare* is not a common species.

**Material examined.** Arkansas: ♀ Lake Oachita State Park, May 1972, G. Heinrich, Malaise trap (CNC). Florida: ♀ Golden Head Branch State Park, Clay Co., April 21–May 5 1971, G. Heinrich, Malaise trap (CNC). Louisiana: 2 ♂ ♂ Bayou Chicot State Park, Evangeline Co., July 23 and September 29 1971, D. Shanek, Malaise trap (CNC). Missouri: 7 ♀ ♂ Williamsville, April to September, J.T. Becker, Malaise trap (CNC). New
York: 25♀♂ Long Island, Huntington, Kalbfleisch Field Station, July 10–September 7 1962, Malaise tap (AMNH, CNC). North Carolina: ♀ Asheville, June 1 1944, W.E. Joffmann (USNM). Texas: ♀ Uvalde Co., Speir Rch., 3 mi NW Uvalde, May 7 1977, M. Wasbauer, Malaise trap (DFAS); ♀ Uvalde Co., Nueces R., 12 mi S Uvalde, April 30 1977, M. Wasbauer (DFAS). In addition to the above material 63 specimens of *G. insulare* were examined from the following exotic localities: Brazil (6 states), Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico (2 states), Panama, and Trinidad. The lectotype of *Hadronotus insularis* Ashmead (St. Vincent, W.I., USNM) was also examined.

18. *Gryon xanthogaster* (Ashmead)

Fig. 63

1893, *Acolus xanthogaster* Ashmead, Bull. U.S. natn. Mus. 45: 174.
1910, *Psilacolus xanthogaster*: Kieffer, Gen. Ins. 80B: 101.
1926, *Psilacolus xanthogaster*: Kieffer, Das Tierreich 48: 153.
1951, *Acoloides xanthogaster*: Muesebeck and Walkley, *in* C.F.W. Muesebeck *et al.*, Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 696.
1967, *Gryon xanthogaster*: Muesebeck and Masner, *in* K.V. Krombein, B.D. Burks *et al.*, Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.
1968, *Gryon xanthogaster*: Masner and Muesebeck, Bull. U.S. natn. Mus. 270: 37.
1979, *Gryon xanthogaster*: Muesebeck, *in* K.V. Krombein *et al.*, Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

**Female.** Length 0.75 mm. Head and mesosoma black; T1, T2 and S1, S2 bright orange-yellow, T3–T7 gradually darker till dark brown; legs including coxae orange-yellow; scape and funicle yellow, clava dark brown; wings almost clear.

Head transverse, slightly less than twice as wide as long; frontal depression rather deep (dorsal aspect), not margined at sides or above, with distinct transverse ridges; frons along inner orbits and around ocelli distinctly net-like reticulate; vertex almost rounded as hyperoccipital carina not developed angular points fine but distinct, posterior ocellus distant from inner orbit fully by 2 diameters, by at least 3 diameters from anterior ocellus; eyes large, appearing glabrous; clypeus moderately protruding, almost semicircular. anterolateral corners not developed; labrum mostly concealed; palpal formula 2, l; malar groove carinate ventrally; mandibles slender, tridentate; antennae considerably clavate, clava compact, broadly spindle-like and abrupt; A2 considerably longer and larger than A3.

Mesoscutum and scutellum finely but distinctly granulose; granular sculpture tends to change gradually into reticulation in posterior half of scutellum; posterior rim of scutellum with small pits; mesopleural carina sharp and complete, mesopleural depression with horizontal costae; metanotal bulge only moderately projecting medially; posterolateral corners of propodeum not protruding; fore wings slightly surpassing tip of metasoma; submarginal vein straight, not bent or “broken” before joining marginalis, with short bristles moderately surpassing wing margin; venal formula 4:5:6; marginal cilia in lower arc slightly longer than stigmalis.

Metasoma short, sessile, only slightly longer than wide (37:33), not distinctly pointed apically; T1 with fine longitudinal striae; T2 fully twice as long as T3, with distinct net-like reticulation, polygons even and almost circular; T3 with finer reticulation; T7 broadly triangular, with 2 pairs of very long bristles.

**Male** (hitherto unknown). Differs from female principally in structure of antennae. Antennal segments in relative proportions 17:3; 5:3; 5:3; 5:3; 4:5:3; 4:5:3; 4:5:3; 4:5:3; 4:3; 4:3; 8:3. Marginal cilia in lower arc of fore wing slightly shorter than stigmal vein; fore wings greatly surpassing the tip of metasoma.
Variability. *G. xanthogaster* seems to be a rather constant species in both colouration and body structure. Unlike *G. xanthosoma* n. sp., the wings do not vary in length. An indication of a weak hyperoccipital carina may be observed on vertex behind posterior ocelli in some individuals.

Biology. Unknown. Some individuals were caught in soil or pan traps.

Distribution. Described from Washington, D.C. in 1893 but not recovered since. All our specimens come from Florida. However, it seems that the species may be distributed much farther south in the Caribbean and South America.

Material examined. District of Columbia: ♀ (Holotype of Acolus xanthogaster Ashmead) (USNM), June 29 1891, E.A. Schwarz. Florida: 3 ♀ ♂, ♂ Everglades National Park, Jan. 1970, L. Masner, sweeping (CNC); ♀ Sugarloaf Key, Monroe Co., August 9 1971, S.B. Peck Berlese sample, hammock forest (CNC); 2 ♀ ♂, ♂ Big Pine Key, Monroe Co., July 1981, S.B. Peck, Malaise trap, hammock forest (CNC); ♀ Ocala National Forest, Juniper Springs, August 13 1980, L. Masner, sweeping (CNC); ♀ Lake Placid, Archbold Biol. Sta., November 1979, D.F. Hardwick, pan trap (CNC); ♀. 2 ♂ ♂ Th. Roosevelt Preserve nr. Jacksonville, St. John Co., October 13 1980, L. Masner & B. Bowen, sweeping (CNC); ♀. 2 ♀ ♂ Gainesville, Alachua Co., October–November 1975, E.E. Grissell, pan trap (CNC); ♀ Torreya State Park, Liberty Co., October 7 1980, L. Masner & B. Bowen, sweeping (CNC).

Remarks. *G. xanthogaster* and *G. xanthosoma* may be superficially confused with similarly coloured species of the *misellum*-group, such as *misellum* Hal. or *brevipenne* (Harr.). However, the deep frontal depression with transverse ridges and the complete mesopleural carina in the *xanthogaster*-group should clarify the convergence. Individuals of *G. xanthogaster* can be conveniently distinguished from those of *G. xanthosoma* by characters mentioned in the key; and by sculpture of the lower frons which contains almost no longitudinal elements in *G. xanthogaster* but is distinctly longitudinally rugulose in *G. xanthosoma*. Contrary to *G. xanthosoma* the hypostomal line is present in *G. xanthogaster* being formed by a row of scattered cupules.

19. *Gryon xanthosoma* n.sp. Fig. 64

Female. Length 0.85 mm. Xanthic; head dark brown to black, clypeus, labrum, mandibles (except for brown tips), palpi, radicle, A1–A6 golden-yellow, A7–A12 brownish; pleura, entire legs, and metasoma (except for brownish T4–T7) golden-yellow, mesoscutum and scutellum slightly darker, rufo-testaceous; wings slightly infuscate.

Differing from *G. xanthogaster* in the following characters: frontal depression distinctly margined at sides, particularly in the lower part, though marginal keel undulating, becoming blurred at the top of depression, merging here with reticulae on frons; eyes with very short and dense hairs; lower frons (above mandibular base) with distinct longitudinal rugae radiating upwards, merging gradually into reticulation along inner orbits; venal formula 5:5:5; metasoma slightly more elongate (43:33).

Male. Differs from the female by structure of antennae (similar to *xanthogaster*), by stronger lateral margins of frontal depression and by brownish mesonotum and posterior half of T3.

Variability. Mesosoma may be lighter dorsally (orange-yellow) in some females, almost concolorous with metasoma. Wings may be shortened to stumps reaching the base of T2 in females. Frontal depression is generally better margined in males and it is in this sex where it may be almost enclosed. Postmarginal vein tends to be rather vague apically in some individuals, shorter than marginal vein.

Biology. Unknown.

Distribution. Florida, S. Carolina.
Type material. FLORIDA: ♀ (Holotype CNC No. 17017), Ocala National Forest, Juniper Springs, August 13 1980, L. Masner, sweeping; 5 ♀, 4 ♂ (Paratypes, CNC), with same data as in holotype; ♂ (Paratypes, CNC), Highlands Co., Venus, Big Cypress Swamp, December 30 1973, W. Suter, Berlese sample; 2 ♀, 2 ♂ (Paratypes CNC), Alachua Co., Gainesville, March, April, May and November 1975, E.E. Grissell, pan traps; ♂ (Paratype, CNC), Everglades National Park, January 1970, L. Masner, sweeping. S. CAROLINA: ♀, 4 ♂ (Paratypes, CNC), 5 mi W Myrtle Beach, August 15 1980, L. Masner, sweeping.

Remarks. The females of G. xanthosoma occur in two forms, viz. fully winged and brachypterous. This seems to be an unique case among those Nearctic species of Gryon whose members have a well developed frontal depression and rounded clypeus. Members of G. xanthosoma differ from those of G. xanthogaster by being generally more xanthic in the female sex. The females can also be distinguished readily by different shapes of metasoma, the latter being more elongate in members of xanthosoma. The hypostomal line is absent in G. xanthosoma but partly developed in G. xanthogaster. The name of the species refers to xanthic colour of the body.

20. Gryon misellum Haliday

Figs. 37, 62

1833, Gryon misellum Haliday, Ent. Mag. 1: 271.
1834, Teleas pumilio Nees, Hym. Monogr. 2: 288.
1859, Acolus basalis Thomson, Ofv. Ak. Forh. 15: 422.
1859, Acolus opacus Thomson, Ofv. Ak. Forh. 15: 422.
1908, Plastogryon foersteri Kieffer, Ann. Soc. sci. Bruxelles 32: 141.
1908, Plastogryon investis Kieffer, Ann. Soc. sci. Bruxelles 32: 143.
1908, Plastogryon sagax Kieffer, Ann. Soc. sci. Bruxelles 32: 142.
1910, Gryon walkeri Kieffer, in André, Spec. Hym. Eur. Alg. 11: 216.
1926, Plastogryon brevipennis Kieffer (nec Harrington 1899), Das Tierreich 48: 448.

Preoccupied.

1961, Gryon misellus: Masner, Acta Soc. ent. Cechosl. 58: 160–162.
1980a, Gryon misellum: Mineo, Boll. Ist. Ent. agr. Oss. Fitopat. Palermo 10: 197–199.

This species was redescribed and figured by Masner (1961), who also discussed its variability. Mineo (1980a) also discussed the variability and suggested two basic types of individuals depending on extent of the longitudinal striae on T2. I have, however, found all possible intermediates between the two types of sculpture. Concluding from the above evidence I must assume that G. misellum is an unusually variable species. This variability may be partly due to its wide distribution, encompassing virtually the entire Holarctic region. Also, G. misellum is a very common species throughout its entire range, one of the most common scelionids encountered in a wide range of habitats. Although no biological data are available so far we must assume that the host is also a very common insect. Finally, a wide range of hosts is anticipated judging from considerable differences in total body length of populations examined. These factors are believed to influence the gene pools which determine the respective phenotypes.

Surprisingly enough, G. misellum remained unrecognized in North America. The present paper is the first report of this species in America north of Mexico. Rather than repeating Masner’s (1961) redescriptions the following few character states are emphasized to distinguish between Nearctic populations of G. misellum and G. brevipenne. These two semixanthic species might be confused, particularly in their shortwinged forms.

G. misellum. Holopterous specimens with only minute bristles along marginal vein between tegula and marginal vein, bristles decumbent, not surpassing the fore margin of the wing. Brachyptery common in male sex. Hyperoccipital carina not developed above
angular points. Row of foveolae in front of mesopleural suture indistinct or absent. Metapleuron mostly smooth. Head more globose, i.e. less transverse. A5–A11 in males almost as long as wide or even slightly transverse. Generally smaller individuals than in G. brevipenne. Melanic forms occur.

**G. brevipenne.** Holopterous specimens with long semierect bristles along marginal vein between tegula and marginal vein, bristles distinctly surpassing the fore margin of the wing by about half of their length. Brachyptery not observed in male sex. Hyperoccipital carina present as a continuation of the occipital carina, though often weak, particularly in smaller individuals. Row of foveolae in front of mesopleural suture distinct, with deep foveolae. Metapleuron with coriaceous sculpture. Head less globose, i.e. more transverse. A5–A11 in males moderately elongate. Generally larger specimens than in G. missellum. No entirely melanic forms.

**Distribution.** Holarctic species (Masner 1961; Mineo 1980a; present data).

**Material examined.** Numerous individuals were examined from Ontario, Quebec, New Brunswick, Manitoba, and Alberta (CNC). Members were particularly common in late summer and fall. Greatest part of the material was collected in grassy situations, close to the ground, with vacuum devices, pan traps, pitfall traps, but also by sweeping low on vegetation.

**21. Gryon brevipenne** (Harrington)

Fig. 61

1899, Hadronotus brevipennis Harrington, Trans. Roy. Soc. Canada, 5: 188.
1926, Hadronotus brevipennis: Kieffer, Das Tierreich 48: 465.
1951, Hadronotus brevipennis: Muesebeck and Walkley, in Muesebeck et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 704.
1967, Gryon brevipennis: Muesebeck and Masner, in K.V. Krombein, B.D. Burks et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.
1979, Gryon brevipennis: Muesebeck, in, K.V. Krombein et al., Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

**Female.** Length 0.9 mm. Bicoloured; head black, mesosoma dark brown, metasoma mostly orangyellow, with only the posterior third darker; A1–A6 and legs (including coxae) yellowish; wings slightly tinted.

Head semiglobose, moderately transverse (20:33); frontal depression very shallow, unmargined and not differentiated, with fine coriaceous sculpture and with a longitudinal median keel ascending from antennal insertion to midpoint towards anterior ocellus; sculpture of frons along inner orbits with coarser coriaceous sculpture; upper frons, intercellar space, temples, and occiput with almost granular sculpture; vertex rounded; occipital carina entire in its vertical part, not angular on sloping temples but continuing into hyperoccipital carina, horizontal part of occipital carina not developed; hyperoccipital carina fine but complete, crenulate or serrulate (to be viewed from an angle); hypostomal carinae almost absent, hypostomal sulcus shallow to indistinct, directed towards the lower part of occipital carina; hypostomal pits well developed, most of hypostoma coriaceous; temples behind eyes rather wide; posterior ocelli distant from inner orbits by slightly more than a diameter; eyes with dense short hairs; interorbital space as large as eye height; cheeks near mandibular base with very short fan of striae; subocular suture bordered with distinct carina; clypeus prominent, with anterolateral corners divergent; labrum concealed under clypeus; mandibles subtridentate; antennae short, A2 slightly longer than A3, clava moderately abrupt, A12 more than twice as long as A11 (7:3).

Mesosoma slightly longer than high (31:27), moderately arched dorsally; epomial carina rudimentary, merging rather high with anterior margin of pronotum; mesoscutum scaly reticulate; scutellum coriaceous; metanotal bulge distinct and rather prominent, with rough rugulose sculpture;
mesopleural carina incomplete, indicated right above middle coxa and again in front of its merger with the pronotal suture; mesopleuron below mesopleural carina with fine dense rugulose sculpture, above mesopleural carina distinctly concave, depression smooth, with row of deep foveolae along mesopleural suture and a patch of fine rugulose sculpture between mesopleural pit and tegula; metapleuron with rough coriaceous sculpture, metapleural pit large; fore wings shortened, reaching to posterior quarter of T2, venal formula 3:3:7.

Metasoma obovate, moderately longer than wide (47:34); T1 with fine longitudinal striae; T2 distinctly longer than T3 (17:5), with longitudinal sculpture in median sector, with striae reaching to about middle of the tergite, otherwise coriaceous; T3-T7 with delicate coriaceous sculpture.

**Male.** Differs from the female mainly in structure of antennae. A5–A11 moderately elongate (5.5:3.5), with dense hairs, the hairs longer than half of the width of the respective antennomeres; wings fully developed, distinctly surpassing tip of metasoma, venal formula 5:11:26; submarginal vein between tegula and marginal vein with semierect bristles distinctly surpassing the fore margin of the wing.

**Variability.** The most conspicuous variation in this species is in the length of wings. While all males examined are holopterous, most females are brachypterous, with fore wings reaching to about middle of T2. The total body length also varies; dwarf individuals usually show finer sculpturing, the hyperoccipital carina less distinct, etc. Colour of the metasoma seems to be reasonably constant, also the legs and antennae show minimum colour variation. There seem to be no totally melanic individuals (contrary to *G. misellum*). The degree of striation on T2 varies considerably, from short striae along the anteromedian sector to striation reaching at meson almost to the posterior margin of the tergite.

**Biology.** Unknown, however the host is presumed to be a very common heteropteron, most probably a lygaeid or largid bug.

**Distribution.** A very common species in the northeastern part of North America.

**Material examined.** Quebec: ♂ (Lectotype of *Hadronotus brevipennis* Harrington, CNC No. 2523, hereby selected), Hull, August 2 1897 (♀ Harrington), 14 ♀, 2 ♂ paralectotypes (present selection) from the type series, with data as in the lectotype (CNC No. 2523); numerous ♀, ♂, G. Gibson, pan trap near Hull, October 1969 (♀ Harrington). Ontario: 4 ♀, 2 ♂ Crow Lake, Marmora area, August 1959, L.K. Smith (CNC); 2 ♀, 2 ♂ Constance Bay, July 1973, G. Gibson, pan trap; ♀ nr. Kemptville, May 1974, C.C. Loan, pan trap (CNC); ♂ Innisville, September 1968, W.R. Mason, Malaise trap (CNC); N.W.T.: ♀, ♂ Martin River, August 1972 (♀ Harrington). Tennessee: ♂ Lexington, Natchez Trace S.P. June 1972, G. Heinrich, Malaise trap (CNC).

**Remarks.** *G. brevipenne* together with *G. misellum* form a subgroup within the *misellum*-group. Members are characterized by subtridentate mandibles and a partly xanthic metasoma. Smaller brachypterous individuals of *G. brevipenne* may be confused with those of *G. misellum* in that the hyperoccipital carina is not well developed.

22. **Gryon parkeri** (Fouts)

Figs. 26, 28, 30, 38, 60

1920, *Hadronotus parkeri* Fouts, Proc. ent. Soc. Washington 22: 64.
1951, *Hadronotus parkeri*: Musebeck and Walkley, in C.F.W. Musebeck et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 705.
1967, *Gryon parkeri*: Musebeck and Masner, in K.V. Krombein, B.D. Burks et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.
1968, *Gryon parkeri*: Masner and Musebeck, Bull. U.S. natn. Mus., 270: 36.
1979, *Gryon parkeri*: Muesebeck, in K.V. Krombein et al., Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

1980a, *Gryon parkeri*: Mineo, Boll. Ist. Ent. agr. Oss. Fitopat. Palermo 10: 198 (proposed synonymy with *G. misellum* Hal.).

**Female.** Length 0.9 mm. Black. Legs mostly yellowish brown, coxae dark brown, femora darker than tibiae; radicle and base of scape distinctly lighter than the dark brown rest of scape and antenna; wings clear.

Head transverse, twice as wide as long; frontal depression very shallow (dorsal aspect), not margined, finely coriaceous; frons along inner orbits and around ocelli with coriaceous-reticulate sculpture, with no rough elements; vertex rounded, separate from occiput by delicate yet distinct hyperoccipital carina; posterior ocelli distant from inner orbits by one diameter; eyes with only minute scattered hairs; clypeus prominent, anterolateral corners acute, more developed than in *largi*; labrum concealed under clypeus; mandibles generally shorter and stouter than in *largi*, deeply bidentate, teeth almost equal; antennae short, A4–A12 transverse, club not too abrupt.

Mesosoma moderately arched if viewed laterally; mesoscutum appearing scaly reticulate-punctate, the “punctures” being actually minute cupules (210×, Fig. 30); scutellum with very fine coriaceous sculpture; bulge of metanotum moderately protruding; fore wings slightly surpassing the tip of metasoma; submarginal vein not distinctly “broken” in front of marginalis, with short semidecumbent bristles hardly surpassing wing margin (in proximal part of the vein); marginal cilia rather long but shorter than stigmalis; venal formula 3:7:15.

Metasoma rather flat, only slightly longer than wide, obtuse apically; T2 more than twice as long as T3, with longitudinal striae anteromedially and reticulation laterally and posteriorly; T3 and following tergites with much finer reticulation than in T2.

**Male.** Differing from female only in antennal structure.

**Variability.** The colour of legs varies from almost entirely dirty yellow to predominantly brown. Individuals from the South tend to be lighter, even the colour of body may be lighter, chestnut brown. Specimens from alcohol and old museum material may be lighter also. Hyperoccipital carina is less developed in some individuals, better developed in others. Striae on T2 are longer in some individuals reaching up to two thirds of tergite.

**Biology.** Reared from eggs of *Lygaeus kalmii* Stål and *Oncopeltus fasciatus* (Dallas) (Heteroptera: Lygaeidae) (Kenaga 1944). Adults often swept from milkweed (*Asclepias*).

**Distribution.** Probably a widely distributed species but so far known from relatively scattered places in USA and Canada.

**Material examined.** **Colorado:**♀ Doolittle Ranch, Mt. Evans, 3200 m, S.M. Clark (CNC). **Maryland:**♀ (Holotype of *Hadronotus parkeri* Fouts) and 4♀♂ (Paratypes), Hagerstown, September 15 1916, H.L. Parker (USNM). **Michigan:** 13♀♂ Midland, September 11 1942, E.E. Kenaga, ex eggs of *Oncopeltus fasciatus* (det. C.F.W. Muesebeck) (USNM). **Missouri:** 5♀♀ Webster Groves, December 19 1947, J.M. Mayner, ex eggs of *Oncopeltus fasciatus* (det. C.F.W. Muesebeck) (USNM). **New Mexico:**♀ Las Vegas, November 8 (? year), H.S. Barber (USNM). **New York:** 27♀♂ Ithaca, May 1957, H.E. Evans, ex eggs of *Oncopeltus fasciatus* (det. C.F.W. Muesebeck) (USNM and Cornell). **Ontario:** 3♀♂, 2♂♀ Ottawa, July—September 1975, L. Masner (CNC); 2♀♂ Grenadier Is., St. Lawrence Islands National Park, July 15 1975, L. Masner (CNC); 3♀♀ Belleville, July 31 1962, A.L. Turnbull, pitfall trap (CNC). **Pennsylvania:** 3♀♀ Fallsington, October 8 1949, C.A. Weigel, ex eggs of *Oncopeltus fasciatus* (det. C.F.W. Muesebeck) (USNM). **Texas:**♀ Big Bend National Park, Santa Elena Canyon, 700 m, May 9 1959, W.R. Mason (CNC);♀ Davis Mts., Point of Rocks, May 30 1959, W.R. Mason (CNC).

**Remarks.** Mineo (1980a) considers *G. parkeri* a junior synonym of *G. misellum*. In my opinion the two species can be conveniently distinguished by differences in mandibular
structure, distinctly bidentate in *G. parkeri* (Fig. 28) and subtridentate in *G. misellum* (cf. Mineo 1980a: 191, fig. 5). Furthermore, individuals of *G. parkeri* are always entirely melanin, whereas the majority of individuals in *G. misellum* have a partly xanthic metasoma. The two species can also be distinguished by sculpture of the mesoscutum (cf. *G. parkeri*, Fig. 30) and by the development of hyperoccipital carina.

23. *Gryon largi* (Ashmead)

Figs. 14, 18, 27, 59

1893, *Hadronotus largi* Ashmead, Bull. U.S. natn. Mus. 45: 230, 231.
1926, *Hadronotus largi*: Kieffer, Das Tierreich, 48: 462.
1951, *Hadronotus largi*: Muesebeck and Walkley, in C.F.W. Muesebeck et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 705.
1967, *Gryon largi*: Muesebeck and Masner, in K.V. Krombein, B.D. Burks et al., Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.
1968, *Gryon largi*: Masner and Muesebeck, Bull. U.S. natn. Mus. 270: 35.
1979, *Gryon largi*: Muesebeck, in K.V. Krombein et al., Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158. Smithsonian Inst. Press, Washington, D.C.
1980a, *Gryon largi*: Mineo, Boll. Ist. Ent. agr. Oss. Fitopat. Palermo 10: 199.

**Female.** Length 1.2 mm. Black. Legs (except for brown coxae), scape, and mandibles yellowish brown; A2–A12 brown; wings clear.

Head slightly more than twice as wide as long; frontal depression not developed (in both dorsal and frontal aspects), frons medially with keel running up from antennal insertion to midway between the insertion and anterior ocellus; area around this keel smooth and virtually without sculpture, further on frons with fine coriaceous sculpture which becomes rather rugose particularly along inner orbits; vertex between ocelli at first coriaceous then becoming rugose in front of hyperoccipital carina; vertex rounded but separated from occiput by fine but distinct hyperoccipital carina which runs uninterrupted down into occipital carina and this further to base of mandibles; angular points not developed; posterior ocelli distant from inner orbits by one diameter; eyes distinctly hairy; malar groove replaced by strong carina; clypeus prominent but less so than in *G. parkeri*, with anterolateral corners rather blunt; labrum concealed under clypeus; mandibles rather long and slender, deeply bidentate, teeth almost equal; antennal club starts rather abruptly as A6 is distinctly smaller than A7.

Mesosoma in lateral aspect only slightly arched; anterior half of mesoscutum finely coriaceous-punctate, posterior half with distinct longitudinal ridges; scutellum evenly coriaceous, with row of deep foveolae along its posterior rim; bulge of metanotum moderately protruding; fore wing slightly surpassing the tip of metasoma, marginal cilia rather long but distinctly shorter than stigmal vein; submarginal vein with a few semidecumbent bristles slightly surpassing fore margin of wing in its basal half, less in the distal half; submarginalis slightly “broken” in front of marginalis; venal formula 3:10:15.

Metasoma rather flat, moderately elongate (63:50), obtuse apically; T2 fully twice as long as T3, with distinct longitudinal striation reaching medially almost to posterior margin, otherwise finely reticulate, particularly at sides; T3 and following tergites with similar but generally finer reticulation than in T2.

**Male.** Differing from female by following characters. Legs generally shorter and stouter, in particular middle basitarsi remarkably shortened; scape and flagellum concolorous, light chestnut brown, flagellum remarkably short and stout, A6–A12 strongly transverse.

**Variability.** There seems to be a slight difference between the eastern and western individuals. Eastern specimens tend to have eyes more distinctly hairy, sculpture of frons coarser and the longitudinal sculpture in posterior half of mesoscutum more distinct than the specimens from California. Whether this really reflects geographic distribution or mere
individual variability can be determined only when more material is available. The species is otherwise relatively constant both structurally and chromatically.

**Biology.** Reared from eggs of *Largus succinctus* (L.) and *L. convivus* Stål (Heteroptera: Largidae).

**Distribution.** The species is sparse but widely distributed from coast to coast in southern United States.

**Material examined.**
- Arizona: 14 ♀ ♂ Chiricahua Mts., Cochise Co., South Western Research Station nr. Portal, July–August 1965, V. Roth (AMNH, CNC); 4 ♀ ♂ as above but caught August 16–17 1978, M. Wasbauer, Malaise trap (DFAS).
- California: ♀ (Lectotype of *Hadronotus largi* Ashmead) and 7 ♀ ♂ (Paralectotypes), Los Angeles, ex eggs of *Largus succinctus* (L.) (USNM); 15 ♀ ♂ Santa Barbara, 1967, J.C. Allen, ex eggs of *Largus convivus* Stål (det. P. Marsh) (USNM); ♀ Borego, San Diego Co., Sheep Canyon, April 27 1955, R.O. Schuster (UCD); ♀ San Diego Co., Warner Springs, Agua Caliente Cr., elev. 3100′, August 23–25 1980, M. Wasbauer, Malaise trap (DFAS); 2 ♀ ♂ Placer Co., 4 mi S. Rocklin, May 29 1980, P. Adams, Malaise trap (DFAS); ♀ Fresno Co., 2 mi N. Tollhouse, A. Gilbert, November 28 1977, ex *Ceanothus* duff (DFAS).
- Georgia: 5 ♀ ♂ Forsyth, May–July 1970 and 1971, F. Naumann, Malaise trap (CNC).
- Louisiana: ♂ Natchitoches, June 8–19 1971, G. Heinrich, Malaise trap (CNC); ♀ Bayou Chicot, Evangeline Co., May 15–June 1 1971, D. Shanek, Malaise trap (CNC).
- Missouri: 3 ♀ ♂, ♂ Williamsville, June–August 1969, T.J. Becker, Malaise trap (CNC).
- Tennessee: 2 ♀ ♂ Lexington, Natchez Trace St. Park, June 9–15 1972, G. Heinrich, Malaise trap (CNC).

### 24. Gryon myrmecophilum (Ashmead)

**Figs. 25, 39, 40a-c, 65**

1893, *Hadronotus myrmecophilus* Ashmead, Bull. U.S. natn. Mus. 45: 230, 232.

1926, *Hadronotus myrmecophilus*: Kieffer, Das Tierreich 48: 462, 463.

1951, *Hadronotus myrmecophilus*: Muesebeck and Walkley, in C.F.W. Muesebeck *et al.*, Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 705.

1967, *Gryon myrmecophilus*: Muesebeck and Masner, in K.V. Krombein, B.D. Burks *et al.*, Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2, 2nd suppl., p. 299.

1968, *Gryon myrmecophilus*: Masner and Muesebeck, Bull. U.S. natn. Mus. 270: 36.

1979, *Gryon myrmecophilus*: Muesebeck, in K.V. Krombein *et al.*, Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

**Female** (hitherto unknown). Length 1.1 mm. Black. Legs (except for brown coxae) bright yellow, mandibles, radicle, scape and ventral side of A2–A8, orange-yellow, rest of antennae brown; wings slightly infuscate.

Head slightly more than twice as wide as long; frontal depression moderately deep but un-margined, with fine oblique aciculation; distinct keel running up from antennal insertion almost to anterior ocellus; cheeks near mandibular base with indication of a fine fan of striae, otherwise finely coriaceous- punctate, the same sculpture prevailing on frons along inner orbits and on vertex around ocelli; vertex behind posterior ocelli with fine but distinct hyperoccipital carina, hence occiput falling off abruptly; posterior ocelli relatively small, distant from inner orbits by more than 1 diameter; eyes large, appearing glabrous; clypeus snout-like prominent, anterolateral corners acute; labrum almost completely concealed under clypeus; mandibles large and strong, deeply bidentate, teeth almost equal; antennal club not too strong and not abrupt.

Mesosoma remarkably short and high; mesoscutum and scutellum with fine scaly-coriaceous sculpture which under high magnification (160×) appears imbricate with pointed apices; scuto-
scutellar suture rather fine; scutellum rather flattened, relatively large, only slightly shorter than mesoscutum, in profile distinctly overlapping metanotum and propodeum; metanotum concealed under posterior edge of scutellum, bulge flat and not prominent; wings not distinctly surpassing tip of metasoma, marginal cilia long, longer than stigmatic vein; submarginal vein with only short bristles not surpassing wing margin indistinctly down curved before marginalis; venal formula 2:6:15.

Metasoma short, only slightly longer than wide (60:50), obtuse apically; T1 with distinct longitudinal striae (except for extreme sides) leaving posterior margin of the tergite smooth and shining; T2 more than twice as long as T3, reticulate-rugose, with distinct longitudinal elements in anterior half, with imbricate sculpture at sides and a narrow smooth band along posterior margin; following tergites with delicate reticulate sculpture and smooth posterior margins; 2 pairs of very long bristles on T7.

**Male.** Differing from female in structure of antennae, furthermore lateral ocelli distant from inner orbits by about 2 diameters and eyes with submicroscopic short scattered hairs.

**Variability.** This is a fairly variable species. Colour of legs and scape is usually much darker in northern (Canadian) specimens, being light brown or brownish yellow. Wings may be more infuscate in some specimens, almost clear in others; also the veins may be both darker and paler depending on infuscation of the wings. Head may be slightly less transverse in some populations, particularly in small individuals. Metasoma may be as long as wide or even slightly transverse; T2 may be almost evenly net-like reticulate, with no longitudinal elements. The marginal cilia along the apex of fore wing can be easily broken and hence, are either incomplete or entirely absent in some individuals.

**Biology.** The name of the species was ill chosen, the unique holotype was accidentally found in an ant nest. The species was later reared from eggs of *Alydus eurinus* (Say) (Alydidae). Individuals are also obtained on or in the soil by pan traps, pitfall traps, vacuum cleaning, or Berlese funnels.

**Distribution.** Described from Virginia and reported also from Louisiana (Muesebeck and Walkley 1951) it turns out to be a widely distributed species in North America.

**Material examined.** Alberta: 2♂ ♂ Oldman River nr. Lethbridge, July 9–11 1973, O. Peck (CNC); 2♂ ♂ Scandia, July 9 1959, O. Peck (CNC); 2♂ ♂ Gilchrist Ranch, Aden, June 28 1956, O. Peck (CNC). Arizona: 8 ♀ ♂ Patagonia, April 17 1949 (USNM). California: ♂ San Jacinto, Riverside Co., September 26 1959, E.I. Schlinger, vacuum cleaner in alfalfa field (USNM); 5 ♀ ♂ Fresno Co., 2 mi N. Tollhouse A. Gilbert, November 28 1977, ex *Ceanothus* duff (DFAS). Florida: ♂ Gainesville, Alachua Co., March 15–21 1975, E.E. Grissell, pan trap (CNC). Louisiana: 25 ♀ ♂ Baton Rouge, 1924, ex eggs of *Alydus eurinus* (Say), C.E. Smith (USNM). Manitoba: 3 ♀ ♂ Ft. Whyte, October 10 1974, C.W. Aitchison (CNC). Maryland: 6 ♀ ♂ Laurel, Patuxent Wildlife Centre, May–June, Malaise trap (CNC). Michigan: 2♂ ♂ Edwin S. George Reserve, Livingston Co., September 12–13 1973, G. Gibson (CNC). Missouri: ♂ Williamsville, September 25 1969, T.J. Becker, Malaise trap (CNC). Ontario: 7 ♂ ♀, nr. Belleville, August to October 1967, C.D. Dondale, meadow floor vacuum (CNC). Quebec: 3 ♀ ♂ Hull, July 1965, Malaise trap (CNC). Saskatchewan: 3 ♀ ♂ Fife Lake, July 9–11 1973, L. Masner (CNC). Texas: 3 ♀ Bangs, June 8 1938, peach orchard, Christenson No. 10341 (USNM). Virginia: ♂ (Holotype of *Hadronotus myrmecophilus* Ashmead) Arlington (USNM).

25. **Gryon triangulum** n. sp.

Very similar to *G. myrmecophilum* (Ashm.) from which it differs mainly by the shape of scutellum and some minor characters listed below. Possibly a variety or subspecies of the latter species which is fairly variable.

**Female.** Length 1.5 mm. Black; legs and scape orange-yellow, rest of antennae brown; wings almost clear.
Head slightly less than 3 times as wide as long; posterior ocelli minute, distant from inner orbits by at least 2 full diameters; eyes appearing glabrous, but under high magnification (160 X) with minute scattered hairs.

Scutellum in dorsal aspect subtriangular, its posterior margin tapering into a tiny point; in lateral aspect posterior margin of scutellum not rounded but blade-like sharp, distinctly surpassing metanotum; submarginal vein in fore wing straight, not downcurved in front of marginalis; venal formula 5:7:5, with postmarginal vein vague.

**Male.** Differing from female only in structure of antennae.

**Variability.** Venal formula is sometimes difficult to observe as the veins are generally rather pale.

**Biology.** Unknown.

**Distribution.** Probably same range as *G. myrmecophilum* but the members are more rare.

**Type material.** Holotype ♀ Williamsville (MISSOURI), June 1971, J.T. Becker, Malaise trap (CNC No. 17018). Allotype ♂ Fife Lake (SASKATCHEWAN), July 9–11 1973, L. Masner (CNC). Paratypes: GEORGIA: ♀ Forsyth, August 27 1970, F.T. Naumann, Malaise trap (CNC); ONTARIO: ♀ nr. Belleville, June 1964, C.D. Dondale, vacuum cleaner (meadow) (CNC); ♀ nr. Belleville, August 31 1962, A. Turnbull, pitfall trap (CNC).

**Remarks.** The species name refers to the shape of scutellum.

**26. Gryon coracinum** (Fouts)

Fig. 66

1927, *Synteleia coracina* Fouts, Proc. Ent. Soc. Wash. 29: 178.
1951, *Synteleia coracina*: Muesebeck and Walkley, in Muesebeck *et al.*, Hymenoptera of America north of Mexico, Synoptic Catalog, USDA, Agriculture Monogr. 2: 706.
1956, *Synteleia coracina*: Muesebeck and Walkley, Proc. U.S. natn. Mus. 105: 401.
1967, *Gryon coracinus*: Masner and Muesebeck, in K.V. Krombein and B.D. Burks, Hymenoptera of America north of Mexico, Synoptic Catalog, Agriculture Monogr. 2, 2nd suppl., p. 299.
1968, *Gryon coracinus*: Masner and Muesebeck, Bull. U.S. natn. Mus. 270: 34.
1979, *Gryon coracinus*: Muesebeck, in K.V. Krombein *et al.*, Catalog of Hymenoptera in America North of Mexico, Vol. 1: 1158, Smithsonian Inst. Press, Washington, D.C.

**Female.** Length 1.5 mm. Black; legs (except for dark brown coxae), and scape yellowish brown, A2–A12 and mandibles light brown; wings transparent, with whitish microtrichia.

Head moderately transverse (25:50), in dorsal view semiglobose; frontal depression very shallow, unmarginated, with very fine coriaceous sculpture; distinct keel rearing up from antennal insertion almost to anterior ocellus; cheeks near mandibular base with fine short fan of striae, otherwise finely coriaceous-punctate, the same sculpture prevailing on frons along inner orbits and on vertex in the interocellar space; vertical part of occipital carina fine but sharp and continuing directly into hyperoccipital carina, horizontal part of occipital carina not developed, postoccipital carina absent; hyperocippital carina sharp, running across behind posterior ocelli; temples between hyperocippital carina and posterior orbits extremely narrow; hypostomal carina delicate, directed towards mandibular base; hypostomal pits present; posterior ocelli distant from inner orbits by half diameter; eyes glabrous; interorbital space larger than eye height (30:26); anterolateral corners of clypeus almost spike-like divergent; mandibles short and strong, deeply bidentate, with equal teeth; antennal club rather slender, not too abrupt.

Mesosoma slightly longer than high, rather flattened dorsally; epomial carina on pronotum not developed; mesoscutum and scutellum with fine scaly-reticulate sculpture, posterior half of scutellum with granular sculpture; scutellum wider than long (30:20), with posterior margin rounded (dorsal
view), with sharp rim overlapping metanotum (lateral view); metanotum concealed under scutellar rim, with no bulge medially; propodeum posterolaterally with sharp rims; mesopleural carina complete but rather fine; mesopleural depression moderately deep, with distinct mesopleural pit; fore wings not surpassing the tip of metasoma, reaching to posterior margin of T6; veins very pale, venal formula 3:6:13.

Metasoma distinctly elongate, almost twice as long as wide; tergites in relative proportions 14:43; 30:44; 12:39; 9:31; 7:26; 5:19; 7:12; T1 mostly with strong longitudinal costae; T2 medially with longitudinal rugae almost to posterior margin of the tergite, lateral parts of T2 net-like reticulate; T3–T7 finely coriaceous anteriorly, with narrow smooth band near posterior margin.

**Male.** Unknown.

**Variability.** The longitudinal rugae on T2 may be less developed in some individuals. A pair of slight humps may be observed in the middle of mesoscutum in other specimens.

**Biology.** Unknown.

**Distribution.** Texas, New Mexico, Nebraska, California.

**Material examined.** California: ♂ Rancho Santa Fe, San Diego Co., April 17 1959, E.I. Schlinger, vacuum cleaner in alfalfa field (USNM); ♂ Riverside Co., 12 mi SE Valle Vista, Bautista Canyon, January 30 1977, K.W. Cooper, Berlese Neotoma nest (DFAS). Nebraska: 4♀ ♂ Halsey, July 22 1957, J. Henzlik (USNM). New Mexico: 2♀ ♂ Valencia Co., 20 mi W Los Lunas, Carizzo Arroyo, August 1–23 1977, S.B. Peck, Malaise trap along stream (CNC). Texas: ♂ Waco, July 13 1949, P.A. Glick, on cotton (USNM).

**Remarks.** *G. coracinum* seems to be closely related to the European *G. szelenyii* (Szabo) or even conspecific with the latter; however, the type of *szelenyii* was not available for examination. *G. coracinum* represents the more elongate members in the myrmecophilum-group for which Fouts (1927) and Szabo (1966) proposed the generic names *Synteleia* and *Pannongryon* respectively.

### 27. Gryon elatior n. sp.

**Male.** Length 1.0 mm. Black; coxae dark brown, legs light brown to yellowish brown, with trochanters and apices of femora lighter, tibiae and tarsi yellowish; scape yellowish brown basally, darker apically, A2–A12 dark brown; metasoma dark chestnut brown; fore wings considerably infuscate around the marginal-stigmal-postmarginal veins.

Closely related to *G. coracinum* from which it differs in following character states. Posterior ocelli distant from inner orbits by 1½ diameters; A6–A11 slightly transverse (3.5:4.5); T2 with only very short costae along anterior margin, otherwise regularly net-like reticulate in the median sector, with fine coriaceous sculpture along both sides.

**Female.** Unknown.

**Variability.** No substantial variation encountered in the type series.

**Biology.** Unknown.

**Distribution.** Ontario, Michigan, Florida.

**Type material.** Holotype ♂ Constance Bay (ONTARIO), July 13–20 1973, L. Masner, pan trap (CNC No. 17019). Paratypes: FLORIDA: ♂ Gainesville, Alachua Co., March 15–21 1975, E.E. Grissell, pan trap (CNC); MICHIGAN: ♂ Edwin S. George Reserve, Livingston Co., September 13 1973, G. Gibson (CNC).

**Remarks.** *G. elatior* may be conveniently distinguished from the other two members of the *myrmecophilum*-group, viz. *myrmecophilum* and *triangulum*, by distinctly elongate body, less transverse head and lack of longitudinal sculpturing on T2. It may be distinguished from *G. coracinum* at once by reticulated T2 and distinct infuscation of fore wing around marginal-postmarginal veins. The species name refers to the elongate shape of the body.
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