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CYDNIDAE OF THE WESTERN HEMISPHERE

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Introduction

The group of hemipterous insects treated here as a full family, the Cydnidae, exhibits definite pentatomoid affinities, even though a few of the genera possess only four segments in their antennae. This relationship has long been recognized and acknowledged, but the features separating the cydnids from the other pentatomoids have been accorded varying importance by different authors. Some workers contend that the pentatomoids comprise a single family with many subfamilies, thus according the cydnids subfamily rank under the Pentatomidae; others express the belief that the present group and the corimelaenid bugs deserve to be united into a single family, the Cydnidae or Corimelaenidae according to the authority accepted, while still others contend that even this arrangement is unsatisfactory and that each of these two groups are properly given full family status.

A clear-cut definition of the Cydnidae in the restricted sense, as now generally accepted and used here, is not easy to formulate. McAtee and Malloch (1931, p. 194) listed several features which they con-

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sidered to set the cydnid and corimelaenid bugs apart from the other Pentatomoidea, as follows:²

. . . the presence of fringes of closely set, stiff, bristles at the apices of the mid and hind coxae and the spiracles of the second abdominal segment being in a membranous strip of the sternite, not in the heavily sclerotized portion. Members of these two subfamilies have tri-segmented tarsi, and distinct tibial bristles, and, with the exception of the *Sehirini*, have the trichobothria longitudinally arranged often nearly in line with the spiracles. The trichobothria, or delicate, pale, sensory hairs (which must not be confused with the strong, dark, lateral bristles which are frequently present) are two in number on each side of all sternites and in the other subfamilies of the Pentatomidae are arranged transversely, or nearly so, behind the spiracles.

Disregarding the corimelaenids which McAtee and Malloch (loc. cit.) adequately separated from the cydnids on the basis of the greater claval exposure and the absence of "an area of smooth chitin behind the eyes on the ventral surface of the head," the results of the present study agree with most of those statements. They confirm McAtee and Malloch's observations in the presence of the apical fringe of bristles on the middle and hind coxae, the presence of the distinct tibial bristles, the 3-segmented tarsi (except in *Scaptocoris* where the hind legs lack tarsi) and the location of the spiracle of the second abdominal segment. In contrast, the present results show that the description of the trichobothrial arrangement is not true for all genera in the Cydnidae. McAtee and Malloch apparently followed Tullgren (1918) concerning the location of these structures in Cydnidae. Tullgren's choice of two genera for study was unfortunate because both of them (*Sehirus* and *Gnathoconus*) were members of the subfamily *Sehirinae*, which agrees with the other pentatomoids in arrangement of these structures. Had he examined genera other than those in the *Sehirinae* he would have found that other trichobothrial patterns exist in the family. I have noticed that four additional arrangements occur in the family, so that it is possible to divide the Cydnidae into five subfamilies on the basis of the trichobothria. Further discussion of these subfamilies based on the trichobothria and supporting characters will be found in the discussion under the family heading on a later page.

Thus, for differentiation of the Cydnidae from all other pentatomoids (except the corimelaenids which were separated above) there are four distinguishing features. Of these, the 3-segmented tarsus is least diagnostic because it is shared with nearly all other pentatomoids. The possession of distinct tibial bristles is shared with a few true Pentatomidae (i.e., *Strachia* in the subfamily *Asopinae*), but if this condition is restricted to a consideration of the lateral marginal row of stout spines on the more or less flattened anterior tibia it may be

²The parenthetical references to illustrations in the original have been omitted from this quotation.

considered diagnostic of all genera except *Scaptocoris* and the extralimital genus *Stibaropus*. The presence of a fringe of close-set bristles on the apices of the middle and posterior coxae and the location of the spiracle in the membranous anterior part of the second sternite are nearly unique within this superfamily, being shared only with the corimelaenids. As brought out later in this paper, the leg armature may be simply an adaptive feature for the fossorial habits of these insects and not at all an indicator of phylogenetic relationships. This character shows considerable variation from genus to genus. The same criticism may be valid for the coxal bristles, which are present only on the ventral or exposed side of the structure where they may be functional in preventing sand and grit from entering the articulation during burrowing. Therefore, even though these features furnish good recognition characters their actual value as indicators of phylogeny within the Pentatomoidea is open to question. This uncertainty in accepting proposed characters for separation of the groups included in the Pentatomoidea once again emphasizes the need for a very thorough study of the higher classification of the group. Until such a study is carried on by someone with access to collections containing goodly representation of all parts of the Pentatomoidea, I feel free to follow my usual tendency to be a "splitter" at the family level when the breaks in the morphology and biology of the groups permit a distinct and independent biologic-taxonomic concept to be formed.

The problems in the classification of this group have not been confined to the family level. Instead, they are evident at all levels. Previously only two subfamilies have been recognized, whereas at least five are strongly evident in the material at hand.

Most authors have considered the genera from one of two extremes—either with the idea that any prominent or unusual feature (regardless of its value as a phylogenetic indicator) automatically serves for the establishment of a genus, or, from the other extreme, that the limits of previously erected genera must constantly be expanded to take in new forms that appear regardless of the relationships of the species involved. The former approach has resulted in too many monotypic genera (i.e., *Colobophrys* Horváth, *Cryptoporus* Uhler, *Pachymeroides* Signoret, *Psectrocephalus* Van Duzee and *Syllobus* Signoret to mention some from the Western Hemisphere) as characters of no more than specific value often have been used, while the second method has resulted in a few "catch-all" genera (i.e., *Aethus* and *Geotomus* as accepted by most recent authors) that have worldwide distribution and consequently little or no zoogeographic significance. I believe that if a genus is to consist of a group of "closely related" species, consideration must be given not only to the characters which

separate the species but also to those which two or more species may have in common. This approach appears to be establishing a series of genera that are not only composed of "closely related" species but that also have restricted ranges of some zoogeographical significance.

At the species level there has been much confusion and great uncertainty concerning the application of trivial names. In great part this uncertainty has been due to the fragmentary and at times inaccurate original descriptions, and in part to the assignment of forms to the wrong genus. Many of the keys that have appeared have been drawn from misdetermined material and so could only lead to further error. Even some of America's outstanding hemipterists have been inconsistent in their assignments of names so that in the material available for study some species were determined first as one thing and later as another by the same worker. This point is brought up not to condemn the work of these men, but simply to show that even careful students were confused by the literature. Probably the most misused name in the cydnid literature of the Western Hemisphere was Uhler's *Pangaeus discrepans*. It was found attached to no less than six distinct species in three different genera, while specimens of true *discrepans* were found under three other names as well as the proper one. The most accurate determinations appear to have been made on those species which could be placed chiefly on distribution and with a minimum of morphological characters. With the literature and the work of specialists leading to such muddled results, the group has been in dire need of a thorough revision.

The present study is a revision of the known species of all included genera except *Sehirus*, of which only 1 of the 24 or more nominal species occurs in the Western Hemisphere.

The specific descriptions include the mean and extremes of measurements, in millimeters, from five individuals of each sex unless otherwise indicated. The color, unless otherwise stated, may be assumed to be the usual brownish black to black (yellow or light brown in teneral specimens) without conspicuous or important markings. The following abbreviations are used to indicate the collections in which specimens are housed.

AmN: American Museum of Natural History

Bon: F. Bonet

BrM: British Museum (Natural History)

CalAc: California Academy of Sciences

Cap: J. M. Capriles

Car: Carnegie Museum

Carv: J. C. M. Carvalho

CIS: California Insect Survey

Copen: Universitetets Zoologiske Museum, Copenhagen

HMH: H. M. Harris

Hung: Musée d'Histoire Naturelle de la Hongrie

Ind: University of Indiana

JAS: J. A. Slater	Pur: Purdue University
JCL: J. C. Lutz	RCF: R. C. Froeschner
KU: University of Kansas	RFH: R. F. Hussey
LAMus: Los Angeles County Museum	Rijks: Rijks Museum van Natuurlijke Historie
MassU: University of Massachusetts	RLU: R. L. Usinger
McC: A. T. McClay	Stock: Naturhistoriska Riksmuseum
MCZ: Museum of Comparative Zoology	UnivNac: Universidad Nacional de La Plata
Mex: Dirección General de Agricultura	UnivTuc: Universidad Nacional de Tucumán
MMZ: University of Michigan Museum of Zoology	USNM: U. S. National Museum
OxUniv: Oxford University	Wien: Naturhistorisches Museum
Pel: D. Pelaez	

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Review of the Literature

The written history of this group began in 1803 with Fabricius' description of the genus *Cydnus*, despite the fact that some of the species had been described previously by Fabricius and Linnaeus in the latter's inclusive genus *Cimex*. *Cydnus* originally contained 15 species, of which several (including the American species *lugens* and *umbraculatus*) have subsequently been shown to be noncydnids. In 1820 Billberg gave the first suprageneric recognition of the group when he referred to it as the "Cydnides." This event has generally been conceded to mark the historical beginning of the family name.

The subsequent literature was mostly of a descriptive or listing nature with few efforts at revisionary or synoptic work. Of the latter, the important ones for cydnid studies in the Western Hemisphere began with Amyot and Serville's (1843) foundation for the modern systematics of hemipterology in their "Histoire Naturelle des Insectes, Hémiptères." The work appears quite sound in assembling and presenting a table to the known genera (eight of them new) of the world. The genera, which in definition and extent seem quite modern, were further arranged into two "Groupes" or subfamilies, the "Cydnides" and the "Sehirides." The soundness of these two categories is confirmed by their almost universal use by subsequent authors. The next important works with a world scope were the catalogs of Dallas (1851) and Walker (1867, 1868³). Except for Dallas' table to the known genera, both of these works were enumerations with descriptions of new forms.

During this latter period, 1851-1867, exclusively American studies began to appear. These started with Stål's studies, one on the Brazilian forms (1860) and one on the Mexican forms (1862). These

³ In this paper Walker described as a Cydnidae the new genus and species *Mentisa smaragdina* from Brazil. Dr. China, after examination of the type in the British Museum, reported that it did not belong to the Cydnidae but was a Pentatomidae in the restricted sense.

studies contained several new genera and species but nothing of a synoptic nature. In 1875 Uhler began a series of contributions that proposed new genera and species in that year and the next, and eventually, in 1877, led to a monograph on the Cydnidae known to occur in North America. Uhler's works, which first introduced the use of the important osteolar structures, appear to have been inclusive and careful studies and they do not exhibit excessive generic splitting as certain later authors seem to have believed. Shortly after Uhler's monograph, Carlos Berg (1879, 1884, 1891) published some important studies on Argentine and Brazilian forms. Unfortunately, even though Berg was corresponding with Stål, his identifications were not reliably accurate and his descriptions were not diagnostic. In 1880 the first volume on the Rhynchota in the now-famous *Biologia Centrali-Americana* appeared. The list of cydnids known from the included territory, including descriptions of new forms, was by Distant. No keys were given in the cydnid section and the colored illustrations offer little help in identifying the species.

Returning again to publications with a world-wide scope, one finds a list of known species in Stål's (1876) "Enumeratio." In 1879 Signoret began a series of cydnid studies that eventually culminated in a "Revision" that appeared in a series of papers from 1881 to 1884. This revision, the only attempt to include all the forms of the world in a single such study, contained a key to genera, descriptions of genera and species, and 228 attractively executed illustrations. Unfortunately, the fine appearance of the paper is misleading when an attempt is made to use it. There are several serious errors in the key, the descriptions and illustrations are often inaccurate, and certain earlier species are omitted. In addition, the generic conclusions presented there are not supported by the present study, particularly those which led Signoret to synonymize many of Uhler's genera and to create a number of monobasic genera. The "Catalogue Général des Hémiptères" by Lethierry and Severin (1893) was the last major catalog⁴ of the species for the world.

Since the turn of the century several papers have presented keys to permit identification of cydnids from one or more countries within the scope of the present paper. They were Barber and Bruner's (1932) Cuban study, Barber's (1939) report on most of the Hemiptera of Puerto Rico and the Virgin Islands, and Torre Bueno's (1939)

⁴ Kirkaldy's second part of his general catalog of the Hemiptera had been completed in manuscript and was partially in galley proof at the time of his death. Unfortunately, this second part of the catalog was never brought to publication. Instead, the manuscript and partial galley proof were eventually deposited in the U.S. National Museum. Through the very generous cooperation of Dr. Reece Sailer of that institution, the manuscript and galley proof were entrusted to me during these studies. They have been of inestimable value. Some consideration was given to the possibility of bringing Kirkaldy's catalog to publication, but the great number of changes in generic assignment of species necessitated by redefinitions of genera prevents any such move until I complete studies on the genera of the world.

"Synopsis of the Hemiptera-Heteroptera of America North of Mexico." The first two of these appear to be too fragmentary to be of much use, even in the territory for which they were designed; and the latter obviously was taken directly from the literature, thus offering no real innovations except to introduce a new error. The first checklist of North American Cydnidae was contributed by Uhler (1886). Van Duzee (1904), Banks (1910), and Van Duzee (1916, 1917) followed with their catalogs for the same general territory. For the tropical part of the hemisphere there have appeared only two checklists that have attempted to review much material in this group and, consequently, were able to list more than a few species. One of these lists was by Pennington (1920) for Argentina and the other by Wolcott (1948) for Puerto Rico.

In the above-mentioned studies and in certain other less extensive but surely no less important papers, there have been proposed 164 species of the Western Hemisphere; these have involved 36 generic names in the systematics of the Cydnidae of the New World. As might be expected, many of the specific names are just synonyms of the commoner species of the area. This compares with the present study in which 141 species are treated in 15 genera.

Taxonomic Morphology

The family Cydnidae comprises a superficially monotonous group of spinose, usually unicolorous, similar forms. This is even more descriptive of the species of the Western Hemisphere than of those of the Eastern Hemisphere where several show interesting color patterns. But this similarity is more apparent than real. There are numerous, easily used characters that permit the arrangement of most of the species into clear-cut, often readily recognized groups.

A brief summary of the morphology of the Cydnidae with emphasis on those features used more commonly in this study will aid in interpreting the following classification and descriptions (see figs. 17, 18 for general illustrations of the gross anatomy). The characters most employed in the taxonomy of the Cydnidae are derived from the vestiture (including the punctures from which the hairs arise), the osteolar structures, the venation of the posterior wings, the modifications of structural shapes and relative lengths of body parts, the surface sculpture, and the genitalia.

The head presents several features for use in generic definition. The number of antennal segments may be four or five, with the second sometimes very short (fig. 65) and usually with small, very narrow, weakly sclerotized "ring segments" (not to be counted) between segments III and IV and between IV and V. The labium is always of four segments, of variable length, simple or with a semicircular

foliaceous lobe on segment II. The head bears two types of vestitures. The first type is the primary setae, which arise from a series of punctures and appear to be a constant and basic feature of nearly all species except those in *Sehirus*. There are usually three primary setae present, one on the apical half of each jugum, one anterior to the inner half of each eye, and one in the lateral angle of the preocular part of the head (fig. 43), or there may be more present as in *Amnestus*, which has four (fig. 59), or fewer as in *Ectinopus*, which has two (fig. 66), or there may be none, as in *Sehirus*. The secondary type of vestiture shows considerable generic and specific variation and consists of a variable row of setigerous punctures that may extend from the eye to the apex of the head where the tip of the clypeus is involved, or the row may be partial or reduced to a single setigerous puncture anterior to the eye. This single puncture is, in reality, the lateral primary puncture, but because it is usually incorporated in the row of secondary submarginal setigerous punctures, it may be discussed more clearly as a member of that series. The setae that arise from these submarginal punctures may be long, slender, and hairlike, referred to here as "hairs," or they may be short, stout, and blunt, referred to as "pegs"; interpretation of these types of submarginal setae is difficult because the burrowing habits of the insects may cause the hairs to be broken off near the base and the remaining part will be short and blunt, suggesting the pegs. The absence or presence of ocelli in American Cydnidae appears to be a specific feature, as does the location of the ocelli in relation to the eyes, the surface sculpture, the length of the antennal and labial segments, the relative lengths of the juga and clypeus, and the development of the bucculae.

The features offered by the prothorax, except for the presence or absence of a sharply impressed, subapical line paralleling the anterior margin from side to side, appear to be chiefly of specific value. In several genera certain species show a sexual dimorphism in that the lateral margins of the male pronotum are noticeably constricted, while those of the female are entire. Although such a feature might be conspicuous, it is extremely variable within the group, and often within one species; because this feature appears of questionable survival value and surely of no phylogenetic significance, it should not be accorded more than specific importance. Most species other than those of the genus *Sehirus* present a lateral, submarginal row of setigerous punctures. The arrangement and number of these setigerous punctures furnish good specific features. The pronotal surface is divided into an anterior and posterior lobe by a more or less distinct transverse impression near or behind the middle. The anterior lobe is often modified in the males; it may be tumid and/or variously impressed medially near the apex. The posterior lobe shows a

somewhat nodular prominence, or umbone, near each lateral margin and a differing surface sculpture. Anteriorly, on either side of the midline of the prosternum, there may be present a longitudinal ridge—the prosternal carinae.

The dorsal surfaces of the mesothorax and metathorax, except for the scutellum of the latter, are usually hidden from view and so have been little used for taxonomic characters. In all species except those of *Amnestus* the scutellum is typically pentatomoid in that it is very large and surpasses the apices of the clavi, preventing the latter from coming together to form a claval commissure. Therefore, it is quite surprising to find that in *Amnestus* the scutellum is very short, permitting the clavi to reach beyond its apex and form a claval commissure. The scutellum itself varies in ratio of length to basal width and in having the apex narrowed (fig. 79) or not (fig. 80). The subapical width of the scutellum at the level of the claval apices is often a useful measurement when compared with the width of the membranal suture, the line of union between the apex of the corium, and the base of the membrane. The ventral aspects of the mesothorax and metathorax furnish a number of characters of generic, subgeneric, and specific importance. In the present paper the area laterad of the coxal insertions is referred to as the pleuron, that between the coxal insertions as the sternum. A dull, finely roughened evaporatorium may be present or absent on the pleurae of one or both segments; its occurrence plus its extent may be of varying value depending on the species under consideration. The punctation in the polished area laterad of the evaporatorium, referred to as "lateral area," may be of specific value. The metapleuron bears the external opening of the scent gland, usually referred to as the osteole. The osteole occurs in a cuticular modification referred to here as the peritreme. The peritreme consists of a pair of close-set transverse ridges which may or may not be in contact along their summits; the anterior ridge is usually more strongly developed and frequently modified beyond the osteolar opening. When present, this apical modification furnishes good characters for definition of genera. The osteolar opening may be situated ventrally on the peritreme, or posteriorly where it is concealed by a projecting ledge. In *Amnestus* the middle carina of the mesosternum and metasternum is strongly elevated, separating the coxal cavities.

The basal thickened part of the anterior wing is divided into three main areas—the clavus next to the scutellum, the triangular discal area or mesocorium between the clavus and the radial vein, and the narrow exocorium between the radial vein and the costa. The distinctness, relative sizes, and punctation of these areas plus the presence or absence of a variable number of setigerous punctures on the

costa furnish very useful specific characters. The venation of the posterior wing, especially in the anterior part, has yielded some valuable features for defining subfamilies. The veins of the metathoracic wings are somewhat confusing due to fusions and the presence of only incomplete segments of others. This has led to a difference in terminology concerning them. The conclusions presented by Malouf (1932) for the pentatomid *Nezara viridula* appear applicable and are used here (fig. 167). The anteriormost vein, Sc+R, is distinctly sclerotized from base to a subapical fracture, beyond which it is much weaker. Apically Sc+R and M are connected either by a crossvein, r-m, or by running together. In some cases, M sends an oblique spur or hamus into the radial cell near its midlength.

The legs furnish many characters in the shape of parts and the number and arrangement of the spines. Special modifications are very usable features—the anterior tarsal insertions at or proximad of the tibial apex, the diameter of tarsal II in relation to I and III, the shape of the tibiae (especially the posterior ones), the presence or absence of ventral armature on the femora, and others.

The dorsum of the abdomen has not yet been extensively explored for characters but does appear to present some. The sternites, however, furnish a number of very important characters for use at all levels within the family. There are always seven pregenital sternites, but the entire first sternite and the anterior part of the second, including the spiracle of the latter, are membranous, inseparable, and usually concealed from view. The complete sternites on which spiracles are visible are III to VII. In the male, sternite VIII also bears a spiracle but is telescoped into the apex of the abdomen. The male genital capsule in Hemiptera has been shown by Bonhag and Wick (1953) to be composed ventrally and laterally of the fused gonocoxopodites and dorsally of the last three abdominal segments, IX, X, and XI. These authors further point out that the structures commonly referred to as the parameres are actually the gonostyli or claspers. By definition the paramere is a lateral appendage of the phallobase, not of the gonocoxopodite. As yet, I have not explored the phallic structures for taxonomic worth in the Cydnidae, but there is no reason to believe that they will prove to have any less value here than has been demonstrated for other pentatomoids by Leston (1952) and other workers. As shown by Bonhag and Wick (loc. cit.) for the banded milkweed bug, *Oncopeltus fasciatus*, abdominal segment VIII of the female is visible dorsally as a dorsal plate flanked by a pair of laterotergites that bear one spiracle apiece. Since the pentatomoids apparently do not possess an ovipositor, the homologizing of the female terminalia with those of the lygaeid *Oncopeltus* is not reliable without a more intensive

study than could be undertaken at the present time. Laterally in the spiracular area of sternites III to VII there occurs a pair of sensory hairs or trichobothria. Just what it is that the hairs "sense" appears controversial. When Hansen (1917, p. 258) reviewed and discussed the subject of external sensory hairs he concluded, "But I think I have shown with tolerable certainty that the trichobothria in terrestrial Arthropods are scarcely auditory organs but tactile hairs of special structure." Tullgren's (1918) study of the trichobothria on Hemiptera contained illustrations of them and resulted in some interesting speculations on their role in the higher classification within the order. His conclusions on the Cydnidae were based on an unfortunate choice of two genera of the subfamily *Shirinae*; all members of that subfamily agree with the *Pentatomidae* proper in having two trichobothria arranged in a transverse row behind each spiracle. If he had chosen genera of any other subfamily he would have realized that other patterns also existed in the family. In fact, the present study recognizes four additional arrangements, making it possible to establish five subfamilies on the basis of the trichobothrial arrangements in both the nymphs and the adults. These categories can be supported by additional features derived from other parts of the body. For further information on such use of the trichobothria the reader is referred to the discussion under the family heading.

Measurements were taken in a standard manner. Width and length of head, transverse ocellar width, and size of space separating eye and ocellus were taken from a dorsal view of the head which placed the greatest expanse of outline at right angles to the line of vision; the greatest length of antennal and labial segments was taken from side view; the pronotum was held so that a plane through the margins was at right angles to the viewer and the length was measured along the midline and the width across the humeri; the scutellum likewise was held at right angles to the line of vision and the length was taken along the midline from the bottom of the basal transverse impression to the apex, and the width was measured basally with the lateral ends of the curved basal impression forming the points of limit. The total length of the insect is that of the body alone, the position of the membrane being too variable to give a fixed point for measuring; but even the "length of body" is not as accurate as might be desired because the position of the head often varied from specimen to specimen. All measurements are given in millimeters.

The term *alutaceous* does not appear to have common usage in hemipterology but is very helpful in describing the surface microsculpture of some of these insects. When a surface is *alutaceous*

it appears dulled due to the presence of numerous minute, intersecting cracks and wrinkles like those on the surface of human skin.

Family CYDNIDAE

Cydnides Billberg, 1820, p. 70.

Size small to large, 1.6–16.1, oblong to oval, dorsum subdepressed to strongly convex, venter strongly convex.

Head: Quadrate to semicircular, more or less widened or explanate laterally; antennae 4- or 5-segmented, inserted ventrally on head near ventral angle of eye; ventral surface of eye attaining posterior margin of head; labium 4-segmented, inserted near or beneath apex of clypeus, surpassing base of head, sometimes reaching well onto abdomen.

Thorax: Pronotum large, concealing mesonotum and metanotum except for the usually very large, triangular or subtriangular scutellum; clavus and corium opaque, latter subtriangular, broadened at apex, frenum reaching beyond middle of scutellum; membrane with veins usually weak, simple or anastomosing; legs more or less strongly spined on tibiae, especially anterior pair which are more or less flattened and have single row of very stout, blunt spines on lateral margin (except in *Scaptocorinae*); middle and posterior coxae with apical fringe of close-set bristles (fig. 114); tarsus 3-segmented (absent from posterior legs of *Scaptocoris*). For additional discussion of family definition within the Pentatomoidea see the introduction.

Biological information concerning the Cydnidae is scattered and mostly fragmentary. But from what has been published there may be deduced a rather incomplete outline of the life cycle. Biologically the Cydnidae may be considered in two groups. One group consists of species like those of *Sehirus* (not necessarily all *Sehirinae*) in which both the nymphal and adult stages feed on parts of plants that grow above ground; in so doing they closely resemble the activities of the great percentage of the Pentatomoidea. The second type, which is apparently characteristic of species of all cydnid genera except *Sehirus*, involves nymphal and adult feeding on roots and possibly other underground parts of plants. This habit of underground feeding has suggested for the family the popular name of "burrower bugs."

Although no life history of an American cydnid has appeared in literature, the activities of *Sehirus cinctus* (Beauvois) probably can be predicted somewhat from results published on certain European members of the genus. Southwood (1949) and Southwood and Hine (1950) have given a rather full account of *Sehirus bicolor* (Linnaeus)

in England and an abstract of their "Notes" may indicate what can be expected of *Sehirus cinctus* in North America.

Adults hibernate under soil. In spring they become active, mate, and lay some 40 eggs in a cluster in the soil or under protective leaves or stones. The female remains close above the ball of eggs, apparently ready to defend it. The incubation period varies from 18 to 24 days. The nymphs and adults usually remain together for about 48 hours after hatching. They feed on the above-ground parts of plants, chiefly those of the family Labiatae, with most nymphal feeding apparently concentrated on the floral or fruiting parts of the plants. Adults of *bicolor* also have been collected from plants other than Labiatae. About seven weeks are required to reach maturity. Since there is only one generation each year the adults must live about nine months.

The life history of another European *Sehirus*, *S. sexmaculatus* Rambur, was reported by Boselli (1932); except for minor details the two life histories are very similar.

Scattered notes on life histories of cydnid genera other than *Sehirus* indicate that they are chiefly root-feeders in nymphal and adult stages. They apparently hibernate as adults and begin reproduction in spring. Some forms have been reported (see Carvalho, 1952, p. 1) as feeding on roots "two meters below the surface of the soil" where they were associated with root galls some 4 inches in diameter. Such subterranean activities are an effective shield against observation, and unless some of these insects become of major economic importance there is little likelihood that anyone will attempt to make a detailed study of the life history of even one of them.

In the classification of the Cydnidae, the first subdivision into supra-generic segments appeared in Amyot and Serville (1843) where the two "groupes" "Cydnides" and "Sehirides" were established chiefly on the shape of the anterior tibiae. "Cydnides" were described as having the anterior tibia broader and flatter with strong spines on the outer margin in all included genera except *Scaptocoris*; "Sehirides," in contrast, were said to have the anterior tibiae only slightly flattened and to be without strong spines on the outer margin.

This division on the same characters was accepted by Stål (1864), who latinized the names and added the narrow filiform shape of the tarsus of the Cydnida and the more slender second tarsal segment of *Sehirida*. This separation was used by Stål and subsequent authors until Signoret (1881b) proposed that these two groups be separated on the basis of the presence or absence of certain setigerous punctures on the head and thorax. Signoret's characterization kept most of the genera in the same groups in which earlier workers had placed them, but did require the shifting of *Lobonotus* Uhler to the *Sehirides*. This shift is not supported by findings in the present study. These two taxa have long been considered the primary categories in the

Cydnidae. No other suprageneric separation occurred until Hart (1919) recognized the aberrant conditions exhibited by *Amnestus* and erected the tribe Amnestini for it.

In evaluating the characters mentioned above, one must conclude that the expanded anterior tibia is undoubtedly an adaptive feature—an adaptation to a burrowing habit—and, as such, probably does not deserve consideration as a prime phylogenetic indicator, though it may have value as a convenient key character. The presence of setigerous punctures on the submargin of the head and thorax is also probably adaptive in supplying tactile hairs for the burrowing habit. The narrower second tarsal segment pointed out by Stål (loc. cit.) probably could be construed as giving greater flexibility of the tarsus for the plant-climbing habit of the members of the genus *Schirus* in which it occurs, while the other forms, which are chiefly burrowers, would require the stout, more rigid tarsus for efficient handling of the soil.

The present investigation to find more reliable phylogenetic indicators resulted in the selection of certain features that have already shown such value in other pentatomoids; namely, the arrangement of the trichobothria on the heavily sclerotized sternites III to VII (figs. 170–174) and the pattern of the venation of the posterior wing. The arrangement of the trichobothria in both the nymphs and the adults indicates five major groups of Cydnidae, as tabulated below:

- 1a. Sternites III and IV without trichobothria, V to VII each with a single trichobothrium posterior to the spiracle (fig. 173) **Amnestinae**
- 1b. Sternites III to VII each with two trichobothria.
 - 2a. Trichobothria of sternites III to VII posterior to spiracles.
 - 3a. Trichobothria arranged in transverse pairs (fig. 171) . . . **Schirinae**
 - 3b. Trichobothria arranged in longitudinal pairs (fig. 174) . **Garsaurinae**
 - 2b. Ventralmost trichobothrium of anterior sternites (or all sternites) mesad or anterior to spiracle.
 - 4a. Sternites III to VII with one trichobothrium more anterior in position than spiracle and one (not always strongly developed) posterior to it (fig. 170) **Scaptocorinae**
 - 4b. Trichobothria of sternites VII and usually also of VI both posterior to spiracle (fig. 172) **Cydninae**

The arrangement of the trichobothria on the several posterior segments in the Cydninae is contrary to the statement of McAtee and Malloch (1931, p. 194) that Thyreocoridae and Cydnidae “with the exception of the Schirinae, have the trichobothria longitudinally arranged often nearly in line with the spiracles.” The present grouping of the Cydnidae into five subfamilies can be given additional support from characters drawn from the venation of the posterior wing, as explained below.

The earliest taxonomic use of the venation of the hindwing was by Fieber (1861), who employed it in the first couplet in his key to

the European genera but did not establish any named categories upon the results. Unfortunately, his choice involved the close approximation of the basal halves of the Sc+R and M, a feature which apparently occurs with some irregularity in the Cydnidae so that even otherwise closely allied genera may not agree in this character, though they may agree in it with more distantly related forms. The results of the present study of venational features (figs. 165-169) permit forming the following tabulation, which agrees with the results obtained above from the trichobothria.

- 1a. Sc+R recurved at apex to meet M (fig. 168) **Amnestinae**
- 1b. Sc+R straight, connected to M by a more or less strongly oblique cross vein.
 - 2a. Cross vein r-m very strongly oblique so that M1+2 leaves radial cell basad of fracture in Sc+R (fig. 165) **Scaptocorinae**
 - 2b. Cross vein r-m not so strongly oblique, M1+2 leaving radial cell beyond fracture in Sc+R.
 - 3a. Vein M with a spur or lobe projecting into radial cell at its midlength.
 - 4a. Three veins arising independently from apex of radial cell (fig. 169).
Garsauriinae
 - 4b. Two of the three veins arising at antero-apical angle of radial cell, third one from posteroapical angle (fig. 166) . . . **Shirinae**
 - 3b. Vein M without trace of spur or lobe projecting into radial cell (fig. 167) **Cydninae**

Thus, with evidence drawn from two nonadaptive characters of the Cydnidae it is possible to establish five subfamilies. Unfortunately, both of these features are somewhat difficult to use, either because of their small size or the fact that they are normally hidden from view. But a survey of the other characters of these insects shows that a much more usable key to the subfamilies can be based on certain more conspicuous characters. Such a key to the subfamilies follows.

General key to the subfamilies of Cydnidae

- 1. Clavi meeting beyond short scutellum and forming a commissure almost as long as scutellum (fig. 2) **Amnestinae** (p. 628)
- Clavi not meeting beyond scutellum, not forming a claval commissure . . . 2
- 2. Anterior tibia strongly cultrate, much produced beyond tarsal insertion so that tarsus appears to arise at middle of tibial length (fig. 3).
Scaptocorinae (p. 365)
- Anterior tibia not cultrate, tarsus arising at or very near apex of tibia . . . 3
- 3. Pronotum with a lateral, submarginal row of setigerous punctures; tarsal II subequal in diameter to I and III **Cydninae** (p. 377)
- Pronotum without a lateral, submarginal row of setigerous punctures; tarsal II distinctly narrower than I and III 4
- 4. Antennal II as long as or longer than I; pronotum without fine, distinctly impressed subapical groove **Shirinae** (p. 354)
- Antennal II less than half as long as I; pronotum with fine, distinctly impressed subapical groove paralleling anterior margin (fig. 65).
Garsauriinae (p. 364)

Subfamily *Sehirinae*

Sehirides Amyot and Serville, 1843, p. 96.

DIAGNOSIS.—Either the arrangement of the two trichobothria of sternites III–VII in a transverse row posterior to the spiracle (fig. 171) or the venation of the metathoracic wing (fig. 166, shape of radial cell and presence of a hamus) will define this group in the technical sense. For greater ease of identification of the sole species of the only genus that occurs in the Western Hemisphere, one may rely on the narrow, creamy white lateral margins of the pronotum, corium, and abdomen.⁵

DESCRIPTION.—Head: Margins entire; antennae 5-segmented; labial II simple.

Wings: Posterior wing (fig. 166) with r-m joining M distad of fracture in Sc+R; Sc and R leaving radial cell at antero-apical angle; radial cell receiving hamus from M.

Scutellum: Long, surpassing apices of clavi, latter not forming commissure posterior to scutellar apex.

Thoracic pleurae: Posterior margins well developed; propleuron with anterior and posterior convexities; mesopleuron with posterior margin touching or overlapping anterior edge of metapleuron for most or all of width; metapleuron with posterior margin reaching base of abdomen across full width, completely covering internal part of hind coxa.

Legs: Anterior tibia weakly compressed, with row of small blunt spines on dorsal margin; tarsi inserted at apices of tibiae, with II more slender than I or III.

Sternites (fig. 171): Sutures nearly straight, not sinuate laterally; III to VII each with two trichobothria in transverse row behind spiracle.

Terminalia: Male genital capsule opening dorsally.

TYPE OF SUBFAMILY.—Genus *Sehirus* Amyot and Serville (1843, p. 96).

DISTRIBUTION.—Members of the *Sehirinae* have been reported from all major faunal regions of the world except the Australian and Neotropical. The range of the single New World species extends southward from southern Canada into Mexico.

DISCUSSION.—This subfamily, as defined here and in the key to subfamilies, is now known to contain the two genera *Legnotus* Schiödte (= *Gnathoconus* Fieber, vide China, 1943) and *Sehirus* Amyot and Serville. Only *Sehirus* has been found in the Western Hemisphere. A more detailed discussion of this genus is given below.

⁵ One other species in the New World has a creamy white costa, but it lacks the pale edges on the pronotum and abdomen.

Genus *Shirus* Amyot and Serville

Shirus Amyot and Serville, 1843, p. 96.

Trilomegas Amyot and Serville, 1843, p. 98.

Canthophorus Mulsant and Rey, 1866, p. 344.

Adomerus Mulsant and Rey, 1866, p. 356.

Lalervis Signoret, 1881a, p. 656.

Pending the completion of the author's studies of the Cydnidae of the Eastern Hemisphere, the conclusions of China (1943) concerning this genus are here accepted without question. The decision to do this was a practical solution to a very complex problem which would have involved review of a very extensive literature on a genus whose main area of distribution is removed from the geographic region under consideration.

DIAGNOSIS.—Among the genera of the Western Hemisphere this genus may be recognized by any of many features: i.e., weakly compressed anterior tibia which is almost square in cross section; lack of distinct prosternal carinae; creamy white lateral margins to pronotum, corium, and abdomen; the scimitar-shaped terminal process of the osteolar peritreme; and others.

DESCRIPTION.—This description is based primarily on the New World forms, but it is modified to encompass all Old World forms available. The Eastern Hemisphere species at hand during this study included *bicolor* Linnaeus, *biguttatus* Linnaeus, *dubius* Scopoli, *luctuosus* Mulsant and Rey, *sexmaculatus* Rambur, and one unidentified Oriental species.

Size small to moderate; oval, widest behind middle; dorsum moderately convex, venter more strongly so.

Head: Length usually more than three-fourths of width, eyes projecting by half or more of their width; juga equal to or longer than clypeus, sometimes convergent or contiguous beyond clypeus; surface convex or concave, margins narrowly to broadly reflexed, closely and coarsely punctured over most of surface; ocelli present, small, situated on or behind a line connecting hind margin of eyes; antennae 5-segmented, I shortest, IV subequal to or shorter than V, each longer than II and III, latter subequal to or longer than II; bucculae moderately to very high, nearly or quite reaching base of head, evanescent or abruptly terminated posteriorly; labium reaching between middle of hind coxae, I shortest, II longest, III longer than IV, II slightly compressed but without a foliaceous semicircular lobe.

Pronotum: Length not more than half of width, margin carinate, sides convexly narrowed from base, without lateral submarginal row of setigerous punctures; anterior margin slightly to moderately deeply concave; transverse impression moderate to obsolete, marked

by a wide band of distinct punctures; posterior margin broadly but very weakly convex; all angles rounded.

Scutellum: Longer than broad, triangular, apex narrowed and less than half of membranal suture; disk with numerous distinct punctures over most of surface.

Hemelytra: Areas well defined, membranal suture straight, convex or moderately bisinuate; corium and clavus distinctly, closely, and more or less uniformly punctured; costa thickened, impunctate, inflexed part distinctly punctate; membrane less than half of hemelytral length, reaching or surpassing apex of abdomen, transparent and weakly to strongly clouded with brown.

Propleuron: Usually punctured, sometimes tuberculate; prosternal carinae very low or absent, anterior margin usually without expansions.

Mesopleuron (figs. 86, 87): Nearly flat, evaporative area restricted to posterior two-thirds or less, often reaching side margin where it is sometimes extended anteriorly; shining part punctured; mesosternum distinctly carinate on midline.

Metapleuron (figs. 86, 87): Slightly convex; terminal lobe of peritreme elevated, strap-shaped or reniform, more or less shining, longer than basal part; evaporative area either just surrounding osteolar canal or more extensive, sometimes occupying mesal three-fourths of segment; shining part variously punctured.

Legs: Moderately long, slender; anterior tibia (fig. 130) not surpassing tarsal insertion, weakly compressed, dorsal margin with eight to eleven stout spines; middle and posterior legs (fig. 138) terete; tarsal II shortest, I longest.

Sternites: Moderately convex, punctured, more coarsely and closely so laterally; posterior margin of sternites finely denticulate or crenulate.

Terminalia: Male genital capsule opening dorsally, apical rim entire or broadly and shallowly emarginate.

TYPE OF GENUS.—*Cimex morio* Linnaeus (1761), subsequently designated by Reuter (1888); the several names listed in the synonymy above are accepted on the authority of China (1943).

DISTRIBUTION.—The widest range occupied by any genus of Cydnidae belongs to *Sehirus*. It has been reported, apparently correctly so, from nearly all major faunal regions. The distribution of the genus within the New World was indicated by specimens as extending from coast to coast across southern Canada and thence south to Florida, Texas, New Mexico, California, and into southern Mexico.

DISCUSSION.—In spite of extensive literature to the contrary, the present study found this genus to be the only truly Old World genus

to have extended its range into this hemisphere, where it is represented by the single species treated below.

In habits the members of this genus are quite different from other cydnids. The species of *Sehirus* are not burrowers and root-feeders, the common trait that suggested the popular name of "burrower bugs" for these insects. Instead, nymphs as well as adults of *Sehirus* feed on plant parts above the ground. This has exposed their activities to observation and enabled students to report more ecological data for them. Although the life history of the single New World species has not been worked out, the reported fragments of it agree well with the biological studies on European species by Boselli (1932), Southwood (1949) and Southwood and Hine (1950). A generalized life cycle has been extracted from the latter paper and incorporated in the family discussion (p. 351) of the present study.

Sehirus cinctus (Palisot de Beauvois)

PLATE FIGURES 19, 86, 130, 138, 188

Pentatoma cincta Palisot de Beauvois, 1805, p. 114, pl. 8, fig. 7.

DIAGNOSIS.—This is the only species of the genus known to occur in the Western Hemisphere. The narrow, creamy white margins of pronotum, corium, and abdomen suggested as a ready means of identification of the genus in the New World will serve also to determine this species.

DESCRIPTION.—Color: Brownish black, black, or bluish black, coria usually slightly lighter; narrow side margins of pronotum, costae, edges of sternite II to V, edge of subgenital plate of male, last tergite of female, and elongate dash on dorsal face of each tibia creamy white; antennal II, rostrum, and tarsi yellowish brown.

MALE: Oval, broader to posterior of midlength.

Head: Longer than wide; juga reaching or surpassing apex of clypeus, latter slightly narrowed toward apex; margins of juga variously reflexed; surface, except vertex, with numerous close-set, coarse punctures, these more or less confluent into radiating lines toward margins of head; juga ventrally polished, impunctate; maxillary plate distinctly punctured; antennal and labial lengths as given in subspecies descriptions; bucculae reaching nearly to base of head, evanescent posteriorly.

Pronotum: Length less than half of width; transverse impression weak to moderately impressed, marked by a broad band of numerous, distinct punctures continuing finer and sparser over posterior lobe; anterior lobe distinctly and abundantly punctured except on calli; both lobes with minute punctures interspersed between coarser ones.

Scutellum: Longer than wide; surface mostly punctured, more finely so at apex.

Hemelytron: Clavus and corium with numerous, intermixed moderate and minute punctures, the coarser ones arranged in two rows on each side of claval suture; membranal suture straight, slightly recurved laterally; membrane slightly surpassing apex of abdomen, length little greater than basal width.

Propleuron: Punctured; prosternal carinae obsolete.

Mesopleuron (fig. 86): Evaporatorium confined to narrow posterior margin, narrowing laterally, evanescent just before reaching lateral margin of segment; remainder polished, distinctly punctured.

Metapleuron (fig. 86): Osteolar opening ventrally at base of canal between middle and posterior acetabula; evaporatorium just outlining canal; remainder polished, with impressed punctures.

Sternites: Shining, becoming closer and more coarsely punctured laterally; without setigerous tubercles laterad of spiracles.

Terminalia: Subgenital segment distinctly flared marginally, apex entire; gonostylus as illustrated (fig. 188).

FEMALE: Very similar to male, measurements averaging larger (see subspecies descriptions below).

TYPE DATA.—Location of type unknown to author. The type locality given by Palisot de Beauvois, "A Agathon, royaume de Benin" in Africa, was apparently in error because Stål (1864) wrote, after examining the type specimen, that the specimen was the common American species described by Say as *Cydnius ligatus*.

DISCUSSION.—The species is known to occur across the southern provinces of Canada from Newfoundland to Alberta, throughout the United States from Maine to Florida and west to California, and in Mexico to the Isthmus of Tehuantepec. The extensive range brings the insect into many types of territories, so it is not surprising to find that some apparent subspeciation is evident. The material studied could be easily divided into three groups on the basis of color and certain intergrading morphological features. One form is northern, occurring across southern Canada and the northern United States; the second occupies most of the United States and Mexico; while the third apparently is restricted to a limited area in the central and eastern part of Texas. With a few specimens at the beginning of this study the conclusions reached were decided and clear cut; the three forms appeared sufficiently distinct to warrant being considered full species. But as additional specimens filled in the geographic gaps they also began bridging the morphological gaps so that conclusions concerning the three required revision downward. The subsequent specimens fitted well into the pattern established by the earlier findings but did indicate overlapping of certain structural features that had been considered of specific value.

The features which show geographic significance are the head, the corial pattern, and the punctures of the sternites. The head shows a progressive shortening in the three forms from the longest condition in the northern one to the shortest in the southwestern form. The northern form has the anteoocular length distinctly more than half the anteoocular width, 55 (52–57) percent as compared to a comparable ratio of 45 (41–47) percent in the southwestern form. The gap between these figures is bridged by the common southern form, 49 (40–55) percent. In the northern form the obliquely and very strongly elevated jugal margins are higher than the level of the head (fig. 19), which is in contrast to the condition in the other two forms where the juga are much less elevated and are lower than the dorsum of the head. In addition, the dorsum of the head of the southern and southwestern forms are closely punctured to the margins, while in the northern form a broad, marginal band is virtually impunctate.

The corium of the northern and southwestern forms have, in addition to the narrow pale costal margin, a prominent, angulated, creamy white mark at the tip of the radial vein. The southwestern form usually also shows a small, rather inconspicuous, premedian whitish spot on the corium. The southern form lacks these additional pale maculations.

In a series of specimens the southern form appears to have the lateral punctures of the sternites weaker and sparser than the same punctures of the other forms. This character, however, is difficult to evaluate and put into words, so no further use will be made of it in this study.

Key to the subspecies of *Sehirus cinctus*

1. Jugal margins (in profile) elevated above dorsum of head (fig. 19); corium with angled whitish mark at apex of radial vein . **albonotatus** Dallas (p. 359)
Jugal margins (in profile) lower than dorsum of head; corium with or without whitish mark at apex of radial vein 2
2. Corium with a prominent, angled, whitish mark at apex of radial vein and usually also an inconspicuous premedian pale dot.
texensis, new subspecies (p. 363)
Corium with no pale markings as described above.
cinctus (Palisot de Beauvois) (p. 361)

Sehirus cinctus albonotatus Dallas, new status

PLATE FIGURES 1, 19

Sehirus albonotatus Dallas, 1851, p. 127.

Canthophorus cinctus Stål, 1876, p. 22 (part).—Signoret, 1884, p. 60 (part).

Sehirus cinctus Uhler, 1877, p. 297 (part).—Distant, 1880, p. 9 (part).—Lethierry and Severin, 1893, p. 79 (part).—Van Duzee, 1904, p. 26 (part); 1917, p. 24 (part).—Banks, 1910, p. 101 (part).—Torre Bueno, 1939, p. 184 (part).

DIAGNOSIS.—The presence of the angled whitish mark at the apex

of the radial vein plus the elongate head will separate this subspecies from the other two.

DESCRIPTION.—MALE:

Head: Wider than long, 1.35(1.23–1.40):1.04(0.96–1.10); antecular length slightly more than half of antecular width, 0.52(0.46–0.54):0.87(0.83–0.96); juga very widely reflexed (fig. 19), margins thickened, virtually impunctate. Antennal segments: I, 0.29(0.29–0.30); II, 0.48(0.38–0.53); III, 0.69(0.60–0.80); IV, 0.85(0.70–0.96); V, 0.98(0.90–1.06). Labial segments: I, 0.39(0.36–0.42); II, 0.67(0.63–0.70); III, 0.62(0.56–0.66); IV, 0.43(0.40–0.46).

Pronotum: Width more than twice length, 2.85(2.55–3.00):1.28(1.17–1.36).

Scutellum: Longer than wide, 2.14(1.95–2.21):1.81(1.56–1.89).

Length of body: 5.42(4.72–5.70).

FEMALE: Similar to male but somewhat larger and stouter.

Head: Wider than long, 1.42(1.33–1.51):1.14(1.10–1.23); antecular length more than half of antecular width, 0.55(0.50–0.60):1.00(0.96–1.06). Antennal segments: I, 0.29(0.26–0.33); II, 0.50(0.48–0.53); III, 0.63(0.60–0.70); IV, 0.82(0.76–0.88); V, 0.96(0.88–1.03). Labial segments: I, 0.39(0.36–0.43); II, 0.72(0.70–0.76); III, 0.65(0.53–0.70); IV, 0.50(0.47–0.53).

Pronotum: Width-length ratio, 3.23(2.93–3.52):1.50(1.43–1.56).

Scutellum: Length-width ratio, 2.50(2.21–2.66):2.05(1.82–2.28).

Length of body: 6.13(5.70–6.45).

TYPE DATA.—Two records were given in Dallas' original description, "St. John's Bluff, E. Florida. Presented by E. Doubleday, Esq." and "N. America. From Lieut. Redman's collection." Personal study of the Dallas material (BrM) found only the Florida specimen to be present. As one would expect from the locality, this specimen lacks the apical pale spot on the corium and is *S. cinctus cinctus*. So, in order not to violate Dallas' obvious intent to have this taxon represent a spotted form (both in the description and the name *albonotatus*), it becomes necessary to assume that the missing specimen had the spot and to designate it as the lectotype.

SPECIMENS STUDIED.—82 males, 81 females.

CANADA: *Alberta*: Peace River. *Manitoba*: Cedar Lake, Deepdale; July–August. *Newfoundland*: Nicholsville; July. *Ontario*: Port Sidney; July. *Quebec*: Granby, Mattapedia; July–August.

UNITED STATES: *California*: Meadow Valley (Plumas Co.); June. *Colorado*: Boulder. *Illinois*: Algonquin, Waukon; June–August. *Iowa*: Ames, Boone, Eldora, Little Rock; June–August. *Maine*: Bar Harbor, Eastport, Kingfield, Lovell, Monmouth, Orono, Weld, Westport; April–September. *Massachusetts*: Boston, Humarock, Salem; July. *Michigan*: Cheboygan Co., Chippewa Co., Douglas Lake, Emmet Co.; May–August. *Minnesota*: Pequot Lakes, Traverse Co.; September. *Montana*: Gallatin Co.; May. *New Hampshire*: Bretton Woods,

Franconia, Glen, Mount Washington, Randolph; June–August. *New York*: Buffalo, Catskills, Colden, Cranberry Lake, Greene Co., Hamburg, Keene Valley, Murray Bay, New York, North Elba, Paradox, Westport; June–September. *North Dakota*: Fargo, Mankinsen; July–September. *Pennsylvania*: Germania; July. *Vermont*: Grand Isle, Jay; July. *Wisconsin*: Belle Plain, Winnebago Co.; July. *Wyoming*: Gurney; July.

DISCUSSION.—This subspecies ranges across the provinces of southern Canada from Newfoundland to Alberta and in the northern United States as far south as New York, Michigan, northern Illinois, central Iowa, Wyoming, and northern California. This southern limit of range roughly approximates north latitude 41°.

The reported habits of this subspecies differ in no important respects from the life histories that have been worked out for European species. The present form hibernates as an adult (Parshley, 1923), feeds on labiate plants in the young stages (Van Duzee, 1905), and, as imago, has a variety of feeding tastes, adults having been reported from various plants, especially Scrophulariaceae (Provancher, 1886), from wild raspberries (Parshley, 1923) and from Compositae, Cyperaceae, and Graminae (Hendrickson, 1930). It appears to be adaptive to a variety of habitats, as indicated above, and by reports that it has also been taken under boreal conditions on the summit of Mount Greylock at some 3,500 feet elevation (Parshley, 1920). One report (Torre Bueno, 1915) said that even this species has the ability to burrow "into the sand for shelter."

Sehirus cinctus cinctus (Palisot de Beauvois)

PLATE FIGURES 86, 130, 138, 188

Pentatoma cincta Palisot de Beauvois, 1805, p. 114, pl. 8, fig. 7.

Cydnus ligatus Say, 1831, p. 10.

Sehirus cinctus Amyot and Serville, 1843, p. 97.—Stål, 1864, p. 29 (corrects type locality to America).—Walker, 1867, p. 169 (uses erroneous African type locality).—Uhler, 1876, p. 281 (part).—Distant, 1880, p. 9 (part).—Lethierry and Severin, 1893, p. 79 (part).—Van Duzee, 1904, p. 26 (part); 1917, vol. 2, p. 24 (part).—Banks, 1910, p. 101 (part).—Torre Bueno, 1939, p. 184 (part).
Canthophorus cinctus Stål, 1876, p. 22 (part).—Signoret, 1884, p. 60 (part).

DIAGNOSIS.—The lack of pale spots on the corium appears sufficiently diagnostic for the recognition of this subspecies.

DESCRIPTION.—MALE:

Head: Wider than long, 1.12(1.03–1.20):0.88(0.80–0.93); antecular length averaging just about half (49 percent) of antecular width, 0.36(0.33–0.40):0.73(0.68–0.76); juga narrowly reflexed, margins acute, punctured nearly or quite to edge. Antennal segments: I, 0.22(0.20–0.23); II, 0.38(0.36–0.40); III, 0.47(0.43–0.53); IV, 0.65(0.63–0.71); V, 0.84(0.80–0.93). Labial segments: I, 0.33(0.30–0.36); II, 0.57(0.54–0.60); III, 0.57(0.53–0.60); IV, 0.40(0.40–0.40).

Pronotum: Width more than twice length, 2.45(2.21–2.60):1.13 (0.97–1.17).

Scutellum: Longer than wide, 1.82(1.52–1.95):1.48(1.30–1.60).

Length of body: 4.55(4.05–4.80).

FEMALE.—Similar to male, averaging somewhat larger and stouter.

Head: Wider than long, 1.19(1.13–1.30):0.86(0.80–0.96); antecular length averaging about half (49 percent) antecular width, 0.41(0.40–0.43):0.83(0.76–1.00). Antennal segments: I, 0.23(0.23–0.26); II, 0.40(0.36–0.44); III, 0.50(0.46–0.60); IV, 0.67(0.60–0.80); V, 0.87(0.83–0.98). Labial segments: I, 0.34(0.33–0.36); II, 0.59(0.54–0.66); III, 0.61(0.60–0.66); IV, 0.43(0.40–0.50).

Pronotum: Width more than twice length, 2.71(2.34–3.13):1.23 (1.04–1.36).

Scutellum: Longer than wide, 2.14(1.89–2.47):1.72(1.49–2.02).

Length of body: 5.23(4.65–5.92).

TYPE DATA.—Location unknown to the author. Palisot de Beauvois originally gave the type locality as "A Agathon, royaume de Benin" in Africa. Stål (1864), after examining the type, wrote that the African locality was in error because this was the common American species described by Say as *Cydnus ligatus*. All authors except Walker (1867) have recognized and accepted Stål's correction. The type locality given in Say's original description was "United States."

SPECIMENS STUDIED—35 males, 58 females.

UNITED STATES: *Alabama*: Coatsopa, Gadsden; May–July. *District of Columbia*: April–June. *Florida*: Key Largo, Monticello, Tallulah; January, March, July. *Georgia*: Peach Co.; May. *Iowa*: Ames, Clarinda, Farragut, Gilbert, Iowa City, Muscatine, Shenandoah; March–August. *Illinois*: Algonquin, Belvidere, Cairo, Chicago, East Cape Girardeau, Glen Carbon, Havana, Peoria, Urbana; April–September. *Kansas*: Cowley Co., Douglas Co., Lawrence, Marion Co., Miami Co.; June–October. *Kentucky*: Henderson Co., Mason Co.; June–September. *Louisiana*: Baton Rouge; April–June. *Maryland*: Baltimore. *Massachusetts*: Boston. *Michigan*: Ann Arbor, Detroit, Livingston Co., Monroe Co., Oakland Co., Washtenaw Co.; May–August. *Mississippi*: State College; June–August. *Missouri*: Aldrich, Barry Co., Glencoe, Hayti, Kansas City, Kinsey, Platte City, St. Louis, Sarcoxie, Wyatt; May–August. *Nebraska*: Grand Island; July. *New Mexico*: Ruidoso; June. *New York*: Geneva, Ithaca, Onandago Co., White Plains; April–June. *North Carolina*: Black Mts., Raleigh; March–July. *Oklahoma*: Quinton; June. *Ohio*: Columbus; April, August. *Pennsylvania*: Jeanette, Philadelphia. *South Carolina*: Clemson; August. *Tennessee*: Clarksville, Knoxville, Lawrenceburg; April–August. *Texas*: Alpine, Austin, Brownsville, Cisco, College Station, Cowley, Crosby, Dallas, Kerrville, Lonview, Palm Grove, San Antonio, Sanderson, San Jacinto; February–July. *Virginia*: Arlington, Charlottesville, Fairfax, Falls Church, Nelson Co., Shenandoah; April–August. *Wisconsin*: Broadhead; June.

MEXICO: *Distrito Federal*: Chapultepec, Ciudad de México; July. *Guerrero*: Río Balsas. *Jalisco*: Puente Grande; July. *Michoacán*: Zitacuaro; July. *San Luis Potosí*: Tamazunchale; June. *Other Mexican localities*: Tomás, San José; April. Real de Arriba Temescaltepec; July.

DISCUSSION.—The original description and its accompanying illustration both call attention to the whitish lateral margins of the pronotum and corium. In addition, the illustration shows the elongate pale marks on the dorsal faces of the tibiae and shows the corium to be without the angled pale spot at the apex of the radial vein of the corium. Thus the name *cinctus* of Palisot de Beauvois can apply only to the present form. Say's description of *Cydnus ligatus* is equally detailed in describing the pale markings that are present and in pointing out that the pale corial maculations, other than the costal margin, are lacking. Thus his species also can apply only to this form and so must be considered a synonym of *cinctus*, which was described 26 years earlier.

As is the case with subspecies *albonotatus*, the above-ground habits of this form have permitted observational access to parts of the life history of *cinctus cinctus*. The same general type of life history is evident with overwintering adults (Hart, 1919) possibly breeding on labiates and adults frequenting a variety of plants—sweet clover, *Stachys* sp., *Monarda punctata* (Hart, 1919); raspberry (Froeschner, 1941); raspberry, wild cherry, and grasses (Blatchley, 1926).

Shirus cinctus texensis, new subspecies

DIAGNOSIS.—The creamy white dot at the apex of the radial vein of the corium plus the shorter head (anteocular length less than half of anteocular width) will quickly separate this subspecies from the other two.

DESCRIPTION.—MALE:

Head: Wider than long, 1.14(1.10–1.16):0.87(0.86–0.90); anteocular length little less than half of anteocular width, 0.34(0.33–0.36):0.75(0.73–0.76); juga narrowly and lowly reflexed, punctured nearly or quite to edge. Antennal segments: I, 0.23(0.23–0.24); II, 0.38(0.36–0.40); III, 0.47(0.46–0.50); IV, 0.63(0.63–0.66); V, 0.74(0.73–0.76). Labial segments: I, 0.31(0.30–0.33); II, 0.56(0.53–0.60); III, 0.50(0.50–0.53); IV, 0.33(0.33–0.36).

Pronotum: Width more than twice length, 2.47(2.35–2.53):1.10(1.04–1.17).

Scutellum: Longer than wide, 1.83(1.75–1.89):1.58(1.49–1.62).

Length of body: 4.72(4.35–4.95).

FEMALE: Similar to male, averaging somewhat larger.

Head: Wider than long, 1.26(1.20–1.36):0.93(0.80–1.06); anteocular length averaging less than half (45 percent) of anteocular width, 0.40(0.40–0.43):0.88(0.83–0.96). Antennal segments: I, 0.25(0.23–0.28); II, 0.40(0.36–0.46); III, 0.45(0.43–0.47); IV, 0.61(0.56–0.66); V, 0.71(0.70–0.76). Labial segments: I, 0.38(0.33–0.46); II, 0.61(0.53–0.76); III, 0.61(0.53–0.76); IV, 0.43(0.36–0.50).

Pronotum: Width more than twice length, 2.90(2.79–3.06):1.26 (1.20–1.30).

Scutellum: Longer than wide, 2.23(2.08–2.40):1.85(1.75–1.95).

Length of body: 5.20(4.95–5.70).

TYPE DATA.—Holotype male (USNM 64426). Victoria, Tex., Dec. 16, 1915, J. D. Mitchell, hibernating in sedge grass. Allotype female (USNM), same locality and collector, May 19, 1907. Paratypes as follows:

UNITED STATES: *Texas*: Austin, June 19, 1930, 1 male (RLU); April 9–24, J. O. Martin, 1 female (CalAc). Brazos Co., 2 males, 5 females (MCZ, RCF); May 2, 1950, R. F. Smith, 2 females (CIS). College Station, June 7, 1931, Mills, 1 female (HMH). Concan, July 6, 1936, D. R. Lindsay, nymph (CalAc); Cypress Mills, Chittenden, 2 females (USNM, RCF). Kerryville, May 27, 1907, J. D. Mitchell, 1 female (USNM). San Antonio, June 1942, E. S. Ross, 1 female (CalAc); Tiger Mills, May 10, Schaupp, 13 females (MCZ, RCF). Uvalde, June 12, 1930, G. Linsley, 1 female (CalAc).

DISCUSSION.—Although this form is treated here as a subspecies because of the limited range (southeastern Texas) and great similarity to the more common form within whose range it occurs, there is some possibility that it may more properly be considered a full species. It is an established form which, in spite of the very limited extent of its range, is sympatric with another form, *S. cinctus cinctus*. However, except for the color pattern of the corium, the two forms blend in a clinal series that at present defies morphological separation. Perhaps additional studies coupled with application of statistics will show them as sibling species. Before this can be done reliably, however, large series from several populations must be made available; too many of the specimens at hand for both this and related forms were single representations of collections.

Garsauriinae, new subfamily

PLATE FIGURES 65, 88, 169, 174

DIAGNOSIS.—The fact that tarsal II is distinctly thinner than either I or III, coupled with antennal II being much less than half as long as antennal I, will set this subfamily apart from all others within the family. The trichobothrial arrangement (fig. 174) and venational pattern in the hind wing (fig. 169) are likewise each unique within the family.

DESCRIPTION.—Head: Length little more than half of width; antennae 5-segmented; labium short, reaching base of mesosternum, II without semicircular foliaceous lobe.

Wings: Three widely spaced veins leaving apex of radial cell, median vein with thick, wide, blunt process projecting into radial cell at midlength (fig. 169).

Scutellum.—Surpassing apices of clavi, latter not forming a commissure beyond apex of scutellum.

Thoracic pleurae (fig. 88): Posterior margins fully developed; propleuron with anterior and posterior convexities.

Legs: Not especially modified; tarsi with segment II thinner than I or III; anterior tarsus inserted at apex of tibia.

Sternites: Sutures faintly crenulate, curved anteriorly in middle third; sternites III to VII with two trichobothria arranged in horizontal rows posterior to the spiracles (fig. 174).

TYPE OF SUBFAMILY.—Genus *Garsauria* Walker (1868, p. 536), of which *Microhynchus* Signoret (1882, p. lxiii), *Microrrhampus* Bergroth (1891, p. 214), and *Brachyrrhampus* Haglund (1894, p. 400) are all established synonyms.

DISTRIBUTION.—Literature records show the range of this group to extend from the Malay Archipelago eastward across southern Asia into Africa.

DISCUSSION.—At present, this subfamily consists of the single genus *Garsauria* Walker with the genotype *G. aradoides* fixed by the monobasic original proposal. In addition, there are four other species that have been proposed under this generic name. All of these are extralimital to the present study and so will not be considered further here.

Scaptocorinae, new subfamily

DIAGNOSIS.—The peculiar cultrate anterior tibia with the tarsus inserted at its midlength (fig. 115) will separate this subfamily from all others in the Cydniidae.

DESCRIPTION.—Head: Subquadrate; lateral margins with oblique crenulations (fig. 20); antennae 4-segmented.

Scutellum: Long, surpassing apices of clavi, latter not forming a commissure posterior to scutellar apex.

Wings: Venation of posterior wings (fig. 165) with Sc and R leaving radial cell at antero-apical angle, juncture of r-m and M basad of fracture in Sc+R, radial cell receiving short hamus from M.

Thoracic pleurae (fig. 85): Posterior margins not fully developed; propleuron with no posterior convexity; mesopleuron shrunken posteriorly, hind margin concave, exposing mesometapleural membrane for most of its width; metapleuron shrunken posteriorly, reaching base of abdomen laterally, thence inwardly curving anteriorly and partly exposing internal portion of posterior coxa.

Legs: Strongly modified; anterior tibia (fig. 115) depressed, strongly cultrate, greatly projecting beyond tarsal insertion so that tarsus arises at its midlength, without a dorsal row of spines; middle legs (fig. 133) obliquely impressed, dorsally distinctly curved, with rows of stout bristles, these absent on ventral face, tarsal insertion subapical;

hind femora (figs. 136, 137) greatly swollen, hind tibia heavily club-shaped, apex obliquely truncated and surrounded by a row of stout denticles; tarsi present on front, middle, and sometimes (*Stibaropus*) hind legs, segment II subequal in diameter to I and III.

Sternites: Sutures strongly sinuate or emarginate at level of ventral trichobothrium; sternites III-VII each with two trichobothria (fig. 170), a small one posterior to spiracle and a much larger one antero-ventral to spiracle.

Terminalia: Male genital capsule (fig. 178) opening posteriorly; female terminalia (fig. 187) deflexed so that ventral plates are concealed by sternite VII.

TYPE OF SUBFAMILY.—Genus *Scaptocoris* Perty (1830, p. 165).

DISTRIBUTION.—The distribution of this subfamily is that of its two included genera, *Scaptocoris* and *Stibaropus*. *Scaptocoris* is restricted to the Neotropical Region, where it is represented by not more more than a half dozen known species; the similar number of species of *Stibaropus* appear confined chiefly to the Oriental Region with one species ranging westward through Asia Minor into south-eastern Europe, and so are extralimital to this study.

DISCUSSION.—In addition to the definitive characters given above, the members of the Scaptocorinae have a unique facies due to the very strongly convex form. Of the above-enumerated features the arrangement of the trichobothria, the shape of the sternal sutures, the venation of the hind wing, and the elongated scutellum may be considered fundamental or of phylogenetic significance. These, plus the numerous other characters which are of a highly adaptive nature, point to the group as a very specialized one. Together they emphasize that the evolutionary path followed by its members is separate and well removed from that traveled by other Cydnidae.

The biology of the Scaptocorinae is very poorly known, but what few facts are available will be treated under the species headings below.

Scaptocoris and *Stibaropus*, although so widely separated geographically, are very closely allied, causing one to be more impressed by their similarities than their differences. But to separate the two is a relatively easy matter if one has recourse to the second labial; in *Stibaropus* it is simple, while in *Scaptocoris* it bears a strongly foliaceous, semicircular lobe which is often hidden between the anterior coxae.

Genus *Scaptocoris* Perty

Scaptocoris Perty, 1830, p. 165.

DIAGNOSIS.—This genus, the only member of its subfamily in the Western Hemisphere, may be recognized by any of the features mentioned in the subfamily treatment above. The peculiar club-

shaped posterior tibiae offer the most readily available means of identification.

DESCRIPTION.—Short, compact, strongly convex dorsally and ventrally; widest posterior to midlength of body.

Head (figs. 20, 51): Little wider than long, anterior two-thirds strongly declivent; margin of jugum crenulate with a series of oblique, overlapping crenulations with a single cilium between, without a submarginal row of spines or cilia; eyes prominent, strongly projecting; ocelli well developed, situated behind a line connecting posterior margins of eyes; clypeus as long as or longer than jugum; antennae 4-segmented, IV thickest; bucculae vestigial or absent, maxillary plate with a tuft of long cilia near their site; labium short, arising posterior to apex of head, not or only slightly surpassing anterior coxae, II thickest, with a large, foliaceous, semicircular lobe which is often hidden between anterior coxae.

Pronotum: Distinctly broader than long, narrowed anteriorly, all angles and lateral margins broadly rounded; lateral margins carinate, strongly deflexed with a submarginal row of 12 to 20 setigerous punctures; transverse impression weak or absent; posterior lobe longer than anterior lobe and with wide, transverse rugae which are sometimes punctured.

Scutellum: Longer than broad; sculptured similarly to posterior lobe of pronotum; apex expanded, broadly rounded, wider than half of membranal suture.

Hemelytron: Corial areas usually well defined; membranal suture distinctly sinuate on medial half; membrane hyaline to slightly milky, not more than two-fifths of hemelytral length, usually distinctly surpassing apex of abdomen.

Propleuron: Strongly convex anterior to depression, impunctate; evaporatorium restricted to posterior part of segment; mesosternum carinate medially, with numerous long hairs.

Metapleuron: Slightly convex, impunctate; osteole opening posteriorly under reduced peritreme surrounded by extensive evaporatorium.

Legs: Short and stout; anterior femora stout, thick, height about one-half length, anterior tibiae strongly depressed, cultrate, prolonged beyond tarsal insertion by more than one-third its length; tarsi very slender, length more than half of tibia; II shortest, subequal in diameter to I and III; middle femora not much swollen; middle tibiae somewhat clavate, curved, ciliate, slightly projecting beyond tarsal insertion; length of middle tarsus about one-third of tibia; posterior femora very strongly swollen, convex dorsally; posterior tibiae stoutly

club-shaped, apex obliquely truncated, with U-shaped corbicle; tarsi absent.⁶

Sternites: Strongly convex, densely long-haired subapically.

Terminalia: See subfamily treatment.

Color: All species are some shade of tan or brown; no piceous or black forms are known.

Nymphs: The half dozen nymphs available during this study were third, fourth, and fifth instars of *divergens*, new species, and *talpa*. They showed the head and leg structure of the adults and indicated that the nymphs of this genus may be readily recognized by these same peculiar modifications.

TYPE OF GENUS.—*Scaptocoris castanea* Perty (1830, p. 166), monobasic.

DISTRIBUTION.—Restricted to the Neotropical Region where it has been reported as far north as Mexico and Cuba and south on the South American continent to northern Argentina.

DISCUSSION.—The few notes that have been published on the biology of the species of this genus indicate they are root feeders as adults and nymphs (Champion, 1900; Carvalho, 1952) and of some agricultural importance (Champion, 1900; Costa Lima, 1940).

Some specimens exhibited severe wear in the form of nearly or quite complete obliteration of the lateral crenulations and dorsal rugae of the head and a marked shortening of the front tibia, which apparently are stabbed into the earth in digging.

In 1847 Schiödte also described as new in this genus the following four species: *molginus* (p. 458), *tabulatus* (p. 459), *callidus* (p. 460) and *terginus* (p. 460). The first three of these were described from India and correctly assigned to *Stibaropus* by Stål (1876, p. 17). *S. terginus* was described from the Colman collection as being unlabelled but in a box containing specimens supposed to have come from Brazil; however, Schiödte himself wrote that the accuracy of this label was not beyond question. Personal examination of the type (Copen) of *terginus* showed it to be a true *Stibaropus* (with a simple second labial segment and the posterior tarsi present) and of the same species as the type of *callidus*. Therefore, the label for Brazil must be in error and the name is no longer available for any species of the Western Hemisphere.

The nomenclature within the genus has been further confused by an uncertainty of application of Perty's name *castaneus*. His description and illustration (if the delineation of the hind tarsi is ignored)

⁶ In the original description Perty wrote of the hind tarsi, "tarsis nullis," but in error showed them as present in the illustration. Blanchard (1840) pointed out the error in the figure. Signoret (1881b) objected to considering the posterior tarsi absent and wrote of them as being present and "tres petits, insertes a l'extremite superieure de la tronature." Champion (1900) reported that he was unable to find tarsi on any of the specimens before him. The present study found all pits and punctures of the hind tibiae occupied by short, decumbent spines, and that no point for tarsal attachment exists. Thus, there appears to be no reason to disagree with the original statement, "tarsis nullis" as Signoret has done.

are excellent for assignment to the genus but insufficient for determining which of the six currently recognized species is to bear the name. I have examined the type of *castaneus* Perty, which is still in good condition in the Zoologisches Museum in Munich. The type is the species that Signoret considered to be *terginus*. His "*castaneus*" is thus without a name, and it is described below as a new species.

Key to the known species of *Scaptocoris*

1. Corbicle of posterior tibia crowded with numerous coarse, transverse tubercles arranged in rows which extend almost to base of tibia (fig. 136).
giselleae Carvalho (p. 371)
 Corbicle of posterior tibia mostly smooth, with few tubercles (fig. 134) . . . 2
2. Clypeus distinctly surpassing apices of juga and broadly expanded anterior to them (fig. 51) **divergens**, new species (p. 369)
 Clypeus not or only slightly surpassing juga, not distinctly expanded anterior to them 3
3. Eyes broadly transverse, width of one of them equal to or greater than a third of interocular width; pronotum with distinct punctures on and in transverse sculpturing **minor** Berg (p. 372)
 Eyes not so broad, width of one of them less (usually distinctly less) than a third of interocular width; pronotum with or without punctures . . . 4
4. Corbicle with discal tubercles in an irregular, single row very close to and paralleling outer edge of corbicle (fig. 134); pronotal rugae distinctly punctured, at least in region of transverse impression.
talpa Champion (p. 374)
 Corbicle with discal tubercles not in an irregular row close to outer edge or corbicle (fig. 135); pronotal rugae impunctate or feebly punctate 5
5. Size larger, length of body 10.1 mm; color dark reddish brown.
grossa, new species (p. 373)
 Size smaller, length of body 5.1-7.2 mm; color yellowish tan.
castanea Perty (p. 375)

Scaptocoris divergens, new species

PLATE FIGURES 3, 20, 51, 85, 115, 133, 137, 165, 170, 178, 187, 189

Scaptocoris castaneus (not of Perty) Signoret, 1881b, p. 41, pl. 11, fig. 50.—Lethierry and Severin, 1893, p. 60 (part).
Scaptocoris terginus (not of Schiodte) Berg, 1884, p. 11 (part).—Uhler, 1886, p. 3.—Torre Bueno, 1914, p. 162 (part).—Barber and Bruner, 1932, p. 235.—Martorell, 1939, p. 186.

DIAGNOSIS.—The prolonged and strongly expanded clypeus (fig. 51) will separate adults and nymphs of this species from others in the genus.

DESCRIPTION.—Color: Yellow-brown, apices of anterior tibiae and sometimes marginal spines of corbicles of posterior tibiae fuscous or black.

MALE: Based on two specimens.

Head (fig. 3): Wider than long, 1.61(1.60-1.63):1.50(1.49-1.51); interocular width, 1.04(1.03-1.06); ocellus large, separated from eye

by less than transverse ocellar width; juga weakly convex, shorter than clypeus, latter diverging from base, very wide at apex. Antennal segments: I, 0.59(0.58-0.61); II, 0.48(0.46-0.50); III, 0.43(0.43-0.43); IV, 0.54(0.53-0.56). Labial segments: I, 0.53(0.53-0.54); II, 0.52(0.50-0.55); III, 0.43(0.42-0.44); IV, 0.37(0.36-0.38).

Pronotum: Length about three-fifths width, 2.64(2.63-2.66):4.33(4.30-4.36); posterior lobe impunctate.

Scutellum: Longer than wide, 3.43 (3.42-3.45):2.67(2.65-2.69); impunctate.

Hemelytron: Polished, obsolete or not punctate.

Legs: Corbicle of posterior tibia with single, submedian row of tubercles on dorsal half.

Terminalia: Gonostylus as illustrated (fig. 189).

Length of body: 7.47(7.44-7.50).

FEMALE.—Very similar to male.

Head: Width-length ratio, 1.65(1.58-1.72):1.49(1.40-1.60); interocular width, 1.11(1.00-1.16). Antennal segments: I, 0.66(0.60-0.73); II, 0.50(0.46-0.55); III, 0.49(0.43-0.56); IV, 0.59(0.56-0.60). Labial segments: I, 0.53(0.46-0.60); II, 0.57(0.50-0.63); III, 0.40(0.34-0.43); IV, 0.36(0.33-0.43).

Pronotum: Length-width ratio, 2.72(2.55-2.92):4.54(4.25-4.80).

Scutellum: Length-width ratio, 3.54(3.15-3.90):2.92(2.85-3.07).

Length of body: 7.68(7.05-8.25).

TYPE DATA.—Holotype male (USNM 64869), "Rio Frio, Colombia, 5-24-25." Allotype female (USNM) same data. Paratypes as follows:

GUATEMALA: "Guat.," 1 male, 3 females (USNM).

HONDURAS: La Lima, August 26, 1959, 2 males (USNM). Guarama, Department of Cortes, Dec. 19, 1956, in soil around roots of banana, 10-24 inches down, 1 female (USNM).

PANAMA CANAL ZONE: Fort Clayton, June 25, 1945, K. E. Frick, 1 female (CalAc). Madden Dam, May 18, 1936, M. M. Saylor, 2 females (RLU).

COLOMBIA: Same data as types, 16 females (USNM, RCF). Same locality as type, May 26, 1925, 2 males, 34 females (USNM, RCF). Some of these were determined as *Scaplocoris castaneus* by McAtee and Malloch. Same locality as types, May 20, 1930, Darlington, 1 female (MCZ).

VENEZUELA: Boquerin, Yaracuy, Mar. 20, 1920, J. and E. B. Williamson, 2 females (MCZ). Caracas Valley, Los Ruisses, May 1926, H. E. Box, 11 females (BrM). La Fria, Tachira, Apr. 19, 1920, J. and E. B. Williamson, 2 males (MCZ, RCF).

TRINIDAD: "Trinidad, W. I., Jun.," 1 female (USNM).

DISTRIBUTION.—Specimens studied indicate that the range of this species extends from Panama to northern South America and some of the adjacent islands—Colombia and Venezuela on the continent and Trinidad just off the shore.

DISCUSSION.—This is the species treated as *castaneus* Perty by Signoret. However, examination of Perty's type shows that the name

belongs to a more southern species and leaves the present one without a name. The name proposed above is in reference to the strongly divergent clypeal margins. The numerous illustrations used as characteristic of the genus in this paper are the result of following Signoret's definition of the species and considering, admittedly in error, that this was the type of the genus. However, no serious problems should arise if this is duly noted.

Since *divergens* is the only species of the genus known to occur far enough north to reach Cuba, Martorell's (1939, p. 186) notes on *terginus* on that island probably pertain to it. These notes include several interesting biological facts on the species and are quoted as follows:

This insect becomes a real menace during the rainy nights at La Providence. It is the favorite food of the toad, *Bufo marinus* L., during this season. About 90% of the stomach contents of toads, during the time that these insects were abundant, consists of *S. terginus*, according to dissections made by the writer. The toads do not seem to mind the repugnant odor of these bugs. During the first hours of the evening, when the bright lights inside of the School of Agriculture were turned on, these insects would come in great numbers, attracted to the lights.

Scaptocoris giselleae Carvalho

PLATE FIGURE 136

Scaptocoris giselleae Carvalho, 1952, p. 1.

DIAGNOSIS.—The presence of numerous rows of close-set tubercles that fill the corbicle and extend irregularly to the base of the posterior tibia will easily separate this species from all others in the genus.

DESCRIPTION.—Based on one female.

FEMALE: Head: Wider than long, 1.75 : 1.63; interocular width, 1.33; width of eye, 0.21; ocellus small, separated from eye by a space $1\frac{1}{2}$ times ocellar width; juga weakly convex, almost as long as tylus, latter diverging slightly from base to apex. Antennal segments: I, 0.60; II, 0.63; III, 0.43; IV, 0.60. Labial segments: I, 0.60; II, 0.66; III, 0.46; IV, 0.38.

Pronotum: Length-width ratio, 2.70 : 4.65; posterior lobe with numerous, scattered, fine, fuscous punctures.

Scutellum: Length-width ratio, 3.81 : 3.15; with a few fine punctures toward sides similar to pronotum.

Hemelytron: Polished, with scattered fine punctures, those of exocorium colored like those on pronotum; membrane yellowed, very short, reaching almost to apex of penultimate tergite.

Legs: Posterior tibia with corbicle and dorsal surface crowded with rows of close-set tubercles (fig. 136).

Color: Light brown, apices of anterior tibiae slightly darker.

Length of body: 8.40.

TYPE DATA.—Holotype is in the Museu Nacional do Rio de Janeiro. Carvalho listed the type locality as Sernambetiba, Distrito Federal, Brazil.

SPECIMENS STUDIED: 1 female.

BRAZIL: São Paulo, A. A. Barbiellini, 1 female (USNM).

DISCUSSION.—*S. giselleae* is quite distinct within the genus on several characters: The numerous tubercles on the hind tibia, the very short wing membrane which falls short of the apex of the abdomen, and the small ocelli which are separated from the nearest eye by a space distinctly more than the transverse diameter of an ocellus.

With his original description of this species Carvalho reported that the type material was collected on July 7, 1951,

by Miss Giselle Machilne who collected them when digging between a type of vegetation dominated by *Diplothemium maritimum* Martuis, a dwarf palm and a prairie type of vegetation. There were collected altogether 15 specimens in different phases of development, about one hundred meters from the tide line and two meters below the surface of the soil. The bugs were probably feeding on the roots of *Telanthera maritima* Moq. since they were found around a gall of about the size of a human wrist. A strong odor was noted when handling them.

Scaptocoris minor Berg

PLATE FIGURE 190

Scaptocoris minor Berg, 1894, vol. 1, p. 14.

DIAGNOSIS.—The very broad eyes (one of which equals or exceeds one-third of the interocular width) separate this species from others within the genus.

DESCRIPTION.—Color: Light brown to brown, apices of anterior tibiae and marginal tubercles of corbicle of posterior tibiae fuscous to black.

MALE: Head: Wider than long, 1.67(1.63–1.72): 1.37(1.33–1.43); interocular width, 0.96(0.86–1.00); width of eye, 0.36(0.34–0.38); ocellus large, separated from eye by less than ocellar width; clypeus narrow, parallel-sided, reaching or slightly surpassing apices of juga. Antennal segments: I, 0.40(0.40–0.43); II, 0.42(0.40–0.46); III, 0.43(0.40–0.50); IV, 0.62(0.60–0.66). Labial segments: I, 0.49(0.46–0.56); II, 0.56(0.53–0.63); III, 0.36(0.33–0.40); IV, 0.35(0.33–0.36).

Pronotum: Length-width ratio, 2.39(2.10–2.63): 3.97(3.63–4.20); transverse rugae distinctly punctured.

Scutellum: Length-width ratio, 3.28(3.11–3.43): 2.50(2.25–2.75); surface more or less distinctly punctured.

Hemelytron: Corium polished, with numerous, fine to moderate punctures; membrane surpassing apex of abdomen by more than half its length.

Legs: Corbicle of hind tibia with a double, irregular row of tubercles on outer half.

Terminalia: Gonostylus as illustrated (fig. 190).

Length of body: 6.79(6.00–7.42).

FEMALE: Very similar to male, measurements more variable.

Head: Width-length ratio, 1.65(1.54–1.86):1.39(1.30–1.50); interocular width, 0.94(0.86–1.03); width of eye, 0.36(0.32–0.41). Antennal segments: I, 0.36(0.33–0.43); II, 0.42(0.34–0.53); III, 0.38(0.36–0.40); IV, 0.30(0.28–0.33). Labial segments: I, 0.48(0.40–0.56); II, 0.55(0.45–0.63); III, 0.36(0.33–0.40); IV, 0.30(0.28–0.33).

Pronotum: Length-width ratio, 2.30(1.84–2.66):3.84(3.18–4.45).

Scutellum: Length-width ratio, 3.26(2.84–3.70):2.35(2.05–2.73).

Length of body: 6.50(5.40–7.56).

TYPE DATA.—In Museo Argentina de Ciencias Naturales (formerly Museo Nacional de Buenos Aires), Buenos Aires, Argentina, fide correspondence from Kormilev. The publication containing the original description was not available during this study. The data from the type specimen, as furnished by Kormilev, gives the locality as Matto Grosso, Brazil.

SPECIMENS STUDIED: 10 males, 19 females.

BRAZIL: Amazon River, Arary to Manóas, Sept. 20–21, 1930, Holt, Blake, and Agostini, 1 male (USNM); Parintine, August 1935, G. V. Vredenburg, 2 males, 4 females (BrM); Bahia, Dec. 6, 1907, 1 male, 4 females (Car); Taperapes, Aracuayes, Matto Grosso, J. Carvalho, 2 females (CMC).

PERU: Puerto Maldonado, Madre de Dios, Apr. 17, 1947, alt. 600 ft., J. C. Pallister, 6 males, 8 females (AmM).

VENEZUELA: Samariapo, Amazonas, June 12, 1950, J. M. Capriles, 1 female (Cap).

Scaptocoris grossa, new species

DIAGNOSIS.—The large size and impunctate posterior lobe of the pronotum distinguish this new species from its congenitors.

DESCRIPTION.—Based on four females, one too badly eaten by dermestids to yield measurements.

HEAD: Wider than long, 2.39(2.30–2.47):2.06(2.02–2.08); interocular width, 1.52(1.46–1.56); width of eye, 0.43(0.42–0.45); ocellus large, separated from eye by less than an ocellar width; clypeus parallel-sided, subequal to length of juga. Antennal segments: I, 0.73(0.70–0.73); II, 0.82(0.80–0.83); III, IV, and V missing in all specimens seen. Labial segments: I, 0.71(0.70–0.73); II, 0.85(0.83–0.88); III, 0.57(0.56–0.60); IV, 0.54(0.53–0.56).

Pronotum: Length-width ratio, 3.67(3.57–3.75):6.22(6.15–6.31); posterior lobe impunctate.

Scutellum: Length-width ratio, 4.72(4.65–4.80):3.99(3.90–4.05); impunctate.

Hemelytron: Polished, virtually impunctate or with obsolete punctures; membrane hyaline, surpassing apex of abdomen by about one-third its length.

Legs: Corbicle of posterior tibia with discal tubercles few in number, well removed from outer margin.

Color: Dark brown, apical half or more of anterior tibiae and marginal tubercles of corbicle of posterior tibiae black.

Length of body: 10.65 in all specimens.

TYPE DATA.—Holotype female (KU), "Peru, S.A., 4-21, 1939, F. Woytkowski, No. 398, Dept. Huanuco, Loc. Shapajilla, 630 m.a.s., 1.11 km. N. E. Tingo Maria." Paratypes as follows:

PERU: Same data as type, 2 females (RCF, USNM).

BOLIVIA: Yungas de Coroico, Fassel, 1 female (Wien).

DISTRIBUTION.—This species is known only from Bolivia and Peru, as indicated above.

DISCUSSION.—Although known only from a few female specimens, the present species must be erected because the specimens agree with none of the previously described forms. The four specimens are very uniform in appearance and stand out more boldly in general habitus than is borne out by structural features. In its large size and dark color, this species appears superficially most like *talpa*, but the impunctate posterior lobe of the pronotum and the irregularly placed discal tubercles of the corbicle that are distinctly removed from the side of the corbicle will separate it effectively from *talpa*.

Scaptocoris talpa Champion

PLATE FIGURES 134, 191

Scaptocoris talpa Champion, 1900, p. 256.

DIAGNOSIS.—The location of the single row of transverse tubercles very close to the outer edge of the corbicular area of hind tibia (fig. 134) and large size (over 8.5) separates this species readily from all others in the genus.

DESCRIPTION.—COLOR: Light brown, apices of anterior tibiae and marginal and discal tubercles of corbicle of posterior tibia fuscous to black.

MALE: Two specimens.

Head: Wider than long, 1.94(1.93-1.95):1.65(1.62-1.69); interocular width, 1.31(1.30-1.33); width of eye, 0.32 in both specimens; ocellus large, separated from eye by less than ocellar width; clypeus subparallel-sided, subequal to length of jugs. Antennal segments: I, 0.70(0.70-0.70); II, 0.65(0.65-0.66); III, 0.44(0.43-0.46); IV, 0.40(0.38-0.42). Labial segments: I, 0.65(0.65-0.66); II, 0.68(0.66-0.70); III, 0.44(0.43-0.46); IV, 0.40(0.38-0.42).

Pronotum: Length-width ratio, 3.18(3.15–3.22):5.17(5.10–5.25); posterior lobe with distinct, fine punctures.

Scutellum: Length-width ratio: 4.12(4.05–4.20):3.18(3.15–3.22); with few, scattered, fine punctures.

Hemelytron: Shining, with small, distinct punctures; membrane surpassing apex of abdomen by about one-third its length.

Legs: Discal tubercles of hind tibial corbicle arranged in a single, irregular row very close to outer margin of corbicle (fig. 134).

Terminalia: Gonostylus as illustrated (fig. 191).

Length of body: 8.57(8.55–8.60).

FEMALE: Three specimens. Very similar to male, measurements somewhat larger.

Head: Width-length ratio, 2.05(2.02–2.06):1.79(1.72–1.85); interocular width, 1.37(1.36–1.40); width of eye, 0.32(0.32–0.33). Antennal segments: I, 0.75(0.73–0.76); II, 0.69(0.66–0.73); III, 0.51(0.50–0.53); IV, 0.71(0.70–0.73). Labial segments: I, 0.66(0.60–0.70); II, 0.74(0.70–0.76); III, 0.46(0.43–0.50); IV, 0.41(0.40–0.43).

Pronotum: Length-width ratio, 3.43(3.22–3.75):5.47(5.25–5.83).

Scutellum: Length-width ratio, 4.07(4.00–4.14):3.23(3.07–3.48).

Length of body: 9.33(9.00–9.60).

TYPE DATA.—The type series of "many specimens," including nymphs as well as adults, was originally recorded by Champion (1900, p. 256) as coming from "Guatemala, Capetillo." Some of these specimens are probably still in the British Museum (Natural History).

Champion (1900, p. 256) reported that the types had "been found underground, at the roots of sugar cane and other plants."

SPECIMENS STUDIED.—2 males, 9 females, 1 nymph.

MEXICO: *Chiapas*: Huixtla, 1939, B. D. Pelaez, 5 females (Pel, RCF).

GUATEMALA: West coast, Nov. 20, 1928, V. C. Dunlap, 1 male, 4 females, 1 nymph (USNM). Guatemala, J. G. Salas, on sugar cane, 1 male (USNM).

Scaptocoris castanea Perty

PLATE FIGURES 135, 192

Scaptocoris castanea Perty, 1833, p. 166, pl. 33, fig. 5.

Scaptocoris terginus (not of Schiödte) Stål, 1876, p. 17.—Signoret, 1881b, p. 42, pl. 1, fig. 3.—Berg, 1884, p. 11 (part).—Lethierry and Severin, 1893, p. 61 (part).—Torre Bueno, 1914, p. 162 (part).

DIAGNOSIS.—The small size and lack of distinct punctures on the posterior lobe of the pronotum will separate this species from the others in the genus.

DESCRIPTION.—MALE (from two specimens):

Head: Wider than long, 1.5(1.40–1.63):1.36(1.33–1.40); interocular width, 1.05(0.96–1.14); ocellus large, separated from eye by less than an ocellar width; clypeus narrow, parallel-sided, reaching or slightly

surpassing apices of juga. Antennal segments: I, 0.48(0.43–0.53); II, 0.51(0.50–0.53); III, 0.43(0.43–??); IV, 0.60(0.60–??). Labial segments: I, 0.50(0.50–0.50); II, 0.56(0.53–0.60); III, 0.39(0.36–0.43); IV, 0.36(0.36–0.36).

Pronotum: Length-width ratio, 2.65(2.46–2.85):4.39(4.11–4.57); transverse rugae impunctate or very feebly punctured.

Hemelytron: Corium polished, with scattered, fine, weak punctures; membrane surpassing apex of abdomen by about one-half its length.

Legs: Corbicle of hind tibia with a double, irregular row of transverse tubercles on the outer half but well separated from edge of corbicle.

Terminalia: Gonostylus as illustrated (fig. 192).

Color: Yellowish brown, apices of anterior tarsi and marginal teeth of corbicle darker brown to blackish.

Length of body: 7.12(6.75–7.50).

FEMALE: Very similar to male, but measurements more variable, averaging larger.

Head: Width-length ratio, 1.64(1.44–1.73):1.36(1.16–1.46); interocular width, 1.09(0.93–1.20); width of eye, 0.27(0.25–0.29). Antennal segments: I, 0.46(0.43–0.50); II, 0.54(0.50–0.58); III, 0.43(0.43–0.43); IV, 0.58(0.56–0.63). Labial segments: I, 0.56(0.53–0.60); II, 0.59(0.50–0.66); III, 0.39(0.36–0.43); IV, 0.58(0.56–0.63).

Pronotum: Length-width ratio, 2.75(2.31–3.00):4.60(3.78–4.78).

Scutellum: Length-width ratio, 3.43(3.22–3.79):2.85(2.43–3.15).

Length of body: 7.37(6.45–7.80).

TYPE DATA.—Perty originally reported the type (now in the Zoologisches Museum, Munich) as "Habitat in Provincia Piauihensis," Brazil.

DISCUSSION.—Costa Lima (1940) reported that this species damaged tomatoes and pimentos in Argentina and was of economic importance in Brazil.

Personal examination of Perty's type has left no doubt in the author's mind that this is the correct application of the name *castaneus*. The literature records for specimens from Cuba, Trinidad, and Venezuela are certainly questionable, and in the present paper such specimens have been transferred to *divergens*, new species.

SPECIMENS STUDIED.—10 males, 13 females.

ARGENTINA: Patquia, K. J. Hayward, 1 male, 1 female (BrM). Mendoza, 1 female (MCZ). Perico to Embarcación, May 19, 1920, G. I. Harrington, 1 female (USNM). Tucumán, 450 meters, Rosenberg, 1 male, 2 females (USNM). Cafayate, Mar. 12, 1951, F. Monros, 1 male, 1 female (UnivTuc). Santa Rosa de Leales, January 1948, B. García, 4 males, 2 females (UnivTuc). Fronterita, Mar. 12, 1948, Ares, 3 males, 3 females (UnivTuc). Mar del Plata, 1 female (UnivTuc).

BRAZIL: Provincia Piauihensis, 1 female (Zoologisches Museum, Munich).

Subfamily Cydninae

Cydnides Billberg, 1820, p. 70.

DIAGNOSIS.—Technically, members of this subfamily may be recognized by the arrangement of the trichobothria (see discussion of subfamilies on page 352) or the venation of the metathoracic wing shape of radial cell plus absence of hamus (see page 353). More readily available means of determination, however, have been pointed out in the key to subfamilies. The following features must be used together: lack of claval commissure, front tarsus arising at or near apex of tibia, and the presence of a lateral, submarginal row of setigerous punctures on the pronotum.

DESCRIPTION.—Head: Margin entire, not crenulate; antennae 4- or 5-segmented.

Scutellum: Long, surpassing apices of clavi, latter not forming commissure posterior to scutellar apex.

Thoracic pleurae: Posterior margins all well developed, propleuron with strong convexity posterior to depression; mesopleuron with posterior margin touching or overlapping metapleuron for most or all of its width; metapleuron with posterior margin reaching to base of abdomen for its full width and completely covering internal part of hind coxa.

Legs: Weakly or strongly modified. Anterior tibia of all strongly compressed, a row of stout spines dorsally; middle legs feebly or not modified; posterior legs variously terete or compressed, straight, curved, or sinuate, rows of spines regularly spaced or crowded on dorsal and ventral margins; tarsi present on all legs, segment II shortest, subequal in diameter to I and III.

Sternites: Sutures nearly straight, not strongly sinuate laterally; trichobothria arranged differently on each segment—on VII arranged in transverse row behind spiracle, on VI to III successively the ventral trichobothrium shifts farther forward until on III it lies mesad or meso-anteriorly to the spiracle (fig. 172).

Terminalia: Male genital capsule opening dorsally; female plates well developed, mostly exposed (fig. 186).

TYPE OF SUBFAMILY.—Genus *Cydnus* Fabricius (1803, p. 184).

DISTRIBUTION.—Available information showed that the full geographic range of the family—worldwide, in all zoogeographic regions—is occupied by members of this subfamily.

DISCUSSION.—This subfamily not only contains more genera and species than all the other subfamilies combined but appears also to show greater contrasting extremes of morphological modifications. On the basis of the wing venation, trichobothrial arrangement, and the head structure, the Cydninae appear to be more closely related

to the Sehirinae and the Garsauriinae than to the Scaptocorinae and Amnestinae.

A complete life cycle study of one or more species of the Cydninae is a great desideratum. Although only scattered, fragmentary biological notes are available, the probable life history as outlined in the discussion of the family is true, even if very incomplete.

The separation and definition of the included genera have been difficult, and even yet may be considered far from complete. The search for characters that would permit concise, clear-cut definitions of genera has been only partially successful. The relative value given to any set of characters may vary with workers, so that the included, conservative number of genera may be greatly increased by those who see fit to assign higher taxonomic worth to some of the features here relegated to a position below a genus. In a family as poorly known and as uniform as this one appears to be, any marked structural feature presents a great temptation to the worker to establish a genus—regardless of whether the modification has any fundamental value. This type of splitting results in numerous monotypic genera that may be based on secondary sexual characters, adaptive modifications, or even “ornamental” features of a single species. I consider that several monotypic genera of the Western Hemisphere fall in this category and must be suppressed; they are *Colobophrys* Horváth, *Pachymerooides* Signoret, *Psectrocephalus* Van Duzee, and *Syllobus* Signoret. These are reduced to subgenera or full synonyms in the text, where full explanations are also given. All of these were based on a single superficial but prominent character. They all remained monotypic.

One of the most important and useful characters, used first by Uhler (1877) and later to a lesser extent by Signoret (1881 to 1884), is the modification of the osteole and its peritreme. These features will permit the arrangement of the genera of the world into two groups which, for convenience and to avoid any suggestion of a nomenclatorial position, will be referred to as Groups A and B.

Group A can be defined as including those genera that show a definitely differentiated terminal structure on the anterior part of the osteolar peritreme (figs. 89–100), the differentiation being due either to definite widening of the terminal part or to a marked difference in texture (i.e., being very shining, polished), or a combination of both. The position of the actual osteolar opening, whether visible ventrally at the base of the terminal lobe or opening posteriorly (not visible ventrally) on the peritreme, also shows some significance.

Group B would include those genera that do not show any such terminal modification on the anterior part of the peritreme (figs. 102–112). In addition, all members of this group have the osteole opening posteriorly on the peritreme so that it is not visible ventrally.

The separation of the genera in each of these two groups must be based on an entirely different set of characters. In Group A the modifications of the terminal lobe of the peritreme furnish abundant generic separations. One section of the group exhibits a short, expanded lobe of various shapes and textures (figs. 90, 95-100); a second section has the terminal modification markedly transversely elongate and with or without a recurved apical part (figs. 89, 91-94). In each section there appear some additional modifications that aid in further separation of the genera, so that only very few of the features shown by other body parts are required for delimiting the genera within Group A.

Group B is characterized by the lack of terminal modifications of the peritreme (figs. 102-112); therefore, characters derived from other parts of the body must be used for separating the included genera. Several usable and apparently significant features may be used to separate most of these genera, but at the end of the series there accumulates a very heterogeneous mass of species for which no satisfactory separation was found. An admittedly very weak feature is presented to separate this unwieldy mass into two groups for which generic names are already available. These two genera, *Dallasiellus* Berg and *Tominotus* Mulsant and Rey, each include species that appear to be closer to certain of those in the other genus than to some of the more remote members of the same genus, and this condition led the author to hunt for additional breaks, but a more satisfactory one was not found.

The author has been deliberately conservative in accepting genera in both groups and believes that numerous genera of but one or a few species emphasize the difference between species rather than their relationships. Consequently, in this paper, genera are defined by groups of characters possessed in common rather than by single differences. The results of such an approach may be very unsatisfactory to those who hold the opposite view, so an effort was made to compromise the two viewpoints by retaining some of the lesser differences to establish subgenera. Thus the relationships as well as the more conspicuous structural modifications may be recognized.

The following tabulation of the Cydninae occurring in the Western Hemisphere indicates the author's current conclusions.

- 1a. Anterior part of peritreme terminated by a differentiated lobe, loop, or band (figs. 89-101); osteolar opening usually visible ventrally at base of terminal process.
- 2a. Terminal process of peritreme elongate, transverse length more than three times width (figs. 91-94).
- 3a. Terminal process fused with cuticula, forming a flat, polished band extending almost or quite to lateral margin of evaporatorium and separated therefrom by a distinct, impressed line (figs. 92-94).

- 3b. Terminal process a narrow, shallow trough with extreme apex convex and recurved (fig. 91) **Macroporus**
- 2b. Terminal process short, transverse length not more than twice width.
- 4a. Metapleural evaporatorium limited, simply outlining peritreme (fig. 90).
Microporus
- 4b. Metapleural evaporatorium extensive, occupying most of segment (figs. 95-97).
- 5a. Terminal process large, elongate-oval, with one to three longitudinal rugae discally (fig. 89) **Cydnus**
- 5b. Terminal process not elongate-oval, without rugae (figs. 95-97, 101).
Ectinopus; Melanaethus; Onalips
- 1b. Anterior part of osteolar peritreme not differentiated terminally (figs. 102-112), posterior part sometimes with spinelike or tonguelike process; osteole opening posteriorly on peritreme, not visible ventrally.
- 6a. Pronotum with a sharply defined, deeply impressed transverse line paralleling anterior margin from side to side (figs. 14, 73) . . **Pangaeus**
- 6b. Pronotum without such a line.
- 7a. Posterior tibia strongly compressed, spines confined to dorsal and ventral margins, ventral spines longer, thinner and more tapering than those of dorsal margin (figs. 141, 142).
- 8a. Labial II with a semicircular foliaceous lobe (fig. 36) . . **Prolobodes**
- 8b. Labial II without such a lobe (fig. 34) **Cyrtomenus**
- 7b. Posterior tibia not compressed, spines rather uniformly developed on all margins (figs. 140, 148-150) **Dallasiellus; Tominotus**

In the above arrangement, two points are worthy of mention. First, the two genera listed under 7b represent those which were stated above to be very difficult to separate fully and satisfactorily. As previously mentioned, this is a "residual area" of negative characters that includes a number of species groups. But whether these groups are worthy of generic, subgeneric, or even lower standing is not yet evident. For convenience they are held thus. Supporting evidence will be found in the generic discussions of them.

The second noteworthy point is the absence of certain familiar generic names like *Aethus*, *Geocnethus*, and *Geotomus*. These three genera have Old World genotypes and none of our forms is congeneric with them. In general, our species formerly assigned to *Aethus* belong to *Tominotus*; those listed as *Geocnethus* go to *Dallasiellus*; and the name *Melanaethus* replaces *Geotomus* in the Western Hemisphere. These name changes are discussed under the appropriate generic discussions. With these and certain other generic redefinitions resulting from a companion study on the Old World forms, each genus now assumes a zoogeographic significance that it formerly lacked.

Key to genera of Cydninae known in the Western Hemisphere

1. Anterior part of osteolar peritreme modified apically into a distinctly differentiated loop, lobe, or band which is wider than basal part of peritreme and more or less polished (figs. 89-101) 2

Genus *Rhytidoporus* Uhler, new status

Aethus of authors, nec Dallas, 1851, p. 110.

Rhytidoporus Uhler, 1877, p. 380.

Cryptoporus Uhler, 1877, p. 381, nec Motschulsky (1858) in Coleoptera. New synonymy.

Berghthora Kirkaldy, 1904, p. 280. New synonymy.

Findalia Jensen-Haarup, 1926, p. 51. New synonymy.

DIAGNOSIS.—The narrow, shining bandlike extension of the perimere which interrupts the metapleural evaporatorium anteriorly (figs. 92–94) will separate the members of this genus from all others in the Western Hemisphere.

DESCRIPTION.—Small; length of body, 3.5–6.0; oval, widest approximately at or slightly posterior to middle; dorsum much less convex than venter.

Head: Length nearly two-thirds width, flattened or slightly convex above; jugs as long as clypeus; jugs with fine marginal carina dorsally, either with complete (including apex of clypeus) row of submarginal punctures with their setae becoming finer towards eye, or with one preocular seta and one half way to apex; eyes large, but slightly projecting; ocelli absent or well developed, when present located on or slightly behind a line connecting hind margins of eyes and separated from eyes by not more than twice transverse ocellar width; antennae 5-segmented, I shortest, II slightly shorter or equal to III, latter subequal to or shorter than IV which may be almost as long as V; bucculae moderately high, reaching nearly to base of head; labium reaching between middle coxae (*lucida?*), IV shortest, II longest, III shorter than I, II slightly compressed but without foliaceous lobe.

Pronotum: Length about half width, distinctly narrowed from base; side margins carinate, straight or convex on basal two-thirds or more, with 4 to 8 or about 20 setigerous punctures submarginally; anterior margin shallowly to deeply emarginate; transverse impression weak to absent, usually marked by a row of distinct punctures; posterior margin broadly but slightly convex, all angles rounded.

Scutellum: Shorter than, equal to, or longer than width, triangular, apex narrowed and less than or slightly wider than half of membranous suture; disc with distinct punctures.

Hemelytron: Areas weakly or well defined, membranous suture straight or slightly projecting laterally; costa with 1 or 2, or about 15 to 20 setigerous punctures; membrane not over two-fifths of hemelytral length, usually reaching or slightly surpassing apex of abdomen, hyaline and faintly clouded with brown.

Propleuron: Moderately convex anterior to depression, latter with or without coarse punctures; prosternal carinae low, rather sharp; anterior margin slightly lobulate either side of middle.

Mesopleuron (figs. 92-94): Flat, evaporative area occupying all but extreme lateral area and posterolateral angle; posterior margin entire; mesosternum prominent to subcarinate along median line, with numerous long hairs.

Metapleuron (figs. 92-94): Flat, osteolar canal extended laterally to limit of evaporative area as a flat, posteriorly sharply delimited band that is in large part polished; osteole usually opening at base of a lobulate auricle, latter absent (fig. 93a) in subgenus *Bergthora*.

Legs: Moderately long, slender; anterior tibia (fig. 124) moderately widened, with seven or eight stout spines on outer margin, not prolonged beyond tarsal insertion; middle and posterior tibiae slender; latter terete, slightly more than one-third body length; tarsal II shortest, I subequal to or shorter than III.

Sternites: Strongly convex, shining, with or without setigerous punctures; posterior margin of each sternite with numerous fine, sharp crenulations on lateral third or more.

Nymph: A third (?) instar nymph collected with adults on "strawberry" showed the head with the fine marginal carina dorsally and the submarginal series of stout spines and longer cilia.

TYPE OF GENUS.—*Rhytidoporus indentatus* Uhler (1877, p. 380), monobasic; of *Cryptoporus* Uhler (1877) nec Motschulsky (1858) in Coleoptera, *Cryptoporus compactus* Uhler (1877, p. 382), monobasic; *Bergthora* Kirkaldy (1904) was proposed as a new name for *Cryptoporus* Uhler and so takes *Cryptoporus compactus* Uhler as genotype by objective synonymy; of *Findalia* Jensen-Haarup, *Findalia lucida* Jensen-Haarup (1926, p. 52), by original designation and monobasic.

DISTRIBUTION.—The specimens studied indicated the range of this genus to be from Florida, New Mexico, and Texas in the southern United States and south into Mexico, Brazil, and the West Indies (Cuba, Haiti, Dominican Republic, Puerto Rico, and St. Croix).

DISCUSSION.—The devaluation of the above three "genera" to subgeneric status is based chiefly on the fact that all three possess the important and unique apical modification of the peritreme. Admittedly, the three subgenera are not equally closely related. The subgenera *Rhytidoporus* and *Bergthora*, as indicated by the following key, are more closely related to each other than to the South American *Findalia*. The fact that no male specimen of *Findalia* was available for study was unfortunate, because it prevented determination of the position of that subgenus in relation to the other two as regards the shape of the male gonostylus. In respect to this structure, *Rhytidoporus* shows an interesting divergence from *Bergthora* in bearing at the dorsal angle an unusual mesal, spine-like projection (figs. 193, 194) which is absent in the single species of the latter subgenus (fig. 195).

The relationships of the subgenera of *Rhytidoporus* reflects the same situation that Osborn (1933) pointed out for many of the Auchenorrhynchos Homoptera. The forms that occur on the eastern end of the Antilles chain are more closely related to those of the western part of the chain and in Central America than to those occurring on the South American continent. The West Indian *Rhytidoporus* (sen. str.) are certainly more closely related to *Berghthora* than to the South American *Findalia*.

Key to the subgenera of *Rhytidoporus*

1. Submargin of head with two submarginal setigerous punctures, one in front of eye and one half way to apex; metapleural evaporatorium reaching lateral margin of segment **Findalia** Jensen-Haarup (p. 392)
Submargin of head (including apex of clypeus) with row of coarse, close-set setigerous punctures; metapleural evaporatorium not reaching lateral margin of segment 2
2. Costa with one to three setigerous punctures; osteolar auricle distinctly developed (fig. 92) **Rhytidoporus** Uhler (p. 384)
Costa with about 15 setigerous punctures; osteolar auricle absent (fig. 93) **Berghthora** Kirkaldy (p. 390)

Subgenus *Rhytidoporus* (*Rhytidoporus*) Uhler

Rhytidoporus Uhler, 1877, p. 380.

DIAGNOSIS.—The submarginal row of setigerous punctures on the jugum coupled with the few setigerous punctures on the costa will define this subgenus.

TYPE OF SUBGENUS.—*Rhytidoporus indentatus* Uhler (1877, p. 380), monobasic.

DISTRIBUTION.—The members of this subgenus apparently are native to the West Indies, although one species has invaded the southern part of peninsular Florida on the mainland. This is in contrast to the lone species of each of the other two subgenera which have continental ranges.

DISCUSSION.—The included species appear rather closely allied to each other, *obsoletus*, new species, being the most distinct.

Key to species of the subgenus *Rhytidoporus* (*Rhytidoporus*)

1. Ocelli present, prominent; membrane longer than basal width 2
Ocelli absent; membrane short, length not greater than basal width.
obsoletus, new species (p. 389)
2. Pronotum laterally with submarginal row of ten setigerous punctures; terminal process of peritreme limited apically by narrow strip of evaporatorium (fig. 93b) **diminutus** (Ruckes) (p. 386)
Pronotum laterally with submarginal row of five or six setigerous punctures; terminal process of peritreme extended all the way to edge of evaporatorium (fig. 92) 3

3. Head broadly rounded, semicircular or slightly truncated apically (fig. 52); pronotal disc immediately behind anterior emargination with a single row of a few (usually two to seven) coarse punctures between setigerous punctures posterior to inner angle of eyes **indentatus** Uhler (p. 387)
 Head less broadly rounded (fig. 53); pronotum immediately behind anterior emargination with many (about 15) coarse punctures between setigerous punctures **barberi**, new species (p. 395)

Rhytidoporus (Rhytidoporus) barberi, new species

PLATE FIGURES 53, 194

DIAGNOSIS.—This new species, here described from a single male, may be characterized by the presence of ocelli and the numerous (about 15) punctures immediately behind the anterior emargination of the pronotum. The short, mesally projecting dorsal spine of the gonostylus also separates this from the males of other known species.

DESCRIPTION.—MALE: Only specimen known. Oval.

Head: Wider than long, 1.13 : 0.70; interocular width, 0.66; margins of paraclypei less broadly rounded (fig. 53). Antennal segments: I, 0.16; II, 0.23; III, 0.26; IV, 0.36; V, 0.43. Surface shining, with few weak, radiating rugae, three or four moderate punctures anterior to and between ocelli. Labial segments: I, 0.46; II, 0.56; III, 0.46; IV, 0.40.

Pronotum: Nearly twice as wide as long, 2.34 : 1.23; anterior lobe with moderate, subapical impression bearing about 15 distinct punctures, and with several punctures laterally; transverse impression obsolete, marked by an irregular row of close-set, moderate punctures; posterior lobe with a few scattered punctures discally; side margins with six setigerous punctures.

Scutellum: Length and width equal, 1.43; irregularly and distinctly punctured over surface except at base and apex.

Hemelytron: Shining, discal area with numerous fine punctures and several coarser ones scattered over full length; clavocorial suture distinctly impressed, bordered by two complete rows of distinct, coarse punctures; limiting impressions of radial veins punctured; clavus with a more or less regular row of distinct punctures on basal half; costa with one setigerous puncture, membrane hyaline, faintly yellowed, with a median brownish cloud; longer than basal width, surpassing apex of abdomen by about one-third its length.

Terminalia: Gonostylus as illustrated (fig. 194), mesal dorsal tooth short, edge posterior to it deeply concave.

Length of body: 4.10.

TYPE DATA.—Holotype male (USNM 64425), "St. Croix, V. I., H. A. Beatty, No. 741/1937."

DISCUSSION.—This specimen bore a label of H. G. Barber as "*Aethus* sp. ?, near *indentatus*." Because of this finely studied con-

clusion the species is being named in honor of that outstanding American hemipterist.

Rhytidoporus (Rhytidoporus) diminutus (Ruckes), new combination

PLATE FIGURE 93b

Aethus diminutus Ruckes, 1952, p. 2.

DIAGNOSIS.—The presence of a narrow band of the evaporatorium beyond the apex of the peritreme will separate this species from all others in the genus.

DESCRIPTION.—In the absence of specimens for study, the original description will be quoted and followed by a few comments based on mesopleural and metapleural structures taken from two sketches of those areas on the types as kindly furnished by Dr. Ruckes.

Castaneous brown to dark fuscous, slightly obovate in outline. Head as wide between the eyes as long through its midline; apex evenly rounded as in allied species; spines along the anterior margin short, blunt, and all of the same size; two spines on apex of tylus and five on anterolateral margin of each jugum; only three long setae on each jugal margin just in front of eyes; two setae on each side of disc of head, one in front of each eye and one just behind the anterior margin; a pair of setae, one long and one short, on the under side of the apical margin just lateral of the base of the buccula. Pronotal disc slightly convex, without any indentations, a vague double row of obsolescent, wide-spaced punctures across the posterior half; a pair of large setigerous pits near apical margin diagonally behind the ocelli; a pair of less pronounced setigerous punctures inside each lateral margin, one near anterior angle and one larger, about midway along the length; marginal setae of pronotum at least ten in number on each side. Scutellum with a few small, scattered punctures on the disc; marginal punctures indistinct and tending to become confluent posteriorly; apex of scutellum almost angulate rather than rounded. Hemelytra with some scattered punctures on disc; a row of distinct punctures following the cubital vein, with a second row laterally, converging towards the former posteriorly; a row of subcostal and radial punctures present but not distinct; costal margin with three long setae on the basal third; membrane clear hyaline, with a small fuscous spot near the middle of its base. Abdominal venter impunctate, apical edges of segments obscurely roughened; only two setae laterally on each segment adjacent to spiracle. Mesosternal evaporating area very large, reaching the lateral margins of the supporting sclerites. Rostrum nearly reaching posterior margins of mesocoxae, second joint almost as long as third and fourth combined. Antennal segments I, II, and III subequal, each slightly shorter than segments IV and V, which in themselves are subequal. Antennae, rostrum, and tarsi testaceous, each becoming paler apically. Hypopygium of the male broadly scoop-shaped, its apical margin entire.

Holotype: Male, 3.75 mm. long, 2.25 wide across humeri, South Bimini Island, Bahama Islands, British West Indies, May, 1951 (collected by Cazier and Gertsch).

Allotype: Female, 4 mm. long, 2.5 mm. wide across humeri, same data as for the holotype.

Dr. Ruckes' sketches of the pleurae of both types show both the mesopleural and metapleural evaporatoria as being characteristic for

the genus; the most outstanding feature being that the terminal process stops just short of the lateral margin of the metapleural evaporatorium (fig. 93b, based on Ruckes' sketch of male holotype).

TYPE DATA.—The type series consisted of only the holotype male and allotype female (both in AmM). The type locality is listed in the original description quoted above.

SPECIMENS STUDIED.—None.

DISCUSSION.—The sketches of the evaporatoria do not bear out the statement, in the original description, "Mesosternal evaporating area very large, reaching the lateral margin of the supporting sclerites." The sketches show both the mesopleural and metapleural evaporatoria to be similar to those of *indentatus* in approaching but not actually attaining lateral margin of segment.

***Rhytidoporus (Rhytidoporus) indentatus* Uhler**

PLATE FIGURES 5, 32, 52, 92, 124, 146, 193

Rhytidoporus indentatus Uhler, 1877, p. 380.—Distant, 1880, p. 4.

Aethus (Rhytidoporus) indentatus Signoret, 1882, p. 38, pl. 2, fig. 80.—Torre Bueno, 1939, p. 179.

Aethus indentatus Uhler, 1886, p. 3.—Van Duzee, 1917, p. 20.—Barber and Bruner, 1932, p. 235.—Barber, 1939, p. 271.

Cydnus indentatus Lethierry and Severin, 1893, p. 66.—Banks, 1910, p. 99.

DIAGNOSIS.—The presence of ocelli and the absence of, or the presence of but a few, coarse punctures immediately posterior to the anterior pronotal emargination sets this species apart from others in the group (fig. 5).

DESCRIPTION.—MALE: Oval.

Head: Wider than long, 1.12(1.04–1.30):0.78(0.73–0.86); interocular width 0.66(0.61–0.76); surface smooth, with wide, very feeble radiating lines, impunctate or with a few fine punctures anterior to ocelli; ocellar width 0.06(0.06–0.08); subequal to half of space separating it from an eye, 0.11(0.10–0.13). Antennal segments: I, 0.24(0.23–0.30); II, 0.22(0.20–0.26); III, 0.29(0.24–0.36); IV, 0.37(0.33–0.46); V, 0.51(0.46–0.56). Labial segments: I, 0.40(0.36–0.46); II, 0.59(0.53–0.70); III, 0.45(0.40–0.53); IV, 0.33(0.30–0.40).

Pronotum: Wider than long, 2.28(2.08–2.73):1.26(1.07–1.43); transverse impression near midlength, weakly indicated and usually obsolete at middle; anterior lobe transversely convex, usually with a noticeable triangular impression anteriorly, surface polished, impunctate except for a few punctures behind anterior emargination and usually a variable number near sides; site of transverse impression with an irregular row of fine punctures that are sparse medially and denser laterally; posterior lobe impunctate or with a few widely

scattered very fine punctures; lateral submargins with five or six setigerous punctures.

Scutellum: As long as or slightly longer than basal width, 1.46 (1.36-1.69):1.41 (1.30-1.62); apex narrowed; impunctate basally and at apex, discally with several scattered punctures.

Hemelytron: Areas well defined, surface polished, discally with few or no coarse punctures; two inner rows of punctures bordering clavus distinct, second row nearly complete; clavus with a partial row of punctures on basal half or less.

Terminalia: Genital capsule with rim faintly recurved, entire or vaguely emarginate at middle apex; gonostylus as illustrated (fig. 193), the dorsomedial projection very long.

Length of body: 4.29(3.85-5.00).

FEMALE: Very similar to male, but with impression of anterior pronotal lobe weak or absent and measurements slightly larger.

Head: Width-length ratio, 1.19(1.06-1.33):0.77(0.73-0.86); interocular width 0.71(0.63-0.80); ocellar width, 0.06(0.06-0.08); space separating ocellus from eye 0.12(0.10-0.16). Antennal segments: I, 0.24(0.20-0.26); II, 0.24(0.18-0.30); III, 0.30(0.26-0.36); IV, 0.42(0.36-0.53); V, 0.54(0.50-0.60). Labial segments: I, 0.43(0.36-0.51); II, 0.61(0.53-0.73); III, 0.48(0.41-0.60); IV, 0.33(0.33-0.36).

Pronotum: Width-length ratio, 2.43(2.15-2.79):1.27(1.10-1.43).

Scutellum: Length-width ratio, 1.61(1.36-1.89):1.50(1.30-1.75).

Length of body: 4.42(3.85-5.28).

TYPE DATA.—In the U.S. National Museum, Uhler (1877, p. 381) wrote of the material on which his descriptions were based as follows: "Inhabits Cuba, and has been collected in various parts of the island by Prof. Poey and Mr. Charles Wright. Southern Florida, Dr. E. Palmer."

SPECIMENS STUDIED.—24 males, 36 females.

UNITED STATES: *Florida*: Dade Co., Deerfield, Fort Pierce, Homestead, Lakeland, Lake Placid, Miami, Royal Palm; for all months of the year.

CUBA: Buenos Aires (Trinidad Mts.), Cabanas, Guanajay, Mina Carlota (Trinidad Mts.), Santiago de las Vegas, Soledad, Upper Yara Valley; August-April.

HAITI: Desbarriere, Ennery, Etang Lachaux, Grand Rivière, Jacmel, Kenscoff, mountains near Port-au-Prince; January, September, October.

DOMINICAN REPUBLIC: Constanza, Mt. Diego de Ocampo, Sanchez; July, August.

PUERTO RICO: Aquirre, El Yongue; January, May, October.

ST. CROIX ISLAND: Southern end; July.

DISCUSSION.—The present species is quite variable in length and width of body, in median impression and lateral punctation of anterior lobe of pronotum, and in proportionate length of antennal segments

II and III (II varying from two-thirds as long to subequal in length to III). Without intermediates one might be tempted to separate some of these, but as lots bearing the same data often showed these as well as intermediates in varying combinations, the temptation was greatly lessened. The most persistent doubt as to the validity of this lumping was raised by a small series of large specimens from the Dominican Republic and Puerto Rico which shows a more marked impression of the anterior pronotal lobe in both sexes. However, the males of that series show the long mediadorsal projection on the gonostylus that is present in the others assigned here. Some of this material was reported by Barber and Bruner (1932) as *indentatus*, but their comment that "The males have the anterior disc on the pronotum quite plainly depressed" was not true of all males studied, as some of the smaller ones lacked the depression.

In spite of these tentative conclusions, goodly series of specimens from more localities might validate some sort of separation of some of these variations.

Wolcott (1936, p. 181) reported this species "at light," "on dung" and "eaten by *Ameiva exsul*," an iguana in Puerto Rico. Later (1948, p. 189) he wrote that it had been collected "From numerous humid localities of coast and mountains" on the same island, and repeated that it was found to be "an item of food of the iguana, *Ameiva exsul*."

Rhytidoporus (Rhytidoporus) obsoletus, new species

DIAGNOSIS.—Any of several features will separate this species from the others within the genus. The absence of ocelli, the weakly defined corial areas, the very elongate and slender scutellar apex, or the short membrane may be relied upon. Unfortunately, this form is known only from females so the validity of these characters in relation to the males is purely conjectural.

DESCRIPTION.—FEMALE (only sex known): Oval.

Head: Wider than long, 1.32(1.30–1.33):0.87(0.86–0.90), interocular width 0.91(0.90–0.93); surface smooth, with several very weak, radiating rugae; ocelli absent. Antennal segments: I, 0.28(0.26–0.30); II, 0.32(0.30–0.33); III, 0.36(0.36–0.40); IV, 0.51(0.50–0.53); V, 0.67(0.63–0.70). Labial segments: I, 0.62(0.60–0.66); II, 0.77(0.76–0.80); III, 0.63(0.60–0.66); IV, 0.49(0.46–0.50).

Pronotum: More than twice as wide as long, 1.48(1.43–1.53):0.71(0.70–0.73); transversely convex, smooth, with scattered moderate punctures submarginally to apex and sides of anterior lobe, along obsolete transverse impression and on disc of posterior lobe; side margins with five to seven setigerous punctures, none at basal angles.

Scutellum: Distinctly longer than broad, 1.17(1.13–1.23):0.97(0.93–1.03); irregularly punctured over surface except at base and

apex; latter very narrowed and elongate, the narrowed tip about twice as long as broad.

Hemelytron: Corium shining, very faintly alutaceous, obsoletely wrinkled; corioclaval suture obsolete, the two rows of bordering punctures very weak; usually not or only very weakly punctate discally, along radial vein and in exocorial area; membrane brownish hyaline, not surpassing apex of abdomen, length subequal to basal width.

Length of body: 5.43(5.28–5.71).

TYPE DATA.—Holotype female (MCZ), "La Visite & vic., La Selle Range, 5–7000 ft., Sept. 16–23, Haiti, 1934, Darlington." Paratypes: 5 females (MCZ, USNM, RCF), same data as holotype.

DISCUSSION.—This very distinct species is known only from six female specimens. However, sexual dimorphism is not strongly marked within this family so one may expect the males also to show the unusual features mentioned above.

Subgenus *Rhytidoporus* (*Bergthora*) Kirkaldy

Cryptoporus Uhler, 1877, p. 381, nec Motschulsky (1858) in Coleoptera.
Bergthora Kirkaldy, 1904, p. 280.

DIAGNOSIS.—The single member of this subgenus separates most easily from the species in the other subgenera by the more numerous (15 to 20) setigerous punctures on the costa.

TYPE OF SUBGENUS.—*Cryptoporus compactus* Uhler (1877, p. 382), monobasic; of *Bergthora*, the same species by objective synonymy, the new generic name having been proposed to replace preoccupied *Cryptoporus* Uhler for which the type had already been fixed.

DISTRIBUTION.—The members of this subgenus occur in a limited area in the southwestern United States (in Texas, New Mexico, and Arizona) and all of Mexico. As yet, it is not known to occur on any of the islands to the east or west of Mexico.

Rhytidoporus (*Bergthora*) *compactus* (Uhler), new combination

PLATE FIGURES 93a, 193

Cryptoporus compactus Uhler, 1877, p. 382.

Aethus (*Cryptoporus*) *compactus* Signoret, 1882, p. 41, pl. 2, fig. 63.—Torre Bueno, 1939, p. 179.

Aethus compactus Uhler, 1886, p. 3—Van Duzee, 1917, p. 20.

Cydnius compactus Lethierry and Severin, 1893, p. 65.—Banks, 1910, p. 99.

DIAGNOSIS.—*R. compactus* is the only species in the subgenus.

DESCRIPTION.—MALE: Oval, widest posterior to middle.

Head: Length two-thirds width, 0.82(1.78–0.93):1.21(1.16–1.33); interocular width, 0.82(0.78–0.93); anterior outline semicircular; clypeus as long as juga, slightly narrowed apically; surface convex,

shining, with numerous minute punctures and several obsolete, radiating rugae; ocelli small, separated from eye by space almost three times transverse ocellar width; jugum ventrally polished, impunctate; maxillary plate impunctate on apical half, obsoletely punctured on basal half. Antennal segments: I, 0.25(0.23–0.26); II, 0.21(0.16–0.23); III, 0.23(0.20–0.26); IV, 0.26(0.23–0.30); V, 0.28(0.26–0.30). Bucculae almost as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.44(0.43–0.46); II, 0.53(0.50–0.56); III, 0.45(0.40–0.50); IV, 0.32(0.28–0.36).

Pronotum: Length slightly more than half width, 1.31(1.23–1.49):2.56(2.40–2.89); anterior margin deeply bimarginate; lateral margins entire, middle third straight or very weakly concave, submarginal row with about 30 to 35 setigerous punctures; transverse impression obsolete, usually marked by medially interrupted row of moderate punctures; anterior lobe with numerous small punctures subapically and laterally; posterior lobe with several irregular, small punctures and many minute punctures.

Scutellum: Length equal to, longer than, or shorter than width, 1.59(1.49–1.89):1.66(1.56–1.82); weakly alutaceous, disc with numerous well-separated large punctures and many minute punctures interspersed, occasionally with small, transverse rugae.

Hemelytron: Clavus and corium distinctly alutaceous; clavus with numerous distinct punctures, somewhat arranged in rows; mesocorium with numerous distinct punctures, with one and usually a second complete row of punctures paralleling claval suture; exocorium with numerous distinct punctures over entire length; costa with 15 to 20 setigerous punctures; membranal suture nearly straight, lateral angle not produced; membrane longer than basal width, reaching or surpassing apex of abdomen.

Propleuron: Feebly to distinctly alutaceous, impunctate.

Mesopleuron: Lateral area impunctate.

Metapleuron: Lateral area impunctate.

Sternites: Each with submedian transverse row of setigerous punctures; alutaceous, roughened on lateral third by short, longitudinal rugae.

Terminalia: Genital capsule punctate in lateral angle, apical margin entire or weakly sinuate medially; gonostylus (fig. 195) without mesal projection at dorsal angle.

Length of body: 4.22(4.00–4.57).

FEMALE: Similar to male, measurements mostly averaging larger.

Head: Length-width ratio, 0.79(0.76–0.90):1.27(1.20–1.36); interocular width, 0.85(0.80–0.90). Antennal segments: I, 0.28(0.26–0.30); II, 0.20(0.16–0.23); III, 0.24(0.23–0.28); IV, 0.28(0.26–0.30); V, 0.30(0.30–

0.30). Labial segments: I, 0.45(0.43-0.50); II, 0.55(0.50-0.63); III, 0.43(0.40-0.46); IV, 0.31(0.30-0.33).

Pronotum: Length-width ratio, 1.38(1.30-1.49):2.74(2.60-2.93).

Scutellum: Length-width ratio, 1.75(1.62-1.89):1.78(1.62-1.89).

Length of body: 4.42(4.07-4.85).

TYPE DATA.—Uhler gave the locality of the type (USNM) as "Galveston Island, Texas."

SPECIMENS STUDIED.—38 males, 38 females.

UNITED STATES: *Arizona*: Globe, Huachuca Mts., Patagonia, Pinery Canyon (Chiricahua Mts.); March, July. *California*: Coral Beach (Los Angeles Co.), Hynes, San Diego Co., Saticoy; April, May, October. *New Mexico*: Mesilla Park, Deming; August, December. *Texas*: Austin, Galveston, Padre Island, Tyler, Victoria; February to May.

MEXICO: *Distrito Federal*: Peñón Viejo; April, June. *Mexico*: Tejupilco; June. *Sinaloa*: Mazatlán, Rosario; March. *Sonora*: Guaymas, Yavaros; July. *Yucatán*: Yucatán.

DISCUSSION.—This appears to be a common species on the mainland within its range. It is not yet known to occur on any of the islands of the Caribbean Sea, thereby differing from the members of the subgenus *Rhytidoporus*.

Pearse's (1938, p. 239) note on this species, "in rubbish," in the Mexican State of Yucatán, was accidentally entered under the family name Fulgoridae. One of Pearse's specimens was seen during this study. In the collection of the Museum of Comparative Zoology, Harvard University, there is a specimen collected by W. M. Wheeler and mounted with two ants, suggesting the possibility that they were found in close association. The hemipteron is erroneously labeled as *Homoloporus congruus*.

Subgenus *Rhytidoporus* (*Findalia*) Jensen-Haarup, new status

Findalia Jensen-Haarup, 1926, p. 52.

DIAGNOSIS.—The presence of but two submarginal setigerous punctures on each jugum readily separates this subgenus from the other two, each of which bears a row of submarginal setigerous punctures on jugum.

DESCRIPTION.—Head: Jugum with two submarginal setigerous punctures, one immediately in front of eye, one near middle; vertex with curved, obtuse carina between ocelli.

Pronotum: Transverse impression absent; surface nearly impunctate; side margins with but four submarginal setigerous punctures.

Hemelytron: Membrane small, about one-fourth hemelytral length.

Metapleuron: With distinct auricular process at osteole; evaporatorium reaching side margin of segment.

TYPE OF SUBGENUS.—*Findalia lucida* Jensen-Haarup (1926, p. 52), monobasic. The locality given with the original description was "Brazil," but the type specimen bears no locality label.

DISCUSSION.—Except for the development of the peritreme (a structure which I believe to be a prime phylogenetic indicator), the single species of the subgenus is well removed from the other species of the genus.

Rhytidoporus (Findalia) lucida (Jensen-Haarup), new combination

PLATE FIGURE 94

Findalia lucida Jensen-Haarup, 1926, p. 52.

DIAGNOSIS.—Since this is the only species known for this subgenus the subgeneric characters will place it within the genus.

DESCRIPTION.—Known only from the type female. FEMALE: Elongate-oval, nearly parallel-sided but slightly wider behind mid-length.

Head: Length about two-thirds width, 0.56:0.88; interocular width, 0.53; anterior outline semicircular, clypeus as long as juga, but slightly narrowed at apex; surface alutaceous, with scattered minute punctures; jugum with two submarginal setigerous punctures, one preocular and one near middle; ocelli moderately large, separated from eye by space subequal to transverse diameter of ocellus; jugum ventrally and maxillary plate polished, impunctate. Antennal segments: I, 0.20; II-V missing; bucculae nearly as high as labial II. Labial segments (III, IV, missing): I, 0.30:II, 0.53.

Pronotum: Length less than half width, 0.94:2.00; anterior margin deeply, doubly emarginate; lateral margin entire, more strongly curved on apical half, with submarginal row of four setigerous punctures; transverse impression absent, marked by one or two distinct punctures at extreme ends; surface, except for a few fine punctures near anterior margin and some scattered laterally, virtually impunctate.

Hemelytron: Clavus and corium finely alutaceous; clavus with one longitudinal row of punctures; mesocorium with two complete rows of punctures paralleling claval suture, discally with a few distinct punctures that become more numerous apically; exocorium weakly convex, with numerous obsolete punctures for full length; costa very fine, with one small setigerous puncture subbasally; membranal suture slightly concave; membrane surpassing apex of abdomen, slightly longer than basal width.

Propleuron: Shining, obsoletely alutaceous, impunctate; prosternal carinae sharp, less than half as high as labial II.

Mesopleuron: Evaporatorium filling all but narrow anterior, posterior, and extreme lateral margins of segments.

Metapleuron (fig. 94): With well-developed auricle, near osteole; evaporatorium extending to lateral margin of segment; lateral area with few distinct punctures near evaporatorium.

Sternites: Polished, with numerous widely separated punctures on lateral third.

Length of body: 3.70.

TYPE DATA.—The type female (Copen) bears no locality label although Jensen-Haarup stated "Brazil" as the type locality (see discussion below).

DISCUSSION.—In the absence of a locality label on the type, a question arises as to the source of the locality cited by Jensen-Haarup. One possible explanation is that he derived it from a manuscript "n. sp." label on the pin, the generic name of which was apparently based on the name of that country. Although some doubt may thus arise as to this truly being a species of the Western Hemisphere, the ligulate extension of the peritreme allies it to the present genus—and since this development is not known from any other locality in the world, the logical conclusion is that *lucida* is a species of the New World.

Genus *Macroporus* Uhler

Macroporus Uhler, 1876, p. 278.

DIAGNOSIS.—The shape of the osteolar peritreme here extends more than three-fourths of the way to the lateral margin of the metapleuron where it ends in a conspicuous, recurved, polished lobe (fig. 91).

DESCRIPTION.—Small (3.2–4.4), broadly oval, greatest width behind middle; dorsum slightly, venter moderately, convex.

Head: Length almost three-fifths width, slightly convex above; outline semicircular, clypeus as long as juga; with fine, dorsal carina marginally; submargin, including clypeus, with complete row of coarse, close-set setigerous punctures giving rise to a complete row of pegs and a few hairs; eyes small, entire, moderately projecting; ocelli well developed, moderate in size, situated slightly posterior to line connecting hind margins of eyes, separated from eye by space less than transverse ocellar width; antennae 5-segmented, II shortest and most slender, III, IV, and V increasing slightly in length, all longer than I; bucculae low, reaching almost to base of head (fig. 30); labium reaching between middle coxae, II longest, compressed, without semicircular foliaceous lobe, III longer than I and IV which are subequal.

Pronotum: Length about half width; lateral margin entire, slightly convex, narrowing from base; anterior margin deeply and simply

emarginate; posterior margin subtruncate; anterior submarginal impressed line distinct from side to side; transverse impression postmedian, obsolete; dorsal surface abundantly punctate; lateral submargin with about 15 setigerous punctures.

Scutellum: Slightly wider than long, triangular, slightly narrowed at apical third where it is less than one-third of membranal suture; apex narrowly rounded; disc punctured.

Hemelytron: Corial areas poorly defined; membranal suture straight, strongly oblique; costa arcuate, explanate, with no setigerous punctures; membrane distinctly less than half of hemelytral length.

Propleuron: Alutaceous, impunctate; prosternal carinae very low; anterior margin not lobulate either side of middle.

Mesopleuron: Faintly concave, evaporatorium extensive, covering most of segment, reaching lateral and posterior margins; posterior margin entire; mesosternum prominent and subcarinate along midline, with numerous hairs.

Metapleuron (fig. 91): Nearly flat, evaporatorium reaching almost to lateral margin; peritreme very long, reaching nearly to lateral margin of evaporative area, formed as an open trough for basal two-thirds, apical third a large, recurving, polished lobe; osteole opening at base of trough.

Legs: Moderately long; anterior tibia (fig. 121) moderately widened, with seven stout, blunt spines dorsally, not prolonged beyond tarsal insertion; tarsal II shortest; middle and posterior tibiae terete; latter (fig. 143) straight, little more than half as long as body, without spines on posterior face.

Sternites: Convex, impunctate, alutaceous, dull laterally, shining along broad median area.

Terminalia: Male genital capsule opening dorsally; gonostylus as figured for species (fig. 196).

TYPE OF GENUS.—*Macroporus repetitus* Uhler (1877, p. 375), monobasic.

DISTRIBUTION.—The range of this genus is that of its only included species and appears confined to the western United States, in California (and New Mexico, Torre Bueno, 1939). The specimen (USNM) which Uhler (1876, p. 278) reported from "the vicinity of Baltimore" bears the label "Md." The specimen is of the present species but is undoubtedly mislabeled as no other specimens have been reported from the eastern United States. Therefore, unless supported by additional captures, that record should not be included in the range of the genus.

DISCUSSION.—This genus contains a single species, which is treated below.

Macroporus repetitus Uhler

PLATE FIGURES 9, 30, 91, 121, 143, 196

Macroporus repetitus Uhler, 1876, p. 278; 1877, p. 375; 1886, p. 3.—Signoret, 1881b, p. 329, pl. 10, fig. 46.—Lethierry and Severin, 1893, p. 64.—Banks, 1910, p. 100.—Van Duzee, 1917, p. 19.—Torre Bueno, 1939, p. 178.

DIAGNOSIS.—This is the only species known in this well-marked genus.

DESCRIPTION.—MALE:

Head: Length nearly three-fourths width, 0.64(0.58–0.70):0.89(0.83–0.98); interocular width, 0.63(0.60–0.68); juga as long as clypeus, narrowing it apically; juga and vertex with numerous, irregularly placed punctures; ocelli small, separated from eye by a space almost three times transverse ocellar diameter; jugum ventrally and maxillary plate impunctate. Antennal segments: I, 0.20(0.17–0.23); II, 0.13(0.12–0.14); III, 0.27(0.24–0.29); IV, 0.27(0.23–0.31); V, 0.33(0.32–0.34). Bucculae low, height about half of labial II. Labial segments: I, 0.31(0.30–0.33); II, 0.48(0.46–0.50); III, 0.39(0.36–0.43); IV, 0.26(0.26–0.29).

Pronotum: Length a little more or less than half of width, 1.0(0.90–1.17):2.02(1.82–2.28); anterior lobe polished, moderately punctured except for U-shaped discal area, punctures slightly coarser towards margins; posterior lobe with numerous close-set punctures similar to those of transverse impression.

Scutellum: Distinctly wider than long, 1.34(1.17–1.49):1.02(0.90–1.10); surface, except basal angles, moderately closely punctured almost to apex, latter with a low, median carina.

Propleurae, mesopleurae, and metapleurae: As described for genus.

Legs, sternites, and terminalia: As described for genus, gonostylus as illustrated (fig. 196).

Length of body: 3.74(3.35–4.12).

FEMALE.—Very similar to male, but punctures of posterior pronotal lobe a little coarser and more distinct; and measurements more variable.

Head: Length-width ratio, 0.64(0.55–0.68):0.92(0.80–1.00); interocular width, 0.65(0.56–0.72). Antennal segments: I, 0.21(0.17–0.26); II, 0.13(0.13–0.16); III, 0.28(0.25–0.33); IV, 0.29(0.26–0.33); V, 0.33(0.27–0.37). Labial segments: I, 0.34(0.32–0.38); II, 0.52(0.44–0.60); III, 0.40(0.34–0.51); IV, 0.28(0.27–0.31).

Pronotum: Length-width ratio, 1.08(0.84–1.19):2.11(1.75–2.28).

Scutellum: Width-length ratio, 1.36(1.07–1.56):1.10(0.91–1.19).

Length of body: 4.02(3.42–4.35).

TYPE DATA.—Uhler (1876, p. 278) reported the type "From the vicinity of San Francisco." The other locality given in the original

description, "in the vicinity of Baltimore," is undoubtedly in error, probably resulting from mislabeling, as the specimen is still in the Uhler collection (USNM). No subsequent specimen has been labeled for the eastern United States.

SPECIMENS STUDIED.—28 males, 49 females.

UNITED STATES: *California*: Camp Baldy, Carmel, Greenhorn Mts. in Tulare Co., Independence, Monterey, Mt. Diablo, Mt. Wilson, Paraiso Springs, Pinnacles National Monument, Riverside Co., San Diego Co., San Francisco, San Jacinto Mts., Sequoia National Park, Suisun, Tan Bark Flat, Yuba City; October to June.

DISCUSSION.—Ecological data on specimens consisted of the phrase "in soil" on a series consisting of one adult and three young instars, and one note of "*Ceanothus*." Torre Bueno (1939) listed the species from New Mexico.

Genus *Microporus* Uhler

Microporus Uhler, 1872, p. 394 (name only); 1876, p. 275.

DIAGNOSIS.—The very strongly restricted metapleural evaporatorium that just outlines the peritreme marks this genus as distinct from the others in the Western Hemisphere.

DESCRIPTION:—Small, 3.5–5.2, broadly roundly oval, greatest width slightly posterior to midlength; dorsum moderately, venter strongly convex.

Head: Length about three-fourths width; oblique, slightly to decidedly convex above; clypeus almost or quite as long as juga, both with fine marginal carina dorsally and a sunken submarginal line with coarse contiguous setigerous punctures bearing short blunt pegs and several long hairs; eyes well developed but small, projecting; ocelli well developed, moderate in size, separated from eyes by space distinctly more than the transverse ocellar width; antennae 5-segmented, IV and V subequal in length, stoutest; bucculae low, reaching almost to base of head; labium almost or quite reaching middle coxae, II longest, weakly compressed, without semicircular foliaceous lobe, I and III subequal, longer than IV.

Pronotum: Almost half as long as wide; side margins carinate, narrowing from base, basal half or more straight, with a submarginal row of six or seven or a submarginal band of numerous setigerous punctures; anterior margin moderately, simply emarginate; posterior margin broadly, weakly convex; angles rounded.

Scutellum: As wide as or slightly wider than long, triangular, apex broadly rounded, not or very feebly narrowed; apex about two-thirds of membranous suture; disc abundantly punctured.

Hemelytron: Corial areas well defined, moderately punctured over entire surface; costa with 20 or more setigerous punctures; membranous

suture straight or bisinuate; membrane about two-fifths of hemelytral length, yellow or milky hyaline.

Propleuron: Polished, impunctate; prosternal carinae low; anterior margin broadly and weakly lobed on either side of middle.

Mesopleuron (fig. 90): Slightly concave, shining, evaporatorium very limited or absent and replaced by rough, close, oblique rugae on inner basal half; posterior margin entire; mesosternum carinate medially, with numerous long hairs.

Metapleuron (fig. 90, *a-d*): Rather convex, shining, evaporatorium restricted to simple outline of peritreme and may become evanescent apically, remainder of surface shining, weakly rugose or with few punctures; peritreme reaching almost to or slightly past middle of segment; terminal modification strongly to weakly auriculate (figs. 90, *a-d*) always with anterior part extended posteriorly around osteolar opening which is visible ventrally.

Legs: Short; anterior tibia (fig. 118) moderately dilated, with seven or eight stout, blunt spines on dorsal margin, not prolonged beyond tarsal insertion; tarsal II shortest; middle and posterior tibiae subterete, latter (fig. 151) straight, dorsal and ventral spines equal in size.

Sternites: Convex, polished, wrinkled and more or less punctured, each segment with transverse row of setigerous punctures approaching posterior margin toward middle; each segment laterally with submarginal elevated band which gives rise to two or more than twelve long hairs per segment.

TYPE OF GENUS.—*Microporus obliquus* Uhler (1872, p. 394), monotypy.

DISTRIBUTION.—Two species of this genus are known to occur throughout the entire United States (but only from scattered localities in the eastern half) and south to central Mexico; the third only from Argentina in South America.

DISCUSSION.—The division of the genera of the Cydninae into two groups based upon the absence or presence of a differentiated terminal part of the peritreme has proved to be very workable in nearly all cases. The "exception" proves to be in the present genus—*Microporus*. In the original description of the *Microporus*, Uhler (loc. cit.) said, "Osteolar canal short, at tip enlarged into a circular auricle." He described two species in this genus, *obliquus*, the genotype, and *testudinatus*. Several years later, Distant (1880, p. 8), after quoting Uhler's statement concerning the "circular auricle," described a third species, *mexicanus*. From all this one would assume that the circular auricle was a characteristic of all three forms. The first clue that such was not always the case appeared in Signoret's (1881b) introductory remarks concerning Uhler's genera. At that time Signoret (1881b) transferred *testudinatus* to *Aethus* (defined on p. 423 as having

“le canal ostiolaire terminé par un lobe de formes diverses, libre a l’extrémité ou plus ou moins confondu avec la suture mésosternale”) and in 1882 he transferred *obliquus* to *Cydnus* (defined on p. 145 as having “a l’extrémité du canal ostiolaire un lobe libre, plus ou moins surelévé, en forme de cornet et plus ou moins aplati sur les côtés”). From specimens which Uhler apparently furnished him, Signoret illustrated the greatly reduced terminal modification of the osteolar pattern in *testudinatus* and the auricular development of the same structure in *obliquus*. Since that time, authors have treated these species as members of the genus *Aethus* or *Cydnus* depending on how the latter taxon was defined.

With the intense examinations of the present study the specimens assigned here appeared to stand apart from all others in the Western Hemisphere. And again they appeared to be best defined as Uhler had done, but with a limiting statement concerning the shape of the terminal process of the peritreme. In the more than 200 specimens examined, the shape of the terminal process of the peritreme proved to be somewhat variable but exhibited two general types. The first type was large and loop-shaped with the osteole opening ventrally at its base (fig. 90,a). The second type showed more variability but was essentially the loop-shape greatly reduced and somewhat compressed, but still with the osteole opening ventrally at its base (figs. 90,b-d). The latter, or reduced type, was found almost exclusively on a series of specimens from the coastal regions of central California (see distribution notes under *testudinatus*); while the loop-shaped type was found on specimens from all parts of the range of the genus, even in the central coastal area of California.

Additional support for keeping *Microporus* as a distinct genus is offered by features other than the peritreme. The very limited metapleural evaporatorium appears unique and by itself could be relied upon to separate this genus from all other Cydiniinae in the Western Hemisphere. The combination of a complete, submarginal row of pegs on the juga and the unnarrowed apex of the scutellum, which is broader than half the length of the membranous suture, appears in no other species of the New World except in the *brevis* section of the genus *Tominotus*.

With the genus thus tentatively established, attention must be directed to the three nominal species described within *Microporus*. At the specific level the student of this group is again beset by the same problem—exceeding variability of characters, even those that might be considered critical for separating species. Considering first Uhler’s two species, *obliquus* and *testudinatus*, one gathers from the literature that both an eastern and a western species, respectively, are represented. Attempts to separate the two on the basis of

published treatments lead to confusion and uncertainty because *obliquus* shows such extreme variation that one is easily led to believe that but a single variable species is involved. I am not yet fully convinced otherwise, but simply retain the two forms because sufficient evidence is not at hand to synonymize a long-established name. Additional specimens, especially from California, should decide the matter. The separating character accepted in the present study is that furnished by the development of the terminal lobe of the peritreme. The large loop- or ear-shaped lobe is accepted as the diagnosis for *obliquus*, while the reduced lobe marks the distinctness of *testudinatus*. If the gap would remain evident between these two extremes the two forms could be accepted as distinct. But as indicated by figures 90,b,c, it appears that with a larger series of specimens this gap will eventually be bridged.

If *testudinatus* is accepted as being delimited by the reduced peritreme lobe, it appears to be rather uniform in shape, punctation, and coloration of the membrane. But all features for which *testudinatus* was examined fell within the great range of variability exhibited by *obliquus* (see specific discussion of variability for this form). The confusion caused by this variability also misled Uhler, who labeled a specimen of *obliquus* as *testudinatus*. This specimen does show the proper habitus for *testudinatus*, but has the loop-shaped lobe on the peritreme and a ventral truncation of the prosternal carinae and lacks the membranal markings. Recourse to the male gonostylus resulted in no help. In the more than 20 specimens examined, the gonostyli of no two were alike. The series of accompanying outline drawings (figs. 197,a,b; 198,a-f) demonstrates some of the variability in the shape of this structure.

Distant's (1880, p. 8) species, *Microporus mexicanus*, appears to be *obliquus* for three reasons: (1) The generic characterization quoted Uhler's description of the "circular auricle," while the specific description said nothing about *mexicanus* disagreeing on this point (assuming Distant verified the generic features occurring on the ventral surface of his specimens). (2) Distant made a comparison with *obliquus*, but the differentiating features pointed out that the punctation and wrinkling of the scutellum do not appear to have specific value in the group. In fact, transverse wrinkling appears to be a deformity that occurs often in specimens of this family; perhaps the burrowing of teneral specimens causes the still-plastic cuticula to be jammed into folds. (3) The type locality falls within the range of *obliquus* as accepted here.

Therefore, at present I recognize as valid within this genus only Uhler's two species and, on the basis of its auriculate peritreme, Berg's *Cyrtomenus nigropunctatus*.

Venter: Lateral third finely and rather irregularly rugulose; each segment with one or two submarginal setigerous punctures.

Length of body: 4.08.

Color: Dorsally and ventrally light yellow; spines fuscous to black; dorsal punctures fuscous, becoming paler laterally on head, thorax, and coria; following areas distinctly clouded with fuscous: Occiput, calli, basal angles and apical margin of scutellum, inner base of clavus, lateroapical angle of mesocorium, and broad, lateral areas on mesopleuron and metapleuron.

TYPE DATA.—Berg's (1879, p. 12) pair of specimens (Univ. Nac., fide Kormilev, in lit.) was from "Mendoza," Argentina.

SPECIMENS STUDIED.—1 female.

ARGENTINA: Santiago del Estero to Río Hondo, Feb. 14, 1948, R. Golbach, 1 female (Univ. Tuc.).

DISCUSSION.—This species stands alone among all others of the Western Hemisphere in its color.

The inclusion of *nigropunctatus* in *Microporus* might come as a surprise, especially in view of its range being so distant from those of its congenitors. However, if the sculpture of the peritreme can be used as a phylogenetic indicator the auriculate development here definitely allies this form with the northern ones. The greatly reduced lateral pubescence separates it rather markedly and suggests the possible need for subgeneric recognition. But I am hesitant about erecting supraspecific taxa in the Cydnidae on the basis of vestiture alone, especially for just one or two species, and so refrain from it here.

Microporus obliquus Uhler

PLATE FIGURES 8, 28, 29, 90a, 118, 151, 198

Microporus obliquus Uhler, 1872, p. 394; 1877, p. 373.—Stål, 1876, p. 27.—Signoret, 1882, p. 161, pl. 7, fig. 97.

Microporus mexicanus Distant, 1880, p. 8, pl. 4, fig. 8. New synonymy.

Cydnus obliquus Signoret, 1882, p. 161.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 67.—Banks, 1910, p. 99.

Cydnus mexicanus Signoret, 1882, p. 241.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 67.

Aethus obliquus Van Duzee, 1917, p. 20.

Aethus (Microporus) obliquus Torre Bueno, 1939, p. 179.

DIAGNOSIS.—*M. obliquus* is characterized within the genus by possession of a large, loop- or ear-shaped process on the peritreme (fig. 90,a) and the piceous color.

DESCRIPTION.—MALE: Broadly oval.

Head: Length more than two-thirds width, 0.84(0.72–0.96): 1.13(1.00–1.26); interocular width, 0.80(0.71–0.91); anterior outline a flattened semicircle, jugs slightly longer than clypeus; dorsum shining, with radiating rugae and few to many punctures; jugs ventrally and

maxillary plate polished, impunctate. Antennal segments: I, 0.21 (0.20–0.23); II, 0.14 (0.11–0.18); III, 0.20 (0.19–0.23); IV, 0.20 (0.16–0.23); V, 0.22 (0.20–0.25). Labium reaching bases of middle coxae. Labial segments: I, 0.39 (0.36–0.46); II, 0.50 (0.43–0.53); III, 0.38 (0.33–0.44); IV, 0.30 (0.26–0.36).

Pronotum: Length less than half width, 1.18 (0.99–1.32):2.38 (2.11–2.69); anterior margin moderately, singly emarginate; lateral margin straight on basal two-thirds or more; lateral margin entire, not emarginate, with submarginal stripe of numerous setigerous punctures; transverse impression weak to absent, postmedian, without a row of coarser punctures; anterior lobe distinctly but variably punctate only subapically and laterally; posterior lobe sparsely and finely punctured to coarsely and closely punctured.

Scutellum: Little wider than long, 1.58 (1.36–1.75):1.45 (1.25–1.65); surface shining, feebly or not wrinkled, punctures sparse across narrow base, extending to apex.

Hemelytron: Clavus and corium obsoletely alutaceous; corium uniformly punctured over most of surface; costa with more than 25 setigerous punctures; membrane slightly longer than basal width, immaculate or patterned, pattern consisting either of a median fuscous dot or median fuscous dot with apical half infuscated.

Propleurae, mesopleurae, and metapleurae: As in generic description, latter with lobe of peritreme loop- or ear-shaped, with osteole opening ventrally at its base (fig. 90, *a*); lateral area polished, usually with few scattered punctures mesally.

Legs: As in generic description.

Terminalia: Genital capsule distinctly punctate laterally, apical margin feebly sinuate either side of middle; gonostylus variable in shape (figs. 198, *a-f*).

Length of body: 3.98 (3.66–4.47).

FEMALE: Similar to male, measurements averaging larger.

Head: Width-length ratio, 1.23 (1.13–1.34):0.92 (0.84–0.97); interocular width, 0.88 (0.80–0.95). Antennal segments: I, 0.23 (0.21–0.26); II, 0.15 (0.13–0.17); III, 0.21 (0.20–0.24); IV, 0.21 (0.20–0.26); V, 0.22 (0.20–0.29). Labial segments I, 0.40 (0.37–0.43); II, 0.51 (0.50–0.53); III, 0.40 (0.37–0.44); IV, 0.33 (0.30–0.37).

Pronotum: Length-width ratio, 1.30 (1.21–1.49):2.64 (2.43–2.93).

Scutellum: Length-width ratio, 1.66 (1.49–1.82):1.73 (1.61–1.89).

Length of body: 4.45 (4.04–5.01).

TYPE DATA.—The type (USNM) is from "Ogden, Utah."

SPECIMENS STUDIED.—70 males, 118 females.

UNITED STATES: *Arizona*: Chiso Valley, Phoenix, Tuba City, Winslow, St. Johns; July, August. *California*: Altamont, Amadee, Anaheim, Antioch, Burlingame, Davis Co., Fairfax, Lagunitas, mountains west of La Panza, Los

Angeles, Manhattan Beach, Modesto, Pasadena, Point Arena, Plumas Co., 3 miles south of Olancho, Rio Vista, Riverside, Seal Beach, Sequoia National Park, Truckee; March to September. *Colorado*: Colorado Springs, Denver, Fort Collins, Fountain Valley, Manitou, Power Co.; June, August. *Idaho*: Hansen, Murtaugh, Twin Falls; May and June. *Illinois*: Havana, Oregon; May, June. *Indiana*: Pine; May. *Iowa*: Iowa City, Lake Okoboji; May to September. *Kansas*: Clark Co., Dodge City. *Louisiana*: Bassier; February. *Missouri*: St. Louis; June. *Nevada*: Humboldt Lake; August. *New Mexico*: Albuquerque, Scholle, Estancia, Torrance Co., Tucumari, Vaughn, Willard; June to September. *Oklahoma*: Alva, Stillwater; April, May. *Oregon*: The Dalles, Umatilla; May, June. *South Carolina*: Charleston; March. *South Dakota*: Chester, Hecla; June. *Texas*: Amarillo, Austin, Katherine, Somerset, Tyler, Uvalde, Valentine; February to June, September to December. *Utah*: Ogden, Provo; June. *Virginia*: Cape Henry; June. *Washington*: Vantage; April.

MEXICO: *Coahuila*: Torreón. *Durango*: Durango. *Guanajuata*: "Gazales Jet.," San Miguel Avende; August. *Hidalgo*: Zimipán; November. *Sonora*: Los Alamos, Guaymas; August.

DISCUSSION.—The extreme variability exhibited by this species has been most confusing. This variability is evident on most parts of the body. The head may be weakly (fig. 29) to strongly convex (fig. 28) with the part within the submarginal row of setigerous punctures being abruptly or gradually tumid; the surface may have weak to strong radiating rugae and may be virtually impunctate, with few scattered punctures or with crowded close punctures. The pronotum varies in degree of narrowing of the sides, in the number and size of punctures and in shape of prosternal carina which may (fig. 29) or may not be truncate ventrally. The scutellum and hemelytra likewise vary in surface sculpture. The membrane may be immaculate or patterned as described above. The general shape may be from broadly oval to very broadly oval or almost rounded in outline. With such variability to evaluate, one wonders whether one or several species are involved here, and whether or not this species may actually encompass the form maintained in the present paper as *testudinatus*! With more time and material available for study the answer may become evident, but at present decisions are only tentative.

Reports by Hart (1919) and Stoner (1920) indicate that this species is normally an inhabitant of the roots of various plants growing in sandy areas. Notes on some of the specimens examined during this study confirm the sandy habitat with such remarks as "sand," "sand area," or "sand dune." Occasional specimens likewise bore a record of the plants with which they were associated, as follows: Cantaloupe in Arizona, *Amsinkia* roots and *Ceonothera cheiranthefolia* in California, and *Hudsonia* in Virginia. Stoner (loc. cit.) gave additional notes on the habits of this species in Iowa, reporting that adults were present in spring and that nymphs outnumbered adults during the summer months. He reported an interesting observation in

which specimens were seen to be clutching a seed against the body with the middle legs.

Microporus testudinatus Uhler

PLATE FIGURES 90b-d, 197

Microporus testudinatus Uhler, 1876, p. 276; 1877, p. 374; 1886, p. 3.—Distant, 1880, p. 8, pl. 2, fig. 24.

Aethus (Microporus) testudinatus Signoret, 1881b, p. 424, pl. 11, fig. 53.—Torre Bueno, 1939, p. 179.

Aethus testudinatus Uhler, 1886, p. 3.—Van Duzee, 1917, p. 20.

Cydnus testudinatus Lethierry and Severin, 1893, p. 68.

DIAGNOSIS.—The small size of the apical lobe of the peritreme separates this species from the other member of the genus.

DESCRIPTION.—MALE: Broadly to very broadly oval.

Head: Length about two-thirds width, 0.82(0.80–0.83):1.14(1.13–1.16); interocular width, 0.85(0.83–0.90); anterior outline a strongly flattened semicircle, juga slightly longer than clypeus; surface shining, feebly rugae, with small punctures, somewhat tumid just mesad or submarginal row of punctures; juga ventrally and maxillary plate impunctate. Antennal segments: I, 0.26(0.24–0.28); II, 0.14(0.13–0.16); III, 0.19(0.19–0.20); IV, 0.20(0.20–0.20); V, 0.20(0.20–0.20). Bucculae slightly lower than labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.41(0.40–0.43); II, 0.52(0.48–0.56); III, 0.41(0.40–0.44); IV, 0.28(0.26–0.30).

Pronotum: Length less than half of width, 1.15(1.14–1.17):2.47(2.40–2.55); anterior margin deeply and singly emarginate; lateral margins entire, not emarginate, submarginal setigerous punctures very numerous, arranged in a narrow stripe (not in a single row); transverse groove behind middle, absent medially and faintly indicated laterally; anterior lobe distinctly punctured only subapically and laterally; posterior lobe punctured, finely so on disc and more coarsely so laterally.

Scutellum: Wrinkled, punctures absent at base and becoming progressively coarser and much more numerous to apex.

Hemelytron: Corium distinctly convex, areas well defined; disc with a single, sunken row of close-set punctures paralleling claval suture, elsewhere sparsely punctured; exocorium more densely punctured; costa with 25 or more setigerous punctures; clavus with two longitudinal rows of punctures; membranal suture almost straight, rectangular at outer angle; membrane usually short, about as long as basal width.

Propleuron: Impunctate; prosternal carinae very low, thick, evanescent ventrally.

Mesopleuron: Lateral area sparsely rugopunctate.

Metapleuron: Osteolar peritreme reaching half way across segment, terminal process variable (fig. 90,*b-d*), curved into small auricle with osteole opening ventrally at base; anteroapical angle prolonged along mesosternal suture as evanescent projection; lateral area polished, with a number of obsolete to strong punctures.

Legs: As in generic description.

Terminalia: Genital capsule distinctly punctate laterally, margin slightly flaring, apical margin weakly sinuate either side of middle; gonostylus variable in shape (figs. 197a,b).

Length of body: 3.94(3.85-4.04).

FEMALE.—Very similar to male, but measurements averaging larger.

Head: Length-width ratio, 0.87(0.83-0.90):1.21(1.16-1.28); interocular width, 0.91(0.86-0.96). Antennals: I, 0.24(0.23-0.26); II, 0.15(0.14-0.16); III, 0.20(0.20-0.21); IV, 0.20(0.20-0.21); labials: I, 0.42(0.41-0.43); II, 0.56(0.53-0.63); III, 0.43(0.43-0.46); IV, 0.34(0.33-0.36).

Pronotum: Length-width ratio, 1.24(1.17-1.36):2.67(2.53-2.86).

Scutellum: Length-width ratio, 1.65(1.56-1.82):1.80(1.75-1.89).

Length of body: 4.25(4.14-4.40).

TYPE DATA.—The locality of the type specimen (USNM) was given by Uhler as "California."

SPECIMENS STUDIED.—13 males, 20 females.

UNITED STATES: *California*: Asilomar, Carmel, Dillon Beach (Marin Co.), Monterey Co., Pacific Grove, Plumas Co., Point Arena, San Francisco, Santa Cruz, Sea Side, Sonoma Co.; February, April to September.

MEXICO: "S. W. Mex."

DISCUSSION.—All named California specimens of *Microporus* that were studied bore the determination of *testudinatus*, suggesting that locality rather than morphology was used as the delimiting factor, especially as none of the specimens from outside of California bore that determination. The Mexican specimen cited above was from the Uhler collection (USNM) and may have been the one on which he based the Mexican locality in his monograph. All other Mexican specimens examined during this study belonged to *obliquus*.

Genus *Cydnus* Fabricius

Cydnus Fabricius, 1803, p. 184.

Brachypelta Amyot and Serville, 1843, p. 89.

Pending completion of studies of the Cydnidae of the Eastern Hemisphere, the conclusions of China (1943) concerning this genus are here accepted without question. The decision to do this was a practical solution to a complex problem requiring review of a very extensive literature of a genus which apparently is not yet established in this hemisphere.

DIAGNOSIS.—Among the cydnid genera occurring in the Western Hemisphere, this one may be recognized by being large (more than nine millimeters in length of body), black, and having the membranal suture very strongly bisinuate (fig. 4).

DESCRIPTION.—Size large, shape elongate-oval, sides subparallel; dorsum weakly convex, venter strongly so.

Head: Length more than three-fourths width; margins broadly expanded, eyes faintly or not at all projecting; juga greatly surpassing clypeus, broadly contiguous beyond it and very strongly elevated anteriorly; submarginal row of setigerous punctures on each jugum far removed from margin; clypeus with two subapical setigerous punctures; ocelli small, behind a line connecting posterior margins of eyes and separated from eyes by a space about two or more times a transverse ocellar width; juga ventrally roughened by weak rugae and weaker punctures; maxillary plate with irregularly spaced, fine tubercles; antennae 5-segmented, I shortest, II and IV subequal, longer than III or V; bucculae (fig. 21) very high, posterior end highest and abruptly, perpendicularly truncated; labium reaching onto mesosternum, I shortest, II and III usually subequal, longer than IV.

Pronotum: Length a little more than half of width; anterior margin weakly emarginate; lateral margins carinate, weakly converging from base to apical third, thence broadly rounded to anterior angles; posterior margin nearly straight across width of scutellum, then depressed and slightly lobulate before curving obliquely forward laterally; all angles rounded; transverse impression submedian, broad and shallow; anterior lobe of male strongly inflated across middle three-fifths of posterior third, thence abruptly declivitous to anterior margin; anterior lobe of female without such elevation; posterior lobe in both sexes only slightly convex.

Scutellum: A broad, short, triangle, base and side margins subequal in length; sides strongly and abruptly declivitous, virtually perpendicular on basal half or more; apex narrowed, acute.

Hemelytron: Corial area, except costa, well defined; membranal suture distinctly bisinuate, sinuation accentuated by black basal margin of milky membrane; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Convexities and depression with numerous close-set small tubercles and some closely associated punctures; prosternal carinae low, thick, obscured by heavy punctation; anterior margin very weakly expanded either side of middle.

Mesopleuron: Surface irregular, strongly impressed laterally; evaporatorium limited; lateral area coarsely rugopunctate; meso-

sternum somewhat swollen, carinate along midline, with numerous long hairs.

Metapleuron: Weakly convex; terminal process of peritreme large, elongate-oval, surface alutaceous but shining, with one to three longitudinal or oblique sharp rugae (fig. 89); evaporatorium extensive, distinctly surpassing apex of peritreme and reaching almost to posterior coxae; lateral area with numerous coarse, rugose punctures.

Legs: Moderately long; anterior tibia (fig. 116) not surpassing tarsal insertion, strongly compressed, dorsal margin with eleven spines; middle and posterior (fig. 139) legs with tibia terete; tarsal II little shorter than I, III longest.

Sternites: Strongly convex, punctured, laterally more coarsely punctured and with numerous small tubercles; posterior margin of each segment finely denticulate or crenulate.

Terminalia: Male genital capsule opening dorsally, apical rim feebly flared.

TYPE OF GENUS.—*Cydnus tristis* Fabricius (1803, p. 195), by subsequent designation by Blanchard "(1844, p. 505)" (vide China, 1943, p. 220); Fabricius' name is a synonym of *Cimex aterrimus* Forster (1771, p. 71). The type of *Brachypelta* is *Cydnus tristis* Fabricius (loc. cit.), monobasic. Thus, because *Brachypelta* has the same type as does *Cydnus*, it is a synonym by isogenotypy.

DISTRIBUTION.—The single species of the genus *Cydnus* is a Palearctic form which, according to Oshanin (1912), occurs in all the major zoogeographical regions of the Old World. The present records of it in the Western Hemisphere probably represent introductions rather than a part of the permanent range.

DISCUSSION.—The occurrence of the single species of this genus in the Western Hemisphere came as a surprise. Although the author prefers to consider these records as accidental introductions and not indications of established population, he believes that if the latter does prove to be true this information will be useful.

Cydnus aterrimus (Forster)

PLATE FIGURES 4, 21, 89, 114, 116, 139, 167, 172, 186, 200

Cimex aterrimus Forster, 1771, p. 71.

Cimex tristis Fabricius, 1775, p. 716.

DIAGNOSIS.—This is the only species known to belong to the genus *Cydnus*.

DESCRIPTION.—Based on two males. MALE: Elongate-oval, sides parallel.

Head: Length four-fifths width, 1.71(1.63–1.79):2.02(1.96–2.08); interocular width, 1.43(1.36–1.50); anterior outline more than a semi-circle, broadly V-marginate at apex; jugs much surpassing and

broadly contiguous beyond apex of clypeus; surface concave, mostly shallowly rugopunctate; jugum with six submarginal setigerous punctures; jugum ventrally and maxillary plate weakly to strongly rugopunctate. Antennal segments: I, 0.48(0.47–0.50); II, 0.80(0.78–0.83); III, 0.68(0.66–0.70); IV, 0.83(0.83–??); V, 0.90(0.90–??). Labium reaching base of mesosternum. Labial segments: I, 0.53(0.53–0.53); II, 0.91(0.90–0.93); III, 0.91(0.90–0.93); IV, 0.56(0.53–0.60).

Pronotum: Length more than half of width, 3.11(3.03–3.20):5.51(5.44–5.59); laterally with submarginal row of 10 to 12 setigerous punctures; transverse impression median, shallow, broad and distinct, without a row of coarser punctures; anterior lobe elevated anterior to transverse impression, thence abruptly declivitous to apex in middle third, broad anterior and lateral margins closely and moderately punctate; posterior lobe laterally with continuation of punctation of anterior lobe, discally (especially in transverse impression) with numerous intermixed moderate and minute punctures and fine longitudinal rugulae.

Scutellum: Length about two-thirds width, 2.64(2.60–2.69):3.60(3.56–3.65); surface, except oblique area in basal angles, with crowded intermixed moderate and minute punctures and fine longitudinal rugulae.

Hemelytron: Clavus and corium alutaceous; clavus with two very irregular rows of punctures; mesocorium with crowded small punctures, some arranged in two more or less distinct rows paralleling claval suture; exocorium more densely punctate than mesocorium; costa without setigerous punctures. Remainder as in generic description.

Terminalia: Gonostylus as illustrated (fig. 200).

Length of body: 11.25(10.90–11.63).

TYPE DATA.—The type was described from "Hispania ad fretum Gaditanum." It has not been located.

DISCUSSION.—The occurrence of this species in the New World was not suspected by the author. However, since it is such a common species around many ports of Europe and other parts of the Old World, there appears no reason to doubt that adults could easily fly to lights on the boats and unwittingly accompany the vessels anywhere in the world. At present the author prefers to consider these records as accidental introductions and not representatives of established populations. But perhaps additional collecting in these areas will prove otherwise, in which case the included data will be helpful.

Comparison of these two specimens with material from the Mediterranean area leaves no doubt about the identity of them. The females,

however, differ from the males in that the anterior lobe of their pronotum is low and gently convex, not elevated and declivitous.

SPECIMENS EXAMINED.—2 males.

UNITED STATES: "Ala.?" (HMH).

WEST INDIES: "Tobago, 1-4, ii, 1931. Capt. A. K. Totton. B.M. 1931-183" (BrM).

Genus *Ectinopus* Dallas

Ectinopus Dallas, 1851, p. 121.

DIAGNOSIS.—The large, blackish membrane which occupies about one-half of the hemelytral length permits ready recognition of this genus.

DESCRIPTION.—Large (11.3-14.2), elongate-oval, greatest width approximately at midlength; dorsum slightly convex, venter much more strongly so; body surface dorsally and ventrally and corium distinctly alutaceous.

Head: Length more than half of width, flattened above; clypeus as long as jugs; latter with anterior margin nearly or quite semicircular, not or vaguely reflected at edge, without submarginal row of setigerous punctures; eyes large, entire, slightly projecting; ocelli well developed, moderate in size, situated on a line connecting hind margins of eyes, separated from eyes by about twice an ocellar width; with two primary setigerous punctures, one near inner angle of eye, one subapically on jugum (fig. 66); antennae 5-segmented, I shortest, V usually longest; bucculae moderately high, reaching almost to base of head; labium reaching between or slightly beyond middle coxae, IV shortest, II longest, slightly compressed and without a foliaceous lobe, III longer than I (fig. 22).

Pronotum: Nearly twice as broad as long, narrowed anteriorly, side margins carinate, slightly coarctate, with submarginal row of 5 to 7 setigerous punctures; transverse impression slightly postmedian, weak or obsolete, variously punctured; front margin shallowly and evenly concave; posterior margin slightly and broadly convex; all angles rounded.

Scutellum: As wide as or slightly wider than long, strongly triangular; apex narrowed, acute, sides flattened; disc more or less punctured; width of apex about one-third of membranal suture.

Hemelytron: Corial areas well defined; membranal suture straight, lateral angle acutely prolonged; corium with rather uniform, scattered punctures, these a little denser on exocorium; costal margin usually with a single subbasal setigerous puncture; membrane about half the hemelytral length, translucent brownish black.

Propleuron: Depression moderately punctate; prosternal carinae low, rounded; anterior margin of prosternum with a broad, short lobe either side.

Mesopleuron (figs. 100, 101): Flat, with a strong, oblique, rugopunctate groove anterior to evaporatorium; latter extensive, reaching to posterolateral angle; posterior margin crenulate; mesosternum prominent and subcarinate along midline, with numerous hairs on apical half.

Metapleuron (figs. 100, 101): Nearly flat, evaporatorium occupying mesal two-thirds of segment; lateral polished area punctate near evaporatorium; osteolar peritreme extending less than half way across segment; anterior part of peritreme curved posteriorly around osteolar opening which is visible ventrally (figs. 100, 101), posterior apex narrowly polished.

Legs: Long, slender; anterior tibia (fig. 126) only moderately widened, 8 to 9 stout, sharp spines dorsally, apex not prolonged beyond tarsal insertion; middle and hind tibiae slender, latter (fig. 145) about half as long as body, slightly curved in apical half, margins uniformly spined.

Sternites: Strongly convex; each segment with a broad, lateral area of shallow punctures; segment VI sometimes modified medially on posterior margin in females (see "discussion" below).

Terminalia: Male genital capsule very broadly, shallowly emarginate; ventral plates of female convex, flat or convex, sternite VI variously or not modified (figs. 182, 183).

Three fifth-instar nymphs were available for study. These showed the sparse lateral setigerous punctures of the head and body and the long, terete, posterior tibia of the adult. They differed from adults in possessing a weak, submarginal primary setigerous puncture anterior to the eye. In color they were quite striking. The head, thorax and appendages were the usual brownish black color, but the abdomen was very bright red with the dorsal and lateral plates black. The eyes, also, were brilliant red.

TYPE OF GENUS.—*Cydnus holomelas* Burmeister (1835), monobasic.

DISTRIBUTION.—The general range of *Ectinopus* extends from Mexico south to Bolivia and Brazil.

DISCUSSION.—The three species of this genus are structurally very similar, allowing most of the physical features to be incorporated into the generic description. One structural feature, however, merits additional comment—the modification of the sixth sternite which occurs in the females. This modification of the middle of the posterior margin of the segment forms a progressive series from no modification in the new species *muticus*, through a polished, flattened, transverse area in *rugoscutum* (fig. 183) to a deep excavation between a pair of prominent, blunt tubercles in *holomelas* (fig. 182).

Key to the known species of *Ectinopus*

1. Antennal III less than three-fourth (70%) as long as II.
muticus, new species (p. 413)
 Antennal III at least four-fifths as long as II 2
2. Head with numerous (15 or more) moderate punctures on either side anterior to ocellus; scutellum strongly punctured into basal fourth, sunken punctures of disc confluent transversely, forming transverse rugae (fig. 66).
rugoscutum Signoret (p. 414)
 Head impunctate or with very few scattered, very fine punctures; scutellum virtually devoid of punctures in tumid basal fourth.
holomelas (Burmeister)(p. 412)

Ectinopus holomelas (Burmeister)

PLATE FIGURES 15, 22, 100, 126, 145, 182, 201

Cydnus holomelas Burmeister, 1835, p. 375.*Ectinopus holomelas* Dallas, 1851, p. 122.—Stål, 1862, p. 96; 1876, p. 20.—Walker, 1867, p. 164.—Distant, 1880, p. 8.—Signoret, 1881b, p. 320, pl. 10, fig. 42.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 64.*Aethus fusiformis* Walker, 1867, p. 150.*Pangaeus ? fusiformis* Uhler, 1877, p. 389.*Ectinopus opacus* Distant, 1900, p. 688. New synonymy.

DIAGNOSIS.—This species may be differentiated from its congenitors by the lack of punctures on the basal fourth of the scutellum plus the lack of an impressed line extending laterally from apex of peritreme.

DESCRIPTION.—MALE:

Head: Length more than half of width, 1.81(1.69–1.98):2.62(2.57–2.93); interocular width, 1.63(1.49–1.69); anterior outline a shallow semicircle; surface impunctate, with a few radiating rugae submarginally. Antennal segments: I, 0.49(0.46–0.56); II, 0.88(0.80–0.97); III, 0.71(0.66–0.90); IV, 1.27(1.13–1.33); V, 1.41(1.20–1.60). Labial segments: I, 1.01(0.86–1.23); II, 1.39(1.23–1.60); III, 1.19(1.10–1.30); IV, 0.89(0.83–0.96).

Pronotum: Length slightly more than half of width, 3.23(2.87–3.44):6.14(5.72–6.49); transverse impression with an irregular band of a few, mostly widely separated punctures; anterior lobe with or without a series of punctures paralleling anterior emargination and with numerous crowded punctures laterally.

Scutellum: Usually wider than long, 3.99(3.76–4.20):3.81(3.45–4.05); discally with a scattering of a few punctures often present almost to apex.

Propleuron and mesopleuron: As in generic description.

Metapleuron: As in generic description (fig. 100), without an impressed line extending laterally from apex of peritreme.

Terminalia: Genital capsule alutaceous, with few scattered, weak punctures, apical margin not or only weakly sinuate; gonostylus as illustrated (fig. 201).

Length of body: 12.38(11.38–13.35).

FEMALE.—Similar to male but with posterior margin of sternite VI with a marked impression between two bluntly conical protuberances; measurements rather similar to those of male.

Head: Length-width ratio, 1.81(1.75–1.84):2.72(2.60–2.86); interocular width, 1.57(1.49–1.62). Antennal segments: I, 0.49(0.43–0.53); II, 0.88(0.83–0.96); III, 0.81(0.73–0.85); IV, 1.28(1.16–1.33); V, 1.33(1.16–1.46). Labial segments: I, 1.09(0.96–1.20); II, 1.42(1.26–1.50); III, 1.21(1.03–1.30); IV, 0.89(0.80–0.96).

Pronotum: Length-width ratio, 3.15(2.99–3.45):6.11(5.86–6.65).

Scutellum: Usually longer than wide, 3.87(3.60–4.34):3.80(3.73–4.05).

Terminalia: Ventral genital plates mostly convex.

Length of body: 12.71(11.78–13.36).

TYPE DATA.—Location of Burmeister's type is unknown. It was described as from Pará, Brazil. Walker's type (BrM) was described from Orizaba, Mexico. Distant's (1900) type (BrM) was described from "Costa Rica, Helechales."

SPECIMENS STUDIED.—21 males, 18 females, 3 nymphs.

MEXICO: Isthmus of Tehuantepec (labeled *Pangaeus margo*). Nayarit: Tepic; March. Sinaloa: Mazatlán; January.

PANAMA: Alhajuelo; May. Barro Colorado Island; January. Boquete; March, June. Bugaba.

COLOMBIA: Muzo, Department of Boyacá; July.

BOLIVIA: 50 miles northeast of Cochabamba; August.

DISCUSSION.—*Aethus fusiformis* Walker has previously been assigned to synonymy here by Distant (1880, 1899) and Signoret (1881b), both of whom had examined the type in the British Museum.

The assignment of *opacus* to synonymy under *holomelas* is based on notes from Dr. China who reported that the type, a female, has the excavation between a pair of blunt tubercles on sternite VI.

Ectinopus muticus, new species

PLATE FIGURE 101

DIAGNOSIS.—Either the short, third antennal segment or the oblique, crenulate impressed line extending laterally from apex of the osteolar peritreme (fig. 101) sets this species apart from the other two in the genus.

DESCRIPTION.—Based on a single specimen. FEMALE:

Head: Length more than half width, 1.82:2.73; interocular width, 1.56; anterior outline subquadrate; surface impunctate, with a few moderate oblique rugae. Antennal segments: I, 0.50; II, 1.13; III, 0.80; IV, 1.30; V, 1.46. Labial segments: I, 1.06; II, 1.66; III, 1.33; IV, 0.76.

Pronotum: Length more than half width, 3.28:6.14; transverse impression with several widely separated punctures; in a broad irregular band; rest of surface virtually impunctate except for about a dozen punctures laterally on anterior lobe.

Scutellum: Length and width equal, 3.85:3.85; surface with several distinct, well-separated moderate punctures; apex impunctate.

Propleuron and mesopleuron: As in generic description.

Metapleuron: As in generic description, except that a deeply impressed, oblique, crenulated line extends laterally from apex of peritreme (fig. 101).

Sternites: VI unmodified along posterior margin.

Terminalia: Ventral genital plates distinctly concave.

Length of body: 12.75.

TYPE DATA.—Holotype female (USNM 64579), "Bobas, Guatemala, May, 1924, W. M. Mann."

DISCUSSION.—In punctation the type appears somewhat intermediate between *holomelas* and *rugoscutum*. This condition led the author to consider the form as *opacus* Distant until China's notes on the types showed the latter to have the typically bituberculate sixth sternite of *holomelas*. The taxonomic worth of the impressed crenulate line extending laterally from the apex of the peritreme (fig. 101) is open to serious question in view of the fact that there was no series to indicate the extent of variability in what might prove to be an accidental cuticular fold.

The specific name alludes to the unmodified sixth sternite of the female.

Ectinopus rugoscutum Signoret

PLATE FIGURES 66, 183, 202

Ectinopus rugoscutum Signoret, 1881b, p. 319, pl. 10, fig. 41.—Lethierry and Severin, 1893, p. 64.

DIAGNOSIS.—The numerous punctures on either side of the disc of the head and the coarsely punctured, transversely rugose scutellum will separate this species from the other two in the genus.

DESCRIPTION.—MALE:

Head: Length more than half width, 1.93(1.75–2.08):2.83(2.73–2.99); interocular width, 1.56(1.49–1.66); anterior outline semicircular; surface of juga with moderate radiating rugae, with numerous (15 or more) fine punctures anterior to ocelli. Antennal segments: I, 0.57(0.53–0.63); II, 0.90(0.83–0.96); III, 0.88(0.80–0.94); IV, 1.32(1.26–1.40); V, 1.48(1.43–1.54). Labial segments: I, 1.24(1.16–1.36); II, 2.04(1.66–2.26); III, 1.77(1.46–1.89); IV, 1.16(1.03–1.20).

Pronotum: Length slightly more than half of width, 3.20(3.15–3.33):6.39(6.23–6.75); transverse impression with numerous crowded, coarse, sunken punctures; anterior lobe with a curved band of nu-

merous punctures paralleling anterior emargination; both lobes laterally with abundant, crowded punctures.

Scutellum: Wider than long, 4.10(4.00–4.33):3.87(3.83–3.91); with numerous punctures from base to near apex, these irregularly crowded, forming transverse ruga between them.

Propleuron and mesopleuron: As in generic description.

Metapleuron: As in generic description, without impressed line extending laterally from apex of peritreme.

Terminalia: Genital capsule feebly alutaceous, with few distinct punctures laterally, apical margin broadly and shallowly U- or V-emarginate; gonostylus as illustrated (fig. 202).

Length of body: 13.08(12.57–14.03).

FEMALE: Similar to male but posterior margin of sternite VI with a shining, subapical, transverse flattened area (fig. 202), and measurements usually averaging distinctly larger than those of male.

Head: Length-width ratio, 2.02(1.95–2.05):2.99(2.95–3.08); interocular width, 1.64(1.62–1.69). Antennal segments: I, 0.55(0.42–0.63); II, 0.97(0.93–1.01); III, 0.93(0.87–1.00); IV, 1.41(1.33–1.56); V, 1.53(1.50–1.58). Labial segments: I, 1.23(1.16–1.32); II, 2.16(2.00–2.23); III, 1.85(1.60–2.16); IV, 1.23(1.16–1.36).

Pronotum: Length-width ratio, 3.49(3.33–3.61):6.80(6.30–7.09).

Scutellum Length and width subequal, 4.27(4.08–4.35):4.28(4.06–4.35).

Terminalia: Ventral genital plates flat to gently concave.

Length of body: 13.83(13.41–14.23).

TYPE DATA.—Dr. Sailer reported that a Uhler specimen (USNM) labeled "Teffe" bears a determination of *Ectinopus rugoscutum* in what appears to be in Signoret's handwriting. It agrees with the original data and may be designated lectotype.

SPECIMENS STUDIED.—22 males, 25 females.

BRAZIL: Teffe, P. R. Uhler collection, 2 males (USNM); same locality, Raulin, Thayer Exped., 14 males, 21 females (MCZ). Santarém, May 1919, S. M. Klages, Acc. 6324, 3 males, 1 female (Car). São Paulo de Olivença, S. Klages, January and March 1923, 1 male, 1 female (Car). Villa Brage, December 1919, 1 male (Car).

PERU: Rio Marañón, Sept. 13, 1924, F 6029, H. Bassler collection, Acc. 33591, 1 female (AmM). Iquitos, March 1920, H. S. Parsh, 1 female (USNM).

BOLIVIA: Ivón (Department of Beni), W. M. Mann, February, Mulford Biol. Expl. 1921–22, 1 male (USNM).

Genus *Onalips* Signoret

Onalips (in part) Signoret, 1881b, p. 323.

Signoret originally described *Onalips* for two species, *Aethus nigerrimus* Dallas (1851) and *Onalips cribratus*. Examination proves that these two are not congeneric. Therefore *Onalips* is here restricted

by designating the older of the two originally included species, *Aethus nigerrimus* Dallas (1851), as genotype.⁷

DIAGNOSIS.—The free, foliaceous, truncated auricle with the osteole opening ventrally at its base (fig. 95) marks the species of this genus from all others in the Western Hemisphere.

DESCRIPTION.—Large, elongate-oval, widest posterior to mid-length; dorsum weakly convex in male, more strongly so in female, venter strongly convex.

Head: Width less than twice length; surface flattened or noticeably convex; juga as long as or longer than clypeus and contiguous beyond it; anterior outline forming a flattened semicircle, with marginal dorsal carina and complete (including clypeus) submarginal row of coarse, setigerous punctures giving rise to long and short tapering cilia (no blunt, peglike cilia except by breakage of the others); eyes large, entire, little projecting; ocelli well-developed, small, situated posterior to a line connecting hind margins of eyes, separated from eyes by more than twice an ocellar width; antennae 5-segmented, II shortest, V longest; bucculae very high, reaching almost to base of head, terminated abruptly posteriorly; labium reaching between middle coxae, II or III longest, I usually shortest, II compressed but without a foliaceous, semicircular lobe (fig. 31).

Pronotum: Length half or more of width; widest at or distinctly in front of base; sides more abruptly incurved near apical third, carinate, with submarginal row of 8 to 12 setigerous punctures; anterior margin moderately to deeply emarginate; posterior margin slightly convex; transverse impression weak to absent, median or postmedian in position; surface with few fine or several coarse punctures.

Scutellum: Triangular, width versus length variable; apex narrowed, width about half length of membranal suture; disc impunctate or with coarse, sunken punctures.

Hemelytron: Corial area well defined; exocorium and usually mesocorium with numerous distinct punctures; costa with 1 to 3 setigerous punctures; membranal suture nearly straight, lateral angle rectangular; membrane dark brown to blackish, much less than half of hemelytral length.

Propleuron: Polished, weakly to coarsely punctured; prosternal carinae low but distinct; anterior margin expanded either side of middle.

⁷ Signoret's species is African. Since it apparently fits in no described genus, it requires the erection of a new genus: *Pseudonalips*, new genus (genotype, *Onalips cribratus* Signoret, 1881b, p. 324). This new genus is easily recognized as a member of the Cydninae by the trichobothrial arrangement, and it separates from all other genera of the subfamily by the nature of the apex of the peritreme, which is undifferentiated but outlined posteriorly and laterally by the expanded and curved posterosubapical process (fig. 112).

Mesopleuron: Flattened; evaporatorium extended uninterrupted into posterolateral angle; posterior margin somewhat crenulate; mesosternum low, transversely convex, haired, partially carinate on midline.

Metapleuron: Nearly flat; osteolar peritreme (fig. 95) extending nearly half way across segment, terminating apically in a free-edged, truncated auricle with osteole opening at its base; evaporatorium occupying mesal two-thirds of segment, lateral margin oblique.

Legs: Moderately long, stout; anterior tibia (fig. 119) strongly compressed, 8 to 10 stout spines dorsally, not prolonged beyond tarsal insertion; middle and posterior tibiae subterete, latter (fig. 147) straight or slightly curved, spines equally developed dorsally and ventrally; posterior femur with row of small tubercles on postero-ventral margin.

Sternites: Punctured laterally, polished medially; with or without lateral, submarginal setigerous tubercles.

TYPE OF GENUS.—*Aethus nigerrimus* Dallas (1851), here designated.

DISTRIBUTION.—The three species of this genus occur from Panama south to Paraguay and northern Argentina.

Key to the known species of *Onalips*

1. Scutellum and pronotal transverse impression with widely separated, coarse sunken punctures (fig. 7) *nigerrimus* (Dallas) (p. 420)
Scutellar and pronotal discs without coarse punctures 2
2. Sixth sternite with lateral coarse punctures restricted to lateral, submarginal impressed part of abdomen (fig. 181); male with apical rim of genital capsule entire (fig. 181) *completus*, new species (p. 418)
Sixth sternite with lateral coarse punctures extending mesad and present on lateral third or more of segment (fig. 180); male with apical rim of genital capsule convex either side of median emargination (fig. 180).
bisinuatus, new species (p. 417)

Onalips bisinuatus, new species

PLATE FIGURES 180, 203

DIAGNOSIS.—The lack of discal punctures on both the pronotum and the scutellum plus the more extensive punctation of the sternites laterally will permit recognition of this species.

DESCRIPTION.—MALE: From one specimen.

Head: Length more than half of width, 1.72 : 2.73; interocular width, 1.65; anterior outline a strongly flattened semicircle, fine dorsal carina distinctly submarginal apically; juga surpassing and almost contiguous beyond apex of clypeus; surface with numerous, well-separated minute punctures and a few coarser ones on each jugum.

Antennal segments: I, 0.66; II, 0.56; III, 0.68; IV, 0.93; V, 1.18.
Labial segments: I, 0.96; II, 1.33; III, 1.20; IV, 1.00.

Pronotum: Length slightly more than half of width, 3.33:6.44; lateral setigerous punctures 8 to 11 in number; both lobes virtually impunctate except for a lateral, submarginal band of moderately coarse punctures.

Scutellum: Length-width ratio, 3.66:3.76; impunctate discally and apically.

Hemelytron: Shining, with abundant distinct punctures on exocorium and mesocorium; costa with one setigerous puncture.

Propleuron: With several moderately large, very shallow punctures on both convexities.

Mesopleuron and metapleuron: As described for genus.

Sternites: Shining, coarsely punctured on lateral third of V and VI; most segments without lateral submarginal setigerous tubercles.

Terminalia: Genital capsule coarsely and irregularly punctured except on mediobasal convexity; apical rim distinctly convex either side of small median emargination (fig. 180); gonostylus as illustrated (fig. 203).

Length of body: 11.46.

FEMALE.—Three specimens. Similar to male, measurements averaging larger.

Head: Length-width ratio, 2.02(1.94–2.04):3.08(3.03–3.14); interocular width, 1.91(1.82–1.93). Antennal segments: I, 0.69(0.67–0.70); II, 0.63(0.63–0.64); III, 0.68(0.65–0.71); IV and V missing from all specimens. Labial segments: I, 1.04(0.97–1.10); II, 1.43(1.41–1.46); III, 1.46(1.46–1.46); IV, 1.04(1.04–1.04).

Pronotum: Length-width ratio, 3.96(3.82–4.16):7.16(6.92–7.39).

Scutellum: Length-width ratio, 4.32(4.20–4.42):4.42(4.12–4.57).

Length of body: 12.53(12.18–12.75).

TYPE DATA.—Holotype male (Car), labeled "Santarem, Brazil, Acc. No. 2966." Allotype female (Car), same data. Paratypes: One female (Car) labeled "Santarem, Brazil, April, 1919, S. M. Klages, Acc. 6324," and another female (Car) with the same data except month of capture reads "July."

SPECIMENS STUDIED: The types listed above.

DISCUSSION.—This species and *completus* are closer to each other than they are to *nigerrimus*.

Onalips completus, new species

PLATE FIGURES 181, 204

DIAGNOSIS.—The lack of discal punctations on both the pronotum and the scutellum plus the restricted punctation on the sternites mark this species from its congenitors.

DESCRIPTION.—MALE: Two specimens.

Head: Length more than half of width, 1.59(1.49–1.69):2.35(2.31–2.40); interocular width, 1.56(1.56–1.56); anterior outline a moderately flattened semicircle, fine dorsal carina somewhat submarginal apically; juga as long as clypeus; surface with numerous, well-separated minute punctures and no coarser ones. Antennal segments: I, 0.53(0.53–0.53); II, 0.46(0.46–0.46); III, 0.55(0.50–0.60); IV, 0.68(0.63–0.73); V, 0.88(0.86–0.90). Labial segments: I, 0.81(0.80–0.83); II, 1.07(1.05–1.10); III, 1.11(1.00–1.23); IV, 0.88(0.84–0.93).

Pronotum: Width twice or slightly more than twice length, 5.30(5.26–5.34):2.62(2.62–2.62); lateral setigerous punctures 8 to 12 in number; both lobes virtually impunctate except for lateral submarginal band of fine punctures.

Scutellum: Length-width ratio, 3.22(3.22–3.22):3.26(3.22–3.30); impunctate discally and apically.

Hemelytron: Shining, exocorium with crowded distinct punctures; mesocorium with punctures becoming obsolete medially; costa with one setigerous puncture.

Propleuron: With no punctures or only obsolete ones out of depression.

Mesopleuron and metapleuron: As described for genus.

Sternites: Shining, with no punctures but a few moderate, longitudinal rugae mesad of sunken spiracular area; most segments usually without lateral, submarginal setigerous tubercles.

Terminalia: Male genital capsule impunctate except at extreme lateral edge, apical margin entire; gonostylus as illustrated, (fig. 204).

Length of body: 9.43(9.30–10.57).

FEMALE.—Two specimens. Similar to male, measurements larger.

Head: Length-width ratio, 1.62(1.56–1.69):2.67(2.53–2.82); interocular width, 1.72(1.62–1.82). Antennal segments: I, 0.58(0.56–0.60); II, 0.46(0.43–0.50); III, 0.56(0.50–0.63); IV, 0.76(0.70–0.83); V, 0.91(0.90–0.93). Labial segments: I, 1.00(1.00–1.00); II, 1.28(1.20–1.36); III, 1.28(1.28–1.28); IV, 0.95(0.90–1.00).

Pronotum: Length-width ratio, 3.33(3.07–3.60):6.21(5.73–6.70).

Scutellum: Length-width ratio, 3.82(3.60–4.05):3.98(3.77–4.20).

Length of body: 11.11(10.05–12.17).

TYPE DATA.—Holotype male (USNM 64419), "Rurrenabaque, Rio Beni, Bolivia, Oct., W. M. Mann, Mulford Bio. Expl., 1921–1922." Allotype female (MCZ), "Mirim, Ceara, Brazil, Mann." Paratypes as follows:

PARAGUAY: Horqueta, Nov. 8, 1932, A. Schulze, 1 male (JCL).

BRAZIL: Chapada, September, 1 female (Car).

ARGENTINA: *Salta*: Aguaray, October 1946, Buohn, 1 female (UnivTuc). *Formosa*: "Misión Loishi," Nov. 17, 1950, Willink-Monros, 1 female (UnivTuc). *Misiones*: San Ignacio, November 1950, F. Monros, 1 female (RCF).

DISCUSSION.—This species and *bisinuatus*, also described as new in the present paper, are much closer to each other than to *nigerrimus*.

Onalips nigerrimus (Dallas)

PLATE FIGURES 7, 31, 95, 119, 147, 205

Aethus nigerrimus Dallas, 1851, p. 112.—Walker, 1867, p. 152.—Stål, 1876, p. 25.
Onalips nigerrimus Signoret, 1881b, p. 323, pl. 10, fig. 43.—Lethierry and Severin, 1893, p. 64.

DIAGNOSIS.—The numerous, widely separated coarse punctures on the pronotum and scutellum readily separate this species from the other two in the genus.

DESCRIPTION.—MALE:

Head: Length more than half of width, 1.60(1.43–1.69) : 2.65(2.34–2.60); interocular width, 1.57(1.49–1.62); anterior outline a flattened semicircle; juga surpassing clypeus and contiguous beyond it, with numerous, irregularly spaced, coarse punctures, markedly tumid within submarginal row of setigerous punctures; interocellar space smooth. Antennal segments: I, 0.59(0.53–0.63); II, 0.50(0.50–0.50); III, 0.63(0.60–0.63); IV, 0.83(0.80–0.86); V, 1.16(1.10–1.20). Labial segments: I, 0.94(0.93–1.00); II, 1.20(1.16–1.26); III, 1.20(1.13–1.33); IV, 0.83(0.83–0.86).

Pronotum: Length more than half of width, 3.05(2.85–3.30) : 5.59(5.25–5.92); lateral setigerous punctures 7 to 11; transverse impression postmedian, with broad, irregular band of coarse, sunken punctures; anterior lobe punctured behind anterior emargination and laterally.

Scutellum: Length and width subequal or one longer than the other, length-width ratio, 3.30(3.00–3.75) : 3.26(3.00–3.45); surface polished with numerous coarse, sunken punctures discally, these becoming finer apically.

Hemelytron: Usually distinctly duller than scutellum; abundantly punctured on exocorium and mesocorium; costa with 2 to 4 setigerous punctures.

Propleuron: With numerous coarse punctures on both convexities.

Mesopleuron and metapleuron: As described for genus.

Sternites: Polished, with numerous coarse punctures on lateral third; some or all with one to three setigerous tubercles on lateral submargin.

Terminalia: Genital capsule shining, punctured laterally and at base, apical margin sinuate medially; gonostylus as illustrated (fig. 205).

Length of body: 10.16(9.21–10.95).

FEMALE.—Very similar to male, measurements averaging larger.

Head: Length-width ratio, 1.77(1.69–1.90) : 2.61(2.50–2.73); interocular width, 1.71(1.69–1.75). Antennal segments: I, 0.64(0.63–

0.66); II, 0.51(0.50–0.56); III, 0.59(0.53–0.63); IV, 0.81(0.76–0.90); V, 1.10(1.00–1.20). Labial segments: I, 0.95(0.86–1.00); II, 1.23(1.16–1.30); III, 1.32(1.26–1.40); IV, 0.84(0.83–0.90).

Pronotum: Width-length ratio, 6.00(5.77–6.45):3.25(2.85–3.60).

Scutellum: Length-width ratio, 3.59(3.45–3.75):3.51(3.30–3.75).

Length of body: 10.95(10.20–11.70).

TYPE DATA.—The type specimen (BrM) was listed by Dallas as from Colombia.

SPECIMENS STUDIED.—10 males, 6 females.

PANAMA: Campana, Apr. 27, 1937, R. Bliss, 1 female (JCL). *Canal Zone*: Ancón, Aug. 6, 1924, W. M. Wheeler, *Cordia alliodora*, 1 male (MCZ). Barro Colorado Island, May 1, 1926, Van Tyne, 1 male (MCZ). No specific locality, January–March 1944, Zetek, May 22, 1 male (USNM); January, Griswold, 1 male (MCZ); July–August 1942, J. Zetek, 1 female (USNM); June 24, 1924, N. Banks, 1 female (MCZ).

COLOMBIA: Monteria, 6 males, 3 females.

DISCUSSION.—A male specimen (MCZ) bears the notation that it had been collected on "*Cordia alliodora*."

Genus *Melanaethus* Uhler, new status

Geotomus of authors, not Mulsant and Rey, 1862, p. 324.

Melanaethus Uhler, 1876, p. 280.

Lobonotus Uhler, 1877, p. 395, (nec Milne-Edwards, 1863, p. 280, in Crustacea).

New synonymy.

Lobolophus Bergroth, 1891, p. 235. New synonymy.

DIAGNOSIS.—Among those genera in which the terminal lobe of the peritreme is developed into a short process, the members of this genus may be recognized by the small size (3–6 mm.) and the more extensively developed metapleural evaporatorium (figs. 96, 97).

DESCRIPTION.—Small to moderately large, oval to elongate, greatest width across humeri or across hemelytra posterior to midlength; dorsum much less convex than venter.

Head: As wide as or wider than long, flattened or slightly convex above; juga as long as clypeus, variously curved, usually with fine marginal carina dorsally; submargin with one setigerous puncture, except in *planifrons*, which has three or four; eyes projecting by one-fourth to three-fourths their width; ocelli present, on or behind line connecting posterior margins of eyes; antennae 5-segmented, I shortest, V usually longest, II, III, and IV varying in proportions; bucculae moderately to strongly elevated, highest posteriorly, posterior end usually abruptly terminated (fig. 23); labium variable in length according to species, reaching from middle of mesosternum to basal segments of abdomen, II longest, slightly compressed, without foliaceous lobe.

Pronotum: Length usually not more than half of width; lateral margins converging on anterior half or more, with not more than six setigerous punctures submarginally; transverse impression absent to well-developed and complete; posterior margin broadly and slightly curved or subtruncated; angles more or less rounded.

Scutellum: Distinctly longer than broad, triangular, apex narrowed and less than half of membranous suture.

Hemelytron: Corial areas well-defined; membranous suture straight, convex or sinuate, not prolonged laterally; costa usually sharp, explanate and with no or very few setigerous punctures; membrane not over two-fifths of hemelytral length, sometimes brachypterous.

Propleuron: Moderately convex; convexities and depression rugose and/or punctate or smooth and impunctate; prosternal carinae prominent.

Mesopleuron (fig. 96): Flattened, evaporatorium occupying half or more of segment, lateral margin strongly oblique, reaching near or into posterolateral angle; posterior margin entire; mesosternum with prominent, distinct, median carina on basal half or more of nearly all species.

Metapleuron (figs. 96, 97): Flattened to uneven; evaporatorium occupying mesal two-thirds or three-fourths, lateral margin convex or straight and oblique; peritreme reaching or surpassing middle of segment, apical modification expanded posteriorly as semicircular, quadrate or triangular, more or less shining lobe, osteole usually opening posteriorly on peritreme.

Legs: Moderately long, slender; anterior tibia (fig. 120) moderately compressed, with four to seven long, slender to stout spines on dorsal margin; middle and posterior tibiae terete, spines of latter (fig. 144) subequally developed on all margins; tarsal II shortest, I shorter than III.

Sternites: Strongly convex, shining or alutaceous, with or without setigerous punctures or rugae; posterior margin of each segment more or less finely and acutely crenulate.

TYPE OF GENUS.—*Melanaethus elongatus* Uhler (1876), monobasic. When Signoret (1883) transferred *elongatus* Uhler and *Cydnus elongatus* Herrick-Schaeffer to *Geotomus*, Uhler's name became a homonym for which Signoret proposed the new name *parvulus*. *Lobonotus* Uhler was described for the lone species *anthracinus* Uhler (1877); because Uhler's use of this name was preoccupied by Milne-Edwards (1863, p. 280) in Crustacea, Bergroth (1891) proposed *Lobolophus* to replace it. *Lobolophus* must take *anthracinus* Uhler for type by objective synonymy.

DISTRIBUTION.—*Melanaethus* is restricted to the Western Hemisphere where its members occur in the area from Maryland to California in the north and to southern Brazil in the south.

DISCUSSION.—Most members of this genus have long gone under the name *Geotomus*, but the few recently described species have been assigned to *Geocnethus* of Horváth. Most authors have considered *Melanaethus* to be a synonym of Mulsant and Rey's *Geotomus*, for which *Cydnus punctulatus* Costa (1847, p. 30) was designated as type by Distant (1902, p. 98). From the present study and a partially completed attempt to redefine the cydnid genera of the world, this position appears untenable. The New World species assigned here are not congeneric with *Geotomus punctulatus* and can readily be separated from it by several features, as follows: (1) Terminal process of osteolar peritreme of *G. punctulatus* is auriculate in shape with the osteole opening near the center of its base (fig. 98), while this structure on American species of *Melanaethus* is variously convex posteriorly with osteole opening posteriorly on the peritreme at the base of the expansion (figs. 96, 97). (2) *G. punctulatus* has nine or ten submarginal setigerous punctures laterally on the pronotum, three or more of them posterior to the transverse impression, while no species of *Melanaethus* possesses more than six such punctures, only one of which is posterior to the transverse impression. (3) The head of *G. punctulatus* has a submarginal row of five to seven setigerous punctures bearing long, coarse hairs, while in the forms here assigned to *Melanaethus* all but the new species *planifrons* has but one such puncture. Of these characters, the shape of the terminal process of the osteolar peritreme appears to be most important.

Horváth's genus *Geocnethus*, to which several American species have been accredited, also has an Old World genotype, *obesus* Horváth (1919, p. 248), by original designation. Examination of the type of *Geocnethus obesus* shows that it lacks a terminal modification of the peritreme and so surely cannot include among its closest relatives species which have a terminal modification.

The 16 species here treated as members of *Melanaethus* can be arranged into rather distinct groups based on the extent of the osteolar peritreme, as indicated by the first couplet of the key to species. One group, centering around *M. cavicollis* (Blatchley), agrees with the subgenus *Rhytidoporus* (*Rhytidoporus*) in appearing to be restricted to the region of the Caribbean islands with an invasion of the surrounding mainland at two points. The remainder of the species of *Melanaethus* are continental forms, with only two species occurring south of middle Central America.

Key to the known species of *Melanaethus*

1. Terminal lobe of peritreme triangular posteriorly, separated from lateral margin of evaporatorium by much more than transverse diameter of the lobe (fig. 97) 2
- Terminal lobe of peritreme semicircular or subquadrate posteriorly, separated from lateral margin of evaporatorium by less than transverse diameter of the lobe (fig. 96) 5
2. Anterior convexity of propleuron with numerous coarse punctures.
 cavicollis (Blatchley) (p. 428)
- Anterior convexity of propleuron impunctate 3
3. Dorsum of head and sides of anterior pronotal lobe impunctate.
 cubensis (Barber and Bruner) (p. 432)
- Dorsum of head and sides of anterior pronotal lobe with several to many coarse punctures 4
4. Posterior pronotal lobe and scutellar disc with many crowded, coarse, foveate punctures **aereus**, new species (p. 425)
- Posterior pronotal lobe and scutellar disc with many small, widely separated punctures **externus**, new species (p. 433)
5. Dorsum of head with a fine marginal carina extending from eye to apex . . . 7
- Dorsum of head without a fine marginal carina or with a partial one immediately anterior to eye 6
6. Pronotum with transverse impression and intercallar area distinctly but obtusely impressed; labium surpassing base of sternite III.
 anthracinus (Uhler) (p. 426)
- Pronotum convex, transverse impression and intercallar area not depressed; labium not surpassing middle coxae **spinolae** (Signoret) (p. 449)
7. Costal edge thick, calloused, strongly but narrowly convex dorsally; jugum with three coarse (rarely more), widely separated setigerous punctures submarginally **planifrons**, new species (p. 443)
- Costa flat, thin, neither calloused nor convex dorsally; jugum with not more than one setigerous puncture submarginally 8
8. Head dorsally impunctate or with few patches of minute punctures.
 pensylvanicus (Signoret) (p. 441)
- Head dorsally distinctly punctate or rugopunctate over most of surface . . . 9
9. Pronotal disc, especially transverse impression, with numerous punctures of which many are as coarse as those on sides; scutellum usually distinctly punctured to base 11
- Pronotal disc, especially transverse impression and posterior lobe, polished, with few minute punctures much finer than those on sides; scutellar punctation becoming obsolete basally 10
10. Costa straight and subparallel on basal half, neither explanate nor recurved near base **uhleri** (Signoret) (p. 453)
- Costa gently convex, diverging on basal half, explanate and gently recurved near base **subpunctatus** (Blatchley) (p. 451)
11. Pronotum with punctures of transverse impression and posterior lobe (and usually also one-half of scutellum) of two sizes, coarse and fine ones intermixed 12
- Pronotum with punctures of transverse impression and posterior lobe of one size or those of latter becoming finer posteriorly, often with fine longitudinal rugae between the punctures 15

12. Pronotum with broad, shallow, punctate impression extending anteriorly between calli from middle of weak transverse impression (fig. 67).
noctivagus (Van Duzee) (p. 436)
 Pronotum not impressed between calli 13
13. Length of body about twice pronotal width.
punctatissimus (Signoret) (p. 445)
 Length of body distinctly less than twice (77:42) pronotal width 14
14. Apical two-thirds of mesocorial disc with numerous coarse punctures subequal to those of two rows paralleling claval suture; larger, length of body, 3.6-4.2 **robustus** Uhler (p. 447)
 Apical two-thirds of mesocorial disc with scattered punctures finer than those of two rows paralleling claval suture; smaller, length of body, 3.0-3.3.
mixtus, new species (p. 434)
15. Pronotum with transverse impression distinctly impressed across full width; corium polished **subglaber** (Walker) (p. 437)
 Pronotum with transverse impression obsolete, absent medially; corium distinctly alutaceous **crenatus** (Signoret) (p. 430)

Melanaethus aereus, new species

PLATE FIGURE 206

DIAGNOSIS.—The small, terminal lobe of the peritreme coupled with the very coarse, sunken, close-set punctures on the posterior lobe of the pronotum and scutellum will permit recognition of *aereus* within the genus.

DESCRIPTION.—From a single male. Oval, widest behind mid-length.

Head: Length more than two-thirds width, 0.92:1.33; interocular width, 0.73; anterior outline a very shallow semicircle, clypeus as long as juga, narrowed apically; surface shining, with radiating rows of few, coarse punctures; margin thick, submarginal dorsal carina distinct only on anterior third or half of jugum; ocelli moderately large, separated from eye by space greater than transverse ocellar width; jugum ventrally and maxillary plate (except posteriorly) impunctate. Antennal segments: I, 0.29; II, 0.44; III, 0.39; IV, 0.46; V, 0.60. Bucculae about as high as labial II, posterior end curved; labium reaching between middle coxae. Labial segments: I, 0.49; II, 0.81; III, 0.94; IV, 0.43.

Pronotum: Length about half of width, 1.56:3.10; anterior margin deeply, simply emarginate; lateral margin broadly, shallowly sinuate medially, submarginal row of five setigerous punctures; transverse impression absent, marking row of punctures very coarse, sunken, confused with numerous close-set punctures of posterior lobe; anterior lobe with numerous coarse, close-set punctures laterally, middle half strongly depressed for full length.

Scutellum: Length greater than width, 2.29:1.77; disc shining, with numerous coarse, close, sunken punctures becoming finer at apex.

Hemelytron: Clavus and corium strongly alutaceous; clavus with one long and one short row of punctures; mesocorium with numerous

coarse punctures in basal third, these continued as two complete rows paralleling claval suture and with a few finer ones scattered over mesal half; exocorium with numerous finer punctures scattered irregularly for full length; costa convex, with one setigerous puncture; membranal suture feebly sinuate, lateral angle slightly produced; membrane longer than basal width, reaching apex of abdomen.

Propleuron: Shining, punctate only in depression and near acetabulum; prosternal carinae about half as high as labial II, abruptly terminated ventrally.

Mesopleuron: Lateral area impunctate.

Metapleuron: Peritreme terminated by small, triangular lobe which is separated from gently concave lateral margin of evaporatorium by space greater than width of terminal lobe (similar to fig. 97); lateral area impunctate.

Legs: Anterior tibia with five stout spines dorsally.

Sternites: Shining, with few coarse punctures on lateral third near posterior margin of each segment.

Terminalia: Apical margin entire, straight; gonostylus as illustrated (fig. 206).

Length of body: 6.05.

TYPE DATA.—Holotype male (MCZ), "Whitfield Hall, Blue Mts., Hayti, near 4500 ft., Aug. 13-20, 1934, Darlington."

DISCUSSION.—The trivial name is in allusion to the bronzed cast that is visible on this species.

Melanaethus anthracinus (Uhler), new combination

PLATE FIGURE 207

- Lobonotus anthracinus* Uhler, 1877, p. 395; 1886, p. 3.—Distant, 1880, p. 9, pl. 4, fig. 7.—Signoret, 1883, p. 529, pl. 16, fig. 208.—Bergroth, 1891, p. 235.—Lethierry and Severin, 1893, p. 77.—Banks, 1910, p. 100.
Lobolophus anthracinus Van Duzee, 1917, p. 24.—Torre Bueno, 1939, p. 184.

DESCRIPTION.—Based on one male and one female.

MALE: Elongate, sides parallel.

Head: Length about four-fifths width, 0.82:0.96; interocular width, 0.66; anterior outline elongate, acute, clypeus slightly longer than juga, slightly narrowed apically; surface strongly convex transversely; juga, interocellar area and clypeus with numerous fine, close-set punctures, without or with obsolete, submarginal dorsal carinae, ocelli moderate, separated from eye by space less than twice transverse ocellar width; jugum ventrally shining, impunctate; maxillary plate with few large punctures. Antennal segments: I, 0.23; II, 0.30; III, 0.32; IV, 0.45; V, missing; bucculae higher than labial II, roundly terminated posteriorly. Labium attaining sternite IV. Labial segments: I, 0.23; II, 0.91; III, 0.86; IV, 0.66.

Pronotum: Length half of width, 1.04:2.08; anterior margin deeply, almost quadrately emarginate; lateral margin subparallel on basal third, with one submarginal setigerous puncture at apical angle; transverse impression postmedian, moderately impressed across full length, medially extended anteriorly as distinct impression between convex calli; anterior lobe with dense, moderate punctures laterally, anteriorly and medially, calli polished, with minute punctures centrally; posterior lobe densely punctate almost to hind margin.

Scutellum: Length greater than width, 1.57:1.30; surface shining, all except basal angles with crowded, small to moderate punctures, apical half with faint suggestion of median carina.

Hemelytron: Clavus and corium polished; clavus with two rows of punctures; mesocorium with two complete rows of punctures paralleling claval suture, elsewhere with abundant, distinct punctures; exocorium with more abundant punctation; costa very narrowly convex dorsally, without setigerous punctures; membranal suture almost straight, lateral angle not prolonged; membrane slightly longer than basal width, just surpassing apex of abdomen.

Propleuron: Alutaceous, strongly punctate in depression and anteriorly to acetabulum, with few fine punctures on anterior convexity.

Mesopleuron: Evaporatorium extended into posterolateral angle, not reaching lateral margin of sclerite; lateral area in part rugopunctate.

Metapleuron: Peritreme reaching almost to straight lateral margin of pronotum, terminal modification large, semicircular, distinctly alutaceous, more shining than evaporatorium; lateral area shining, with few striae. Legs: Anterior tibia with five stout spines dorsally.

Sternites: Polished, finely punctate medially, very coarsely so laterally.

Terminalia: Genital capsule punctate, more densely so laterally, apical margin virtually straight; gonostylus as illustrated (fig. 207).

Length of body: 4.50.

FEMALE.—Very similar to male.

Head: Length-width ratio, 0.86:1.07; interocular width, 0.73.

Antennal segments: I, 0.23; II, 0.33; III, 0.34; IV, 0.48; V, 0.36.

Labial segments: I, 0.46; II, 1.06; III and IV missing.

Pronotum: Length-width ratio, 1.10:2.28.

Scutellum: Length-width ratio, 1.76:1.34.

Length of body: 4.97.

TYPE DATA.—The two females in the Uhler collection (USNM) from which this species was originally described were collected in McLennan Co., Tex.

SPECIMENS STUDIED.—2 males, 1 female.

UNITED STATES: *New Mexico*: No exact locality, Uhler collection, 1 female (USNM). *Texas*: Colorado City, July 17, 1927, L. A. Stephenson, 1 male (KU).

MEXICO: *Distrito Federal*: No exact locality, July 10, 1 male (Bon).

DISCUSSION.—The greatly elongate labium reaching onto basal sternites occurs in two other areas in the family as found in the Western Hemisphere. In the Cydninae it appears on *Dallasiellus longulus* (Dallas), while in the Amnestinae it may be found on one species of *Amnestus*.

***Melanaethus cavicollis* (Blatchley), new combination**

PLATE FIGURES 97, 208

Geotomus cavicollis Blatchley, 1924, p. 85.

Geocnethus cavicollis Hussey, 1925, p. 63.—Torre Bueno, 1939, p. 182.

DIAGNOSIS.—Within the genus, *cavicollis* may be recognized by the reduced size of the apical modification of the peritrema and the number of coarse punctures present on most of anterior convexity of propleuron.

DESCRIPTION.—MALE: Elongate-oval, widest posterior to mid-length.

Head: Length more than half width, 0.77(0.72–0.83):1.28(1.23–1.37); interocular width, 0.80(0.74–0.84); anterior outline a flattened semi-circle, clypeus as long as juga, narrowed apically; surface weakly convex, numerous distinct punctures arranged in radiating rows, submarginal dorsal carina distinct only on apical half or less; ocelli moderate, separated from eyes by space more than twice transverse ocellar width; jugum ventrally polished, impunctate; maxillary plate coarsely punctate except at base of antenna. Antennal segments: I, 0.27(0.26–0.30); II, 0.36(0.32–0.40); III, 0.38(0.36–0.42); IV, 0.43(0.40–0.47); V, 0.58(0.56–0.60). Bucculae higher than labial II, abruptly sloping posteriorly; labium extending between middle coxae. Labial segments: I, 0.44(0.43–0.46); II, 0.75(0.73–0.82); III, 0.55(0.53–0.60); IV, 0.40(0.40–0.42).

Pronotum: Length more than half of width, 1.45(1.36–1.55):2.75(2.52–3.04); anterior margin moderately, simply concave; lateral margin straight to very weakly concave on middle third, with submarginal row of four or five setigerous punctures; transverse impression almost absent, site marked by irregular row of coarse, widely separated punctures; anterior lobe with coarse punctures clustered behind each eye and in broad lateral band, middle half strongly impressed for full length; posterior lobe coarsely, closely punctate laterally and sparsely so medially.

Scutellum: Length greater than width, 1.97(1.86–2.15):1.68(1.62–1.81); disc shining, with scattered, coarse punctures on apical three-fourths.

Hemelytron: Clavus and corium weakly alutaceous; claval punctures arranged in one complete row and sometimes partial second row basally; mesocorium distinctly punctate except at middle, mesal punctures arranged in two complete rows; exocorium distinctly punctate for full length; costa convex, with two setigerous punctures; membranal suture straight, lateral angle not prolonged; membrane longer than basal width, reaching apex of abdomen.

Propleuron: Strongly punctate on anterior convexity and in depression; prosternal carinae less than half as high as labial II, abruptly terminated posteriorly.

Mesopleuron: Lateral area with not more than one or two distinct punctures.

Metapleuron (fig. 97): terminal process of peritreme triangular posteriorly, separated from straight edge of evaporatorium by space much greater than transverse width of terminal modification.

Legs: Anterior tibia with five stout spines dorsally.

Sternites: Shining, obsolete alutaceous, with numerous distinct punctures on lateral fourth of each, elsewhere minutely punctate.

Terminalia: Genital capsule shining, impunctate, apical margin slightly convex either side of middle; gonostylus as illustrated (fig. 208).

Length of body: 5.42(5.05–5.97).

FEMALE.—Similar to male but lacking prominent impression in middle of anterior pronotal lobe.

Head: Length-width ratio, 0.87(0.85–0.91):1.27(1.20–1.36); interocular width, 0.73(0.70–0.76). Antennal segments: I, 0.27(0.26–0.30); II, 0.35(0.32–0.42); III, 0.36(0.33–0.40); IV, 0.42(0.40–0.45); V, 0.56(0.52–0.60). Labial segments: I, 0.42(0.41–0.46); II, 0.75(0.73–0.82); III, 0.53(0.48–0.56); IV, 0.41(0.40–0.43).

Pronotum: Length-width ratio, 1.44(1.31–1.62):2.68(2.45–2.95).

Scutellum: Length-width ratio, 1.93(1.75–2.12):1.62(1.49–1.75).

Length of body: 5.34(4.95–5.83).

TYPE DATA.—The types, taken from Arch Creek and Dunedin, Fla., are in the Blatchley collection (Pur).

SPECIMENS STUDIED.—8 males, 7 females.

UNITED STATES: *Florida*: Gainesville, Oct. 13, 1923, T. H. Hubbell, 1 male, 2 females (RFH); W. E. Penner, 1 male (USNM); February 1930, W. S. Blatchley (BrM). Edgewater, Mar. 6, 1939, C. A. Frost, 2 males, 1 female (USNM). "Miaku," Feb. 3, 1911, W. S. Blatchley, 1 female (CalAc). Mewman's Lake, Mar. 15, 1926, T. H. Hubbell, 1 male, (KU). Winter Park, Mar. 1, 1939, F. E. Lutz, 1 female (AmM). *South Carolina*: Florence, Feb. 1, 1939, C. F. Rainwater, 3 males, 2 females (USNM, RCF).

DISCUSSION.—Both Blatchley and Hussey, in the citations listed above, reported taking this species from the ground under leaves or other debris. Specimens examined bore the notations “in woods trash” and “Berlese funnel material, in dry magnolia-hickory hummock.”

The four species that run through the first half of the first couplet of the key to species form a closely knit unit that probably deserves taxonomic recognition of some sort, perhaps as a subgenus. This group would be characterized by the small, triangular terminal process of the osteolar peritreme which is separated from the lateral edge of the evaporatorium by a space greater than the transverse width of the process, and by the thick, calloused margins of the head, with the incomplete, submarginal, dorsal carina. Since three of the four species which would be included in such a group are represented by only one specimen in the material studied, the author hesitates to make such a division at this time.

Melanaethus crenatus (Signoret), revived combination

PLATE FIGURE 209

Geotomus (*Melanaethus*) *crenatus* Signoret, 1883, p. 208, pl. 4, fig. 171.

Melanaethus crenatus Uhler, 1886, p. 3.

Geotomus crenatus Lethierry and Severin, 1893, p. 72.

DIAGNOSIS.—Among those species of the genus with the large terminal lobe on the peritreme this one may be recognized by the distinctly alutaceous coria.

DESCRIPTION.—MALE: Elongate-oval, sides subparallel.

Head: Length about two-thirds of width, 0.56(0.54–0.60):0.81 (0.80–0.82); interocular width, 0.56(0.55–0.60); anterior outline a more or less truncated semicircle, clypeus as long as juga, narrowed apically; dorsum densely and in part confluent punctate; with distinct marginal carina dorsally; ocelli very small, separated from eye by space more than three times transverse ocellar width; jugum ventrally shining; maxillary plate punctate. Antennal segments: I, 0.16(0.15–0.19); II, 0.16(0.16–0.18); III, 0.19(0.17–0.20); IV, 0.25(0.23–0.26); V, 0.33(0.33–0.35). Bucculae higher than labial II, abruptly terminated posteriorly; labium attaining bases of middle coxae. Labial segments: I, 0.22(0.20–0.23); II, 0.44(0.37–0.50); III, 0.30(0.27–0.33); IV, 0.25(0.22–0.26).

Pronotum: Length more than half width, 0.67(0.64–0.70):0.91 (0.86–0.93); anterior margin moderately, singly emarginate; lateral margin nearly straight and subparallel on basal half, without setigerous punctures submarginally; transverse impression weak to obsolete, postmedian, without a special line of coarser punctures marking it; anterior lobe with numerous prominent punctures laterally, subapically and medially, calli polished, with several scattered, finer

punctures; posterior lobe with numerous prominent, elongate punctures over entire surface, sometimes with short, longitudinal rugulae between.

Scutellum: Longer than wide, 1.19(1.13–1.23):0.96(0.93–1.01); surface sculpture similar to but less dense than that of posterior pronotal lobe.

Hemelytron: Clavus and corium alutaceous; clavus with one or two partial rows in addition to one complete row of punctures; mesocorium with two complete rows of punctures paralleling claval suture, elsewhere with well-separated punctures becoming much finer apically; punctation of exocorium similar to but more dense than that of mesocorium; costa without setigerous punctures; membranal suture straight, lateral angle not produced; membrane longer than basal width, usually just reaching apex of abdomen.

Propleuron: Shining, with numerous irregular, anastomosing, longitudinal rugae; prosternal carinae almost as high as labial II, abruptly terminated posteriorly.

Mesopleuron: Evaporatorium extended into posterolateral angle, not reaching lateral margin of segment; lateral area in part rugopunctate.

Metapleuron: Terminal lobe of peritreme semicircular, reaching almost to convex lateral margin of evaporatorium; lateral area in part rugopunctate.

Legs: Anterior tibia with five or six stout spines dorsally.

Sternites: Shining and minutely punctate on middle half, coarsely rugopunctate on lateral fourth.

Terminalia: Genital capsule shining, distinctly punctate in lateral angles, apical margin straight; gonostylus as illustrated (fig. 209).

Length of body: 3.32(3.18–3.42).

FEMALE: Similar to males, measurements averaging larger.

Head: Length-width ratio, 0.60(0.56–0.64):0.83(0.80–0.91); interocular width, 0.59(0.56–0.63). Antennal segments: I, 0.17(0.16–0.20); II, 0.18(0.15–0.20); III, 0.19(0.14–0.24); IV, 0.25(0.25–0.26); V, 0.34(0.33–0.37). Labial segments: I, 0.22(0.19–0.26); II, 0.42(0.36–0.51); III, 0.31(0.26–0.36); IV, 0.26(0.24–0.33).

Pronotum: Length-width ratio, 0.94(0.90–1.03):1.73(1.62–1.87).

Scutellum: Length-width ratio, 1.26(1.13–1.34):1.04(0.90–1.16).

Length of body: 3.43(3.25–3.60).

TYPE DATA.—Signoret described this species from "Mexique." The type is probably in the Naturhistorisches Museum, Vienna.

SPECIMENS STUDIED.—33 males, 32 females.

UNITED STATES: *Arizona*: Castle Hot Springs, Gila Co., Miller Canyon (Huachuca Mts.), Nogales, Sabino Canyon (Santa Catalina Mts.); April, August,

November. *Texas*: Laredo (on orchid from Mexico), San Antonio, Sheffield; March, April, June.

MEXICO: *Distrito Federal*: Pedregal de San Angel, August. *México*: Tejupilco.

DISCUSSION.—The Laredo, Tex., specimen listed above was taken from an orchid which had been imported from Guerrero, Mexico. One other specimen was labeled "Taken at light."

***Melanaethus cubensis* (Barber and Bruner), new combination**

Geocnethus cubensis Barber and Bruner, 1932, p. 236.

DIAGNOSIS.—The combination of the small terminal lobe of the peritreme and the lack of punctures on the head and anterior pronotal lobe will permit ready recognition of this species among the other members of the genus.

DESCRIPTION.—FEMALE: Based on paratype (USNM). Elongate-oval, sides nearly parallel.

Head: Length about two-thirds width, 0.83:1.21; interocular width, 0.70; anterior outline almost semicircular, clypeus as long as juga, narrowing towards apex; margin of head thick, calloused, dorsal "carina" distinctly submarginal; surface somewhat flattened, little depressed submarginally, mostly obsoletely alutaceous, virtually impunctate; ocelli large, separated from eye by space greater than transverse ocellar width; jugum ventrally polished, impunctate; maxillary plate punctate ventrally and posteriorly. Antennal segments: I, 0.26; II, 0.38; III, 0.38; IV, 0.43; V, 0.62. Bucculae not as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.40; II, 0.80; III, 0.56; IV, 0.43.

Pronotum: Length more than half of width, 1.43:2.69; anterior margin shallowly emarginate; lateral margin weakly sinuate at anterior third, with submarginal row of four or five setigerous punctures; transverse impression virtually absent, indicated laterally by few small punctures; both lobes obsoletely alutaceous, minutely punctate; anterior lobe without large punctures, with obsolete, subapical impression; posterior lobe with not more than five small punctures.

Scutellum: Longer than wide, 2.02:1.62; surface obsoletely alutaceous, minutely punctured, with few coarse punctures scattered over disc.

Hemelytron: Clavus and corium distinctly alutaceous; clavus with one row of punctures; corium with one complete row of punctures and basal part of second row paralleling claval suture; costa convex, with two setigerous punctures; membranal suture weakly sinuate, lateral angle not prolonged; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Both convexities impunctate; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate.

Metapleuron: Terminal lobe of peritreme triangular posteriorly, removed from straight lateral margin of evaporatorium by space greater than width of terminal lobe (somewhat similar to fig. 97); lateral area impunctate.

Legs: Anterior tibia with five dorsal spines; posterior tibia weakly sinuate subapically.

Sternites: Alutaceous, with several coarse, shallow punctures in spiracular area.

Length of body: 5.36.

TYPE DATA.—Type male (USNM) is from Cayamas, Cuba.

SPECIMENS STUDIED:

CUBA: Cayamas, April 3, E. A. Schwarz, 1 male (holotype, USNM); Sierra Rangel, Aug. 28, 1929, J. Acuna and S. C. Bruner, 1 female (USNM).

Melanaethus externus, new species

DIAGNOSIS.—Within the genus *Melanaethus* this species may be recognized by the reduced, triangular terminal process of the peritreme, the presence of numerous, coarse punctures on head and side of anterior pronotal lobe, and the lack of punctures on the anterior convexity of the propleuron.

DESCRIPTION.—Based on one female. Elongate-oval, widest posterior to midlength.

Head: Length about two-thirds width, 0.80:1.12; interocular width, 0.66; anterior outline a full semicircle, clypeus as long as juga, narrowed apically; surface slightly convex, juga with numerous crowded punctures, margin thick, with partial, submarginal dorsal carina; ocelli small, separated from eye by space more than three times transverse ocellar width; jugum ventrally and maxillary plate (except posteriorly) shining, impunctate. Antennal segments: I, 0.26; II, 0.33; III, 0.34; IV, 0.41; V, missing. Bucculae about as high as labial II, abruptly terminated posteriorly; labium reaching bases of middle coxae. Labial segments: I, 0.40; II, 0.77; III, 0.49; IV, 0.40.

Pronotum: Length about half of width, 1.26:2.40; anterior margin deeply, doubly emarginate; lateral margin straight to faintly concave on middle third, with submarginal row of five setigerous punctures; transverse impression weak, postmedian, marked by irregular double row of distinct punctures; anterior lobe with single row of distinct punctures paralleling anterior emargination between eyes, and with broad patch of them laterally; posterior lobe with few punctures scattered medially and laterally.

Scutellum: Longer than wide, 1.82:1.43; surface shining, with irregularly scattered, strong punctures over surface except at base and apex.

Hemelytron: Clavus and corium alutaceous; clavus punctate near base and with single longitudinal row; mesocorium with one complete row of punctures paralleling claval suture and with punctures crowded on basal third; exocorium with few punctures scattered along length; costa convex, with one setigerous puncture; membranal suture nearly straight; membrane longer than basal width, reaching apex of abdomen.

Propleuron: Shining, distinctly punctate only in depression and at base of acetabulum; prosternal carinae about half as high as labial II, abruptly terminated posteriorly.

Mesopleuron: Lateral area rugose, impunctate.

Metapleuron: Terminal lobe of peritreme triangular posteriorly, separated from straight lateral margin of evaporatorium by space greater than transverse width of lobe; lateral area impunctate.

Legs: Anterior tibia with six stout spines dorsally.

Sternites: Finely alutaceous, with very few punctures behind spiracular area.

Length of body: 4.71.

TYPE DATA.—Holotype female (USNM 64416), from Veracruz, Mexico, "F. H. B., 586."

DISCUSSION.—See discussion under *M. cavicollis* (Blatchley).

Melanaethus mixtus, new species

PLATE FIGURE 211

DIAGNOSIS.—The small size, presence of two types of punctures on posterior lobe of the pronotum, lack of an impression between the calli, and the large terminal lobe on the peritreme will permit separation of this species from others in the genus.

DESCRIPTION.—MALE: Two specimens, one lacking antennae and labium. Oval, robust, sides subparallel or weakly diverging posteriorly.

Head: Length almost two-thirds width, 0.47(0.47–0.47):0.76(0.76–0.76); interocular width, 0.52(0.51–0.53); anterior outline broad, less than a semicircle, clypeus as long as or very slightly longer than juga; surface, including clypeus, shining, with crowded, distinct punctures; jugum with distinct, marginal carina dorsally, one submarginal setigerous puncture; ocelli small, separated from eye by space more than twice transverse ocellar width; jugum ventrally shining, impunctate; maxillary plate distinctly punctate on basal two-thirds. Antennal segments (missing from larger specimen): I, 0.16; II, 0.16; III, 0.16; IV, 0.23; V, 0.27. Bucculae higher than labial II, abruptly terminated posteriorly; labium reaching between middle coxae. Labial segments (missing from larger specimen): I, 0.21; II, 0.40; III, 0.27; IV, 0.23.

Pronotum: Length slightly more than half of width, 0.87(0.84–0.90):1.60(1.56–1.64); anterior margin moderately, simply emarginate; lateral margin straight on basal half, without submarginal row of setigerous punctures; transverse impression obsolete, postmedian, without defining row of special punctures; anterior lobe with numerous crowded punctures laterally, subapically and between calli, latter with minute punctures discally; posterior lobe with fine punctures over entire width, these mixed with coarser ones anteriorly.

Scutellum: Longer than wide, 1.16(1.15–1.17):0.94(0.93–0.95); shining; surface, except basal angles, with scattered fine and coarse punctures.

Hemelytron: Clavus and corium polished or weakly alutaceous; clavus with $1\frac{1}{2}$ rows of punctures; mesocorium with two rows of punctures paralleling claval suture, elsewhere punctures becoming much finer and more widely scattered towards apex; exocorium punctate similar to mesocorium; costa flattened, slightly reflexed, without setigerous punctures; membranal suture straight, lateral angle not prolonged; membrane longer than basal width, reaching apex of abdomen.

Propleuron: Anterior convexity with numerous crowded, longitudinal rugulae, depression with coarser punctures; prosternal carinae less than half as high as labial II, abruptly terminated posteriorly.

Mesopleuron: Evaporatorium reaching into posterolateral angle but not to side of margin of segment; lateral area in part coarsely rugopunctate.

Metapleuron: Peritreme terminated by large, semicircular lobe reaching almost to lateral margin of evaporatorium; lateral area with few distinct striae.

Legs: Anterior tibia with five stout spines dorsally.

Sternites: Weakly alutaceous and minutely punctate, with few distinct punctures and weak rugae laterally near spiracular area.

Terminalia: Genital capsule with few more punctures laterally, apical margin entire, weakly convex; gonostylus as illustrated (fig. 211).

Length of body: 3.17(3.09–3.29).

FEMALE: Similar to male.

Head: Length-width ratio, 0.52(0.50–0.56):0.79(0.78–0.83); interocular width, 0.54(0.53–0.56). Antennal segments: I, 0.16(0.16–0.19); II, 0.17(0.16–0.20); III, 0.18(0.16–0.23); IV, 0.24(0.21–0.27); V, 0.30(0.27–0.33). Labial segments: I, 0.20(0.20–0.22); II, 0.38(0.33–0.41); III, 0.31(0.30–0.33); IV, 0.24(0.22–0.30).

Pronotum: Length-width ratio, 0.92(0.88–0.95):1.67(1.58–1.76).

Scutellum: Length-width ratio, 1.23(1.17–1.31):0.98(0.93–1.06).

Length of body: 3.17(3.09–3.29).

TYPE DATA.—Holotype male (USNM 64417), "Guatemala [intercepted] Brownsville, Tex., 66430, 6-14-48-10336, *Sobralia* sp." Allotype female (USNM), "Guatemala, x-12-43, *Sobralia macrantha*, 43-19570 [intercepted] San Francisco, Cal. #18417." Paratypes as follows:

MEXICO: *No exact locality*: Intercepted at New Orleans, La., on pineapple, May 12, 1937, 1 female (USNM). *San Luis Potosi*: Tamazunchale, intercepted at Laredo, Tex., on orchid plant, Oct. 10, 1947, 1 female (USNM). Matz, intercepted at Laredo, Tex., on *Laelis anceps*, May 19, 1947, 1 female (RCF). *DISTRITO FEDERAL*: México, intercepted at Laredo, Tex., on *Lilium longiflorum*, Aug. 23, 1945, 2 females (USNM).

COSTA RICA: San José, June or July 1931, H. Schmidt, 1 female (KU).

DISCUSSION.—Although nearly all specimens studied had been collected in the United States, they had originated in Mexico and Guatemala and had been intercepted at quarantine stations upon their entry into this country. Judging from the number of interceptions, it appears that this species must occur in some abundance in Mexico and Guatemala. If such is the case, it is surprising that none of the collections examined in those countries had specimens collected there. This situation points up how poorly known is the fauna of certain countries, especially for groups that require specialized collecting techniques.

Melanaethus noctivagus (Van Duzee), new combination

PLATE FIGURES 67, 210

Geotomus noctivagus Van Duzee, 1923, p. 125.—Torre Bueno, 1939, p. 181.

DIAGNOSIS.—The short labium (reaching only to middle coxae) and the punctate depressed area between the calli (fig. 67) will permit recognition of this form among all those with a large terminal lobe on the peritreme.

DESCRIPTION.—MALE: Elongate-oval, widest at or immediately anterior to humeri.

Head: Length almost three-fourths of width, 0.59(0.56-0.61):0.79(0.76-0.82); interocular width, 0.51(0.50-0.53); anterior outline a prolonged semicircle, clypeus as long as juga, weakly narrowed apically; surface with numerous moderate, well-separated punctures; with distinct, marginal carina dorsally; with no submarginal punctures; ocelli large, separated from eye by space less than twice transverse ocellar width; jugum ventrally and maxillary plate impunctate. Antennal segments: I, 0.16(0.14-0.18); II, 0.21(0.20-0.23); III, 0.21(0.20-0.23); IV, 0.29(0.27-0.31); V, 0.37(0.36-0.41). Buculae higher than labial II, abruptly terminated posteriorly; labium extended to middle coxae. Labial segments: I, 0.21(0.20-0.24); II, 0.39(0.36-0.43); III, 0.26(0.25-0.28); IV, 0.24(0.22-0.26).

Pronotum: Length about half of width, 0.88(0.86–0.92):1.65(1.57–1.67); anterior margin deeply, simply emarginate; lateral margins straight and subparallel on basal third, posterior angle hidden by swollen lateral portion of posterior lobe, submarginally with six setigerous punctures bearing short, fine setae; transverse impression weak but distinct across full width, medially expanded posteriorly and anteriorly between calli as punctate basin (fig. 67); anterior lobe with strong punctures laterally and subapically, with scattered minute punctures on calli; posterior lobe distinctly punctate across full width, usually with much finer punctures between.

Scutellum: Longer than wide, 1.25(1.20–1.33):1.00(0.93–1.03); surface shining, and, except basal angles, with numerous large and small punctures.

Hemelytron: Clavus and corium polished; clavus with row of punctures double at base; mesocorium with two complete rows of punctures paralleling claval suture, elsewhere with numerous distinct punctures; exocorium more densely punctate than mesocorium; costa flattened and punctate, without setigerous punctures; membranal suture weakly sinuate, lateral angle feebly produced; membrane variable; longer than basal width in macropterous forms and shorter than basal width in brachypterous forms.

Propleuron: Anterior convexity alutaceous, with crowded small punctures on anterior half; depression with several coarse punctures.

Mesopleuron: Evaporatorium usually extended into posterolateral angle but not reaching lateral margin of segment; lateral area with numerous coarse punctures.

Metapleuron: Terminal lobe of peritreme large, reaching almost to convex lateral margin of somewhat limited evaporatorium; lateral area with numerous coarse punctures.

Legs: Anterior tibia with five or six stout spines on dorsal margin.

Sternites: Medially alutaceous and minutely punctate, laterally with numerous close, coarse punctures and longitudinal rugae.

Terminalia: Genital capsule shining, or weakly alutaceous, punctate, more densely so laterally, apical margin straight; gonostylus as illustrated (fig. 210).

Length of body: 3.60(3.46–3.74).

FEMALE: Similar to male.

Head: Length-width ratio, 0.59(0.54–0.70):0.81(0.73–0.91); interocular width, 0.52(0.46–0.63). Antennals: I, 0.15(0.14–0.17); II, 0.21(0.20–0.23); III, 0.21(0.20–0.26); IV, 0.29(0.26–0.33); V, 0.37(0.33–0.40). Labials: I, 0.19(0.17–0.21); II, 0.38(0.36–0.41); III, 0.29(0.24–0.33); IV, 0.26(0.24–0.30).

Pronotum: Length-width ratio, 0.87(0.83–0.97):1.64(1.53–1.89).

Scutellum: Length-width ratio, 1.27(1.18–1.46):0.97(0.91–1.10).

Length of body: 3.49(3.17-4.01).

TYPE DATA.—The type male and paratype female (both in CalAc), were taken at San Carlos Bay, Sonora, Mexico.

SPECIMENS STUDIED.—14 males, 29 females.

UNITED STATES: *Arizona*: Atascosa Mt., Cochise Co., Douglas, Higley, Mesa, Oracle, Phoenix, Pima Co., Pleasant Lake, Thatcher, Yuma Co.; January, June, July, August. *California*: Coachella, Davis, San Diego; January, May, July. *Idaho*: Rupert; August. *New Mexico*: Las Cruces; June. *Texas*: Presidio Co., Valentine; July. *Washington*: Wilbur; March.

MEXICO: *Sonora*: Hermosillo, Pitiquito, San Carlos Bay; May, July.

DISCUSSION.—The placement of this species close to *pensylvanicus* on the basis of the punctation of the head was not justified by the material at hand. All material seen, including the female paratype from San Carlos Bay, Sonora, showed distinct and often crowded punctures on the head, not the minute punctation of *pensylvanicus*. This is in contradiction to Van Duzee's original description which reads, "superior surface minutely, obscurely, punctured." Comparison of specimens with the type will settle the question.

***Melanaethus subglaber* (Walker), new combination**

PLATE FIGURE 213

Aethus subglaber Walker, 1867, p. 150.—Torre Bueno, 1939, p. 181.

Melanaethus elongatus Uhler, 1876, p. 280; 1877, p. 393; 1886, p. 3. New synonymy.

Geotomus parvulus Signoret, 1883, p. 208, pl. 4, fig. 170.—Lethierry and Severin, 1893, p. 72.—Banks, 1910, p. 100.—Van Duzee, 1917, p. 22.—Torre Bueno, 1939, p. 181. New synonymy

DIAGNOSIS.—Among the species of *Melanaethus* with the large terminal modification of the peritreme extending almost to the lateral margin of the evaporatorium, this one may be recognized by its very elongate form and the fact that the transverse impression is distinct across its entire width but not expanded medially.

DESCRIPTION.—MALE: Elongate-oval, slender for the genus, sides parallel.

Head: Length about three-fourths width, 0.63(0.62-0.64):0.82(0.80-0.86); interocular width, 0.53(0.50-0.56); anterior outline elongate, distinctly roundly truncated, clypeus as long as juga, scarcely narrowed at apex; surface, including clypeus, with numerous crowded punctures; jugum with distinct marginal carina dorsally, with one submarginal puncture anterior to eye; jugum ventrally shining, impunctate; maxillary plate alutaceous, feebly punctate. Antennal segments: I, 0.17(0.16-0.20); II, 0.18(0.16-0.20); III, 0.22(0.22-0.23); IV, 0.27(0.26-0.30); V, 0.37(0.36-0.40). Bucculae higher than labial II, abruptly terminated posteriorly; labium reaching between middle

coxae. Labial segments: I, 0.23(0.21–0.24); II, 0.42(0.40–0.45); III, 0.30(0.28–0.32); IV, 0.22(0.21–0.24).

Pronotum: Length more than half of width, 0.85(0.81–0.92):1.58(1.51–1.67); anterior margin shallowly, simply emarginate; lateral margin straight on basal half or more, submarginal row of five setigerous punctures; transverse impression postmedian, distinctly and almost equally depressed across full width, not marked by special row of punctures; anterior lobe with coarse, crowded punctures laterally and subapically, medially with fine punctures, calli with few minute punctures; posterior lobe shining, with numerous moderate punctures scattered nearly or quite to hind margin.

Scutellum: Length greater than width, 1.13(1.06–1.20):0.92(0.86–0.97); shining, with numerous well-separated punctures over surface except in basal angles.

Hemelytron: Clavus and corium shining, clavus with $1\frac{1}{2}$ rows of punctures; mesocorium with two complete rows of punctures paralleling claval suture, elsewhere punctation sparse, fine, becoming little coarser towards base; exocorium punctate similar to mesocorium; costa thin, weakly reflexed on basal half, with one setigerous puncture dorsally near base; membranal suture straight, lateral angle not produced; membrane little longer than basal width, just attaining apex of abdomen.

Propleuron: Anterior convexity longitudinally rugopunctate; depression with few coarse punctures; prosternal carinae about as high as labial II, anterior margin long, vertical, produced ventrally as small, semicircular lobe.

Mesopleuron: Evaporatorium reaching into posterolateral angle, not attaining lateral margin of segment; lateral area shining, in part rugopunctate.

Metapleuron: Terminal modification of peritreme large, semicircular, reaching almost to lateral margin of evaporatorium; lateral area with several coarse punctures.

Legs: Anterior tibia with five or six stout spines dorsally.

Sternites: Polished, minutely punctate, with several weak rugae laterally near spiracular area.

Terminalia: Genital capsule shining, punctures becoming dense laterally, apical margin weakly decurved; gonostylus as illustrated (fig. 213).

Length of body: 3.33(3.16–3.55).

FEMALE: Similar to male, most measurements averaging larger.

Head: Length-width ratio, 0.65(0.63–0.67):0.85(0.83–0.87); interocular width, 0.53(0.51–0.56). Antennal segments: I, 0.18(0.16–0.22); II, 0.20(0.18–0.23); III, 0.24(0.23–0.25); IV, 0.30(0.30–0.33);

V, 0.38(0.34-0.40). Labial segments: I, 0.24(0.23-0.26); II, 0.44(0.42-0.46); III, 0.33(0.31-0.35); IV, 0.23(0.21-0.26).

Pronotum: Length-width ratio, 0.88(0.85-0.91):1.64(1.63-1.67).

Scutellum: Length-width ratio, 1.19(1.15-1.23):0.95(0.97-1.00).

Length of body: 3.46(3.43-3.50).

TYPE DATA.—Walker's type (BrM) was listed for the general territory of "North America"; Uhler's type (USNM) of *elongatus* came from "California."

SPECIMENS STUDIED.—112 males, 146 females.

UNITED STATES: *Arizona*: Aquila, Baboquivari Canyon (Pima Co.), Castle Hot Springs, Chiricahua Mts., Douglas, Florence, Gila Bend, Globe, Grand Canyon (Desert View), Indian Hot Spring, Nogales, Patagonia, Phoenix, Roosevelt Dam, Sabino Canyon (Santa Catalina Mts.), Thatcher, Tucson, Yuma, Warren; April to August. *California*: Borego Valley, Campo, Clayton, Coachella, Colton, Death Valley, Edison, Imperial Co., Lindsay, Los Angeles, Mt. Diablo, Needles, Niles Canyon (Alameda Co.), Oakland, Ojai, Orange, Palm Springs, Paso Robles, Ripley, San Bernardino, San Diego, San Felipe Valley (San Diego Co.), San Francisco, San Quentin, Santa Anna River, Santa Cruz, Sobabo Springs, Tanbark Flats (Los Angeles Co.); March to November. *Nevada*: Hoover Dam, Carson City, Las Vegas; June to August. *New Mexico*: Clovis; August. *Texas*: Concho, Dell City; July, August. *Utah*: Delta, Oasis; July, August.

MEXICO: *Sonora*: Hermosillo, Imuris, Pitiquito, San Bernardino; June, July. *Baja California*: Mesquital, San Fernando, San Ignacio; July.

ECUADOR: *Galápagos Islands*: Bindloe Island.

DISCUSSION.—The ecological notes on the specimens tell little about the habits of the species because they represent the usual collecting places for members of the family: i.e., at lights and under objects on the ground. There is one specimen, however, which does bear an interesting label which the author prefers to disbelieve. The specimen is labeled "Sao Paulo, Brazil(!), San. F. 23832, VII-8-47-10080." The Brazilian locality would suggest that the specimen was from that country, while the abbreviation "San F." indicates that it was intercepted in commerce at that quarantine station. Since San Francisco is within the known range of *parvulus* and Brazil is very far removed from it, the author prefers to interpret this as a case of contamination after the products to be examined arrived in California.

The "*Aethus subglaber*" of Walker has long been an enigma to heteropterists, but personal examination of the type leaves no doubt that the name is correct for this species.

In 1883 Signoret transferred Uhler's species and Herrick-Schaeffer's (1839, p. 97) *Cydnus elongatus* into *Geotomus*, making Uhler's species a junior homonym of Herrick-Schaeffer's species and proposing for it the new name *parvulus*.

Melanaethus pensylvanicus (Signoret), new combination

PLATE FIGURE 212

Cydnus (*Melanaethus*) *picinus* Uhler, 1876, pl. 19, fig. 17 (figured, but not mentioned in text).

Melanaethus picinus Uhler, 1877, p. 391 (designated as "new sp."); 1886, p. 3.

Geotomus pensylvanicus Signoret, 1883, p. 207, pl. 4, fig. 169.—Lethierry and Severin, 1893, p. 72.—Banks, 1910, p. 100.—Van Duzee, 1917, p. 22.—Torre Bueno, 1939, p. 181.

DIAGNOSIS.—Among the species of *Melanaethus* with the large terminal lobe on the peritreme, this one may be recognized by having the head impunctate or with scattered minute punctures.

DESCRIPTION.—MALE: Oval, widest behind midlength.

Head: Length almost two-thirds width, 0.54(0.50–0.56):0.84(0.83–0.86); interocular width, 0.52(0.52–0.53); anterior outline a strongly flattened semicircle, clypeus as long as juga, narrowed apically; dorsum distinctly convex, with several minute punctures scattered over surface; with distinct marginal carina dorsally; submarginally with three widely separated setigerous punctures; ocelli moderate, separated from eye by space more than twice transverse ocellar width; jugum ventrally shining, impunctate; maxillary plate with crowded punctures. Antennal segments: I, 0.15(0.13–0.16); II, 0.16(0.16–0.17); III, 0.19(0.17–0.23); IV, 0.24(0.23–0.26); V, 0.31(0.30–0.33). Bucculae about as high as labial II, abruptly terminated posteriorly; labium attaining bases of middle coxae. Labial segments: I, 0.24(0.23–0.27); II, 0.39(0.36–0.43); III, 0.28(0.26–0.32); IV, 0.23(0.23–0.26).

Pronotum: Length more than half width, 0.93(0.93–0.94):1.74(1.72–1.79); anterior margin shallowly, simply emarginate; lateral margin straight on basal third or half, with submarginal row of five or six setigerous punctures; transverse impression postmedian, obsolete, not marked by special row of punctures; anterior lobe with lateral patch of distinct punctures, with several minute punctures medially and scattered over calli; posterior lobe with numerous fine punctures across full width.

Scutellum: Length greater than width, 1.25(1.25–1.28):1.09(1.08–1.11); surface, except basal angles, with scattered intermixed minute and moderate punctures.

Hemelytron: Clavus and corium polished; clavus with one or two partial rows of punctures in addition to the complete one; mesocorium with two complete rows of punctures paralleling claval suture, elsewhere with scattered punctures becoming coarser and closer basally; exocorium with irregular punctation, punctures most numerous subcostally; costa straight on basal third, diverging, with one setigerous puncture located dorsally near base; membranal suture straight,

lateral angle not produced; membrane longer than basal width, reaching or slightly surpassing apex of abdomen.

Propleuron: Alutaceous, with minute punctures on anterior convexity and several coarser ones in depression; prosternal carinae less than half as high as labial II, more or less abruptly terminated posteriorly.

Mesopleuron: Evaporatorium attaining posterolateral angle but not lateral margin of segment; lateral area with numerous oblique rugulae.

Metapleuron: Terminal lobe of peritreme a large, irregular semi-circle reaching almost to straight lateral margin of evaporatorium; lateral area shining, with few rugae paralleling evaporatorium.

Legs: Anterior tibia with five or six stout spines dorsally.

Sternites: Shining and minutely punctate medially, laterally with distinct punctures and longitudinal rugae.

Terminalia: Genital capsule finely alutaceous, more closely punctate laterally; gonostylus as illustrated (fig. 212).

Length of body: 3.42(3.30-3.56).

FEMALE: Similar to male.

Head: Length-width ratio, 0.56(0.51-0.60):0.84(0.83-0.86); interocular width 0.52(0.52-0.53). Antennal segments: I, 0.15(0.14-0.16); II, 0.17(0.16-0.20); III, 0.18(0.16-0.20); IV, 0.24(0.23-0.26); V, 0.31(0.30-0.33). Labial segments: I, 0.24(0.23-0.27); II, 0.39(0.36-0.43); III, 0.28(0.26-0.32); IV, 0.23(0.23-0.26).

Pronotum: Length-width ratio, 0.95(0.90-1.00):1.82(1.74-1.92).

Scutellum: Length-width ratio, 1.34(1.26-1.41):1.14(1.12-1.16).

Length of body: 3.45(3.31-3.59).

TYPE DATA.—The type specimen (USNM) was reported by Uhler as having come from Pennsylvania.

SPECIMENS STUDIED:

UNITED STATES: *Alabama:* Anniston; July. *Arkansas:* Pike Co., Washington Co.; May, September. *Florida:* Pensacola; October. *Georgia:* Atlanta, Savannah; March, May, July. *Illinois:* Charleston; September. *Kansas:* Douglas Co., Lyons Co., Manhattan; May, June. *Louisiana:* Bossier Parish, Baton Rouge, Logansport; April, May. *Maryland:* "Md.," Hagerstown; March, June, November. *Mississippi:* Gulfport, Hamilton; April, July, December. *Missouri:* Carthage, Lincoln, Phelps; May, June. *Nebraska:* Lincoln; May. *North Carolina:* Moore Co., Southern Pines; July. *Oklahoma:* Calera Grove; December. *Tennessee:* Knoxville; May. *Virginia:* Falls Church, Leesburg; April.

DISCUSSION.—When Signoret (1883) transferred Uhler's *Cydnus picinus* and Stål's (1853, p. 215) *Aethus picinus* to *Geotomus*, Stål's use of the name had priority and Signoret was obliged to rename Uhler's species. He called it "*pensylvanicus*," using but one "n" originally, according to usage in French at that time.

Uhler's name *picinus* must date from 1876 even though it was not described in words until 1877. In 1876 Uhler presented a habitus sketch and on the caption for the plate used the name *Melanaethus picinus*. In view of the lack of ecological comments in literature concerning this species, the following notes copied from labels of specimens examined should be especially interesting: "on okra," "swept grasses," "tanglefoot trap posts," "from soil, peach orchard" and "under litter, peach orchard."

Melanaethus planifrons, new species

PLATE FIGURE 214

DIAGNOSIS.—The enlarged terminal lobe of the peritreme reaching close to the lateral edge of the evaporatorium plus the presence of three or four setigerous punctures submarginally on the head will easily separate this species from all others in the genus.

DESCRIPTION.—MALE: Elongate-oval, sides parallel.

Head: Length about three-fourths width, 0.99(0.96–1.02):1.22(1.16–1.27); interocular width, 0.86(0.82–0.90); anterior outline semicircular, juga longer than clypeus, contiguous beyond it; surface shining, nearly smooth, or with weak to prominent radiating rugae, with patches of numerous small punctures scattered on higher parts; jugum with distinct marginal carina dorsally, submarginally with row of three or four setigerous punctures; ocelli moderate, situated distinctly posterior to line connecting hind margin of strongly oblique eyes, removed from eye by space about four times transverse ocellar width; jugum ventrally and maxillary plate, except base, shining, impunctate. Antennal segments: I, 0.30(0.30–0.33); II, 0.39(0.35–0.43); III, 0.37(0.34–0.40); IV, 0.46(0.41–0.50); V, 0.52(0.49–0.60). Bucculae as high as labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.41(0.40–0.43); II, 0.65(0.65–0.66); III, 0.49(0.43–0.56); IV, 0.40(0.37–0.43).

Pronotum: Length not over half width, 1.35(1.17–1.44): 2.71(2.47–2.82); anterior margin deeply, doubly emarginate; lateral margin weakly incurved basally, then straight for more than half length, with submarginal row of six or seven setigerous punctures; transverse impression postmedian, obsolete to distinct, marked by irregular, medially interrupted row of coarser punctures; anterior lobe with mixture of coarse and fine punctures in broad lateral band and in narrow line in moderate, subapical impression; posterior lobe with scattered minute punctures and a few distinct punctures medially.

Scutellum: Length greater than width, 1.88(1.69–1.97):1.59(1.36–1.69); shining, with several widely scattered minute and coarse punctures discally.

Hemelytron: Clavus and corium polished, clavus usually with one row of punctures, sometimes with partial second row; mesocorium with one complete and one medially interrupted row of punctures paralleling claval suture, elsewhere obsoletely or minutely punctate; exocorium with punctures of various sizes scattered along length; costa convex dorsally, with one, or rarely two, setigerous punctures; membranal suture straight, lateral angle not produced; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Weakly alutaceous to shining, with few distinct punctures in depression; prosternal carinae about as high as labial II, abruptly rounded off posteriorly.

Mesopleuron: Evaporatorium reaching lateral margin of segment; lateral area shining, with few oblique rugae.

Metapleuron: Terminal modification of peritreme somewhat transverse, polished only along posterior margin, distinctly separated from lateral margin of evaporatorium by space less than diameter of the lobe; lateral area polished, impunctate.

Legs: Anterior tibia with six to eight stout spines dorsally.

Sternites: Shining, minutely punctate, with few coarse punctures and weak, longitudinal rugae laterally.

Terminalia: Genital capsule shining, with small, shallow emargination apically; gonostylus as illustrated (fig. 214).

Length of body: 5.38(4.79-5.77).

FEMALE: Similar to male, lacking punctate subapical impression on pronotum.

Head: Length-width ratio, 0.98(0.94-1.03):1.24(1.16-1.30); interocular width, 0.86(0.80-0.90). Antennal segments: I, 0.30(0.30-0.32); II, 0.37(0.35-0.40); III, 0.36(0.34-0.40); IV, 0.47(0.43-0.53); V, 0.54(0.49-0.63). Labial segments: I, 0.40(0.36-0.43); II, 0.70(0.68-0.73); III, 0.51(0.48-0.56); IV, 0.38(0.36-0.41).

Pronotum: Length-width ratio, 1.35(1.19-1.49):2.70(2.47-2.93).

Scutellum: Length-width ratio, 1.99(1.85-2.18):1.61(1.43-1.69).

Length of body: 5.26(4.81-5.82).

TYPE DATA: Holotype male (USNM 64418), "Lower California, Pacific Slope, Calexico, Cal., VI-30-40." Allotype female (USNM), same data. Paratypes as follows:

UNITED STATES: *Arizona*: Elroy Aug. 4, 1932, E. D. Bell, 4 females (USNM). Patagonia, July 1936, E. S. Ross, 1 male (CalAc). Oak Creek Canyon, July 9, 1941, L. H. Beamer, 1 male, 1 female (KU). Salt River Valley, October 1933, A. F. Swain, 4 males, 3 females, 2 nymphs (RLU) and (in lettuce) 1 male, 1 female, 2 nymphs (CalAc). San Luis, Yuma Co., Aug. 11, 1940, E. C. Van Dyke, 2 females (CalAc). Tucson, July 7, 1949, R. H. and L. D. Beamer, 5 females (KU); July 29, 1924, E. P. Van Duzee, 1 male (CalAc). Yuma, Aug. 6, 1948, C. and P. Vaurie, 1 female (AmM). *California*: Brawley, Oct. 14, 1936, A. T. McClay, 1 female (McC). Dos Palos (Merced Co.), Aug. 14, 1947, V. M. Stern, 1 male

(CIS). El Centro, July 24, 1938, R. H. Beamer, 1 female (KU). Fort Yuma, Aug. 21, 1924, E. P. Van Duzee, 2 females (CalAc). Holtville, April, February 1945, sugar beet, 1 female (USNM). Imperial Co., July 14, W. Benedict, 3 females (KU). Imperial Valley, March, W. M. Davidson, 1 female (USNM). Los Angeles, Oct. 15, 1917, E. P. Van Duzee, 1 female (CalAc). Palo Verde (Imperial Co.), Aug. 27, 1946, P. D. Hurd, 1 female (CIS). Ripley, Riverside Co., July 26-27, 1946, P. D. Hurd, 1 male, 2 females (CIS). Santa Ana Canyon, Nov. 2, 1934, 1 male (LAMus). Selma, July 17, 1947, R. C. Bechtel, 1 female (McC).

MEXICO: *Baja California*: Mexicali, Aug. 20, 1942, purslane leaves, 1 female (USNM). 20 miles south of Palacio, April 1939, Michener, 1 male (CalAc). *Sinaloa*: Los Mochis, June 27, 1922, C. T. Dodds, 1 male, 1 female (CalAc); same locality and collector, July 4, 1922, 1 male (CalAc). *Sonora*: Hermasillo, Apr. 19, 1897, Koebele Collection, 1 male (CalAc). Navajo, Aug. 3, 1953, C. and P. Vaurie, 1 male, 2 females (AmM). Ciudad, Obregon, July 29, 1952, C. and P. Vaurie, 19 males, 27 females (AmM). Pitiquito, July 4, 1952, C. and P. Vaurie, 11 males, 36 females (AmM). Tiburón Island (north end), July 9, 1952, C. and P. Vaurie, 1 male, 1 female (AmM). Yavaros, July 31, 1952, C. and P. Vaurie, 7 males, 16 females (AmM).

DISCUSSION.—The several specimens that bore determination labels were identified as *Geotomus semilevis* Signoret. Because Signoret's illustration of that species shows the peritreme without a specially modified terminal lobe such application of the name cannot be supported. In the present paper *semilevis* is considered to be a synonym of *Dallasidius lugubris*.

On two occasions this insect had been collected in association with cultivated plants. Some of the Arizona specimens were labeled "in lettuce," while one California specimen was noted as having come from "sugar beet."

***Melanaethus punctatissimus* (Signoret), new combination**

Geotomus punctatissimus Signoret, 1883, p. 216, pl. 5, fig. 180.

DIAGNOSIS.—The long narrow body (length about twice as great as width of pronotum) plus the mixture of two sizes of punctures on the posterior pronotal lobe mark this species as distinct from the others in the genus.

DESCRIPTION.—Based on the type female.

FEMALE: Elongate, sides parallel.

Head: Length about three-fourths width, 0.63:0.82; interocular width, 0.56; anterior outline semicircular; surface decidedly convex, with crowded, distinct punctures; ocelli tiny, separated from eye by a space subequal to an ocellar width; juga with fine marginal carina dorsally, shining and impunctate ventrally; maxillary plate impunctate. Antennal segments: I, 0.16; II, 0.15; III, 0.21; IV, 0.23; V, missing. Bucculae almost as high as labial II, abruptly terminated posteriorly; labium reaching between middle coxae. Labial segments: I, 0.30; II, 0.35; III, 0.31; IV, 0.23.

Pronotum: Length about half width, 0.78:1.62; anterior margin moderately singly emarginate; lateral margin slightly converging from base, more strongly rounded anteriorly, with submarginal row of five setigerous punctures; transverse impression obsolete, absent medially, not marked by a row of special punctures; anterior lobe, except for most of calli and oblique strip in anterior angles, with a broad band of punctures anteriorly, laterally and posteriorly; calli with a few minute punctures; transverse impression, posterior lobe and extreme hind margin with a mixture of coarse and fine punctures.

Scutellum: Length-width ratio, 1.20:0.88; shining, surface, except basal angles, with irregularly scattered moderate and fine punctures intermixed and becoming finer and more uniform toward apex.

Hemelytron: Polished, clavus with one complete and one partial row of punctures; mesocorium with numerous well-separated punctures, the discal ones, like those in the two rows paralleling the claval suture, becoming coarser toward base; exocorium with fewer and finer punctures than mesocorium; costa thin, slightly reflexed, with a single subbasal setigerous puncture dorsally; membranal suture feebly sinuate, lateral angles not projecting; membrane about as long as basal width, just reaching tip of abdomen.

Propleuron: Anterior convexity, except dorsally and posteriorly, with numerous net-like rugae; fewer punctures in the depression; prosternal carinae about as high as labial II, gradually terminated posteriorly.

Mesopleuron: Evaporatorium reaching almost to posterolateral angle; with few punctures anteriorly.

Metapleuron: Terminal modification of peritreme moderate, extending about two-thirds of way across supporting plate; lateral area with a few moderate to fine punctures near lateral margin of evaporatorium.

Sternites: Polished, punctuate and/or horizontally rugose laterally. Length of body: 3.19.

TYPE DATA.—Signoret gave the locality of the type as "Sitka." This agrees with the specimen in the Signoret Collection which also bears the name "Kolenati." This must be the type female (Wien).

DISCUSSION.—Examination of type specimen made possible the recognition of this species, which the author at first considered to be a synonym of *subglaber*. The elongate form does suggest that it is close to *subglaber* but the lack of a strong transverse impression and the two sizes of punctures on the posterior pronotal lobe and site of the transverse impression will separate the two. Signoret's illustration in his monograph is misleading in not showing the calli as being polished with only a patch of minute punctures medially and in indicating the

scutellum to have uniform, close-set punctures. Actually the punctures of the scutellum are of two sizes and are irregularly scattered.

Perhaps collectors in British Columbia and coastal Alaska will rediscover this species in nature and tell us something of its habits.

***Melanaethus robustus* Uhler, revived combination**

PLATE FIGURES 13, 23, 50, 96, 120, 144, 215

Melanaethus robustus Uhler, 1877, p. 390; 1886, p. 3.

Geotomus (Melanaethus) robustus Signoret, 1883, p. 59, pl. 4, fig. 168.

Geotomus robustus Lethierry and Severin, 1893, p. 73.—Banks, 1910, p. 100.—

Van Duzee, 1917, p. 22.—Torre Bueno, 1939, p. 181.

DIAGNOSIS.—The coarse, close punctation of the head, the intermixed coarse and fine punctation of the posterior pronotal lobe and the large size (3.6–4.2) will readily separate this species from all others of the genus that exhibit the large terminal modification of the peritreme.

DESCRIPTION.—MALE: Broadly oval, widest behind midlength.

Head: Length three-fourths width, 0.62(0.60–0.65):0.88(0.86–0.93); interocular width, 0.63(0.61–0.66); anterior outline semicircular, clypeus as long as or very slightly longer than juga, scarcely narrowed apically; surface shining (fig. 50), with numerous coarse punctures, many of them contiguous with distinct marginal carina dorsally, with one setigerous puncture submarginally; ocelli very small, far behind line connecting posterior margins of eyes, removed from eyes by space greater than four times transverse ocellar width; jugum ventrally shining, impunctate; maxillary plate rugopunctate. Antennal segments: I, 0.16(0.15–0.20); II, 0.15(0.15–0.16); III, 0.19(0.17–0.23); IV, 0.25(0.23–0.27); V, 0.38(0.36–0.40). Bucculae (fig. 23) higher than labial II, abruptly terminated posteriorly; labium attaining middle coxae. Labial segments: I, 0.24(0.24–0.26); II, 0.50(0.47–0.53); III, 0.37(0.35–0.40); IV, 0.25(0.23–0.30).

Pronotum: Length less than half width, 0.97(0.93–1.03):2.01(1.96–2.08); anterior margin moderately, singly emarginate; lateral margin straight on basal half, without submarginal setigerous punctures; transverse impression obsolete, sometimes absent medially, not marked by special row of punctures; anterior lobe, except calli and their anterior projection into the lateroapical angles, with numerous moderate to coarse, closely crowded punctures, calli with few minute punctures; transverse impression and posterior lobe very closely punctate laterally, discally with numerous fine punctures and few to many coarse ones intermixed.

Scutellum: Length greater than width, 1.31(1.29–1.33):1.19(1.17–1.23); shining, surface, except basal angles, with numerous coarse

punctures (usually with fine ones intermingled) becoming finer apically.

Hemelytron: Clavus and corium polished; clavus with one complete row of punctures and basal part of another; mesocorium with two complete rows of punctures paralleling claval suture, disc with numerous distinct punctures becoming coarser basally; exocorium irregularly but mostly more densely punctate than mesocorium; costa wide, thin, gently reflexed to form a shallow, open trough on basal third, without setigerous punctures; membranal suture straight, lateral angle not produced; membrane longer than basal width, reaching apex of abdomen.

Propleuron: Anterior convexity with numerous, close, anastomosing rugulae; with few coarse punctures in depression; prosternal carinae not as high as labial II, convexly terminated posteriorly.

Mesopleuron (fig. 96): Evaporatorium reaching almost to lateral margin of segment; lateral area with several coarse punctures.

Metapleuron (fig. 96): Terminal modification of peritreme large, reaching almost to lateral margin of evaporatorium; lateral area with band of numerous punctures near evaporatorium.

Legs: Anterior tibia with six or seven stout spines dorsally.

Sternites: Medially shining and minutely punctate, lateral fourth with small punctures and numerous short, longitudinal rugulae.

Terminalia: Genital capsule shining, almost uniformly punctate, apical margin straight; gonostylus as illustrated (fig. 215).

Length of body: 3.71(3.62-3.76).

FEMALE: Similar to male.

Head: Length-width ratio, 0.63(0.59-0.67):0.93(0.90-0.98); interocular width, 0.64(0.62-0.69). Antennal segments: I, 0.19(0.17-0.21); II, 0.17(0.15-0.20); III, 0.22(0.21-0.24); IV, 0.28(0.26-0.30); V, 0.40(0.38-0.43). Labial segments: I, 0.27(0.26-0.29); II, 0.55(0.50-0.60); III, 0.38(0.36-0.40); IV, 0.26(0.25-0.31).

Pronotum: Length-width ratio, 1.06(1.04-1.12):2.03(1.90-2.13).

Scutellum: Length-width ratio, 1.43(1.34-1.52):1.15(1.10-1.23).

Length of body: 3.82(3.59-4.07).

TYPE DATA.—Uhler's type specimens (USNM) were reported as having come from "Maryland, near Baltimore," and "Andover, Mass."

SPECIMENS STUDIED.—29 males, 46 females.

UNITED STATES: *District of Columbia*: Washington; June. *Florida*: Dunedin; December. *Illinois*: Catlin, Jacksonville, Muncie, Urbana, White Heath; March, May, June, September, October, December. *Indiana*: Marion Co.; August. *Iowa*: Ames, Indianola; March, April, June. *Kansas*: Douglas Co., Lawrence; June. *Maryland*: Plummer's Island; April, August. *Mississippi*: Natchez; May. *Missouri*: Columbia, Kimmswick, New Hartford, Ranken, Springfield; June, July. *New Jersey*: Gloucester; June. *Ohio*: Delaware Co., Whitman Beach (Ash-tabula Co.); June, July. *Pennsylvania*: Harrisburg, Jeannette, Philadelphia,

Pittsburgh, Washington Co.; March, September. *Texas*: Concho Co., Victoria; February, August. *Virginia*: Deer Run, Great Falls; June.

DISCUSSION.—The only ecological note on any specimen was “woods ground cover” on a small series from Illinois.

Melanaethus spinolae (Signoret), revived combination

PLATE FIGURE 216

Aethus spinolae Signoret, 1863, p. 545, pl. 12, fig. 12.—Walker, 1867, p. 152.—Stål, 1876, p. 27 (“loc. incert.”).

Melanaethus spinolae Uhler, 1877, p. 392.

Geotomus (Cydnus) spinolai Signoret, 1883, p. 209, pl. 4, fig. 172.

Geotomus spinolai Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 74.—Barber and Bruner, 1932, p. 238.

Geotomus minusculus Jensen-Haarup, 1926, p. 50. New synonymy.

DIAGNOSIS.—The small size (2.7–3.2) and the thick, almost caloused margin of the head, which has no dorsal carina and is unarmed except for a single, submarginal setigerous puncture in front of eye, mark this species as very distinct.

DESCRIPTION.—MALE: Elongate-oval, sides subparallel.

Head: Length about two-thirds width, 0.52(0.50–0.54):0.74(0.73–0.76); interocular width, 0.44(0.43–0.46); anterior outline angled, side margins convex, clypeus longer than juga; margin thick, almost caloused, without dorsal carina, with one submarginal setigerous puncture next to eye; surface, including clypeus, shining, with scattered fine but distinct punctures; ocelli moderate, separated from eye by space less than twice transverse ocellar width; jugum ventrally and maxillary plate (except basally) shining, impunctate. Antennal segments: I, 0.16(0.15–0.18); II, 0.19(0.16–0.20); III, 0.21(0.20–0.23); IV, 0.25(0.23–0.26); V, 0.32–0.31–0.33). Bucculae about as high as labial II, abruptly terminated posteriorly; labium reaching between middle coxae. Labial segments: I, 0.21(0.20–0.23); II, 0.42(0.41–0.46); III, 0.30(0.29–0.32); IV, 0.19–0.23).

Pronotum: Length half width, 0.70(0.67–0.74):1.46(1.43–1.50); anterior margin moderately, simply emarginate; lateral margin straight on basal third, basally concealed from above by slightly swollen sides of posterior lobe, with submarginal row of four or five setigerous punctures; transverse impression submedian, obsolete to absent, not marked by special row of punctures except laterally; anterior lobe laterally with patch of fine and moderate punctures, anteriorly and medially with fine punctures, calli with few minute punctures; posterior lobe finely punctate medially, punctures coarser towards sides.

Scutellum: Length greater than width, 1.15(1.15–1.16):0.91(0.90–0.93); surface shining, with numerous minute to fine punctures, these becoming coarser apically.

Hemelytron: Clavus and corium shining, very feebly alutaceous; clavus with one complete row of punctures and few punctures at base; mesocorium with two complete rows of punctures paralleling claval suture, disc with numerous distinct punctures; exocorium with median row of distinct, close-set punctures; costa thin, sharp, depressed, with one setigerous puncture dorsally near base; membranal suture feebly convex, lateral angle slightly produced; membrane longer than basal width, slightly surpassing apex of abdomen.

Propleuron: Anterior convexity alutaceous, with numerous obsolete to feeble punctures and rugulae, depression with several coarse punctures; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium restricted, extended two-thirds across posterior margin of segment; lateral area finely rugulose.

Metapleuron: Terminal lobe of peritreme large, almost reaching to side margin of evaporatorium; lateral area with number of close-set, elongate, coarse punctures.

Legs: Anterior tibia with four stout spines dorsally.

Sternites: Shining, very faintly alutaceous, minutely punctate, lateral fourth roughened by numerous small, close rugae.

Terminalia: Genital capsule shining, scattered punctures becoming numerous in depressed lateral angles, apical margin straight, with small, prominent tooth medially (sometimes broken off); gonostylus as illustrated (fig. 216).

Length of body: 3.01(2.94-3.07).

FEMALE: Similar to male.

HEAD: Length-width ratio, 0.52(0.50-0.56):0.75(0.72-0.81); interocular width, 0.43(0.40-0.47). Antennal segments: I, 0.15(0.15-0.16); II, 0.17(0.16-0.20); III, 0.21(0.17-0.25); IV, 0.25(0.23-0.30); V, 0.34(0.32-0.37). Labial segments: I, 0.21(0.20-0.23); II, 0.37(0.36-0.40); III, 0.26(0.23-0.30); IV, 0.23(0.21-0.26).

Pronotum: Length-width ratio, 0.72(0.70-0.76):1.50(1.46-1.57).

Scutellum: Length-width ratio, 1.22(1.14-1.31):0.93(0.90-1.00)

Length of body: 2.92(2.74-3.18).

TYPE DATA.—Location of the types unknown to the author. Signoret originally described *spinolae* as coming from Chile. Jensen-Haarup described the type (Copen) of *minusculus* from Lagôa Santa, Brazil.

SPECIMENS STUDIED.—4 males, 82 females.

PANAMA: Canal Zone: Ancón, Barro Colorado Island, Corozal; April.

DOMINICAN REPUBLIC: Barahona, south side of Lake Enriquillo; September.

BRITISH GUIANA: Bartica.

BRAZIL: Corumba (Matto Grosso), Espírito-Santo, Distrito Federal, Rio de Janeiro, São Paulo; February, June, November, December.

PARAGUAY: Chaco, Grand Chaco; June.

ARGENTINA: Misiones: Bemberg, Iquazu; February, March.

DISCUSSION.—The few ecological comments on specimens examined were the usual “at lights,” implying that these insects are active after dusk.

None of the specimens studied showed the tubercles described and figured with the original description. In fact, in his later “Revision,” Signoret himself did not again mention such a modification.

The synonymizing of *minusculus* Jensen-Haarup with this species is based on comparison of undoubted specimens of the latter with the type of *minusculus*. This comparison was made by Dr. S. L. Tuxen.

Melanaethus subpunctatus (Blatchley), new combination

PLATE FIGURE 217

Geotomus subpunctatus Blatchley, 1926, p. 78.—Torre Bueno, 1939, p. 181.

DIAGNOSIS.—The virtual absence of large punctures from the transverse impression and posterior lobe of the pronotum coupled with the broadly reflexed costa will separate this species from all others in the genus.

DESCRIPTION.—MALE: Broadly oval, widest at midlength.

Head: Length more than half width, 0.66(0.62–0.67):1.00(0.99–1.03); interocular width, 0.65(0.63–0.69); anterior outline semicircular, often flattened, clypeus as long as juga, not much narrowed apically; surface shining, with numerous crowded punctures; with marginal carina dorsally; ocelli small, separated from eye by space nearly twice transverse ocellar width; jugum ventrally and maxillary plate (except basally) shining, impunctate. Antennal segments: I, 0.18(0.16–0.20); II, 0.20(0.17–0.23); III, 0.20(0.20–0.21); IV, 0.23(0.23–0.26); V, 0.30(0.30–0.34). Bucculae higher than labial II, abruptly terminated posteriorly; labium reaching between middle coxae. Labial segments: I, 0.26(0.25–0.30); II, 0.53(0.50–0.58); III, 0.40(0.37–0.44); IV, 0.28(0.25–0.33).

Pronotum: Length about half width, 1.09(1.04–1.17):2.12(2.02–2.22); Anterior margin deeply, doubly emarginate; lateral margin straight on basal half or two-thirds, with one submarginal setigerous puncture at apical angle or none; transverse impression obsolete to absent, not marked by special row of punctures; anterior lobe with numerous crowded, coarse punctures laterally, and in a band paralleling anterior margin, calli with scattered minute punctures; posterior lobe with widely scattered minute punctures medially, closer coarser ones laterally.

Scutellum: Length equal to or longer than width, 1.35(1.24–1.43):1.27(1.24–1.32); shining, with numerous minute punctures and very few coarse ones, both becoming more numerous towards apex.

Hemelytron: Basal width across both hemelytra usually slightly wider than pronotum; clavus with one row of punctures; mesocorium

with one complete row of punctures, apically with minute, widely scattered punctures becoming coarser and closer towards base; exocorium explanate, at base wider than radial vein, faintly reflexed, more densely punctate than mesocorium; costa thin, sharp, without setigerous punctures; membranal suture straight, lateral angle not produced; membrane longer than basal width, almost or quite reaching apex of abdomen.

Propleuron: Anterior convexity with several irregular, longitudinal carinae and few punctures; depression with few coarse punctures; prosternal carina about half as high as labial II, roundly terminated posteriorly.

Mesopleuron: Evaporatorium reaching into posterolateral angle, not attaining lateral margin of segment; lateral area with several longitudinal rugae.

Metapleuron: Terminal modification of peritreme large, reaching almost to lateral margin of evaporatorium; lateral area with few rugae.

Legs: Anterior tibia with six or seven stout spines dorsally.

Sternites: Shining, minutely punctate, with few weak rugae and punctures laterally near spiracular area.

Terminalia: Genital capsule shining, with numerous punctures, apical margin straight; gonostylus as illustrated (fig. 217).

Length of body: 3.97(3.88-4.12).

FEMALE: Similar to male, measurements averaging larger.

Head: Length-width ratio, 0.64(0.60-0.70):1.02(1.00-1.09); interocular width, 0.66(0.63-0.71). Antennal segments: I, 0.20(0.20-0.21); II, 0.22(0.20-0.24); III, 0.21(0.20-0.23); IV, 0.25(0.23-0.30); V, 0.31(0.30-0.34). Labial segments: I, 0.30(0.30-0.32); II, 0.56(0.50-0.60); III, 0.42(0.41-0.44); IV, 0.30(0.27-0.35).

Pronotum: Length-width ratio, 1.09(1.04-1.17):2.20(2.14-2.34).

Scutellum: Length-width ratio, 1.40(1.36-1.50):1.29(1.23-1.37).

Length of body: 4.08(3.91-4.35).

TYPE DATA.—Blatchley described this species from Dunedin, Fla., Wilmington, N.C., and Plum Point, Md. Some of these types are in the collection of Purdue University, Lafayette, Ind.

SPECIMENS STUDIED.—14 males, 20 females.

UNITED STATES: *Alabama*: Mobile; November. *Arkansas*: Hope; May. *Florida*: Alachua Co., Gainesville, Lake County, Lake Placid, Newberry, Sanford, Tampa; February to May and August to November. *Georgia*: Savannah; September. *Louisiana*: Bossier Parish, Hart; April. *Maryland*: Cove Point, Plum Point; March, August. *North Carolina*: Southern Pines, Wilmington; April. *Texas*: Tyler; February. *Virginia*: Trammel's Landing (Potomac River); April.

DISCUSSION.—Two of the types were reported by Blatchley (loc. cit.) to have been "sifted from vegetable debris" in Florida. The

Louisiana specimens seen bore the notation "under litter, peach orchard." Several specimens were identified as "*Geotomus robustus*."

***Melanaethus uhleri* (Signoret), revived combination**

PLATE FIGURE 218

Geotomus (Melanaethus) uhleri Signoret, 1883, p. 211, pl. 5, fig. 174.—Lethierry and Severin, 1893, p. 74.—Banks, 1910, p. 100.—Van Duzee, 1917, p. 22.—Torre Bueno, 1939, p. 181.

Melanaethus uhleri Uhler, 1886, p. 3.

DIAGNOSIS.—Among the species of *Melanaethus* with the large terminal modification of the peritreme this one may be recognized by the fact that the punctation on the middle of the posterior pronotal lobe is much finer than that found laterally and that the costae, which are straight and subparallel on the basal half, are neither explanate nor recurved.

DESCRIPTION.—MALE: Elongate, widest behind midlength.

HEAD: Length two-thirds width, 0.62(0.60–0.66):0.96(0.94–1.01); interocular width, 0.63(0.63–0.66); anterior outline a flattened semi-circle, clypeus very slightly longer than juga, weakly narrowed apically; juga, clypeus and interocular space variously punctate; with fine, distinct, marginal caina dorsally; ocelli small, separated from eye by space about three times transverse ocellar width; jugum ventrally dull or shining, maxillary plate strongly alutaceous. Antennal segments: I, 0.18(0.17–0.21); II, 0.19(0.16–0.22); III, 0.23(0.22–0.24); IV, 0.32(0.30–0.34); V, 0.36(0.36–0.40). Bucculae almost twice as high as labial II, abruptly terminated posteriorly; labium reaching middle of mesosternum. Labial segments: I, 0.26(0.25–0.27); II, 0.44(0.43–0.46); III, 0.30(0.30–0.32); IV, 0.27(0.23–0.30).

Pronotum: Length more than half width, 1.11(1.04–1.17):2.08(2.02–2.15); anterior margin moderately, simply emarginate; lateral margin straight on basal third or half, with submarginal row of seven or eight setigerous punctures; transverse impression virtually absent, its postmedian site not marked by special row of punctures; anterior lobe with numerous strong punctures subapically and laterally, elsewhere with scattered minute punctures; posterior lobe minutely punctured medially, more strongly so laterally.

Scutellum: Longer than wide, 1.42(1.36–1.46):1.25(1.17–1.30); disc polished, with scattered small punctures absent in basal angles, becoming more numerous apically.

Hemelytron: Clavus and corium polished; clavus with two or three rows of punctures; mesocorium with two complete rows of punctures paralleling claval suture, large punctures of main area becoming very coarse basally; exocorium more abundantly punctate, declivent basally to flattened costa; costa without setigerous punctures; membranal

suture nearly straight, lateral angle weakly produced; membrane little longer than basal width, slightly surpassing apex of abdomen.

Propleuron: Front half of anterior convexity with crowded, prominent, longitudinal rugae and few punctures; depression with few coarse punctures; prosternal carinae more than half as high as labial II, abruptly terminated posteriorly.

Mesopleuron: Evaporatorium reaching into posterolateral angle, not to lateral margin of segment; lateral area strongly rugopunctate anterior to evaporatorium.

Metapleuron: Terminal modification of peritreme very large, semi-circular, reaching lateral margin of evaporatorium; lateral area with several strong punctures.

Legs: Anterior tibia with six stout spines dorsally.

Sternites: Polished, minutely punctate on middle half, coarsely rugopunctate on lateral fourth.

Terminalia: Genital capsule punctate, more closely so laterally, apical margin very weakly sinuate medially; gonostylus as illustrated (fig. 218).

Length of body: 3.99(3.91-4.09).

FEMALE: Similar to male, measurements usually averaging larger.

Head: Length-width ratio, 0.65(0.65-0.66):1.01(1.00-1.04); interocular width, 0.68(0.66-0.70). Antennal segments: I, 0.21(0.20-0.23); II, 0.20(0.20-0.23); III, 0.25(0.23-0.26); IV, 0.32(0.30-0.33); V, 0.37(0.36-0.40). Labial segments: I, 0.28(0.27-0.30); II, 0.44(0.43-0.46); III, 0.35(0.33-0.37); IV, 0.30(0.30-0.30).

Pronotum: Length-width ratio: 1.18(1.10-1.23):2.21(2.15-2.28).

Scutellum: Length-width ratio, 1.52(1.49-1.56):1.34(1.30-1.36).

Length of body: 4.11(3.91-4.25).

TYPE DATA.—*M. uhleri* was described by Signoret from "Amerique du Nord." The type from the Signoret collection (Wien), was examined. It is labeled "Morrison, Geog. Am., 1877. I" and agrees with the above treatment except that the contrast between the punctures of the transverse impression and those laterally is slightly less than in most specimens.

SPECIMENS STUDIED.—6 males, 34 females.

UNITED STATES: *Alabama*: Gadsden; May. *Arkansas*: Howard Co., Pike Co., Washington Co.; February, May, September. *Georgia*: Morrison (type). *Kansas*: Lawrence; July. *Oklahoma*: Grove; May. *Tennessee*: Hamilton Co., Roane Co.; April, May. *Texas*: Benchley, Brownsville, Calvert, Columbus, Denton, Devil's River, Gainesville, Kerrville; January, April, May, August.

DISCUSSION.—Signoret's statement that the terminal lobe of the peritreme in this species is like that of the European *Geotomus punctulatus* is erroneous. The lobe here is quite typical for the present genus, being flat, with outline convex posteriorly, and with osteole

opening posteriorly on the peritreme, although the trough from the opening does extend onto the mesal part of the lobe.

One of the specimens from Texas was labeled as having been collected on parsnip, *Pastinaca sativa*. Blatchley (1926, p. 78) reported specimens as having been "swept from herbage in low, moist meadows."

Genus *Pangaeus* Stål

Pangaeus Stål, 1862, p. 95.

Homaloporus Uhler, 1877, p. 376. New synonymy.

DIAGNOSIS.—The unmodified terminal part of the peritreme coupled with the presence of an impressed, subapical line which extends from side to side on the pronotum will separate *Pangaeus* from all other genera of Cydnidae.

DESCRIPTION.—Size small to medium, oval, widest approximately at or slightly behind middle; dorsum much less convex than venter.

Head (figs. 24, 46–49): Distinctly broader than long, dorsum distinctly depressed to moderately convex; juga as long as or longer than and more or less convergent in front of clypeus, with a fine marginal carina above; submargin with one to six setigerous punctures, or a complete row from eye to apex of jugum; eyes large, moderately projecting; ocelli well developed, located on or behind a line connecting hind margins of eyes; antennae 5-segmented, II usually shortest, V longest; bucculae low, usually not as high as labial II; labium reaching between middle coxae, II longest, slightly compressed but not foliaceously lobed, IV shortest.

Pronotum: Wider than long, distinctly narrowed from near base; side margins carinate, submarginal row of 5 to 9 or 18 to 20 setigerous punctures; anterior margin moderately to slightly concave, with a collum distinctly limited posteriorly by a sharply impressed line extending from one anterior angle to the other (even when punctured this line is distinct across its full width); transverse impression submedian, usually rather distinct and with a row of punctures; posterior margin broadly, shallowly convex; all angles rounded.

Scutellum: Longer than wide, triangular; apex narrowed, width less than half length of membranal suture; disc sparsely to abundantly punctured.

Hemelytron: Corial areas well-defined; membranal suture straight, lateral angle somewhat acute; costa with one to twelve setigerous punctures; membrane not over two-fifths of hemelytral length, surpassing apex of abdomen.

Propleuron: Impunctate or with few punctures in depression; prosternal carinae low, distinct.

Mesopleuron: Flattened; evaporatorium either entire (fig. 103) and reaching uninterrupted in posterolateral angle of segment (subgenus

Pangaeus) or limited (figs. 102, 104) laterally and posteriorly and not reaching into posterolateral angle (subgenus *Homaloporus*).

Metapleuron (figs. 103, 104): Flattened; osteole opening posteriorly on peritreme; latter not surpassing middle of segment, apex not differentiated; evaporatorium occupying mesal two-thirds of segment, outer margin variously concave; polished lateral space impunctate.

Legs: Moderately long; anterior tibia (fig. 127) compressed, with nine to ten stout spines dorsally, not or only slightly surpassing tarsal insertion; middle and posterior tibiae usually slender, latter modified in shape and spine arrangement in males of several species (figs. 152-159).

Sternites: Alutaceous to polished; with one or two lateral submarginal setigerous tubercles; sutures entire or finely denticulate.

TYPE OF GENUS.—*Aethus margo* Dallas (1851), subsequently designated by Van Duzee (1914, p. 378). The name *margo* as well as several others have been found to be synonyms of *Cimex acthiops* Fabricius. Further data on this synonymy can be found in the discussion of *Pangaeus acthiops*. The type of subgenus *Homaloporus* is *congruus* Uhler by nature of Uhler's monobasic proposal for his generic name.

DISTRIBUTION.—A New World genus, *Pangaeus* ranges throughout North America from southern Canada (Provancher, 1886) south through Central America and the West Indies into South America as far south as Argentina and Uruguay. The two "species," *douglasi* and *scotti*, that Signoret (1882) described from Australia and New Zealand respectively may or may not have been correctly labeled. Study of the types of both of these species shows that they were based on undoubted specimens of the common North American species *bilineatus* (Say). For further information on this see the remarks under *Pangaeus bilineatus*.

DISCUSSION.—The name "*Homaloporus*" has long been maintained in full generic status for one North American and one South American species which resembled members of the genus *Pangaeus* in having an impressed, subapical line on the pronotum, but differing in possessing a submarginal row of pegs on the head. As the present study progressed and the value of the head vestiture for generic separation lessened, a reevaluation of the relationships of these two "genera" became necessary.

The presence of an undifferentiated apex of the peritreme coupled with the impressed subapical line on the pronotum definitely allied these two taxa and separated them from all other Cydnidae. Experimental joining of the two revealed such a startling similarity of development between the northern members of each and between the southern members of each that one could not believe this to be a case

of convergence but rather a reflection of fundamental relationships. And even the separation offered by the presence or absence of the submarginal row of pegs on the head was in part bridged by the discovery of a new species from North America which possessed a partial row of submarginal pegs. Therefore, the two forms formerly assigned to "*Homaloporus*" must now be considered as members of *Pangaesus* and the former name synonymized under the latter where it is available for subgeneric naming as is proposed below.

The combination of the two features given in the diagnosis above sets this genus apart so sharply from other cydnid genera that it is somewhat surprising to find that there has been some confusion concerning its limits. The emphasis formerly placed on the vestiture of the head could justify the old separation of "*Homaloporus*" and *Pangaesus*, but even so, the latter taxon was not clearly delimited in other directions. The confusion actually started with Uhler's (1877) assignment of his new species *discrepans* to *Pangaesus* with the remark, "the transverse line interrupted in the middle, remotely, coarsely punctate." The type of *discrepans* has no collum or limiting impressed line, thus, Uhler's statement that the line was "interrupted" has been misleading. Not only was *discrepans* carried thus as a *Pangaesus*, but another species, *californicus*, without a collum was described and erroneously assigned to the genus by Blatchley (1929). Blatchley did, however, recognize that both of these species were in the wrong genus and suggested that a change would have to be made. In the present study, both of these species have been transferred to the genus *Dallasiellus*.

From the studies on which this revision was based, from a close examination of Signoret's revision, from Distant's (1899) attempt to clarify the status of Walker's several species, and from notes on the types in several museums it is clearly evident that there has been excessive splitting of species in this genus. Many of the earlier workers apparently assumed that every specimen from a new locality represented a new species—giving little or no thought to the possibility of widespread species. Others based their descriptions on teneral or badly mutilated specimens or overemphasized minor differences, real or imaginary. The resulting confusion can be cleared away only by a drastic synonymizing of names.

The genus *Pangaesus* is readily divisible into two groups which the author chooses to designate as subgenera. One occurs from Guatemala northward and the other from Mexico southward. They are most reliably separated by the shape of the mesopleural evaporatorium. The southern subgenus, which contains the type of the genus and must be called *Pangaesus*, has the mesopleural evaporatorium extended uninterruptedly into the posterolateral angle (fig. 103); while the

northern subgenus, which contains the type of "*Homaloporus*" and so must take that name, has the evaporatorium very restricted, it being separated from the posterolateral angle of the sclerite by the polished lateral area (fig. 103). Subgenus *Homaloporus*, in most of its species, has more setigerous punctures laterally than does nominal *Pangaeus*. In the former subgenus all species except *rugiceps* bear two or more submarginal setigerous punctures distad of the preocular one; and normally have two or more costal setigerous punctures. In nominal *Pangaeus* all but four closely allied species of the dozen included forms have no setigerous punctures distad of the preocular one, and, with four exceptions, the number of costal setigerous punctures is usually one or two with only an occasional specimen showing three—the exceptions being *subtilius*, *xanthopus*, *pluripunctatus*, new species, and *semibrunneus*, new species, each of which has five to ten such costal punctures.

The shape of the mesopleural evaporatorium alone furnishes the most reliable feature for separating these subgenera and permits the forming of the following couplet:

Key to subgenera of *Pangaeus*

1. Mesopleural evaporatorium extending uninterrupted along posterior margin of sclerite into posterolateral angle (fig. 103) **Pangaeus (Pangaeus)** (p.477)
 Mesopleural evaporatorium limited, separated from posterolateral angle and posterior margin of sclerite by polished area (figs. 102, 104).
Pangaeus (Homaloporus) (p.458)

Subgenus *Pangaeus (Homaloporus)* Uhler, new status

DIAGNOSIS.—The limited mesopleural evaporatorium (figs. 102, 104), which does not reach into the posterolateral angle of the segment, sets this subgenus apart from the nominal subgenus.

DESCRIPTION.—The generic description as modified by the notes in the generic discussion will furnish sufficient characterization for this subgenus.

TYPE OF SUBGENUS.—*Homaloporus congruus* Uhler, monobasic.

DISTRIBUTION.—This subgenus occupies the northern part of the range of the genus from Guatemala north into the United States, where it is known to occur as far north as New York, Iowa, and Nebraska east of the Great Plains and west from Texas across New Mexico and Arizona into southern California.

DISCUSSION.—*Pangaeus rugiceps* Horváth might be considered somewhat intermediate between this subgenus and the nominal one on the basis of the reduction of the number of setigerous punctures on the submargin of the head and costa. However, the shape of the mesopleural evaporatorium, which the author considers a better phylogenetic indicator, clearly places it in the subgenus *Homaloporus*.

- Pangoeus* [!] *spangbergi* Signoret, 1882, p. 259, pl. 9, fig. 116. New synonymy.
Pangoeus spangbergi Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 70.—
Banks, 1910, p. 101.—Van Duzee, 1917, p. 2I.—Torre Bueno, 1939, p. 180.
Pangoeus uhleri Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 70.—Banks,
1910, p. 101.—Van Duzee, 1917, p. 2I.
Pangoeus douglasi Lethierry and Severin, 1893, p. 69.
Pangoeus scotti Lethierry and Severin, 1893, p. 70.
Pangoeus vicinus Lethierry and Severin, 1893, p. 70.

DIAGNOSIS.—As can be deduced from the key to species, *bilineatus* is probably best characterized within the subgenus mostly by negative characters: (1) no tubercles on ventral surface of posterior femora; (2) no punctures in subapical impression of the pronotum; and (3) the presence of three or more submarginal setigerous punctures on each jugum.

DESCRIPTION.—MALE: Oval, widest behind the middle.

Head: Length about two-thirds width, 1.20(1.03–1.26):1.76(1.58–1.87); interocular width, 1.09(0.96–1.16); anterior outline a full semi-circle or less, usually evenly curved; clypeus usually as long as juga, little narrowed apically; jugum submarginally with three to five setigerous punctures, usually with feeble to obsolete radiating rugae; surface somewhat convex, punctures obsolete or absent; ocelli moderately large, separated from eye by a space less than twice transverse ocellar width; jugum ventrally and maxillary plate (except basally) polished, impunctate. Antennal segments: I, 0.34(0.28–0.40); II, 0.32(0.27–0.43); III, 0.40(0.30–0.46); IV, 0.47(0.34–0.56); V, 0.50(0.36–0.60). Bucculae almost as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.60(0.50–0.66); II, 0.90(0.73–1.00); III, 0.73(0.70–0.78); IV, 0.46(0.36–0.50).

Pronotum: Length more than half of width, 2.04(1.69–2.28):3.73(3.24–3.97); anterior margin moderately, simply emarginate; side margins entire, nearly straight on middle third, lateral submarginal row of nine to twelve setigerous punctures; transverse impression submedian, obsolete to absent, impunctate or marked by irregular row of distinct punctures; anterior lobe impunctate or sometimes with few (one to five) weak punctures laterally; posterior lobe impunctate or with few to a dozen punctures medially.

Scutellum: Length equal to or slightly longer or shorter than width, 2.31(1.95–2.53):2.32(2.02–2.47) surface obsoletely alutaceous (not polished), with numerous punctures discally except across base and at extreme apex.

Hemelytron: Corium and clavus distinctly alutaceous; clavus usually with one or two partial rows of distinct punctures; mesocorium with one complete and a second partial or complete row of punctures paralleling claval suture, disc obsoletely, rarely distinctly punctured; exocorium with numerous punctures usually more distinct than those

of mesocorial disc; costa with two to six setigerous punctures; membranous suture weakly bisinuate, lateral angle slightly produced; membrane longer than basal width, distinctly surpassing apex of abdomen.

Propleuron: Distinctly alutaceous, punctured only in depression; prosternal carinae less than half as high as labial II, acute.

Mesopleuron and metapleuron: As in figure 103.

Legs: Moderately long; posterior femora not tuberculate ventrally; posterior tibiae not angulate ventrally near base.

Sternites: Distinctly alutaceous, impunctate.

Terminalia: Genital capsule alutaceous, punctured laterally, apical margin weakly emarginate medially; gonostylus as illustrated (fig. 220).

Length of body: 6.87(5.85–7.46).

FEMALE: Very similar to male. Head: Length-width ratio, 1.14 (0.88–1.30):1.72(1.33–1.94). Antennal segments I, 0.34(0.28–0.40); II, 0.32(0.27–0.43); III, 0.40(0.30–0.46); IV, 0.47(0.34–0.56); V, 0.50(0.36–0.60). Labial segments: I, 0.53(0.41–0.63); II, 0.87(0.63–1.03); III, 0.69(0.43–0.81); IV, 0.49(0.41–0.54).

Pronotum: Length-width ratio, 1.97(1.61–2.30):3.55(2.22–4.23).

Scutellum: Length-width ratio, 2.22(1.69–2.47):2.26(1.69–2.61).

Length of body: 6.64(5.25–7.78).

TYPE DATA.—*Cydnus bilineatus* was described by Say with the comments "Inhabits the United States Not uncommon in Pennsylvania as well as in Missouri." Say's collection has been destroyed, but in the T. W. Harris collection (MCZ) there are a number of specimens that Say determined for Harris. Since very few Say-determined specimens are still in existence, these generally have been accepted as substitutes for the types of Say's species. Of this collection Uhler (1878, p. 365) stated: "this collection is of especial interest at the present time, because it is the only one preserved in this country which contains original and authentic types of the Hemiptera described by Mr. Say." Specimen No. 135 in the Harris collection bears the data, "Florence, Ala., January and February, 1836, Prof. Hentz." Of it Uhler (1878, p. 371) wrote: "Having examined the type of Dr. Fitch, I am enabled to refer it to this species." As indicated by the year of the collection quoted above, this specimen cannot be the original type because it was not captured until some 10 years after the description appeared.

The location of the types of Herrick-Schaeffer's two species, *Cydnus femoralis* and *C. rugifrons*, is not known to the author. *C. femoralis* was described from "aus Lankaster [Pennsylvania?] in Nordamerika," *rugifrons* "aus Georgian in Amerika."

The type (BrM) of *Aethus fortis* was described by Walker (1867, p. 151) from "Oajaca," Mexico.

As indicated in the synonymy of the species, Signoret (1882) described five forms which he erroneously thought to be distinct from *bilineatus*. They were *douglasi* from "Australia," *scotti* from "Nouvelle-Zelande," *spangbergi* from "Texas," *uhleri* from "Caroline et Georgie," and *vicinus* from "Guayaquil." The types of *douglasi* and *scotti* are in the Naturhistorisches Museum in Vienna, while the type of *spangbergi* is in the Naturhistoriska Riksmuseum in Stockholm. The location of the type of *vicinus*, which was described from "Guayaquil," apparently is not in the major Signoret collection in Vienna. Since *uhleri* was proposed for those specimens from South Carolina and Georgia which Uhler (1877, p. 385) had determined as *rugifrons* of Herrick-Schaeffer, those Uhler specimens must comprise the type lot; they are in the Uhler collection (USNM).

SPECIMENS STUDIED.—352 males, 408 females.

UNITED STATES: *Alabama*: Auburn, Burnsville, De Soto State Park, Florala, Mobile, Tuscaloosa Co.; April to July. *Arkansas*: Hope, Hot Springs, Washington Co.; July, October. *Arizona*: Alamo Canyon (Pima Co.), Baboquivari Mts., Buckeye, East Fort Lowell, Globe, Oracle, Patagonia, Phoenix, Sabino Canyon, Thatcher, Tucson, Yuma; June to September. *California*: Holtville, Indio, Palm Springs, Riverside; May, June. *Florida*: Alachua Co., Coconut Grove, Crescent City, Deerfield, De Land, Fort Lauderdale, Fort Myers, Fruitville, Gainesville, Hollywood, Homestead, Juniper Springs, LaSalle, Lacochoes, Lakeland, Lake Placid, Liberty Co., Miami, Moore Haven, Okeechobee, Palm Beach, Plant City, Quincy, Royal Palm Park, Sanford, Zolfo Springs; all months. *Georgia*: Atlanta, Bainbridge, Billy's Island (Okefenokee Swamp), Bueno Vista, DeWitt, Eaton, Pamona, St. Simon's Island, Thomasville, Vidalia; April to November. *Illinois*: Ashmore, Catlin, Charleston, Collinsville, Olive Branch, Urbana; March, April, July to October. *Indiana*: Hanover, Harrison Co., Terre Haute; May to August. *Iowa*: Ames, Kelso, Muscatine, Pleasant Valley; April to September. *Kansas*: Baldwin, Douglas Co., Lawrence, Leavenworth, Onaga; May to July. *Louisiana*: Baker, Buras, Creole, Harahan, New Orleans; June to August. *Maryland*: Plummer's Island; September. *Massachusetts*: No exact locality. *Mississippi*: Handsboro, Jackson, August. *Missouri*: Aldrich, Carthage, Columbia, Gray Summit, Kansas City, Kirkwood, Perry Co., St. Louis, Van Buren; April to August. *Nebraska*: Crete Inn. *New Jersey*: Palisades, Snake Hill; October. *New York*: Ithaca, Long Island, New York, Pelham, Sea Cliff; May, July, November. *North Carolina*: Ashville, Black Mountain City, Edenton, McDowell Co.; May to August. *Oklahoma*: Alva, Hobart, Osage Co., Payne Co., Smithville; May to September. *Pennsylvania*: Chestnut Hill, Jeanette, Philadelphia; July, September. *South Carolina*: Aiken Co., Blaney, Charleston, Clemson, Florence, Fort Jackson, Spartanburg; May to September. *South Dakota*: Elk Point; August. *Tennessee*: Knoxville, Reelfoot Lake; April, May. *Texas*: Abilene, Aransas Co., Brazoria Co., Brownsville, Canadian, Cedar Lane, Colorado City, Colorado Co., Corpus Christi, Dallas, Del Rio, Devil's River, Harlingen, Hidalgo Co., Lake Kemp, Navasota, Palacios, Peeler, Port Arthur, San Angelo, San Antonio, Sherman, Terrell, Three Rivers, Uvale, Waco; April to August. *Virginia*: Falls Church, Great Falls; May to July, October. *West Virginia*: Cheat Mts., Jackson's Mill, Lewis Co.

MEXICO: *Coahuila*: Monclova, San Pedro de Colonias (3,700 feet); August. *Durango*: Nombre de Dios (5,900 feet); August. *Distrito Federal*: "El Guard,"

Peñón de Marquis; March, November. *Guerrero*: Balsas, Iguala; September. *Hidalgo*: "Guerrero Mills," Tizayuca; November. *Jalisco*: Guadalajara; February. *Baja California*: Comondú, Miraflores, San Domingo, Triunfo; July. *México*: Tejupileo; June. *Michoacán*: El Sabine, 12 miles south of Tzitzio on Huetano road; July. *Morelos*: Cuernavaca; May, November. *Puebla*: Northern slope (11,000 feet) of Mt. Popocatepetl; November. *San Luis Potosí*: El Salto; June. *Veracruz*: "Lococos," Minatitlán; February, July.

GUATEMALA: *Zacapa*: Zacapa; February, July.

BERMUDA: No exact locality; May.

DISCUSSION.—The range indicated by specimens studied extended across the eastern half of the United States from Massachusetts south to Florida and Bermuda, west to South Dakota, Nebraska, Kansas, Oklahoma, and Texas, thence through Arizona into southern California, and south into Mexico and Guatemala. The type localities of Signoret's two synonyms, *douglasi* and *scotti*, were given as "Australia" and "Nouvelle-Zelande." These countries are not here considered to be part of the established distribution of the species. More detailed discussion of this matter is given below.

The extensive range occupied by *bilineatus* brings it under many and varying environmental conditions. In adapting to these conditions the insect may be expected to show several modifications. Such variation was recognized and noted by Uhler as early as 1877. In material seen during the present study these variations were present in bewildering array. The anterior outline of the head varied from a full semicircle to a flattened one; the surface of the head ranged from smooth and impunctate to distinctly but weakly rugose (*rugifrons* Herrick-Schaeffer) with scattered fine punctures; and the number of the submarginal setigerous punctures on each jugum ranged from three to five. The number of these setigerous punctures may have some significance, but variability included unlike numbers on the two sides of one individual as well as unlike numbers on specimens from the same locality, especially as the material from farther north was studied. In contrast to this, the southern material appeared to have a tendency toward few and more regularly arranged submarginal punctures, until in Mexican specimens each jugum usually has one or two close-set punctures immediately anterior to the eye and two more widely separated ones beyond. Antennal II, while usually shorter than III, sometimes was subequal to it.

Pronotal punctation showed variation in the number and size of punctures laterally on the anterior lobe, medially on the posterior lobe and in the transverse impression. The number of costal setigerous punctures ranged from two to five, not uncommonly differing in number on the two sides of one specimen. The shape of the lateral margin of the metapleural evaporatorium was almost straight in some individuals and weakly to strongly concave in others. The length of the

body shows great difference between the smallest and largest specimens seen, 5.25 to 7.78 mm; the smaller specimens were all from the southern part of the range, with the smallest being from Bermuda. But not all southern specimens are small; many of them are as large as any of the northern ones, and intermediate sizes exist; consequently, the name *uhleri* is not necessary for the smaller specimens.

Depending on the maturity of the individual at the time of its death, the color varied from yellowish brown through reddish brown and piceus ("var. a. *picea*" of *bilineatus* Say, 1825) to black with the legs, particularly the femora, often being reddish brown (*femoralis* Herrick-Schaeffer). These above-mentioned variations have been confusing, but since nearly any one of them may be found in any part of the range, there can be no other conclusion but that only one quite variable species is involved.

The application of Say's name *bilineatus* employed here is that commonly followed by all other workers. *Pangeus bilineatus* is considered the common species of the eastern United States. Since most of Say's collection has been destroyed, it is quite probable that the type of *bilineatus* was destroyed with it. This leaves the species without a type, but since the presently used assignment is so universally adopted there can be little objection to continuing the practice. Although Signoret apparently intended to follow this plan, his figure 113 on plate 9 of his 1882 "Revision" shows one important difference from all specimens of the species seen during this study. No specimen showed the quadrate terminal appendage to the ostecolar peritreme. Without doubt, this misrepresentation aided Signoret in separating several "new species" from *bilineatus*. Considering in order the older names and those doubtful Signoret species of which Signoret material was available for study, the reasons for synonymizing the names are given below.

Herrick-Schaeffer's two species, *Cydnus rugifrons* from "Georgien in Amerika" and *Cydnus femoralis* from "Lankaster aus Nordamerika," were described from individual variants as indicated in the present discussion of the variation that occurs in this species (*supra*).

Walker's *Aethus fortis* from Mexico. Notes on the type furnished by Dr. China confirm the general acceptance of this name as a synonym of *bilineatus*.

Pangoeus vicinus Signoret, "Guayaquil." A female specimen in the Signoret collection (Wien) is labeled "*vicinus* det Signoret," but does not bear a type label. In addition, the specimen is labeled as being from "Mexico," not from the type locality given in the original description. In view of the description of the limited mesopleural evaporatorium of *vicinus* and the present study revealing no members of the subgenus *Homaloporus* from the South American continent,

the "Guayaquil" locality appears to be in error. The Mexican locality is included within the presently determined range of the subgenus. Assuming, at least temporarily, that Signoret's determination represents his concept of *vicinus*, one is confronted with certain discrepancies between the specimen and the original description. In the latter he points out the similarity to *bilineatus* and reports a difference in the apex of the peritreme—a character already shown (supra) to be nonexistent in *bilineatus*. He recorded a single costal seta, where the Mexican specimen shows three setigerous punctures. His description of the cephalic bristles is of the primary setae, not of the submarginal setigerous punctures which consist of four close-set punctures immediately anterior to the eye and one more widely removed beyond. This Mexican specimen also lacks antennals II to V, so the characters pertaining thereto cannot be verified, but the described condition fits the variations accepted in the present study for *bilineatus*. The description of the punctuation of the pronotum, scutellum, corium, and venter agrees both with the Mexican specimen and *bilineatus* as here understood. Since discrepancies of this sort are numerous in Signoret's cydnid work—even where the type itself was available for study—one should not attach too much importance to them. So, with apparently no characters for separating *vicinus* from *bilineatus*, the former must be considered a synonym of the latter.

Pangoeus douglasi Signoret, "Australia," and *Pangoeus scotti* Signoret, "Nouvelle-Zelande." Although these two species were described from areas well-removed from the native range of the genus, examination of the types (Wien) leaves no doubt of their synonymy with *bilineatus*. Signoret was undoubtedly misled by the distant localities and his own error in figuring the apex of the peritreme of *bilineatus*. Two possible explanations may be offered for the remote type localities. The simplest is that the specimens were mislabeled. The second is that the specimens may have been carried to these localities by commerce. Being burrowers, they could easily be scooped into the holds of ships with soil that was added for ballast and then be unloaded to make room for a cargo; or they could have travelled in soil about the roots of plants. In either event, neither *douglasi* nor *scotti* appears to have been reported from its original type locality by subsequent authors, except on the authority of Signoret's original descriptions. There is, however, a specimen (MCZ) labeled as coming from the Society Islands. Although no further data are given on the label, this record plus those of Signoret's specimens lend plausibility to the theory that *bilineatus* can be readily transported by commerce.

Pangoeus spangbergi Signoret, "Texas." The type specimen (Stock) was loaned for study and proved to be a Belfrage specimen. Signoret's comparison of this with *P. moestus*, a member of the nominal subgenus,

apparently misled him into describing his specimen as new. Signoret's (1882, pl. 9, fig. 116) illustration does not agree with the type in the following respects: (1) head has submarginal setigerous punctures arranged four close-set in front of eye and one more widely spaced beyond, not as pictured; (2) on the pronotum the lateral punctures are much fewer in number and the posterolateral angles are neither so prominent nor sharp as shown; (3) apex of scutellum is shown too long and narrow; (4) hemelytron of type has only one row of punctures on clavus, fewer and more irregularly spaced punctures on mesocorium and more punctures on exocorium; (5) both evaporatoria are misrepresented—mesopleural evaporatorium shown as acute, while it is rounded in the type, and that of metapleuron does not extend to anterolateral margin of segment as shown in the figure; and (6) the posterior emargination of the peritreme does not show the large hooklike blade visible in the illustration. The author was unable to find any feature to separate the type from *bilineatus*.

The name *uhleri* was proposed by Signoret for the Carolina and Georgia specimens which Uhler (1877, p. 385) had identified as *Pan-gaeus rugifrons* (Herrick-Schaeffer). Uhler's use of *rugifrons* was in the same sense that it had been proposed, for a species of the southeastern United States. Thus *uhleri* must be considered a synonym of *rugifrons*, which, in turn, is considered to be the same as *bilineatus*. Signoret's (1822, p. 252) transfer of the name *rugifrons* to Mexican species was erroneous, so Horváth (1919, p. 236) proposed the name *rugiceps* for the Mexican form.

As with most other species in the family, the biology and ecology of this insect is poorly known. The author's experience with it is that it may be quite common in an area and still be rarely collected. Intensive field work in St. Louis, Mo., and adjacent territory had yielded less than a half dozen specimens in more than 20 years, and these always under debris on the ground. Yet, when it became possible to examine the miscellaneous insect material collected in the Japanese beetle traps in the St. Louis area, several times that many specimens would be seen in one week. Apparently, these insects had been attracted to the eugenol or geranol that had been used as an attractant for the Japanese beetles. Judging from certain published notes, this species may be quite injurious to cultivated plants. Cassidy (1939, p. 322) reported it as doing "serious damage to cotton" in Arizona. In the same year, Tissot (1939, p. 455) wrote: "pepper seed beds at Fort Myers [Florida] being severely damaged. Beds mulched with grass and weeds, which probably was the cause of the bugs congregating in such large numbers."

Pangaeus (Homaloporus) congruus (Uhler), new combination

PLATE FIGURES 12, 33, 102, 125, 152, 219

Homaloporus congruus Uhler, 1877, p. 377; 1886, p. 3.—Signoret, 1881b, p. 330, pl. 10, fig. 47.—Lethierry and Severin, 1893, p. 65.—Banks, 1910, p. 100.—Torre Bueno, 1939, p. 178.

Homaloporus pangaeiformis Signoret, 1881b, p. 331, pl. 11, fig. 48.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 66.—Van Duzee, 1917, p. 19.—Torre Bueno, 1939, p. 178. New synonymy.

Aethus ferrugineus Signoret, 1882, p. 40, pl. 2, fig. 82.—Uhler, 1886, p. 3. New synonymy.

Cydnus ferrugineus Lethierry and Severin, 1893, p. 66.

DESCRIPTION.—MALE: Oval, widest behind middle.

Head: Length about two-thirds width, 0.84(0.82–0.90):1.25(1.20–1.36); interocular width, 0.85(0.80–0.93); anterior margin a slightly flattened semicircle, clypeus as long as juga; eyes projecting by one-half their length; surface shining, nearly smooth, impunctate. Antennal segments: I, 0.24(0.23–0.26); II, 0.22(0.20–0.23); III, 0.27(0.26–0.30); IV, 0.30(0.30–0.33); V, 0.34(0.33–0.36). Bucculae (fig. 33) about half as high as labial II, evanescent posteriorly. Labial segments: I, 0.43(0.40–0.50); II, 0.53(0.50–0.60); III, 0.51(0.46–0.60) IV, 0.33(0.30–0.36).

Pronotum: Length slightly more than half width, 1.45(1.30–1.69):2.76(2.47–3.06); anterior margin shallowly, doubly emarginate; lateral margin straight in basal two-thirds, submarginally with 18 to 20 setigerous punctures; transverse impression somewhat postmedian, weak to obsolete, marked by incomplete row of moderate punctures; anterior lobe polished, impunctate except for few moderate and many minute punctures laterally, subapically with distinctly impressed line terminated laterally at setigerous puncture posterior to inner margin of eye; posterior lobe with few, scattered, moderate to fine punctures discally and laterally.

Scutellum: Length subequal width, 1.70(1.56–1.82):1.70(1.56–1.82); discally with numerous scattered punctures similar to those of posterior pronotal lobe; apically with punctures finer, more numerous.

Hemelytron: Clavus and corium shining, very finely alutaceous; clavus with median row of punctures and usually a partial row either side; mesocorium with two complete rows of punctures paralleling claval suture, discally with numerous moderate punctures becoming coarser towards base; exocorium similarly punctate on apical half; costa with five to ten setigerous punctures; membranal suture straight, lateral angle little produced; membrane longer than basal width, surpassing apex of abdomen by about half its length.

Pleurae (fig. 102): As described for genus.

Sternites: Alutaceous, impunctate, slightly rugose laterally.

Terminalia: Genital capsule weakly alutaceous, closely punctate in lateral angle, apical margin straight; gonostylus as illustrated (fig. 219).

Length of body: 4.80(4.42–5.20).

FEMALE: Similar to male, measurements averaging slightly larger.

Head: Length-width ratio, 0.88(0.86–0.93):1.37(1.33–1.40); interocular width, 0.93(0.90–0.96). Antennal segments: I, 0.26(0.26–0.26); II, 0.21(0.20–0.23); III, 0.30(0.28–0.31); IV, 0.29(0.26–0.33); V, 0.35(0.33–0.36). Labial segments: I, 0.41(0.40–0.44); II, 0.55(0.53–0.56); III, 0.44(0.41–0.50); IV, 0.32(0.30–0.33).

Pronotum: Length-width ratio, 1.50 (1.43–1.56) : 2.95(2.86–3.00).

Scutellum: Length-width ratio, 1.82(1.75–1.89) : 1.82(1.75–1.89).

Length of body: 4.96(4.85–5.14).

TYPE DATA.—The types (USNM) were described by Uhler (1877, p. 378) from the vicinity of Denver City, Colo., and Dallas Co., Tex. The location of the type of Signoret's *Homaloporus pangaeiformis* is unknown to the author, but the species was described from "Mexique." The locality of the type specimen (Wien) of *Aethus ferrugineus* Signoret (1882, p. 40) was also given as "Mexique."

SPECIMENS STUDIED.—18 males, 21 females, 1 third-instar nymph.

UNITED STATES: *Arizona*: Oak Creek, December. *California*: Laguna Beach, Lone Pine, Los Angeles, Riverdale, San Diego, Santa Cruz, Wilmington; April to August. *Colorado*: Cortez, Cottonwood, Denver, Fort Collins, Palisades, Salida; April to July, October, third instar nymphs in July. *Kansas*: Greeley Co., Thomas Co. *New Mexico*: Estancia, Mesilla Park, Santa Fe Co.; July, August. *Utah*: Brigham, St. George; February, August.

MEXICO: *Distrito Federal*: Guadalupe Hidalgo; July. *México*: Amecameca.

DISCUSSION: The type of *Homaloporus pangaeiformis* Signoret has not yet been located, but the author feels no misgivings about assigning the name to synonymy. Considering first Signoret's comparison of this with *congruus*, the more oval and broader form that he ascribes to *pangaeiformis* may be a sexual difference, but in the series of *congruus* at hand there was noticeable variation in robustness of both sexes sufficient to include Signoret's figures (47 and 48) of both species. The descriptive statement that the mesopleuron has no shining space between the evaporatorium and the posterior margin of the segment is not borne out by the figure, which shows that area to have a different surface texture. Another feature that he listed, the evanescent, acute apex of the peritreme, appears to have no specific value in this genus as it occurs on North American material almost as freely as does the abrupt termination. The other differences mentioned are definitely not of specific value here. But returning to Signoret's illustration (fig. 48) of the mesopleuron and metapleuron of *H. pangaeiformis*, one notices that something is amiss as the osteolar

petritreme appears to be located on the mesopleuron—a condition unknown to this or any other family of the Hemiptera.

Discovery of this erroneous detail crystallized the author's suspicions that Signoret worked by comparison with his own illustrations, which appear to have been done without reference to the specimens once the preliminary sketches had been made. This permitted Signoret to misinterpret his own sketch when finishing the drawing. Then, in comparing additional material with his figures he could not help but find differences. Examination of the types of several other cydnids described by Signoret and comparison of them with the illustrations supported this contention.

Aethus ferrugineus Signoret is here placed as a synonym of *congruus* (Uhler) as a result of study of the female type (Wien). The type labeled "Bilimek, Mexico, 1871, Chapultepec," is in good condition, lacking only antennals IV and V on each side, the right middle leg and all or part of the tarsi from the left front, left middle, and right hind legs. Most of the pubescence is present.

That Signoret's species belongs to *Homaloporus* as described by Uhler, Signoret himself, and subsequent authors is beyond doubt. The type does not agree with the original description in having the anterior pronotal margin "faiblement margine," but instead shows a sharply defined, well impressed, subapical groove. The head also possesses a submarginal row of coarse, setigerous punctures giving rise to short, stout pegs and several long cilia; and the osteolar canal lacks a differentiated terminal lobe.

Other discrepancies between the type and the original description are: (1) "lobe median . . . sans points piligeres" is not wholly true; although the cilia are missing, the punctures are quite evident; (2) the lateral pronotal row of setigerous punctures does not number 13 or 14, but actually 18 with a complete set of like number of cilia on the right side and a full set of punctures and nearly a full set of cilia on the left side; (3) costal setigerous punctures are nine on the right side and eight on the left.

With his original description of *H. congruus*, Uhler gave the following interesting notes concerning capture of specimens:

. . . and a few specimens occurred to me while collecting insects near the foothills of the Rocky Mountains, west of Denver, in August 1875. The summer was a particularly rainy one, and the sudden chilling of the atmosphere by a hailstorm would cause this insect, together with beetles, flies, Hymenoptera, and other Hemiptera, to take refuge under the tufts of grass and roots of *Yucca* and other flowers and herbs, where they remained secure from the driving elements.

It is interesting to speculate about the development of a complete row of pegs on the submargin of the head on two species (*P. congruus* and *P. subtilius*) at widely separated parts of the geographic range of

the genus. Whether this is just coincidence or reflects the adaptation to conditions found at either end of its geographic range remains to be demonstrated by more detailed biological information about the species concerned.

Pangaeus (Homaloporus) punctilinea, new species

DIAGNOSIS.—The row of distinct punctures in the subapical impressed line of the pronotum will permit easy recognition of this species within the subgenus.

DESCRIPTION.—Described from three females. FEMALE: Oval, sides subparallel, faintly widened behind midlength.

Head: Length almost two-thirds width, 0.97(0.96–1.00):1.54 (1.51–1.61); interocular width, 1.05(1.03–1.08); anterior outline a somewhat flattened semicircle, clypeus as long as juga and slightly narrowed at apex; surface weakly convex, polished, with numerous minute punctures and several radiating weak rugae on each jugum; submarginal setigerous punctures somewhat variable in arrangement, two or three close-set punctures with two more widely separated ones beyond, or four close-set punctures with one widely separated puncture distally; ocelli very small, separated from eye by a space equalling four to five transverse ocellar diameters; jugum ventrally and maxillary plate (except base) shining, impunctate. Antennal segments: I, 0.30(0.30–0.31); II, 0.33(0.32–0.34); III, 0.35(0.34–0.36); IV, 0.44 (0.43–0.46); V, 0.51(0.49–0.54). Bucculae about half as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.54(0.51–0.56); II, 0.85(0.83–0.90); III, 0.67(0.64–0.70); IV, 0.50(0.50–0.50).

Pronotum: Anterior margin moderately, doubly emarginate; side margins faintly convex on basal half, more strongly so on apical half, with submarginal row of seven to nine setigerous punctures; transverse impression postmedian, obsolete, absent medially, marked by narrow, irregular band of distinct punctures; anterior lobe distinctly punctured in complete, subapical impressed line, with few to many distinct punctures laterally, discally with numerous obsolete, minute punctures; posterior lobe medially with few coarse and numerous minute punctures, laterally with a few coarse punctures.

Scutellum: Length subequal, longer or shorter than width, 1.77 (1.75–1.82):1.80(1.74–1.82); disc polished, discally with numerous large punctures except at base and apex.

Hemelytron: Clavus and corium polished, clavus with one, nearly complete row of distinct punctures; mesocorium with two complete rows of punctures paralleling claval suture, discally with numerous small punctures scattered full length; exocorium with numerous distinct punctures scattered for full length; costa with two setigerous

punctures; membranar suture nearly straight, lateral angle weakly produced; membrane longer than basal width, distinctly surpassing apex of abdomen.

Propleuron: Shining, with few punctures in depression and antero-ventral angle; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium reaching posterior margin for more than half its length; lateral area rugopunctate.

Metapleuron: Evaporatorium with lateral margin straight; lateral area with row of obsolete, broad punctures adjacent to edge of evaporatorium.

Legs: Posterior femora not tuberculate ventrally.

Sternites: Shining, with few punctures and longitudinal rugae laterally.

Length of body: 5.57(5.45–5.78).

TYPE DATA.—Holotype female (USNM 64422), "Brownsville, Texas, Wickham, col. C. F. Baker." Paratypes as follows:

TEXAS: Brownsville, 1929, 1 female (USNM); 25 miles southeast of Harlingen, Sept. 21, 1945, E. Hardy, nest of *Neotoma micropus* BD., 1 female (JAS).

DISCUSSION: The subapical transverse impression of the pronotum, while distinctly punctured, is, nevertheless, complete from one side of the pronotum to the other.

Pangaeus (Homaloporus) rugiceps Horváth

PLATE FIGURES 48, 221

Pangaeus rugifrons Signoret (nec Herrick-Schaeffer, 1839, p. 97, a synonym of

Pangaeus bilineatus), p. 252, pl. 8, fig. 111, 1882.

Pangaeus rugiceps Horváth, p. 236, 1919.

DIAGNOSIS.—At present, this is the only species in the subgenus with a single submarginal setigerous puncture in front of an eye.

DESCRIPTION.—Male: Oval, widest at or slightly behind midlength.

Head: Length more than two-thirds width, 1.17(1.10–1.26):1.59 (1.52–1.70); interocular width, 0.99(0.95–1.06); anterior outline an elongated semicircle, juga longer than apically narrowed clypeus and nearly or quite contiguous beyond it; juga impunctate, with strong, mostly transverse rugae, submarginally with one setigerous puncture anterior to eye; ocelli moderately large, separated from eye by space somewhat greater than transverse ocellar width; jugum ventrally in large part rugopunctate; maxillary plate polished, impunctate. Antennal segments: I, 0.28(0.26–0.30); II, 0.29(0.26–0.32); III, 0.39 (0.36–0.43); IV, 0.42(0.42–0.44); V, 0.46(0.44–0.49). Bucculae about half as high as labial II, labium reaching between middle coxae. Labial segments: I, 0.52(0.48–0.56); II 0.84(0.80–0.93); III, 0.64 (0.60–0.68); IV, 0.46(0.40–0.50).

Pronotum: Length more than half width, 1.90(1.75-2.02):3.35 (3.06-3.55); anterior margin shallowly, doubly emarginate; lateral margins straight to very slightly sinuate opposite ends of transverse impression, with six setigerous submarginal punctures; transverse impression weak, obsolete at middle, marked by medially interrupted, irregular row of coarse punctures; surface elsewhere impunctate except for prominent punctures laterally on anterior lobe and a few medially on posterior lobe.

Scutellum: Length equal to, longer, or shorter than width, 2.10 (1.92-2.22):2.09(1.89-2.28); surface polished, basal third to fourth impunctate, disc with several widely scattered, coarse punctures and numerous interspersed minute punctures, latter extending to apex.

Hemelytron: Clavus and corium shining, very weakly alutaceous; clavus with a partial row of punctures; mesocorium with two complete rows paralleling claval suture, discally with numerous scattered small punctures becoming more abundant and stronger apically; exocorium with few weak punctures scattered over most of its length; costa with two or three setigerous punctures; membranal suture slightly bisinuate, lateral angle vaguely produced; membrane longer than basal width, distinctly surpassing apex of abdomen.

Propleuron: Vaguely alutaceous, with no distinct punctures; prosternal carinae less than half as high as labial II, sharp.

Mesopleuron: Lateral area finely alutaceous, impunctate.

Metapleuron: Evaporatorium moderately concave laterally; lateral area weakly alutaceous, impunctate.

Legs: Posterior femora not tuberculate ventrally; posterior tibiae not angulate ventrally near base.

Sternites: Shining, vaguely alutaceous, impunctate but with fine longitudinal rugae in spiracular area.

Terminalia: Genital capsule rugopunctate laterally, finely punctured elsewhere, apical margin weakly sinuate medially; gonostylus as illustrated (fig. 221).

Length of body: 6.11(5.60-6.71).

FEMALE: Very similar to male.

Head: Length-width ratio, 1.23(1.10-1.36):1.69(1.56-1.84); interocular width, 1.05(0.96-1.16). Antennals: I, 0.30(0.27-0.33); II, 0.30(0.28-0.33); III, 0.41(0.36-0.46); IV, 0.44(0.40-0.50); V, 0.46 (0.43-0.50). Labials: I, 0.53(0.50-0.60); II, 0.95(0.86-1.03); III, 0.79 (0.63-1.16); IV, 0.56(0.49-0.73).

Pronotum: Length-width ratio, 2.07(1.89-2.34):3.61(3.16-4.11).

Scutellum: Length-width ratio, 2.19(1.82-2.60):2.25(1.95-2.53).

Length of body: 6.53(5.93-7.22).

TYPE DATA.—Signoret misapplied the name *rugifrons* of Herrick-Schaeffer (now shown to be a synonym of *Pangaeus bilineatus* (Say))

to a specimen from "Mexique." Horváth (1919, p. 236) called attention to this error and proposed the new name *Pangaeus rugiceps* for this Mexican specimen, which thus becomes the type of *rugiceps*. The specimen was originally in Signoret's own collection.

SPECIMENS STUDIED.—82 males, 95 females.

MEXICO: *Chiapas*: Esequintla; February. *Colima*: Armería, Colima, Manzanito; July. *Guerrero*: Balsas, Iguala; September. *Jalisco*: Volcán de Colima, Villa Corona. *Morelos*: Alpuyecá; June. *Nuevo León*: Monterrey (1,700 feet); June. *Oaxaca*: Tuxtepec. *San Luis Potosí*: El Salto; June. *Sinaloa*: Mazatlán; August. *Sonora*: Minas Nuevas; August.

GUATEMALA: *Chiquimula*: Chiquimula (1,000 feet), Sacapulas (4,500 feet); July, August. *Zacapa*: Zacapa (600 feet); July.

EXTRALIMITAL SPECIMENS: UNITED STATES: *Louisiana*: "ex airplane" from Mexico.

DISCUSSION.—Signoret's erroneous application of Herrick-Schaeffer's name is quite understandable, especially if he had only very limited material of *bilineatus* and thus was not aware that individuals of *bilineatus* did show rugae on the head. The figure of *rugifrons*, especially in rugae and outline of the head, is very suggestive of the present species. The type locality, however, precludes the employment of that name for this species.

Pangaeus (Homaloporus) setosus, new species

PLATE FIGURES 49, 222

DIAGNOSIS.—This species may be recognized within the subgenus by the presence of numerous tubercles on the ventral surface of the posterior femur (as in fig. 154) in combination with a partial, submarginal row of setigerous punctures on the anterior half or more of the head (fig. 49).

DESCRIPTION.—MALE: Oval, somewhat parallel-sided.

Head: Length almost two-thirds width, 1.18(1.06–1.26):1.84(1.71–1.95); interocular width, 1.17(1.06–1.26); anterior outline elongate, weakly truncate semicircle, juga longer than and nearly or quite contiguous beyond apex of clypeus; surface shining, with numerous minute punctures and partial, radiating rugae; jugum depressed distally, with four or five setigerous punctures submarginally in front of eye and on apical half a partial row of close-set setigerous punctures giving rise to a row of short, stout pegs (fig. 49); ocelli small, situated behind line connecting hind margins of eyes, removed from eye by more than two times a transverse ocellar width; jugum ventrally and maxillary plate shining, impunctate. Antennal segments: I, 0.40(0.38–0.46); II, 0.52(0.50–0.60); III, 0.55(0.46–0.66); IV, 0.69(0.60–0.76); V, 0.75(0.70–0.83). Bucculae about as high as labial II, obliquely terminated posteriorly; labium reaching between middle

coxae. Labial segments: I, 0.60(0.57–0.60); II, 1.04(1.01–1.10); III, 0.94(0.90–1.01); IV, 0.54(0.50–0.56).

Pronotum: Length more than half width, 2.14(2.02–2.26):4.03 (3.82–4.26); anterior margin moderately, simply emarginate; lateral margin entire, broadly and shallowly curved, with nine or ten setigerous punctures submarginally; transverse impression obsolete to absent, marked by very irregular row of scattered punctures; anterior lobe impunctate except for lateral patch of about one dozen coarse punctures with minute punctures interspersed; posterior lobe with few moderate punctures medially and laterally.

Scutellum: Longer than wide, 2.66(2.53–2.79):2.53(2.34–2.73); disc polished, with numerous coarse, usually foveate punctures becoming finer toward apex.

Hemelytron: Clavus and corium shining; clavus with one row of punctures; mesocorial surface slightly uneven, punctures in one row paralleling claval suture and closely set on basal half, apically the punctures are much finer and sparser; exocorium obsoletely to distinctly punctate for full length; costa with two to four setigerous punctures; membranal suture straight, lateral angle distinctly produced; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Shining, punctate ventrally in depression and anterior to acetabulum; prosternal carinae less than half as high as labial II.

Mesopleuron and metapleuron: Similar to figure 106, but peritreme abruptly terminated apically.

Legs: Posterior femur with numerous small tubercles on ventral face; posteroventral margin of hind tibia with a finely crenulate basal emargination and a strong angulation distad of it (as in fig. 153).

Sternites: Shining, impunctate except in trichobothrial area.

Terminalia: Genital capsule with broad, shallow emargination medially; gonostylus as illustrated (fig. 222).

Length of body: 7.89(7.38–8.38).

FEMALE: Similar to male, but without modification of posterior tibia.

Head: Length-width ratio, 1.18(1.13–1.23):1.87(1.75–2.00); interocular width, 1.16(1.11–1.23). Antennal segments: I, 0.41(0.40–0.43); II, 0.54(0.50–0.60); III, 0.55(0.50–0.60); IV, 0.70(0.70–0.72); V, 0.76(0.70–0.79). Labial segments: I, 0.57(0.53–0.64); II, 1.10(1.03–1.16); III, 0.94(0.90–1.00); IV, 0.53(0.49–0.56).

Pronotum: Length-width ratio, 2.31(2.12–2.60):3.97(3.71–4.29).

Scutellum: Length-width ratio, 2.72(2.53–2.93):2.40(2.28–2.53).

Length of body: 7.79(7.18–8.31).

TYPE DATA.—Holotype male and allotype female (both MCZ), "Oracle, Ariz., 11–III–1919, 4500 ft." Paratypes as follows:

UNITED STATES: *Arizona*: Same data as types, 3 males, 8 females (MCZ, RCF); same locality as types, Mar. 7, "2 males labeled *Pangaeus bilineatus* Uhl. det. O. H.[eidemann]" (USNM). Dry Canyon Sands Ranch, southeast end of Whetstone Mts., Cochise Co., Aug. 10, 1952, H. B. Leech and J. W. Green, 1 male (CalAc). Mt. Lemon Road, 6,000 feet, Santa Catalina Mts., Dec. 27, 1937, E. C. Van Dyke, 2 males, 1 female (CalAc). Benson, June 7, 1930, G. Linsley, 1 male (CalAc). Santa Rita Mts., 5,000 to 8,000 feet, July, F. H. Snow, 1 male (KU). Catalina Springs, Apr. 27, 1 female (USNM). Baboquivari Mts., July 24, 1941, R. H. Beamer, 1 female (KU); Nov. 8, 1936, E. D. Ball, 1 female (USNM). Paradise, July 22, 1914, 1 male (USNM). Douglas, W. W. Jones, 1 female (USNM). *Texas*: Presidio Co., July 16, 1927, R. H. Beamer, 2 males, 2 females (KU). El Paso, July 18, 1932, 1 male (RLU). Chisos Mts., Brewster Co., July 16, 1921, C. D. Duncan, 1 female (CalAc). Big Bend Park, Chisos Mts., July 5, 1942, H. A. Scullen, 1 male (USNM). Marathon, C. M. Hamilton, 1 male (USNM). Davis Mts., June 26, 1946, E. C. VanDyke, 1 female (CalAc). Valentine, July 13, 1927, P. A. Radio, 2 females (KU). Guadalupe Pass, Hudspeth Co., July 28, 1950, R. F. Smith, 1 female (AmM). Basin, Big Bend National Park, Brewster Co., July 14, 1950, R. F. Smith, 1 female (AmM).

MEXICO: *Chihuahua*: Cañon de Prieto, near Primavera, July 2, 1947, 6,500 to 6,800 feet, D. Rockefeller Exp., Michener. *San Luis Potosi*: El Salto, June 19, 1953, Univ. Kansas Mexican Expedition, 1 male (KU).

DISCUSSION.—This species and the next comprise a pair of forms well-separated from the other species of the subgenus by several characters: (1) the coarse crenulations on the posterior margin of the mesopleuron; (2) the very deeply concave side margin of the meta-pleural evaporatorium which permits the lateral area to reach almost or quite to the apex of the peritreme; (3) the convex ventral surface of the posterior femur with the numerous small tubercles on the distal half; and (4) the peculiar shape of the hind tibia of the male (fig. 153), the posteroventral margin of which shows a finely crenulate emargination basally and a strong angulation just beyond. The two forms are very close and when more material from northern Mexico is studied it may be found that they represent two forms of a single species. At present, however, they appear separable on the basis of the key character pertaining to the vestiture of the head and the generally separate ranges.

How these two, strongly marked species could remain so long without being described is difficult to explain. This condition reflects the uncertainty that has existed pertaining to the limits of species within the group and leading to many misidentifications.

Pangaeus (Homaloporus) tuberculipes, new species

PLATE FIGURES 153, 154, 223

DIAGNOSIS.—The presence of numerous small tubercles on the ventral face of the posterior femur (fig. 154) coupled with the lack of a submarginal row of short stout submarginal pegs on the anterior

half of the head will separate this species from all others within the subgenus.

DESCRIPTION.—MALE: Oval, somewhat parallel-sided.

Head: Length two-thirds width, 1.22(1.13–1.31):1.80(1.71–1.96); interocular width, 1.20(1.10–1.26); anterior outline a full semicircle, jugs longer than and nearly or quite contiguous anterior to clypeus; surface shining, with numerous distinct, radiating rugae; jugum depressed medially with four to six coarse, setigerous punctures submarginally, without short, stout pegs; ocelli small, situated well behind line connecting posterior margins of eyes, removed from eyes by about three times a transverse ocellar width; jugum ventrally shining, impunctate; maxillary plate impunctate, alutaceous on basal half. Antennal segments: I, 0.39(0.33–0.43); II, 0.46(0.43–0.53); III, 0.52(0.46–0.56); IV, 0.65(0.60–0.70); V, 0.70(0.69–0.73). Bucculae as high as labial II, obliquely terminated posteriorly; labium reaching between middle coxae. Labial segments: I, 0.55(0.53–0.57); II, 1.00(0.88–1.07); III, 0.83(0.71–0.93); IV, 0.52(0.46–0.58).

Pronotum: Length more than half width, 2.22(2.08–2.37):3.98(3.78–4.16); anterior margin moderately, doubly emarginate; lateral margin entire, broadly and shallowly curved, with ten submarginal setigerous punctures; transverse impression obsolete to absent, marked by very irregular row of scattered punctures; anterior lobe impunctate except for lateral patch of about one dozen coarse punctures with minute punctures interspersed; posterior lobe with few moderate punctures medially and laterally.

Scutellum: Length greater than width, 2.67(2.47–2.86):2.40(2.27–2.58); disc polished, with a number of irregularly scattered large punctures.

Hemelytron: Clavus and corium shining; clavus with one row of punctures; mesocorial surface slightly uneven, punctures in one row paralleling claval suture and closely set on basal half, apically the punctures are much finer and sparser; exocorium obsolete to distinctly punctate for full length; costa with two to five setigerous punctures; membranal suture straight, lateral angle distinctly produced; membrane longer than basal width, distinctly surpassing apex of abdomen.

Propleuron: Shining, punctate ventrally in depression and anterior to acetabulum; prosternal carinae much less than half the height of labial II.

Mesopleuron and metapleuron: Similar to figure 106, but peritreme abruptly terminated apically.

Legs: Posterior femur with numerous small tubercles on ventral face; posteroventral margin of hind tibia with a finely crenulate basal emargination and a strong angulation distad of it (fig. 153).

Sternites: Shining, impunctate except in spiracular area.

Terminalia: Genital capsule distinctly punctate except for broad middle line, apical margin broadly, shallowly emarginate medially; gonostylus as illustrated (fig. 223).

Length of body: 7.83(7.50–8.25).

FEMALE: Similar to male, but without modification of posterior tibia.

Head: Length-width ratio, 1.24(1.20–1.30):1.87(1.78–1.98); interocular width, 1.25(1.20–1.30). Antennal segments: I, 0.37(0.32–0.40); II, 0.49(0.43–0.60); III, 0.53(0.46–0.60); IV, 0.69(0.60–0.80); V, 0.74(0.70–0.80). Labial segments: I, 0.53(0.50–0.56); II, 1.03(0.96–1.18); III, 0.82(0.76–0.93); IV, 0.53(0.50–0.57).

Pronotum: Length-width ratio, 2.23(2.08–2.42):4.07(3.76–4.43).

Scutellum: Length-width ratio, 2.77(2.61–2.97):2.44(2.34–2.66).

Length of body: 7.74(7.20–8.52).

TYPE DATA.—Holotype male and allotype female (both CalAc), 5 miles north of Tizayuca, Hidalgo, Mexico, Nov. 13, 1946, E. S. Ross. Paratypes as follows:

MEXICO: *Hidalgo*: Same data as types, 5 males, 8 females (CalAc, USNM, RCF). "Guerrero Mills," W. M. Mann, 1 male, 1 female (MCZ). *Distrito Federal*: "15 mi. S. of El Guarda," Nov. 14, 1946, E. S. Ross, 1 male, 2 females (CalAc); July 10, 1 female (Mex). Peñón del Marquis, March 27, Wheeler, 1 male, 4 females (MCZ). Pedregal, June 29, 1932, 1 female (RLU). Lomas de Chapultepec, July 14, 1932, 1 female (RLU). Peñón, Viejo, June 21, 1932, 1 female (RLU). Pedregal San Angel, Aug. 27, 1939, C. Bolívar, 1 female (Pel). *State unknown*: Minatitlán, Feb. 1, 1892, H. Osborn, 1 male labeled *Pangaeus rugifrons* H-S., *Pangaeus confusus* Sign., and *Pangaeus discrepans* Uhl. (USNM).

UNITED STATES: *Texas*: Devil's River, June 6, 1907, Bishop and Pratt, at light, 1 female (USNM). Colorado City, July 17, 1927, L. A. Stephenson, 1 female (KU).

DISCUSSION.—This form is discussed with the preceding species.

Subgenus *Pangaeus* (*Pangaeus*) Stål

Pangaeus Stål, 1862, p. 95.

DIAGNOSIS.—The key character concerning the extensiveness of the mesopleural evaporatorium is the most reliable feature for separating this subgenus from subgenus *Homaloporus*.

DESCRIPTION.—The generic description as modified by the notes in the generic discussion will furnish sufficient description for this subgenus.

TYPE OF SUBGENUS.—*Aethus margo* Dallas, subsequent designation by Van Duzee (1914, p. 378); this name is a synonym of *Cydnus aethiops* Fabricius, which is treated in the present paper as a member of the genus *Pangaeus*. For explanation of this synonymy see the discussion under *Pangaeus aethiops*.

DISTRIBUTION.—The range of the nominal subgenus occupies the southern part of the range of the genus, overlapping the range of subgenus *Homaloporus* to the north for a short distance in Guatemala and southern Mexico.

DISCUSSION.—The problems encountered in this subgenus were somewhat different from those found in most other parts of the family. The males of all forms were rather easily separated with the aid of secondary sexual characters, but not all the females have, as yet, proven decipherable. Therefore, as indicated in the key to species, females of certain species cannot yet be properly separated from their congeners. This situation results from the great variability of external features in the females which either prevent establishment of reasonable limits to the species as indicated by the males, or results in the separation of a disproportionate and unbelievable number of forms. Therefore, until later studies of the internal genitalia are made, the author deems it best to treat only such females as lend themselves to ready association with males through possession of some outstanding common character.

Key to the species of *Pangaeus* (*Pangaeus*)

1. Posterior tibia with spines of posteroventral margin conspicuously longer, thinner, and sharper than those on dorsal margin (fig. 159); head transversely convex, basal half or more of jugum with several distinct, coarse, transverse rugae. 2
 Posterior tibiae with spines equally developed on all margins; head flattened, jugum with broad, shallow, longitudinal impression medially. 5
2. Jugum with a complete, submarginal row of setigerous punctures which give rise to a series of pegs and hairs. 3
 Jugum without a complete row of submarginal setigerous punctures, those which are present give rise to hairs but not pegs. 4
3. Mesocorium with numerous moderate but distinct punctures over entire surface. **semibrunneus**, new species (p. 502)
 Mesocorium virtually impunctate. **subtilius** (Signoret) (p. 507)
4. Costa with ten or more setigerous punctures; tibiae and femora concolorous. **pluripunctatus**, new species (p. 479)
 Costa with five or less setigerous punctures; basal third or more of hind tibia and apex of femur yellow, distinctly lighter than greater part of femur. **xanthopus** Signoret (p. 481)
5. Jugum with four setigerous punctures submarginally (fig. 47). 6
 Jugum with one or two submarginal setigerous punctures. 9
6. Anterior pronotal lobe laterally with broad patch of numerous distinct, moderately coarse punctures. 7
 Anterior pronotal lobe impunctate or with less than half dozen distinct punctures. 8
7. Pronotum with subapical impressed line and midline of anterior lobe distinctly punctate (fig. 74). **punctinotum**, new species (p. 495)
 Pronotum with subapical impressed line and midline of anterior lobe impunctate; calli posteriorly with numerous small rugae (fig. 73). **rugonotum**, new species (p. 501)

8. Costa with one setigerous puncture; transverse impression of pronotum sharply impressed across full width **rubrifemur** (Walker) (p. 499)
Costa with three or four setigerous punctures; transverse impression of pronotum weakly impressed or interrupted at middle.
rufobrunneus Jensen-Haarup (p. 498)
9. Males (abdomen ending in single, cuplike genital capsule). 10
Females (abdomen ending in several pairs of triangular plates) 18
10. Posterior tibia ventrally with distinct, subbasal angulation, with one to three spines on posteroventral margin before apex (figs. 155, 156) 11
Posterior tibia ventrally without subbasal angulation, posteroventral margin with four or more spines before apex (figs. 157, 158) 13
11. Apex of genital capsule with a broad, deep, U-shaped emargination (fig. 177).
aethiops (Fabricius) (p. 504)
Apex of genital capsule not emarginate, sometimes gently sinuate 12
12. Costa with two setigerous punctures; larger, length of body 5.84–6.60.
impressus, new species (p. 486)
Costa with one setigerous puncture; smaller, length of body 4.21–5.56.
docilis (Walker) (p. 484)
13. Costa with two (rarely three) setigerous punctures 14
Costa with one setigerous puncture 16
14. Corium distinctly alutaceous (at 15 magnifications); larger, length of body 5.8–7.1 **ncogeus**, new species (p. 491)
Corium polished, not alutaceous (at 30 magnifications); smaller, length of body 5.0–5.3 15
15. Jugum with two submarginal setigerous punctures, one immediately anterior to eye and one near apical third . . . **bisetosus**, new species (p. 483)
Jugum with one submarginal setigerous puncture just anterior to eye.
moestus (Stål) (p. 489)
16. Posterior tibia with four strong spines on posteroventral margin before apex.
piceatus Stål (p. 492)
Posterior femur with more than four spines on posteroventral margin before apex 17
17. Corium polished, with two complete (or nearly complete) rows of mesocorial punctures paralleling claval suture; smaller, length of body 4.8–5.7.
quinquespinosus, new species (p. 497)
Corium distinctly alutaceous, with one complete row of mesocorial punctures paralleling claval suture; larger, length of body more than 7.
laevigatus Signoret (p. 487)
18. Ocelli large, separated from eye by a space not greater than transverse ocellar width **aethiops** (Fabricius) (p. 504)
Ocelli smaller, separated from eyes by space not less than 1½ times transverse ocellar diameter (to date the author has been unable to prepare a key that will satisfactorily separate females which run here).

***Pangoeus (Pangoeus) pluripunctatus*, new species**

PLATE FIGURE 224

Pangoeus [!] *aethiops* Signoret (nec Fabricius), 1882, p. 245, pl. 8, fig. 104.

DIAGNOSIS.—The abundant setigerous punctures on the costa (10 or more) set this species apart from all others in the subgenus.

DESCRIPTION.—From one male and one female.

MALE: Broadly oval, basal halves of costa straight, subparallel.

Head: Length about two-thirds width, 1.10:1.51; interocular width, 1.00; anterior outline a slightly prolonged semicircle, clypeus as long as jugum and narrowed at apex; surface convex, shining, with scattered minute punctures and numerous distinct, coarse, radiating rugae; jugum with four setigerous punctures submarginally; ocelli moderately large, separated from eye by about twice transverse ocellar width; jugum ventrally and maxillary plate shining, impunctate. Antennal segments: I, 0.32; II, 0.20; III, 0.35; IV, 0.30; V, 0.36. Bucculae lower than labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.50; II, 0.88; III, 0.69; IV, 0.35.

Pronotum: Length little more than half width, 1.82:3.51; anterior margin shallowly, singly emarginate; lateral margin entire, posterior part hidden from dorsal view by somewhat swollen umbones, with 16 setigerous punctures submarginally; transverse impression submedian, weak, marked by medially interrupted, regular row of large punctures; anterior lobe without large punctures, midline narrowly depressed between calli; posterior lobe with three discal patches of a few punctures each.

Scutellum: Length about four-fifths width, 1.82:2.21; disc polished, with irregularly scattered, large punctures except at base and apex.

Hemelytron: Clavus and corium finely alutaceous; clavus with one row of punctures; mesocorial punctures obsolete except those in impressed row and basal half of second row paralleling claval suture; exocorium without distinct punctures; costa with 10 or 11 setigerous punctures; membranal suture virtually straight, lateral angle faintly prolonged; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Faintly alutaceous, impunctate; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium weakly concave; lateral area impunctate.

Legs: Tibiae and femora unicolorous; hind tibia curved, spines of posteroventral margin longer, thinner and more tapering than those of dorsal margins (as in fig. 159).

Sternites: Shining, impunctate except for a single row of setigerous punctures across II and a double row across III.

Terminalia: Genital capsule with very sparse, fine punctures becoming slightly more numerous laterally, apical margin with broad, very shallow punctures mesally; gonostylus as illustrated (fig. 224).

Length of body: 5.50.

FEMALE: Similar to male except that the head is without the minute punctures dorsally.

Head: Length-width ratio, 1.04:1.50; interocular width, 1.00. An-

tennal segments: I, 0.30; II, 0.23; III, 0.36; IV and V missing. Labial segments: I, 0.60; II, 0.80; III, 0.66; IV, 0.43.

Pronotum: Length-width ratio, 1.80:3.70.

Scutellum: Length-width ratio, 2.10:2.23.

Length of body: 6.00.

TYPE DATA.—The holotype male (USNM 64420), originally in the Uhler collection, is labeled simply "Montevideo," undoubtedly referring to the capital of Uruguay. The allotype female is from the Berg collection and bears the label "Uruguay"; this specimen is being returned to the Universidad Nacional de La Plata, where the Berg collection is housed.

DISCUSSION.—This is the species treated as *aethiops* by Signoret. His description and illustration of the ten setigerous punctures on the costa prevent such assignment.

Pangaeus (Pangaeus) xanthopus Signoret

PLATE FIGURES 159, 236b

Pangaeus [!] *xanthopus* Signoret, 1882, p. 254.

Pangaeus aethiops Lethierry and Severin, 1893, p. 69.

Pangaeus uhleri xanthopus Lethierry and Severin, 1893, p. 70.

DIAGNOSIS.—Either the bicolored legs (especially posterior pair) in which the apex of the femur and the basal third or more of the tibia are contrastingly yellow, or the longer, more slender spines of the posterior margin of the hind tibia (as in fig. 159) coupled with the few (not over five) setigerous punctures on the costa will separate this species from all others in the genus.

DESCRIPTION.—MALE: Broadly oval, costae mostly arcuate.

Head: Length about two-thirds width, 1.05(0.93–1.12):1.53(1.36–1.70); interocular width, 0.91(0.83–1.00); anterior outline a slightly prolonged semicircle, juga as long as or slightly longer than clypeus and greatly narrowing or contiguous beyond it; surface convex, impunctate, with number of weak to distinct radiating rugae; jugum with one submarginal setigerous puncture anterior to eye; ocelli large, situated on line connecting hind margins of eyes, separated from eye by space less than transverse ocellar width; jugum ventrally and maxillary plate, except basal margin, polished, impunctate. Antennal segments: I, 0.28(0.26–0.33); II, 0.22(0.19–0.26); III, 0.38(0.33–0.43); IV, 0.37(0.33–0.43); V, 0.40(0.36–0.46). Bucculae not as high as labial II, evanescent posteriorly; labium reaching nearly or quite to bases of middle coxae. Labial segments: I, 0.41(0.36–0.43); II, 0.59(0.53–0.64); III, 0.52(0.50–0.55); IV, 0.41(0.38–0.46).

Pronotum: Length about half width, 1.62(1.36–1.90):3.24(2.79–3.64); anterior margin shallowly, doubly emarginate; lateral margin entire, very weakly arcuate on basal half, with submarginal row of

seven to ten setigerous punctures; transverse impression weak to obsolete, marked by medially interrupted, somewhat irregular row of large punctures; anterior lobe with few scattered punctures behind subapical line, along midline and laterally; posterior lobe with punctation dense medially and becoming sparser laterally.

Scutellum: Length less than width, 1.97(1.69–2.21):2.04(1.75–2.28); disc weakly alutaceous, with numerous punctures except at base.

Hemelytron: Clavus and corium finely alutaceous; clavus with double row of small punctures; mesocorium with two more or less equally developed rows of distinct punctures paralleling claval suture, rest of area obsoletely punctured except in basal third and in outer apical angle; exocorium with punctures scattered for full length; costa with two to five setigerous punctures; membranal suture nearly straight, lateral angle slightly prolonged; membrane longer than basal width, distinctly surpassing apex of abdomen.

Propleuron: Alutaceous, punctate in depression and anterior to acetabulum; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium weakly concave; lateral area impunctate.

Legs: Posterior tibia with spines of posteroventral margin longer, more slender and tapering than those of dorsal margins (fig. 159); tibiae bicolored, basal half or more (especially of posterior pair) pale yellow, contrasting distinctly with the mostly reddish brown femora.

Sternites: Alutaceous; impunctate.

Terminalia: Genital capsule alutaceous, very sparsely, finely punctured medially, apical margin entire, straight in posterior view; gonostylus as illustrated (fig. 236b).

Length of body: 5.54(4.74–6.18).

TYPE DATA.—Signoret's *xanthopus* was based on a specimen from "Bresil" in the "Berlin Museum."

SPECIMENS STUDIED:

BOLIVIA: Province of Sara, Santa Cruz de la Sierra (450 meters), Tiguipa; April, November, December.

BRAZIL: Bahia, Ceara, Joazeiro, Matto Grosso, Parnaguá, Serrinha (Paraná); October to December.

PARAGUAY: Horqueta, Villarrica; November to February.

ARGENTINA: Buenos Aires, Marull, Patquia, Tucumán; January.

DISCUSSION.—This is the only member of the genus that fits Signoret's description "les pattes d'un jaune pale, avec les poils et epines noirs." The type repository as given by Signoret was "Berlin Museum" and undoubtedly referred to what is now the Zoologisches Museum der Humboldt-Universität, in East Berlin. However, personal examination of that collection and the one at the Deutsches

Entomologisches Institut, also in East Berlin, did not locate the specimen.

Within the subgenus, *xanthopus*, *pluripunctatus*, *semibrunneus*, and *subtilius* stand out on the basis of the modification of the spines of the posterior tibiae and the convex, more or less rugose head surface. Both of these characters appear in the genus *Cyrtomenus*, which these four species superficially resemble quite closely due to their more convex dorsum. Other students may prefer to transfer these four species to *Cyrtomenus*, a step which could be easily accomplished by rearranging the key to genera so that the character of the spines of the hind tibiae comes before that of the subapical impression of the pronotum. The present author, however, prefers to consider the subapical impression of the pronotum a better phylogenetic indicator and to leave these forms as they have been treated for many years. The conclusion to keep these forms in *Pangaeus* is admittedly conservative and currently tentative until investigations of the internal genitalia of the females are made.

Pangaeus (Pangaeus) bisetosus, new species

PLATE FIGURE 225

DIAGNOSIS.—The presence of two submarginal setigerous punctures on a jugum (one next to eye, one at apical third) will separate this species from all others in the subgenus.

DESCRIPTION.—Based on one male. MALE: Oval, widest near midlength.

Head: Length more than four-fifths width, 1.19:1.30; interocular width, 0.75; anterior outline a full semicircle, clypeus as long as juga, strongly narrowed apically; surface shining, impunctate; jugum with two submarginal setigerous punctures, one immediately anterior to eye and one at apical third; ocelli moderate, separated from eye by space equal to twice transverse ocellar width; jugum ventrally and maxillary plate, except basal margin, polished, impunctate. Antennal segments: I, 0.23; II, 0.26; III, 0.33; IV, 0.38; V, 0.50. Bucculae about half as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.46; II, 0.72; III, 0.63; IV, 0.34.

Pronotum: Length more than half width, 1.42:2.60; anterior margin shallowly emarginate; lateral margin curved from near base, with five setigerous punctures submarginally; transverse impression postmedian, impressed for full width, marked by row of punctures; anterior lobe impunctate except for not more than five punctures laterally; posterior lobe with 12 to 15 punctures medially.

Scutellum: Length less than width, 1.49:1.62; disc shining, with not more than five large punctures.

Hemelytron: Clavus and corium shining; clavus with several punctures in one longitudinal row; mesocorium finely or obsoletely punctate except for one complete and basal third of second row paralleling claval suture; exocorium obsoletely punctured; costa with two setigerous punctures; membranal suture straight, lateral angle not produced; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Faintly alutaceous, punctate only in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium straight; lateral area impunctate.

Legs: Not specially modified, hind tibia with four spines on posteroventral margin.

Sternites: Polished, impunctate.

Terminalia: Genital capsule with few scattered, fine punctures; apical margin very broadly and very shallowly U-shaped; gonostylus as illustrated (fig. 225).

Length of body: 5.00.

TYPE DATA.—Holotype male (Cap), "Venezuela Exp., Culebra N. Duida Terr., Amazonas, April 7-16, J. Maldonado Capriles Coll."

DISCUSSION.—The name *bisetosus* is given in obvious reference to the two setigerous punctures on each jugum.

Pangaeus (Pangaeus) docilis (Walker)

PLATE FIGURES 156, 226

Aethus docilis Walker, 1867, p. 154.

Pangoeus [!] *dallasi* Signoret, 1882, p. 263, pl. 9, fig. 121.

Pangaeus dallasi Lethierry and Severin, 1893, p. 69.

Pangaeus docilis Distant, 1899, p. 221.

DIAGNOSIS.—The male of *docilis* may be separated from all other species in the genus by the subbasal angulation on the posteroventral margin of the hind tibia and the single setigerous puncture on the costa.

DESCRIPTION.—MALE: Oval, widest near midlength.

Head: Length two-thirds width, 0.86(0.81-0.90):1.28(1.13-1.36); interocular width, 0.78(0.72-0.83); anterior outline semicircular, clypeus as long as juga and strongly narrowed apically; surface shining, impunctate, with weak rugae; jugum with one submarginal setigerous puncture anterior to eye; ocelli moderate, separated from eye by space more than twice transverse ocellar width; jugum ventrally and maxillary plate, except basal margin, polished, impunctate. Antennal segments: I, 0.24(0.21-0.26); II, 0.24(0.20-0.26); III, 0.36(0.30-0.43); IV, 0.46(0.37-0.53); V, 0.55(0.48-0.60). Bucculae nearly as high as labial II; labium reaching between middle coxae. Labial segments:

I, 0.44(0.40–0.46); II, 0.74(0.66–0.80); III, 0.58(0.53–0.65); IV, 0.35(0.30–0.40).

Pronotum: Length little more than half width, 1.47(1.19–1.69):2.71(2.26–2.93); anterior margin shallowly, doubly emarginate; lateral margin straight on basal half, with five setigerous punctures submarginally; transverse impression slightly postmedian, sharply impressed across full width, marked by medially interrupted regular row of close-set punctures; anterior lobe impunctate except for few punctures medially.

Scutellum: Length equal to width, 1.60(1.36–1.75):1.60(1.36–1.75); disc shining, with few to numerous scattered punctures.

Hemelytron: Clavus and corium alutaceous; clavus with one row of punctures; corium not distinctly punctate except along one complete and usually basal part of second row paralleling claval suture; costa with one setigerous puncture; membranal suture straight, lateral angle not produced; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Shining, punctate in depression and anterior to acetabulum; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area with few small punctures.

Metapleuron: Lateral margin of evaporatorium concave; lateral area impunctate.

Legs: Posterior tibia with subbasal angulation and two subapical spines on posteroventral margin (fig. 156).

Sternites: Alutaceous, impunctate.

Terminalia: Genital capsule finely alutaceous, with few scattered punctures, apical margin faintly sinuate either side of apex; gonostylus as illustrated (fig. 226).

Length of body: 5.13(4.21–5.56).

FEMALE: Not yet properly associated with male.

TYPE DATA.—The type female (BrM) was stated by Walker to have come from Rio de Janeiro, Brazil. Signoret described *dallasi* from "Bresil, Guyane." His Brazilian specimen (Wien) has a red label bearing the word "Type."

SPECIMENS STUDIED.—31 males.

GUATEMALA: *Alta Verapaz*: Trece Aguas.

PANAMA: Bugaba, Chilibrillo Caves; May to October.

CANAL ZONE: Barro Colorado Island, Cano Saddle (Gatún Lake), Mt. Hope, Parafso, Summit; February, July to September.

COLOMBIA: Río Daguta.

VENEZUELA: Cabima, Mt. Marachuaca; May.

BRAZIL: Amazonas, Chapada, Corumba, Macura, west border of Matto Grosso, Nova Teutonia, Taperina; May, September, October.

ECUADOR: Balzapamba.

PERU: Callanga, Department of Junín, Marcapata; November.

DISCUSSION.—The type specimen of *dallasi* was available for study. It is a male that shows well the subbasal angulation on the posterior tibia. In describing the species, Signoret indicated that he thought it might be identical with *docilis*. Other authors, including Distant (loc. cit.), who attempted to place Walker's species, agree that the two are one and the same. In fact, the type bears the label "*docilis* Walk.," in an unknown script. Since the type of *docilis* is a female, as was reported to the author by Dr. China, no better placement can be made at this time.

The Panamanian specimens from the Chilibrillo Caves bore the notation "In cave earth."

Pangaeus (Pangaeus) impressus, new species

PLATE FIGURE 227

DIAGNOSIS.—The male of this new species may be recognized within the subgenus by the combination of a distinct subbasal angulation posteroventrally on the hind tibia, two setigerous punctures on the costa and the lack of an emargination on the apex of the genital capsule.

DESCRIPTION.—Based on two males, one broken. MALE: Oval; widest behind midlength.

Head: Length two-thirds width, 1.00(0.93–1.07):1.56(1.53–1.60,) interocular width, 0.94(0.92–0.96); anterior outline nearly or quite a full semicircle, clypeus as long as juga, distinctly narrowed apically; surface shining, impunctate; jugum depressed medially, with one submarginal puncture adjacent to eye; ocelli moderate, separated from eye by space almost twice transverse ocellar width; jugum ventrally and maxillary plate, except basally, polished, impunctate. Antennal segments: I, 0.26(0.26–0.26); II, 0.33(0.33–0.33); III, 0.45(0.44–0.46); IV, 0.56(??–0.56); V, 0.62(??–0.62). Bucculae little more than half as high as labial II; labium reaching between middle coxae. Labial segments (missing from smaller specimen): I, 0.46: II, 0.74: III, 0.73: IV, 0.46.

Pronotum: Length more than half width, 1.84(1.71–1.97):3.43 (3.23–3.64); anterior margin shallowly, doubly emarginate; lateral margin straight on basal half, with five setigerous punctures submarginally; transverse impression median, impressed across full width, marked by medially interrupted, regular row of very close-set punctures; lobes impunctate except for few weak punctures laterally on anterior lobe and several distinct ones on middle of posterior lobe.

Scutellum: Length little less than width, 2.08(1.95–2.21):2.15 (2.02–2.28); disc shining, with few to several scattered punctures.

Hemelytron: Clavus and corium alutaceous; clavus with one row of punctures; mesocorium with one complete and basal part of second

row of punctures paralleling claval suture, elsewhere impunctate or obsolete punctate; exocorium without distinct punctures; costa with one setigerous puncture; membranal suture virtually straight; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Faintly alutaceous, with distinct punctures only in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium straight; lateral area impunctate.

Legs: Posterior tibia with distinct, subbasal angulation on posteroventral margin which also bears only two subapical spines.

Sternites: Finely alutaceous, impunctate.

Terminalia: Genital capsule finely alutaceous, punctate laterally; apical margin slightly convex at middle, gonostylus as illustrated (fig. 227).

Length of body: 6.22(5.84–6.60).

TYPE DATA.—Holotype male (USNM 64421), from "Above Tepic, Mexico, Mar. 23, W. M. Mann collector." Paratype, 1 male (RLU) from Tejupilco, Mexico, June 18, 1933, H. E. Hinton and R. L. Usinger.

DISCUSSION.—The presence of a deep transverse impression on the pronotum is reflected in the name *impressus*.

***Pangoeus (Pangoeus) laevigatus* Signoret**

PLATE FIGURE 228

Pangoeus [!] *laevigatus* Signoret, 1882, p. 250, pl. 8, fig. 110.

Pangoeus [!] *stali* Signoret, 1882, p. 256. New synonymy.

Pagoeus [!] *buchanani* Signoret, 1882, p. 260, pl. 9, fig. 118. New synonymy.

Pangoeus laevigatus Lethierry and Severin, 1893, p. 69.

Pangoeus buchanani Lethierry and Severin, 1893, p. 69.

Pangoeus stali Lethierry and Severin, 1893, p. 70.

DIAGNOSIS.—As here determined, *laevigatus* may be recognized in the subgenus by its large size, single setigerous puncture on submargin of head and one on costa and lack of a ventral, subbasal angulation on the posterior tibia.

DESCRIPTION.—Based on one male specimen, the type. MALE: Oval, widest behind midlength.

Head: Length about two-thirds width, 1.13:1.68; interocular width, 1.06; anterior outline semicircular, juga slightly longer than clypeus, narrowly contiguous above its apex; surface shining, with few moderate, radiating rugae and scattered minute punctures; jugum longitudinally impressed medially, with one submarginal setigerous puncture; ocelli small, separated from eye by space distinctly more than transverse ocellar width; jugum ventrally and maxillary plate (except

near base) shining, impunctate. Antennal segments: I, 0.36; II, 0.35; III, 0.54; IV and V missing. Bucculae almost as high as labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.60; II, 1.16; III, 0.80; IV, 0.53.

Pronotum: Length more than half width, 2.15:3.78; anterior margin deeply, singly emarginate; lateral margin straight on basal half or more, with submarginal row of four setigerous punctures; transverse impression postmedian, weak, obsolete medially, marked by medially interrupted row of punctures; anterior lobe laterally with area of minute punctures enclosing few large punctures, elsewhere impunctate; posterior lobe mostly impunctate, with few obsolete punctures medially.

Scutellum: Length greater than width, 2.37:2.21; disc shining, with large scattered punctures.

Hemelytron: Clavus and corium alutaceous; clavus with one row of punctures; corium virtually impunctate except for single row paralleling claval suture; costa with one setigerous puncture; membranal suture straight, lateral angle not produced; membrane longer than basal width, just reaching apex of abdomen.

Propleuron: Shining, weakly alutaceous, with few large punctures in depression; prosternal carinae much less than half as high as labial II.

Mesopleuron: Evaporatorium attaining side margin of segment; lateral area irregular.

Metapleuron: Lateral margin of evaporatorium almost straight; lateral area polished, impunctate.

Legs: Posterior tibia without subbasal angulation ventrally, with four preapical spines on posteroventral margin.

Sternites: Obsoletely alutaceous, impunctate.

Terminalia: Genital capsule virtually impunctate except in lateral angles; apical margin slightly convex medially; gonostylus as illustrated (fig. 228).

Length of body: 7.66.

FEMALE: As yet not properly associated with male; for further comments, see discussion below.

TYPE DATA.—Signoret's type (Wien) of *laevigatus* was from "Ocana," his type (Wien) of *stali* was from "Bresil," and his type (BrM) of *buchanani* was from "Amazon super."

SPECIMENS STUDIED.—1 male, 1 female. These respectively were the types of *laevigatus* and *stali* and were labeled "Ocana" and "Bresil."

DISCUSSION.—The types of both *laevigatus* and *stali* were studied, and full notes on the type of *buchanani* were furnished. *P. laevigatus* was based on a male specimen, while both *stali* and *buchanani* were based on females. *P. laevigatus* is distinct from the others as keyed and described above. The placement of the two females here must be

considered a tentative but practical step. Rather than have these unidentified names carried indefinitely on lists of unidentified species, the author believes it desirable to associate them as closely as possible with some known form. They are thus still available if further study shows their distinctness, but are not dangling uncertainties. The female type of *stali* is almost identical with the male of *laevigatus* except that the ocelli are slightly larger and separated from the eye by a space not quite three times a transverse ocellar width, and has one posterior tibia with four and one with five spines on posteroventral margins.

The large size and uninterrupted mesopleural evaporatorium of *buchanani* permits its comparison with only two species—*aethiops* and *laevigatus*. The original description and notes on the type of *buchanani* show that it cannot be *aethiops* because the ocelli are too small and too widely separated from the eyes. Comparison with *laevigatus* yields nothing in the available information to contradict the placement of *buchanani* under that species as defined by the author after a study of the type. Therefore, *buchanani* is so synonymized here.

Pangaeus (Pangaeus) moestus (Stål)

PLATE FIGURE 229

Aethus moestus Stål, 1860, p. 13.—Walker, 1867, p. 153.

Pangaeus moestus Stål, 1876, p. 19.—Lethierry and Severin, 1893, p. 70.

Pangocus (!) *maestus* (!) Signoret, 1882, p. 257, pl. 9, fig. 114.

DIAGNOSIS.—Among those species of the subgenus with one submarginal setigerous puncture anterior to each eye and the posterior tibia of the male unmodified, this species can be delimited by the presence of two setigerous punctures on the costa and the corium being polished.

DESCRIPTION.—Based on one male. MALE: Oval, widest behind midlength.

Head: Length two-thirds width, 0.88:1.31; interocular width, 0.80; anterior outline a full semicircle, clypeus as long as juga, strongly narrowed apically; surface shining, impunctate, with obsolete, radiating rugae; jugum with single submarginal puncture near eye; ocelli moderate, separated from eye by more than twice transverse ocellar width; jugum ventrally and maxillary plate, except basal margin, polished, impunctate. Antennal segments: I, 0.26; II, 0.26; III, 0.36; IV, 0.41; V, 0.52. Bucculae about half as high as labial II; labium attaining base of middle coxae. Labial segments: I, 0.44; II, 0.70; III, 0.56; IV, 0.34.

Pronotum: Length more than half width, 1.56:2.85; anterior margin shallowly emarginate; lateral margin almost straight on basal half, with five setigerous punctures submarginally; transverse impression

submedian, lightly impressed across full width, marked by regular row of punctures; anterior lobe impunctate except for four or five punctures laterally; posterior lobe with less than ten punctures medially.

Scutellum: Length less than width, 1.62:1.72; disc polished, with sparse, scattered punctures.

Hemelytron: Clavus and corium polished; clavus with one row of strong punctures; corium virtually impunctate except for one complete and interrupted second row of mesocorial punctures; costa with two setigerous punctures; membranal suture straight, lateral angle not prolonged; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Shining, distinctly punctate only in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium straight; lateral area impunctate.

Legs: Hind tibia without subbasal spine ventrally, posteroventral margin with four spines.

Sternites: Faintly alutaceous, impunctate.

Terminalia: Genital capsule with few punctures laterally, apical margin straight; gonostylus as illustrated (fig. 229).

Length of body: 5.38.

TYPE DATA.—Stål's type female (Stock) is from Rio de Janeiro, Brazil.

SPECIMENS STUDIED.—1 male, 1 female:

GUATEMALA: Acatenango, May 1948, H. T. Dalmat, 1 male (USNM).

BRAZIL: Rio de Janeiro, 1 female, the type specimen (Stock).

DISCUSSION.—The single specimen assigned here is a male that agrees quite well with the female type except that its transverse pronotal impression is not quite as deeply impressed medially as is that of the type. At present, the author is not fully confident that he can accurately associate males and females of the same species within this section of the subgenus; but in order to tie down the name *moestus*, which was described from a female, he has chosen to apply it to a male which is structurally very similar to the type, even though from a widely removed locality. Assumption that the males and females are usually morphologically similar is based on the results of studying many females that bear data labels identical to those found on some males. The females usually are very similar but never show the ventral subbasal angulation on the hind tibia. Thus, a strong landmark of the males is missing from the females and adds to the difficulty of separating the nearly twice as many female specimens.

As soon as a means of delimiting the females of each species becomes evident, judgment on the wisdom of the present action may be passed.

Pangaeus (Pangaeus) neogeus, new species

PLATE FIGURE 230

DIAGNOSIS.—Among the species of this subgenus with the single setigerous puncture on the submargin of the head and two on the costa, the males of this species may be recognized by the combination of the lack of a ventral, subbasal angulation on the posterior tibia and the distinctly alutaceous corium.

DESCRIPTION.—MALE: Oval, widest posterior to midlength.

Head: Length about two-thirds width, 0.96(0.86–1.03):1.40(1.36–1.56); interocular width, 0.88(0.83–0.91); anterior outline a slightly flattened semicircle, juga slightly surpassing apex of clypeus and nearly or quite contiguous anterior to it; surface very feebly alutaceous, with obsolete minute punctures; jugum with one submarginal setigerous puncture next to eye; ocelli well developed, separated from eye by space less than twice transverse ocellar width; jugum ventrally and maxillary plate (except basally) shining, impunctate. Antennal segments: I, 0.26(0.26–0.27); II, 0.26(0.26–0.26); III, 0.42(0.40–0.46); IV, 0.48(0.46–0.50); V, 0.54(0.54–0.55). Bucculae almost as high as labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.47(0.43–0.50); II, 0.74(0.70–0.76); III, 0.48(0.42–0.53); IV, 0.36(0.33–0.43).

Pronotum: Length more than half width, 1.82(1.62–2.01):3.34(3.00–3.64); anterior margin moderately, singly emarginate; lateral margin straight on basal two-thirds, with submarginal row of seven setigerous punctures; transverse impression slightly postmedian, weak, obsolete at middle, marked by medially interrupted row of punctures; anterior lobe with few moderate punctures laterally; posterior lobe with few scattered punctures medially.

Scutellum: The length usually less than the width, 1.97(1.78–2.12):2.06(1.82–2.21); shining, with several to many large, scattered punctures.

Hemelytron: Clavus and corium distinctly alutaceous; clavus with one row of punctures; corium impunctate except for one complete and basal half of second row paralleling claval suture; costa with two setigerous punctures; membranal suture nearly straight, lateral angle not produced; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Shining, few large punctures in depression; prosternal carinae almost half as high as labial II, rounded off posteriorly.

Mesopleuron: Lateral area polished, impunctate.

Metapleuron: Lateral margin of evaporatorium weakly concave; lateral area impunctate.

Legs: Posterior tibia without subbasal angulation ventrally, with five spines on posteroventral margin.

Sternites: Finely, minutely alutaceous, impunctate.

Terminalia: Genital capsule alutaceous, with few weak punctures laterally, apical margin straight or feebly concave; gonostylus as illustrated (fig. 230).

Length of body: 6.21.

TYPE DATA.—Holotype male (JCL), "Nova Teutonia, Santa Catarina, Brazil, X-20, 1948, F. Plauman." Paratypes as follows:

BRAZIL: Same locality and collector as holotype, Jan. 6, 1949, 1 male (JCL); Sept. 16, 1940, 2 males (JCL); Apr. 8, 1948, 1 male (JCL); Dec. 5, 1948, 1 male (JCL); June 19, 1935, 1 male (RLU); July 30, 1935 (RLU); Sept. 4, 1950 (JCL). Rio Grande do Sul, Stieghnayr, 7 males (Wien, RCF).

PARAGUAY: Horqueta, 45 miles east of Paraguay River, Nov. 27, 1933, A. Schulze, 1 male (JCL).

DISCUSSION.—Except for some variation in the number of punctures on the pronotum and scutellum, this species appears to be quite constant in its features.

Pangaeus (Pangaeus) piceatus Stål

PLATE FIGURES 157, 231

Pangaeus piceatus Stål, 1862, p. 96; 1876, p. 19.—Uhler, 1877, p. 388; 1886, p. 3.—Distant, 1880, p. 6; 1899, p. 221.—Lethierry and Severin, 1893, p. 70.—Banks, 1910, p. 101.—Van Duzee, 1917, p. 21.—Barber and Bruner, 1932, p. 237.—Torre Bueno, 1939, p. 180.

Aethus piceatus Walker, 1867, p. 150.

Aethus tenuis Walker, 1867, p. 151.

Aethus parilis Walker, 1867, p. 153.

Aethus nitidulus Walker, 1867, p. 154. New synonymy.

Pangaeus ? tenuis Uhler, 1877, p. 390.

Pangaeus (!) *sallei* Signoret, 1882, p. 262, pl. 9, fig. 119. New synonymy.

Pangaeus (!) *piceatus* Signoret, 1882, p. 262, pl. 9, fig. 120.

Pangaeus (!) *petersi* Signoret, 1882, p. 264, pl. 9, fig. 122. New synonymy.

Pangaeus (!) *minimus* Signoret, 1882, p. 265, pl. 9, fig. 123. New synonymy.

Pangaeus minimus Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 70.

Pangaeus sallei Uhler, 1886, p. 3.

Cydnus nitidulus Lethierry and Severin, 1893, p. 67.

Pangaeus petersi Lethierry and Severin, 1893, p. 70.

Pangaeus tenuis Lethierry and Severin, 1893, p. 70.

Pangaeus parilis "incerti loci" Lethierry and Severin, 1893, p. 81.

DIAGNOSIS.—Among the species with one setigerous puncture on the submargin of the head and one on the costa, the males of this one may be recognized by the lack of ventral, subbasal angulation on the hind tibia coupled with the presence of but four spines on the posteroventral margin of the posterior tibia.

DESCRIPTION.—MALE: Oval, broadest slightly posterior to mid-length.

Head: Length more than two-thirds width, 0.86(0.74–1.00):1.22 (1.06–1.36); interocular width, 0.75(0.66–0.84); anterior outline an elongate semicircle, juga little longer than clypeus and almost contiguous anterior to it; surface shining, usually with weak, radiating rugae; jugum with one setigerous puncture submarginally anterior to eye; ocelli moderate, removed from eye by space almost twice transverse ocellar width; jugum ventrally and maxillary plate (except basally) shining, impunctate. Antennal segments: I, 0.25(0.23–0.29); II, 0.21(0.21–0.23); III, 0.32(0.30–0.37); IV, 0.37(0.36–0.40); V, 0.47(0.46–0.52). Bucculae about half as high as labial II, evanescent posteriorly; labium extended between middle coxae. Labial segments: I, 0.36(0.35–0.43); II, 0.61(0.51–0.66); III, 0.50(0.44–0.56); IV, 0.37(0.32–0.40).

Pronotum: Length more than half width, 1.40(1.19–1.56):2.57 (2.13–2.92); anterior margin shallowly, doubly emarginate; lateral margin straight to weakly convex on basal two-thirds, with submarginal row of four or five setigerous punctures; transverse impression distinct across full width, weaker at middle, marked by medially interrupted row of punctures; anterior lobe impunctate except for occasional small punctures laterally, median line impressed from subapical line to between calli; posterior lobe with few scattered punctures on anterior half of middle area.

Scutellum: Length equal to or less than width, 1.46(1.24–1.64):1.48 (1.25–1.71); disc shining, with several widely scattered punctures.

Hemelytron: Clavus and corium polished; clavus with one row of punctures; corium obsolete or not punctate except for punctures in one complete row and usually one partial row paralleling claval suture; costa with one setigerous puncture; membranal suture straight, lateral angle not produced; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Shining, impunctate or with few coarse punctures in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium reaching lateral margin; lateral area shining, obtusely rugose.

Metapleuron: Lateral margin of evaporatorium feebly concave; lateral area shining, impunctate.

Legs: Posterior tibia without subbasal angulation ventrally, with four spines on posteroventral margin.

Sternites: very finely alutaceous, impunctate.

Terminalia: Genital capsule with scattered fine punctures more abundant in lateral impressed areas, apical margin straight or slightly

convex medially, edge thickened laterally; gonostylus as illustrated (fig. 231).

Length of body: 4.79(4.22-5.21).

TYPE DATA.—Stål's type (Stock) is from Mexico. Walker described *nitidulus*, *parilis*, and *tenuis* from "Belize, [British] Honduras," "Amazon Region," and "Orizaba," Mexico, respectively (types in BrM). Signoret described and named *sallei* from "Laguayra [Venezuela] et Mexique"; *petersi* from "Perou"; and *minimus* from "Mexique." Two specimens (Wien) are labeled as types of *sallei* and *minimus* respectively. The type of *petersi* has not been located.

SPECIMENS STUDIED.—20 males:

MEXICO: Oaxaca: Tuxtepec; July.

GUATEMALA: Antigua; August.

COSTA RICA: Río Virillo, San José, San Pedro, Turrialba; January, June to August.

PUERTO RICO: Ponce.

COLOMBIA: Cali.

BRAZIL: Pará.

PERU: Pachitea.

DISCUSSION.—A number of names based on small specimens must be considered here. Walker's three forms (*nitidulus*, *parilis*, and *tenuis*) present a special problem. In kind reply to a request for information on the types of them, Dr. China reported that all had a single submarginal setigerous puncture on the jugum and one on each costa, and that all were described from a female or male now lacking hind legs. This combination prevents placement of these forms at this time. They appear to fit equally well under *piceatus*, *docilis*, or the new species *quinquespinosus*. However, until further work furnishes characters which will permit interpretation of these forms, the author prefers to have the names fixed to a definite concept rather than leave them unattached, and for convenience attaches them here.

The three Signoret species here assigned to synonymy for the first time were so treated for the following reasons: *P. minimus*, as determined by a personal study of the type was based on a pale, teneral specimen of *piceatus*, the light color having prompted Signoret to remark that the pale color contrasted this species with all others in the genus. The situation involving *sallei* is more complex. Signoret gave Venezuela and Mexico as the type localities for this species. The specimen bearing the Mexican locality label now bears the type label and was kindly lent for study by Dr. Max Beier of the Naturhistorisches Museum in Vienna. It disagrees with the original descriptions in several important respects: (1) it was said to be similar to *piceatus* but described and figured as having four submarginal setigerous punctures on each jugum and two to five on the costa—the type has but one on each part; (2) only five, instead of the described

nine or ten submarginal setigerous punctures laterally on the pronotum; and (3) the original description stated that the mesopleural evaporatorium was "séparée de la suture par un espace lisse atteignant les deux tiers prés des hanches," while in the type this structure extends along the suture and reaches the lateral margin of the segment. These three features as described suggest that *sallei* is a member of the northern subgenus, *Homaloporus*. Perhaps the description was drawn from the Venezuelan specimen and not the Mexican one which now bears the type label. If this is true, the problem is still not solved. The author is not aware that any member of that subgenus occurs on continental South America and so cannot guess which, if any, of the known species of subgenus *Homaloporus* it might be. So, until the Venezuelan specimen is examined, the author accepts the Mexican individual as the type and places the name where the specimen obviously belongs, as a synonym of *piceatus*. Lastly, *petersi* also presents certain problems. As yet, the type has not been located so work must be done in reference to the original description and illustration. Of all the specimens which were small enough to be considered as meeting the "4 mill." size stated for this species, some were *docilis*, as delimited by the ventral subbasal angulation on the posterior tibia, and the remainder were *piceatus*. These included several specimens from the type locality of Peru. None of them showed the two submarginal setigerous punctures on the submargin of the jugum as described and illustrated by Signoret. But the present author has developed such a distrust for Signoret's "Revision" that he does not have much faith in either its text or its illustrations. If the text and figures are accurate concerning this species, then it is the only one in the genus lacking the lateral primary setigerous puncture immediately anterior to the eye. Since the presence of the three primary setigerous punctures is characteristic for all the known species of the genus and because Signoret's work has been found to be far from accurate in a number of other instances, the present author prefers to believe that Signoret failed to correctly interpret this part of the animal. Until a specimen is found which agrees with Signoret's works and disproves this belief, the author will cling to it and assign *petersi* to synonymy under *piceatus*.

Two of the Costa Rican specimens bear labels indicating they had been collected from cultivated plants, one from strawberry and the other from beans.

***Pangaeus (Pangaeus) punctinotum*, new species**

PLATE FIGURES 47, 74, 232

DIAGNOSIS.—The numerous distinct punctures behind the subapical impression and on the midline of the anterior pronotal lobe (fig. 74) mark this species as distinct from all others in the genus.

DESCRIPTION.—Based on a single specimen. MALE: Oval, widest slightly behind midlength.

Head: Length more than two-thirds width, 0.93:1.31; interocular width, 0.82; anterior outline almost semicircular, jugs longer than and contiguous beyond clypeus; surface impunctate, flattened, jugs depressed medially and submarginally with two close-set setigerous punctures in front of eye and two more widely separated ones beyond; ocelli moderate, separated from eye by space almost three times transverse ocellar width; jugum ventrally and maxillary plate, except posteriorly, polished, impunctate. Antennal segments: I, 0.23; II, 0.23; III, 0.33; IV, 0.43; V, 0.60. Bucculae almost as high as labial II, evanescent posteriorly; labium reaching bases of middle coxae. Labial segments: I, 0.58; II, 0.73; III, 0.50; IV, 0.33.

Pronotum: Length more than half of width, 1.42:2.65; anterior margin moderately, singly emarginate; lateral margin feebly sinuate opposite ends of transverse impression, with six submarginal setigerous punctures; anterior lobe with numerous distinct punctures bordering the subapical impression, along midline and in depressed lateral area, collum and calli with minute punctures; transverse impression strongly impressed across full width, marked by row of very close-set punctures; posterior lobe with numerous strong punctures scattered across anterior half.

Scutellum: Length slightly less than width, 1.55:1.62; disc polished, with scattered punctures.

Hemelytron: Clavus and corium shining; clavus with incomplete row of punctures; mesocorium with one complete and one incomplete row of punctures paralleling claval suture, distinctly punctured basally and apically and obsoletely so discally; exocorium obsoletely punctured except at extreme base and apex; costa slightly reflexed, with two setigerous punctures; membranal suture straight, lateral angle somewhat prolonged; membrane little longer than basal width, reaching apex of abdomen.

Propleuron: Faintly alutaceous, distinctly punctate only in depression; prosternal carinae about half as high as labial II.

Mesopleuron: Evaporatorium reaching into posterolateral angle of segment, but not quite attaining lateral margin; lateral area with few punctures.

Metapleuron: Lateral margin of evaporatorium straight; lateral area impunctate.

Legs: Not specially modified.

Sternites: Polished, impunctate.

Terminalia: Genital capsule distinctly punctate only in lateral angles, apical margin straight, entire; gonostylus as illustrated (fig. 232).

Length of body: 5.28.

TYPE DATA.—Known only from the holotype male (BrM), "Mazaruni: High Forest, 20, viii, 1937, British Guiana: coll. Richardson & Smart. B. M. 1937-776."

DISCUSSION.—The unusual punctuation of the pronotum is unique within the genus and suggested the trivial name. Additional comments on this species may be found in the discussion of *rugonotum* which is also described as new in this paper.

Pangaeus (Pangaeus) quinquespinosus, new species

PLATE FIGURES 83, 158, 234

DIAGNOSIS.—The male of this species can be recognized from the others with a single submarginal setigerous puncture anterior to each eye and polished coria by the simple posterior tibiae which have five preapical spines on the posteroventral margin.

DESCRIPTION.—MALE: Oval, sides subparallel.

Head: Length more than two-thirds width, 0.89(0.87-0.91):1.36 (1.30-1.41); interocular width, 0.78(0.73-0.83); anterior outline semi-circular, weakly angulated medially, juga longer than and narrowly contiguous beyond clypeus; surface polished, impunctate, with mostly obsolete, radiating rugae; ocelli moderate, separated from eye by space almost twice transverse ocellar width; jugum ventrally and maxillary plate, except basally, shining, impunctate. Antennal segments: I, 0.25(0.24-0.26); II, 0.24(0.23-0.26); III, 0.33(0.32-0.36); IV, 0.43(0.40-0.50); V, 0.55(0.51-0.58). Bucculae almost as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.42(0.40-0.46); II, 0.68(0.66-0.73); III, 0.52(0.47-0.56); IV, 0.35(0.34-0.40).

Pronotum: Length more than half width, 1.47(1.34-1.56):2.73 (2.47-2.86); anterior margin shallowly, doubly emarginate; lateral margin straight on basal half, with five setigerous punctures submarginally; transverse impression weak to obsolete medially, distinctly impressed laterally, marked by medially interrupted, regular row of close-set punctures merging laterally with few scattered punctures on both lobes; posterior lobe with less than a dozen punctures medially.

Scutellum: Length subequal to or shorter than width, 1.60 (1.42-1.69):1.61(1.43-1.75); disc shining, with numerous punctures except at base and apex.

Hemelytron: Clavus and corium polished; clavus with single row of punctures; mesocorium with two complete rows of coarse punctures paralleling claval suture, discally with fine punctures becoming denser towards base and apex; exocorium finely and more densely punctate than mesocorium; costa with one setigerous puncture; membranal

suture weakly bisinuate; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Feebly alutaceous, punctate in depression and anterior to acetabulum; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate, weakly rugose.

Metapleuron: Lateral margin of evaporatorium distinctly concave; lateral area impunctate.

Legs: Not specially modified, posteroventral margin with five preapical spines.

Sternites: Shining, impunctate.

Terminalia: Genital capsule shining, with few punctures laterally; gonostylus as illustrated (fig. 234).

Length of body: 5.23(4.30-5.70).

TYPE DATA.—Holotype male (USNM 64423), "Barro Colo. Id., C.Z., VII-VIII-42, Jas. Zetek, No. 4985." Paratypes, four males: Same data as holotype (RCF); same locality and collector, Jan.-Feb. 1945 (USNM), Jan.-Feb. 1944 (USNM), April 1945 (USNM).

DISCUSSION.—The only habit note attached to any specimen was the conventional "at light."

Pangaesus (Pangaesus) rufobrunneus Jensen-Haarup

Pangaesus rufobrunneus Jensen-Haarup, 1926, p. 49.

DIAGNOSIS.—The combination of the four or five submarginal setigerous punctures on the jugum, the virtual absence of distinct punctures laterally on the anterior lobe of the pronotum and the presence of three or four setigerous punctures on costa sets this species apart from all others in the subgenus.

DESCRIPTION.—From one specimen, the type. FEMALE: Oval, broadest behind midlength.

Head: Length slightly more than two-thirds width; 1.10:1.60; interocular width, 0.99; anterior outline semicircular, clypeus as long as juga, very slightly narrowed at apex; line on either side of clypeus extending posteriorly to between ocelli where they diverge around a median fovea; surface with numerous minute punctures on coarse, radiating rugae; jugum with submarginal row of four close-set punctures in front of eye and one separated distally; ocelli small, separated from eye by space about three times transverse ocellar width; jugum ventrally and maxillary plate (except at posterior margin) polished, impunctate. Antennal segments: I, 0.31; II, 0.37; III, 0.39, IV, 0.46; V, 0.54. Bucculae about as high as labial II; labium attaining base of middle coxae. Labial segments: I, 0.53; II, 0.80; III, 0.72; IV, 0.43.

Pronotum: Length more than half width, 1.82:3.31; anterior margin deeply, simply emarginate; lateral margins not sinuate, with

submarginal row of eight or nine setigerous punctures; transverse impression postmedian, weakly impressed and obsolete at middle, marked by medially interrupted row of numerous close-set, moderate punctures; surface with numerous scattered minute punctures; anterior lobe with few, obsolete, small punctures laterally; posterior lobe without coarser punctures.

Scutellum: Little longer than wide, 2.08:2.02; disc shining, with very many well-separated minute punctures and numerous widely separated coarser punctures becoming finer toward apex.

Hemelytron: Clavus and corium weakly alutaceous; clavus with single longitudinal row of punctures; mesocorium obsoletely punctured except for one complete and the suggestion of a second row of distinct punctures paralleling claval suture; exocorium with few obsolete punctures scattered along full length; costa with three or four setigerous punctures; membranal suture almost straight, lateral angle somewhat produced; membrane little longer than basal width, slightly surpassing apex of abdomen.

Propleuron: Alutaceous, without distinct punctures except ventrally in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate, with few oblique rugae.

Metapleuron: Lateral margin of evaporatorium distinctly concave; lateral area alutaceous, neither rugose nor punctate.

Sternites: Alutaceous, impunctate.

Legs: Posterior tibia without subbasal angulation ventrally, with four spines on posteroventral margin.

Length of body: 6.24.

TYPE DATA.—Jensen-Haarup listed type material from "Lima" and "Mendoza." The "Lima" specimen (Copen) was loaned for study by Dr. S. L. Tuxen. This specimen bears the label "Type., Coll. J-Hrp.," and is here designated lectotype.

SPECIMEN STUDIED: The female type (Copen) from Lima, Peru.

DISCUSSION.—The median, interocular fovea around which the proximal ends of the clypeal sutures diverge appears to be unique not only within this genus but also within all other genera in the Western Hemisphere.

***Pangaesus (Pangaesus) rubrifemur* (Walker), new combination**

PLATE FIGURE 233

Aethus rubrifemur Walker, 1867, p. 153.

Aethus rubrifemur "incerti loci" Lethierry and Severin, 1893, p. 81.

DIAGNOSIS.—The presence of four setigerous punctures on the submargin of the head coupled with the very few scattered punctures laterally on the anterior lobe of the pronotum and the single setigerous

puncture on the costa mark this species as distinct from all others in the subgenus.

DESCRIPTION.—Based on one male. MALE: Oval, slightly elongate.

Head: Length more than two-thirds width, 0.90:1.34; interocular width, 0.83; anterior outline a full semicircle, clypeus as long as juga and strongly narrowed apically; surface polished, impunctate, with weak radiating rugae; jugum with three or four setigerous submarginal punctures; ocelli small, separated from eye by space more than twice transverse ocellar width; jugum ventrally and maxillary plate, except posterior margin, polished, impunctate. Antennal segments: I, 0.26; II, 0.26; III, 0.36; IV, 0.43; V, 0.51. Bucculae about as high as labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.46; II, 0.70; III, 0.60; IV, 0.36.

Pronotum: Length more than half width, 1.49:2.69; anterior margin moderately, doubly emarginate; lateral margin narrowing from near base, not sinuate, with six setigerous punctures submarginally; transverse impression postmedian, moderately impressed for full width, marked by medially interrupted, regular row of coarse punctures; anterior lobe without strong punctures except for less than six laterally; posterior lobe with very few punctures clustered at middle.

Scutellum: Length and width subequal, 1.66:1.69; disc polished, with several scattered punctures except at base and apex.

Hemelytron: Clavus and corium finely alutaceous; clavus with single row of punctures; corium impunctate except for one complete and one interrupted row of distinct punctures paralleling claval suture; costa with one setigerous puncture; membranal suture straight, lateral area not produced; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Weakly alutaceous, punctured in depression and anterior to acetabulum; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium slightly concave; lateral area impunctate.

Legs: Posterior tibia with distinct subbasal angulation and one subapical spine on posteroventral margin.

Sternites: Faintly alutaceous, impunctate.

Terminalia: Genital capsule weakly alutaceous, with few scattered punctures, apical margin nearly straight; gonostylus as illustrated (fig. 233).

Length of body: 5.25.

TYPE DATA.—The type male (BrM) was described by Walker from Rio de Janeiro.

SPECIMENS STUDIED.—1 male:

PARAGUAY: Horqueta, May 27, 1935, A. Schultze (JCL).

DISCUSSION.—Dr. China's (MS) notes on the type enabled the author to associate the name *rubrifemur* with the present species.

This species and the other three that run into couplets 7 and 8 of the key to species appear to be closely related but are represented by very few specimens. Since two of these are known only from females and two from males, perhaps more information will show them to be the opposite sexes of only two species. This should not be especially surprising in view of the amount of sexual dimorphism that occurs within the subgenus.

Pangaeus (Pangaeus) rugotum, new species

PLATE FIGURE 73

DIAGNOSIS.—The numerous longitudinal rugae on the posterior third of the calli (fig. 73) identify this form within the genus.

DESCRIPTION.—Based on two females. FEMALE: Oval, widest behind midlength.

Head: Length more than two-thirds width, 1.05:1.45; interocular width, 0.95; anterior outline semicircular, clypeus as long as juga, strongly narrowed apically; surface shining, impunctate; juga depressed medially, with four submarginal punctures, two close-set in front of eye and two more widely set distally; ocelli moderate, separated from eye by space about three times transverse ocellar width; jugum ventrally and maxillary plate, except posterior margin, polished, impunctate. Antennal segments: I, 0.31(0.30–0.32); II, 0.24(0.23–0.26); III, 0.41(0.40–0.42); IV, 0.47(0.46–0.49); V, 0.54(0.52–0.56). Bucculae about half as high as labial II; labium reaching between or just beyond middle coxae. Labial segments: I, 0.53(0.50–0.56); II, 0.76(0.76–0.77); III, 0.47(0.46–0.48); IV, 0.43(0.43–0.44).

Pronotum: Length more than half width, 1.46(1.43–1.49):3.07(2.95–3.20); anterior margin deeply, doubly emarginate; lateral margin entire, curved from near base; transverse impression submedian, depressed across full width, marked by row of small, close-set punctures; anterior lobe distinctly punctate laterally, discally obsoletely rugulose, posterior third of calli with numerous close-set, longitudinal rugae extending into transverse impression; posterior lobe with few widely separated small punctures, especially medially.

Scutellum: Length little less than width, 1.75(1.69–1.82):1.96(1.89–2.03); disc polished, with few, widely scattered punctures.

Hemelytron: Clavus and corium shining; clavus impunctate or with incomplete row of obsolete punctures; mesocorium with few punctures in impressed line paralleling claval suture and sometimes basal half of second such lines, elsewhere feebly or not punctured; exocorium impunctate; costa slightly reflexed, with one setigerous puncture; membranal suture straight, lateral margin very feebly or not pro-

duced; membrane longer than basal width, slightly surpassing apex of abdomen.

Propleuron: Faintly alutaceous, with few punctures in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium reaching into posterolateral angle but not quite reaching lateral margin of segment; lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium straight; lateral area impunctate.

Legs: Not especially modified, with five spines on posteroventral margin.

Sternites: Polished, impunctate.

Length of body: 5.82(5.67-5.97).

TYPE DATA.—Holotype female (USNM 64424), "Corumba, Matto Grosso Brazil." Paratype: Vilcanota, Peru, H. G. Barber Collection, 1 female (USNM).

DISCUSSION.—The impunctate head with four submarginal setigerous punctures on each side, the reduced punctation of the scutellum and coria and the failure of the mesopleural evaporatorium to reach all the way to the lateral margin of the segment suggests that this species is very close to the lone male on which the new species *punctinotum* is based, and perhaps may even be the female of that species. However, the pronotal punctation and sculpturing of the two forms plus the presence of but a single costal setigerous puncture in *rugonotum* is of sufficient worth to separate the two forms until biological evidence is available to indicate their sameness.

Pangaeus (Pangaeus) semibrunneus, new species

PLATE FIGURE 236a

DIAGNOSIS.—The presence of a complete, submarginal row of setigerous punctures on each jugum plus the abundant moderate-sized but distinct punctures on the mesocorium will permit placement of this form within the subgenus.

DESCRIPTION.—COLOR: Head, thorax, and appendages light brown; hemelytra, scutellum, and abdomen dark brown to piceous.

MALE (from two specimens): Oval to subparallel.

Head: Length greater than width, 1.04(1.04-1.04):1.38(1.36-1.40); interocular width, 0.85(0.84-0.86); anterior outline broadly rounded, slightly truncated apically, clypeus almost as long as juga, distinctly narrowed apically; surface distinctly convex, shining, impunctate; juga with coarse, transverse rugae; ocelli distinct, separated from eye by less than twice ocellar width; jugum ventrally and maxillary plate polished, impunctate. Antennal segments: I, 0.30(0.30-0.30); II,

0.19(0.18–0.20); III, 0.40(0.39–0.41); IV, 0.36(0.35–0.38); V, 0.39(0.39–0.40). Bucculae about two-thirds as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.52(0.52–0.52); II, 0.85(0.82–0.89); III, 0.75(0.73–0.77); IV, 0.44(0.42–0.47).

Pronotum: Length about one-half width, 1.55(1.55–1.56):3.17(3.15–3.20); anterior margin simply, shallowly emarginate; lateral margin straight on basal two-thirds, incurved apically, with 11 to 12 setigerous punctures submarginally; transverse impression obsolete to moderately distinct, marked on lateral third by row of distinct, close-set punctures; anterior lobe impunctate except for a few obsolete, minute punctures laterally; posterior lobe with very few, widely scattered punctures on anterior half.

Scutellum: Length less than width, 1.82(1.80–1.84):2.01(1.99–2.04); disc shining, with fine punctures scattered between sparse, moderately coarse punctures.

Hemelytron: Clavus and corium shining, both with numerous fine but distinct punctures, those near claval suture on corium forming a single line of coarser punctures; costa with about ten setigerous punctures; membranal suture straight, lateral angle not prolonged; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: Polished, impunctate; prosternal carinae sharp, less than one-fourth as high as labial II.

Mesopleuron: Lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium concave; lateral area convex, impunctate.

Legs: Hind tibia minutely denticulate proximad of obtuse, sub-basal emargination on posteroventral margin; spines of that margin longer and much finer than those of dorsal margin.

Sternites: Polished, with few scattered punctures on lateral third.

Terminalia: Genital capsule with patch of numerous minute punctures either side of midline, lateral angles impressed and rugulose; apical margin entire; gonostylus as illustrated (fig. 236a).

Length of body: 5.69(5.58–5.80).

FEMALE: Similar to male, but without subbasal angulation on posteroventral margin of hind tibia.

Head: Length-width ratio, 1.02(0.98–1.04):1.36(1.32–1.44); interocular width, 0.91(0.91–0.92). Antennal segments: I, 0.29(0.28–0.31); II, 0.33(0.33–0.33); III, 0.40(0.38–0.42); IV, 0.38(0.38–0.38); V, 0.40(0.37–0.42). Labial segments: I, 0.62(0.60–0.66); II, 0.89(0.88–0.90); III, 0.76(0.73–0.79); IV, 0.31(0.30–0.32).

Pronotum: Length-width ratio, 1.66(1.60–1.74):3.64(3.44–3.76).

Scutellum: Length-width ratio, 2.15(2.00–2.40):2.16(2.04–2.36).

Length of body: 5.64(5.52–5.80).

TYPE DATA.—Holotype male and allotype female (both UnivTuc), "Tucuman Argentina Amaicha del Valle, Nov. 1945, A. Willink." Paratypes: One male, nine females, as follows:

ARGENTINA: *Tucumán*: Amaicha del Valle, November 1945, A. Willink, 1 male, 5 females (UnivTuc, USNM, RCF). Concepción, December 4, R. Golbach, 1 female (UnivTuc). *Salta*: Cafayate, Feb. 20, 1949, H. J. Hayward, 1 female (UnivTuc); Mar. 7, 1939, Biraben-Scott, 2 females (UnivNac, RCF).

DISCUSSION.—The presence of a submarginal row of peg-bearing setigerous punctures on the jugum sets apart this species and *subtilius* from all other members of the subgenus. But since this feature appears elsewhere within this and other genera it must be an adaptive character and therefore should not be used to erect categories in contradiction to the less variable, phylogenetically significant, nonadaptive structure of the evaporatorium and subapical impressed line of the pronotum. The stout form, transverse rugae on the head, the numerous lateral hairs and the differentiated spines of the posterior tibia are suggestive of *semibrunneus* and *xanthopus*, while the subbasal angulation on the posteroventral margin of the hind tibia reminds one of *aethiops* and certain other species within the subgenus.

On the basis of the locality, the submarginal row of pegs on the jugum, and a reluctance to accept Signoret's work as accurate, the author considered this form to be *subtilius*. However, Dr. Blöte's comparison of specimens with the type of that species showed their distinctness.

Pangaeus (Pangaeus) aethiops (Fabricius)

PLATE FIGURES 14, 24, 46, 103, 127, 155, 177, 235

Cimex aethiops Fabricius, 1787, p. 296.

Cydnus aethiops Fabricius, 1803, p. 186.

Cydnus serripes Westwood, 1837, p. 19. New synonymy.

Aethus ? *aethiops* Walker, 1868, p. 534.

Pangaeus aethiops Stål, 1868, p. 7.

Cydnus serripes "loc. incert." Stål, 1876, p. 26.

Aethus margo Dallas, 1851, p. 116.—Walker, 1867, p. 151. New synonymy.

Pangaeus margo Stål, 1862, p. 95; 1876, p. 19.—Uhler, 1877, p. 387.—

Distant, 1880, p. 5, pl. 2, fig. 15.—Lethierry and Severin, 1893, p. 70.—Banks, 1910, p. 100.—Van Duzee, 1917, p. 20.—Torre Bueno, 1939, p. 180.

Pangaeus [!] *confusus* Signoret, 1881a, p. 642; 1882, p. 249, pl. 8, fig. 107 (not 108 as stated in text). New synonymy.

Pangaeus [!] *serripes* Signoret, 1882, p. 247, pl. 8, fig. 106.

Pangaeus [!] *margo* Signoret, 1882, p. 248, pl. 8, fig. 108 (not 107 as stated in text).

Pangaeus serripes Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 70.

Pangaeus confusus Uhler, 1886, p. 3.

DIAGNOSIS.—The male is easily recognized within the genus by the deep medioapical emargination of the genital capsule (fig. 177); the female is not so positively identified, even within the subgenus, except

that the large ocelli, which are separated from an eye by less than the transverse diameter of an ocellus (fig. 46), appear to be serviceable for that purpose within the subgenus.

DESCRIPTION.—MALE: Oval, widest near midlength.

Head: Length about two-thirds width, 1.39(1.15–1.56):2.14(1.84–2.36); interocular width, 1.15(0.98–1.30); anterior outline a slightly elongate semicircle, juga as long as or longer than clypeus and nearly or quite contiguous beyond its apex; surface polished, with few scattered minute punctures, apex distinctly recurved; juga longitudinally impressed medially, with one submarginal setigerous puncture immediately anterior to eye; ocelli large, separated from eye by space less than transverse ocellar width (fig. 46); jugum ventrally and maxillary plate, except posterior fourth, polished, impunctate. Antennal segments: I, 0.39(0.33–0.43); II, 0.41(0.33–0.46); III, 0.57(0.47–0.63); IV, 0.69(0.56–0.76); V, 0.78(0.66–0.83). Bucculae (fig. 24) almost as high as labial II; labium reaching between or slightly beyond middle coxae. Labial segments: I, 0.70(0.58–0.83); II, 1.19(0.93–1.30); III, 0.97(0.80–1.06); IV, 0.56(0.50–0.62).

Pronotum: Length more than half width, 2.47(2.15–2.86):4.55(3.84–5.04); anterior margin shallowly, doubly emarginate; lateral margin nearly straight on basal two-thirds, with four or five setigerous punctures submarginally; transverse impression weak but evident, marked by medially interrupted row of punctures; anterior lobe with median line finely impressed on apical half, impunctate except for variable lateral patch; posterior lobe with several to many punctures scattered across full width, most abundant medially.

Scutellum: Length equal to or slightly longer than width, 2.97(2.34–3.16):2.79(2.34–3.16); disc polished, with numerous punctures scattered nearly to apex.

Hemelytron: Clavus and corium alutaceous; clavus with one complete and sometimes a second incomplete row of punctures; mesocorium with one complete and sometimes another incomplete or complete row of punctures, elsewhere impunctate or with obsolete to distinct punctures, especially basally and at outer apical angle; exocorial punctures likewise varying from absent to distinct; costa with two setigerous punctures; membranal suture straight, lateral angle feebly or not produced; membrane longer than basal width, surpassing apex of abdomen.

Pleuron: Weakly alutaceous, punctured in depression and sometimes anterior to acetabulum; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area with few or no punctures.

Metapleuron: Lateral margin of evaporatorium weakly or not concave; lateral area impunctate.

Legs: Posteroventral margin of hind tibia with fine tubercles basal of distinct angulation at basal sixth (fig. 155) and three or four sub-apical spines.

Sternites: Without distinct punctures except in spiracular area.

Terminalia: Genital capsule laterally impressed and more distinctly punctate, apical margin slightly elevated either side of broad, deep, U-shaped median emargination (fig. 177); gonostylus as illustrated (fig. 235).

Length of body: 8.53(7.34-9.73).

FEMALE: Similar to male but posterior tibia without subbasal angulation and with five or six subapical spines on posteroventral margin.

Head: Length-width ratio, 1.28(1.13-1.56):1.93(1.67-2.27); interocular width, 1.10(1.03-1.24). Antennal segments: I, 0.36(0.28-0.43); II, 0.36(0.28-0.43); III, 0.52(0.50-0.58); IV, 0.62(0.53-0.76); V, 0.68(0.63-0.80). Labial segments: I, 0.64(0.60-0.80); II, 1.09(1.00-1.23); III, 0.83(0.71-0.93); IV, 0.51(0.46-0.58).

Pronotum: Length-width ratio, 2.31(2.02-2.86):4.29(3.91-5.06).

Scutellum: Length-width ratio, 2.64(2.40-3.20):2.60(2.28-3.20).

Length of body: 7.91(7.01-9.45).

TYPE DATA.—Fabricius' type (Copen) was from "Cajenne" in French Guiana. The type (OxUniv) of *Cydnus serripes* was described by Westwood from "Insula Sti. Vincentii"; Dallas' type of *Aethus margo*, a male (BrM) without posterior tibiae, was reported from "Columbia [!]." Since Signoret proposed the name *confusus* for those Mexican specimens reported by Stål (1862, p. 95) as *margo*, those specimens must constitute the type series and probably are now in the Stål collection in the Naturhistoriska Riksmuseum, Stockholm.

SPECIMENS STUDIED.—43 males, 67 females.

MEXICO: *Chiapas*: Finca Esperanza, La Esperanza; May. *Guerrero*: Iquala; September. *México*: Tejupilco; September. *San Luis Potosí*: El Salto, Tamazunchale, Valles; May, June. *Yucatán*: Colonia Yucután; August.

GUATEMALA: Finca El Cipres, south of Flores, Sacapulas; June.

PANAMA: Progreso. Canal Zone: Madden Dam.

HONDURAS: "Ratuch River"; June.

NICARAGUA: Managua.

GRENADA: Balthazar (windward side), Grand Etang (leeward side).

TRINIDAD: Near Port of Spain, St. Augustine; August.

FRENCH GUIANA: Cayenne; February.

BRITISH GUIANA: Source of Río Essequibo.

VENEZUELA: Mérida, Caracas.

COLOMBIA: "W. Colomb." Bonda, Cali, Muzo, Santa Marta; May, November.

ECUADOR: Balzapamba; March.

BRAZIL: Grajaú, Manáos, Matto Grosso, Mirim, Pará, Pernambuco, Rio de Janeiro, Santa Cruz, Santarém, São Paulo, Taperina; July to October.

PERU: Yurimaguas; April, June.

PARAGUAY: Horqueta, Sapucay; February, July.

BOLIVIA: Santa Cruz de la Sierra, Provincia de Sara; November.

ARGENTINA: El Quemado.

URUGUAY: Corralitos; January.

DISCUSSION.—Personal examination of Fabricius' type, a male, and Westwood's type of *serripes*, a headless male, leaves no doubt about their identity; also, they are identical.

The wide geographic range and structural variability of *aethiops* has permitted the forming of many synonyms. Even so, this is quite surprising in view of the strong features which clearly define it: (1) strongly emarginate apical margin of the male genital capsule; (2) the subbasal angulation on the posteroventral margin of the hind tibia; (3) the large ocelli set close to the eyes; and (4) the mesopleural evaporatorium which extends all the way to the lateral margin of the segment. Not one of the descriptions of *aethiops* or its synonyms pointed out one of these characters, although Signoret's illustration of the pleurae did show the extent of the evaporatorium.

The type of *Aethus margo* Dallas is a male (BrM). According to notes furnished by Dr. China it lacks the hind tibiae but does have large ocelli and an apical emargination on the genital capsule, and so must fall as a synonym of *aethiops*. While the types of Signoret's *confusus* have not been located, the various features which he used to separate it from *margo* fall within the range of variation exhibited by *aethiops* as here defined and so *confusus* cannot be maintained as a distinct species.

***Pangaeus (Pangaeus) subtilius* (Signoret), new combination**

Homaloporus subtilius Signoret, 1881b, p. 331, pl. 11, fig. 49.—Lethierry and Severin, 1893, p. 65.

Homaloporus subtilisus [!] Uhler, 1886, p. 3.

DIAGNOSIS.—Within the subgenus, *P. subtilius* may be recognized by having on the submargin of the jugum a complete row of setigerous punctures (at least five or six of these having pegs) and virtually no punctures on the mesocorium.

DESCRIPTION.—In the absence of specimens for study, the original description is quoted:

Cordoba (Cong. Arg.).—Long. 5 mill., larg. $2\frac{3}{4}$ mill (Musée royal de Leyda).

Ovale; d'un brun marron foncé, brillant, finement et discrètement striolé et ponctué.

Tête arrondie, bordée de spinules et de cils, six ou sept spinules, cinq ou six cils, non compris les ordinaires du vertex et de la naissance du rostre. Antennes jaunes à la base, avec le deuxième article plus court que le troisième. Rostre jaune, atteignant les pattes intermédiaires, le premier article entièrement caché (vu de côté) par les carènes rostrales. Prothorax avec les côtés subparallèles et ciliés, glabre sur le disque, ne présentant qu'une ligne de points sur l'impression transverse et deux très fines stries faiblement ponctuées sur le disque postérieur, le bord antérieur lisse, avec un sillon bien marqué. Écusson étroitement arrondi

à son extrémité, qui est légèrement impressionnée: disque discrètement ponctué. Élytres avec la corie et l'espace marginal presque lisses, la ponctuation étant très fine, les séries près des nervures très senties: plaque mate supérieure atteignant à la base le bord latéral, presque lisse, l'inférieure avec la ligne latéral presque droite, à peine striée: les espaces lisses, glabres. Canal ostiulaire plus large vers le sommet qu'à la naissance et terminé par un lobe arrondi, échancré en arrière avec une petite valve arrondie.

Cette espèce est très voisine de l'*Hom. congruus*, dont elle diffère par l'ostiole et surtout par le lobe médian qui ne présente pas les deux spinules.

TYPE DATA.—The type (Rijks) was reported from Córdoba, Argentina.

DISCUSSION.—Dr. Blöte compared certain specimens with the type and made possible the present definition of this form and pointed out the differences between it and *P. semibrunneus*, new species. He confirmed most of Signoret's description of the species, but reported that there are only two setigerous punctures on the left costa and three on the right—information that made it possible to establish that Signoret's sketch does not differentiate the hairs of the costa from those of the abdomen so that there appears to be nine present on each costa. Dr. Blöte further pointed out that the head does not have distinct, transverse rugae such as are present on the head of the new species *semibrunneus*.

Genus *Prolobodes* Amyot and Serville

Lobostoma Amyot and Serville, 1843, p. 87 (nec Berthold, 1827, p. 528, in Trematoda; nec Rafinesque, 1831, p. 5, in Coelenterata; nec Gundlach, 1840, p. 356, in Mammalia).

Prolobodes Amyot and Serville, 1843, p. 676.

Discostoma Scudder, 1890, p. 452.

DIAGNOSIS.—This genus is remarkable among all genera of Cydnidae, except *Scaptocoris*, by reason of the large, semicircular, foliaceous lobe on the second segment of labial II (fig. 36). It is easily separated from *Scaptocoris* by many characters, not the least of which is the fact that the members of *Prolobodes* have the anterior tarsi inserted at the tip of the tibia (fig. 122) instead of near middle of tibia as in *Scaptocoris* (fig. 115).

DESCRIPTION.—Size very large (11.5–17.0), dorsum nearly as strongly convex as venter, shape oval, greatest width posterior to midlength.

Head: Length about two-thirds width, oblique, flattened except for tumid interocular area and strongly reflexed juga (fig. 36); jugal margins entire, with submarginal row of thirteen to sixteen coarse, close-set setigerous punctures bearing long hairlike setae but no blunt, peglike setae; eyes prominent; ocelli large, situated on or behind line connecting posterior margins of eyes, separated from

latter by space not as great as transverse ocellar width; antennae 5-segmented, short, not reaching posterior margin of pronotum, II shortest, III, IV, and V subequal, longer than I; bucculae almost as high as labial II (without lobe), evanescent posteriorly; labium reaching between middle coxae (fig. 36), II longest, strongly curved apically and with large, semicircular, foliaceous lobe, this often hidden between anterior coxae, IV shortest.

Pronotum: Length more than half width; anterior margin moderately, doubly emarginate; lateral margin straight on basal half, with submarginal row of 14 to 19 setigerous punctures; transverse impression submedian, impressed or not, marked by row of distinct punctures; anterior lobe subapically with punctate impressed area which is larger in males than females.

Scutellum: Wider than long; width of broadly rounded apex less than half the length of membranal suture.

Hemelytron: Corial areas well-defined and, except for limited area on exocorium, more or less uniformly punctate throughout; membranal suture weakly concave, lateral angle noticeably produced; membrane almost two-fifths hemelytral length, its length greater than basal width, surpassing apex of abdomen.

Propleuron: Finely punctate in depression; prosternal carinae very low, a thick, blunt ridge.

Mesopleuron (fig. 110): Flat, impunctate, evaporatorium reaching into posterolateral angle, attaining lateral margin of segment.

Metapleuron (fig. 110): Flattened to slightly convex, osteolar peritreme reaching half-way across segment, without terminal modification, osteole opening posteriorly; evaporatorium occupying mesal two-thirds of segment.

Legs: Moderately large; anterior tibia (fig. 122) not surpassing tarsal insertion, dorsally with nine to ten stout, blunt spines; posterior tibia strongly compressed, curved, with rows of spines restricted to dorsal and ventral margin, spines of posteroventral margin much longer and more slender than those of dorsal margin; tarsal I longest, II shortest.

Sternites: Polished, with few punctures, especially laterally; each segment laterally with one or two setigerous tubercles submarginally.

Terminalia: Male genital capsule slightly emarginate at middle apex.

One nymph, a third-instar, was available for study. It showed the semicircular foliaceous lobe on the labium, the submarginal row of hairlike setae on the head, and the differences in the vestiture of the posterior tibia.

TYPE OF GENUS.—Of *Lobostoma* Amyot and Serville (1843), *Cydnus giganteus* Burmeister (1835, p. 375), designated by Kirkaldy (1903,

p. 232). Since *Prolobodes* and *Discostoma* were proposed to replace the preoccupied *Lobostoma*, they must both take *Cydnus giganteus* as type, by objective synonymy.

DISTRIBUTION.—Available specimen records indicate this genus occurs in tropical America from Nicaragua in the north to southern Brazil and Paraguay in the south.

DISCUSSION.—There can be little doubt about the species of this genus being closely allied to those of *Cyrtomenus*, but the foliaceous, semicircular lobe on labial II sets them apart morphologically and probably also represents a biological difference. Just what might be the significance of such a structure is conjectural. Within it may be seen the coiled, elongate stylets. This would suggest a peculiarity in feeding habits. China (1931) reported that such coiling of the stylets appeared in three other families of the Hemiptera, the Aradidae, Termitaphididae and some Plataspidae. He further pointed out that although these groups are not otherwise closely related they all feed on fungi. Could it be that the members of *Prolobodes* are also fungus-feeders? Or do they employ these long slender structures in probing for roots and thus avoid the necessity of burrowing to each root from which they feed? Only observations on living animals will conclusively determine the exact use of such a structure.

Key to the known species of *Prolobodes*

1. Anterior pronotal lobe with not more than five or six coarse punctures laterally, usually with none **gigas** (Signoret) (p. 512)
Anterior pronotal lobe with 15 or more coarse, deep punctures laterally . . . 2
2. Pronotum with a weak, transverse impression near midlength, this with numerous crowded, coarse, deep, impressed punctures which often show longitudinal rugae between them (fig. 11) . . . **giganteus** (Burmeister) (p. 510)
Pronotum without a transverse impression near midlength, punctures in that area coarse, deep, but neither crowded nor impressed nor with rugae between them **reductum** (Amyot and Serville) (p. 513)

Prolobodes giganteus (Burmeister)

PLATE FIGURES 11, 17, 18, 36, 110, 122, 141, 237

Cydnus giganteus Burmeister, 1835, p. 375.

Lobostoma giganteus Amyot and Serville, 1843, p. 88.

Prolobodes giganteus Amyot and Serville, 1843, p. 676, pl. 2, fig. 6.—Lethierry and Severin, 1893, p. 62.

Lobostoma gigantea Walker, 1867, p. 147.—Stål, 1876, p. 18.—Distant, 1880, p. 1.

Lobostoma giganteum Dallas, 1851, p. 111.—Signoret, 1881b, p. 194, pl. 6, fig. 14.

DIAGNOSIS.—The heavy pronotal punctation, especially on the sides of the anterior lobe, plus the presence of a weakly impressed transverse impression on the pronotum limit this species within the genus.

DESCRIPTION.—MALE:

Head: Length about two-thirds width, 2.45(2.38–2.58):3.66(3.56–3.78); interocular width, 2.30(2.22–2.41); jugum dorsally polished, with distinct, radiating rugae and numerous minute punctures; juga ventrally irregularly and usually weakly rugulose. Antennal segments: I, 0.79(0.70–1.02); II, 0.54(0.46–0.63); III, 0.95(0.83–1.02); IV, 0.97(0.95–1.01); V, 0.99(0.90–1.10). Labial segments: I, 1.26(1.22–1.30); II, 1.85(1.78–1.91); III, 1.53(1.45–1.59); IV, 1.07(1.00–1.13).

Pronotum: Length more than half width, 5.23(4.78–5.57):9.48(8.83–10.10); transverse impression weak but evident across entire width and with numerous crowded, sunken punctures; anterior lobe with numerous (20 or more) moderate punctures laterally; posterior lobe on anterior half with numerous punctures sparser and slightly finer than those of transverse impression.

Scutellum: Wider than long, 6.21(5.76–6.73):5.52(5.12–5.97); disc with numerous, in part contiguous, punctures.

Propleuron, mesopleuron, and metapleuron: As described for genus.

Legs and sternites: As described for genus.

Terminalia: Gonostylus as illustrated (fig. 237).

Length of body: 15.52(14.40–15.72).

FEMALE: Rather similar to male, but anterior pronotal impression weaker and less extensive and measurements more variable.

Head: Length-width ratio, 2.46(2.21–2.60):3.63(3.21–3.94); interocular width, 2.29(2.06–2.40). Antennal segments: I, 0.66(0.62–0.70); II, 0.50(0.40–0.60); III, 0.94(0.90–0.96); IV, 0.89(0.83–0.96); V, 0.94(0.88–1.01). Labial segments: I, 1.23(1.01–1.33); II, 1.80(1.63–1.96); III, 1.57(1.46–1.66); IV, 1.09(1.01–1.18).

Pronotum: Length-width ratio, 4.99(4.35–5.46):9.35(7.64–10.05).

Scutellum: Width-length ratio, 5.88(4.95–6.45):5.53(4.52–6.00).

Length of body: 14.64(12.89–16.18).

TYPE DATA.—The author has not yet located the types which Burmeister described "von Para und Siaras," Brazil.

SPECIMENS STUDIED: 8 males, 12 females.

BRAZIL: Caviana, Chapada, Corumbá, Rio San Francisco, Saltada Cruzed, Salta Grande, São Paulo; May, October to December.

BOLIVIA: Provincia de Sara; November.

PARAGUAY: Horqueta, Villarrica, Trinidad; October to December.

DISCUSSION.—Burmeister's choice of a name for this species was accurate because some of its individuals are the largest cydnids in the world, both in length and bulk. In size it is rivalled only by the other species of the genus and a few of the larger species of *Cyrtomenus*.

Prolobodes gigas (Signoret)

PLATE FIGURE 238

Lobostoma gigas Signoret, 1881b, p. 195, pl. 6, fig. 15.*Prolobodes gigas* Lethierry and Severin, 1893, p. 62.

DIAGNOSIS.—The absence of prominent, coarse punctures laterally on the anterior lobe of the pronotum (one specimen showed a few, less than six) marks this species from the other two within the genus.

DESCRIPTION.—MALE:

Head: Length nearly two-thirds width, 2.49(2.23–2.63):3.71(3.56–3.88); interocular width, 2.17(2.08–2.22); juga dorsally with radiating rugae weak to obsolete, impunctate or with obsolete minute punctures. Antennal segments: I, 0.75(0.73–0.80); II, 0.61(0.54–0.70); III, 0.96(0.93–1.01); IV, 1.03(0.98–1.07); V, 1.10(1.06–1.15). Labial segments: I, 1.31(1.16–1.38); II, 1.75(1.72–1.82); III, 1.59(1.39–1.76); IV, 1.09(1.06–1.15).

Pronotum: Length more than half width, 5.07(4.64–5.47):8.94(8.37–9.31); transverse impression absent or weakly indicated laterally, marked by a band of several, usually well separated punctures; anterior lobe not or only very feebly and minutely punctured (one specimen with a few moderate punctures laterally); posterior lobe with a few widely separated punctures on anterior half.

Scutellum: Wider than long, 5.72(5.40–6.27):5.21(4.80–5.39); disc with several irregularly but distinctly separate d, moderate punctures.

Propleuron, mesopleuron, and metapleuron: As described for genus.

Legs and sternites: As described for genus.

Terminalia: Gonostylus as illustrated (fig. 238).

Length of body: 15.15(13.94–15.90).

FEMALE: Similar to male but jugal rugae and anteapical pronotal impression weaker, measurements mostly smaller.

Head: Length-width ratio, 2.25(2.18–2.31):3.49(3.37–3.68); interocular width, 2.09(2.02–2.18). Antennal segments: I, 0.70(0.66–0.73); II, 0.55(0.53–0.58); III, 0.85(0.84–0.87); IV, 0.93(0.92–0.96); V, 1.04(1.01–1.08). Labial segments: I, 1.23(1.22–1.26); II, 1.72(1.70–1.74); III, 1.52(1.40–1.64); IV, 1.06(1.02–1.10).

Pronotum: Length-width ratio, 4.20(3.91–4.48):7.72(7.23–8.17).

Scutellum: Width-length ratio, 5.07(4.65–5.31):4.79(4.61–5.10).

Length of body: 13.26(12.60–13.68).

TYPE DATA.—Signoret gave the type locality as "Santa-Fe-de-Bogata." A female (Wien) labeled "Bogata" and "*gigas*" is marked with a red type label. The three legs from the right side of the type are glued to a small card on another pin; antennals II–V are missing from both sides, as are all middle and hind tarsi; all bristles have been abraded from head, pronotum and costa.

SPECIMENS STUDIED.—6 males, 5 females:

PANAMA: Canal Zone: Barro Colorado, June 22, 1924, N. Banks, 1 female (MCZ); November, M. Bates, 1 male (MCZ); date unknown, Dodge (labeled *Cyrtomenus grossus*), 1 male (MCZ); Nov. 25, 1893, E. I. Huntington, F.301125, 1 male (AmM). Cocoli, Aug. 21, 1946, N. L. H. Krauss, 1 male, 1 female (USNM). Gatún, August 1922, 1 female (USNM). Panama: La Chorrera, Busck, 1 female (USNM).

NICARAGUA: Near Bluefields, Aug. 31, 1892, W. Richmond, 1 female (USNM).

COLOMBIA: Bogotá, 1 female (Wien). Don Amó, July, Acc. No. 19992, 2 males (Car).

Prolobodes reductum (Amyot and Serville)

PLATE FIGURE 239

Lobostoma reductum Amyot and Serville, 1843, p. 88.—Signoret, 1881b, p. 195, pl. 6, fig. 16.

Prolobodes reductus Amyot and Serville, 1843, p. 676.—Lethierry and Severin, 1893, p. 62.

Lobostoma reducta Stål, 1876, p. 18.

DIAGNOSIS.—The presence of numerous punctures laterally on the anterior lobe of the pronotum plus the lack of an impressed transverse impression set this species apart from the other two in the genus.

DESCRIPTION.—MALE:

Head: Length about two-thirds width, 2.29(2.21–2.40):3.42(3.36–3.58); interocular width, 2.16(2.15–2.20); jugs dorsally with very weak, radiating rugae and usually obsolete minute punctures. Antennal segments: I, 0.72(0.63–0.80); II, 0.63(0.60–0.70); III, 0.86(0.79–0.90); IV, 1.01(0.93–1.10); V, 1.05(1.01–1.09). Labial segments: I, 1.20(1.13–1.26); II, 1.73(1.66–1.77); III, 1.50(1.43–1.59); IV, 1.04(0.96–1.14).

Pronotum: Length more than half width, 4.79(4.49–5.18):8.15(7.50–8.70); transverse impression absent or very weak laterally; anterior lobe with 15 or more punctae laterally; posterior lobe with few widely scattered punctae on anterior half.

Scutellum: Wider than long, 5.35(4.95–5.67):4.98(4.65–5.25); disc with numerous, irregularly spaced punctures, some tending to coalesce and form transverse rugae between them.

Propleurae, mesopleurae and metapleurae: As described for genus.

Legs and sternites: As described for genus.

Terminalia: Gonostylus as illustrated (fig. 239).

Length of body: 14.01(13.27–14.58).

FEMALE: Similar to male but anterior pronotal impression weaker and measurements more variable.

Head: Length-width ratio, 2.25(2.08–2.47):3.34(3.09–3.74); interocular width, 2.08(1.95–2.21). Antennal segments: I, 0.71(0.66–0.78); II, 0.53(0.51–0.56); III, 0.76(0.73–0.81); IV, 0.90(0.80–0.98); V,

0.99(0.90–1.13). Labial segments: I, 1.15(1.08–1.30); II, 1.66(1.62–1.74); III, 1.43(1.33–1.74); IV, 1.01(0.98–1.05).

Pronotum: Length-width ratio, 4.38(3.60–5.08):7.60(6.63–8.67).

Scutellum: Width-length ratio, 5.18(4.50–5.81):4.88(4.27–5.42).

Length of body: 13.30(11.62–14.61).

TYPE DATA.—The type of this species was said by Amyot and Serville to have come from "Cayenne," French Guiana. Its present location is unknown to the author.

SPECIMENS STUDIED.—10 males, 9 females:

TRINIDAD: St. Benedict Mt., Tunapuna; September.

BRITISH GUIANA: Bartica District; June, July.

FRENCH GUIANA: Maroni River, St. Jean.

BRAZIL: Alagoinhas, Hyutanahã, Santarém, Taperhina.

PERU: "Achinamiza"; December.

BOLIVIA: Buena Vista, Ichilo, Santa Cruz, Provincia de Sara; November, December.

PARAGUAY: Villarrica.

DISCUSSION.—As originally proposed, this name appeared in parentheses in a paragraph following the treatment of *giganteus*. This apparently explains why several of the early workers overlooked it during their studies.

Genus *Cyrtomenus* Amyot and Serville

Cyrtomenus Amyot and Serville, 1843, p. 90.

Syllobus Signoret, 1879, p. clxxii. New synonymy.

DIAGNOSIS.—The lack of a distinct subapical stria from side to side on the pronotum, the compressed posterior tibia on which the spines of the posteroventral margin are longer and distinctly more slender than those on the dorsal margin, and the simple second labial combine to separate this genus from all others in the Western Hemisphere.

DESCRIPTION.—Size large, length of body 6.4–13.3 mm; shape oval, widest distinctly posterior to midlength; dorsum strongly and venter still more strongly convex.

Head: Nearly or about two-thirds as long as wide, oblique, flattened or convex above, with a distinct, marginal carina; juga equal to or longer than clypeus, converging and sometimes contiguous in front of the latter; margins rounded or sometimes triangularly produced either side of apex (fig. 58); a submarginal row of seven to twelve coarse punctures, each bearing a single long, tapering hairlike seta; ocelli moderate to large, situated on or slightly behind a line connecting hind margins of eyes, separated from eyes by less than twice the width of ocellus; antennae 5-segmented, II usually shortest (equal to III in *marginalis*), III and IV often subequal, V longer or shorter than IV;

bucculae low to moderately high, reaching nearly to base of head; labium variable in length, reaching to middle coxae or as far as base of abdomen, II compressed but without a semicircular foliaceous lobe above, II and III usually subequal and longer than I or IV.

Pronotum: Length about three-fourths width, narrowed from base; anterior margin moderately and broadly emarginate; lateral margins carinate, arcuate for full length or straight to weakly concave on basal half or more, submarginal row of 6 to 25 coarse, setigerous punctures; posterior margin broadly rounded; transverse impression near mid-length, varying from distinct to obsolete, usually marked with a row or band of coarse punctures; male of some species with a broad, shallow, median, subapical impression.

Scutellum: Width equal to or shorter than length, triangular, apex narrowed, narrower than half the length of the coriomembranal commissure; disc with widely, irregularly scattered fine or coarse punctures.

Hemelytron: Polished, more or less punctured throughout; corioclaval suture distinct; clavus usually with single row of coarse, close-set punctures for most of its length; costal margin with 0-22 setigerous punctures; membranal suture nearly straight; membrane almost two-fifths hemelytral length.

Propleuron: Surface polished or closely and finely punctured and/or striated, depression usually punctate; prosternal carinae low, obtuse, area between them sunken.

Mesopleuron: Flattened; evaporatorium extensive, reaching posterior and lateral margins of segment, sometimes entire (fig. 109) and sometimes interrupted by posterior, submarginal polished spur extending mesally from lateral area; posterior margin finely crenulate; mesosternum swollen and partly carinate along midline, with a number of long, fine hairs on apical half.

Metapleuron (fig. 109): Flat; evaporatorium reaching about two-thirds across segment; osteolar peritreme extended about half way across evaporatorium, without a differentiated apical structure, osteole opening posteriorly at base of subapical "hook."

Legs: Moderately long; anterior tibia (fig. 123) compressed, not surpassing tarsal insertion, dorsal margin with eight to ten stout, blunt spines; middle tibia stout, somewhat compressed, spines of posteroventral margin longer and more slender than those of dorsal margins; posterior tibia (fig. 142) distinctly compressed, spines restricted to dorsal and ventral margins, those of posteroventral margin longer and more slender than those of dorsal margin; tarsi 3-segmented, II shortest.

Sternites: Polished, with or without rows of setigerous punctures across segments; segmental sutures entire or finely crenulate.

The only nymphal material available was of the common North American species *ciliatus* (*mirabilis* auct., nec Perty). The several specimens involved possessed the submarginal setae on the head, the longer, finer spines on the posteroventral margin of the posterior tibia and the simple second labial segment.

TYPE OF GENUS.—*Cyrtomenus castaneus* Amyot and Serville (1843, p. 91), subsequently designated by Kirkaldy (1903, p. 230); of *Syllobus*, *Cyrtomenus emarginatus* Stål (1862, p. 95), monobasic. *C. castaneus* belongs to the common *Cyrtomenus* of the southern United States and therefore must fall as a synonym of Palisot de Beauvois' name *ciliatus*, which antedates it by 38 years.

DISTRIBUTION.—This genus is known to occur only in the Western Hemisphere where its included species range from lat. 40° N. in the eastern United States south and west through Central America to about lat. 35° S. in Argentina in South America.

DISCUSSION.—Stål's species *Cyrtomenus emarginatus*, for which Signoret (1879, p. clxxiii) erected the new genus *Syllobus*, is here being returned to its original assignment to *Cyrtomenus*. This is being done because *emarginatus* shows the same thick-set, convex form, the flattened and somewhat curved posterior tibia with the longer, more slender posteroventral spines, the short osteolar peritreme with a posterior, subapical hook but no differentiated terminal process, and the indicated closer relationship with *teter* whose placement in *Cyrtomenus* has been generally accepted. Signoret apparently based his separation of the two genera chiefly on the triangularly produced apices of the juga. While this is admittedly a conspicuous character in a family of superficially morphologically similar forms, it is hardly of sufficient fundamental value to outweigh the several features which ally *emarginatus* to *Cyrtomenus*.

The species included in this genus as thus understood may easily be arranged in two major groups on the basis of the shape of the mesopleural evaporatorium. In one group, which contains *emarginatus* and the other larger South American species, this evaporatorium is interrupted posteriorly by a submarginal, mesally directed spur from the lateral area which reaches more than half way to medial angle of segment; in the other group the mesopleural evaporatorium is not interrupted (fig. 109) by such a shining area. If these two groups are recognized as subgenera, as is proposed to be done here, the one with the uninterrupted mesopleural evaporatorium contains the genotype, *castaneus*, and will take the subgeneric name *Cyrtomenus*, while the other will take the name *Syllobus* which had previously been proposed for one of its included species, *emarginatus*.

Key to the subgenera of *Cyrtomenus*

1. Mesopleural evaporatorium posteriorly interrupted by shining, submarginal band *Syllobus* (p. 517)
2. Mesopleural evaporatorium entire (fig. 109) *Cyrtomenus* (p. 525)

Subgenus *Cyrtomenus* (*Syllobus*) Signoret, new status

Syllobus Signoret, 1879, p. clxxiii.

DIAGNOSIS.—This subgenus is best identified by the posterior, submarginal interruption of the mesopleural evaporatorium as described in key to subgenera.

DESCRIPTION.—Size usually larger, 8.99–13.95, but *marginalis* measures only 7.07 (known only from type female). Juga rounded and equalling or surpassing clypeus or triangularly produced apically and contiguous in front of it.

Pronotum: Laterally with 10 to 25 setigerous punctures submarginally; of males with a large, shallow, subapical, somewhat cruciform impression.

Sternites: Polished; submarginal or median rows of setigerous punctures on segments I to III, usually with small or moderate setae arising from them.

Legs: Posterior tibia not or but gradually and little expanded toward apex.

TYPE OF SUBGENUS.—*Cyrtomenus emarginatus* Stål (1862, p. 95), monobasic.

DISTRIBUTION.—The known range extends from Mexico south through the northeastern part of South America to southern Brazil; this being a more or less central part of the range of the entire genus. The Florida record for *emarginatus* by Torre Bueno (1939) requires confirmation, and at best probably represents only an adventive specimen.

DISCUSSION.—Of the four species belonging to this subgenus, two—*emarginatus* and *marginalis*—are well marked. The former is strongly characterized by the remarkable, triangular projections at the apices of the juga, and *marginalis* by the much more numerous setae on the sides of the pronotum and costa. The other two species, *teter* and *grossus*, are very closely allied to each other, but appear distinct on the basis of external features as well as on the shape of the gonostyli.

Key to species of subgenus *Cyrtomenus* (*Syllobus*)

1. Costa with 20 or more setigerous punctures . . . *marginalis* Signoret (p. 521)
- Costa with not more than 10 setigerous punctures 2
2. Apices of juga projecting as blunt to acute triangles (fig. 58).
emarginatus Stål (p. 518)
Apices of juga rounded, not projecting triangularly 3

3. Interocular width distinctly greater than length of head; costa not continuing or paralleling outline of lateral margins of pronotum, distinctly more flaring posteriorly. **grossus** Dallas (p. 520)
 Interocular width less than length of head; costa continuing or paralleling outline of lateral margins of pronotum **teter** (Spinola) (p. 523)

***Cyrtomenus (Syllobus) emarginatus* Stål, revived combination**

PLATE FIGURES 58, 240

Cyrtomenus emarginatus Stål, 1862, p. 95; 1876, p. 27.—Walker, 1867, p. 147.

Syllobus emarginatus Signoret, 1879, p. clxxiii; 1881b, p. 322, pl. 10, fig. 40.—

Distant, 1880, p. 4, pl. 3, fig. 6.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 64.—Torre Bueno, 1939, p. 177.

DIAGNOSIS.—This species can be recognized not only within this subgenus but among all the Cydnidae of the Western Hemisphere by the triangular projecting jugal apices (fig. 58).

DESCRIPTION.—MALE:

Head: Length more than half width, 1.79(1.62–2.47):2.84(2.60–3.13); interocular width, 1.57(1.49–1.62); anterior outline forming one blunt to acute angulation either side of median emargination (fig. 58); surface polished, jugum with numerous round and elongate punctures; ocelli large, separated from eye by space slightly more than half of transverse ocellar width; jugum ventrally polished, impunctate; maxillary plate with fine punctures and wrinkles. Antennal segments: I, 0.58(0.50–0.70); II, 0.39(0.30–0.50); III, 0.79(0.73–0.86); IV, 0.81(0.63–1.00); V, 0.95(0.83–1.00). Bucculae not more than half as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.92(0.83–1.00); II, 1.49(1.30–1.66); III, 1.39(1.26–1.66); IV, 1.06(0.93–1.20).

Pronotum: Length more than half width, 3.80(3.60–4.20):6.66(6.15–7.35); lateral margin straight on basal third or half, with submarginal row of six to nine setigerous punctures; transverse impression obsolete, marked by irregular, interrupted row of punctures; anterior lobe with very broad, shallow, median, subapical depression; this depression and sides of both lobes with coarse and fine punctures intermixed; posterior lobe with few large punctures medially.

Scutellum: Length little less than width, 4.14(3.76–4.49):4.31(3.90–4.81); impunctate across base and apex, disc with widely scattered, coarse, sunken punctures.

Hemelytron: Clavus and corium polished; clavus with single row of large punctures; mesocorial punctures forming two more or less distinct rows paralleling claval suture, elsewhere with scattered punctures; exocorial punctation more abundant and variable than that of mesocorium; costa with 0–3 setigerous punctures.

Propleuron: Polished, with numerous fine punctures in depression.

Mesopleuron: Evaporatorium interrupted posteriorly by shining submarginal band, lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium distinctly concave; lateral area impunctate.

Legs: Posterior tibia not expanded near apex.

Terminalia: Genital capsule strongly punctate laterally, apical margin with broad, shallow emargination medially; gonostylus as illustrated (fig. 240).

Length of body: 11.91(10.80–13.39).

FEMALE: Similar to male, but lacking median, subapical depression on anterior lobe of pronotum and often with pronotal punctation less dense; measurements averaging larger.

Head: Length-width ratio, 1.84(1.69–1.95):3.13(2.93–3.26); interocular width, 1.71(1.62–1.82). Antennal segments: I, 0.67(0.60–0.73); II, 0.49(0.40–0.53); III, 0.89(0.76–0.96); IV, 0.93(0.80–1.00); V, 1.04(0.96–1.10). Labial segments: I, 1.01(0.93–1.13); II, 1.60(1.33–1.72); III, 1.62(1.43–1.69); IV, 1.11(1.00–1.23).

Pronotum: Length-width ratio, 4.02(3.57–4.29):6.91(6.28–7.28).

Scutellum: Length-width ratio, 4.28(3.71–4.71):4.55(4.14–4.85).

Length of body: 12.96(11.25–13.95).

TYPE DATA.—Although no locality was specifically cited in the original description, the title of Stål's paper indicated the material had come from Mexico. The type has not been located. It is not with the Stål collection (Stock).

SPECIMENS STUDIED.—14 males, 30 females.

MEXICO: Veracruz: Atoyac, Córdoba, Jesús Carranza; May.

GUATEMALA: Morales; August.

BRITISH HONDURAS: Punta Gorda; July.

COSTA RICA: Caño; April.

FRENCH GUIANA: Mara River (Oyapock River); May.

BRAZIL: Chapada, Monlevade, Rio Madeira, Viçosa (Minas Gerais); May, September.

PERU: Tingo María; May.

ARGENTINA: Coronda (Santa Fé), Urundel (Salta); adults and nymphs, January.

DISCUSSION.—In citing this species as the sole inclusion in his new genus *Syllobus*, Signoret (1879) gave the original combination of this name as "*Cydnus emarginatus* Stal." This was undoubtedly an error as the insect was originally described as a member of the genus *Cyrtomenus*.

Except for an occasional notation of "collected at light," no ecological data were found on any of the specimens. Fifth-instar nymphs show the apical, bluntly triangular projections of the juga characteristic of the adults.

Torre Bueno's (1939) record for Florida needs verification, and may prove to have been based on an adventive.

Cyrtomenus (Syllobus) grossus Dallas

PLATE FIGURE 242

Cyrtomenus grossus Dallas, 1851, p. 111.—Walker, 1867, p. 148.—Stål, 1876, p. 18.—Distant, 1880, p. 2, pl. 2, fig. 14.—Signoret, 1881b, p. 198, pl. 16, fig. 18.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 62.

DIAGNOSIS.—The very great width of the interocular part of the head, which here is greater than the length of the head, will permit ready recognition of this species within the subgenus.

DESCRIPTION.—Based on one male and two females. MALE: Oval, outline of costa not continuing nor paralleling lateral margins of pronotum but more abruptly flaring posteriorly.

Head: Length more than half width, 1.69:2.79; interocular width, 1.89; surface shining, with faint, radiating rugae and minute, widely scattered punctures; ocelli small to moderate, separated from eye by space nearly or quite equalling twice transverse ocellar width; jugum ventrally and maxillary plate shining, impunctate. Antennal segments: I, 0.61; II, 0.46; III, 0.80; IV, 0.73; V, 0.74. Bucculae about half as high as labial II; labium surpassing posterior coxae, sometimes reaching to sternite IV. Labial segments: I, 1.26; II, 2.06; III, 2.19; IV, 1.63.

Pronotum: Length more than half width, 3.75:6.30; lateral margin straight on basal two-thirds, with submarginal row of twelve setigerous punctures; transverse impression virtually not impressed, marked by very irregular interrupted row of punctures; anterior lobe with intermixed coarse and fine punctures laterally and in subapical band paralleling anterior margin, with broad, shallow basin-like depression over most of middle third; posterior lobe with few minute and fewer coarse punctures scattered irregularly across width.

Scutellum: Length more than width, 4.20:3.91; disc polished, with about half dozen coarse punctures and several fine ones widely scattered.

Hemelytron: Clavus and corium shining; clavus with single row of coarse punctures and several finer scattered ones; mesocorium with one complete and one partial row of punctures paralleling claval suture; punctation elsewhere not dense, absent medially; exocorium less densely punctured than mesocorium; costa with five or six setigerous punctures; membrane distinctly surpassing apex of abdomen.

Propleuron: Polished, with few small punctures in depression.

Mesopleuron: Lateral area with few oblique rugulae.

Metapleuron: Lateral margin of evaporatorium oblique, concave; lateral area impunctate.

Legs: Posterior tibia distinctly compressed, gently widened to apical third.

Sternites: Polished, minutely punctate, with several short rugae in spiracular area.

Terminalia: Genital capsule shining, irregularly punctate, more densely so laterally, apical margin slightly concave either side of small, median angulation; gonostylus as illustrated (fig. 242).

Length of body: 10.71.

FEMALE: Similar to male but differing in less distinct subapical impression on pronotum, more distinct rugae on head, and more uniform punctation on apical two-thirds of corium.

Head: Length-width ratio, 1.93(1.91–1.95):2.91(2.86–2.96); interocular width, 2.02(2.02–2.02). Antennal segments: I, 0.61(0.60–0.62); II, 0.52(0.50–0.55); III, 0.73(0.67–0.80); IV, 0.71(0.70–0.73); V, 0.81(0.80–0.83). Labial segments: I, 1.19(1.16–1.23); II, 1.87(1.86–1.89); III, 2.27(2.12–2.42); IV, 1.64(1.56–1.72).

Pronotum: Length-width ratio, 3.75(3.75–3.75):6.30(6.28–6.32).

Scutellum: Length-width ratio, 4.86(4.80–4.92):3.90(3.90–3.91).

Length of body: 11.03(10.90–11.08).

TYPE DATA.—Dallas described the type (BrM) as being from "Columbia [!]."

SPECIMENS STUDIED.—1 male, 2 females.

MEXICO: *Chiapas*: Volcán de Tacaná, 9,100 feet, Mar. 30, 1939, P. Brodtkorb, 1 female (MMZ).

GUATEMALA: Purulhá, May 16, 1 female (USNM).

ECUADOR: El Topo, Oct. 5, 1944, E. J. Hambleton, 1 male (USNM).

DISCUSSION.—Notes based on the type and furnished by Dr. W. E. China in correspondence has enabled the author to associate Dallas' name with this form. *C. grossus* and *C. teter* are rather closely allied to each other but separate easily from the other two forms in the subgenus as indicated in the key. From each other, these forms may be best separated by the head and costal characters listed in the key, but in addition one may often use the greatly elongated labium, which in *grossus* always reaches sternite IV and in *teter* seldom surpasses the posterior coxae.

Cyrtomenus (Syllobus) marginalis Signoret

Cyrtomenus marginalis Signoret, 1881b, p. 201, pl. 6, fig. 21.—Lethierry and Severin, 1893, p. 62.

DIAGNOSIS.—The elongate second antennal segment, which is here equal in length to the third, or the large number of setigerous punctures in lateral submarginal row on the pronotum, or the numerous setigerous punctures on the costa will separate *marginalis* from all other members of the genus.

DESCRIPTION.—Based on one specimen seen, the type female.

Head: Length more than half width, 1.23:1.82; interocular width, 1.04; anterior outline broadly semicircular, juga longer than clypeus, converging and contiguous above its apex; eyes projecting beyond outline of head by about half transverse diameter; surface shining, jugum with prominent radiating rugae and numerous close-set, intermixed moderate and fine punctures; ocelli large, separated from eye by space about half transverse ocellar width; jugum ventrally smooth, impunctate; maxillary plate alutaceous, with irregular, coarse punctures posteriorly. Antennal segments: I, 0.36; II, 0.43; III, 0.43; IV and V missing. Bucculae not as high as labial II; labium broken, only first segment present (0.56).

Pronotum: With posterior margin partly broken, length more than half width, 2.42:4.19; lateral margin weakly arcuate from base to apical fourth, thence more abruptly incurved, with submarginal row of 25 setigerous punctures; transverse impression weak, with moderate punctures similar to and merging with punctation across entire anterior half of posterior lobe; latter with minute, widely scattered punctures on posterior half; anterior lobe with broad submarginal band apically and broader submarginal band laterally and narrower midline with punctures similar to those of transverse impression, subapical band with minute punctures interspersed.

Scutellum: Length less than width, 2.56:2.71; discal punctures irregular, much denser than those of mesocorium, slightly more abundant laterally but not arranged in single, regular series; apex shining, impunctate.

Hemelytron: Shining, clavus with several incomplete rows of punctures; mesocorium and exocorium with several widely spaced, moderate punctures; costa with 21 to 23 setigerous punctures.

Mesopleuron: Lateral area with few longitudinal rugae.

Sternites: All, except ultimate, roughened laterally, with irregular postmedian row of prominent setigerous punctures.

Length of body: 7.07.

TYPE DATA.—Signoret's type specimen (Wien) is a female. Although the original description gave no locality, personal examination of the type showed it to bear two labels, "Brazil, Coll. Signoret," and Signoret's determination "marginal."

SPECIMEN STUDIED: The type from Brazil. Distant (1899) accredited Dallas' (1851) record of *Aethus ciliatus* from Colombia to this strongly marked species. However, Dr. China informed the author that Dallas' specimen has only seven costal setigerous punctures, thus preventing acceptance of Distant's conclusions.

DISCUSSION.—Signoret's type specimen is in fair condition but lacks antennals IV and V, labials III and IV, the apex of II (dermestid

damage?) and all tarsi, and the pronotum is fractured. In the original description the equality of antennals II and III was noted. This is an unusual feature within the genus and would suggest that the species had not been properly placed. However, the type not only shows the antennal condition as described by Signoret, but also has the general shape and osteolar and leg modifications of *Cyrtomenus*, thereby confirming the generic assignment.

Cyrtomenus (Syllobus) teter (Spinola)

PLATE FIGURE 241

Cydnus teter Spinola, 1837, p. 332.

Cyrtomenus teter Dallas, 1851, p. 111.—Walker, 1867, p. 147.—Stål, 1876, p. 18.—

Distant, 1880, p. 2, pl. 2, fig. 12.—Signoret, 1881b, p. 197, pl. 6, fig. 17.—

Uhler, 1886, p. 3.—Van Duzee, 1917, p. 18.—Torre Bueno, 1939, p. 177.

Cyrtomenus excavatus Distant, 1880, p. 2, pl. 2, fig. 13.

DIAGNOSIS.—This species may be recognized by a combination of three features: regularly rounded outline of head, less than 10 setigerous punctures on costa, and the short labium which does not surpass or only very slightly surpasses the posterior coxae.

DESCRIPTION.—MALE:

Head: Length more than half width, 1.79(1.69–1.91):2.63(2.60–2.70); interocular width, 1.68(1.56–1.75); anterior outline a flattened semicircle, clypeus nearly or quite as long as juga, moderately to strongly narrowed apically; surface shining, with faint to moderate, radiating rugae, punctation fine or absent; ocelli large, separated from eye by space slightly greater than transverse ocellar width; jugum ventrally and maxillary plate shining, impunctate. Antennal segments: I, 0.56(0.51–0.60); II, 0.41(0.36–0.45); III, 0.67(0.66–0.70); IV, 0.72(0.70–0.73); V, 0.71(0.70–0.73). Bucculae low, about half as high as labial II; labium reaching between or slightly beyond posterior coxae. Labial segments: I, 1.10(1.01–1.16); II, 1.59(1.50–1.66); III, 1.66(1.60–1.69); IV, 1.34(1.23–1.40).

Pronotum: Length more than half width, 3.66(3.31–3.83):6.15(5.70–6.27); lateral margin with 16 to 18 setigerous punctures submarginally; transverse impression more strongly impressed laterally than medially, marked with irregular, medially interrupted row of coarse punctures; anterior lobe impunctate except for few punctures laterally and irregular, transverse row of coarse punctures subapically; posterior lobe polished, with few widely scattered punctures.

Scutellum: Length subequal to width, 4.13(4.05–4.20):4.12(4.05–4.19); disc impunctate or with few widely scattered punctures.

Hemelytron: Clavus and corium polished; clavus with one complete row of punctures, sometimes also with several scattered punctures; mesocorium with two rows of punctures paralleling claval suture,

outer row usually interrupted medially, elsewhere closely punctate; exocorium with punctation much sparser than on mesocorium; costa with five to seven setigerous punctures; membrane distinctly surpassing apex of abdomen.

Propleuron: Shining, with few small punctures in depression.

Mesopleuron: Lateral area impunctate, obliquely rugulose.

Metapleuron: Lateral area impunctate.

Legs: Posterior tibia distinctly compressed, not expanding toward apex.

Sternites: Polished, minutely punctate.

Terminalia: Genital capsule polished, irregularly punctate, more densely so laterally; apical margin slightly concave either side of small, median angulation; gonostylus as illustrated (fig. 241).

Length of body: 11.19(10.36–11.55).

FEMALE: Similar to male except that subapical pronotal impression is greatly reduced and scutellum is usually longer than wide.

Head: Length-width ratio, 1.76(1.49–1.95):2.61(2.34–2.76); interocular width, 1.63(1.56–1.75). Antennal segments: I, 0.57(0.53–0.63); II, 0.40(0.36–0.43); III, 0.68(0.63–0.73); IV, 0.68(0.63–0.73); V, 0.71(0.70–0.73). Labial segments: I, 1.16(1.06–1.26); II, 1.65(1.56–1.69); III, 1.75(1.60–2.06); IV, 1.35(1.23–1.56).

Pronotum: Length-width ratio, 3.46(2.73–3.75):5.91(5.17–6.29).

Scutellum: Length-width ratio, 4.05(3.58–4.34):3.78(3.78–4.05).

Length of body: 10.15(8.99–10.85).

TYPE DATA.—The type specimen of *teter* Spinola, whose present location has not yet been ascertained, had been reported as coming from "Brazil." The type (BrM) of Distant's *Cyrtomenus excavatus* was described from "Costa Rica, Irazu."

SPECIMENS STUDIED.—11 males, 35 females.

GUATEMALA: Cobán; July.

COSTA RICA: Pacayas, San Lucas.

PANAMA: El Volcán (Chiriquí), Potrerillos; February, May.

BRAZIL: Espírito-Santo, Nova Teutonia, Rio Natal (Santa Catarina), Rio Negro (Paraná), Rio Verelho (Santa Catarina), Santa Cruz, São Paulo, Serra das Orgãos, Therezópolis, Viçosa; September to February.

DISCUSSION.—Although the type was not studied in connection with the present work, there appears to be no reason to disagree with the unanimous association of Spinola's name with the present form. In the original description of *excavatus*, Distant enumerated certain differences between his supposed new species and *teter*, but these differences were simply sexual, Distant having redescribed the male under a new name. None of the specimens examined bore any comments as to the conditions under which it had been captured.

Subgenus *Cyrtomenus* (*Cyrtomenus*) Amyot and Serville

Cyrtomenus Amyot and Serville, 1843, p. 90.

DIAGNOSIS.—The uninterrupted mesopleural evaporatorium will satisfactorily distinguish this subgenus from *Syllobus*.

DESCRIPTION.—Size moderate; length of body, 6.4–8.6.

Head: Jugal rounded, equalling, longer than, or surpassing clypeus and contiguous at apex of clypeus.

Pronotum: Laterally with 4 to 12 setigerous punctures; males and females usually with similar, vague, subapical, median impression.

Sternites: Polished; I and II and sometimes others with submarginal row of setigerous punctures giving rise to long, golden setae.

Legs: Posterior tibia moderately to strongly compressed and often strongly expanded in apical third.

TYPE OF SUBGENUS.—*Cyrtomenus castaneus* Amyot and Serville (1843, p. 91), subsequently designated by Kirkaldy (1903, p. 230). This name is here considered as a synonym of *Pentatoma ciliata* Palisot de Beauvois which becomes *Cyrtomenus ciliatus* (Palisot de Beauvois) as the proper name for the common North American species which has long but erroneously gone under the name "*Cyrtomenus mirabilis* (Perty)." A lengthier discussion of this problem is presented under *C. ciliatus* (p. 532).

DISTRIBUTION.—The species of this subgenus occupy the area from eastern and central United States south through Central America and the West Indies into South America to central Argentina; i.e., the full range of the genus.

DISCUSSION.—The four species of this subgenus can be grouped in several ways by different sets of characters. If just the degree of dilation of the posterior tibia is considered (which may have significance in burrowing forms), the two very closely allied North American species separate from the other two, as follows:

Posterior tibia as broad as anterior tibia:	<i>ciliatus</i> (Palisot de Beauvois) <i>crassus</i> Walker
Posterior tibia narrower than anterior tibia:	<i>mirabilis</i> (Perty) <i>bergi</i> , new name

But if the greater convexity of the body, the more strongly rugose head and the larger ocelli are contrasted with the less convex body, the flatter, smoother head, and the smaller ocelli, the arrangement would be like this:

Greater convexity; rugose head; large ocelli:	<i>ciliatus</i> (Palisot de Beauvois) <i>crassus</i> Walker <i>mirabilis</i> (Perty)
Less convex; smoother head; small ocelli:	<i>bergi</i> , new name

A grouping similar to the one based on the degree of dilation of the posterior tibia is possible if reference is made to the presence or absence of a postmedian, partial row of prominent setigerous punctures on the lateral third of sternites IV to VI, as indicated in the following couplet:

With setigerous punctures on lateral third of
sternites IV to VI:

ciliatus (Palisot de Beauvois)

crassus Walker

Without such setigerous punctures:

mirabilis (Perty)

bergi, new name

One notices immediately that *mirabilis* is the form that shifts position in these various associations. Obviously, it is not an extreme form, but probably occupies a somewhat intermediate position. In habitus it appears closest to the two North American forms, but is separated from them on the absence of setigerous punctures on the lateral third sternites IV to VI and the less expanded hind tibia. The latter feature should not be passed over too lightly, because if one of the directions of evolution within the Cydnidae is towards greater efficiency of digging (which seems logical in view of what is known of the ecology of the group) the more strongly dilated posterior tibiae should have some significance within this subgenus.

Key to species of the subgenus *Cyrtomenus* (*Cyrtomenus*)

1. Sternites IV to VI with postmedian, partial, transverse row of prominent setigerous punctures on lateral third; posterior tibia strongly compressed, its greatest diameter nearly or quite equal to that of anterior tibia . . . 2
Sternites IV to VI without a transverse row of prominent setigerous punctures on lateral third; posterior tibia weakly to moderately compressed, greatest diameter not more than two-thirds that of anterior tibia 3
2. Outline ^s of juga rounded, tending to be somewhat triangular (fig. 56); about one-half width of eye projecting laterally beyond posterolateral angle of jugum. *ciliatus* (Palisot de Beauvois) (p. 530)
Outline of juga very broadly rounded and reflexed (fig. 57); about one-third of eye projecting laterally beyond posterolateral angle of jugum.
crassus Walker (p. 533)
3. Space separating ocellus from eye less than transverse ocellar width (12:20); surface of head distinctly convex, with coarse, radiating rugae
mirabilis (Perty) (p. 536)
Space separating ocellus from eye slightly more than transverse ocellar width (18:15); surface of head nearly smooth, almost without rugae
bergi, new name (p. 527)

^s NOTE: When using this feature, one is cautioned to determine the amount of wear on the margin of the head by noticing the position of the margin of the head in relation to the submarginal row of setigerous punctures. This character may be negated by such wear. During the present study, it has been noted that there appears to be a direct correlation between the amount of wear on the margin of the head and that shown by the dorsal margin of the anterior tibia. In extreme cases, even the tubercles that give rise to the dorsal spines of the anterior tibia may be completely abraded away. Such a situation may be used as a check for the amount of wear on the margin of the head.

Cyrtomenus (Cyrtomenus) bergi, new name

PLATE FIGURE 243

Cyrtomenus ciliatus Berg, 1879, p. 10 (nec Palisot de Beauvois, 1805, p. 186).

DIAGNOSIS.—The smaller ocelli which are separated from the eyes by a space slightly greater than a transverse ocellar width or the absence of strong rugae on the head will mark this species as distinct from the other three in the subgenus.

DESCRIPTION.—MALE: Head: Length more than half width, 1.45 (1.11–1.62):2.08(1.71–2.47); interocular width, 1.34(1.10–1.56); anterior outline nearly or quite a full semicircle, juga surpassing and converging or contiguous in front of clypeus; surface polished, with weak to obsolete, radiating rugae, impunctate, with minute punctures or with few distinct punctures anterior to ocelli; ocelli small to moderate, separated from eye by space little greater than transverse ocellar width; jugum ventrally weakly alutaceous, sometimes with few small punctures; maxillary plate strongly alutaceous and with crowded punctures. Antennal segments: I, 0.47(0.34–0.63); II, 0.27(0.20–0.43); III, 0.47(0.35–0.63); IV, 0.47(0.40–0.53); V, 0.49(0.46–0.90). Bucculae about half as high as labial II; labium slightly surpassing apices of intermediate coxae. Labial segments: I, 0.78(0.53–1.06); II, 1.02(0.70–1.40); III, 1.02(0.70–1.46); IV, 0.77(0.57–1.03).

Pronotum: Length more than half width, 2.58(1.82–3.00):4.63 (3.57–5.46); lateral margins straight on basal half, with submarginal row of 15 to 20 setigerous punctures; transverse impression weakly to moderately impressed, obsolete or absent at middle, marked by irregular, interrupted row of coarse punctures; anterior lobe with weak subapical impression, with several coarse punctures laterally and in subapical band; posterior lobe with few to many coarse scattered punctures medially.

Scutellum: Length less than width, 3.01(2.26–3.60):3.07(2.25–3.73); disc with widely scattered, sunken, coarse punctures.

Hemelytron: Clavus and corium polished; clavus with one row of punctures medially; mesocorial punctures arranged in two rows paralleling claval suture, outer row often incomplete, discal punctures numerous, well-separated, often absent along radial vein; exocorium usually more sparsely punctate than mesocorium; costa with six to eight setigerous punctures; membrane distinctly surpassing apex of abdomen.

Propleuron: Variable, from polished and impunctate to roughened by crowded, fine, longitudinal rugulae and small punctures.

Mesopleuron: Lateral area shining, impunctate, with few oblique rugae.

Metapleuron: Lateral area polished, impunctate.

Legs: Posterior tibia compressed, very weakly expanded toward apex, greatest diameter much less than that of anterior tibia.

Sternites: Polished, virtually impunctate except among longitudinal rugae in spiracular area.

Terminalia: Genital capsule polished, with several distinct punctures laterally, apical margin virtually straight; gonostylus as illustrated (fig. 243).

Length of body: 7.32(6.17-9.40).

FEMALE: Similar to male, anterior pronotal lobe without median, subapical impression.

Head: Length-width ratio, 1.42(1.30-1.62):2.07(1.82-2.47); interocular width, 1.34(1.23-1.52). Antennal segments: I, 0.45(0.40-0.53); II, 0.28(0.23-0.34); III, 0.47(0.40-0.56); IV, 0.46(0.40-0.56); V, 0.51(0.46-0.60). Labial segments: I, 0.75(0.66-1.00); II, 1.05(0.86-1.50); III, 1.00(0.83-1.66); IV, 0.78(0.68-1.13).

Pronotum: Length-width ratio, 2.37(2.11-2.84):4.34(3.90-5.02).

Scutellum: Length-width ratio, 2.71(2.54-3.45):2.81(2.54-3.13).

Length of body: 7.41(6.72-9.00).

TYPE DATA.—The type specimen of *Cyrtomenus bergi*, since it is proposed as a new name for the preoccupied *Cyrtomenus ciliatus* of Berg, not of Palisot de Beauvois (1805, p. 186), must be the same as that which served as the type for Berg's name. That specimen was cited in the original description as having come from "Provincia Bonaerensis," Argentina. Unfortunately, this type, as well as many of Berg's other types, appears to be lost, but in its absence this author is accepting a female specimen in the Signoret collection (Wien) as indicative of Berg's concept of this form; it is labeled "Cordoba" and "*Cyrtomenus ciliatus* det. Berg."

SPECIMENS STUDIED.—83 males, 171 females.

MEXICO: *San Luis Potosí*: Tamazunchale; May. *Tabasco*: Fontera; June. *Veracruz*: Orizaba. *Yucatán*: Colonia Yucután; August.

GUATEMALA: Champerico, Morales; January, May.

NICARAGUA: Managua.

COSTA RICA: San José, Turrialba; March, July.

PANAMA: *Canal Zone*: Barro Colorado Island; May.

GRENADA: Leeward side.

TRINIDAD: Port of Spain, St. Augustine; January.

COLOMBIA: Río Guayuriba (Meta); December.

VENEZUELA: Boquerón, Caracas, Tachira; June, October.

BRITISH GUIANA: Kartabo; June.

SURINAM: "Surinam."

BRAZIL: Bahia, Chapada, Distrito Federal, Espírito Santo, Independencia, Nova Teutonia, Pará, Pernambuco, Rio de Janeiro, Rio Grande do Sol, Sabará, Belo Horizonte, San Mauro, Santarém, São Paulo, Taperina, Viçosa; June, October to March.

PERU: Achinamiza, Chanchosmayo, Iquitos, Río Pampas, Tingo María; January to May.

BOLIVIA: Coroico, Ñuffo de Chavez, Puerto Suárez, Provincia de Sará, Río Cristalmayo (50 miles northeast of Cochabamba), Rurrenabaque (Beni), Santa Cruz de la Sierra, Tiguipa; April, October to December.

PARAGUAY: Asunción, Horqueta, Villarrica; May, September to December.

ARGENTINA: Alta Garfía, Córdoba, La Plata, Rosario, Tucumán; January, May, October.

DISCUSSION.—Ever since Signoret (1881a) suggested that *Cyrtomenus ciliatus* Berg was the same species as another *Cyrtomenus* described by Palisot de Beauvois (1805) as *Pentatoma ciliata*, authors have accepted this placement. Examinations of the original descriptions indicate that such a position is untenable. First of all, the two forms were described from widely separated localities. Palisot de Beauvois gave his type locality as "Etats-Unis d'Amerique," while Berg described his specimen as being from "Provincia Bonaerensis," Argentina. Since no species of the genus *Cyrtomenus* is known to occur in both of these places one doubts Signoret's conclusions. Secondly, Berg described his species as having the head "subrugose," a statement that can scarcely fit the species known from the United States. As the two forms thus appear to be distinct, Palisot de Beauvois' name cannot be used for a South American form as was done by Signoret, but must be reserved for a northern species, i.e., one from the United States. In the present paper Palisot de Beauvois' name is assigned to the common *Cyrtomenus* of the southern United States, the one that has long gone under the name *mirabilis* of authors but not of Perty. Further discussion of this point will be found under the name *Cyrtomenus ciliatus*.

Even though *ciliatus* Berg is not a synonym of *ciliatus* Palisot de Beauvois, it is a junior homonym and so must receive a new name. The new name *bergi* is here proposed.

C. bergi, whether a single species or a species complex, presents a real problem because of its very extensive distribution and great amount of variability in several features which appear to grade from one extreme to another. This variability was most conspicuous in four characters, as follows:

(1) The length of the body varied from 6.17 to 9.40, with the larger specimens mostly from the more northern localities and appearing (maybe deceptively so) slightly more robust. As yet, this cannot be indicated in a definitive way and so is not followed further.

(2) Measurements indicated that the segments of the labium were the most variable structures, not only in the actual measurements but also in proportions. Unfortunately, these measurements and proportions showed no discontinuity that could be relied upon for separations.

(3) Dorsal punctation was moderately uniform throughout the series except that toward the sides of the pronotum, especially of the anterior lobe. Ventrally, surface sculpture offered little help for separating characters except on the propleuras. For some time one group of specimens was separated from all the others

on the basis of the propleural sculpture. These specimens had the anterior propleural convexity distinctly dulled by prominent alutaceousness and often longitudinal striae and fine punctures, and the depression and posterior convexity coarsely, transversely striated and often with coarse punctures. This worked very satisfactorily in contrast to the other extreme of highly polished surfaces. But study of additional specimens found so many intermediates that repeated separations of the same material on these characters rarely resulted in the same placement of any but the extremes.

(4) The male gonostyli also offered some variability which, on the basis of the several specimens studied for this structure, was gradual rather than discontinuous and so could not be used for a separating feature.

Besides the usual occasional specimen with the comment "collected at light," there was in the material studied a sizable series of unusually small specimens from Surinam labeled "in coffee field," and one specimen from Venezuela with the note "on potato."

Cyrtomenus (Cyrtomenus) ciliatus (Palisot de Beauvois), new status

PLATE FIGURES 10, 34, 56, 109, 123, 142, 244

Pentatoma ciliata Palisot de Beauvois, 1805, p. 186, pl. 11, fig. 6.

Cyrtomenus castaneus Amyot and Serville, 1843, p. 91.—Walker, 1867, p. 147.—Stål, 1876, p. 18.

Cydnus ciliatus Amyot and Serville, 1843, p. 62.

Cyrtomenus mutabilis Walker, 1867, p. 147 (part).—Uhler, 1877, p. 367 (part).

Pentatoma ciliata "loc. incert." Stål, 1876, p. 26.

Cyrtomenus ciliatus Berg, 1879, p. 9 (part).

Cyrtomenus mirabilis Berg, 1879, p. 9 (part).—Distant, 1880, p. 3 (part).—Signoret, 1881b, p. 199 (part, not figure).—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 62 (part).—Banks, 1910, p. 99.—Van Duzee, 1917, p. 18 (part).—Torre Bueno, 1939, p. 177.

DIAGNOSIS.—The strongly compressed posterior tibia whose width equals that of the anterior tibia marks this species from all its congeners except *crassus* Walker. From *crassus* it is distinguished by the less broadly rounded anterior outline of the head and the more strongly projecting eyes (figs. 56, 57).

DESCRIPTION.—MALE:

Head: Length more than half width, 1.44(1.30–1.56):2.12(1.95–2.28); interocular width, 1.28(1.23–1.36); anterior outline (fig. 56) somewhat triangular, juga slightly longer than clypeus and convergent beyond it; eyes projecting by about one-half their width; surface decidedly convex, shining, with prominent coarse rugae radiating from base of clypeus, minutely punctate; ocelli very large, separated from eye by space about half transverse ocellar width; jugum ventrally shining, partly rugulose; maxillary plate alutaceous, with numerous distinct punctures. Antennal segments: I, 0.40(0.36–0.43); II, 0.29(0.26–0.31); III, 0.44(0.40–0.48); IV, 0.46(0.43–0.50); V, 0.48(0.46–0.50). Bucculae less than half as high as labial II,

labium reaching between posterior coxae. Labial segments: I, 0.83(0.73–0.96); II, 1.11(0.93–1.23); III, 1.06(0.93–1.16); IV, 0.91(0.83–1.00).

Pronotum: Length more than half width, 2.65(2.58–2.85):4.56(4.41–5.10); lateral margins straight on basal two-thirds, with submarginal row of 12 to 14 setigerous punctures; transverse impression moderately impressed, marked by rather regular, medially interrupted row of coarse punctures; anterior lobe with broad, shallow, subapical impression, with punctures confined to subapical band and lateral patch; posterior lobe with several coarse punctures medially and few others scattered elsewhere.

Scutellum: Length subequal to, slightly less than, or slightly more than width, 3.23(3.15–3.45):3.13(2.86–3.31); disc with few to several widely scattered, coarse, sunken punctures.

Hemelytron: Clavus and corium polished; clavus with one submedian row of punctures; mesocorial punctation moderate, abundant except along radial vein, forming two rows paralleling claval suture, outer one usually incomplete; costa with six to eight setigerous punctures; membrane distinctly surpassing apex of abdomen.

Propleuron: Shining, with few fine punctures laterad of acetabulum and few coarse punctures in depression.

Mesopleuron (fig. 109): Lateral margin of evaporatorium bisinuate; lateral area shining, impunctate.

Legs: Posterior tibia (fig. 142) with greatest diameter equalling that of anterior tibia (fig. 123), latter with seven or eight stout, flattened, blunt spines arising from blackened elevations on dorsal margin.

Sternites: Shining, polished or faintly alutaceous, rugulose in spiracular area; setigerous punctures on III to VIII prominent, with long setae.

Terminalia: Genital capsule shining, with scattered fine punctures; gonostylus as illustrated (fig. 244).

Length of body: 7.63(6.73–7.94).

FEMALE: Very similar to male in shape, punctation, and subapical pronotal impression; measurements somewhat larger, especially of labial segment II.

Head: Length-width ratio, 1.49(1.43–1.56):2.16(2.08–2.24); interocular width, 1.33(1.23–1.43). Antennal segments: I, 0.41(0.36–0.46); II, 0.28(0.23–0.33); III, 0.45(0.43–0.50); IV, 0.40(0.38–0.43); V, 0.47(0.40–0.53). Labial segments: I, 0.90(0.83–1.00); II, 1.21(1.13–1.33); III, 1.07(1.03–1.13); IV, 0.97(0.93–1.04).

Pronotum: Length-width ratio, 2.75(2.71–2.97):4.76(4.46–5.09).

Scutellum: Length-width ratio, 3.29(3.14–3.45):3.30(3.30–3.30).

Length of body: 7.75(7.33–7.97).

TYPE DATA.—The author has been unable to locate Palisot de Beauvois' type which was from "Etats-Unis d'Amerique." Amyot and Serville's type of *castaneus*, also unlocated, was from "Amerique Septentrionale."

SPECIMENS STUDIED: 96 males, 119 females.

UNITED STATES: *Alabama*: Mobile; June. *Delaware*: Newark; July. *Florida*: Branford, Clearwater, Dunnellon, Fort Lauderdale, Fort Myers, Fruitville, Gainesville, Indian River, Jackson, La Belle, Lacochee, Lake City, Lakeland, Lake Placid, Lutz, Macclenny, Miami, Putnam Co., St. Petersburg, Sanford, Suwannee Springs, Tallahassee; April to November. *Georgia*: Bainbridge, Hunter Field, Okefenokee Swamp, Thomasville, Waycross; June to September. *Illinois*: Cairo, Harrisburg; June to September. *Kansas*: Ellsworth; September. *Louisiana*: Harahan; July. *Mississippi*: Gulfport, Lucedale; June, November. *Missouri*: Charleston, Kansas City, St. Louis; June to August. *New Jersey*: Manahawkin; August. *North Carolina*: Southern Pines; July. *Oklahoma*: Elmer, Payne Co.; July, August. *South Carolina*: Allendale, Charleston, Florence, Fort Royal; July. *Texas*: Brazos Co., Burkburnett, Colorado City, Columbus, El Paso, Hidalgo Co., Sherman, Sequin; May to August. *Virginia*: Virginia Beach; August.

DISCUSSION.—This species has long gone under the name *mirabilis* Perty (the earlier usage of the spelling *mutabilis* appears to be due to an error on the caption of the plate accompanying the original description). However, the larger size (8.9 mm.) and the type locality "Provincia Piauiensis," Brazil, indicate that this name has been improperly applied by most authors and actually belongs to a larger South American species of the genus. The earliest published name assignable to this genus, *ciliata* Palisot Beauvois, appears to be the correct one for the present species. The type locality, "Etats-Unis d'Amerique," and the illustration of a stout, compact body 7 mm. long agree well with the species at hand and could belong to no other form except possibly *crassus* Walker. *C. crassus*, however, occurs only in the southwestern part of the continent, an area that did not belong to the United States in the early 1800's. The synonymy also includes the *Cyrtomenus castaneus* of Amyot and Serville, a name which also probably belongs to this species as has been indicated by Uhler (1877) and others.

The relationship between *Cyrtomenus ciliatus*, *crassus* and *mirabilis* (in the sense of the present paper) is not yet fully evident. That there is close morphological relationship between them is observable. Also, their respective ranges are separate, yet adjacent and form a north-south sequence from central North America to southern South America. Such evidence suggests that perhaps these forms do not represent three distinct species, but subspecies of one widely ranging form. If the discontinuities disappear with the examination of additional material from the critical regions, a clinal development of but one form would result, and that form would have to take the name

ciliatus as that is the oldest one applied to any member of the group. At present, however, the author believes that our knowledge of these forms, as well as most of the rest of the family, is so fragmentary that application of the "new systematics" should definitely await the accumulation of more material and more intensive revisions.

An additional feature that may be used to separate *ciliatus* from *crassus* is the presence of more stout, blunt spines on the dorsal margin of the anterior tibia of the latter form. In the specimens of *ciliatus* examined, none showed more than seven or eight of these blunt spines, but they often showed tapering spines based of the series. These latter may make interpretation of this feature difficult until a little experience is gained, as *crassus* shows nine or ten blunt spines. With some experience, however, one can learn to recognize the greater space between the spines, especially on the apical third, as it occurs on the tibia of *ciliatus* (fig. 123). In *crassus* the spines of the same region are more numerous and closely spaced.

Collecting notes and field experience indicate that *ciliatus* is a species of sandy areas and that it frequently comes to light after dark. One specimen from Louisiana bore the label, "with sweet potato." Another small collection of adults and nymphs was noted on "chufa" in Mississippi; and Hart (1919, p. 205) reported nymphs and adults "from Georgia as injurious to the chufa, or edible sedge-root (*Cyperus esculentus* L.)."

The several nymphs seen belonged to later instars and all showed the typical hind tibia, the convex, coarsely rugose head, and the submarginal row of spines on the head which are characteristic of the adults.

***Cyrtomenus (Cyrtomenus) crassus* Walker, new status**

PLATE FIGURES 57, 245

Cyrtomenus crassus Walker, 1867, p. 147.

Cyrtomenus obtusus Uhler, 1877, p. 369. New synonymy.

Cyrtomenus mirabilis Distant, 1880, p. 3 (part).—Signoret, 1881b, p. 199 (part, not figure).—Uhler, 1886, p. 3 (part).—Van Duzee, 1917, p. 18 (part).

Cyrtomenus castaneus Lethierry and Severin, 1893, p. 62.

Cyrtomenus vestigiatus Distant, 1903, p. 525. New synonymy.

DIAGNOSIS.—The very broadly rounded antecular part of the head beyond which the eyes project only slightly (fig. 57) added to the presence of a postmedian row of setigerous punctures on lateral third of sternites IV to VI will separate this species from all others in the subgenus.

DESCRIPTION.—MALE:

Head: Length more than half width, 1.50(1.43–1.62):2.20(2.08–2.36); interocular width, 1.37(1.30–1.49); anterior outline very broadly

rounded (fig. 57), eyes projecting beyond sides of head by not more than one-third their width, juga longer than clypeus and nearly or quite contiguous in front of it; apices of juga and clypeus broadly recurved; surface noticeably convex, shining, with prominent, coarse, irregular rugae radiating from base of clypeus, minutely punctate; ocelli large, separated from eye by space slightly more than half transverse ocellar width; jugum ventrally shining, in part obsolete rugulose; maxillary plate alutaceous, with numerous shallow punctures. Antennal segments: I, 0.44(0.43-0.46); II, 0.30(0.30-0.33); III, 0.47(0.43-0.50); IV, 0.45(0.40-0.50); V, 0.47(0.46-0.50). Bucculae less than half as high as labial II; labium reaching between posterior coxae. Labial segments: I, 0.89(0.86-0.99); II, 1.21(1.13-1.33); III, 1.06(0.96-1.16); IV, 0.87(0.83-0.94).

Pronotum: Length more than half width, 2.83(2.69-3.00):5.01 (4.81-5.40); lateral margin straight to slightly concave on basal two-thirds, with submarginal row of 15 to 18 setigerous punctures; transverse impression distinct laterally, obsolete medially, with medially interrupted, irregular row of coarse, close-set punctures; anterior lobe impunctate except for moderate punctures laterally and in subapical band, median subapical impression broad, very shallow; posterior lobe with several coarse punctures anteriorly, these more numerous medially.

Scutellum: Length subequal to, slightly longer or shorter than width, 3.30(3.15-3.60):3.33(3.14-3.71); disc with few to several widely scattered, coarse, sunken punctures.

Hemelytron: Clavus and corium shining; clavus with one submedian row of punctures; mesocorial punctation forming two rows (outer one incomplete) paralleling claval suture, elsewhere, except along radial vein, uniformly punctate; exocorium more irregularly and less densely punctate than mesocorium; costa with six to ten setigerous punctures; membrane distinctly surpassing apex of abdomen.

Propleuron: Shining, with few distinct punctures in depression.

Mesopleuron: Lateral area polished, impunctate, with few oblique rugulae.

Metapleuron: Lateral margin of evaporatorium more or less concave; lateral area polished, impunctate.

Legs: Posterior tibia (as in fig. 142) strongly dilated toward apex, greatest diameter there equal to that of anterior tibia; latter with nine or ten stout, flattened, blunt spines arising from blackened elevations on dorsal margin.

Sternites: Shining, polished or faintly alutaceous, rugulose in spiracular area; setigerous punctures on segments III to VII prominent, with long setae.

Terminalia: Genital segment shining, with scattered fine punctures, apical margin straight; gonostylus as illustrated (fig. 245).

Length of body: 8.17(7.93–8.66).

FEMALE: Similar to male.

Head: Length-width ratio, 1.51(1.43–1.62):2.31(2.21–2.37); interocular width, 1.41(1.36–1.49). Antennal segments: I, 0.44(0.43–0.46); II, 0.30(0.26–0.33); III, 0.51(0.50–0.53); IV, 0.49(0.43–0.53); V, 0.49(0.43–0.53). Labial segments: I, 0.91(0.86–0.96); II, 1.23(1.20–1.30); III, 1.07(1.00–1.16); IV, 0.91(0.83–1.00).

Pronotum: Length-width ratio, 2.97(2.84–3.02):5.21(5.10–5.38).

Scutellum: Length-width ratio, 3.53(3.44–3.60):3.58(3.42–3.61).

Length of body: 8.67(8.40–8.98).

TYPE DATA.—Walker's type (BrM) is from Veracruz, Mexico. *C. obtusus* (types in USNM) was described by Uhler from "Texas, Arizona, and perhaps the same as that from Cape Saint Lucas, Lower California." Distant's *vestigatus* (type in BrM) was described from San Jose, Costa Rica.

SPECIMENS STUDIED.—53 males, 71 females.

UNITED STATES: *Arizona:* Baboquivari Mts., Carr Canyon (Huachuca Mts.), Chiricahua National Monument (Cochise Co.), Douglas, Dragoon, Fort Grant, Globe, Patagonia, Ruby, Sabino Basin (Santa Catalina Mts.), Tombstone, Tucson, Wickenburg, Wilcox; June to August. *New Mexico:* Tucumcari; July. *Texas:* Ysleta; September.

MEXICO: *Chihuahua:* Camargo, Catarinas, Las Delicias, Matachic, Mecoqui, Parral, Primavera; July to September. *Coahuila:* Torreón. *Distrito Federal:* "Guadalu" [Guadalupe Hidalgo?]. *Guanajuata:* Gonzales "Jet.," Irapuato. *Guerro:* Balsas. *Jalisco:* Guadalajara, Las Fuentes, La Venta; July. *Baja California:* Miraflores, Triunfo; July. *Morales:* Alpuyeca, Cuernavaca; June, September. *Nayarit:* Tepic; July. *Oaxaca:* Salina Cruz; July. *Sinaloa:* Mazatlán; August. *Veracruz:* "Pureza"; June.

CUBA: San Blas; May.

GUATEMALA: Antigua; June.

HONDURAS: Zamorano (2,600 feet); July.

COSTA RICA: San José; May.

DISCUSSION.—In previous literature this species generally has been considered synonymous with *ciliatus* Palisot de Beauvois (*mirabilis* auct., nec Perty). Although the two are admittedly very closely allied, they may be separated by the features given in the key to species. In addition, the range of *crassus* is distinct from that of *ciliatus*, being definitely more southern. *C. obtusus* Uhler has likewise been considered a synonym of *ciliatus*, but both the description and the type locality leave little doubt that it is the same form as *crassus*. It is surprising that no one has previously recognized the identity of Uhler's *obtusus* and Distant's *vestigatus*. Both authors compared their specimens to "*mirabilis*" and pointed out several of the same sepa-

rating features, as in the following statements of comparison with "*mirabilis*":

	<i>obtusus</i> Uhler	<i>vestigatus</i> Distant
Head:	More deeply emarginate in front	cleft at apices
Pronotum:	Punctures less numerous	sparingly, strongly punctate
Scutellum:	Very coarsely and sparingly punctured	very sparingly but very coarsely punctate.

Additional comments on the close relationship of the present form with the other species of the subgenus will be found in the introductory discussion of the subgenus and under the species *ciliatus*. The present understanding of this species would not have been possible without the full answers that Dr. W. E. China kindly supplied to questions about the types of Dallas, Walker, and Distant, and the replies from Dr. R. I. Sailer concerning Uhler's type of *obtusus*.

Ecological data are sparse for this species. One specimen from Texas was labelled simply "corn." Uhler, in the notes accompanying his original description of *obtusus*, reported that considerable wear and breakage were evident on the head and front legs of some of his specimens. Many of the specimens examined during the present study, especially those from Texas and Arizona, also showed considerable wear. In fact, one series of these specimens had most of the margin of the head worn off past the row of submarginal setigerous punctures and showed marked abrasion as far back as the interocular area. The anterior tibiae of these specimens were literally reduced to virtually unarmed stumps, the tarsi and all spines except those on the ventral margin were broken away and even the prominent tubercles that gave rise to the dorsal row of spines were nearly all completely worn down so that the width was reduced and the dorsal margin was only slightly crenulate. Since the members of this species show so much drastic wear, one wonders what significance this might have. As conjecture, one might suggest that the insects live in a more abrasive soil or are more aggressive in their burrowing. There was nothing but further conjecture to suggest that the cuticula might be softer here than elsewhere in the family.

Cyrtomenus (Cyrtomenus) mirabilis (Perty)

PLATE FIGURE 246

Cydnus mirabilis Perty, 1830, p. 166, pl. 33, fig. 6 (erroneously labeled as "*mutabilis*" on caption of plate).

Cyrtomenus mutabilis Dallas, 1851, p. 112.—Walker, 1867, p. 147 (part).

Cyrtomenus mirabilis Stål, 1876, p. 18.—Distant, 1880, p. 3 (part).—Signoret, 1881b, p. 199, pl. 6, fig. 19 (part).—Lethierry and Severin, 1893, p. 62 (part).

Macroscytus umbonatus Berg, 1879, p. 14.

DIAGNOSIS.—The absence of a partial, postmedian row of setigerous punctures on lateral third of sternites IV to VI and the large ocelli,

which are removed from the eyes by a space distinctly less than a transverse ocellar width, will separate *mirabilis* from the other members of the subgenus.

DESCRIPTION.—MALE:

Head: Length more than half width, 1.55(1.40–1.69):2.28(2.12–2.40); interocular width, 1.36(1.30–1.43); anterior margin fully semi-circular, broadly reflexed juga surpassing clypeus and convergent or contiguous in front of it; surface polished, with numerous strong, radiating rugae and scattered minute punctures; ocelli very large, separated from eye by space distinctly less than transverse ocellar width; jugum ventrally shining, in large part finely punctulate; maxillary plate alutaceous, with scattered, vague punctures. Antennal segments: I, 0.43(0.30–0.49); II, 0.30(0.26–0.34); III, 0.54(0.52–0.56); IV, 0.52(0.50–0.56); V, 0.52(0.50–0.56). Bucculae less than half as high as labial II; labium reaching bases of posterior coxae. Labial segments: I, 0.94(0.91–1.00); II, 1.29(1.26–1.33); III, 1.16(1.10–1.24); IV, 1.05(0.97–1.11).

Pronotum: Length more than half width, 3.09(2.96–3.40):5.13(4.67–5.42); lateral margin straight or slightly concave on basal two-thirds; with 8 to 18 submarginal setigerous punctures; transverse impression moderate, usually obsolete medially, marked by irregular, medially interrupted row of coarse punctures; anterior lobe with broad, shallow, subapical impression, punctation restricted to broad, subapical band and irregular lateral patch of few to many punctures; posterior lobe with few widely scattered punctures, especially in middle third.

Scutellum: Length subequal to width, 3.30(2.93–3.61):3.30(2.91–3.60); disc polished, with widely scattered, coarse, sunken punctures.

Hemelytron: Clavus and corium polished; clavus with one submedian row of punctures; mesocorium rather uniformly and closely punctate except in smooth space along radial vein and in two rows of close-set punctures paralleling claval suture; exocorium irregularly and less densely punctate than mesocorium; costa with four to eight setigerous punctures; membrane distinctly surpassing apex of abdomen.

Propleuron: Alutaceous, with few punctures in depression.

Mesopleuron: Lateral area shining, impunctate with few obsolete rugulae.

Metapleuron: Lateral margin of evaporatorium straight or slightly concave; lateral area polished, impunctate.

Legs: Anterior tibia dorsally with seven or eight stout, flattened, blunt spines arising from blackened elevations; posterior tibia moderately widened apically, greatest diameter less than that of anterior tibia.

Sternites: Polished, without postmedian rows of setigerous punctures at lateral third of segments III to VI.

Terminalia: Genital capsule polished, with scattered minute punctures more abundant laterally, apical margin nearly straight or faintly sinuate laterally, gonostylus as illustrated (fig. 246).

Length of body: 8.85(8.38-9.37).

FEMALE: Similar to male, subapical impression of pronotum less extensive.

Head: Length-width ratio, 1.47(1.43-1.56):2.31(2.25-2.41); interocular width, 1.41(1.36-1.44). Antennal segments: I, 0.43(0.40-0.46); II, 0.27(0.25-0.31); III, 0.53(0.44-0.60); IV, 0.50(0.47-0.56); V, 0.53(0.50-0.60). Labial segments: I, 0.92(0.86-1.06); II, 1.27(1.23-1.36); III, 1.16(1.10-1.23); IV, 1.03(0.94-1.11).

Pronotum: Length-width ratio, 3.04(2.85-3.42):4.99(4.85-5.36).

Scutellum: Length-width ratio, 3.07(2.40-3.60):3.25(3.00-3.61).

Length of body: 8.76(8.12-9.41).

TYPE DATA.—The unlocated type of *mirabilis* was said to have come from Brazil. Berg's types of *umbonatus* were reported as having come from the Argentine localities of Catamarca and Tucumán. One specimen (UnivNac) in a collection of miscellaneous material is labeled "Catamarca, *umbonatus* Berg, type." This obviously is one of the original types and is here designated the lectotype. Dr. Kormilev informed the author that no recognized types of this species are in any other Argentine museums that he visited.

SPECIMENS STUDIED.—12 males, 13 females.

BRAZIL: Campinas, Nova Teutonia, Porto Alegre, Taperina; October, November.

PERU: "Chauchamayo."

PARAGUAY: Asunción, Colonia Nuevo Italia, Horqueta; September to December.

ARGENTINA: Catamarca, Tucumán; December.

DISCUSSION.—Although the close resemblance between this form and the common form of the southern United States led most authors to consider them as one, there is sufficient difference to warrant separating them. In fact, the present study also separates a geographically intermediate form, *crassus* Walker. The form of the southern United States properly takes the name *ciliatus* Palisot de Beauvois, as explained under the treatment of that species in the present paper. Signoret's (1881a) synonymizing of Berg's *Macroscytus umbonatus* is supported by the finding of the "Catamarca" type mentioned above.

For a discussion of this species in relation to others of the subgenus, see comments in the introduction to this subgenus and those under *C. ciliatus*.

Genus *Tominotus* Mulsant and Rey

Tominotus Mulsant and Rey, 1866, p. 319.

Trichocoris Uhler, 1876, p. 277. New synonymy.

Psectrocephalus Van Duzee, 1922, p. 270. New synonymy.

Aethus of authors, nec Dallas (1851, p. 110).

DIAGNOSIS.—This genus is best diagnosed by the lack of differentiated terminal part of the osteolar canal, the terete hind tibiae which have all spines similarly developed and by the complete, submarginal row of coarse, close-set setigerous punctures on the head.

DESCRIPTION.—Size small to large (4–12), oval, ovate or subparallel; dorsum much less convex than venter.

Head: Length usually more than half width, flattened to somewhat convex above; juga carinate dorsally on margin, as long as or longer than and convergent in front of clypeus; juga with a submarginal row of coarse, close-set punctures giving rise to long cilia and usually also to short, erect, stout pegs; eyes well developed, slightly to strongly projecting; ocelli absent or well developed, when present located on or behind a line connecting hind margins of eyes and separated from eyes by a space equal to or greater than an ocellar width; antennae 5-segmented, I shortest, others variable in proportion; bucculae low to very high, reaching nearly or quite to base of head; labium reaching from middle of mesosternum to middle of metasternum, labial II longest, compressed but without a foliaceous lobe, IV shortest.

Pronotum: Width about twice length; anterior margin moderately to strongly emarginate, without a paralleling submarginal groove; lateral margins carinate, narrowed on apical third or more, basal part straight or incurved, some males with slight to strong constriction submedially; lateral submarginal setigerous punctures variable in number and arrangement; posterior margin broadly but shallowly convex; transverse impression distinct to absent, usually marked by a row or band of distinct punctures.

Scutellum: Wider or narrower than long, triangular, apex broad and rounded (fig. 80) or distinctly narrowed (fig. 79); disc impunctate, weakly punctate or with numerous distinct punctures.

Hemelytron: Corial areas well defined; costa with one to many setigerous punctures; membranal suture straight or weakly bisinuate, curved anteriorly or posteriorly laterally; membrane distinctly less than one-third of hemelytral length, approaching, reaching or surpassing apex of abdomen.

Propleuron: Weakly to distinctly convex anterior to depression, usually with some punctures; prosternal carinae prominent, usually rather sharp; anterior margin slightly lobulate either side of middle.

Mesopleuron: Weakly concave; evaporatorium extensive to very restricted and interrupted by mesally projecting spur of lateral pol-

ished area (fig. 111); latter usually impunctate; mesosternum swollen, carinate on basal half or more and with numerous long hairs.

Metapleuron (fig. 111): Flattened; evaporatorium occupying mesal half or more of segment, vaguely or sharply defined from lateral area; latter with or without punctures; osteolar peritreme without a differentiated terminal lobe, sharply delimited apically or continued obliquely to anterior margin of segment: osteole opening posteriorly at emargination of peritreme, a subapical spur usually also present.

Legs: Short to moderately long; anterior tibia (fig. 117) distinctly compressed, dorsal margin with six to ten stout spines, not surpassing tarsal insertion; middle and posterior tibiae (fig. 140) slender, terete, equally spined on all margins; posterior tibia as long as or longer than abdomen; tarsal II shortest, I equal to or shorter than III.

Venter: Strongly convex, shining, with or without setigerous punctures; posterior margin of each segment finely to distinctly crenulate.

TYPE OF GENUS.—*Cydnus* (*Tomnotus*) *signoreti* Mulsant and Rey (1866, p. 319), monobasic; of *Trichocoris*, *Trichocoris conformis* Uhler (1876, p. 277), monobasic; of *Psectrocephalus*, *Psectrocephalus caecus* Van Duzee (1922, p. 271), original designation and monobasic.

DISTRIBUTION.—This genus occupies a wide range from North Carolina, Tennessee, Missouri, Arizona, and California south through Central America and the Antilles to Argentina and Chile.

DISCUSSION.—The separation of this genus from *Dallasiellus* marks a rather weak area in the present attempt to redefine the cydnid genera that occur in the Western Hemisphere. These two groups are both relatively unspecialized when compared to allied forms and so present no really strong features for separation. The complete submarginal row of coarse punctures does set off a group of closely allied species, but leaves the residuum containing species in which the submarginal row of punctures varies from absent to well developed and reaching almost to apex of jugum, this character being simply one extreme of an almost continuous variation.

Tomnotus Mulsant and Rey, based on a species originally described from France, appears to be the correct name for this genus as it is the oldest included generic name. A rather unusual set of circumstances beclouds the soundness of this application, but a statement of events leading to this decision should indicate the reasons for making it. *Tomnotus* was described in 1866 by Mulsant and Rey as a subgenus of *Cydnus* and contained the single, newly described species *signoreti*, that species being the genotype by the monobasic condition of the original proposal. The specimen on which it was based was reported as having come from the collection of Signoret and its locality of capture was given as "Montpellier," in France. The species was thus carried as a European form. However, Signoret (1881b)

reported that he was unable to separate *signoreti* from Berg's (1879) Argentine species *constrictus*; he further stated that Mulsant and Rey's French locality for their species had been due to a misinterpretation of the abbreviated locality "Mont." on his specimen label. He stated that this abbreviation stood for "Montevideo" and not "Montpellier." In view of Signoret's explanation (and in spite of the fact that he had given both names valid standing in his "Revision") and the fact that Mulsant and Rey's description leaves no doubt about the identity of their species with that of Berg's, one is forced to consider Berg's name as a synonym, as has already been done by Berg (1891, p. 171). *Tominotus* thus is available and must be considered in the study of nomenclature for forms of the Western Hemisphere.

But why replace the older, better known name *Aethus* of Dallas with *Tominotus*? In redefining the genera, the start must be made from the genotype. The genotype of *Aethus* Dallas (1851) is *Cydnus indicus* Fabricius, subsequently designated by Van Duzec (1914, p. 378). It possesses a differentiated terminal osteolar process (fig. 99), the shape of which is unlike that found in any species of cydnids found in the Western Hemisphere. The terminal process in *Aethus indicus* is almost semicircular with the convexity cephalad, a strong emargination in the transverse posterior margin and the surface in part polished. As thus restricted, *Aethus* appears to have a limited distribution chiefly in Asia; but as only limited extralimital material was available for study its range may be more extensive.

Thus, our American forms, none of which is congeneric with *Aethus indicus*, must take new generic names. After transferring certain other species, those which belonged to the *Aethus* of American authors (not Dallas) on the basis of a complete submarginal row of setigerous punctures must take the name *Tominotus* Mulsant and Rey (1866) because that name antedated all other included generic proposals, *Trichocoris* Uhler (1877) and *Psectrocephalus* Van Duzec (1922), by several years.

In *Tominotus* the vestiture arising from the submarginal row of setigerous punctures on the head may be uniformly hairlike, or may consist of a row of peglike setae with a few hairlike ones interspersed. A caution for interpreting this character already given in the introduction to this study may be profitably repeated here: the burrowing habit often results in the breaking of the hairlike setae near their bases, resulting in what appears to be a row of the peglike setae. Although this vestiture character has not been used as a primary key character in the present study, it is mentioned in the description of each species and offers a usable recognition feature for certain groups

of the included species. But the caution must be heeded in interpreting the descriptions and especially in describing new forms.

Key to the known species of *Tominothus*

1. Mesopleural evaporatorium interrupted posteriorly by a transverse, marginal or submarginal polished band (fig. 111) 2
 Mesopleural evaporatorium not interrupted posteriorly by polished band . 11
2. Scutellar apex broad (fig. 80), half or more than half as wide as membranaral suture. 3
 Scutellar apex narrowed (fig. 79), distinctly less than half as wide as membranaral suture. 9
3. Pronotum with lateral submarginal setigerous punctures arranged in single, impressed row (fig. 68); costa with not more than ten setigerous punctures. 4
 Pronotum with lateral submarginal setigerous punctures not confined to a single, submarginal row, but forming a wider, submarginal stripe, especially anteriorly (fig. 69); costa usually with fifteen or more setigerous punctures 8
4. Pronotum laterally with many distinct, moderately coarse punctures on both lobes. 5
 Pronotum laterally with few or no distinct punctures laterally (sometimes with minute punctures) 7
5. Costa creamy white, contrasting strongly with dark brown corium.
 albicostus, new species (p. 543)
 Costa concolorous with remainder of corium 6
6. Tibiae yellowed, in contrast to reddish-brown femora; size larger, length of body, 6.9-8; lateral pronotal margins of males not constricted.
 brevis (Signoret) (p. 547)
 Tibiae concolorous with femora; size smaller, length of body, 5-5.2; lateral pronotal margins of males strongly constricted near middle (fig. 6).
 signoreti (Mulsant and Rey) (p. 566)
7. Membranaral suture virtually straight (fig. 82); scutellum with few widely scattered punctures; larger, length of body, 8.6.
 impuncticollis (Distant) (p. 560)
 Membranaral suture distinctly bisinuate (fig. 81); scutellum with many crowded punctures; smaller, length of body, 5.5.
 blanchardi (Signoret) (p. 544)
8. Abdomen polished, impunctate except in spiracular area; larger, length of body, 8.5-10.0 **hogenhoferi** (Signoret) (p. 559)
 Abdomen and dorsal surface, except membrane, with coarse punctures giving rise to long, golden setae similar to those along lateral margins; smaller, length of body, 5.0-6.8 **conformis** (Uhler) (p. 554)
9. Corium alutaceous; costa with two or three setigerous punctures.
 breviostris, new species (p. 545)
 Corium polished; costa with five to ten setigerous punctures 10
10. Size smaller, length of body 5.1-7.3; labium surpassing middle coxae.
 communis (Uhler) (p. 551)
 Size larger, length of body 9.1-10.8; labium not surpassing middle coxae.
 curvipes (Dallas) (p. 556)
11. Ocelli present, distinct; costa with not more than five setigerous punctures. 12
 Ocelli absent; costa with ten or more setigerous punctures.
 caecus (Van Duzee) (p. 549)

- 12. Costa with one setigerous puncture; male with apex of genital capsule distinctly V-emarginate **unisetosus**, new species (p. 567)
 Costa with two to four setigerous punctures; male with apex of genital capsule not V-emarginate 13
- 13. Clypeus with two subapical setigerous punctures; size smaller, length of body 3.7-4.5 **laeviculus** (Berg) (p. 564)
 Clypeus without subapical setigerous punctures; size larger, length of body 4.8-5.5 **inconspicuus**, new species (p. 562)

Tominotus albicostus, new species

DIAGNOSIS.—The creamy white costa plus the unicolorous pronotum will separate this species from all other Cydnidae known to occur in the Western Hemisphere.

DESCRIPTION.—From a single specimen. FEMALE: Broadly oval.

Head: Length about two-thirds width, 1.26:1.80; interocular width, 1.28; jugs rounded, forming a semicircle, as long as clypeus, latter with two subapical setigerous punctures; jugum with a complete, submarginal, depressed row of coarse setigerous punctures giving rise to long hairlike setae and stout pegs; surface slightly convex, weakly rugose radially, punctate only toward margins; ocelli small, separated from eyes by space about four times an ocellar width; jugum ventrally and maxillary plate (except posteriorly) impunctate. Antennal segments: I, 0.36; II, 0.33; III, 0.35; IV, 0.40; V, 0.46. Bucculae lower than labial II; labium reaching between middle coxae. Labial segments: I, 0.60; II, 0.76; III, 0.70; IV, 0.46.

Pronotum: Length less than half width, 1.99:4.26; anterior margin broadly and deeply emarginate; lateral margins entire, not emarginate, with about thirty setigerous punctures in a single, submarginal row; transverse impression slightly behind midlength, obsolete, marked by an irregular band of slightly coarser punctures; anterior lobe impunctate discally, a few distinct punctures anteriorly and a wide band of them laterally, surface finely alutaceous except on impunctate calli; posterior lobe weakly and finely alutaceous, with fine, irregular punctures over most of width.

Scutellum: Wider than long, 2.87:2.36; finely alutaceous; with numerous irregular, crowded punctures, except basally.

Hemelytron: Clavus and corium alutaceous; clavus with irregular, partly confluent punctures; corium with numerous punctures, these more abundant in two rows paralleling elaval suture and on exocorium; costa with twelve setigerous punctures; membranal suture bisinuate, lateral angle slightly acute; membrane longer than basal width.

Propleuron: More or less alutaceous, punctured anteriorly, in depression and in lateroposterior angle.

Mesopleuron: Evaporatorium separated from posterior margin of segment for nearly full width; lateral area with few distinct punctures; posterior margin entire.

Metapleuron: Evaporatorium occupying mesal half, prolonged laterally along anterior margin; peritreme extended about one-third across segment, evanescent apically; lateral area alutaceous and punctate on mesal two-thirds.

Legs: Moderately long; posterior tibia straight.

Sternites: Alutaceous, finely punctate, with few irregular rugae laterally.

Length of body: 6.29.

TYPE DATA.—Holotype female (Wien) labeled "Fiebrig, Paraguay, S. Bernardino."

DISCUSSION.—As indicated in the key, this species is most closely allied to *brevis* Signoret and *signoreti* Mulsant and Rey. In addition to the key characters it agrees with these in general habitus, being broadly oval, with a semicircular head, and having the dorsum and venter alutaceous. Its large size (6.29) and creamy white costa separate it from *signoreti*, while the pale costa and the greater number (about 30:15) of submarginal setigerous punctures laterally on the pronotum distinguishes it from *brevis*.

Tomnotus blanchardi (Signoret), new combination

PLATE FIGURE 81

Aethus blanchardi Signoret, 1863, p. 545.—Walker, 1867, p. 152.—Stål, 1876, p. 27.

Cydnus ? *blanchardi* Signoret, 1882, p. 154, pl. 6, fig. 91.

Cydnus blanchardi Lethierry and Severin, 1893, p. 65.

DIAGNOSIS.—Among those members of the genus whose body length is less than 6 mm., the broad scutellar apex and lack of distinct punctures towards sides of pronotal lobes will identify this species.

DESCRIPTION.—Based on the single available specimen which lacked antennae, legs and abdomen, consequently sex is unknown. Oval.

Head: Length two-thirds width, 0.90:1.36; interocular width, 0.94; surface shining, juga with few obsolete, radiating rugae and numerous very fine punctures; ocelli small, separated from eye by twice an ocellar width; jugum ventrally and maxillary plate impunctate, latter finely alutaceous; antennae missing; bucculae lower than height of labial II. Labial segments: I, 0.40; II, 0.61; III, 0.47; IV, 0.34.

Pronotum: Length half width, 1.40:2.81; anterior margin broadly and moderately emarginate; side margins strongly converging from base; with a single submarginal row of about 25 setigerous punctures; transverse groove slightly behind midlength, very feeble; anterior lobe shining, with fine but distinct punctures behind anterior emargination and a few obsolete punctures laterally; posterior lobe with irregularly scattered moderate to minute punctures.

Scutellum: Little longer than wide, 1.85:1.75; surface shining, disc with numerous close-set punctures coarser than those of pronotum, apex with fine punctures; apex broadly angled, more than half as wide as membranal suture.

Hemelytron: Corial areas well defined, alutaceous; exocorium more closely punctured than disc, latter with a single row of close-set punctures; paralleling claval suture; clavus alutaceous, with two longitudinal rows of punctures; costa with ten or twelve setigerous punctures; membranal suture strongly bisinuate (fig. 81), lateral angle acute; membrane longer than basal width.

Propleuron: Finely alutaceous, impunctate; prosternal carinae thick, prominent, abruptly and acutely terminated ventrally, area between depressed.

Mesopleuron: Evaporatorium triangular, extending about three-fourths across segment, and separated from posterior margin of segment nearly to base by polished area.

Metapleuron: Evaporatorium reaching three-fourths across segment, lateral two-fifths more shining; peritreme abruptly terminated before middle of segment.

Legs, abdomen and terminalia: All missing.

Length of body: About 5.5.

TYPE DATA.—The author has been unable to locate Signoret's type, reported as having come from Chile.

SPECIMEN STUDIED.—A broken specimen (USNM) of unknown sex, reported from Chile.

DISCUSSION.—The specimen (USNM) studied was old and incomplete, lacking antennae, legs, and abdomen. It bore an unusual, double-spaced, blue-bordered label with a determination of "*Aethus blanchardi*" in what appeared to be Signoret's handwriting, and a penciled note, "Chile." This specimen may have been a part of the Uhler collection, although it was not so labeled.

In illustrating this species in his "Revision," Signoret (1882) depicted the peritreme as terminating in an auricular lobe. The specimen at hand showed the peritreme ending abruptly, but not in the loop or ear-shape structure implied by Signoret.

Tominotus brevirostris, new species

PLATE FIGURE 247

DIAGNOSIS.—The large size (9.5–10.2) plus the strongly alutaceous coria will differentiate this species from all others in the genus.

DESCRIPTION.—MALE: One specimen. Elongate-oval.

Head: Length more than two-thirds width, 1.75:2.34; interocular width, 1.52; outline semicircular, juga narrowing clypeus or contiguous beyond it; clypeus without subapical punctures; juga roughened by

many crowded, distinct, radiating rugae and a few moderate punctures, submarginal row of punctures giving rise to long cilia and no pegs (all specimens badly abraided); vertex impunctate; ocelli separated from eyes by almost twice an ocellar width; juga ventrally and maxillary plate impunctate. Antennal segments: I, 0.53; II, 0.70; III, 0.70; IV, 0.93; V, 1.00. Bucculae as high as labial II, almost to abrupt posterior end; labium reaching to middle of mesosternum. Labial segments: I, 0.76; II, 1.10; III, 0.83; IV, 0.56.

Pronotum: Length slightly more than half width, 2.85:5.42; anterior margin deeply, almost semicircularly emarginate; side margins entire, not constricted opposite ends of transverse groove, with a single, submarginal row of six setigerous punctures; transverse groove absent, marked by irregular band of small, distinct punctures that laterally extends anteriorly and posteriorly on otherwise impunctate pronotal lobes.

Scutellum: Length and width subequal, 3.42:3.49; triangular, apex narrowed; very faintly alutaceous, with numerous irregularly scattered moderate punctures which get closer and finer toward apex.

Hemelytron: Corial areas well defined, strongly alutaceous; mesocorial area with distinct punctures only in basal part and in one complete row and one incomplete row paralleling claval suture, apically with widely separated, very fine punctures; exocorial area with distinct punctures only at base; radial vein and costa with numerous fine punctures, costa also with two or three setigerous punctures; clavus alutaceous like corium, with two partial rows of punctures; membranal suture weakly bisinuate, lateral angle slightly projecting; membrane distinctly longer than basal width, distinctly surpassing apex of abdomen.

Propleuron: With few distinct punctures ventrally in depression.

Mesopleuron: Evaporatorium extending into posterolateral angle, interrupted near posterior margin by weak polished band; posterior margin of segment moderately coarsely crenulate.

Metapleuron: Evaporatorium occupying about mesal two-thirds of segment, lateral margin well defined, strongly concave; peritreme reaching about halfway across segment, posterior subapical emargination with a distinct, flattened process.

Venter: Alutaceous, almost smooth and with numerous minute punctures along midline, vaguely roughened laterally.

Terminalia: Apical margin of genital segment not entire and not flared marginally; gonostyli as illustrated (fig. 247).

Length of body: 10.00.

FEMALE: Very similar to male.

Head: Length-width ratio, 1.71(1.56-1.95):2.34(2.25-2.42); interocular width, 1.56(1.49-1.66). Antennal segments: I, 0.54 (0.50-

0.60); II, 0.78(0.76–0.83); III, 0.64(0.56–0.70); IV, 0.94(0.90–1.00); V, 1.04(1.00–1.16). Labial segments: I, 0.81(0.76–0.90); II, 1.06(1.00–1.12); III, 0.89(0.86–0.93); IV, 0.57(0.55–0.61).

Pronotum: Length-width ratio, 2.88(2.78–3.00):5.45(5.25–5.67).

Scutellum: Length-width ratio, 3.51(3.36–3.71):3.42(3.28–3.57).

Length of body: 9.91(9.56–10.14).

TYPE DATA.—Holotype male (USNM 64427) and allotype female (USNM), 10 kilometers northeast of Taxco, Guerrero, Mexico, Apr. 4, 1943, W. F. Foshag. Paratypes as follows:

MEXICO: *Guerrero*: Taxco, same data as types, 11 females (USNM, RCF). *México*: Tejuipilco, June 30, 1933, H. R. Hinton and R. L. Usinger, 2 females (RLU). *Michoacán*: 12 miles south of Tzitzio on Huetamo road, July 9, 1947, 3 females (RFH).

DISCUSSION.—The trivial name, *brevirostris*, is in allusion to the labium reaching only to the middle of the mesosternum and not to the middle coxae or farther as occurs in most species of the family.

The large size and generally alutaceous dorsal and ventral surfaces suggest that this species might be closely related to the members of the genus *Ectinopus*, but the lack of a differentiated terminal process on the osteolar peritreme, the presence of three primary setigerous punctures on a jugum, and the complete row of submarginal setigerous punctures on the jugum each would prevent assignment of it to that genus.

Tominotus brevis (Signoret), new combination

PLATE FIGURES 68, 248

Aethus (Tominotus) brevis Signoret, 1881, p. 426, pl. 11, fig. 55.

Aethus neotropicus Jensen-Haarup, 1926, p. 49. New synonymy.

DIAGNOSIS.—The decidedly yellowed tibiae (especially the hind pair), which contrast with the reddish brown femora, will readily separate this species from others in the genus.

DESCRIPTION.—MALE: Based on two specimens. Broadly oval.

Head: Length nearly two-thirds width, 1.29(1.23–1.36):1.90(1.86–2.02); interocular width, 1.25(1.20–1.30); juga rounded, forming a semicircle, as long as clypeus, latter with two subapical setigerous punctures; juga with a complete, submarginal, depressed row of coarse setigerous punctures giving rise to stout pegs with a few interspersed cilia; surface slightly convex, with weak radiating rugae and scattered minute punctures; ocelli small, separated from eyes by more than three times an ocellar width; jugum ventrally and maxillary plate (except posteriorly) impunctate. Antennal segments: I, 0.38(0.36–0.43); II, 0.45(0.40–0.50); III, 0.47(0.43–0.51); IV, 0.62(0.58–0.66); V, 0.64(0.60–0.66). Bucculae lower than height of labial II; labium slightly surpassing middle coxae. Labial segments:

I, 0.88(0.83-0.95); II, 1.24(1.13-1.33); III, 0.97(0.96-1.03); IV, 0.61(0.53-0.68).

Pronotum: Width more than twice length, 4.52(3.97-4.66):2.10(1.92-2.28); anterior margin broadly and deeply emarginate; lateral margins entire, not emarginate, with about 15-20 setigerous punctures in a single, submarginal row (fig. 68); transverse impression slightly behind midlength, marked by a more or less regular row of moderately coarse punctures; anterior lobe with numerous similar punctures laterally and a number of finer ones subapically, surface very finely alutaceous, except on impunctate calli; posterior lobe very weakly alutaceous, with punctures more numerous laterally than discally.

Scutellum: Length and width subequal, 2.61(2.50-2.73):2.66(2.47-2.88); surface with weak, transverse wrinkles and numerous fine, close-set, longitudinal striae between distinct punctures which become finer and closer toward apex; latter more than half as wide as membranous suture.

Hemelytron: Corial areas well defined, strongly but finely alutaceous and distinctly and rather uniformly punctured with two regular rows of punctures paralleling claval suture; clavus alutaceous, with two regular rows of distinct punctures; membranous suture obtusely angularly convex, rectangular at outer angle; membrane slightly surpassing apex of abdomen, a little longer than basal width.

Propleuron: Very weakly alutaceous, punctured at anteroventral angle and in depression; prosternal carinae prominent, thick, calloused, abruptly and rectangularly terminated posteriorly.

Mesopleuron: Evaporatorium separated from posterior margin for nearly full length by polished band; lateral area with few distinct punctures; posterior margin weakly crenulate.

Metapleuron: Evaporatorium occupying about half of segment; lateral area immediately adjacent to it with distinct rugae and punctures; peritreme extending about one-third across segment, becoming evanescent apically.

Sternites: Smooth, sometimes visibly alutaceous laterally.

Legs: Moderately long, posterior tibia virtually straight.

Terminalia: Genital capsule shining, obsoletely rugulose, impunctate, apical margin virtually straight; gonostylus as illustrated (fig. 248).

Length of body: 6.97(6.90-7.05).

FEMALE: Very similar to male except that antennal segment II is equal in length to III instead of being shorter as in the male, and the scutellum is distinctly wider than long instead of having the length and width subequal.

Head: Length-width ratio, 1.34(1.30-1.38):2.05(1.98-2.08); inter-

ocular width, 1.33(1.27–1.37). Antennal segments: I, 0.40(0.40–0.42); II, 0.49(0.46–0.53); III, 0.47(0.46–0.48); IV, 0.61(0.60–0.66); V, 0.63(0.60–0.66). Labial segments: I, 1.02(1.00–1.06); II, 1.26(1.13–1.33); III, 0.98(0.90–1.06); IV, 0.64(0.60–0.70).

Pronotum: Width-length ratio, 4.54(4.46–4.69):2.18(2.02–2.37).

Scutellum: Width-length ratio, 3.05(2.93–3.13):2.86(2.75–3.06).

Length of body: 7.60(7.20–7.95).

Color: Above piceous with metallic reflections, broad margin of head, side margins of pronotum and all of corium usually paler; membrane milky white, marks along veins and between them fuscous; ventrally slightly paler, acetabulae and femora reddish brown; antennae, labium, prosternal carinae, basal third or more (all of posterior) of tibiae, and tarsi distinctly yellow.

TYPE DATA.—A female specimen (Wien) bears a red type label and a locality label "Brasil." This specimen was made available for study. Since there is no reason to doubt that this was one of the original specimens, it is here designated as lectotype. In the original description two localities were cited, "Bresil" and "Nouvelle Grenada."

SPECIMENS STUDIED.—6 males, 6 females.

VENEZUELA: Yaraeuy, G. Pittier, 1 male (USNM).

COLOMBIA: Bogotá, July 20, 1927, M. H. Nicefero, 1 female (JCL). Bonda, June, 3 males, (Car, RCF). Río Frío, Magdalena, May 13, 1927, G. Salt, 1 female (USNM). Santa Marta, Dec. 26, 1910, F. M. Gaige, 1 male, 1 female (RFH). Santa María Mts., Valle del Tamacal, Sept. 22, 1920, F. M. Gaige, 1 male, 1 female (RFH). Villa Vieja, April 11, 1945, 1 female (CalAc).

BRAZIL: No exact locality, type female (Wien).

DISCUSSION.—Little information is available on this well-marked form, but for some comments on its close relationship to other species see the discussion under *Tominotus albicostus*, new species.

Tominotus caecus (Van Duzee), new combination

PLATE FIGURE 249

Psectrocephalus caecus Van Duzee, 1922, p. 271.—Torre Bueno, 1939, p. 182.

DIAGNOSIS.—This is the only species in the genus that is without ocelli. All the others have the ocelli moderately to strongly developed and conspicuous.

DESCRIPTION.—Based on two males and one female.

MALE: Elongate-oval.

Head: Length more than two-thirds width, 0.98(0.93–1.03):1.38(1.30–1.46); interocular width, 0.99(0.93–1.06); anterior outline broadly semicircular, eyes projecting by less than one-third width; juga surpassing and nearly contiguous beyond apex of clypeus, latter without subapical setigerous punctures; juga with sharp margins

distinctly reflexed, submargin with distinct pegs and a few long cilia, surface shining and with short radiating rugae and punctures; vertex with few or no punctures; jugum ventrally and maxillary plate (except posteriorly) impunctate. Antennal segments: I, 0.28(0.26-0.30); II, 0.28(0.26-0.30); III, 0.31(0.30-0.33); IV, 0.30(0.30-??); V, 0.33(0.33-??). Bucculae slightly lower than height of labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.58(0.56-0.60); II, 0.69(0.63-0.76); III, 0.51(0.43-0.60); IV, 0.36(0.34-0.38).

Pronotum: Width slightly more than twice length, 2.92(2.79-3.06):1.39(1.36-1.43); anterior margin moderately deeply and almost simply emarginate; side margins subparallel on basal fourth, thence gently narrowed to broadly rounded anterior angles, not emarginate opposite ends of transverse groove; lateral submarginal row of some 30 setigerous punctures giving rise to long, reddish cilia; transverse groove broad, very shallow, situated near basal fourth; anterior lobe with broad lateral area and narrower anterior area with distinct punctures, calli and median line impunctate; posterior lobe and transverse groove with numerous scattered, distinct punctures across width.

Scutellum: Distinctly longer than wide, 2.15(2.02-2.28):1.85(1.75-1.95); triangular, apex narrowed, disc with numerous distinct punctures which are missing from narrow basal area and are more numerous at apex.

Hemelytron: Corial areas weakly defined; corium and clavus with numerous distinct punctures, these more dense on exocorium and in single impressed row paralleling claval suture; membranal suture bisinuate and slightly acute laterally; membrane somewhat longer than wide, just attaining apex of abdomen.

Propleuron: Polished, impunctate, prosternal carinae low, rather sharp. Mesopleuron: Evaporatorium extending uninterrupted into posterolateral angle of segment. Metapleuron: Evaporatorium occupying mesal two-thirds of segment, lateral margin concave; lateral area impunctate; peritreme reaching almost to middle of segment, apex fused with cuticle.

Venter: Shining, impunctate, with a few weak, usually short rugae laterally.

Terminalia: Subgenital plate not reflexed marginally, apex feebly convex with the faintest trace of a median emargination; gonostyli as illustrated (fig. 249).

Length of body: 5.55(5.24-5.87).

FEMALE: Generally similar to male.

Head: Length-width ratio, 0.98:1.40; interocular width, 0.96. Antennal segments: I, 0.30; II, 0.33; III, 0.30; IV, 0.36; V, ??. Labial segments: I, 0.55; II, 0.70; III, 0.50; IV, 0.36.

Pronotum: Width-length ratio, 3.00:1.43.

Scutellum: Length-width ratio, 2.28:2.06.

Length of body: 5.68.

TYPE DATA.—Holotype male (CalAc, 926), and allotype female (CalAc, 927), Pasadena, Calif., Oct. 12, 1916, "one pair taken among ants under a stone" (Van Duzee, 1922, p. 271).

SPECIMENS STUDIED: 2 males, 1 female.

UNITED STATES: *California*: Greenhorn Mt., Kern Co., June 17, 1930, 1 male (KU). Los Angeles, Coquillett, 1 male (USNM).

MEXICO: "S.W. Mex.," 1 female (USNM).

DISCUSSION.—Further comments given by Van Duzee with the original description carry the information that the three paratypes had also been taken "under stones," and that he believed that "This species undoubtedly is an inhabitant of ants' nests and may be common in such situations."

Tominotus communis (Uhler), new combination

PLATE FIGURES 54, 55, 72, 79, 250

Aethus communis Uhler, 1877, p. 379; 1886, p. 3.—Signoret, 1882, p. 35, pl. 2, fig. 76.—Van Duzee, 1917, p. 20.—Barber and Bruner, 1932, p. 235.—Torre Bueno, 1939, p. 179.

Aethus politus Signoret, 1882, p. 36, pl. 2, fig. 77.—Uhler, 1886, p. 3.—Van Duzee, 1917, p. 20.—Torre Bueno, 1939, p. 179. New synonymy.

Cydnus communis Lethierry and Severin, 1893, p. 65.—Banks, 1910, p. 99.

Cydnus politus Lethierry and Severin, 1893, p. 67.—Banks, 1910, p. 99.

DIAGNOSIS.—The moderate size (5.14–7.22), narrowed scutellar apex, and polished dorsum will separate this species from its congeners.

DESCRIPTION.—MALE: Oval.

Head: Length more than half width, 1.02(0.93–1.10):1.62(1.43–1.75); interocular width, 1.04(0.91–1.13); jugum rounded, forming a semicircle or flattened semicircle (figs. 54, 55) (see Discussion), as long as clypeus, latter with two subapical setigerous punctures; jugum with a complete, submarginal, depressed row of setigerous punctures giving rise to a row of stout pegs and several long cilia; surface slightly convex, sometimes longitudinally depressed just mesad of eyes, neither punctate nor rugose; ocelli well-developed, separated from eyes by a space slightly more than an ocellar width; jugum ventrally impunctate; maxillary plate impunctate except for several coarse, very close-set punctures posteriorly. Antennal segments: I, 0.33(0.30–0.36); II, 0.38(0.30–0.46); III, 0.33(0.30–0.38); IV, 0.41(0.36–0.51); V, 0.50(0.46–0.56). Bucculae much lower than labial II, evanescent posteriorly; labium very slightly surpassing middle coxae. Labial segments: I, 0.68(0.60–0.72); II, 0.84(0.73–0.99); III, 0.74(0.66–0.80); IV, 0.57(0.46–0.63).

Pronotum: Width slightly more or less than twice length, 3.34 (2.86–3.84):1.67(1.36–2.02); anterior margin broadly and moderately deeply emarginate; lateral margins faintly to very strongly constricted at midlength (fig. 72) (see Discussion), with submarginal row of some twenty setigerous punctures; transverse impression slightly post-medial, absent except laterally, usually marked by a medially interrupted row of distinct punctures; anterior lobe impunctate discally, laterally with numerous close-set, very fine punctures and occasionally several scattered coarser ones; posterior lobe impunctate or with fine punctures laterally.

Scutellum: Usually little longer than wide, 2.21(1.91–2.60):2.16 (1.82–2.47); surface polished, with few to several distinct punctures discally and numerous fine ones apically; apex narrowed, width less than half of membranal suture.

Hemelytron: Corial areas well defined; surface polished to vaguely alutaceous, variously punctured (see Discussion) but more coarsely so basally and in two rows paralleling claval suture; clavus with coarser punctures arranged in longitudinal rows; costa with five to eight setigerous punctures; membranal suture nearly straight, slightly acute at lateral angle.

Propleuron: Smooth or faintly alutaceous, punctate only in depression.

Mesopleuron: Evaporatorium reaching two-thirds across segment, separated from posterior margin by a polished band; lateral area somewhat rugose, impunctate.

Metapleuron: Evaporatorium occupying mesal two-thirds or three-fourths of segment, polished area smooth, impunctate: peritreme extending about half-way across segment, apex fusing with surrounding cuticle or more or less free due to forward curving of posterior margin, lateral polished area impunctate; sternites polished, impunctate.

Legs: Moderately long, posterior femur with a subapical, midventral tubercle (see Discussion); posterior tibiae distinctly curved in apical half.

Terminalia: Genital capsule polished, with few punctures laterally, apical margin weakly sinuate; gonostylus as illustrated (fig. 250).

Length of body: 6.34(5.38–7.19).

FEMALE: Very similar to male, subapical tubercle on midventer of posterior femur sometimes absent; measurements averaging larger.

Head: Length-width ratio, 1.08(1.03–1.16):1.74(1.60–1.89); interocular width, 1.12(1.01–1.24). Antennal segments: I, 0.33(0.30–0.38); II, 0.37(0.33–0.43); III, 0.31(0.30–0.36); IV, 0.43(0.38–0.50); V, 0.49(0.43–0.53). Labial segments: I, 0.71(0.63–0.80); II, 0.89(0.80–1.00); III, 0.78(0.70–0.84); IV, 0.58(0.53–0.63).

Pronotum: Width-length ratio, 3.57(3.16–3.90):1.73(1.49–2.02).

Scutellum: Length-width ratio, 2.39(2.08–2.66) : 2.32(2.08–2.66).

Length of body: 6.65(5.70–7.56).

TYPE DATA.—Uhler's types (USNM) were reported from "Cuba, sent from Havana by Prof. Felipe Poey, and from the interior of the island by Mr. Charles Wright; also, from near St. John's River, Florida." Signoret's type specimen (Wien) from "California" bears a red type label and is hereby designated the lectotype. His other type specimen (USNM) is labeled "Nicaragua."

SPECIMENS STUDIED.—37 males, 50 females.

UNITED STATES: *Alabama*: Mobile; November. *California*: No exact locality. *Florida*: Crescent City, Dunedin, Gainesville, Indian River, Key West, Lacochee, Lakeland, Lutz, Melrose, Miami, St. Augustine; January to December. *Georgia*: Thomasville, Tifton; July. *Illinois*: Grant City State Park; June. *Mississippi*: Biloxi; April. *North Carolina*: Southern Pines; January. *South Carolina*: Berkeley Co., Florence; February, April. *Tennessee*: Allardt, Roane Co.; April, June. *Texas*: Alligator Head, Bastrop, Navasota, Uvalde, Waco; May, June.

NICARAGUA: No exact locality.

BRITISH WEST INDIES: Anguilla; October. Santo Domingo Cay; April.

CUBA: Baraquá, "Central Saronu," Habana, Mafsi, Pico Turquino, Santiago de las Vegas, Soledad, Taco Taco; April to August.

HAITI: "Diquini," "Étang Lachaux," Grande Rivière, Pétienville, August, October.

DOMINICAN REPUBLIC: Santo Domingo; May.

PUERTO RICO: Bayamón; January.

BAHAMAS: South Bimini Island; July.

DISCUSSION.—After a study of more than 80 specimens from across the United States and the islands of the Caribbean (including both of Signoret's types), the identity of *Aethus communis* Uhler and *Aethus politus* Signoret is apparent. Dr. Sailer compared the types of Signoret's *politus* with the Uhler types of *communis* and expressed agreement as to the specific identity of the two. Uhler's species was well defined and so is easily identified; Signoret's species was compared to it and three special differences were pointed out: more constricted form of the prothorax, freer end of the osteolar canal, and the polished area laterad of the vaporative areas smooth but "strioles punctués" in *communis*. The first two of these differences appear quite variable, even in specimens from the same locality, and combine with other variable characters in several ways. The third character concerning the sculptured lateral polished area does not appear in any specimens at hand, suggesting that perhaps the specimens of *communis* to which Signoret referred were unusual in that respect. The most unusual thing about Signoret's types is that they came from widely separated localities outside of the range of the species as determined here; but since both types were seen, there can be no doubt about their being identical with *communis*.

The goodly series seen showed this to be a rather variable species with certain variations having geographical significance but that the variations are clinal, merging by easy stages from one condition in the north to the other condition in the southern part of the range. Other variations are without geographic occurrence. The two most conspicuous of the geographic variations involve corial punctation and the shape of the head. The corial punctures in specimens from Missouri, Tennessee, and North Carolina are distinct, numerous and consistent, while the specimens from Cuba and the Bahamas show distinct punctures only toward base of hemelytra and in rows paralleling claval suture. Specimens from intermediate geographic localities exhibit intermediate conditions so that there is no discontinuous break lending itself to the establishment of a named subspecies. This condition is also true for the shape of the head. Specimens from the northern part of the range have the head in the shape of a strongly flattened, almost truncated semicircle (fig. 54), and as specimens from gradually more southern localities are studied they are seen to have less truncated outlines to the head until in Cuba, Haiti and the Bahamas they present nearly semicircular forms (fig. 55).

Among the apparently nonregional variations are: (1) shape of the pronotal side margins of males which vary from decidedly constricted through weakly to virtually not sinuate, with the most extreme constriction appearing in a series of five specimens from South Bimini Island, Bahamas; (2) the apical end of the osteolar canal varies from decidedly limited by an abrupt anterior curving of the posterior free margin through a weaker and shorter curve to having the end fuse imperceptibly with the cuticle beyond (widely varying examples of this often show in material from the same locality); and (3) the development of the subapical tubercle on the midventer of the hind femur varies from completely absent in some females to strong and elevated on a swelling in some males; all males seen showed the tubercle in sufficient development to permit its use to separate males of this species from males of all its congeners except *curvipes* (Dallas).

***Tominotus conformis* (Uhler), new combination**

PLATE FIGURE 251

Trichocoris conformis Uhler, 1876, p. 277; 1877, p. 372.

Aethus conformis Signoret, 1881b, p. 425, pl. 11, fig. 54.—Uhler, 1886, p. 3.—Van Duzee, 1917, p. 20.

Cydnus conformis Lethierry and Severin, 1893, p. 65.—Banks, 1910, p. 99.

Aethus (Trichocoris) conformis Torre Bueno, 1939, p. 178.

DIAGNOSIS.—Within the genus this species may be recognized by the great abundance of golden hair which not only forms a dense fringe around the outer margin of the insect but also arises individually from many of the coarse punctures of the dorsum and venter.

DESCRIPTION.—MALE: Oval.

Head: Wider than long, 1.47(1.36–1.56):1.02(0.93–1.10); interocular width, 0.97(0.90–1.04); juga semicircular, slightly but distinctly surpassing clypeus, not or only slightly converging in front of latter and leaving a rectangular emargination at apex of head; eyes projecting by more than half their width; clypeus with a few coarse, transverse rugae and two subapical setigerous punctures; jugum with a submarginal row of coarse, close-set punctures giving rise to long cilia and stout pegs, surface with numerous coarse punctures, some of them contiguous in radiating rugae; vertex polished, a few coarse punctures medially; ocelli present, separated from eye by more than ocellar width; jugum ventrally polished, impunctate; maxillary plate with few coarse punctures, especially posteriorly. Antennal segments: I, 0.36(0.31–0.40); II, 0.28(0.25–0.33); III, 0.34(0.31–0.38); IV, 0.43(0.40–0.48); V, 0.41(0.38–0.46). Bucculae lower than labial II; labium reaching between middle coxae. Labial segments: I, 0.60(0.56–0.63); II, 0.86(0.81–0.90); III, 0.63(0.60–0.66); IV, 0.48(0.46–0.51).

Pronotum: Width almost twice length, 3.15(2.90–3.41):1.67(1.47–1.82); anterior margin moderately biemarginate; lateral margins entire, not emarginate opposite ends of transverse impression; latter postmedian, weakly indicated and usually obsolete medially; anterior lobe impunctate except for broad lateral band of coarse, setigerous punctures; posterior lobe with numerous similar setigerous punctures scattered over surface, those along transverse impression coarser, elongate.

Scutellum: As long as or slightly longer than width, 2.07(1.82–2.28):2.05(1.82–2.25); surface polished, with coarse, sunken punctures scattered over disc, basal angles impunctate.

Hemelytron: Corial areas well defined, disc with scattered moderate punctures intermixed with finer ones; coarse ones along claval suture forming two rows; exocorium more closely and coarsely punctured; costa with many close-set, irregularly arranged setigerous punctures; clavus with two irregular rows of coarser punctures; membranal suture straight, lateral angle rounded; membrane reaching apex of abdomen, basal width slightly more than half of length.

Propleuron: Smooth, with a few coarse punctures at anteroventral angle, in depression and near posterolateral angle; prosternal carinae ventrally abruptly terminated at almost a right angle, with a broad, deep trough between them.

Mesopleuron: Evaporatorium restricted, interrupted on outer half along posterior margin; lateral area in part rugose, with few coarse punctures.

Metapleuron: Evaporatorium slightly surpassing middle of segment, lateral margins concave; lateral area with few coarse punctures; peritreme elongate, becoming evanescent along anterior margin of segment; osteole opening posteriorly in a distinct notch occupied by a small tongue.

Legs: Moderately long, posterior tibiae slightly curved.

Sternites: With numerous coarse setigerous punctures irregularly spaced over all but midline.

Terminalia: Genital capsule polished, coarsely, closely punctate on lateral third or more; gonostylus as illustrated (fig. 251).

Length of body: 5.74(5.06-6.24).

FEMALE: Very similar to male, posterior tibiae straight; measurements averaging larger.

Head: Length-width ratio, 1.58(1.50-1.74):1.06(1.06-1.10); interocular width, 0.99(0.96-1.04). Antennal segments: I, 0.40(0.38-0.43); II, 0.31(0.30-0.33); III, 0.39(0.36-0.46); IV, 0.47(0.46-0.50); V, 0.47(0.46-0.50). Labial segments: I, 0.59(0.58-0.60); II, 0.84(0.76-0.93); III, 0.65(0.62-0.73); IV, 0.49(0.48-0.51).

Pronotum: Width-length ratio, 3.32(2.90-3.41):1.77(1.62-1.89).

Scutellum: Length-width ratio, 2.26(2.08-2.60):2.25(2.08-2.72).

Length of body: 6.33(5.68-6.75).

TYPE DATA.—The types (USNM) were originally reported by Uhler from "California, and near San Francisco."

SPECIMENS STUDIED.—13 males, 20 females.

UNITED STATES: *Arizona*: Baboquivari Mts., Boyce Thompson Arboretum (Pinal Co.), Catalina Springs, Tempe, Tucson; March to June. *California*: No exact locality. *Utah*: St. George, Sevier Bridge Reservoir; March, August.

MEXICO: *Baja California*: El Rufugio, La Paz, Mesquital, San Ignacio, San José del Cabo, San Pedro; July. *Quintana Roo*: Espíritu Santo Island; June. *Sonora*: Guaymas; April.

DISCUSSION.—This very strongly marked species is easily identified, as is attested to by the fact that whenever this name was found attached to a specimen, that specimen was one of this species.

Tomnotus curvipes (Dallas), new combination

PLATE FIGURES 70, 71, 252

Aethus curvipes Dallas, 1851, p. 114.—Walker, 1867, p. 152.—Stål, 1876, p. 25.—Signoret, 1882, p. 39, pl. 2, fig. 81.—Uhler, 1886, p. 3.
Cydnius curvipes Lethierry and Severin, 1893, p. 66.

DIAGNOSIS.—The large size, polished dorsum, and modified hind tibiae (which in both sexes show a distinct curve in apical third and a flattened space ventrally near base) readily distinguish this species.

DESCRIPTION.—MALE: Oval.

Head: Length more than half width; 1.59(1.38-1.75):2.55(2.28-

2.73); interocular width, 1.59(1.33–1.70); jugs rounded, forming a flattened semicircle, almost as long as clypeus, latter with two subapical setigerous punctures; jugum with a complete, submarginal row of coarse, close-set, setigerous punctures giving rise to long cilia and stout pegs, surface longitudinally depressed either side of clypeus and with scattered minute punctures; ocelli well developed, separated from eye by more than ocellar width; jugum ventrally polished, impunctate; maxillary plate moderately and very closely punctured. Antennal segments: I, 0.55(0.49–0.58); II, 0.68(0.66–0.71); III, 0.59(0.50–0.65); IV, 0.79(0.70–0.86); V, 0.77(0.75–0.81). Bucculae not as high as labial II; labium surpassing middle coxae. Labial segments: I, 1.09(0.91–1.17); II, 1.39(1.20–1.50); III, 1.25(1.03–1.33); IV, 0.89(0.72–1.00).

Pronotum: Width almost twice length, 5.73(5.03–6.07):2.95(2.69–3.26); anterior margin strongly and broadly emarginate; lateral margins entire, with a submarginal row of about 20 setigerous punctures; transverse impression slightly behind midlength, obsolete to absent medially, marked by a single crescentic row of coarse punctures behind anterior emargination and a few (one to five) or no punctures laterally; posterior lobe with a few punctures medially and laterally.

Scutellum: Length equal to or greater than width, 3.78(3.32–4.08):3.69(3.30–3.90); numerous coarse punctures scattered irregularly over surface except across base and apex, latter sometimes with several minute punctures.

Hemelytron: Corial areas well defined; disc punctured throughout, more obsoletely so medially, two distinct rows of coarse punctures paralleling claval suture; exocorium closely and distinctly punctured for most of its length; costa with six to ten setigerous punctures; clavus with one or two irregular, longitudinal rows of punctures; membranous suture broadly, shallowly concave, lateral angle acute; membrane usually with distinct fuscous clouds between veins.

Propleuron: Shining, with a few coarse punctures above acetabulum, in depression and near posterolateral angle; prosternal carinae about half as high as labial II, abruptly terminated posteriorly.

Mesopleuron: Evaporatorium interrupted on outer half by polished strip along posterior margin of segment; lateral polished area impunctate.

Metapleuron: Evaporatorium occupying more than two-thirds of segment, lateral margin weakly concave; peritreme abruptly terminated; lateral area impunctate.

Sternites: Polished, impunctate, posterior margins sharply and finely crenulate on lateral third or more.

Legs: Posterior legs distinctly modified, femora convex ventrally with a prominent, subapical, conical tubercle, tibiae abruptly and

strongly flattened below near base and conspicuously curved in apical third.

Terminalia: Genital capsule shining, with scattered obsolete and minute punctures; gonostylus as illustrated (fig. 252).

Length of body: 10.01(9.16–10.81).

FEMALE: rather similar to male, but posterior femora with only a weak indication of the subapical tubercle ventrally, tibiae more weakly but still distinctly flattened and curved as described for male. Measurements averaging somewhat smaller.

Head: Length-width ratio: 1.55(1.52–1.59):2.47(2.40–2.53); interocular width, 1.48(1.36–1.59). Antennal segments: I, 0.53(0.50–0.56); II, 0.64(0.63–0.66); III, 0.51(0.50–0.53); IV, 0.73(0.70–0.76); V, 0.78(0.76–0.80). Labial segments: I, 1.05(0.98–1.10); II, 1.39(1.26–1.50); III, 1.25(1.10–1.33); IV, 0.87(0.76–0.93).

Pronotum: Width-length ratio, 5.42(5.24–5.58):2.88(2.70–2.97).

Scutellum: Longer than wide, 3.64(3.45–3.78):3.37(3.30–3.45).

Length of body: 9.88(9.61–10.05).

TYPE DATA.—Dallas' types (BrM) were listed as coming from "Jamaica" and "S. America."

SPECIMENS STUDIED.—4 males, 13 females.

BAHAMAS: Andros Island, May–June, 1904, W. M. Wheeler, 1 female (AmM); W. M. Mann, 1 female (USNM). Cat Island, Arthur's Town, July–Aug., 1935, W. J. Clench, 2 females (MCZ). South Bimini Island, June 20, 1950, Cazier and Rindge, 2 females (AmM, RCF); July, August 10, 15, and 21, 1951, C. and P. Vaurie, 5 females (AmM).

JAMAICA: South of Bug River, Mar. 30, 1906, A. E. Wright, 1 male (MCZ). Port Antonio, 1 male (MCZ); January, A. E. Wright, 1 male, 1 female (AmM). Richmond, Nov. 2, 1 male (USNM). Stoney Hill, M. Bovell–37, 1 female (USNM).

DISCUSSION.—Several interesting types of variation were noted in the small series studied. These included a difference in pronotal punctation, in degree of concavity of anterior pronotal margin, and the size of the ocelli. The pronotal punctation on the specimens from the Bahamas was coarser, impressed, and more abundant in the transverse impression (fig. 70) than on those from Jamaica (fig. 71). The Island of Cuba, lying between the Bahamas and Jamaica, was not represented in the material studied. A series from Cuba compared with specimens from the other two localities should prove interesting. The degree of concavity of the anterior margin of the pronotum (figs. 70, 71) and the variation in ocellar size showed no such geographic arrangement.

Tominotus hogenhoferi (Signoret), new combination

PLATE FIGURES 69, 253

Aethus hogenhoferi Signoret, 1881b, p. 429, pl. 12, fig. 58.—Uhler, 1886, p. 3.*Aethus rogenhoferi* Lethierry and Severin, 1893, p. 68.

DIAGNOSIS.—The broad band of setigerous punctures along the sides of the pronotum plus the impunctate abdomen will identify this species within the genus.

DESCRIPTION.—MALE: One specimen. Oval.

Head: Length more than half width, 1.43:2.05; interocular width, 1.43; juga rounded, forming a flattened semicircle, as long as clypeus, latter with two subapical setigerous punctures giving rise to a row of stout pegs with numerous long cilia scattered between and mesally; surface flattened, vertex and clypeus smooth, juga with numerous prominent punctures which converge toward margins; ocelli small, removed from eyes by about twice an ocellar width; jugum ventrally impunctate; maxillary plate with several coarse punctures. Antennal segments: I, 0.53; II, 0.50; III, 0.53; IV and V missing. Bucculae as high as antennal II, almost semicircular; labium reaching between middle coxae. Labial segments: I, 0.95; II, 1.23; III, 0.93; IV, 0.76.

Pronotum: Length more than half width, 3.01:5.08; anterior margin broadly and deeply emarginate; lateral margins entire, not emarginate, with a broad, submarginal line of many setigerous punctures (fig. 69); transverse impression at midlength, vague, marked by an irregular row of moderate punctures; anterior lobe polished, impunctate except for a few punctures laterally; posterior lobe polished, with a few scattered punctures finer than those of transverse impression.

Scutellum: Little longer than wide, 3.45:3.31; surface smooth, with numerous well-separated punctures becoming fine apically; apex broadly rounded, wider than half of membranal suture.

Hemelytron: Corial areas well defined; surface polished and punctures scattered, fine on apical half, becoming coarser toward base and in two rows paralleling claval suture; radial vein with an irregular row of fine punctures; clavus with three partial rows of punctures; costa with 14 or 15 setigerous punctures; membranal suture weakly bisinuate, rounded at lateral angle; membrane surpassing apex of abdomen, with prominent, rounded, premedian fuscous spot.

Propleuron: Punctured only at anteroventral angle, ventrally in depression and in posterolateral angle; prosternal carinae prominent, sharp, abruptly terminated ventrally.

Mesopleuron: Evaporatorium with marginal polished band separating it from posterior margin of segment; latter entire.

Metapleuron: Evaporatorium occupying more than half of segment;

peritreme extending more than half way across segment, becoming evanescent apically.

Legs: Moderately long, not unusually modified.

Sternites: Polished, impunctate or with a few fine punctures laterally.

Terminalia: As illustrated (fig. 253).

Length of body: 8.54.

FEMALE: Two specimens. Similar to male, except sometimes the outer row of punctures paralleling claval suture is incomplete; measurements larger.

Head: Length-width ratio, 1.43(1.43-1.43):2.25(2.22-2.28); interocular width, 1.50(1.50-1.51). Antennal segments: I, 0.58(0.56-0.60); II, 0.54(0.53-0.56); III, 0.57(0.53-0.61); IV, 0.75(0.72-0.78); V, 0.78(??-0.78). Labial segments: I, 0.98(0.93-1.04); II, 1.28(1.23-1.33); III, 1.01(0.93-1.10); IV, 0.81(0.80-0.83).

Pronotum: Length-width ratio, 2.97(2.95-2.99):5.46(5.38-5.55).

Scutellum: Length-width ratio, 3.45(3.29-3.61):3.53(3.44-3.61).

Length of body: 9.64(9.38-9.90).

TYPE DATA.—The two specimens (Wien) on which Signoret based his original description were loaned for study. They are in a somewhat poor condition but clearly recognizable. The specimen from Mexico bearing the type label is here designated lectotype. The other specimen is labeled "Guatemala, Escuintla." On both specimens the trivial name begins with the letter "R" instead of the "H" which appeared in the original citation. The type localities as given with the original description were simply "Guatemala, Mexico".

SPECIMENS STUDIED.—2 males, 3 females.

MEXICO: *No exact localities*: 1 male (USNM), 1 male (Wien). *Colima*: 2 females (USNM).

GUATEMALA: Escuintla, 1 female (Wien).

DISCUSSION.—Each of the three nontype specimens examined had been determined by a different worker, but all were labeled "*Aethus hogenhoferi*."

The present author considers the use of the initial "R" in the trivial name by Lethierry and Severin an unnecessary emendation from the letter "H" which appeared in the original description.

Tominotus impuncticollis (Distant), new combination

PLATE FIGURES 82, 254

Pangaeus impuncticollis Distant, 1880, p. 7, pl. 3, fig. 7.

Aethus impuncticollis Signoret, 1881b, p. 428, pl. 12, fig. 57.

Cydnius impuncticollis Lethierry and Severin, 1893, p. 66.

DIAGNOSIS.—This species may be recognized by the broad scutellar apex and the absence of distinct punctures laterally on pronotal disc.

DESCRIPTION.—MALE: Oval.

Head: Length about two-thirds width, 1.29(1.24–1.36):1.92(1.89–2.01); interocular width, 1.41(1.36–1.43); anterior outline a slightly truncated semicircle, clypeus almost as long as juga, narrowed apically, with two subapical setigerous punctures; submarginal setigerous punctures bearing full row of stout pegs and few long hairs; surface flattened, obsolete punctate, moderate rugae radiating from eyes by space greater than three times transverse ocellar width; jugum ventrally and maxillary plate impunctate. Antennal segments: I, 0.44(0.41–0.50); II, 0.39(0.36–0.41); III, 0.48(0.45–0.50); IV, 0.57(0.55–0.60); V, 0.62(0.61–0.64). Bucculae higher than labial II, almost semicircular; labium reaching between middle coxae. Labial segments: I, 0.67(0.63–0.83); II, 0.98(0.96–1.00); III, 0.84(0.80–0.96); IV, 0.65(0.63–0.66).

Pronotum: Length more than half width, 2.56(2.50–2.70):4.67(4.56–4.76); anterior margin deeply, roundly emarginate; lateral margin entire, not emarginate, with submarginal row of 20 to 23 setigerous punctures; transverse impression absent or weakly indicated laterally; disc with few widely scattered, very fine punctures.

Scutellum: Length usually slightly greater than width, 3.07(3.00–3.15):2.96(2.85–3.01); discally with few scattered, moderate punctures.

Hemelytron: Clavus and corium polished; clavus with irregular row of punctures; mesocorium with obsolete, fine punctures becoming slightly more distinct basally, row paralleling claval suture represented by few, usually separated punctures; exocorial punctation stronger, more abundant than that on mesocorium; costa with four setigerous punctures; membranal suture nearly straight (fig. 82); membrane reaching base of abdomen.

Propleuron: Shining, with distinct punctures in depression and above acetabulum; prosternal carinae less than half as high as labial II, truncated posteriorly.

Mesopleuron: Evaporatorium interrupted posteriorly by polished band; lateral area roughly rugopunctate.

Metapleuron: Lateral margin evaporatorium concave; lateral area coarsely punctate near evaporatorium.

Legs: Not unusually modified.

Sternites: Smooth, punctate only laterally.

Terminalia: Genital capsule shining, with few scattered, distinct punctures, apical margin almost straight; gonostylus as illustrated (fig. 254).

Length of body: 8.55(8.40–8.70).

TYPE DATA.—Distant's (1880) types (BrM) are from "Mexico; Panama."

SPECIMENS STUDIED: 5 males.

MEXICO: *Na exact localities*: 1 male (USNM) labeled *Ectinopus holomelas* and *Aethus impuncticollis* and 1 male (USNM) labeled *Aethus impuncticollis* by Linell. *Distrito Federal*: Lomas de Chapultepec, June 28, 1932, 1 male (RLU). *Hidalgo*: 5 miles north of Tizayuca, Nov. 13, 1946, E. S. Ross, 2 males (CalAc).

DISCUSSION.—Distant's statement in the original description that the margins of the pronotum "are sparingly fringed with long hairs" may have been true of his specimens, but the great number of setigerous punctures indicate that 20 or more hairs should be present in unrubbed specimen.

Tomnotus inconspicuus, new species

PLATE FIGURE 258

DIAGNOSIS.—Among those species of the genus which measure less than 6 mm. in length, this one may be recognized by the lack of subapical setigerous punctures on the clypeus and the few (two to six) setigerous punctures on the costa.

DESCRIPTION.—MALE: Oval.

Head: Length about two-thirds width, 0.81(0.80–0.86):1.29(1.26–1.37); interocular width, 0.79(0.76–0.83); anterior outline semicircular, clypeus equalling juga, narrowed apically, without subapical setigerous punctures; juga with complete row of submarginal, setigerous punctures bearing full row of pegs and few hairs between; surface shining, impunctate or with very few widely scattered, fine punctures; ocelli moderate, separated from eye by space almost twice ocellar width; jugum ventrally and maxillary plate (except basally) shining, impunctate. Antennal segments: I, 0.24(0.23–0.26); II, 0.24(0.23–0.26); III, 0.29(0.27–0.32); IV, 0.36(0.34–0.39); V, 0.41(0.40–0.43). Bucculae almost as high as labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.41(0.40–0.43); II, 0.64(0.60–0.71); III, 0.50(0.47–0.55); IV, 0.37(0.37–0.38).

Pronotum: Length about half width, 1.33(1.30–1.40):2.60(2.40–2.73); anterior margin moderately emarginate; lateral margins entire, straight on middle third or more, with submarginal row of seven or eight setigerous punctures; transverse impression slightly impressed, obsolete at middle, marked by medially interrupted row of close-set punctures; anterior lobe with large and fine punctures intermixed laterally and in subapical, depressed row; posterior lobe with very widely scattered punctures somewhat more numerous medially.

Scutellum: Length greater than width, 1.75(1.69–1.88):1.65(1.60–1.71); impunctate basally, discal punctation becoming finer and closer toward narrowed apex.

Hemelytron: Clavus and corium polished; clavus with one complete and one partial row of punctures; mesocorium with two rows of punctures.

tures paralleling claval suture, discally with fine scattered punctures becoming denser and coarser basally and sometimes apically; exocorium more uniformly and closely punctate; costa with two (one specimen with three on one side) setigerous punctures; membranal suture straight, lateral angle not produced; membrane surpassing apex of abdomen.

Propleuron: Shining, with few punctures in depression and above acetabulum.

Mesopleuron: Evaporatorium reaching lateral margin; lateral area impunctate.

Metapleuron: Lateral margin of evaporatorium straight; lateral area impunctate.

Legs: Not specially modified.

Sternites: Shining, impunctate, more or less rugopunctate in spiracular area.

Terminalia: Genital capsule shining, with few fine punctures laterally, apical margin sinuate medially; gonostylus as illustrated (fig. 258).

Length of body: 5.10(4.87–5.44).

FEMALE: Similar to male.

Head: Length-width ratio, 0.85(0.79–0.92):1.31(1.23–1.37); interocular width, 0.81(0.78–0.87). Antennal segments: I, 0.27(0.25–0.33); II, 0.24(0.22–0.30); III, 0.28(0.26–0.31); IV, 0.33(0.31–0.36); V, 0.40(0.36–0.43). Labial segments: I, 0.44(0.40–0.51) II, 0.64(0.62–0.66); III, 0.45(0.43–0.49); IV, 0.36(0.34–0.41).

Pronotum: Length-width ratio, 1.40(1.31–1.52):2.66(2.53–2.86).

Scutellum: Length-width ratio, 1.76(1.62–1.88):1.67(1.56–1.82).

Length of body: 4.97(4.89–5.39).

TYPE DATA.—Holotype male (Car) and allotype female (Car), "Taperina, Brazil, Acc. No. 2966." Paratypes as follows:

BRAZIL: Taperina, 4 males, 4 females (Car, USNM). Santarém, 2 males, 2 females (Car). Natal, Mann, 1 female (MCZ). No exact locality ("Brasil, S. Am."), 1 male, 1 female (AmM).

ARGENTINA: La Plata, Spegessini, 1 female (MCZ); 2 males, 1 female (UnivNac); C. Bruck, 2 females (UnivNac); A. R. Bezzi, 1 male (UnivNac). "Pucapampa," December 1919, Weiser, 1 female (BrM). Río Negro (Menafra), Tremolera and Jorgensen, 3 males, 4 females (UnivNac, RCF). Buenos Aires, C. Bruck, 1 female (UnivNac). Río Luján, Buenos Aires Province, Nov. 19, 1939; Biraben-Bezzi, 1 female (UnivNac). Palado, Buenos Aires Province, Sept. 20, 1942. Torres, 1 male (UnivNac). Rosario, Santa Fé Province, 1 female (UnivNac).

DISCUSSION: The specific name refers to the lack of outstanding features to make this form conspicuous among other species of the genus.

Tomnotus laeviculus (Berg), new combination

PLATE FIGURE 255

Cydnus laeviculus Berg, 1879, p. 11.

Aethus insularis Signoret, 1882, p. 37, pl. 2, fig. 78.

Aethus distinctus Signoret, 1882, p. 37, pl. 2, fig. 79. New synonymy.

Cydnus insularis Lethierry and Severin, 1893, p. 66.

DIAGNOSIS.—The small size (body length 3.7–4.5) and the presence of two setigerous punctures subapically on the clypeus will mark this species from its congeners.

DESCRIPTION.—MALE: Elongate-oval, costa subparallel on basal half.

Head: Length almost two-thirds width, 0.74(0.71–0.81):1.10(1.02–1.16); interocular width, 0.69(0.63–0.73); anterior outline semicircular, clypeus as long as juga, narrowed apically and with two subapical setigerous punctures; jugum with a complete, submarginal row of setigerous punctures bearing a row of stout, blunt pegs and few hair-like setae between; surface shining, with few distinct, oblique rugae, punctation becoming coarser and more abundant towards margins; ocelli well developed, separated from eyes by space nearly twice transverse ocellar width; jugum ventrally and maxillary plate, except basally, polished, impunctate. Antennal segments: I, 0.21(0.16–0.24); II, 0.18(0.16–0.20); III, 0.24(0.23–0.26); IV, 0.27(0.26–0.30); V, 0.34(0.33–0.36). Bucculae almost as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.37(0.35–0.40); II, 0.52(0.50–0.61); III, 0.42(0.41–0.43); IV, 0.34(0.33–0.36).

Pronotum: Length about half width, 1.17(1.10–1.21):2.27(2.11–2.40); anterior margin deeply, doubly emarginate; lateral margins entire, straight on basal half, with submarginal row of seven to ten setigerous punctures; transverse impression moderately impressed, obsolete medially, marked by regular, medially interrupted row of punctures; punctation of anterior lobe restricted to broad lateral area and subapical line; posterior lobe with scattered fine and coarse punctures.

Scutellum: Length little greater than width, 1.46(1.36–1.56):1.40(1.29–1.49); polished; almost impunctate across base, discally with numerous scattered punctures becoming slightly finer toward apex.

Hemelytron: Clavus and corium polished; clavus with one complete and basal half of second row of punctures; corium with numerous punctures becoming larger and more crowded basally; costa with two to four setigerous punctures; membranal suture virtually straight, lateral angle not produced; membrane surpassing apex of abdomen.

Propleuron: Shining, with few punctures in depression; prosternal carinae about half as high as labial II.

Mesopleuron: Evaporatorium following posterior margin to lateral

margin, thence continued forward along lateral margin; lateral area impunctate.

Legs: Not specially modified.

Sternites: Shining, impunctate except in spiracular area.

Terminalia: Genital capsule shining, with few punctures in lateral angles, apical margin slightly sinuate medially; gonostylus as illustrated (fig. 255).

Length of body: 4.27(4.08–4.50).

FEMALE: Similar to males.

Head: Length-width ratio, 0.74(0.70–0.78):1.10(1.03–1.15); interocular width, 0.70(0.66–0.73). Antennal segments: I, 0.21(0.20–0.23); II, 0.18(0.16–0.20); III, 0.24(0.23–0.26); IV, 0.29(0.26–0.30); V, 0.35(0.35–0.36). Labial segments: I, 0.37(0.34–0.40); II, 0.57(0.53–0.61); III, 0.41(0.38–0.43); IV, 0.33(0.32–0.36).

Pronotum: Length-width ratio, 1.14(0.97–1.21):2.20(2.00–2.31).

Scutellum: Length-width ratio, 1.42(1.31–1.56):1.37(1.23–1.49).

Length of body: 4.16(3.74–4.35).

TYPE DATA.—Berg's type, which is apparently lost, was reported to be from Buenos Aires. Signoret indicates that his type had come from Montevideo, Uruguay.

SPECIMENS STUDIED.—8 males, 10 females.

BRAZIL: Baixa Verde, Rio Grande do Norte, Mann, 1 male (MCZ). Chapada, July and August, 6 males, 6 females (Car). Estancia Sergipes, December 1929, R. C. Shannon, 1 female (USNM). Nova Teutonia, Santa Catarina, Aug. 26, 1950, Nov. 28, 1950, F. Plaumann, 2 females (JCL). Pará, July, 1 male, 1 female (Car).

DISCUSSION.—This is the form which Signoret (1882, p. 37) synonymized under *C. insularis* Westwood after a study of the type of Berg's *laeviculus*. Such assignment is not tenable, as Dr. Graham's helpful notes reveal that the type of *insularis* Westwood has an incomplete row of setigerous punctures on the submargin of the jugum, thus not agreeing with Signoret's definition and causing it to be placed in the genus *Dallasiellus* in the present study (footnote 9, p. 573). However, in the absence of Berg's type, the author is accepting Signoret's association of Berg's species with this form.

Although the author has not seen the type of *Aethus distinctus* Signoret, that species is synonymized here because of a reluctance to accept Signoret's species when they are separated from closely allied forms on the basis of the osteolar peritreme. Sufficient evidence is available in other parts of the family (i.e., his separation of *Aethus politus* from *A. communis*, of *Pangaeus vicinus* from *P. bilineatus*, and other examples) to cause one to question the accuracy of his observations on this structure. Study of the type may refute this conclusion.

Tominotus signoreti (Mulsant and Rey), new combination

PLATE FIGURES 6, 35, 80, 111, 117, 140, 256

Cydnus (Tominotus) signoreti Mulsant and Rey, 1866, p. 319.*Cyrtomenus constrictus* Berg, 1879, p. 277.*Aethus (Tominotus) constrictus* Signoret, 1881b, p. 427, pl. 12, fig. 56.*Cydnus signoreti* Lethierry and Severin, 1893, p. 68.

DIAGNOSIS.—The broad scutellar apex, the single, lateral submarginal row of setigerous punctures and the unicolorous corium and legs combine to separate this species from others within the genus. The pronotal constriction shown by the males is the deepest and most abrupt found in any cydnid of the Western Hemisphere.

DESCRIPTION: Based on a single male and a single female. MALE: Rounded oval.

Head: Length about two-thirds width, 1.00:1.46; interocular width, 1.06; outline semicircular, eyes projecting by about one-third their width; juga shining, with faint radiating rugae; surface, including base of clypeus, faintly alutaceous, with scattered minute punctures; clypeus with two subapical setigerous punctures; juga with submarginal row of setigerous punctures bearing only long cilia, no pegs; juga ventrally and maxillary plate polished, impunctate. Antennal segments: I, 0.23; II, 0.25; III, 0.30; IV, 0.33; V, 0.33. Bucculae low, evanescent posteriorly (fig. 35); labium reaching between middle coxae (as in female?). Labial segments: I, 0.56; II–IV missing.

Pronotum: Width more than twice length, 3.32:1.56; anterior margin deeply bimarginate; side margins very deeply and abruptly constricted opposite ends of transverse groove (fig. 6), with single, submarginal row of 25 to 27 setigerous punctures, one setigerous puncture near base set mesad of this row; transverse groove absent; anterior lobe laterally with broad area of prominent punctures; posterior lobe, except hind margin, punctured across width.

Scutellum: Distinctly wider than long, 2.28:1.75; triangular, apex not narrowed (fig. 80); impunctate basally, discally with numerous, close-set, moderate punctures becoming finer posteriorly.

Hemelytron: Corial areas well defined, alutaceous and rather uniformly punctured on discal and exocorial areas with two rows of closer set punctures paralleling claval suture; clavus finely alutaceous, with irregular rows of fine punctures; costa with 13 to 15 punctures; membranal suture bisinuate; membrane longer than basal width, somewhat surpassing apex of abdomen.

Propleuron: Impunctate; prosternal carinae prominent, thick, calloused, abruptly and rectangularly terminated ventrally.

Mesopleuron (fig. 111): Evaporatorium interrupted by a broad polished band along posterior margin.

Metapleuron (fig. 111): Evaporatorium occupying almost mesal half of segment, lateral margin well defined, deeply concave.

Sternites: Shining, very weakly alutaceous, weakly and finely rugose and punctured laterally.

Terminalia: Genital segment marginally carinate and slightly expanded; gonostylus as illustrated (fig. 256).

Length of body: 5.14.

FEMALE: Generally similar to male but lacking constriction of pronotal side margins and the extra pronotal setigerous puncture in the posterior angle mesad of the submarginal row; measurements (in the single female studied) slightly smaller than those of male.

Head: Width-length ratio, 1.43:0.96; interocular width, 1.00. Antennal segments: I, 0.33; II, 0.26; III, 0.28; IV and V missing. Labial segments: I, 0.56; II, 0.64; III, 0.53; IV, 0.43.

Pronotum: Width-length ratio, 3.26:1.43.

Scutellum: Width-length ratio, 2.08:1.69.

Length of body: 5.00.

TYPE DATA: Mulsant and Rey originally gave their type locality as "Montpellier," France, but Signoret (1881b, p. 428) later pointed out their misinterpretation of his label "Mont.," which he said stood for Montevideo in Uruguay. Berg gave the type locality for *constrictus* as Provincia Bonaerensis, Argentina. The author has been unsuccessful in locating the type of *signoreti* but has learned that Berg's type is in the Universidad Nacional de La Plata, Buenos Aires.

SPECIMENS STUDIED: 1 male, 1 female.

PARAGUAY: San Bernardino, Fiebrig, 1 male, 1 female (Wien).

DISCUSSION.—See discussion under the genus.

Tominotus unisetosus, new species

PLATE FIGURE 257

DIAGNOSIS.—Among its congeners with the uninterrupted mesopleural evaporatorium, this species may be recognized by the single setigerous puncture on the costa.

DESCRIPTION.—MALE: Elongate, subparallel.

Head: Width one-half greater than length, 1.26(1.16–1.36):0.87 (0.86–0.90); interocular width, 0.80(0.80–0.83); juga semicircular, converging but not contiguous beyond apex of clypeus; latter with two setigerous punctures subapically; juga with submarginal punctures giving rise to peglike setae anteriorly and long slender setae basally; surface faintly to distinctly rugose radially, with numerous rounded, wide, shallow punctures; vertex with punctures minute or absent; ocelli well developed, removed from eye by more than ocellar width; jugum ventrally polished, impunctate; maxillary plate with few punc-

tures posteriorly. Antennal segments: I, 0.26(0.26–0.27); II, 0.33(0.30–0.36); III, 0.34(0.33–0.36); IV, 0.41(0.40–0.46); V, 0.48(0.46–0.50). Bucculae as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.48(0.46–0.50); II, 0.67(0.66–0.70); III, 0.59(0.53–0.68); IV, 0.43(0.40–0.46).

Pronotum: Width about twice length, 2.60(2.40–3.06):1.32(1.23–1.39); anterior margin strongly emarginate; side margins convex, not sinuate nor constricted at ends of transverse groove, more abruptly narrowed anteriorly; lateral submarginal row with six or seven setigerous punctures; transverse groove weak, marked by a row of close-set, prominent punctures; anterior lobe impunctate discally, with an irregular double row of prominent punctures and numerous minute ones; submarginally at apex between eyes and laterally with numerous punctures similar to those of transverse groove; posterior lobe polished, with few scattered, moderate punctures and more numerous minute ones on median disc and laterally.

Scutellum: Distinctly longer than broad, 1.83(1.69–2.06):1.64(1.56–1.82); triangular, apex narrowed; disc with numerous distinct, irregularly placed punctures except on basal fifth and on apex.

Hemelytron: Corial areas well defined, polished; mesocorium with numerous punctures, these obsolete on middle third, coarser and closer set in two rows paralleling claval suture; exocorial area distinctly, closely and rather irregularly punctured throughout; costa with a single, subbasal, setigerous puncture; clavus with a disrupted, submedian row of distinct, close-set punctures; membranal suture straight; membrane slightly surpassing apex of abdomen, length and basal width subequal.

Mesopleuron: Evaporatorium extensive, reaching posterolateral angle of segment and prolonged forward along side margin; posterior margin finely crenulate.

Metapleuron: Evaporatorium occupying more than mesal three-fourths of segment, obliquely and abruptly separated from impunctate lateral polished area.

Sternites: Shining, impunctate, irregularly sculptured with obsolete to distinct longitudinal rugae.

Terminalia: Subgenital plate with apical margin slightly flaring and broadly, deeply, sinuate at middle apex; gonostyli as illustrated (fig. 257).

Length of body: 4.88(4.57–5.28).

FEMALE: Very similar to male, measurements averaging larger.

Head: Width-length ratio, 1.33(1.30–1.40):0.89(0.86–0.93); interocular width 0.82(0.81–0.86). Antennal segments: I, 0.27(0.26–0.30); II, 0.33(0.30–0.36); III, 0.33(0.30–0.36); IV, 0.44(0.40–0.46);

V, 0.54(0.46–0.60). Labial segments: I, 0.47(0.46–0.50); II, 0.73(0.66–0.76); III, 0.59(0.56–0.65); IV, 0.44(0.43–0.47).

Pronotum: Width-length ratio, 2.64(2.47–2.79):1.40(1.30–1.49).

Scutellum: Length-width ratio, 1.99(1.89–2.15):1.64(1.56–1.82).

Length of body: 4.95(4.57–5.28).

TYPE DATA.—Holotype male (USNM 64428) and allotype female (USNM), both labeled "Brownsville, Tex., Mar. 14, 1936, P. A. Glick, col., cotton on roots in soil." Paratypes as follows:

UNITED STATES: *Texas*: Austin, Mar. 1, 1901, 1 male (USNM), Aug. 24, 1927, D. Rockefeller Exp., Gertsch, 1 female (AmMus). Bexar Co., from spoil, peach orchard, W. F. Turner, 1 male (labeled "*Aethus* sp. det. H. G. Barber"), 2 females: Nov. 9, 1938, 9019, 1 female, Mar. 1937, 3385, 1 female; Mar. 27, 1932, under litter, T 3282, 1 female; May 5, 1938, 11D-14, 1 female; July 16, 1937, 5446, 1 male; Nov. 6, 1936, 1 female (all USNM, same collector). Brazos Co., 1 female (MCZ). Brownsville, June, 3 females (one labeled "*Homaloporus* sp. perhaps *pangaеformis* Sign., det. E. P. Van Duzee") (KU); same data, double mount of 2 females (one labeled "*Pangaеus bilineatus* Say," and the other "*Aethus* n. sp., det. H. G. Barber") (USNM); same data, double mount of 2 females (labeled "*Rhytidoporus* sp.," in Van Duzee's handwriting) (CalAc); Oct. 1942, E. S. Ross, at light, 3 females (CalAc); June 1903, 1 female with determination of "*Cydnus communis*" crossed out (USNM); June 11–16, 1938, Darlington, 2 females (MCZ); March 3, 4, 10, 11, 14, 1936, cotton on roots in soil, 6 females, 2 nymphs (USNM); 1929, 1 female (USNM); 1929, 1 female (with determination "*Cydnus communis*" crossed out) (USNM). Del Rio, July 8, 1938, R. I. Sailer, 1 female (USNM). Harlingen, Sept. 1, 1945, D. E. Hardy, 1 female (SI). Hidalgo Co., June 6, 1930, J. C. Gaines, Tex. Exp. Sta. light trap, 4 females (one labeled "*Aethus* sp.") (HMH, RCF). Runge, Sept. 24, 1906, 1 female, nighthawk stomach (USNM). San Angelo, Tom Green Co., June 28, 1948, C. and P. Vaurie, 1 female (AmMus). San Antonio, July 7, 1942, E. S. Ross, 1 female (CalAc). San Juan, June 28, 1939, L. W. Hapner, 1 female (KU). Uvalde, Aug. 4, 1937, D. J. and J. N. Knull, 1 female (JCL). No exact locality, Mar. 27, 1900, 1 male (labeled "*Geotomus parvulus*," second label with note by Van Duzee, "does not agree") (USNM); February, A. L. Melander, 1 female (labeled "*Pangaеus* sp.") (HMH).

MÉXICO: *Guerrero*: 3 miles north of Chilpancingo, Nov. 18, 1946, 1 female (CalAc). *Jalisco*: Volcán de Colima, L. Conrad, 1 female (USNM). *México*: Tejupileo, June 16, 1933, H. E. Hinton, R. L. Usinger, 3 males, 5 females (RLU, RCF). *Morelos*: Cuernavaca, June, 1 male (RCF). "Temixco," June 13, 1941, 1350, Bolívar, Osorio, 1 female (Pel). *Oaxaca*: Tuxtepec, J. Canelo, May 21, 1934, #894, 1 female (USNM). *San Luis Potosí*: 18 miles south of Tamazunchale, Nov. 22, 1946, E. S. Ross, 1 female (CalAc). *Yucatán*: Merida, July 29, 1952, J. and D. Pallister, 2 females (AmM).

GUATEMALA: 70 miles east of Guatemala City, May 8, 1947, R. R. Miller, 1 female (USNM). Panzós, July 17, 1947, C. and P. Vaurie, 1 female (AmM).

COSTA RICA: Bebedero, June 12–July 4, 1930, E. Reimoser, 17 females (Wien, RCF), E. Reimoser, 1 male, 5 females (Wien). San Isidro, E. Reimoser, 1 female (USNM). No exact locality, intercepted at Philadelphia on banana, Oct. 1, 1905, F. K. Knab, 1 female (USNM).

DISCUSSION.—That such a common species should not have been described previously is quite surprising. However, the confusion that seems to permeate the studies of this family is very evident from the

variety of determinations listed above, even to the extent of one hemipterist placing specimens of one series under two generic names.

The present species shows very little variation except in the abundance of punctures laterally on the anterior pronotal lobe. An unusual number of specimens, all from Texas, bore ecological data with such notes as "cotton, in roots in soil," "at light," "from soil," "peach orchard," and "nighthawk stomach."

Genus *Dallasiellus* Berg

Stenocoris Signoret, 1880, p. xliv (nec Burmeister, 1839, p. 1010, in hemipterous family Coreiidae; nec Rambur, 1839, p. 139, in hemipterous family Lygaeidae).

Dallasia Bergroth, 1891, p. 235 (nec Stokes, 1886, p. 534, in Protozoa).

Dallasiellus Berg, 1901, p. 281.

Colobophrys Horváth, 1919, p. 244. New synonymy.

Geocnethus Horváth, 1919, p. 245 (in part). New synonymy.

DIAGNOSIS.—This genus is best recognized among those cydnid genera of the Western Hemisphere that lack a differentiated terminal lobe of the osteolar peritreme by the incomplete, submarginal row of setigerous punctures on the jugs and the absence of a subapical, impressed line on the pronotum.

DESCRIPTION.—Size small to large, 3.7 to 11.5; form oval to parallel-sided; dorsum less strongly convex than venter.

Head: Length more than half width; eyes weakly to strongly projecting; jugs as long as or longer than clypeus and convergent in front of it; surface more or less flattened, with no punctures, scattered punctures or coarse confluent punctures; margin with or without fine dorsal carina; ocelli small to moderate, situated on or posterior to line connecting hind margins of eyes; antennae 5-segmented, relative lengths of segments variable, I usually shortest and V usually longest; bucculae moderately to very high, reaching nearly or quite to base of head; labium reaching from between middle coxae to third sternite, II longest, I or IV shortest.

Pronotum: Width less than to more than twice the length; side margins usually narrowed from base, with submarginal row of setigerous punctures; anterior margin moderately to deeply concave; transverse impression median or postmedian, weakly to strongly impressed; posterior margin broadly but shallowly convex.

Scutellum: Longer than broad, apex narrowed, less than half of membranal suture; disc with or without punctures.

Hemelytron: Corial areas well defined, membranal suture straight or sinuate, lateral angle prolonged or not; corial punctation variable; membrane less than half of hemelytral length, reaching or surpassing apex of abdomen.

Propleuron: Punctate or not; prosternal carinae moderately to very strongly elevated and lobulate.

Mesopleuron: Nearly flat; evaporatorium restricted (fig. 106) or extending into posterolateral angle of segment (figs. 105, 107); mesosternum convex, more or less carinate and haired medially.

Metapleuron: Convex; osteolar peritreme without modified terminal lobe (figs. 106, 107); evaporatorium occupying mesal two-thirds or three-fourths of segment; lateral area with few or no punctures.

Legs: Moderately long; anterior tibia (fig. 129) not surpassing tarsal insertion; posterior tibia (fig. 150) terete, usually simple, in some males (chiefly in the new subgenus *Pseudopangaeus*) ventrally with subbasal emargination distad of which is a decided angle (fig. 149).

Sternites: Polished or alutaceous, impunctate or with few punctures laterally; posterior margins of segments finely denticulate or crenulate.

Terminalia: Male genital capsule with apical rim entire or variously emarginate.

TYPE OF GENUS.—Signoret proposed *Stenocoris* monobasically for *Aethus longulus* Dallas (1851, p. 119). Since that generic name had been used previously by Burmeister in the hemipterous family Coreidae and by Rambur in the hemipterous family Lygaeidae, Signoret's application of it was invalid. Bergroth recognized this and proposed for it the new name *Dallasia*. Unfortunately, this name was also preoccupied, this time by Stokes in Protozoa so it became necessary for Berg to propose yet another name, *Dallasiellus*, for Signoret's genus. Because both of these new names were proposed to replace *Stenocoris* of Signoret, they must both take *Aethus longulus* Dallas as genotype by objective synonymy. The genotype of *Colobophrys* Horváth is *Colobophrys solitaria* Horváth (1919, p. 244) by original designation. The genotype of *Geocnethus* Horváth is the African species *Geocnethus obesus* Horváth (1919, p. 248) by original designation. Although none of the species of the Western Hemisphere is congeneric with *Geocnethus*, this name enters the American list because Horváth, in proposing it as new, assigned a number of American species to it. In this he has been followed by subsequent authors.

DISTRIBUTION.—From Washington and Idaho south through Central America into South America as far as Argentina, and eastward in the Gulf States of the United States and into the West Indies.

DISCUSSION.—Of all the genera of Cydnidae occurring in the Western Hemisphere, this genus is the least satisfactorily defined. It is a "residual area" of relatively little specialization, a "dumping ground" to receive those species which do not fit into any of the more strongly marked genera previously separated in the key.

The reasons for synonymizing the generic names of *Stenocoris* Signoret and *Dallasia* Bergroth were given above, both having been preoccupied.

Colobophrys Horváth is here relegated to synonymy because the genotype presents no features which the author considers to be of generic importance for separating it from *Dallasiellus*. In fact, *Colobophrys* is here considered to be the same as the nominal subgenus. Horváth had pointed out that he considered his genus to be close to *Macroscytus* to which it was related by the "marginatis pronoti postice abbreviatus." Actually this statement was misleading not only to the reader but also to Horváth himself. In none of the specimens of Cydnidae examined by the author, not even *Macroscytus*, has there been any shortening of the lateral pronotal margins. In *Macroscytus* the posterior part of the lateral pronotal margin is evanescent and hidden from dorsal view by the laterally swollen umbones; but nevertheless, it does extend to the posterior margin of the segment. Horváth based *Colobophrys* on a new species, *C. solitaria*, which he described from a single female. Through the kind cooperation of Drs. Soos and Halaszfy, of the Musée d'Histoire Naturelle de la Hongrie, this type was made available for study. In this type, as well as in other specimens of the species, the lateral pronotal margin is evanescent posteriorly but is visible for its full length because the umbones are not swollen laterally. The evanescence of the posterior part of the lateral margin results in the greatest pronotal width being distinctly antebasal. This latter situation also is evident in *D. californicus* and to a much lesser degree in the new species *Dallasiellus puncticeps*. *D. puncticeps* and *D. solitaria* agree in one feature, the coarsely rugopunctate cephalic punctuation, which sets them apart from all other members of the genus. But surely this cannot be interpreted as being of generic value in any part of the Cydnidae because this extreme as well as the opposite and all intermediates occurs in many parts of the family. Horváth did not know the male of his lone species of *Colobophrys* so he was unable to point out the sexual dimorphism that occurs in *Dallasiellus solitaria*. The males differ markedly from the females in possessing a peculiar, submedian emargination in the lateral pronotal margin. This emargination is marked by a peculiar "fold" which appears to send an oblique furrow mesally, as shown in the illustration of the male pronotum of *D. americanus* (fig. 78). If this pronotal "fold" is believed to have value as a generic indicator, these two species must be grouped together in one genus. But the present author cannot bring himself to agree with establishing genera in the Cydnidae on secondary sexual characters, preferring to believe that the presently offered generic arrangement, based primarily on modifications of the osteolar peritreme and

secondarily on other features possessed by groups of species, gives a truer picture of relationships than any other system offered. This arrangement has the additional merit of keeping to a minimum the number of monobasic genera in this morphologically homogeneous family.

All American species of *Dallasiellus* differ from the type species of *Geocnethus* Horváth (*G. obesus* Horváth) in that the metapleural evaporatorium is complete, while in *Geocnethus obesus* it has an anterior, submarginal, polished band (suggestive of *Rhytidoporus*) extending laterally from the tip of a fold just anterior to the apex of the osteolar peritreme. All Western Hemisphere species that have been described in *Geocnethus* fit readily into *Dallasiellus* as here defined.

Dallasiellus contains three major groups of species that grade into each other by transitional combinations of structural details, thus preventing the establishment of full genera. To point out this grouping, the author has felt obligated to divide the genus into three subgenera which may be separated by the following key:

Key to the subgenera of *Dallasiellus* ⁹

1. With the combination of very coarse, widely separated crenulations sublaterally on posterior margin of mesopleuron, and a transverse, submarginal, polished band interrupting mesopleural evaporatorium posteriorly (fig. 106) (male hind tibia with strong, subbasal angulation on posteroventral margin as in fig. 148) **Pseudopangaeus**, new subgenus (p. 573)
Without the combination of coarse crenulations and posterior interruption mentioned above, usually with neither (male hind tibia never with subbasal ventral angulation) 2
2. Margin of jugum with fine, marginal carina dorsally from eye to apex.
Dallasiellus Berg (p. 595)
Margin of jugum thick, calloused, ecarinate or with partial carina (not reaching eyes) located submarginally . . . **Ecarinoceps**, new subgenus (p. 583)

Dallasiellus (*Pseudopangaeus*), new subgenus

DIAGNOSIS.—The members of this subgenus differs from all other species in *Dallasiellus* by the combination of strong crenulations and evaporatorial interruption mentioned in the key and illustrated by figure 106. The males can be more readily separated by the presence of a strong angulation ventrally on the posterior tibia (fig. 148).

⁹ The *Cydnus insularis* which Westwood (1837, p. 19) described from "Insula Sti. Vincentii" apparently also belongs to this genus. Dr. Graham's notes on the type in the collection at Oxford University show it to lack a terminal modification of the peritreme and to have an incomplete row of setigerous punctures on the submargin of the jugum. These features coupled with the small size will permit no other assignment. But as yet, not enough information is at hand to place it exactly. It most probably belongs in either the subgenus *Ecarinoceps* or the subgenus *Dallasiellus*. If the former, it will run to couplet 5 in the key to species but will differ from both forms found there in possessing a partial row of setigerous punctures on the submargin of the jugum. If it belongs to *Dallasiellus* it will probably run to *tugubris* in couplet 14 of the key to species.

DESCRIPTION.—Agreeing with the generic description except in the following important modifications:

Head: Jugal dorsally always with entire, fine, marginal carina, with partial row of setigerous punctures reaching about two-thirds from eye to apex; labium reaching between middle coxae.

Mesopleuron: Evaporatorium restricted (fig. 106), reaching not more than three-fourths across segment, separated from posterior margin on outer half or more by a polished band; posterior margin with large, quadrate, widely separated crenulations (fig. 106).

Legs: Posterior tibia of male moderately curved, with distinct, sub-basal angulation on posteroventral margin, basad of which is a row of fine, rounded, crenulations (fig. 148); posterior and sometimes middle femora with numerous small tubercles on ventral face.

TYPE OF SUBGENUS.—*Pangaeus discrepans* Uhler (1877, p. 386), here designated.

DISTRIBUTION.—This subgenus occupies the northernmost segment of the range of *Dallasiellus*, being known generally from the territory west of the Rocky Mountains from Washington south into northern Mexico and eastward through New Mexico into western Texas and Oklahoma.

DISCUSSION.—The transfer of Uhler's species *discrepans* from *Pangaeus* to its present position removes one of the enigmas in North American hemipterology. At the same time, the nearness of this subgenus to *Pangaeus* through *discrepans* is recognized. As was noted in the discussion of *Dallasiellus*, this genus serves as a vehicle for the least strongly modified species of Western Hemisphere Cydnidae. Since such is the case, one should not be surprised to find that some of the included species do resemble certain of the more strongly marked genera, even though they lack the unique separating modifications of those genera. The present subgenus, *Pseudopangaeus*, resembles *Homaloporus*, the northern subgenus of *Pangaeus*, in several interesting respects. First, it is somewhat northern in distribution, occurring mostly within the United States. Secondly, there are the following structural parallels: (1) Several setigerous punctures on jugal submargins; (2) usually (except in *D. californicus*) with four or more costal setigerous punctures; (3) the mesopleural evaporatorium is restricted; (4) osteolar peritreme lacks a terminal differentiation, and its evaporatorium has lateral margin strongly concave. The modification of the hind legs (ventral tubercles on femora of both sexes, and the subbasal angulation on the tibia of the male), which forms such a prominent character here, is duplicated in the subgenus *Homaloporus* in *Pangaeus setosus*, new species, and *Pangaeus tuberculipes*, new species. These several similarities suggest the possibility that the species of subgenus *Pseudopangaeus* actually belong

with those of *Pangaesus*. Perhaps they do; perhaps they represent the still unmodified "ancestral stock" from which more specialized *Pangaesus* arose; or perhaps they are an offshoot from *Pangaesus*. Regardless of the reason for the admitted closeness of *Pangaesus*, the addition of these species to that genus would create a major problem of defining and separating the genera in Group B of the subfamily Cydnidae. As here treated, the species groups, whether at a generic level or a higher or lower level, can be recognized in a usable way—surely one of the principal aims of systematics is to produce an arrangement that is workable as well as "natural." The present author, therefore, chooses to recognize the sharply impressed, subapical line on the pronotum as being sufficiently diagnostic to separate *Pangaesus* from *Dallasiellus* in a practical way (but even this character is suggested by partial and vague lines or a sunken row of punctures in some individual specimens of subgenus *Pseudopangaesus*).

Key to species of *Dallasiellus* (*Pseudopangaesus*), new subgenus

1. Corium distinctly alutaceous; peritreme abruptly terminated apically (as in fig. 107) **californicus** (Blatchley) (p. 575)
Corium polished; apex of peritreme fusing gradually into surrounding cuticula (fig. 106) 2
2. Scutellum distinctly longer than wide; size smaller, length of body 6.7–8.2 . . . 3
Scutellum as wide as or wider than long; size larger, length of body 8.6–10.0.
vanduzeei, new species (p. 582)
3. Pronotum laterally with abundant, close-set, intermixed coarse and fine punctures; mesocorium with many distinct punctures throughout and forming two complete rows paralleling claval suture.
puncticoria, new species (p. 580)
Pronotum laterally with no fine punctures between the few, well-separated, coarse punctures; mesocorium with one complete and the basal part of a second row of punctures paralleling claval suture, discally impunctate or with few punctures near apex **discrepans** (Uhler) (p. 577)

Dallasiellus (*Pseudopangaesus*) **californicus** (Blatchley), new combination

PLATE FIGURE 260

Pangaesus californicus Blatchley, 1929, p. 74.—Torre Bueno, 1939, p. 180.

DIAGNOSIS.—The finely but distinctly alutaceous surface of the corium sets this species apart from the others in the subgenus.

DESCRIPTION.—MALE: Elongate-oval, widest immediately anterior to base of pronotum.

Head: Length two-thirds width, 1.46(1.38–1.56):2.13(1.97–2.34); interocular width, 1.30(1.17–1.44); anterior margin approximately semi-circular; juga a little longer than clypeus and contiguous beyond it; jugal surface moderately rugose on apical half, minutely punctured anterior to ocelli, with three or four widely separated, submarginal setigerous punctures; juga ventrally polished; maxillary plate aluta-

ceous, with few weak punctures toward base. Antennal segments: I, 0.46(0.43-0.50); II, 0.68(0.66-0.71); III, 0.62(0.59-0.68); IV, 0.94(0.90-1.00); V, 1.00(0.94-1.05). Bucculae about as high as labial II. Labial segments: I, 0.71(0.70-0.73); II, 1.25(1.16-1.35); III, 1.11(1.03-1.20); IV, 0.61(0.60-0.63).

Pronotum: Length more than half width, 2.75(2.40-3.00):5.08(4.61-5.53); anterior margin broadly and rather shallowly emarginate; side margins entire, narrowing from base or from immediately anterior to base, with submarginal row of seven or eight setigerous punctures; transverse impression obsolete to absent, submedian, marked by a broad band of moderate punctures; remainder of surface virtually impunctate except for several punctures on middle of posterior lobe.

Scutellum: Longer than wide, 3.39(3.02-3.70):3.13(2.83-3.60); surface shining, or faintly alutaceous, with several irregularly scattered punctures discally.

Hemelytron: Corium and clavus alutaceous; former with distinct punctures restricted to a single complete row paralleling claval suture and basal third of a second row; clavus with a single longitudinal row of punctures becoming evanescent posteriorly; costa with none to three setigerous punctures; membranal suture faintly sinuate near lateral angle, latter slightly acute.

Propleuron: Depression with numerous coarse, close-set punctures ventrally; prosternal carinae low, blunt.

Mesopleuron: As described for genus.

Metapleuron: Peritreme abruptly terminated apically (as in figure 107); evaporatorium with lateral edge slightly concave; lateral shining area tumid, impunctate or with a few moderate punctures.

Sternites: Impunctate, alutaceous; sutures finely crenulate.

Legs: Long; posterior tibia gently curved, with prominent angulation at basal fourth of posteroventral margin, emargination basad of this finely crenulate.

Terminalia: Genital capsule with apical margin slightly emarginate medially, surface punctured along base and apex; gonostylus as illustrated (fig. 260).

Length of body: 9.62(8.58-10.46).

FEMALE: Similar to males except for generally fewer pronotal punctures and the absence of the tibial modification described above.

Head: Length-width ratio, 1.45(1.43-1.49):2.08(2.02-2.17); interocular width, 1.25(1.22-1.31). Antennal segments: I, 0.50(0.47-0.56); II, 0.68(0.64-0.76); III, 0.63(0.60-0.68); IV, 0.91(0.86-1.00); V, 0.97(0.93-1.03). Labial segments: I, 0.78(0.71-0.90); II, 1.30(1.30-1.33); III, 1.06(0.98-1.13); IV, 0.64(0.61-0.70).

Pronotum: Length-width ratio, 2.78(2.68-3.00):5.03(4.79-5.42).

Scutellum: Length-width ratio, 3.41(3.17-3.88):3.00(2.74-3.45).

Length of body: 9.40(8.78–10.21).

TYPE DATA.—The type female, now in the W. S. Blatchley collection (Ind), was listed as coming from “near Sunland, Los Angeles County, California.”

SPECIMENS STUDIED.—20 males, 38 females.

UNITED STATES: *Arizona*: Antelope Park (Yavapai Co.), Chiricahua Mts., Continental, Devoe, Globe, Hackberry, Hualpai Mt., Kit's Peak (4,050 feet, Baboquivari Mts.), Sabino Basin (Santa Catalina Mts.), Rita Mts., Thatcher, Tucson; May to September. *California*: Cold Water Canyon (Los Angeles Co.), Pamona, Piñon Flat (San Jacinto Mts.), Sequoia National Park (Ash Mountain Road, Potwisha, Wolverton), Van Nuys, “So. California”; March to October. *New Mexico*: Las Cruces, Mesilla Park, Rodeo; March, June, July. *Texas*: Boquillas, Terlingua; May, July.

MEXICO: *Baja California*: Ensenada.

DISCUSSION.—In describing this species as new, Blatchley pointed out its nearness to Uhler's “*Pangaeus discrepans*” and suggested that these two forms differed from other true *Pangaeus* in lacking the subapical impressed line on the pronotum.

Ecological data consisted of the lone collection note given with the original description, “from beneath a stone in a small semi-desert area.”

Dallasiellus (Pseudopangaeus) discrepans (Uhler), new combination

PLATE FIGURES 106, 148, 261

Pangaeus discrepans Uhler, 1877, p. 386; 1886, p. 3.—Distant, 1880, pl. 2, fig. 19.—Signoret, 1882, p. 249, pl. 8, fig. 109.—Lethierry and Severin, 1893, p. 69.—Banks, 1910, p. 100.—Van Duzee, 1917, p. 21.—Torre Bueno, 1939, p. 180.

DIAGNOSIS.—This species may be separated from its related species by the elongate scutellum and the polished mesocorium, which is virtually impunctate on the apical half or more, coupled with the smaller size, 6.8–8.2.

DESCRIPTION.—MALE: Oval, widest behind the middle.

Head: Length about two-thirds width, 1.23(1.24–1.26):1.83(1.71–1.91); interocular width, 1.22(1.16–1.26); anterior margin a broad semicircle, sometimes slightly truncated apically; juga as long as clypeus or slightly longer and nearly or quite meeting anterior to it; surface with several radiating, moderate rugae and numerous minute punctures; ocelli very small, separated from eye by a space equalling about four times transverse ocellar diameter; jugum ventrally polished, impunctate; maxillary plate faintly alutaceous, with few or no punctures. Antennal segments: I, 0.41(0.40–0.43); II, 0.49(0.46–0.53); III, 0.47(0.43–0.50); IV, 0.64(0.60–0.70); V, 0.65 (0.60–0.70). Bucculae about as high as labial II. Labial segments: I, 0.64(0.60–0.70); II, 1.00(0.96–1.06); III, 0.84(0.76–0.90); IV, 0.51(0.57–0.54).

Pronotum: Length more than half width, 2.13(1.89–2.28):3.92 (3.57–4.16); anterior margin deeply and simply emarginate; side margins entire, narrowing from just in front of base, with submarginal row of 14 to 17 setigerous punctures; transverse impression obsolete to absent, marked by a very irregular band of moderate punctures; anterior lobe with anterior submargin sometimes vaguely impressed, with a row of irregularly spaced punctures, laterally with numerous close-set punctures; posterior lobe impunctate except for a few punctures in middle and several in antero-lateral angles.

Scutellum: Longer than wide, 2.65(2.37–2.79):2.28(2.08–2.47); disc polished, with few, mostly wide scattered, sunken punctures becoming finer toward apex.

Hemelytron: Corium and clavus polished; corium usually with one complete and the basal part of a second row of punctures paralleling claval suture, exocorium punctate for most of its length; mesocorium variously punctured at base and apex and with one complete row and the basal half of a second row of punctures present and paralleling claval suture; clavus with a single, longitudinal row of punctures extending more than half way to apex; costa with five to eight setigerous punctures; membranal suture straight, lateral angle almost rectangular; membrane reaching or very slightly surpassing apex of abdomen.

Propleuron: Impunctate; prosternal carinae low, acute.

Mesopleuron and metapleuron: As described for subgenus; apex of peritreme fusing with surrounding cuticula; lateral edge of evaporatorium deeply concave (fig. 106); lateral polished area slightly convex, with several weak, longitudinal rugae.

Sternites: Polished, roughened laterally by numerous fine, longitudinal rugae; sutures finely crenulate.

Legs: Moderately long, posterior pair modified as in subgeneric description (fig. 148).

Terminalia: Genital capsule with distinct, shallow emargination at middle of apical margin; surface with numerous punctures either side of polished midline; gonostylus as illustrated (fig. 261).

Length of body: 7.57(6.83–7.94).

FEMALE: Similar to male, usually with fewer pronotal and scutellar punctures and never with modification of posterior legs that occurs in males.

Head: Length-width ratio, 1.30(1.26–1.39):1.84(1.76–1.99); interocular width, 1.19(1.15–1.26). Antennal segments: I, 0.39(0.37–0.43); II, 0.49(0.46–0.56); III, 0.48(0.43–0.56); IV, 0.60(0.46–0.68); V, 0.65(0.54–0.71). Labial segments: I, 0.66(0.62–0.70); II, 1.05(0.96–1.16); III, 0.89(0.76–1.03); IV, 0.54(0.50–0.60).

Pronotum: Length-width ratio, 2.11(1.95–2.28):3.97(3.78–4.36).

Scutellum: Length-width ratio, 2.70(2.53–2.86):2.44(2.34–2.60).

Length of body: 7.70(7.37–8.25).

TYPE DATA.—The types (USNM) were collected “near Fort Cobb, Indian Territory, by Dr. George H. Horn, and near San Diego, Cal., by William Holden.”

SPECIMENS STUDIED.—37 males, 41 females.

UNITED STATES: *Arizona*: Buckeye, Douglas, Flagstaff, Grand Canyon (south rim, Roaring Springs), Huachuca Mts., Oracle, Palmerlee, Pepper Sauce Canyon (Santa Catalina Mts.), Pinal Mts. (base), Ramah, Roosevelt Lake, San Carlos Lake; March to August. *California*: Claremont, Laguna Beach, Los Angeles Co., Mohave, San Diego, Santa Paula; May to July. *Colorado*: Boulder, Fort Collins; April. *Idaho*: Coeur d’Alene Lake, Lewiston; May, July. *New Mexico*: Jemez; April, June, August. *Oklahoma*: Kenton; July. *Oregon*: The Dalles, Malheur Co., Monroe, Ochocho Dam; June, September. *Pennsylvania*: Philadelphia; May (see discussion concerning this specimen). *Texas*: No exact locality. *Utah*: Salt Lake City; July. *Washington*: Asotin, Pullman, Walla Walla, Wawawai; May to October.

DISCUSSION.—The original combination of names of this species has been the most abused of all the names in the family in the Western Hemisphere. It has been found affixed to no less than five species in three genera. What has been the real cause of this confusion is not apparent. True, Uhler’s assigning it to *Pangaeus* was misleading, but the original description is complete enough to preclude many of the assignments that have been made. It is hoped that the present treatment will correct and simplify the determination of specimens of this species.

The relation of this species to *Dallasiellus puncticoria*, new species, is not yet clear to the author. *D. puncticoria*, new species, appears to share the southern half of California with *discrepans* and then range southward into Baja California. Unfortunately, the latter territory is represented by a single pair of rather atypical specimens which are somewhat suggestive of *discrepans* in having fewer mesocorial punctures than do most specimens of *puncticoria* from California proper. A goodly series of *puncticoria*, some 54 specimens, was at hand from Sequoia National Park, Calif.; this series, with one or two exceptions, was easily separated from *discrepans* by abundant mesocorial punctures. The few exceptions were quite similar to the two from Baja California and suggested that these forms belonged together. Perhaps when more intensive collecting is done with this problem in mind, *puncticoria* will be found to be but a localized variant of *discrepans* and so deserve no more than subspecific status. Unfortunately, the internal male genitalia of these two species and *vanduzeei* are all very similar and offer no help in the problem—unless one wishes to accept them as evidence that the present treatment is simply an unnecessary splitting of what is but one species.

A single female labeled "Phila., Pa., 30 May, 20, J. C. Lutz" is in the Lutz collection. This locality of capture is far removed from the continuous range of *discrepans* as indicated in the distributional data given above. In reply to a query concerning this specimen, Mr. Lutz wrote that, according to his field notes, "This specimen was found in its normal habitat, under a log in Morris Park, Phila." With doubt about the authenticity of this capture removed, one is at a loss to explain its appearance at such a distance from its native haunts. The most likely explanation that occurred to the author was that it had been carried into that area in soil around plant roots, possibly nursery stock. Additional collecting in that area might determine whether or not the species has become established.

Dallasiellus (Pseudopangaeus) puncticoria, new species

PLATE FIGURE 262

DIAGNOSIS.—The presence of numerous distinct punctures occurring uniformly over the mesocorium will separate this species from all others in the subgenus.

DESCRIPTION.—MALE: Oval, widest behind the middle.

Head: Length about two-thirds width, 1.17(1.16-1.20):1.71(1.63-1.86); interocular width, 1.18(1.13-1.26); anterior margin broadly semicircular, slightly flattened apically; juga slightly longer than clypeus, convergent and contiguous beyond latter; surface with several radiating, moderate rugae and numerous minute punctures; ocelli minute, separated from eye by a space equalling about five times a transverse ocellar width; jugum ventrally polished, impunctate; maxillary plate impunctate except along basal margin. Antennal segments: I, 0.35(0.34-0.37); II, 0.45(0.45-0.47); III, 0.42(0.40-0.44); IV, 0.59(0.56-0.62); V, 0.62(0.61-0.63). Bucculae about as high as labial II. Labial segments: I, 0.58(0.57-0.60); II, 0.87(0.83-0.90); III, 0.74(0.70-0.79); IV, 0.46(0.44-0.47).

Pronotum: Length little more than half width, 1.92(1.86-2.02):3.76(3.64-3.84); anterior margin deeply, simply concave; side margins entire, narrowing from just in front of base, submarginal row of thirteen to seventeen setigerous punctures; transverse impression obsolete to absent, marked by irregular band of punctures; latter very sparse at middle and close-set laterally; anterior lobe and anterior part of posterior lobe densely punctate laterally, denser punctures usually with numerous minute punctures between.

Scutellum: Longer than wide, 2.60(2.49-2.66):2.28(2.21-2.34); disc polished, usually with numerous crowded moderate punctures and minute ones in between.

Hemelytron: Corium and clavus polished; exocorium and mesocorium with numerous punctures distributed for full length, meso-

corium with two complete rows of punctures paralleling claval suture; clavus with several smaller punctures in addition to usual longitudinal row; costa with four to seven setigerous punctures; membranal suture virtually straight; membrane reaching or slightly surpassing apex of abdomen.

Propleuron: Alutaceous; punctate ventrally; prosternal carinae low, acute.

Mesopleuron: As described for subgenus.

Metapleuron: As in *D. discrepans* (fig. 106), apex of peritreme fusing with surrounding cuticula; lateral edge of evaporatorium deeply concave; lateral polished area weakly convex, with few punctures.

Sternites: Shining, very weakly alutaceous, with numerous scattered, very fine punctures; sutures finely crenulate.

Legs: Moderately long, posterior pair modified as in subgeneric description (as in fig. 148).

Terminalia: Apical margin of genital capsule faintly emarginate medially, midline with few fine punctures, laterally with crowded prominent punctures; gonostylus as illustrated (fig. 262).

Length of body: 7.12(6.78–7.34).

FEMALE: Similar to male, lacking modification of posterior legs.

Head: Length-width ratio, 1.16(1.06–1.23):1.65(1.60–1.74); interocular width, 1.16(1.12–1.23). Antennal segments: I, 0.36(0.33–0.40); II, 0.44(0.38–0.51); III, 0.42(0.40–0.46); IV, 0.56(0.53–0.60); V, 0.45(0.43–0.48). Labial segments: I, 0.55(0.53–0.60); II, 0.88(0.86–0.94); III, 0.70(0.68–0.72); IV, 0.45(0.43–0.48).

Pronotum: Length-width ratio, 1.92(1.73–2.08):3.60(3.45–3.80).

Scutellum: Length-width ratio, 2.52(2.35–2.69):2.16(2.08–2.28).

Length of body: 6.83(6.57–7.19).

TYPE DATA.—Holotype male and allotype female (both CalAc) labeled "Potwisha, Sequoia Natl. Park, Calif., 3,000–5,000 ft., V-8-31, E. C. Van Dyke collector." Paratypes, 19 males, 43 females:

CALIFORNIA: *Sequoia National Park*: Potwisha, same data as types, 3 males, 5 females (CalAc, RCF); same collector, 2,000–5,000 feet, May 20, 1930, 3 males, 4 females, May 24, 1929, 1 female, June 2, 1929, 2 males, June 13, 1929, 3 females, June 20, 1929, 2 males (all in CalAc); July 16, 1931, 11 females. *Paradise Valley*, 3,000–4,000 feet, Van Dyke, 4 females (CalAc). *Wolverton*, 7,000–9,000 feet, Van Dyke, 2 females. No exact locality, 2,000–3,000 feet, Apr. 24, 1946, R. C. Bechter, 1 male, 1 female (McC); May 24–26, 1929, 1 male, 4 females (RLU); May 19, 1930, 1 male (RLU); 3,000–7,000 feet, May 27, 1929, 2 females (CIS); 2,000–3,000 feet, June 13, 1929, 1 female (CIS). *Los Angeles County*: *Altadena*, Mar. 11, 1912, J. C. Bridwell, 2 males (USNM). *Playa del Roy*, May 20, 1938, A. T. McClay, 1 female (McC). *Claremont*, August 28, 1 male (RLU). No exact locality: "So. Calif.," 3 males, 2 females (RLU).

MEXICO: *Baja California*: *Hamilton Ranch*, Aug. 2, 1938, Michelbacher and Ross, 2 females (CalAc).

DISCUSSION.—Although treated as a valid new species here, this form may prove, with more specimens from the southern half of California, to merge into *discrepans*. If this happens it will have to fall into synonymy, but for the present it is probably better to have the differences between the two brought forcibly to the attention of collectors who can solve the problem in the field or possibly by breeding the two forms.

Dallasiellus (Pseudopangaeus) vanduzeei, new species

PLATE FIGURE 263

DIAGNOSIS.—The large size and polished corium permits ready recognition of this species within the subgenus, as does the broad scutellum which is as wide as or wider than long.

DESCRIPTION.—MALE: Oval, widest behind the middle.

Head: Length about three-fourths width, 1.55(1.53–1.56):2.15(2.10–2.20); interocular width, 1.44(1.43–1.47); anterior margin a broad, slightly flattened semicircle; juga as long as clypeus, strongly narrowing latter at apex; jugal surface with strong, radiating rugae and numerous minute punctures; jugum ventrally and maxillary plate impunctate. Antennal segments: I, 0.49(0.46–0.53); II, 0.63(0.62–0.64); III, 0.62(0.61–0.63); IV, 0.81(0.80–0.84); V, 0.78(0.76–0.80). Bucculae about as high as labial II. Labial segments: I, 0.75(0.73–0.78); II, 1.32(1.30–1.37); III, 1.16(1.13–1.23); IV, 0.68(0.67–0.70).

Pronotum: Length more than half width, 2.89(2.84–3.02):5.22(4.97–5.40); anterior margin rather deeply and simply emarginate; side margins entire, narrowing from just anterior to base, with submarginal row of fourteen setigerous punctures; transverse impression obsolete to absent, marked by an irregular band of widely separated punctures; remainder of surface virtually impunctate except for numerous close-set punctures laterally on anterior lobe.

Scutellum: Wider than long, 3.42(3.27–3.60):3.31(3.15–3.45); surface polished, discally with several coarse, often sunken punctures, irregularly spaced.

Hemelytron: Corium and clavus polished; former usually with distinct punctures restricted to one complete and the basal part of a second row paralleling claval suture, some specimens with several distinct punctures at apex of exocorium; clavus impunctate or with few punctures near base; costa with five to seven setigerous punctures; membranal suture nearly straight, lateral angle slightly acute; membrane slightly surpassing apex of abdomen.

Propleuron: Depression punctate ventrally; prosternal carinae very low, acute.

Mesopleuron: As described for genus.

Metapleuron: As in *discrepans* (fig. 106), peritreme apically fusing with surrounding cuticula; lateral edge of evaporatorium deeply concave; lateral polished area faintly convex, with several obsolete, longitudinal rugae.

Sternites: Polished, impunctate; suture finely crenulate.

Legs: Moderately long; posterior tibia gently curved, with prominent angulation at basal fourth of posteroventral margin, emargination basad of this finely crenulate.

Terminalia: Genital capsule with apical margin slightly emarginate medially; surface with numerous punctures laterally, gonostylus as illustrated (fig. 263).

Length of body: 9.30(8.69)–9.95).

FEMALE: Similar to male, usually with fewer pronotal punctures and never with the modification of the posterior tibia that occurs in the males of all species in this subgenus.

Head: Length-width ratio, 1.53(1.49–1.57):2.13(2.08–2.18); interocular width, 1.40(1.36–1.47). Antennal segments: I, 0.51(0.50–0.53); II, 0.62(0.60–0.66); III, 0.57(0.53–0.60); IV, 0.78(0.76–0.80); V, 0.78(0.75–0.83). Labial segments: I, 0.77(0.76–0.80); II, 1.30(1.26–1.35); III, 1.13(1.10–1.23); IV, 0.69(0.68–0.70).

Pronotum: Length-width ratio, 2.84(2.80–2.89):5.12(5.10–5.20).

Scutellum: Width-length ratio, 3.33(3.28–3.45):3.30(3.18–3.43).

Length of body: 9.25(8.89–9.45).

TYPE DATA.—Holotype male (USNM 64415) from Austin, Tex., with the label "*Pangaeus discrepans*" and Van Duzee's label reading "does not agree." Allotype female (USNM), "Austin, Tex., C. T. Brues." Paratypes, 5 males, 6 females:

Texas: Austin, same data as allotype, 1 male, 1 female (RCF); Mar. 2, 1900, A. L. Melander, labeled *Pangaeus ? margo*, 1 male (HMH); Nov. 23, 1900, 1 male (USNM); labeled *Pangaeus discrepans* Uhl. ?, 1 male (USNM); Mar. 25, 1900, P. R. Uhler collection, 1 female (USNM); with label "Det. by D. Stone[r?]," 1 female (USNM); Mar. 11, 1945, M. Polhemus, 2 females (HMH). Buenc, Van Duzee collection, 1 male (CalAe).

California: El Centro, July 8, 1927, G. Linsley, 1 female (RLU).

DISCUSSION.—In general appearance, members of this species appear to be simply large-sized individuals of *discrepans*, but can be separated readily therefrom by the broader scutellum.

Dallasiellus (Ecarinoceps), new subgenus

DIAGNOSIS.—The lack of a fine, marginal carina dorsally on the juga enables one to recognize species of this subgenus from those in the other two subgenera.

DESCRIPTION.—Agreeing with the generic description except for the following modifications:

Head: Jugal dorsally without fine carina marginally, margin thickened, usually calloused, sometimes with a submarginal line; in all species (except *foratus* and *megalcephalus*) with one submarginal setigerous puncture; labial length variable from between middle of mesosternum to sternite IV.

Mesopleuron: Evaporatorium extensive, extending along posterior margin of segment into posterolateral angle; posterior margin with crenulations finer and closer set than in subgenus *Pseudopangaeus* (fig. 106).

Legs: Posterior tibia of both sexes simple; femora not tuberculate ventrally.

TYPE OF GENUS.—*Aethus americanus* Stål (1860, p. 12), here designated.

DISTRIBUTION.—Specimens at hand indicate the range of this subgenus as extending from Mexico south through Central America into northern Brazil and eastward into the West Indies, with a single specimen labeled from Florida.

DISCUSSION.—The form of the jugal margin seen in the members of this subgenus appears to be almost unique within the American forms of the subfamily Cydninae appearing only in certain *Melanaethus*. In most species the juga have a fine but distinct dorsal carina at the very margin of the head. In the subgenus *Ecarinoceps*, however, such a carina is either lacking or distinctly submarginal and incomplete when the head is viewed at right angles to its dorsal surface. This feature is easily interpreted in all included species.

Key to species of subgenus *Dallasiellus* (*Ecarinoceps*)

1. Mesopleural evaporatorium reaching to lateral margin of segment 2
 Mesopleural evaporatorium approaching but not attaining lateral margin of segment (fig. 105) 6
2. Labium very long, reaching to sternite IV; anterior convexity of propleuron with numerous, close-set, moderate punctures.
 longirostris, new species (p. 591)
 Labium shorter, not surpassing middle coxae; anterior convexity of propleuron most impunctate 3
3. Costa with one setigerous puncture 4
 Costa with two setigerous punctures 5
4. Head across eyes more than half pronotal width, anterior outline broadly rounded or semicircular (fig. 62) . . **megalcephalus**, new species (p. 592)
 Head across eyes less than half pronotal width. . **laevis**, new species (p. 589)
5. Bucculae higher than labial II, terminated abruptly posteriorly (as in fig. 23); size larger, length of body, 8.2–8.8. **reflexus**, new species (p. 594)
 Bucculae lower than labial II, evanescent posteriorly; smaller, length of body, 6.0–6.7. **scitus** (Walker) (p. 587)

6. Jugum with one submarginal setigerous puncture immediately anterior to eye; mesocorium in great part impunctate. . . . **americanus** (Stål) (p. 585)
 Jugum with three submarginal setigerous punctures; mesocorium with abundant punctation over all of surface. . . . **foratus** (Signoret) (p. 587)

***Dallasiellus (Ecarinoceps) americanus* (Stål), new combination**

PLATE FIGURES 78, 105, 264

Aethus americanus Stål, 1860, p. 12.—Walker, 1867, p. 152.

Macroscytus americanus Stål, 1876, p. 19.

Geotomus americanus Signoret, 1883, p. 34, pl. 2, fig. 143.—Lethierry and Severin, 1893, p. 72.

DIAGNOSIS.—The peculiar shape of the mesopleural evaporatorium which extends into the posterolateral angle of the segment but does not reach all the way to the side margin (fig. 105) coupled with presence of a single submarginal setigerous puncture on the jugum will identify this species within the subgenus.

DESCRIPTION.—From two incomplete males and two females.

MALE: Elongate-oval.

Head: Length two-thirds width, 1.01(1.00–1.03):1.56(1.56–1.56); interocular width, 0.86(0.86–0.87); anterior outline semicircular, clypeus as long as juga, slightly narrowed apically; surface slightly convex, impunctate, with one submarginal setigerous puncture in front of eye; ocelli small, on line connecting hind margins of eyes, removed from eyes by about one transverse ocellar width; jugum ventrally and maxillary plate (except at base) polished, impunctate. Antennal segments missing except I–III on one specimen: I, 0.33; II, 0.43; III, 0.46. Bucculae about as high as labial II, decurved posteriorly; labium reaching between middle coxae. Labial segments: I, 0.51(0.50–0.53); II, 0.88(0.83–0.93); III, 0.68(0.66–0.71); IV, 0.51(0.51–0.51).

Pronotum: Length about half width, 1.71(1.70–1.71):3.52(3.52–3.53); anterior margin concave; side margins concave opposite ends of obsolete, median, transverse impression due to a peculiar "fold" in margin (fig. 78); virtually impunctate except for rows paralleling anterior margin and marking site of transverse impression and a patch laterally on the anterior lobe.

Scutellum: Longer than broad, 2.50(2.47–2.53):2.07(2.02–2.12); disc shining, with a few small punctures scattered on basal half.

Hemelytron: Corium and clavus finely and almost imperceptibly (X–30) alutaceous, impunctate except for one complete and one partial row paralleling claval suture and one longitudinal row on clavus; costa with one or two setigerous punctures; membranal suture weakly bisinuate, lateral angle prolonged, acute; membrane subquadrate, reaching to apex of abdomen.

Propleuron: Polished, with distinct punctures only in depression; prosternal carinae low, narrow.

Mesopleuron: Evaporatorium large, lateral margin gently convex; polished area impunctate.

Sternites: Shining, impunctate.

Legs: Moderately long.

Terminalia: Apical margin of genital capsule slightly sinuate, not flared, surface impunctate; gonostylus as illustrated (fig. 264).

Length of body: 7.20(6.90–7.20).

FEMALE: Similar to male but without "fold" in side margin of pronotum and scutellum with more numerous punctures extending onto apical half.

Head: Length-width ratio, 1.13(1.10–1.16):1.69(1.69–1.70); interocular width, 0.95(0.93–0.98). Antennal segments: I, 0.38(0.36–0.40); II, 0.44(0.43–0.46); III, 0.49(0.46–0.53); IV, 0.64(0.63–0.65); V, 0.80(0.80–0.80). Labial segments: I, 0.60(0.60–0.60); II, 1.03(1.03–1.03); III, 0.74(0.73–0.76); IV, 0.58(0.56–0.60).

Pronotum: Length-width ratio, 1.88(1.82–1.95):3.64(3.63–3.66).

Scutellum: Length-width ratio, 2.76(2.66–2.86):2.23(2.13–2.28).

Length of body: 7.11(7.02–7.20).

TYPE DATA.—The type male (Stock) is labeled "Rio," and was reported by Stål to have come from Rio de Janeiro, Brazil.

SPECIMENS STUDIED.—2 males, 2 females.

BRAZIL: *Santa Catarina*: Corupa, October 1945, A. Maller, 1 female (AmM). Nova Teutonia, Oct. 6, 1944, Maller, 1 female (JCL); Feb. 22, 1949, Maller, 1 male (JCL). *Rio de Janeiro*: "Rio," type specimen, 1 male (Stock).

DISCUSSION.—The type specimen was available for study through the kindness of Dr. Rene Malaise. It proved to be in an excellent state of preservation, lacking only antennals II–V on one side and IV and V on the other.

The peculiar "fold" which occurs in the side margin of male pronotum appears in only one other known species of cydnid, *Dallasiellus solitaria* (Horváth). The biological significance of this structure is not apparent and as a taxonomic character it appears to be of no more than specific worth, as *americanus* and *solitaria* are not especially closely related, other than generically, on other features.

Signoret's illustration of the pleurae of this species is so inaccurate as to suggest the possibility of an error in association of sketches. His illustration of those structures for *foratus* is reasonably similar to that of *americanus* as determined in the present paper from a study of Stål's type.

***Dallasiellus (Ecarinoceps) foratus* (Signoret), new combination**

Geotomus foratus Signoret, 1883, p. 38, pl. 2, fig. 146.—Lethierry and Severin, 1893, p. 72.

DIAGNOSIS.—Within the subgenus, *foratus* may be recognized by the presence of three submarginal setigerous punctures on each jugum coupled with the fact that the mesopleural evaporatorium extends into the posterolateral angle of the segment but does not attain the lateral margin.

DESCRIPTION.—In the absence of specimens for study, the original description is quoted:

D'un noir brun foncé, le rostre, les tarse, les antennes d'un brun jaune, le premier article de ces dernières jaune.

Tête arrondie, les lobes latéraux plus longs que les médians, se touchant presque au delà et offrant trois cils sur les bords, dont un très près des yeux et les deux autres espacés au milieu de la distance de ce dernier au lobe médian. Vertex peu ponctué. Rostre atteignant le sommet des hanches intermédiaires; le premier article entièrement enchâssé entre les carènes rostrales. Antennes avec le deuxième article plus long que le troisième. Prothorax offrant une très forte ponctuation, très brillant, avec quatre ou cinq cils sur les bords latéraux; derrière le bord antérieur une ligne transverse de forts points entre les deux points piligères sous-oculaires, sur les côtés latéraux et sur l'impression transverse de forts points bien détachés. Écusson avec l'extrémité subarrondie; une forte ligne de points de chaque côté et le disque fortement ponctué. Élytres fortement ponctuées, excepté sur la corie, où la ponctuation est obsolète; la côte marginale est très forte jusqu'au milieu, à peine visible ensuite et offrant deux points piligères vers la base. Membrane d'un jaune hyalin, dépassant d'un quart l'abdomen: celui-ci lisse, très brillant. Plaque mésosternale arrondie en avant, faiblement striée, avec une forte ligne au-dessus de la suture; quelques points sur la partie lisse en dessus. Plaque métasternale presque droite sur les côtés, avec quelques stries. Canal ostiulaire finissant par un lobe arrondi subélevé, avec une dent dans l'échancre. Dans l'espace post-métasternal une forte ligne de points limitant les hanches postérieures. A la base de chaque segment, une ligne ponctuée-crênelée.

TYPE DATA.—The type specimen (Br M) was described from "Amazones."

SPECIMENS STUDIED.—None.

DISCUSSION.—In the absence of specimens for study the author tentatively diagnosed this form from the original description and illustration. Dr. China's notes on the type specimen confirmed the results.

***Dallasiellus (Ecarinoceps) scitus* (Walker), new combination**

PLATE FIGURES 45, 265

Aethus scitus Walker, 1868, p. 535.

Aethus ? scitus Uhler, 1886, p. 3.

Aethus scitus "incerti loci" Lethierry and Severin, 1893, p. 81.

DIAGNOSIS.—Three characters are needed to set this species apart from the others in the subgenus: Mesopleural evaporatorium reach-

ing to side margin of segment, costa with two setigerous punctures, and bucculae low and evanescent posteriorly.

DESCRIPTION.—MALE: Oval, width greatest just anterior to mid-length.

Head (fig. 45): Length less than two-thirds width, 0.96(0.90–1.05): 1.52(1.38–1.63); interocular width, 0.83(0.78–0.87); anterior outline a broad, sometimes slightly flattened semicircle; juga as long as clypeus, latter very slightly narrowed toward apex; a single, submarginal setigerous puncture next to eye; surface impunctate, with broad, shallow, longitudinal depression on juga; ocelli large, separated from eye by space less than transverse ocellar width; jugum ventrally and maxillary plate (except along bucculae) shining, impunctate. Antennal segments: I, 0.28(0.25–0.30); II, 0.43(0.40–0.49); III, 0.39(0.33–0.43); IV, 0.52(0.50–0.56); V, 0.63(0.60–0.70). Bucculae lower than labial II, evanescent posteriorly; labium attaining middle coxae. Labial segments: I, 0.44(0.38–0.50); II, 0.81(0.76–0.86); III, 0.61(0.56–0.66); IV, 0.46(0.43–0.50).

Pronotum: Length about twice width, 1.54(1.36–1.62):3.14(2.78–3.41); anterior margin shallowly concave; side margins entire, without "fold," submarginal row of six setigerous punctures; transverse impression postmedian, weak to obsolete, marked by single, medially interrupted row of punctures; remainder of surface impunctate except for row of punctures paralleling anterior emargination, a few toward sides and usually several in middle of posterior lobe.

Scutellum: Longer than wide, 2.32(2.18–2.43):1.90(1.69–2.02); surface shining, with numerous punctures on disc, impunctate at base and apex.

Hemelytron: Corium and clavus finely but distinctly alutaceous; exocorium and all of mesocorium, except two rows paralleling claval suture, impunctate; clavus with a longitudinal row of punctures and a few laterad of this basally; costa with two setigerous punctures; membranal suture faintly bisinuate, lateral angle somewhat acute; membrane distinctly longer than basal width, slightly surpassing apex of abdomen.

Propleuron: Shining, punctate in depression and anterior to base of acetabulum; prosternal carinae low, acute, truncated ventrally.

Mesopleuron: Evaporatorium reaching side margin of segment; lateral area impunctate, with few coarse rugae.

Metapleuron: Lateral margin of evaporatorium oblique, slightly concave; lateral area impunctate.

Sternites: Polished, impunctate.

Legs: Moderately long.

Terminalia: Apical margin of genital capsule with a very shallow, broad V-shaped emargination, surface impunctate except at lateral angles; gonostylus as illustrated (fig. 265).

Length of body: 6.34(5.86–6.66).

FEMALE: Very similar to male.

Head: Length-width ratio, 0.98(0.94–1.02):1.55(1.46–1.60); interocular width, 0.87(0.85–0.90). Antennal segments: I, 0.29(0.28–0.30); II, 0.44(0.40–0.48); III, 0.39(0.33–0.44); IV, 0.52(0.46–0.56); V, 0.63(0.60–0.70). Labial segments: I, 0.46(0.41–0.50); II, 0.81(0.74–0.86); III, 0.64(0.60–0.69); IV, 0.47(0.44–0.50).

Pronotum: Length-width ratio, 1.56(1.49–1.62):3.19(3.07–3.30).

Scutellum: Length-width ratio, 2.36(2.24–2.42):1.96(1.89–2.02).

Length of body: 6.33(6.04–6.73).

TYPE DATA.—Walker's type of *Aethus scitus* (BrM) was listed as coming from "St. Domingo," an early name for the Dominican Republic.

SPECIMENS STUDIED:

BAHAMAS: South Bimini Island, June to August 17, 1951, C. and P. Vaurie, 6 males, 7 females (AmM; RCF). New Providence, Nassau, August 5, Clench, 1 male, 1 female (MCZ).

CUBA: Guantánamo, May 7, 1924, B. Hioram, 1 male (JCL).

HAITI: Port au Prince, May 1925, 1 male (USNM). Fond-Parisien, Feb. 11–18, 1922, altitude about 60 feet, 1 female (AmM). Gros-Morne, Feb. 17, 1926, E. C. Leonard, 1 female (USNM).

HISPANIOLA: "St. Domingo," 1 male (BrM), type.

DISCUSSION.—Personal study of Walker's type clearly showed that Distant (1899, p. 222) was in error when he placed *scitus* as a synonym of *Pangaeus margo*, which is made a synonym of *Pangaeus aethiops* in the present paper. One of the specimens had been labeled as "*Geocnethus cubensis* Barber and Bruner."

Dallasiellus (Ecarinoceps) laevis, new species

PLATE FIGURES 176, 266

DIAGNOSIS.—The single setigerous puncture on the costa coupled with the narrow, impunctate head and the mesopleural evaporatorium extended to the side of the segment permits recognition of this species within the subgenus. The narrow, very deep emargination at the apex of the male genital plate (fig. 176) marks that sex from the males of all other species within the genus.

DESCRIPTION.—MALE: Elongate-oval, widest across pronotum.

Head: Length about two-thirds width, 0.84(0.80–0.86):1.29(1.26–1.30); interocular width, 0.77(0.74–0.80); anterior outline almost semicircular, clypeus very slightly surpassing juga; surface gently convex, impunctate, with weak radiating rugae and one submarginal puncture in front of eye; ocelli moderate, separated from eye by space

subequal to transverse diameter of an ocellus; juga ventrally polished, impunctate; maxillary plate punctate for most of its length. Antennal segments: I, 0.29(0.28–0.30); II, 0.39(0.37–0.43); III, 0.38(0.37–0.40); IV, 0.47(0.46–0.50); V, 0.62(0.60–0.63). Bucculae lower than labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.45(0.43–0.47); II, 0.86(0.83–0.91); III, 0.57(0.53–0.61); IV, 0.39(0.36–0.43).

Pronotum: Length less than half width, 1.39(1.30–1.49):2.95(2.89–3.00); anterior margin moderately concave; lateral margins entire, distinctly narrowing from base; transverse impression postmedian, obsolete, absent medially; with several close-set, distinct punctures at ends of transverse impression and several widely separated ones scattered medially and on posterior lobe.

Scutellum: Longer than wide, 2.32(2.28–2.35):1.82(1.82–1.82); surface shining, numerous punctures scattered over disc, base and elongate apex impunctate.

Hemelytron: Corium and clavus finely but distinctly alutaceous, with usual rows of punctures, one on clavus and two on mesocorium paralleling claval suture; remainder of mesocorium impunctate; exocorium with numerous obsolete or distinct punctures scattered along most of length except apex; costa with one setigerous puncture; membranal suture almost straight, lateral angle weakly prolonged; membrane about as long as basal width, not surpassing apex of abdomen.

Propleuron: Punctate ventrally, in depression and on posterior convexity; prosternal carinae very low, fine.

Mesopleuron: Evaporatorium extended to side margins of segment; lateral area rugose, impunctate.

Metapleuron: Evaporatorium with side margin gently concave; lateral area impunctate.

Sternites: Shining, obsoletely alutaceous; with a few punctae laterally.

Legs: Moderately long.

Terminalia: Apical margin of genital capsule roundly convex either side of narrow, very deep emargination (fig. 176), punctate laterally; gonostylus as illustrated (fig. 266).

Length of body: 5.97(5.84–6.13).

FEMALE: Similar to male except pronotal and scutellar punctae more numerous and radial vein ending in area of punctae; membrane surpassing apex of abdomen.

Head: Length-width ratio, 0.87(0.83–0.94):1.30(1.27–1.36); interocular width, 0.77(0.73–0.81). Antennal segments: I, 0.30(0.28–0.33); II, 0.40(0.38–0.43); III, 0.39(0.38–0.41); IV, 0.49(0.46–0.52);

V, 0.61(0.60–0.63). Labial segments: I, 0.44(0.43–0.46); II, 0.87(0.80–0.93); III, 0.55(0.53–0.60); IV, 0.43(0.40–0.46).

Pronotum: Length-width ratio, 1.48(1.43–1.52):2.96(2.84–3.13).

Scutellum: Length-width ratio, 2.39(2.21–2.60):1.85(1.74–2.02).

Length of body: 5.88(5.55–6.30).

TYPE DATA.—Holotype male and allotype female (both MCZ) labeled "Constanza, Aug. '38, Dom. Rep., 3–4,000 ft., Darlington." Paratypes, 5 males, 7 females, as follows:

DOMINICAN REPUBLIC: Constanza, same data as type, 1 male (RCF), 2 females (RCF; MCZ). Vicinity of Valle Nuevo, cloud forest, 6,000 feet, August 1928, Darlington, 2 males (USNM; MCZ), 2 females (USNM; MCZ). Foothills of Cordillera Central, south of Santiago, June 1928, 1 male, 1 female (MCZ).

HAITI: Mt. Basil, to 4,700 feet, Sept. 9, 1934, Darlington, 1 male, 2 females (MCZ).

DISCUSSION.—The distribution of this form undoubtedly will be found to be more widespread than is indicated by the data on the type series.

Dallasiellus (Ecarinoceps) longirostris, new species

PLATE FIGURES 77, 267

DIAGNOSIS.—The very elongate labium of which the first segment surpasses the bucculae by about one-third its own length sets this species apart from all others in the genus.

DESCRIPTION.—From a single male. Elongate, parallel-sided, moderately convex above, more strongly so below.

Head: Width one-fifth greater than length, 1.28:1.00; interocular width, 0.86; anterior outline semicircular, eyes strongly projecting (about two-thirds width); surface convex transversely and longitudinally, with numerous punctures except on clypeus; ocelli posterior to line connecting hind margins of eyes, separated from eye by more than transverse ocellar diameter; juga with no submarginal setigerous punctures except the one in front of the eye; clypeus very slightly longer than juga, very slightly narrowed at apex; jugum ventrally polished, impunctate; maxillary plate with several scattered, distinct punctures. Antennal segments: I, 0.36; II, 0.43; III, 0.50; IV, 0.70; V, 0.94. Bucculae about as high as labial II. Labial segments: I, very long, 0.81, surpassing base of bucculae and reaching base of prosternal carinae; II, 1.30; III, 1.00; IV, 1.10.

Pronotum: Length slightly more than half width, 1.36:2.53; anterior margin very deeply concave; side margins subparallel on basal two-thirds then more abruptly narrowed; side margin slightly sinuate at ends of submedian transverse impression; latter marked by irregular wide band of large punctures; anterior lobe with wide band of close-set punctures immediately behind anterior emargination, and a deep,

longitudinal depression laterally (fig. 77); posterior lobe irregularly punctured on anterior half.

Scutellum: Longer than wide, 2.21:1.56; surface shining, rather convex, with numerous, irregularly spaced punctures becoming finer apically.

Hemelytron: Corium and clavus polished; exocorium punctate for full length; mesocorium with two complete rows of punctures on apical third; clavus with one complete row and one incomplete row of punctures; costa without setigerous punctures; membranal suture virtually straight; membrane very slightly longer than basal width, slightly surpassing apex of abdomen.

Propleuron: Polished, punctured on both convexities and in depression; prosternal carinae convex, as high as labial II.

Mesopleuron: Evaporatorium reaching side margin of segment; lateral polished area punctate.

Metapleuron: Lateral edge of evaporatorium straight; lateral area impunctate.

Sternites: Polished, punctate laterally; sutures finely crenulate.

Legs: Moderately long.

Terminalia: Margin of genital capsule flared, surface with numerous punctures, gonostylus as illustrated (fig. 267).

Length of body: 5.92.

TYPE DATA.—Holotype male (Carv) from Manaus, Amazonas, Brazil, "Parko, 7, 1941."

DISCUSSION.—The elongate form, long labium, and lack of submarginal setigerous punctures on the head is suggestive of Uhler's species "*Lobonotus anthracinus*," but members of this new species are easily separated therefrom by the generic character of the peritreme, and also by the very long first labial segment which here exceeds the bucculae by about one-third of its length. The broad, longitudinal impression laterally on the anterior pronotal lobe appears to be unique in the Cydnidae of the Western Hemisphere. This character, however, is probably restricted to the male.

Dallasiellus (Ecarinoceps) megalocephalus, new species

PLATE FIGURES 62, 175, 268

DIAGNOSIS.—The very large head (fig. 62), which is broader than half the width of the pronotum, should separate this cydnid from all others in the Western Hemisphere.

DESCRIPTION.—MALE: Oval.

Head: Length about three-fifths width, 1.54(1.49–1.56):2.52(2.37–2.60); interocular width, 1.51(1.49–1.56); anterior outline semicircular, sometimes flattened; clypeus as long as juga, strongly narrowed at apex; surface concave, vertex with a broad, shallow, U-shaped carina

between ocelli; juga with few to several prominent punctures; ocelli moderate, removed from eyes by a space twice an ocellar width; juga ventrally polished, impunctate; maxillary plate with punctate impression mesad of antennal insertion and punctate along basal margin. Antennal segments: I, 0.36(0.36–0.36); II, 0.60(0.53–0.66); III, 0.56(0.50–0.60); IV, 0.81(0.73–0.86); V, 0.94(0.90–1.00). Bucculae lower than labial II; labium reaching between middle coxae. Labial segments: I, 0.73(0.70–0.76); II, 1.04(0.96–1.10); III, 1.21(1.16–1.23); IV, 0.76(0.73–0.80).

Pronotum: Length about half width, 2.45(2.38–2.55):4.75(4.47–4.92); anterior margin shallowly concave, about two-thirds of basal width; side margins entire, gradually narrowed from base and more abruptly at apical third, with five or six submarginal setigerous punctures; transverse impression obsolete to absent, marked by irregular, postmedian band of punctures; anterior lobe with a row of punctures paralleling anterior emargination and several punctures laterally; posterior lobe with several punctures medially.

Scutellum: Length and width equal, 3.01(2.85–3.12):3.01(2.84–3.12); surface shining, with numerous punctures except across base and apex.

Hemelytron: Corium and clavus very weakly alutaceous; exocorium abundantly punctate for full length; mesocorium with two complete rows of punctures paralleling claval suture, and numerous punctures at base and apex; clavus with several punctures in addition to longitudinal row; costa with one setigerous puncture; membranal suture weakly concave, lateral angle acute; membrane reaching apex of abdomen, slightly longer than basal width.

Propleuron: Impunctate except along anterior margin and in depression; prosternal carinae very low, thick, blunt.

Mesopleuron: Evaporatorium reaching side margin of segment; lateral shining area rugopunctate.

Metapleuron: Evaporatorium slightly concave laterally; lateral area impunctate.

Sternites: Polished, impunctate.

Terminalia: Apical margin of genital plate with deep U-shaped notch (fig. 175), surface impunctate; gonostylus as illustrated (fig. 268).

Length of body: 8.93(8.50–9.26).

FEMALE: Based on two specimens. Similar to males, but surface of head flattened or concave only on juga.

Head: Length-width ratio, 2.32(2.10–2.55):4.63(4.23–5.00); interocular width, 1.49(1.43–1.56). Antennal segments: I, 0.35(0.35–0.36); II, 0.58(0.53–0.63); III, 0.56(0.50–0.63); IV, 0.82(0.73–0.92); V, 0.93

(0.86–1.00). Labial segments: I, 0.68(0.63–0.73); II, 0.99(0.96–1.03); III, 1.21 (1.16–1.26); IV, 0.76(0.70–0.83).

Pronotum: Length-width ratio, 2.32(2.10–2.55):4.63(4.26–5.00).

Scutellum: Length-width ratio, 2.92(2.70–3.15):2.92(2.70–3.15).

Length of body: 8.53(7.92–9.14).

TYPE DATA.—Holotype male and allotype female (both Car), "Chapada, Brazil, Acc. No. 2966, Aug." Paratypes, 3 males, 3 females, as follows:

BRAZIL: Chapada, same data as types, 1 female (Car). Manaus, Amazonas, November 1941, 1 male (Carv).

PANAMA: Canal Zone: Barro Colorado Island, October–November 1941, J. Zetek, No. 4915, 1 male (USNM); April 1941, J. Zetek, No. 4985, 1 male (RCF).

BRITISH GUIANA: Kartabo, June 18, 1925, C. C. Searl, 1 female (CalAc). Upper Kutari River, January–March 1936, G. A. Hudson, 1 female (BrM).

DISCUSSION.—The extremely large head (fig. 62) marks this as being quite distinct from all other Cydnidae of the Western Hemisphere. In all the males and some of the females studied the surface of the head was distinctly concave, in the other females flattened with the juga longitudinally depressed along the middle. The punctuation of the head appears to become a little more numerous and dense in the specimens from the southern part of the range, but the very broad head and the unusual, deep, U-shaped notch at the apex of the genital capsule of the male confirm that they all belong to one species. One of the Chapada females listed among the paratypes appears to be a malformed individual and so was not included in the measurements given above; the pronotum was shrunken and reduced in size, as was the apical part of the scutellum, with a consequent change in size and shape of these two parts.

Dallasiellus (Ecarinoceps) reflexus, new species

PLATE FIGURE 26

DIAGNOSIS.—The high bucculae whose posterior termination is abrupt, not evanescent, mark this species within the subgenus.

DESCRIPTION.—Known from three females. Oval, widest at mid-length.

Head: Length two-thirds width, 1.22(1.17–1.30):1.84(1.75–1.92); interocular width, 1.12(1.04–1.17); anterior outline a faintly flattened semicircle; clypeus as long as juga, distinctly narrowed apically; juga impunctate, with few weak, radiating rugae and but one submarginal setigerous puncture in front of eye; ocelli small, separated from eye by almost twice transverse ocellar width; jugum ventrally and maxillary plate, except at base, shining, impunctate. Antennal segments: I, 0.35(0.33–0.40); II, 0.63(0.60–0.66); III, 0.53(0.53–0.53);

IV, 0.71(0.70–0.73); V, 0.82(0.80–0.83). Bucculae higher than labial II, abruptly terminated posteriorly; labium reaching posterior half of mesosternum. Labial segments: I, 0.63(0.56–0.70); II, 1.05(0.96–1.10); III, 0.72(0.66–0.76); IV, 0.53(0.50–0.56).

Pronotum: Length more than half width, 2.36(2.21–2.44):4.29(4.10–4.52); anterior margin moderately concave; side margins entire, gently narrowed from base, more abruptly so on apical third; transverse impression obsolete to absent; with few punctures along transverse impression, on middle of posterior lobe and sometimes behind anterior emargination, remainder of surface impunctate.

Scutellum: Longer than broad, 3.16(3.00–3.35):2.61(2.53–2.69); surface shining, punctured except at base and apex.

Hemelytron: Corium and clavus finely but distinctly alutaceous; exocorium and mesocorium mostly with very weak to obsolete fine punctures, mesocorium also with two rows of coarser punctures paralleling claval suture; clavus with one row and basal part of another row of punctures; costa broadly reflexed, with two setigerous punctures; membranal suture nearly straight, lateral angle weakly produced; membrane surpassing tip of abdomen, length longer than basal width.

Propleuron: Shining, impunctate except near acetabulum and in depression; prosternal carinae low, acute.

Mesopleuron: Evaporatorium reaching lateral margin of segment; lateral area impunctate.

Metapleuron: Lateral edge of evaporatorium weakly concave; lateral area impunctate.

Sternites: Finely alutaceous, impunctate except in spiracular area.

Legs: Moderately long.

Length of body: 8.47(8.24–8.85).

TYPE DATA.—Holotype female (USNM 64414) labeled "Colima, Volcán, Mex., L. Conrad." Paratypes, 3 females, as follows:

MEXICO: Volcán de Colima, L. Conrad, 1 female (USNM).

COSTA RICA: No exact locality ("la Vruca"?), No. 79, 1 female (Wien).

UNITED STATES: *Florida*: Redlands, J. C. Lutz collection No. 86, 1 female (JCL).

DISCUSSION.—The Florida paratype differs slightly from the other two specimens in having the hemelytra slightly shorter (membrane barely surpassing apex of abdomen) with the membranal suture straighter and not prolonged at lateral angle.

Subgenus *Dallasiellus* (*Dallasiellus*) Berg

Dallasiellus Berg, 1901, p. 281.

DIAGNOSIS.—Species of this subgenus may be recognized by the presence of a complete dorsal carina on the margin of the head plus

the lack of coarse crenulations on the posterior margin of the mesopleuron and the mesopleural evaporatorium which is usually entire and reaches uninterrupted to the posterior margin of the segment.

DESCRIPTION.—Agreeing with the generic description with the following important modifications:

Head: Jugum with complete, fine, marginal carina dorsally, usually with two or more submarginal setigerous punctures; labial length variable from between middle coxae to base of sternite II.

Mesopleuron: Posterior margin usually with fine crenulations or none; evaporatorium extending into posterolateral angle of segment, usually attaining lateral margin.

Metapleuron: Lateral margin of evaporatorium usually straight or nearly so (deeply concave only in *fusus*); apex of peritreme not (except in *fusus*) fusing with surrounding cuticula.

Legs: Posterior tibia of both sexes without angulation near base of posteroventral margin, femora not tuberculate ventrally on apical fourth.

TYPE OF SUBGENUS.—Same as for type of genus.

DISTRIBUTION.—From southwestern United States south through Central America and the West Indies to southern South America.

DISCUSSION.—Comments on the definition and relationships of this taxon will be found in the generic discussion.

Several of the new species described in the present study appear to be somewhat intermediate between this subgenus and the subgenus *Dallasiellus* (*Pseudopangaeus*). Notes on these will be given at appropriate places in the text.

Key to species of subgenus *Dallasiellus* (*Dallasiellus*)

1. Dorsum of head coarsely and in large part rugosely punctate 2
 Dorsum of head not coarsely rugopunctate, either impunctate or with widely separated punctures 3
2. Bucculae abruptly terminated posteriorly (as in fig. 23); corium and sternites not distinctly alutaceous **puncticeps**, new species (p. 622)
 Bucculae evanescent posteriorly; corium and sternites distinctly alutaceous. **solitaria** (Horváth) (p. 624)
3. Peritreme abruptly terminated apically (fig. 107); lateral margin of metapleural evaporatorium straight or gently concave 4
 Apex of peritreme not abruptly terminated, fusing with surrounding cuticula (as in fig. 106); lateral margin of metapleural evaporatorium very deeply concave (as in fig. 106) **fusus**, new species (p. 604)
4. Mesopleural evaporatorium interrupted near or at posterior margin by transverse, polished band (fig. 108) 5
 Mesopleural evaporatorium not thus interrupted (fig. 107) 6

5. Corium highly polished; basal half of costa strongly depressed; male with ventral margin of anterior tibia abruptly, subquadrately expanded (fig. 128) at apex **dilatipes**, new species (p. 602)
Corium distinctly alutaceous; costa strongly convex for full length; anterior tibia of male not expanded ventrally near apex.
interruptus, new species (p. 608)
6. Size larger, length of body 8 mm. or more 7
Size smaller, length of body less than 7.5 mm. 10
7. Prosternal carinae as high as or higher than labial II (fig. 27).
levipennis (Signoret) (p. 609)
Prosternal carinae not more than half as high as labial II 8
8. Scutellum discally with numerous (35+) coarse, sunken, foveate punctures, crowded and forming coarse, transverse rugae between them.
planicollis (Horváth) (p. 621)
Scutellum with few widely scattered, fine punctures. 9
9. Pronotum with a single, irregular, medially interrupted line of close-set small punctures along the site of the transverse impression; posterior pronotal lobe impunctate **horvathi**, new species (p. 606)
Pronotum with punctures coarse, along site of transverse impression forming a band that extends back onto posterior lobe. . . **bergi** (Signoret) (p. 601)
10. Labium long, distinctly surpassing posterior coxae; prosternal carinae abruptly lobed (fig. 25) **longulus** (Dallas) (p. 611)
Labium short, not reaching apices of posterior coxae; prosternal carinae not lobed 11
11. Antennal II shorter than I, about half as long as III.
orchidiphilus, new species (p. 618)
Antennal II longer than I, nearly or quite equal to III 12
12. Scutellum discally without large punctures; apex of mesocorium impunctate or with few punctures near radial vein 13
Scutellum discally and usually mesocorium apically with numerous distinct, large punctures 14
13. Jugum with one submarginal setigerous puncture in front of eye.
viduus (Stål) (p. 627)
Jugum with four submarginal setigerous punctures in front of eye.
triangularis, new species (p. 625)
14. Jugum with three, widely separated, setigerous punctures anterior to eye (fig. 44) 15
Jugum with two, three, or more close-set, setigerous punctures anterior to eye, sometimes with several more widely spaced ones distally (figs. 42, 43).
lugubris (Stål) (p. 613)
15. Corium distinctly alutaceous (at 15X) . . **alutaceus**, new species (p. 598)
Corium shining, not distinctly alutaceous (at 30X) 16
16. Costa without setigerous punctures; pronotal transverse impression weak, marked by irregular band of small punctures.
ovalis, new species (p. 620)
Costa with one setigerous puncture; pronotal transverse impression distinct, obsolete medially, marked by regular row of large punctures 17
17. Larger, length of body 6.4–7.0; head with subapical, distinct, poorly defined depression (in areas indicated by dotted circle on fig. 44); clypeus elevated apically **bacchinus**, new species (p. 599)
Smaller, length of body 4.9–5.5; head without subapical depression; clypeus not elevated apically. **murinus** (Van Duzee) (p. 616)

Dallasiellus (Dallasiellus) alutaceus, new species

PLATE FIGURE 270

DIAGNOSIS.—Among the moderately large species (5.5–6.5) with the three widely separated setigerous punctures on the submargin of the head, this one may be recognized by the short labium, which does not surpass the middle coxae, and by the distinct alutaceous sculpturing of the corium.

DESCRIPTION.—MALE: Oval, slightly elongate.

Head: Length about three-fifths width 0.99(0.95–1.06):1.59(1.44–1.69); interocular width, 0.87(0.83–0.93); anterior outline less than a full semicircle, clypeus as long as juga and strongly narrowed apically; surface weakly alutaceous, with scattered fine punctures; jugum with obsolete radiating rugae, with three widely separated setigerous punctures submarginally; ocelli large, separated from eye by slightly more than transverse ocellar width; jugum ventrally and maxillary plate, except on basal fourth, polished and impunctate. Antennal segments: I, 0.32(0.30–0.33); II, 0.37(0.34–0.43); III, 0.39(0.39–0.40); IV, 0.55(0.52–0.60); V, 0.62(0.55–0.66). Bucculae about as high as labial II, evanescent posteriorly; labium reaching base of middle coxae. Labial segments: I, 0.51(0.45–0.60); II, 0.85(0.75–0.94); III, 0.60(0.58–0.63); IV, 0.50(0.46–0.54).

Pronotum: Length slightly more than half width, 1.63(1.57–1.82):3.16(2.93–3.43); anterior margin moderately emarginate; side margins entire, straight on basal two-thirds, with five or six setigerous punctures submarginally; transverse impression submedian, marked by regular row of close-set punctures; anterior lobe with curved row of punctures in subapical impression and numerous punctures laterally; posterior lobe with distinct punctures most numerous medially.

Scutellum: Longer than wide, 2.24(2.08–2.40):1.96(1.82–2.15); shining, with numerous crowded punctures from near base almost to apex, latter minutely punctate.

Hemelytron: Clavus and corium strongly alutaceous; clavus with one complete and one partial row of punctures; mesocorium with two complete rows of punctures paralleling claval suture, discally with distinct close punctures only at base and apex; exocorium with numerous distinct punctures for full length; costa without or with one setigerous puncture; membranal suture straight, lateral angle not prolonged; membrane longer than basal width, surpassing apex of abdomen by about one-fourth its length.

Propleuron: Feebly alutaceous, distinctly punctate in depression and anterior to acetabulum, minutely punctate on convexities; pro-sternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium entire; lateral area impunctate.

Metapleuron: Peritreme abruptly terminated apically; lateral margin of evaporatorium feebly concave; lateral area impunctate.

Legs: Not specially modified.

Sternites: Distinctly alutaceous, with few punctures and small rugae near spiracular area.

Terminalia: Genital capsule finely alutaceous, obsoletely punctate except for crowded punctures in lateral angles, apical margin broadly and very shallowly emarginate; gonostylus as illustrated (fig. 270).

Length of body: 5.91(5.61–6.42).

FEMALE: Very similar to male.

Head: Length-width ratio, 0.98(0.96–1.00):1.58(1.56–1.60); interocular width, 0.92(0.90–0.93). Antennal segments: I, 0.31(0.30–0.33); II, 0.36(0.36–0.40); III, 0.39(0.36–0.43); IV, 0.51(0.50–0.53); V, 0.61(0.60–0.63). Labial segments: I, 0.54(0.53–0.56); II, 0.80(0.76–0.83); III, 0.62(0.62–0.63); IV, 0.46(0.46–0.50).

Pronotum: Length-width ratio, 1.64(1.56–1.75):3.17(3.06–3.26).

Scutellum: Length-width ratio, 2.30(2.22–2.40):1.98(1.89–2.02). Length of body: 5.76(5.57–5.92).

TYPE DATA.—Holotype male (USNM 64411) and allotype female (USNM) both labeled "Rosario Lake, Rogagua, Boliv., W. M. Mann, Oct. 28–Nov. 9, 1921. Mulford Biol. Expl., 1921–22." Paratypes, 4 males, 20 females, as follows:

BOLIVIA: Same data as types, 7 females (USNM, RCF). Chapare, July 26, 1945, 400 meters, R. Zischka, No. 163, 1 male (USNM). Rurrenabaque, Beni, W. M. Mann, October 1921, Mulford Biol. Expl., 1921–1922, 8 females, (USNM, RCF). Santa Cruz de la Sierra, 450 meters, J. Steinbach, November 1910, C. M. 4550, 2 females (Car).

BRAZIL: Viçosa, Minas Gerais, April 1945, Carvalho, 1 male (Carv). Nova Teutonia, January 1939, F. Plaumann, 1 female (JCL). Rio de Janeiro, P. Wygodzinsky, 2 males (USNM, RCF); Acc. No. 2966, 1 female (Car).

COLOMBIA: No exact locality, intercepted at Hoboken, N.J., on wild orchid, May 22, 1941, 1 female (USNM).

DISCUSSION.—The specific name refers to the distinctly alutaceous sculpturing of the corium.

Dallasiellus (Dallasiellus) bacchinus, new species

PLATE FIGURES 44, 284

DIAGNOSIS.—The weakly defined but definite subapical impression near the apex of the head (indicated by dotted outline on fig. 44) can be used to separate this species from all others in the subgenus.

DESCRIPTION.—MALE: Elongate-oval.

Head: Length about three-fourths width, 1.21(1.17–1.30):1.69(1.62–1.80); interocular width, 0.99(0.95–1.04); anterior outline rounded, juga as long or slightly longer than clypeus and almost contiguous

beyond it; jugum with three submarginal setigerous punctures; surface flattened, with weakly defined but definite subapical impression (dotted circle, fig. 44), smooth, distinctly punctured anterior to ocelli; latter well developed, separated from eye by space less than twice transverse ocellar width; jugum ventrally and maxillary plate (except posteriorly) impunctate. Antennal segments: I, 0.38(0.36–0.40); II, 0.52(0.48–0.56); III, 0.45(0.43–0.48); IV, 0.67(0.63–0.73); V, 0.79(0.73–0.85). Bucculae about as high as labial II, labium reaching apices of middle coxae. Labial segments: I, 0.67(0.66–0.68); II, 1.04(1.00–1.10); III, 0.82(0.80–0.83); IV, 0.61(0.60–0.63).

Pronotum: Length more than half width, 1.89(1.82–1.95):3.46(3.28–3.71); anterior margin broadly and deeply emarginate; lateral margins entire, with five or six submarginal setigerous punctures; transverse impression slightly behind middle, weakly impressed laterally, marked by irregular row of distinct punctures; anterior lobe with curved row of punctures paralleling anterior emargination and more than fifteen punctures laterally, these equal to those of transverse impression; posterior lobe with a number of punctures at middle and few laterally.

Scutellum: Little longer than broad, 2.52(2.42–2.73):2.17(2.08–2.31); surface polished, impunctate basally and apically, elsewhere with numerous, irregularly spaced coarse punctures.

Hemelytron: Corium polished, with two impressed rows of coarser punctures paralleling claval suture, mesocorium obsolete or impunctate medially, with few moderate punctures near base and numerous finer ones near apex; exocorium distinctly punctured full length on outer half or more; costa with one setigerous puncture; clavus polished with one row of punctures extending almost to apex and a shorter row laterad; membranal suture straight, outer angle slightly acute; membrane surpassing apex of abdomen, about one-fourth longer than basal width.

Propleuron: Punctured only at anteroventral angle and in depression; prosternal carinae low, distinct, most prominent anteriorly.

Mesopleuron: Evaporatorium reaching broadly to lateral margin; lateral area impunctate.

Metapleuron: Evaporatorium separated from side margin by narrow, polished, impunctate area; peritreme attaining middle of segment, abruptly terminated.

Legs: Not specially modified.

Sternites: Shining, weakly alutaceous, rugose, with few punctures laterally.

Terminalia: Genital capsule polished, punctate laterally, apical margin very broadly, shallowly V-emarginate; gonostylus as illustrated (fig. 284).

Length of body: 6.63(6.42–7.00).

FEMALE: Very similar to male.

Head: Length-width ratio, 1.21(1.18–1.26):1.74(1.71–1.80); interocular width, 1.04(1.01–1.13). Antennal segments: I, 0.38(0.35–0.41); II, 0.52(0.50–0.55); III, 0.46(0.43–0.48); IV, 0.67(0.65–0.70); V, 0.79(0.78–0.83). Labial segments: I, 0.65(0.63–0.70); II, 1.03(1.00–1.06); III, 0.91(0.82–0.93); IV, 0.62(0.60–0.66).

Pronotum: Length-width ratio, 1.82(1.77–1.89):3.48(3.45–3.58).

Scutellum: Longer than broad, 2.55(2.47–2.60):2.25(2.15–2.43).

Length of body: 6.56(6.42–6.71).

TYPE DATA.—Holotype male (USNM 64412) and allotype female (USNM), La Chorrera, Panama, May 10, 1912, A. Busck. Paratypes, 3 males, 3 females, as follows:

MEXICO: No exact locality, No. 1785, C. F. Baker collection, 1 male (USNM).

PANAMA: La Chorrera, same data as type, 1 female (USNM). Aquadulce. Apr. 12, 1941, 1 male, 1 female (MCZ). Ancón, Canal Zone, April 1911, Kraft, arc-light globe, 1 male, 1 female (RCF).

DISCUSSION.—The specific name alludes to the vague, cuplike impression near the apex of the head. As is often the case with Cydnidae, the only habit notes refer to specimens having been collected at a light.

***Dallasiellus (Dallasiellus) bergi* (Signoret), new combination**

Geotomus bergi Signoret, 1883, p. 36, pl. 2, fig. 145.—Lethierry and Severin, 1893, p. 72.

Geocnethus bergi Horváth, 1919, p. 246.

DIAGNOSIS.—Among the large species of the subgenus this one may be recognized by the low prosternal carinae and the numerous coarse punctures on the pronotum.

DESCRIPTION.—Based on broken female type without antennae or legs. Oval, broadest at midlength of the hemelytra.

Head: Length-width ratio, 1.43:2.25; interocular width, 1.36; anterior outline a flattened semicircle, clypeus as long as juga; latter impunctate, with a few radiating vague rugae, submargin with three coarse, preocular setigerous punctures followed apically by a row of finer setigerous punctures; ocelli moderate, removed from eyes by a space equal to twice an ocellar width; jugum ventrally and maxillary plate impunctate; antennae missing; bucculae about as high as labial II, evanescent posteriorly; labium reaching base of abdomen. Labial segments: I, 0.86; II, 1.36; III, 1.23; IV, 0.84.

Pronotum: Length-width ratio, 2.52:4.77; anterior margin moderately deeply emarginate; lateral margin straight on basal two-thirds, distinctly curved anteriorly, submargin with six setigerous punctures; transverse impression postmedian, obsolete, with numerous,

irregularly spaced, coarse punctures; posterior lobe with some scattered coarse and fine punctures.

Scutellum: Length-width ratio, 3.45:2.66; polished, with about 15 small punctures scattered over disc; apex impunctate.

Hemelytron: Polished; clavus with three incomplete rows of punctures; mesocorium with two rows of coarse punctures paralleling claval suture and a few coarse and numerous fine punctures scattered over surface; exocorium with a few coarse punctures; costa with three setigerous punctures on the left side and two on the right; membranal suture straight, lateral angle slightly produced posteriorly; membrane little longer than basal width, slightly surpassing tip of abdomen.

Propleuron: Polished, impunctate except immediately above coxa and in depression; prosternal carinae little more than half as high as labial II.

Mesopleuron: Evaporatorium entire, reaching posterolateral angle of segment; lateral area with three punctures.

Sternites: Polished, impunctate, laterally with few horizontal, obsolete rugae.

Length of body: 9.35.

TYPE DATA. The label on the specimen in the Signoret collection (Wien) agrees with Signoret's listing from "Misiones" and so must be the type.

SPECIMEN STUDIED.—1 female (type), from Misiones, Argentina.

DISCUSSION.—This species appears to be somewhat of an intermediate between *Dallasiellus* and *Tominotus* because the preocular row of submarginal setigerous punctures is almost complete, the only gap appearing between the three punctures immediately anterior to eyes and the remaining ones of the row, which are finer and set closer together.

Dallasiellus (Dallasiellus) dilatipes, new species

PLATE FIGURES 128, 149, 272

DIAGNOSIS.—Since this species is known only from the male, separation must be made on the basis of that sex. The strong and unusual modifications of the male form the most convenient features for characterization: The peculiar quadrate lobe at the apex of the ventral margin of the anterior tibia (fig. 128); the costa strongly flattened and depressed; and the posterior femur with prominent strong knob near middle of ventral margin and spines of posteroventral row on hind tibia directed downward from prominent tubercles (fig. 149) instead of the usual oblique position from a serrated margin. Any one of these is sufficient to separate the males of this species from those of any other species within the genus.

DESCRIPTION.—Based on a single male. Oval, widest near midlength.

Head: Length more than half width, 1.90:2.77; interocular width, 1.67; anterior outline semicircular, clypeus as long as juga and only slightly narrowed apically; surface convex with scattered minute punctures and weak, incomplete radiating rugae; jugum submarginally with three widely separated setigerous punctures; ocelli large, separated from eye by a space subequal to transverse ocellar width; juga ventrally polished, impunctate; maxillary plate on apical half polished with a few scattered punctures; posterior half alutaceous and punctate. Antennal segments: I, 0.66; II, 0.70; III, 0.70; IV, 1.00; V, 1.00. Bucculae higher than labial II; labium reaching between posterior coxae. Labial segments: I, 1.30; II, 1.99; III, 1.82; IV, 1.31.

Pronotum: Length more than half width, 3.31:6.30; anterior margin shallowly, doubly emarginate; side margins entire, very weakly sinuate at midlength, with six or seven submarginal setigerous punctures; transverse impression obsolete, absent medially, marked by medially interrupted row of very close-set punctures; anterior lobe with curved, subapical band of intermixed minute and close-set coarse punctures; laterally similarly but with mixed sparser punctures; posterior lobe with scattered moderate and more numerous minute punctures.

Scutellum: Longer than broad, 1.79:1.67; polished, with numerous minute punctures and scattered coarser punctures discally becoming finer toward apex.

Hemelytron: Corium and clavus polished; clavus with two lateral exterior rows and one mesal row of punctures; mesocorium with two complete rows of punctures paralleling claval suture, discally with scattered fine punctures becoming crowded toward apex; exocorium for full length with numerous crowded punctures over most of surface; costa depressed, flattened, with two setigerous punctures on basal half; membranal suture nearly straight, lateral angle little produced; membrane surpassing apex of abdomen, longer than basal width.

Propleuron: Weakly punctate, rugose on anterior convexity, distinctly punctate in depression and laterally on posterior convexity, prosternal carinae very low, less than half as high as labial II.

Mesopleuron: Evaporatorium interrupted near posterior margin by polished band (as in fig. 108); lateral area roughened.

Metapleuron: Evaporatorium occupying more than three-fourths of segment, side margin straight; lateral area impunctate.

Sternites: Polished, with weak to obsolete minute punctures over most of surface and longitudinal rugae laterally.

Legs: Anterior tibia with subquadrate lobe at apex of lower margin (fig. 128); posterior leg (fig. 149) with a prominent knob near middle

of ventral margin of femur, and spines on posteroventral margin of tibia arising ventrally from prominent tubercles.

Terminalia: Apex of genital capsule prolonged, weakly emarginate, surface with scattered fine punctures; gonostylus as illustrated (fig. 272).

Length of body: 11.97.

TYPE DATA.—Described from holotype male in the collection of J. C. Lutz labeled "Nova Teutonia, Santa Catarina, Brazil, XII-24, 1950, F. Plaumann."

DISCUSSION.—The numerous, strong, unique modifications on the single specimen leaves no room for doubt concerning its validity as a new species. The trivial name alludes to the peculiar dilation of the anterior tibiae.

Dallasiellus (Dallasiellus) fusus, new species

PLATE FIGURE 273

DIAGNOSIS.—The fusing of the apex of the peritreme to the surrounding cuticula permits ready recognition of this species within the subgenus.

DESCRIPTION.—MALE: Four specimens. Oval, widest near mid-length.

Head: Length about two-thirds width, 0.99(0.90–1.03):1.47(1.36–1.53); interocular width, 0.91(0.90–0.93); anterior outline a somewhat truncated semicircle, juga longer than and contiguous in front of clypeus; surface finely alutaceous, impunctate only in and immediately anterior to interocellar area, remainder of surface with numerous fine punctures and distinct, radiating rugae; jugum with submarginal row of close-set setigerous punctures extending little more than three-fourths of way to apex; ocelli small, separated from eye by space about three times ocellar width; jugum ventrally and maxillary plate, except basally, shining, impunctate. Antennal segments: I, 0.31(0.30–0.33); II, 0.33(0.33–0.33); III, 0.38(0.36–0.43); IV, 0.46(0.43–0.49); V, 0.51(0.50–0.53). Bucculae higher than labial II, evanescent posteriorly; labium attaining mesosternum or bases of middle coxae. Labial segments: I, 0.44(0.43–0.44); II, 0.77(0.69–0.83); III, 0.54 (0.52–0.58); IV, 0.41(0.38–0.46).

Pronotum: Length more than half width, 1.76(1.62–1.95):3.22 (3.06–3.39); anterior margin moderately, singly emarginate; lateral margin entire, straight on basal third, with seven to eleven setigerous punctures submarginally; transverse impression almost wholly absent, marked by irregular band of widely separated punctures; anterior lobe with numerous punctures laterally and few subapically, elsewhere with scattered minute punctures; posterior lobe with several punctures medially and laterally.

Scutellum: Longer than wide, 2.11(2.02–2.30):2.02(1.89–2.15); disc shining, with few widely scattered punctures, impunctate on basal fourth and apex.

Hemelytron: Clavus and corium alutaceous; clavus with two irregular, confused rows of punctures; mesocorium with one complete row and one incomplete row of punctures paralleling claval suture, discally with punctures sparse and scattered or numerous; exocorium punctured similarly to disc of mesocorium; costa with three or four setigerous punctures; membranal suture nearly straight, lateral angle sometimes weakly produced; membrane longer than basal width, just reaching apex of abdomen.

Propleuron: Finely alutaceous, punctured sparsely in depression and more abundantly anterior to acetabulum; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium reaching into posterolateral angle but not to lateral margin of segment; lateral area with a few coarse punctures.

Metapleuron: Apex of peritreme fused with surrounding cuticula (as in fig. 106), not abruptly terminated; evaporatorium with lateral margin deeply concave, C-shaped, lateral area impunctate, extended almost to apex of peritreme.

Legs: Not specially modified.

Sternites: Shining, becoming more distinctly alutaceous laterally; laterally also with several longitudinal rugae.

Terminalia: Genital capsule shining, distinctly punctured in lateral angle, with broad submarginal depression laterally, apical margin entire, almost straight; gonostylus as illustrated (fig. 273).

Length of body: 6.22(5.97–6.66).

FEMALE: Very similar to male.

Head: Length-width ratio, 0.98(0.90–1.06):1.50(0.36–1.58); interocular width, 0.98(0.89–1.03). Antennal segments: I, 0.32(0.30–0.36); II, 0.31(0.30–0.36); III, 0.39(0.36–0.43); IV, 0.48(0.43–0.53); V, 0.55(0.53–0.62). Labial segments: I, 0.45(0.42–0.46); II, 0.76(0.68–0.86); III, 0.55(0.53–0.60); IV, 0.41(0.40–0.43).

Pronotum: Length-width ratio, 1.80(1.56–2.02):3.21(2.93–3.52).

Scutellum: Length-width ratio, 2.19(2.02–2.60):2.10(1.75–2.60).

Length of body: 5.96(5.34–6.74).

TYPE DATA.—Holotype male and allotype female (both CalAc) labeled "12 miles S. E. Nochixtlan, Oax., Mex., XII-13-48, H. B. Leech collector." Paratypes, 2 males, 7 females, as follows:

MEXICO: *Oaxaca*: Same data as types, 1 female (RCF). *Durango*: Coyotes, 8,300 feet, Aug. 8, 1947, D. Rockefeller Exp., Gertsch, 1 male (AmM). *México*: Tejuipilco, June 16, 21, 27, 1933, H. E. Hinton and R. L. Usinger, 1 male, 2 females (RLU, RCF). *Distrto Federal*: 15 miles southeast of "El Guarda," Nov.

14, 1946, E. C. Van Dyke, 1 female (CalAc). *Jalisco*: Guadalajara, March 1923, 1 female (USNM). *Michoacán*: Ajuno, May 1923, W. M. Mann, 1 female (USNM). *State unknown*: Jalapa (USNM), "Tozi," November, 1 female (USNM).

DISCUSSION.—The specific name alludes to the fusion of the apex of the peritreme with the surrounding cuticula. This character, as well as the numerous coarse crenulations on the posterior margin of the mesopleuron and the very deeply C-shaped metapleural evaporatorium (all similar to fig. 106) point out the close relationship of *fusus* to the slightly more northern species of the subgenus *Pseudopangaeus*. Although these three characteristics outweigh in number the single features of the interrupted mesopleural evaporatorium, the more logical placement of *fusus* is in subgenus *Dallasiellus*. To separate the two subgenera on the basis of the fused peritremal apex would permit placing the present species with its apparently close relatives of subgenus *Pseudopangaeus*, but would do violence to the distributional pattern by necessitating the transfer of *californicus* to *Dallasiellus* (*Dallasiellus*) as a geographically detached species. The presently accepted placement appears best in that it permits the more northern species to form a closely knit offshoot of the more southern subgenus by way of *fusus*. Further, *fusus* differs from all members of subgenus *Pseudopangaeus* in lacking an angulation near the base of the posteroventral margin of the posterior tibia of the male.

Dallasiellus (*Dallasiellus*) *horvathi*, new species

DIAGNOSIS.—Among the large species (over 9 mm.) of the subgenus, *horvathi* may be recognized by the low prosternal carinae and the virtual lack of punctures on the posterior lobe of the pronotum.

DESCRIPTION.—From one male and one female. MALE: Oval, widest near midlength.

HEAD: Length almost two-thirds width, 1.51:2.34; interocular width, 1.43; anterior outline a full semicircle, clypeus as long as juga; latter impunctate; almost smooth; submargin with four close-set setigerous punctures in front of eyes and one more widely spaced beyond; ocelli moderately large, situated about half way between eye and midline of head, separated from eye by a space nearly three times a transverse ocellar width; jugum ventrally and most of maxillary plate polished, impunctate. Antennal segments: I, 0.41; II, 0.56; III, 0.70; IV, 0.80; V, 0.90. Bucculae as high as labial II; labium reaching between hind coxae. Labial segments: I, 1.03; II, 1.66; III, 1.63; IV, 1.10.

PRONOTUM: Length more than half width, 3.13:5.43; anterior margin moderately, simply emarginate; side margins strongly sinuate opposite ends of transverse impression, submargin with row of six

setigerous punctures; transverse impression submedian, very weak, absent medially, marked by medially interrupted row of close-set punctures; anterior lobe with punctured lunate impression subapically, with about five punctures laterally; posterior lobe impunctate except for few punctures at middle near transverse impression.

Scutellum: Longer than wide, 3.34:3.24; disc polished, with irregularly spaced, moderately coarse, sunken punctures, apex impunctate.

Hemelytron: Corium and clavus polished, clavus with double row of punctures for more than half its length; mesocorium impunctate except for two complete rows paralleling claval suture and few punctures at lateroapical angle; exocorium with numerous distinct punctures for full length; membranal suture weakly concave, lateral angle slightly prolonged; costa with two setigerous punctures; membrane slightly surpassing apex of abdomen, length little more than basal width.

Propleuron: Polished, impunctate, even in depression; prosternal carinae low, about half as high as labial II.

Mesopleuron: Evaporatorium entire, reaching lateral margin of segment; lateral area impunctate.

Metapleuron: Evaporatorium occupying about three-fourths of segment; lateral area impunctate.

Sternites: Polished, impunctate.

Terminalia: Apical margin of genital capsule entire, faintly sinuate either side of middle, surface punctate in lateral depressions; gonostylus as illustrated for *bergi* (fig. 271).

Length of body: 10.22.

FEMALE: Similar to male with the following exceptions: (1) Submarginal setigerous punctures on jugum normal on left side but with only three widely separated ones on the right; (2) ocelli larger, separated from eye by a space about twice the ocellar width; (3) lateral pronotal margin weakly sinuate opposite the ends of the transverse impression; (4) exocorial punctures less distinct; and (5) propleuron with some distinct punctures in the depression.

Head: Length-width ratio, 1.61:2.55; interocular width, 1.43. Antennal segments: I, 0.56; II, 0.60; III, 0.74; IV, 1.00; V, 1.05. Labial segments: I, 0.94; II, 1.50; III, 1.43; IV, 1.03.

Pronotum: Length-width ratio, 3.40:6.02.

Scutellum: Length-width ratio, 4.04:3.92.

Length of body: 11.17.

TYPE DATA.—The holotype male (AmM) is labeled "Moyobamba Region, Peru, Jan. 8, 1926, F 6149, H. Bassler Collection, Acc. 33591"; the allotype female (USNM) bears the following data: "Costa Rica,

Turrialba, collection Shild-Burgdorf" and a label "*Ectinopus holomelas*."

DISCUSSION.—Although the type localities of the two specimens are somewhat removed from each other, the detected differences evident between the holotype and allotype are not sufficient to indicate specific distinctness.

Dallasiellus (Dallasiellus) interruptus, new species

PLATE FIGURES 108, 275

DIAGNOSIS.—The shape of the mesopleural evaporatorium, which is interrupted near posterior margin (fig. 108), not only suggested the name for the species but is also reliable for separating it from all other species within the subgenus except *dilatipes*, which has highly polished coria.

DESCRIPTION.—From one male and one female. MALE: Oval, widest at about mid-length.

Head: Length about two-thirds width, 1.56:2.29; interocular width, 1.36; anterior outline evenly curved, shallowly semicircular, clypeus as long as juga; latter with weak, radiating rugae with moderate punctures in between; submarginal setigerous punctures a row of four close-set punctures in front of eye and one more widely removed distally; ocelli moderately large, separated from eye by a space that is about $1\frac{1}{2}$ times transverse ocellar width; jugum ventrally polished, impunctate; maxillary plate basally alutaceous, weakly punctate. Antennal segments: I, 0.46; II, 0.70; III, 0.56; IV, 0.84; V, 0.95. Bucculae as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.96; II, 1.40; III, 1.40; IV, 0.96.

Pronotum: Length more than half width, 2.79:5.21; anterior margin deeply and doubly emarginate; side margins entire, not sinuate, with submarginal row of six setigerous punctures; transverse impression weak across full width, marked by punctured band which extends onto posterior lobe at middle; anterior lobe with numerous distinct punctures laterally and few in curved row behind anterior emargination.

Scutellum: Longer than wide, 3.71:3.13; polished, impunctate apically and at basal angles, discally with numerous, crowded, coarse punctures becoming finer toward apex.

Hemelytron: Corium and clavus distinctly alutaceous; latter with one complete and basal half of another longitudinal row of punctures; mesocorium and exocorium with numerous punctures over most of surface, former with two complete rows of slightly coarser punctures paralleling claval suture; costa with two setigerous punctures; membranous suture straight; membrane little longer than basal width, very slightly surpassing apex of abdomen.

Propleuron: Weakly alutaceous, punctured only in depression; prosternal carinae very low, sharp.

Mesopleuron: Evaporatorium reaching lateral margin along posterior edge of segment, interrupted near posterior margin of segment by polished band (fig. 108); lateral area impunctate.

Metapleuron: Evaporatorium with outer edge weakly concave; lateral area impunctate.

Sternites: Weakly alutaceous, with scattered punctures and short, longitudinal rugae on lateral third.

Legs: Moderately long.

Terminalia: Genital capsule entire apically, surface finely punctate in lateral impressed areas; gonostylus as illustrated (fig. 275).

Length of body: 10.27.

FEMALE: Very similar to male but with exocorium and mesocorium more sparsely punctate medially.

Head: Length-width ratio, 1.51:2.29; interocular width, 1.30.

Antennal segments: I, 0.43; II, 0.66; III, 0.63; IV, 0.86; V, 0.94.

Labial segments: I, 0.95; II, 1.46; III, 1.46; IV, 0.96.

Pronotum: Length-width ratio, 2.70:5.21.

Scutellum: Length-width ratio, 3.61:3.24.

Length of body: 10.30.

TYPE DATA.—Holotype male (Wien), "Unt. Amaz. Taperinha b. Santarem, 1-10, VI, '27, Zerny." Allotype female (Carv), "Paranha, Est. do Pará, 6-1-1920, coll. Doris Mender." Paratypes, 2 females, as follows:

BRAZIL: Santarém, 1 female (Carn).

ARGENTINA: Guadalupe, Santa Fé, Nov. 27, 1939, Biraben-Bezzi, 1 female (UnivNac).

DISCUSSION.—The shape of the mesopleural evaporatorium is very suggestive of the condition found in the subgenus *Pseudopangaeus*, but differs in that the extreme posterior part extends thinly to lateral margin of the segment (fig. 108), thus allying this species to subgenus *Dallasiellus*. It also differs from *Pseudopangaeus* in having only fine crenulations on the posterior margin of the mesopleuron, in not having the lateral margin of the matapleural evaporatorium deeply concave, and in having the posterior tibia of the male simple.

***Dallasiellus (Dallasiellus) levipennis* (Signoret), now combination**

PLATE FIGURE 27

Geotomus levipennis Signoret, 1883, p. 35, pl. 2, fig. 144.

Geocnethus prosternalis Horváth, 1919, p. 246. New synonymy.

DIAGNOSIS.—This species is characterized by its complete, uninterrupted mesopleural evaporatorium and lobulate prosternal carinae (fig. 27), which are as high or higher than labial II.

DESCRIPTION.—No detailed description of this species is warranted until such time as material is available in sufficient quantity to permit proper evaluation of the variation characterizing the few specimens examined in the course of this study. If, when such material becomes available, it can be demonstrated that the variations are such as distinguish population segregates that conform to our accepted species concept, meaningful descriptions of *prosternalis*, *levipennis*, and any other species of the complex can be prepared.

TYPE DATA.—Horváth's types of *prosternalis* were from "Brasilia: Minas Geraes . . . , Cuyaba in prov. Matto Grosso." The Cuyaba specimen (Hung), bearing the "Typus" label, was studied by the present author. The type specimens of *levipennis* were from "Cajenne," French Guiana, and "Amazonas," Brazil; their locations are unknown.

DISTRIBUTION OF SPECIMENS STUDIED.—The seven males and three females studied came from northern South America, ranging from Panama to Ecuador on the west and through Venezuela to central Brazil on the east.

DISCUSSION.—Because of the limited number of specimens available for this study and the number and nature of the variations in structure among them, they are here placed under *prosternalis* for reasons of nomenclatorial convenience. Indications are that two or more species are represented in a complex of closely related species. The following comments indicate the nature and direction of the variations shown by different structures and, in a general way, provide information descriptive of the complex.

The head shows several types of variations: (1) anterior outline varies from a flattened semicircle through a full semicircle to a semicircle slightly prolonged anteriorly; (2) surface with no punctures or numerous scattered minute punctures; (3) jugum with submarginal punctures variously arranged with two close-set punctures in front of eye and one puncture strongly separated apically (fig. 43), these sometimes appearing in various combinations on the two sides of one individual; (4) labium varying in length from between middle coxae to between posterior coxae. In all specimens the pronotum has the transverse impression weak but marked with a row of distinct punctures, but the two lobes vary from impunctate laterally to strongly abundantly punctate; all males showed a decided sinuation of the side margin opposite the ends of the transverse impression. The hemelytron varies in surface texture from highly polished to distinctly alutaceous, and in punctation from impunctate (except for usual row in clavus, one or two rows on mesocorium paralleling claval suture, and punctures in impressions delimiting veins) to punctate apically or for full length of exocorium. The scutellum varies from weakly to very coarsely punctured and in one specimen shows a

strong, submarginal carina. The prosternal carinae are strongly lobulate in all, but the shape of this lobe varies from a nearly full semicircle to a shape much longer than broad. The sternites may be polished or weakly to strongly alutaceous. The male genital capsule is relatively unmodified in all except that in each it shows a weak, triangular impression subapically and punctate laterally. The length of the body varies from 9.6 to 11.9 mm.

The taxonomic significance of these variations can only be determined through study of additional material. In the present author's opinion, the variations probably indicate the existence of additional species, but the evidence is not conclusive and it seems best to attempt no further divisions at this time.

Dallasiellus (Dallasiellus) longulus (Dallas)

PLATE FIGURES 16, 25, 41, 107, 129, 150, 276

- Aethus longulus* Dallas, 1851, p. 119.—Walker, 1867, p. 152.—Stål, 1876, p. 26.
Stenocoris longulus Signoret, 1880, p. xliv; 1882, p. 242, pl. 8, fig. 102.—Distant, 1880, p. 5.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 69.
Dallasia longulus Bergroth, 1891, p. 235.
Dallasiellus longulus Berg, 1901, p. 281.

DIAGNOSIS.—The very elongate, parallel-sided form or, more usable, the long labium which surpasses apices of posterior coxae will separate this species from all other members of the subgenus.

DESCRIPTION.—MALE: Elongate, parallel-sided.

Head (fig. 41): Length about three-fourths width, 1.25(1.20–1.30):1.71 (1.66–1.74); interocular width, 1.04(1.00–1.08); gena rounded, forming a slightly flattened semicircle, as long as clypeus and distinctly narrowing it apically; the marginally carinate jugum has three submarginal setigerous punctures—one immediately anterior to eye and two near midlength; surface weakly convex, faintly rugose radially and with several scattered distinct punctures; ocelli well developed, separated from eye by about twice an ocellar width; jugum ventrally smooth, impunctate; maxillary plate with several distinct punctures, these more abundant posteriorly. Antennae: I, 0.38(0.36–0.39); II, 0.46(0.44–0.50); III, 0.43(0.42–0.45); IV, 0.56(0.53–0.60); V, 0.65(0.63–0.68). Bucculae about as high as labial II; labium reaching to first or base of second sternite. Labial segments: I, 0.70(0.68–0.73); II, 1.25(1.16–1.33); III, 1.29(1.20–1.40); IV, 1.03(1.00–1.06).

Pronotum: Length more than half width, 1.92(1.82–1.95):3.47 (3.31–3.62); anterior margin doubly but moderately deeply emarginate; side margins entire, with submarginal row of five setigerous punctures, one of which is posterior to transverse impression; latter slightly behind middle, shallow, interrupted medially, marked by

irregular row of distinct punctures; anterior lobe impunctate except in subapical crescentic impression and in wide lateral band; posterior lobe with most punctures grouped at middle.

Scutellum: Longer than wide, 2.78(2.73–2.86):2.18(2.08–2.24); surface with numerous scattered, irregular punctures (except across base) becoming finer toward impunctate apex.

Hemelytron: Corial areas well defined, surface shining to vaguely alutaceous; exocorium and mesocorium punctured full length, punctures becoming coarser basally, mesocorium with one complete, sunken row and one incomplete row of close-set punctures paralleling claval suture; clavus with a single row of punctures; costa with one setigerous puncture; membranous suture nearly straight, outer angle slightly acute.

Propleuron: Punctate in depression; prosternal carinae strongly raised in anterior half of prosternum, in profile forming a somewhat semicircular lobe (fig. 25).

Mesopleuron (fig. 107): Evaporative area reaching to posterolateral angle of segment, thence extended anteriorly along lateral margin; lateral area feebly rugose, impunctate; posterior margin entire.

Metapleuron (fig. 107): Evaporative area occupying more than mesal three-fourths, lateral margin straight, oblique; lateral area impunctate, with impressed line close to and paralleling outer edge of evaporative area; osteolar canal reaching half way across segment.

Legs (figs. 129, 150): Not specially modified.

Sternites: Shining, laterally roughened by weak rugae and patches of very small tubercles.

Terminalia: Subgenital plate flared laterally near base, apex with a slight emargination; gonostylus as illustrated (fig. 276).

Length of body: 6.91(6.73–7.14).

FEMALE: Very similar to male; measurements averaging slightly smaller.

Head: Length-width ratio, 1.18(1.16–1.20):1.71(1.63–1.75); interocular width, 1.05(1.03–1.10.) Antennal segments: I, 0.34(0.30–0.38); II, 0.47(0.43–0.50); III, 0.41(0.39–0.46); IV, 0.56(0.52–0.60); V, 0.62(0.60–0.64). Labial segments: I, 0.68(0.63–0.73); II, 1.28(1.20–1.33); III, 1.32(1.26–1.38); IV, 1.02(1.00–1.03).

Pronotum: Length-width ratio, 1.87(1.79–1.95):3.36(3.13–3.52).

Scutellum: Length-width ratio, 2.76(2.60–2.86):2.08(1.95–2.16).

Length of body: 6.87(6.50–7.16).

TYPE DATA.—Dallas' type (BrM) came from Pará, Brazil.

SPECIMENS STUDIED.—5 males, 8 females, as follows:

BRAZIL: *Pará*: Pará, Uhler collection, 1 male, 2 females (USNM). Taperina, near Santarém, August 1927, Zerny, 1 male (USNM). Santarém, 1 female (Car).

BOLIVIA: *Sara*: No exact locality, Steinbach, 2 males, 2 females (Carn; MCZ).
Santa Cruz: Puerto Suárez, 150 meters, Steinbach, Acc. 3845, 1 female (Carn).

PARAGUAY: Gran Chaco, 260 kilometers west of Paraguay River, Nov. 10, 1936, A. Schulze, 2 females (JCL). Villarrica, September 1935, F. Schade, 1 male (USNM).

DISCUSSION.—This species furnishes an excellent example of the superficiality of the approach to genera that has been commonly employed in many of the studies of the Cydniidae. On the basis of a slightly more elongate shape and a lengthened labium, this species served as the type of a monobasic genus. The genus has stood with this single species for more than seventy years, even though several really closely allied species have been described during that period. Many workers have been misled by such specific differences which are more conspicuous in a superficial scanning of a few species at a time than are the more important features of the trichobothria and osteolar peritreme. But such results must be expected when workers are interested in cataloging and describing all the forms possible—the differences being accorded more importance than the similarities.

Dallasiellus (Dallasiellus) lugubris (Stål), new combination

PLATE FIGURES 42, 43, 274

Aethus lugubris Stål, 1860, p. 13.

Geotomus obscurus Signoret, 1883, p. 39, pl. 2, fig. 147. New synonymy.

Geotomus nigrocinctus Signoret, 1883, p. 40, pl. 2, fig. 148. New synonymy.

Geotomus semilevis Signoret, 1883, p. 44, pl. 3, fig. 153. New synonymy.

Geotomus pangaeoides Signoret, 1883, p. 45. New synonymy.

Geocnethus reversus Barber and Bruner, 1932, p. 237, pl. 25, fig. 1. New synonymy.

DIAGNOSIS.—Within its subgenus this species may be recognized by the small size (3.9–5.5) coupled with the presence of two or more close-set setigerous punctures in front of eye on submargin of head and two almost equally developed rows of mesocorial punctures paralleling the claval suture.

DESCRIPTION.—MALE: Oval, broadest near midlength.

Head: Length less than three-fourths width, 0.84(0.82–0.86) : 1.29 (1.26–1.32); interocular width, 0.77(0.76–0.80); anterior outline semi-circular, juga very slightly longer than clypeus and strongly narrowing it apically; surface polished, impunctate, and with faint, radiating rugae; two to four close-set submarginal setigerous punctures immediately in front of eye and usually two widely separated ones beyond them; ocelli distinct, separated from eye by a space equal to or slightly greater than their own diameter; juga ventrally and maxillary plate polished, impunctate. Antennal segments: I, 0.23(0.23–0.24); II, 0.24(0.23–0.26); III, 0.30(0.29–0.31); IV, 0.35(0.35–0.36); V, 0.42(0.41–0.42). Bucculae about as high as labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments:

I, 0.39(0.37-0.43); II, 0.63(0.60-0.66); III, 0.45(0.43-0.46); IV, 0.37(0.35-0.40).

Pronotum: Length slightly more than half width, 1.36(1.32-1.44) : 2.56(2.47-2.63); anterior margin weakly, doubly emarginate; side margins entire, gently curving on anterior third, with six submarginal setigerous punctures; transverse impression more or less impressed laterally, obsolete medially; anterior lobe with a curved, irregular band of distinct punctures subapically and a patch of numerous coarse punctures laterally; posterior lobe with several distinct punctures medially and laterally.

Scutellum: Longer than wide, 1.75(1.62-1.85) : 1.59(1.56-1.64); disc polished and with numerous scattered punctures becoming finer apically.

Hemelytron: Corium and clavus polished; clavus with one complete row and one incomplete row of punctures; mesocorium with two complete rows of punctures paralleling clavocorial suture, elsewhere distinctly punctured basally and apically and much more finely so medially; exocorium for its full length more densely punctate than mesocorium; costa with one to three setigerous punctures; corio-membranal suture nearly straight; membrane slightly longer than basal width, distinctly surpassing apex of abdomen.

Propleuron: Distinctly punctured only in the depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium reaching lateral margin and extended anteriorly; polished area impunctate.

Metapleuron: Peritreme free apically; evaporatorium virtually straight laterally; polished area impunctate.

Sternites: Shining, impunctate except for a few punctures behind spiracles.

Terminalia: Genital capsule with a shallow but distinct medio-apical emargination; surface with a few small punctures laterally.

Length of body: 5.02(4.64-5.11).

FEMALE: Very similar to male.

Head: Length-width ratio, 0.84(0.80-0.90) : 1.27(1.20-1.36); interocular width, 0.76(0.73-0.80). Antennal segments: I, 0.22(0.20-0.24); II, 0.25(0.23-0.27); III, 0.28(0.26-0.30); IV, 0.34(0.30-0.36); V, 0.41(0.40-0.43). Labial segments: I, 0.38(0.36-0.41); II, 0.62(0.56-0.69); III, 0.49(0.46-0.53); IV, 0.41(0.40-0.43).

Pronotum: Width-length ratio, 2.50(2.31-2.74) : 1.33(1.30-1.37).

Scutellum: Length-width ratio, 1.70(1.56-1.89) : 1.53(1.43-1.75).

Length of body: 4.79(3.98-5.50).

TYPE DATA.—Stål's type (Stock) of *Aethus lugubris* was from Rio de Janeiro. Signoret's type (Wien) of *nigrocinctus* was from "Bresil"; his type (Wien) of *obscurus* was from "Ocana," Colombia, his type

(not now in Distant or Signoret collections) of *semilevis* was from "Mexique"; and his type (not yet located) of *pangaeoides* was from "Guayra et du Mexique." The Barber and Bruner type (USNM) was from "Mayaguez, Puerto Rico."

SPECIMENS STUDIED: 39 males, 84 females:

UNITED STATES: *Alabama*: Mobile; November. *Louisiana*: Gueydan, Morgan City; June, July. *Mississippi*: Harrison Co.; August. *Texas*: Brazos Co., Brownsville, Harlingen, Mission, Victoria, Weslaco; March, May, June, September, October, November.

MEXICO: *Veracruz*: Córdoba, Pureza, Tres Zapotes; April, September. *Yucatán*: Mérida; June.

GUATEMALA: Coban; July.

NICARAGUA: La Calera; September.

COSTA RICA: San José; June.

PANAMA: *Canal Zone*: Barro Colorado Island; April to December.

BRAZIL: Chapada, Rio de Janeiro, Santarém, Taperina; February, November, December.

BOLIVIA: Santa Cruz de la Sierra; January, November.

ARGENTINA: San Pedro de JuJuy; July.

PUERTO RICO: Gurabo, Río Piedras, Vieques; April, November.

DISCUSSION.—The author proposes the above synonymy because it has not been possible in this study to differentiate population segregates based on discontinuities in variation of anatomical structures. A frustrating array of variations are shown by the specimens which in the key run to *lugubris*. The gonostyli likewise offer no help in separating these specimens, as they appear similar (fig. 275) in all parts of the geographic range. The above variations all extend uninterruptedly from one extreme of geographic range to another, and occur in unpredictable combinations from one locality to another.

The geographic range, although greater than that known for any other species in the Western Hemisphere, has satisfactory specimen representation from all its main areas. Some localities are represented by goodly series of specimens. It is in these larger series that the combinations of variations, although appearing to tend in certain directions, are most confusing. This geographic picture is even more complicated by the spotty occurrences of these "tendencies" within groups; i.e., the specimens from the southern United States appear more similar in combinations to some of the Brazilian groups than to the Mexican or West Indies specimens.

When an intense study of this kind reveals no way to separate such an array into definable taxonomic categories, there is reason to surmise that perhaps the specimens all belong to one species. Supporting this possibility is the fact that this part of the family represents the least specialized portion. To begin with, *Dallasiellus* is a "residual" genus that appears at the end of the key after all the more strongly marked genera have been removed. Then, within the

genus the specimens under consideration also appear at the end of the key after all the more readily recognized species have been separated. Thus, a point of relatively little differentiation is reached and further separation becomes very difficult.

Perhaps this melange could be treated as a "Rassenkreis"; however, the nature and geographic distribution of the variation exhibited by the specimens studied does not conform to that required by the accepted definition of a polytypic species. In view of these considerations the most practical arrangement is to treat these specimens as one species, unless and until investigation of additional characters in the phallosome and the internal female genitalia reveal means for their separation into additional species. Until this is accomplished, Stål's name *lugubris* has priority over the other names that have been applied to specimens belonging to this complex.

***Dallasiellus (Dallasiellus) murinus* (Van Duzee), new combination**

PLATE FIGURE 277

Geotomus murinus Van Duzee, 1933, p. 26.

DIAGNOSIS.—Among those species that are less than 6 mm. in length and have three widely separated setigerous punctures on the submargin of the head, this species may be detected by the single setigerous puncture on the costa, the polished mesocorium and the longitudinal impression on each jugum.

DESCRIPTION.—From four males and four females. MALE: Elongate-oval, sides subparallel.

Head: Length about two-thirds width, 0.86(0.80–0.91):1.26(1.22–1.32); interocular width, 0.77(0.76–0.80); anterior outline semi-circular, clypeus as long as jugum, strongly narrowed apically; surface shining, with numerous, well scattered, minute punctures; jugum with longitudinal, obtuse impression medially, this marked laterally by longitudinal tumid elevation anterior to eye, with three widely separated setigerous punctures submarginally; ocelli small, separated from eye by space equal to or $1\frac{1}{2}$ times transverse ocellar width; jugum ventrally and maxillary plate (except basally) shining, impunctate. Antennal segments: I, 0.28(0.26–0.30); II, 0.32(0.30–0.36); III, 0.35(0.33–0.36); IV, 0.45(0.42–0.49); V, 0.50(0.47–0.54). Bucculae about as high as labial II, evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.44(0.43–0.46); II, 0.81(0.69–0.73); III, 0.54(0.50–0.60); IV, 0.31(0.29–0.36).

Pronotum: Length slightly more than half width, 1.31(1.23–1.38):2.55(2.47–2.60); anterior margin moderately doubly emarginate; lateral margin entire, straight on basal half, with six setigerous punctures submarginally; transverse impression postmedian, dis-

tinctly impressed across full width, except sometimes more weakly so medially, marked by regular row of distinct, close-set punctures; subapical impression moderate, with numerous coarse and minute punctures; anterior lobe laterally with mixture of numerous coarse and minute punctures; posterior lobe with numerous widely separated minute punctures over full width and few coarse ones medially and laterally.

Scutellum: Longer than broad, 1.82(1.75–1.89):1.58(1.49–1.62); shining, with numerous scattered minute punctures, with several coarse ones discally but not across base or apex.

Hemelytron: Clavus and corium polished; clavus polished, with one complete and sometimes a second partial row of coarse punctures; mesocorium with two complete rows of punctures paralleling claval suture and finer ones scattered widely over disc; exocorium punctured full length, punctures coarser and sparser on mesal half; membranal suture straight, lateral angle not or faintly produced; membrane longer than basal width, reaching or just surpassing apex of abdomen.

Propleuron: Polished, punctate in depression and anterior to acetabulum; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium not interrupted; lateral area impunctate, with obsolete oblique rugae.

Metapleuron: Peritreme abruptly terminated apically; lateral margin of evaporatorium weakly concave; lateral area impunctate.

Sternites: Shining, with very minute punctures scattered over full width; moderately rugopunctate in spiracular area.

Legs: Not specially modified.

Terminalia: Genital capsule more densely punctate laterally, apical margin broadly and very shallowly emarginate medially; gonostylus as illustrated (fig. 277).

Length of body: 5.23(5.09–5.41).

FEMALE: Very similar to male, measurements averaging larger.

Head: Length-width ratio, 0.90(0.86–0.93):1.35(1.31–1.38); interocular width, 0.81(0.76–0.85). Antennal segments: I, 0.27(0.26–0.30); II, 0.30(0.30–0.32); III, 0.34(0.33–0.38); IV, 0.45(0.43–0.46); V, 0.53(0.53–0.54). Labial segments: I, 0.42(0.40–0.44); II, 0.79(0.70–1.00); III, 0.53(0.52–0.56); IV, 0.35(0.35–0.36).

Pronotum: Length-width ratio, 1.35(1.30–1.43):2.66(2.51–2.76).

Scutellum: Length-width ratio, 1.95(1.83–2.05):1.64(1.50–1.75).

Length of body: 5.33(4.97–5.55).

TYPE DATA.—The type female (CalAc) is from "Tagus Cove, Albemarle Island," in the Galápagos Islands.

SPECIMENS STUDIED.—4 males, 4 females, as follows:

ECUADOR: Bucay (?), Mar. 19, 1922, G. Tate, 900 feet, 2 females (USNM). Guayaquil, 1940, C. L. Fagan, 1 male (USNM).

GALÁPAGOS ISLANDS: Galápagos Island, Pinchot Exp., June 1929, A. K. Fisher, 2 males, 2 females (RCF, USNM). Chatham Island, June 30, 1933, 1 male (JCL).

DISCUSSION: The distribution of *murinus* presents an interesting problem. Here is a species occurring in two areas separated by some 600 miles of ocean barrier. Is its appearance on the Galápagos Islands due to the ocean currents that flow from the mainland to the islands, or was man and his machines the agent of dissemination? Either way, it is interesting to note that Van Duzee's species is not one of the animals of the Galápagos Islands whose range is restricted to them.

Dallasiellus (Dallasiellus) orchidiphilus, new species

PLATE FIGURE 278

DIAGNOSIS.—This new species is most easily recognized from all other species within the genus by the very short second antennal segment, which is distinctly shorter than the first and just about half as long as the third.

DESCRIPTION.—MALE: Oval, widest slightly posterior to mid-length.

Head: Length about two-thirds width, 0.74(0.70–0.86):1.12(1.10–1.16); interocular width, 0.69(0.67–0.70); anterior outline less than a semicircle, clypeus as long as juga and slightly narrowed apically; surface weakly convex, shining, with few minute punctures anterior to each ocellus and obsolete rugae subapically; jugum with one submarginal setigerous puncture next to eye and one or two short, stout pegs at apex; ocelli small, separated from eye by space almost three times transverse ocellar diameter; jugum ventrally and maxillary plate shining, impunctate. Antennal segments: I, 0.25(0.23–0.26); II, 0.15(0.14–0.17); III, 0.31(0.30–0.33); IV, 0.32(0.31–0.33); V, 0.41(0.40–0.43). Bucculae almost as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.39(0.36–0.41); II, 0.57(0.53–0.61); III, 0.45(0.43–0.48); IV, 0.32(0.30–0.36).

Pronotum: Length about half width, 1.18(1.10–1.23):2.39(2.21–2.53); anterior margin shallowly emarginate; side margin entire, not sinuate, with four or five submarginal setigerous punctures; transverse impression marked by irregular, medially interrupted band of strong punctures; anterior lobe with large punctures paralleling anterior margin and in large patch laterally, and with numerous minute punctures intermixed with large ones to form a line either side of midline and scattered over calli; posterior lobe with scattered large punctures discally and in patch laterally, with few minute punctures scattered over surface.

Scutellum: Length equal to or little longer than width, 1.48 (1.36–1.62):1.45(1.36–1.55); disc shining, with few coarse punctures or none, and numerous weak, minute punctures.

Hemelytron: Corium and clavus feebly alutaceous; clavus with one row of punctures; mesocorium with distinct punctures scattered over disc and two complete rows paralleling claval suture; exocorium punctured similarly or a little more closely than mesocorium; costa with one setigerous puncture; membranal suture straight, lateral angle not prolonged; membrane about as long as basal width, reaching or slightly surpassing apex of abdomen.

Propleuron: Shining, with few punctures ventrally in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium reaching into posterolateral angle but not to lateral margin; lateral area with several distinct punctures.

Metapleuron: Peritreme abruptly terminated apically; lateral margin of evaporatorium straight; lateral area impunctate.

Legs: Not specially modified.

Sternites: Shining, impunctate except near apex of VI.

Terminalia: Genital capsule distinctly punctate except medio-apically, apical margin virtually straight; gonostylus as illustrated (fig. 278).

Length of body: 4.18(3.93–4.47).

FEMALE: Very similar to male.

Head: Length-width ratio, 0.69(0.66–0.73):1.10(1.03–1.16); interocular width, 0.68(0.65–0.71). Antennal segments: I, 0.24(0.23–0.26); II, 0.14(0.14–0.16); III, 0.30(0.28–0.33); IV, 0.35(0.33–0.37); V, 0.43(0.40–0.48). Labial segments: I, 0.38(0.36–0.40); II, 0.56(0.53–0.60); III, 0.45(0.44–0.46); IV, 0.34(0.33–0.35).

Pronotum: Length-width ratio, 1.17(1.10–1.33):2.42(2.15–2.53).

Scutellum: Length-width ratio, 1.49(1.36–1.63):1.39(1.30–1.49).

Length of body: 4.08(3.78–4.63).

TYPE DATA.—Holotype male (USNM 64413) labeled "Colombia, on *Cattleya*, intercepted Honolulu, VII-9-37," and allotype female (USNM) labeled "Colombia, on orchid, intercepted San Francisco, Cal., II-1-39." Paratypes: 4 males, 3 females, as follows:

PANAMA: Summit, Canal Zone, January 1947, N. L. H. Krauss, 1 female (USNM).

COLOMBIA: Bogotá, Nov. 30, 1921, F. H. B. #32857, 1 male (USNM). *Intercepted on orchids*: Hoboken, N.J., Sept. 25, 1940, 1 male (USNM). Washington, D.C., Jan. 13, 1940, 1 male (USNM); Nov. 14, 1936, 1 female (USNM); June 7, 1938, 1 male (RCF). San Francisco, Calif., Aug. 22, 1945, 1 female (USNM).

DISCUSSION.—The trivial name was given on the basis of the numerous interceptions of this form on orchids. The several specimens for which the host orchid was determined all came from *Cattleya*, a tree-inhabiting orchid genus. This habit of frequenting an orchid that grows on trees probably accounts in great part for the fact that only two of the nine specimens seen had been collected in

their native haunts; the other seven were found in a specialized form of collecting in which the orchids were examined after having been shipped from their country of origin. Collecting on *Cattleya* in Central and South America should yield many more specimens.

Dallasiellus (Dallasiellus) ovalis, new species

DIAGNOSIS.—Among the smaller species (not over 5.5) with the three widely separated setigerous punctures in front of the eye, this species may be recognized by the lack of costal setigerous punctures and the obsolete transverse pronotal impression.

DESCRIPTION.—Based on three females. Oval.

Head: Length two-thirds width, 0.80(0.76–0.83) : 1.24(1.23–1.26); interocular width, 0.78(0.76–0.81); anterior outline a flattened semi-circle, clypeus as long as juga, narrowed apically; surface shining, impunctate, with three widely-separated submarginal setigerous punctures; ocelli small, separated from eye by space more than three times transverse ocellar width; jugum ventrally and maxillary plate, except basal third, polished, impunctate. Antennal segments: I, 0.20(0.20–0.20); II, 0.20(0.20–0.20); III, 0.29(0.26–0.33); IV, 0.36(0.36–0.36); V, 0.47(0.47–0.48). Bucculae almost as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.43(0.40–0.45); II, 0.70(0.70–0.72); III, 0.54(0.50–0.60); IV, 0.32(0.30–0.33).

Pronotum: Length more than half width, 1.36(1.36–1.38) : 2.47(2.44–2.53); anterior margin shallowly, singly emarginate; side margins entire, straight on basal two-thirds, with four or five submarginal setigerous punctures; transverse impression postmedian, obsolete, marked by very irregular row of numerous punctures; both lobes laterally with numerous punctures; anterior lobe with curved row of punctures paralleling anterior emargination; posterior lobe with distinct punctures scattered across most of disc.

Scutellum: Longer than wide, 1.73(1.12–1.90) : 1.51(1.49–1.56); disc polished, with a number of well-separated moderate punctures becoming finer apically.

Hemelytron: Clavus and corium polished; clavus with two longitudinal rows of punctures; mesocorium coarsely punctured toward base, more finely and sparsely so toward apex, with two complete rows of punctures paralleling claval suture; exocorium with punctures crowded for full length; costa with no setigerous punctures; membranous suture straight, lateral angle faintly prolonged; membrane longer than basal width, slightly surpassing apex of abdomen.

Propleuron: Shining, punctate only in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Lateral area impunctate, lightly obliquely rugose.

Metapleuron: Peritreme abruptly terminated apically; lateral margin of evaporatorium straight to faintly convex; lateral area impunctate.

Sternites: Polished, impunctate, with few short, longitudinal rugae in spiracular area.

Legs: Not specially modified.

Length of body: 4.79(4.65–4.92).

TYPE DATA.—Holotype female (JCL), "Nova Teutonia, Santa Catarina, Brazil, X-16, 1950, F. Plaumann." Paratypes: Same data as type, 1 female (JCL); same locality and collector as type, Aug. 15, 1935, 1 female (RLU).

DISCUSSION.—None of the specimens examined bore any biological data.

Dallasiellus (Dallasiellus) planicollis (Horváth), new combination

PLATE FIGURE 280

Geocnethus planicollis Horváth, 1919, p. 247.

DIAGNOSIS.—Among the large species which make up the group centering about *bergi* (key couplets 7 to 9), this species may be recognized by a combination of several characters: low prosternal carinae, corium alutaceous and with but a few exocorial punctures which are confined to apex, and the numerous coarse, scutellar punctures.

DESCRIPTION.—Based on one specimen, the type male. Oval.

Head: Broader than long, 2.25:1.43; interocular width, 1.30; clypeus as long as juga, slightly narrowed at apex; juga longitudinally impressed medially with four submarginal setigerous punctures—two close-set ones in front of eye and two widely-spaced ones beyond; ocelli large, width subequal to space separating them from eye. Antennal segments: I, 0.45; II, 0.60; III, 0.63; IV, 0.91; V, missing. Maxillary plate punctate on basal half; bucculae moderately high; labium reaching between middle coxae. Labial segments: I, 1.05; II, 1.33; III, 1.20; IV, 0.88.

Pronotum: Wider than long, 5.21:2.83; sides tapering from base, markedly sinuate medially; anterior margin deeply emarginate, with a bordering broad, punctate impression; transverse impression slightly behind middle, vaguely impressed, with an irregular row of coarse punctures that curve forward medially; anterior lobe with a few punctures laterally; posterior lobe impunctate except for few moderate punctures medially; prosternal carinae low, in profile angulately rounded.

Scutellum: Longer than wide, 3.42:3.28; discally with more than 35 coarse, sunken punctures crowded to form coarse, transverse rugae between them.

Hemelytron: Corium finely but distinctly alutaceous; exocorium with few moderate punctures near base and apex; mesocorium impunctate except for rows bordering claval suture; clavus with one complete row and one incomplete row of punctures; costa with two setigerous punctures; membrane reaching apex of abdomen, longer than basal width.

Mesopleuron: Evaporatorium reaching uninterrupted to posterolateral angle of segment; posterior margin entire.

Metapleuron: Lateral margin of evaporatorium gently concave.

Legs: Posterior femur not tuberculate medioventrally; posterior tibia simple.

Sternites: Polished, impunctate except along basal margin and near spiracles.

Terminalia: Genital capsule with posterior margin faintly emarginate either side of broad, blunt apex; gonostylus as illustrated (fig. 280).

Length of body: 10.35.

TYPE DATA.—Holotype male (Hung), "Brasilia: Rio de Janeiro."

SPECIMENS STUDIED: 2 males, as follows:

BRAZIL: Rio de Janeiro, type male (Hung) and another male (Hung) with same data.

DISCUSSION.—This species, like most of the other large species of the subgenus (in couplets 7–9 of the key to species), is represented by very limited material—one specimen in this case. With such limited material the worker has little chance to evaluate the differences that do appear. Until more specimens become available these species must be accepted.

Dallasiellus (Dallasiellus) puncticeps, new species

PLATE FIGURE 281

DIAGNOSIS.—The coarse, close-set punctures on the surface of the head plus the abrupt posterior termination of the bucculae mark *puncticeps* from all others in the subgenus.

DESCRIPTION.—Based on one male. Elongate-oval, almost parallel-sided, widest behind midlength.

Head: Length almost two-thirds width, 1.16:1.81; interocular width, 1.03; anterior outline semicircular, juga longer than and contiguous beyond clypeus; surface depressed either side of midline, coarsely and subrugosely punctate over most of surface posteriorly to ocellar area; jugum with one setigerous puncture immediately anterior to eye; ocelli large, separated from eye by space subequal to transverse diameter of ocellus; jugum ventrally polished, impunctate; maxillary plate coarsely punctured, more densely so on basal third.

Antennal segments: I, 0.38; II, 0.50; III, 0.53; IV, 0.64; V, 0.79. Bucculae much higher than labial II, abruptly and roundly terminated posteriorly; labium reaching past middle of mesosternum. Labial segments: I, 0.61; II, 1.02; III, 0.88; IV, 0.79.

Pronotum: Length less than half width, 2.06:4.36; anterior margin shallowly, singly emarginate; side margin entire, somewhat flattened on middle third, with submarginal row of four or five setigerous punctures; transverse impression median, obsolete, emphasized anteriorly by slightly tumid calli; with irregular row of large punctures; anterior lobe with crowded large punctures in band paralleling anterior emargination, in broad lateral area and in small patch on midline; posterior lobe with numerous punctures becoming finer posteriorly, absent on hind and margin and umbone.

Scutellum: Longer than wide, 3.26:2.47; disc polished, punctured over full length, more finely so toward apex.

Hemelytron: Clavus and corium obsoletely alutaceous; clavus with double row of punctures on basal half and a single row on apical half; mesocorium distinctly punctured over full length, more densely so apically, with two rows of punctures paralleling claval suture, outer row of more widely separated punctures; exocorium for full length more densely and coarsely punctate than mesocorium; costa without setigerous punctures; membranal suture weakly bisinuate, lateral angle slightly produced; membrane longer than basal width, surpassing abdomen by about one-fourth its length.

Propleuron: Polished, with few coarse punctures in depression and smaller punctures on posterior convexity and anterior convexity laterally; prosternal carinae about half as high as labial II.

Mesopleuron: Evaporatorium reaching lateral margin in postero-lateral angle; lateral area longitudinally rugopunctate.

Metapleuron: Peritreme abruptly terminated apically; evaporatorium delimited laterally by impressed line; lateral area impunctate.

Sternites: Weakly alutaceous, with minute punctures scattered over most of surface and coarser ones laterally.

Legs: Posterior femora ventrally with numerous transverse tubercles basad of large, blunt, subapical angulation; posterior tibiae elongate, about $1\frac{1}{2}$ times as long as femora, slender and gently curved in apical half.

Terminalia: Genital capsule alutaceous, with numerous fine punctures over most of surface, apical margin with broad, weak emargination medially and gonostylus as illustrated (fig. 281).

Length of body: 8.85.

TYPE DATA.—Holotype male (Wien), "Espírito-Santo, Brasil, ex coll. Fruhstorfer."

DISCUSSION.—The trivial name of this new species obviously refers to the very strongly punctured head, a character shared with only one other species, *solitaria*, within the subgenus.

***Dallasiellus (Dallasiellus) solitaria* (Horváth), new combination**

PLATE FIGURE 282

Colobophrys solitaria Horváth, 1919, p. 244.

DIAGNOSIS.—Within the genus this species may be most readily recognized by the coarsely rugopunctate head and the posteriorly evanescent bucculae.

DESCRIPTION.—MALE: Based on three specimens. Oblong-oval.

Head: Length two-thirds width, 1.41(1.36–1.49):1.98(1.95–2.02); interocular width, 1.10; juga shallowly curved, forming an elongate semicircle, as long as clypeus; jugum with a single, submedian hair on submargin anterior to antecular seta; surface longitudinally convex, jugum and vertex very closely, rugosely punctured; ocelli large, wider than space separating them from eye; jugum ventrally polished, impunctate; maxillary plate anteriorly to antennal insertion polished, with one or two distinct punctures, posteriorly cribrately punctured. Antennal segments: I, 0.55(0.53–0.60); II, 0.68(0.66–0.70); III, 0.64(0.60–0.66); IV, 0.94(0.93–0.96); V, 1.14(1.13–1.16). Bucculae higher than labial II, mostly cribrately punctured, abruptly evanescent posteriorly; labium reaching between middle coxae. Labial segments: I, 0.77(0.70–0.80); II, 1.25(1.25–1.26); III, 0.92(0.90–0.96); IV, 0.68(0.66–0.70).

Pronotum: Width more than twice length, 4.50(4.35–4.70):2.21(2.13–2.28); anterior margin broadly but shallowly emarginate; lateral margins strongly and broadly emarginate at ends of transverse groove, the carinate margin immediately posterior to emargination appearing reflexed and thickened, posterior fifth of lateral margin obliquely truncated and causing margin to appear angled prebasally; lateral submargin of anterior lobe with four setigerous punctures and prebasal angle laterally on posterior lobe with one setigerous puncture; transverse impression submedian, shallow, irregular, interrupted laterally by oblique fold extending mesally from lateral constriction; entire surface, except curved calli areas, with numerous, close-set punctures.

Scutellum: Longer than wide, 3.55(3.45–3.60):2.74(2.71–2.79); surface shining, with abundant, crowded punctures over all but apex, with a feeble, interrupted suggestion of a median carina; apex slightly inflated, impunctate and usually acute.

Hemelytron: Clavus and corium strongly alutaceous, distinctly duller than pronotum and scutellum; corial areas well defined, disc

and exocorium with scattered weak punctures, former with two complete rows of close-set punctures paralleling claval suture; costa flattened, acute, reflexed on basal two-thirds, with numerous fine punctures and with two coarser setigerous punctures on basal half; costa weakly sinuate posterior to subbasal setigerous puncture; membranous suture bisinuate, lateral angle acute; membrane slightly longer than basal width, surpassing apex of abdomen.

Propleuron: Coarsely and closely punctured at anteroventral angle and in depression, more sparsely and weakly so posterior to depression; prosternal carinae thick, blunt, low.

Mesopleuron: Evaporatorium reaching uninterrupted into posterolateral angle; polished area variously rugose and punctured.

Metapleuron: Evaporatorium occupying mesal four-fifths of segment, lateral margin paralleling side of segment, osteolar canal extending about half way across segment.

Legs: Long, slender.

Sternites: Dull, distinctly alutaceous.

Terminalia: Subgenital plate slightly compressed laterally; with a broad, low, blunt tubercle, medially immediately below apical margin; gonostylus as illustrated (fig. 282).

Length of body: 9.40(9.15–9.57).

FEMALE: Similar to male, except pronotum laterally with only a weak sinuation at ends of transverse impression and no reflexed carinate margin and no oblique furrow projecting mesally on disc.

Head: Length-width ratio, 1.42(1.36–1.49):2.01(1.92–2.11); interocular width, 1.17(1.12–1.23). Antennal segments: I, 0.54(0.50–0.60); II, 0.65(0.63–0.70); III, 0.65(0.64–0.66); IV, 0.92(0.88–0.96); V, 1.14(1.13–1.16). Labial segments: I, 0.79(0.73–0.83); II, 1.24(1.21–1.26); III, 0.95(0.93–0.96); IV, 0.67(0.63–0.70).

Pronotum: Length-width ratio, 2.25(2.15–2.28):4.67(4.35–4.91).

Scutellum: Length-width ratio, 3.58(3.30–4.01):2.71(2.50–3.00).

Length of body: 9.39(9.00–9.42).

TYPE DATA.—Horváth (loc. cit.) gave the type locality as "Peru: Marcapata." The type female (Hung) has the same data.

SPECIMENS STUDIED.—4 males, 9 females.

PERU: Marcapata, 1 female, labeled as "Typus" of *Colobophrys solitaria* Horváth (Hung). Santa Isabel, Department of Cuzco, Valley of Ccosinpata River, Jan. 1, 1952, Nov. 30, 1951, Dec. 3, 25, 1951, F. Woytkowski, 4 males, 8 females (JCL).

DISCUSSION.—The original description of this species served as the genotype of Horváth's new genus *Colobophrys* (see discussion under *Dallasiellus* for reasons for synonymizing the two). The description of the sternites as being smooth is inaccurate, they are really strongly alutaceous.

Dallasiellus (Dallasiellus) triangularis, new species

DIAGNOSIS.—Among the smaller species of the subgenus this species may be marked by the impunctate scutellar disc and the presence of two complete rows of mesocorial punctures paralleling the claval suture.

DESCRIPTION.—Described from one female. Oval, slightly elongate.

Head: Length more than half width, 0.76:1.33; interocular width, 0.76; anterior outline semicircular, clypeus as long as juga and only slightly narrowed apically; surface polished, impunctate; jugum with two adjacent setigerous punctures next to eye and two more widely spaced ones beyond; ocelli moderately large, separated from eye by about twice a transverse ocellar width; jugum ventrally and apical two-thirds of maxillary plate polished, impunctate. Antennal segments: I, 0.23; II, 0.26; III, 0.36; IV, 0.48; V, 0.60. Bucculae as high as labial II; labium reaching onto mesosternum. Labial segments: I, 0.50; II, 0.83; III, 0.63; 0.40.

Pronotum: Length little more than half width, 1.49:2.73; anterior margin moderately and singly emarginate; lateral margin mostly straight, with six submarginal setigerous punctures; transverse impression postmedian, very weak, marked by medially interrupted, irregular or double row of mostly well-separated punctures; anterior lobe impunctate except for almost straight row immediately behind anterior emargination; posterior lobe impunctate except for very few punctures on disc.

Scutellum: Longer than wide, 1.89:1.56; disc polished, virtually impunctate.

Hemelytron: Clavus and corium polished; clavus with partial longitudinal rows of punctures; mesocorium and exocorium impunctate except at apex and two complete rows paralleling claval suture; costa with two setigerous punctures; membranal suture straight, lateral angle not produced; membrane longer than basal width, reaching tip of abdomen.

Propleuron: Punctate only in depression; prosternal carinae as high as labial II, in profile acutely triangular with apex ventrally.

Mesopleuron: Lateral area impunctate, weakly rugose.

Metapleuron: Peritreme abruptly terminated apically; lateral area polished, with a row of punctures delimiting lateral margin of evaporatorium.

Sternites: Polished, impunctate except laterally near posterior margin of sternite VI.

Legs: Not specially modified.

Length of body: 5.25.

TYPE DATA.—Holotype female (BrM), "British Guiana: Essequibo R., Moraballi Creek, 14–viii, 1929, Oxf. Univ. Expedn., B. M. 1929–485."

DISCUSSION.—The peculiar, acutely triangular prosternal carinae appear to be unique within the genus and suggested the trivial name.

Dallasiellus (Dallasiellus) viduus (Stål), new combination

PLATE FIGURE 283

Aethus viduus Stål, 1860, p. 13.—Walker, 1867, p. 153.

Macroscythus viduus Stål, 1876, p. 19.

Geotomus viduus Signoret, 1883, p. 45, pl. 3, fig. 154.—Lethierry and Severin, 1893, p. 74.

DIAGNOSIS.—The absence of large punctures on the disc of the scutellum plus the presence of but one submarginal setigerous puncture on each jugum will separate *viduus* from all others in the subgenus.

DESCRIPTION.—From two males and three females.

MALE: Elongate-oval.

Head: Length more than half width, 0.64(0.64–0.65):1.04(1.03–1.06); interocular width, 0.64(0.63–0.65); anterior outline subsemicircular, clypeus as long as juga, somewhat narrowed apically; surface slightly convex, impunctate; jugum with one submarginal setigerous puncture immediately anterior to eye; ocelli moderate, separated from eye by space about two times transverse ocellar width; jugum ventrally polished, impunctate; maxillary plate alutaceous and with few punctures on basal third. Antennal segments: I, 0.21(0.20–0.23); II, 0.23(0.20–0.26); III, 0.33(0.32–0.34); IV, 0.55(0.50–0.60); V, 0.55(0.50–0.60). Bucculae about as high as labial II; labium reaching between middle coxae. Labial segments: I, 0.35(0.34–0.36); II, 0.66(0.66–0.66); III, 0.47(0.44–0.50); IV, 0.33(0.30–0.36).

Pronotum: Length about half width, 1.17(1.17–1.17):2.23(2.18–2.29); anterior margin shallowly, singly emarginate; lateral margin weakly sinuate opposite ends of transverse impression; latter submedian, sharply impressed across full width, marked by entire row of very closely set large punctures; surface with several scattered, minute punctures and a row of coarser ones on anterior lobe paralleling anterior emargination, and several coarse ones discally on posterior lobe.

Scutellum: Longer than wide, 1.52(1.49–1.56):1.26(1.25–1.28); discally polished, with scattered minute punctures but no large ones.

Hemelytron: Clavus and corium feebly alutaceous; clavus with one longitudinal row of coarse punctures; mesocorium obsoletely punctured except for one row of close-set distinct punctures paralleling claval suture; exocorium without distinct punctures; costa without setigerous punctures; membranal suture weakly sinuate, lateral

angle not produced; membrane longer than basal width, surpassing apex of abdomen.

Propleuron: With few distinct punctures in depression; prosternal carinae less than half as high as labial II.

Mesopleuron: Evaporatorium reaching into posterolateral angle, not attaining lateral margin; lateral area impunctate, somewhat depressed apically.

Metapleuron: Lateral margin of evaporatorium virtually straight; lateral area polished, impunctate.

Sternites: Shining, very weakly alutaceous, impunctate.

Legs: Not specially modified.

Terminalia: Genital capsule distinctly punctured laterally, apical margin broadly but shallowly concave; gonostylus as illustrated (fig. 283).

Length of body: 4.33(4.20-4.47).

FEMALE: Similar to male, but side margins of pronotum not sinuate, measurements averaging larger.

Head: Length-width ratio, 0.74(0.71-0.80):1.17(1.13-1.23); interocular width, 0.70(0.70-0.71). Antennal segments: I, 0.26(0.25-0.28); II, 0.27(0.26-0.28); III, 0.37(0.36-0.40); IV, 0.46(0.46-0.46); V, 0.60 (only one specimen with terminal segment). Labial segments: I, 0.37(0.36-0.39); II, 0.69(0.67-0.70); III, 0.56(0.53-0.60); IV, 0.34(0.33-0.36).

Pronotum: Length-width ratio, 1.36(1.31-1.43):2.50(2.43-2.60).

Scutellum: Length-width ratio, 1.69(1.48-1.82):1.56(1.56-1.57).

Length of body: 4.84(4.63-5.09).

TYPE DATA.—The locality of Stål's type (Stock) was given as Rio de Janeiro, Brazil.

SPECIMENS STUDIED.—3 males, 3 females.

BRAZIL: "Brasilia," Coll. Brancsik, 1 female (Hung). Blumenau, Hetschko, 89, 1 male (Wien). Distrito Federal, Carvalho, 1 male (Carv). Rio de Janeiro, 1 male (type, Stock); 1 female (Car). Rio Doce, Minas Gerais, Mrs. Y. Mexia, 1 female (CalAc).

DISCUSSION.—Study of the type left no doubt about the identity of this form.

Subfamily Amnestinae Hart, new status

Amnestini Hart, 1919, p. 204.

DIAGNOSIS.—This subfamily is the only one within the family Cydnidae showing a claval commissure.

DESCRIPTION.—Head: Antennae 4-segmented or 5-segmented.

Scutellum: Short not reaching apices of clavi, latter forming a distinct claval commissure posterior to scutellar apex.

Thoracic pleurae (fig. 113): Posterior margins of all segments well-developed; propleuron with posterior convexity low; mesopleuron with posterior margin touching or overlapping metapleuron for most of width; metapleuron covering posterior coxa, posterior margin expanded as a free, triangular lamella which laterally covers sides of sternites I-III.

Legs: Male with secondary sexual characters in form of strongly modified spines and angulations on femora and/or tibiae; female without secondary sexual modifications of legs; tarsus present on all legs, II subequal in thickness to I and III.

Sternites (fig. 173): Sutures entire, not emarginate laterally; III and IV without trichobothria, V to VII each with a single trichobothrium located posterior to the spiracle.

Terminalia: Male genital capsule opening posteriorly (fig. 179); female plates small, anus completely surrounded by an undivided triangular plate (fig. 185).

TYPE OF SUBFAMILY.—Genus *Amnestus* Dallas (1851, p. 126).

DISTRIBUTION.—From the northern United States south to central Argentina.

DISCUSSION.—The presence of a distinct claval commissure is a very unusual feature in the Pentatomoidea. Usually the scutellum is enlarged so as to surpass the apices of the clavi and prevent their coming together. This condition plus the trichobothrial arrangement, strongly lamellated posterior margin of the metapleuron, and the unusual secondary sexual modifications of the legs of the males set this genus apart from all the other Cydnidae studied and support the elevation of Hart's tribe Amnestini to full subfamily position.

Biologically the Amnestinae are known only from fragmentary notes that have appeared in scattered publications. A generalized life cycle deduced from these notes, data on specimens and personal observations may be outlined here: adults hibernate and so probably lay eggs on again becoming active in spring; both nymphs and adults are root-feeders, with the preferred habitat apparently under moist conditions. This latter is surmised from the fact that the adults, which come freely to lights, are collected most abundantly at lights along bodies of water (i.e., bridge and dock lights, streamside cottages, etc.). This preference for a moist habitat is confirmed by such published statements as "on weeds in slough" (Crevecoeur, 1905) and "on low vegetation along streams" (Blatchley, 1926). The number of generations per year is not indicated by data at hand.

The subfamily contains the single genus, which is treated here.

Genus *Amnestus* Dallas

Amnestus Dallas, 1851, p. 126.

Magoa Stål, 1860, p. 13.

Pachymeroides Signoret, 1880, p. vii. New synonymy.

DIAGNOSIS.—Because this is the only genus in the subfamily, it can be recognized readily by any of the features pointed out above for subfamily recognition.

DESCRIPTION.—Small, 1.6–4.5; subparallel to oval; dorsum much less convex than venter.

Head: Strongly deflexed, wider than long; clypeus as long as or longer than juga, with four apical, marginal pegs, except in *A. sexdentatus*, new species, in which two additional pegs are present; juga with four or five (rarely more) pegs marginally; ocelli well developed, posterior to line connecting hind margins of eyes; primary setigerous punctures usually eight in number (fig. 59)—two near anterior margin of each eye and two on midline of jugum; jugum ventrally and maxillary plate impunctate; antennae usually 5-segmented (described as 4-segmented for *Pachymeroides bolivari* Signoret, and available material of several species show occasional individuals with four segments), II minute, III, IV, and V subequal; bucculae well developed, about one-third length of labial I; labium variable in length, reaching to middle of mesosternum or all the way to sternite III, II compressed, without foliaceous lobe.

Pronotum: Subquadrate to transverse; anterior margin feebly to strongly concave; lateral margins subparallel on basal half converging from base, broadly rounded on apical half, with submarginal row of not more than twelve setigerous punctures; transverse impression postmedian, weak to strong; posterior margin weakly convex, sinuate laterally near umbones; anterior lobe usually distinctly tumid in male, not so in female, variously punctate; posterior lobe punctate, punctures becoming finer posteriorly.

Scutellum: Triangular, wider than long, apex acute, not narrowed; disc shining, coarsely punctate.

Hemelytron: Corial areas well defined; membranal suture deeply emarginate on inner half, lateral angle acute; clavus with three rows of distinct punctures; mesocorium with two rows of punctures paralleling claval suture, variably punctured elsewhere; membrane hyaline to faintly yellowed, comprising a third or more of hemelytral length, surpassing apex of abdomen by one-half its length.

Propleuron: Row of coarse punctures in depression; prosternal carinae well-developed.

Mesopleuron (fig. 113): Evaporatorium occupying entire area; posterior margin entire, straight to moderately prolonged at posterolateral angle.

Metapleuron (fig. 113): Evaporatorium occupying entire area; peritreme transverse, elongate, trough-shaped, slightly curved, reaching two-thirds to three-fourths of way to lateral margin of segment; metasternum carinate, projecting between posterior coxae.

Legs: Moderately long; in male with various secondary sexual characteristics in the form of spines and angles on femora and tibiae (figs. 160-164); in female without such modifications; anterior tibia distinctly compressed, expanded, dorsally with row of seven stout spines set on tubercles.

Sternites: Strongly convex, shining, with abundant long, golden hairs arising from fine punctures.

Nymphs of this genus in the second to fifth instars (first not available for study) can be recognized by the row of stout pegs on the margin of the head, four on the apex of the clypeus—in this respect being like the adults.

TYPE OF GENUS.—*Cydnus spinifrons* Say (1825, p. 316), monobasic; of *Magoa* Stål, *Magoa cribrata* Stål (1860, p. 14), designated by Van Duzee (1917, p. 23); of *Pachymeroides* Signoret, *Pachymeroides bolivari* Signoret (1880, p. vii), monobasic.

DISTRIBUTION.—*Amnestus* is a New World¹⁰ genus known to range from Maine and Ontario west to Colorado, thence south through Central America and the West Indies into South America as far as Buenos Aires, Argentina.

DISCUSSION.—The synonymy of *Magoa* with *Amnestus* has long been accepted and is supported by present findings, which included study of the types of all the species that Stål originally included in *Magoa*.

The synonymy of *Pachymeroides* with *Amnestus* is here proposed because of the strong features which ally the two and the very weak separating characters. For separation Signoret relied most heavily on the condition of the 4-segmented antennae as contrasted to the 5-segmented condition in typical *Amnestus*. While such a reduction of number of antennal segments is not common in *Amnestus*, at least some species do show it in an occasional specimen. Therefore, it certainly cannot be considered a reliable generic separation. A second structural difference between these two nominal genera was the "absence" of evaporatoria in *Pachymeroides*. But even this may be looked upon as a matter of interpretation as greasy specimens frequently have shiny mesothoracic and metathoracic pleurae and superficially appear to be without the "plaques mates." The generic separation of *bolivari* from all the other species of *Amnestus* does not appear sound when these weak separations used by Signoret are com-

¹⁰ One specimen (in MCZ) of *pusio* (Stål) labeled "Madagascar" must be a case of mislabeling, or at most a stray specimen carried into that part of the world by the agency of man.

pared with such allying features as presence of hemelytral suture, marginal pegs on the head, secondary sexual differences, general punctuation, small size, and general shape.

Although this genus appears to be readily separable into species units, the problems of correctly associating older names with them has been vexing. The chief reason for this appears to lie in the fact that the small size of the specimens has deterred some authors from making critical enough studies of specimens to locate the real diagnostic features. Consequently, without a personal study of the types, the author feels that this must be considered the most tentative part of the present work. Perhaps with the points established here the author or other workers may have opportunity to examine the types and be able to straighten out the nomenclature.

Until corrected by Hart (1919), workers generally had the sexes of this genus confused. They described the females as having prominent spines on the ventral surface of the femur, whereas these secondary sexual modifications in reality belong to the males. The male also generally has the anterior lobe of the pronotum more tumid than do the females.

From specimens available, males of some species of *Amnestus* were arranged according to the secondary sexual characteristics of the legs, as follows:

- 1a. Anterior tibia distinctly angled (sometimes obtusely so) or spined midventrally (figs. 131, 132).
- 2a. Anterior tibia ventrally with spine at basal fourth (fig. 132).
- 3a. Subapical ventral spine of posterior femur a third or more of tibial length (fig. 164) **pusillus**
- 3b. Subapical ventral spine of posterior femur shorter than vertical height of femur **basidentatus**
- 2b. Anterior tibia without subbasal spine ventrally.
- 4a. Posterior femur dorsally angulated subapically (fig. 162).
lateralis, pusio, radialis
- 4b. Posterior femur dorsally without subapical angulation.
- 5a. Medioventral spine of anterior femur conical, with a prominent lateral spine near its midlength (i.e., very unequally bifurcate) (fig. 131) **spinifrons**
- 5b. Medioventral spine of anterior femur simple or feebly, equally bifurcate **subferrugineus**
- 1b. Anterior tibia neither spined nor distinctly angled midventrally.
- 6a. Anterior femur with midventral spine simple. **diminuatus, explanatus**
- 6b. Anterior femur with midventral spine furcate.
- 7a. Subapical spine of posterior femur flattened, bifid.
championi, cribratus, forreri
- 7b. Posterior femur with ventral spine not bifid, either spine-, needle- or blade-like.
brunneus, foveatus, lautipennis, pallidus, trimaculatus, uhleri

12. Anterior pronotal lobe laterally with two to four irregular rows of close coarse punctures similar in size or larger than those of transverse impression; mesocorium with large impunctate area on disc. 13
 Anterior pronotal lobe with lateral punctures finer than those of transverse impression; mesocorium sparsely but uniformly punctate on disc.
lateralis Signoret (p. 648)
13. Corium with longitudinal brownish line along radial vein extending to costa along apical margin; umbone distinctly paler than remainder of pronotal disc *radialis*, new species (p. 656)
 Corium without brownish line along radial vein; umbone concolorous with remainder of pronotal disc 14
14. Lateral pronotal margins slightly but distinctly concave at basal fourth; corium becoming fuscous on apical third or more.
brunneus Signoret (p. 639)
 Lateral pronotal margin straight on basal half; corium uniformly yellowish.
lautipennis (Stål) (p. 649)
15. Pronotal umbones prominently, closely punctate over surface.
bolivari (Signoret) (p. 637)
 Pronotal umbones in great part not punctate 16
16. Male: Subapical ventral spine of posterior femur more than one-third length of tibia (fig. 164). Female: Last sternite with medially flattened, glabrous area delimited laterally by partial or complete, obtuse, longitudinal carinae (fig. 184) *pusillus* Uhler (p. 652)
 Male: Subapical ventral spine of posterior femur shorter than vertical height of femur. Female: Last sternite without flattened glabrous area, or if present, not so delimited laterally 17
17. Middle third of costa narrowly expanded, reflexed, forming shallow trough nearly as wide as middle tibia *explanatus*, new species (p. 649)
 Corium convex to margin, neither explanate nor reflexed in middle third . 18
18. Clypeus convex, with prominent, transverse rugae; coria with obscure fuscous cloud across middle and at apex . . . *diminuatus* Barber (p. 643)
 Clypeus not transversely rugose; coria unicolorous hyaline-yellow . . . 19
19. Male: Anterior tibia with distinct, subbasal spine ventrally (fig. 132).
basidentatus, new species (p. 634)
 Male: Anterior tibia without subbasal spine ventrally . . . *pusio* (Stål) (p. 654)

Amnestus basidentatus, new species

PLATE FIGURES 132, 285

DIAGNOSIS.—The males of this species can be separated from males of all others in the genus by the distinct subbasal spine on the ventral margin coupled with short, ventral, subapical spine on posterior tibia. The females of *basidentatus* and *pusio* will run easily to the last couplet of the key, but the author is unable to separate that sex of these two species by a practical key character.

DESCRIPTION.—Color: Light brownish yellow, coria, legs, and labium slightly but distinctly paler.

MALE.—Elongate, parallel-sided.

Head: Length almost three-fourths width, 0.37(0.37–0.39):0.50 (0.49–0.52); interocular width, 0.29(0.29–0.30); clypeus slightly longer than juga; latter with four marginal pegs; surface, except

clypeus, with coarse, crowded punctures. Antennal segments: I, 0.11(0.10–0.12); II, 0.02(0.02–0.03); III, 0.19(0.17–0.20); IV, 0.18(0.16–0.20); V, 0.20(0.19–0.22). Labium reaching between middle coxae. Labial segments: I, 0.16(0.14–0.18); II, 0.21(0.20–0.23); III, 0.27(0.26–0.27); IV, 0.21(0.20–0.23).

Pronotum: Length less than two-thirds width, 0.68(0.64–0.71):1.08(1.05–1.13); anterior margin virtually truncate, not concave; lateral margin weakly sinuate on basal third; transverse impression moderate, punctate; anterior lobe weakly tumid, with prominent punctures laterally, subapically, along midline and scattered over disc of calli; posterior lobe, except umbones, with close-set, moderate punctures.

Scutellum: Length-width ratio, 0.44(0.43–0.46):0.51(0.49–0.54).

Hemelytron: Mesocorium with few discal punctures; exocorium abundantly punctate across full width.

Propleuron: Prosternal carinae lower than labial II, subrectangular.

Legs: Anterior femur ventrally near basal third with strongly oblique, stout spine slightly emarginate at apex; anterior tibia ventrally with strong, subbasal spine in addition to median angulation (fig. 132); posterior femur with subapical oblique spine simple, about half as high as femur.

Terminalia: Gonostylus as illustrated (fig. 285).

Length of body: 1.94(1.93–1.96).

FEMALE: Similar to male, without secondary sexual modifications.

Head: Length-width ratio, 0.38(0.35–0.40):0.51(0.49–0.54); interocular width, 0.30(0.28–0.31). Antennal segments: I, 0.11(0.10–0.13); II, 0.02(0.02–0.03); III, 0.17(0.16–0.18); IV, 0.17(0.16–0.20); V, 0.19(0.16–0.22). Labial segments: I, 0.16(0.16–0.17); II, 0.23(0.21–0.25); III, 0.29(0.27–0.30); IV, 0.20(0.20–0.22).

Pronotum: Length-width ratio, 0.61(0.56–0.64):1.05(0.98–1.10).

Scutellum: Length-width ratio, 0.44(0.42–0.46):0.49(0.46–0.53).

Length of body: 1.87(1.75–1.95).

TYPE DATA.—Holotype male (USNM 64408) and allotype female (USNM) both labeled "Hamilton County, Tenn., 8–13–40, W. F. Turner, at light." Paratypes as follows:

UNITED STATES: *Alabama*: No exact locality, 1 female (labeled "Ala. 2286, *Amnestus pusillus*") (USNM). Auburn, Lee Co., June 30, 1939, F. S. Barkalow, 7 males, 6 females (one labeled *Amnestus pusio*) (MMZ). Clay Co., H. H. Smith, 1 female (USNM). Burnsville, July 20, 1930, P. W. Oman, L. D. Tuthill, 7 males, 7 females (KU, RCF). Decatur, July 6, 1939, D. E. Hardy, P. B. Lawson, 2 males, 1 female (KU). Marion Junction, July 16, 1930, P. W. Oman, L. D. Tuthill, 2 males, 1 female (KU). Tuskegee, July 22, 1930, R. H. Beamer, L. D. Tuthill, 1 male, 1 female (KU). *Arkansas*: Berryville, July 4, 1934, R. H. Beamer, 1 male (KU). Hope, Oct. 3, 1925, L. Knobel, 3 females (USNM). Howard Co., Feb. 2, 1938, 2 males, 1 female; May 13, 1938, 1 female; Sept. 24, 1937, 5 males, 3 females, all W. F. Turner (USNM). Pike Co., June 10, 1936, in soil, 1 male, 1 female (USNM). Polk Co., Aug. 21, 1928, R. H. Beamer, 1 male,

1 female (KU). *District of Columbia*: Washington, 1 female (USNM). *Florida*: Branford, Aug. 4, 1939, R. H. Beamer, 1 male, 2 females (KU). One-half mile west of Child's Crossing, Highlands Co., Aug. 11, 1928, Hubbell and Friauf, 3 males, 5 females (one labeled *Amnestus pusio*) (MMZ). Coconut Grove, March, G. Fairchild, 7 males, 5 females (MCZ, RCF). Crescent City, June, 1938, C. T. Brues, 1 female (MCZ). Deerfield, July 26, 1948, E. L. Todd, 15 males, 29 females (KU, RCF). Dunnellon, July 12, 1939, P. B. Lawson, 1 male, 1 female (KU). Everglades, Apr. 11, 1912, W. T. Davis, 1 female (USNM). Fort Myers, Aug. 11, 1930, J. Nottingham, 1 female (KU). Fort Pierce, Aug. 7, 1930, P. W. Oman, 2 males (KU). Fort Lauderdale, May 25, 1928, D. M. Bates, 6 males, 9 females (labeled *Amnestus pusio*) (MMZ, RCF). Gainesville, May 25, 1934, T. H. Hubbell, 1 female (labeled *Amnestus pusio*) (MMZ); May 28, 1922, 1 female (RFH); Oct. 21, 1923, T. H. Hubbell, at light, 1 female (RFH). Hilliard, Aug. 6, 1939, R. H. Beamer, 1 male (KU), Aug. 31, 1930, J. O. Nottingham, 1 male (KU). Hillsborough River State Park, Hillsborough Co., Aug. 18, 1928, Hubbell-Friauf, 2 males, 1 female (MMZ). Homestead, Sept. 25, 1948, R. H. Beamer, 1 female (KU). Indian River, Apr. 7, 1930, J. R. Barass, Florida Fruit Fly Trap Survey, La Belle, July 16, 1939, D. E. Hardy, 1 male, 5 females (KU). Lacoochee, July 7, 1948, E. L. Todd, 4 males, 3 females (KU); Aug. 9, 1939, R. H. Beamer, 1 male (KU). Lakeland, Apr. 3, May 28, June 5, 10, 20, July 11, 20, 25, Aug. 7, Oct. 2, 7, Nov. 14, various years and collectors, 12 males, 16 females (RFH, MMZ). Lake Placid, July 10, 13, 16, 1948, N. W. Crosder, 31 males, 35 females (KU, RCF). 7 miles northeast of Leesburg, Lake Co., Aug. 27, 1938, Hubbell-Friauf, 3 females (labeled *Amnestus pusio*) (MMZ). Morrison Field, Jan. 28, 1943, D. E. Hardy, 2 males (KU). Okeechobee, Mar. 3, 1939, F. E. Lutz, 1 male (AmM). Old Town, July 11, 1939, R. H. Beamer, 1 male (KU). Orlando, July 1927, O. C. McBride, 3 males, 1 female (USNM). Paradise Key, Feb. 29, 1919, H. G. Barber, 1 female (USNM). Plant City, Aug. 15, 1930, J. O. Nottingham, L. D. Tuthill, 2 males, 18 females (KU). Port Mayaca, Mar. 13, 1939, F. E. Lutz, 1 female (labeled *Amnestus pusio*) (AmM). Royal Palm State Park, July 22, 1948, E. L. Todd, 8 males, 11 females (KU, RCF). Sanford, July 31, 1933, C. O. Bare, 7 males, 5 females (KU). 1.7 miles northeast of Satsuma, Putnam Co., July 30, 1938, Hubbell-Friauf, 4 females (some labeled *Amnestus pusio*) (MMZ). Sebring, Mar. 7, 1939, F. E. Lutz, 2 females (AmM); Aug. 5, 1930, R. H. Beamer, 1 female (KU); December, Aug. 30, C. T. Parsons, 3 males, 2 females (MCZ). Vero Beach, Feb. 14, swept from St. Augustine grass, Webster No. 9458, 1 male (USNM); Feb. 18, 1914, swept from Bermuda grass, G. G. Ainslie, 1 male (USNM). *Georgia*: Crawford Co., Oct. 10, 1938, W. F. Turner, 1 male, 2 females (USNM). Demorest, Aug. 19, 1939, Valentine, 1 male, 4 females (USNM); Sept. 9, 1939, J. M. Valentine, 5 males, 9 females (1 labeled *Amnestus* n. sp. by H. G. Barber) (USNM). Okefenokee Swamp, July 27, 1939, E. G. Wegenek, 1 female (KU); July 30, 1934, M. E. Griffin, 1 male, 29 females (KU); Aug. 3, 1934, M. E. Griffin, R. H. Beamer, P. A. McKinstry, 8 males, 4 females (KU). Peach Co., Jan. 29, Feb. 13, Apr. 3, 22, June 17, Sept. 17, Oct. 11, 12, 13, Dec. 5, various years, W. F. Turner, 21 males, 32 females (USNM). Perry, Aug. 12, 1939, W. F. Turner, 1 female (USNM). Prattsburg, July 25, 1930, L. D. Tuthill, 1 male, 3 females (KU). Tifton, Aug. 11, 1939, D. E. Hardy, 1 male, 4 females (KU). Upson Co., Nov. 25, 1937, W. F. Turner, 2 females (USNM). *Louisiana*: Bossier Parish, Feb. 2, May 10, 1939, W. F. Turner, 2 males (USNM). Covington, June 23, 1948, E. L. Todd, 7 males, 10 females (KU). Denham Springs, June 20, 1948, E. L. Todd, 3 females (KU). Hammond, June 22, 1948, E. L. Todd, 2 males, 1 females (KU). Madison Parish, July 7,

1930, R. W. Bunn, 1 male, 1 female (KU). Natchitoches Parish, Aug. 16, 1938, L. D. Beamer, (KU). Shreveport, July 3, 1895, F. W. Mally, 1 female (USNM). *Maryland*: Berlin, F. C. Bishop, mosquito trap, 1 male (USNM). College Park, Aug. 10, 1932, F. C. Bishop, mosquito trap, 1 male (USNM). Gibson Island, July 28, 31, 1933, F. C. Bishop, mosquito trap, 2 females (USNM). Plummers Island, Oct. 5, 1913, W. L. McAtee, 1 female (USNM). Sparrow Point, July 5, Aug. 6, 8, 1933, F. C. Bishop, 2 males, 4 females (one male labeled *Amnestus pusio*) (USNM). *Mississippi*: Fulton, July 14, 1930, R. H. Beamer, 2 males (KU). Hamilton, July 15, 1930, L. D. Tuthill, 2 females (KU). Horn Island, July 12, 1944, 1 male (MassU). Ireland, July 3, 1934, M. E. Griffin, 3 females (KU). Madison Co., Sept. 8, 1937, W. F. Turner, 1 female (USNM). Meridian, July 17, 1930, R. H. Beamer, 1 male, 1 female (KU). Shuquaalak, July 16, 1930, P. W. Oman, 1 female (KU). *Missouri*: Scott Co., Nov. 9, 1937, W. F. Turner, soil, 2 males (USNM). *New York*: Indian Lake, Sabael, Aug. 22, 1921, 1 male, 1 female (USNM). *North Carolina*: No exact locality, July 10, 1929, W. F. Turner, 1 female (USNM). *Pennsylvania*: No exact locality ("Penn. Eastern"), June 30, 1933, 1 male (MCZ). *South Carolina*: Saluda Co., Mar. 2, 1938, Dec. 3, 1937, W. F. Turner, 3 males, 6 females (KU, USNM). *Tennessee*: Chattanooga, Aug. 11, 1941, Turner, at light, 1 female (USNM); Hamilton Co., Mar. 26, Apr. 16, 18, June 22, 24, July 1, Aug. 2, 4, 13, 16, 20, 21, 23, 28, Oct. 3, 22, Nov. 3, various years, all W. F. Turner, 62 males, 90 females (RCF, USNM). *Texas*: Bay City, May 4, 1953, R. H. Beamer, 1 male (KU). Bexar [County?] July 16, 1937, W. F. Turner, 1 female (USNM). Brazoria Co., Aug. 10, 12, 1928, R. H. Beamer, 2 females (KU). Tyler, Feb. 15, 1939, 1 male (USNM); Sept. 1, 1937, L. D. Christenson, soil in peach orchard, 1 male (USNM); Oct. 24, 1939, 1 male (USNM); Nov. 23, 1939, 1 male, 1 female (USNM). *Virginia*: Bedford, June 4, 1904, 1 male, 2 females (KU, USNM). Nelson, July 20, 1926, W. Robinson, 3 females (USNM); July 23, 26, 1924, W. Robinson, 3 females (USNM). Norfolk, Mar. 21, 1938, L. D. Anderson, 1 male (KU); Aug. 11, 1934, P. McKinstry, 1 male (KU). Warrenton, June 5, 1928, L. C. Woodruff, 1 female (KU). *CUBA*: Cayamas, Mar. 16, E. A. Schwarz, 1 male (USNM).

DISCUSSION.—This species ranges from New York south to Florida and Cuba, and west to Missouri and Texas. Since the females of *basidentatus* and *pusio* are not yet readily separated they are not used to delimit the range of the two forms. Records of them from within the established ranges, however, are listed among the specimens studied.

This species has been masquerading under the names *pusio* and *pusillus*, thus making published records even less reliable than they would have been in the former confused state of the Cydnidae.

***Amnestus bolivari* (Signoret), new combination**

Pachymeroides bolivari Signoret, 1880, p. vii; 1883, p. 366, pl. 10, fig. 191.—Lethierry and Severin, 1893, p. 75.

DIAGNOSIS.—The combination of the four marginal pegs on each jugum coupled with the closely and abundantly punctate umbones will permit ready recognition of this species.

DESCRIPTION.—In the absence of specimens for study and the

current unavailability of the original description, Signoret's (1883) characterization of *bolivari* is quoted here:

Coca (Equateur).—Long. $3\frac{1}{2}$ mill., larg. $1\frac{1}{4}$ mill. (Mus. roy. de Madrid.)

D'un brun ferrugineux, en ovale allongé, aplati, dentelé au bord de la tête, très largement ponctué en dessus, presque rugueux.

Tête très petite, foliacée sur le bord, le lobe médian dépassant un peu les latéraux, sur celui-là quatre dents en forme d'épines et sur ceux-ci quatre sur chaque. Vertex fortement ponctué, lisse vers le sommet, surtout sur le médian. Yeux forts, presque pédonculés. Ocelles très forts. Antennes de quatre articles, dont le second deux fois plus long que le troisième, le quatrième un peu plus long que le précédent et plus grêle. Prothorax avec un large rebord foliacé, ponctué, crénelé et cilié; disque très ponctué, excepté quatre espaces lisses sur le disque antérieur. Écusson court, les bords latéraux presque égaux à la base, l'extrémité très acuminée, très ponctué sur tout le disque. Élytres longues, la membrane blanche sans nervures visibles, dépassant de moitié l'abdomen, la portion du cubitus offrant trois lignes complètes de points, la corie irrégulièrement ponctué le long des bords, mais présentant trois séries longitudinales, dont une très rapprochée de la suture cubitale, les deux autres séparées sur le disque avec des espaces lisses entre elles, le sommet de la corie fortement sinueux, la côte marginale crénelée, ciliée à la base, puis lisse à partir du milieu. Abdomen lisse, crénelé au sommet des segments, faiblement marqué de points ciliés sur le disque, les points plus nombreux sur les côtés. Mésosternum lisse, fortement impressionné de larges points vers la hanche; métasternum avec un canal ostiole large, épais, sillonné, et présentant en arrière une longue ouverture dans la forme de celle des Séhirides; le reste lisse, ainsi que le post-métasternum. Pattes ciliées et spinuleuses, les cuisses antérieures ♀ offrant vers le tiers supérieur une forte épine bifide, et, après, deux ou trois plus externe cinq ou six épines, vers le sommet quatre. Tarses courts, le troisième article le double plus long que les précédents et égalant les deux articles basilaires réunis. Cuisses intermédiaires ne présentant que des cils.

TYPE DATA.—The type, from "Coca (Equateur)," has not yet been located.

DISCUSSION.—Although the type of *bolivari* has not yet been positively located, there is in the Signoret collection (Wien), a card point with two legs of a male glued to it. The labels on it show that the specimen was from Ecuador and had been determined by Signoret as *Pachymeroides bolivari*. Although no type label is present, this specimen may well be the type. But Signoret's work specimens do not always agree with the illustrations in his "Revision." In this case, the remaining front leg does not show the two ventral tubercles between the middle and subapical spines. However, two features illustrated by Signoret (1883, fig. 191)—the four marginal pegs on each jugum and the closely punctate pronotal umbones—allow no choice except to consider this a valid species as characterized here.

SPECIMENS STUDIED.—One broken male consisting of one anterior leg and one middle leg (Wien), from Ecuador.

Amnestus brunneus Signoret

PLATE FIGURE 287

Amnestus brunneus Signoret, 1883, p. 370, pl. 10, fig. 194.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 75.

DIAGNOSIS.—Among the species with five marginal pegs on each jugum and the low, rounded prosternal carinae which are not higher than labial II, *brunneus* may be characterized by the short clypeus which only very slightly surpasses apices of juga and by the strongly contrasting yellowish (in large part) coria with the dark brown or brownish black pronotum and scutellum.

DESCRIPTION.—Based on one male and one female compared with the type.

Color: Head, pronotum and scutellum dark brown, contrasting strongly with yellowish hyaline clavus and corium, latter with broad apical margin weakly to distinctly fuscous; underside brownish, legs tannish brown with apices of femora and tarsi yellow.

MALE: Elongate-oval, slightly widest behind middle.

Head: Length more than three-fourths width, 0.40:0.52; interocular width, 0.32; anterior outline elongate, clypeus very slightly surpassing apices of juga; surface shining, strongly punctate on bases of juga and on interocular area; jugum with five marginal pegs. Antennal segments: I, 0.11; II, 0.03; III, 0.23; IV and V missing. Labium reaching between middle coxae. Labial segments: I, 0.16; II, 0.22; III, 0.29; IV, 0.20.

Pronotum: Length two-thirds width, 0.81:1.21; anterior margin shallowly emarginate; lateral margin very shallowly emarginate sub-basally; transverse impression moderately indicated, marked by row of coarser punctures; anterior lobe weakly tumid, with two more or less complete rows of coarse punctures subapically and laterally, calli shining with few scattered, minute punctures, midline with double row of fine punctures; posterior lobe, except umbones which project to anterior lobe as a ridge, with numerous separated punctures becoming finer posteriorly.

Scutellum: Wider than long, 0.60:0.50.

Hemelytron: With few punctures near apex; exocorium closely and uniformly punctured over entire area.

Propleuron: Prosternal carinae not higher than labial II, broadly rounded in profile.

Legs: Anterior femur with premedian, oblique, stout spine unequally furcate; anterior tibia vaguely, obtusely angled ventrally near midlength; posterior femur ventrally with slender, oblique, subapical spine about half as long as femoral height, dorsally with distinct, subapical angulation.

Terminalia: Gonostylus as illustrated (fig. 287).

Length of body: 2.08.

FEMALE: Similar to male, but without secondary sexual modifications.

Head: Length-width ratio, 0.40:0.50; interocular width, 0.32. Antennal segments: I, 0.13; II, 0.04; III, 0.22; IV, and V missing. Labial segments: I, 0.16; II, 0.23; III, 0.29; IV, 0.20.

Pronotum: Length-width ratio, 0.84:1.22.

Scutellum: Length-width ratio, 0.44:0.56.

Length of body: 2.10.

TYPE DATA.—None of the three specimens from the Signoret collection (Wien) bears a type designation, but all are from Mexico and bear labels indicating that Signoret had determined them as this species. Thus, these may be accepted as the type series because Signoret listed the original locality simply as "Mexique." The specimen labeled "Bilimek" is here designated lectotype.

SPECIMENS STUDIED.—3 males, 2 females:

MEXICO: No exact locality, 1 male, 1 female (Wien). Coricavaca, 1871, Bilimek, 1 male (Wien). San Luis Potosí, July 17, 1947, intercepted on orchids at Laredo, Tex., 47-9428, 1 female (USNM). Oaxaca, May 13, 1938, R. Greenfield, 1 male (USNM).

DISCUSSION.—Several discrepancies between Signoret's specimens of *brunneus* and his published work may be pointed out here: clypeus actually slightly surpasses juga; anterior pronotal lobe has median punctures concentrated in a broad, median line, not in two rows; there are no setigerous punctures across calli; pronotal transverse impression more nearly median than shown; metapleuron not showing the complicated "fold" pattern depicted anterior and lateral to the peritreme; and mesocorium has several obsolete but noticeable punctures apically.

Amnestus championi Distant

PLATE FIGURE 286

Amnestus championi Distant, 1893, p. 453.

DIAGNOSIS.—Among those species of the genus with five pegs on the margin of each jugum, this one may be recognized by the closely punctate umbones and the subbasal fuscous spot on the corium.

DESCRIPTION.—Color: Head, pronotum, and scutellum dark brown to black, shining, somewhat paler along free edges of head and pronotum; clavus and coria translucent yellow, latter with distinct fuscous spot near base and usually faint clouding along apical margin;

underside reddish brown to brown, antennae, labium, and legs distinctly paler.

MALE: Oval, widest across anterior pronotal lobe.

Head: Length more than four-fifths width, 0.50(0.39–0.53):0.59 (0.56–0.62); interocular width, 0.32(0.30–0.34); clypeus distinctly surpassing juga, outline of head notched at their juncture; juga with five marginal pegs; surface coarsely punctate between and posterior to eyes. Antennal segments: I, 0.12(0.11–0.13); II, 0.03(0.03–0.05); III, 0.25(0.24–0.26); IV and V missing on all specimens. Labium attaining middle coxae. Labial segments: I, 0.21(0.20–0.23); II, 0.28(0.26–0.31); III, 0.28(0.26–0.31); IV, 0.23(0.20–0.26).

Pronotum: Length more than two-thirds width, 0.98(0.63–1.06):1.41(1.35–1.50); anterior margin moderately concave, deeply cupped behind eyes; lateral margin slightly concave and weakly converging on basal half; transverse impression moderately impressed, punctate; anterior lobe, including most of disc of calli, with crowded, prominent punctures; posterior lobe, including umbones, densely punctate.

Scutellum: Length-width ratio, 0.52(0.50–0.54):0.66(0.63–0.72).

Hemelytron: Mesocorium with few scattered punctures discally; exocorium abundantly punctate across full width.

Propleuron: Prosternal carinae about twice as high as labial II, anterior margin vertical, ventral margin concave.

Legs: Anterior femur with medioventral spine strongly oblique, unequally furcate, with small, subapical tubercle on posteroventral margin; anterior tibia without median angulation ventrally; posterior femur with ventral, subapical spine very short, oblique, not or weakly bifid.

Terminalia: Gonostylus as illustrated (fig. 286).

Length of body: 2.27(2.15–2.38).

FEMALE: Similar to male, lacking secondary sexual modifications and widest across humeri.

Head: Length-width ratio, 0.48(0.46–0.52):0.58(0.53–0.61); interocular width, 0.30(0.30–0.32). Antennal segments: I, 0.11(0.10–0.12); II, 0.03(0.02–0.03); III, 0.24(0.20–0.29); IV, 0.22(0.18–0.27); V, 0.23(0.21–0.26). Labial segments: I, 0.22(0.21–0.24); II, 0.26(0.22–0.30); III, 0.27(0.26–0.29); IV, 0.22(0.20–0.24).

Pronotum: Length-width ratio, 0.81(0.70–0.91):1.36(1.20–1.52).

Scutellum: Length-width ratio, 0.51(0.46–0.56):0.62(0.53–0.71).

Length of body: 2.12(1.89–2.30).

TYPE DATA.—Distant's single specimen, a female (BrM), is from "Guatemala, Zapote."

SPECIMENS STUDIED.—7 males, 6 females.

PANAMA: Barro Colorado Island, Canal Zone, Jan.-Mar., 1944, Zetek-5122, 2 males, 1 female (USNM); July-Aug. 1942, Jas. Zetek, No. 4985, 4 males, 3 females (RCF, USNM); Oct.-Nov. 1941, Jas. Zetek, No. 4915, 1 male, 2 females (USNM).

DISCUSSION.—The present interpretation of *championi* is based on the following evidence: (1) It is the only Central American species described with a subbasal fuscous spot on the corium; (2) the pronotum and scutellum were described as thickly and coarsely punctate; (3) the "frontal [clypeal] spines" were described as "much more developed than lateral ones"; and (4) Dr. China has supplied the information that the exocoria are fully punctate across their width.

Amnestus cribratus (Stål)

PLATE FIGURE 289

Magoa cribrata Stål, 1860, p. 14.

Amnestus cribratus Walker, 1867, p. 170.—Stål, 1876, p. 21.—Signoret, 1883, p. 370, pl. 10, fig. 195.—Lethierry and Severin, 1893, p. 75.

DIAGNOSIS.—The punctate umbones coupled with the color pattern (coria mostly yellowish hyaline, contrasting strongly with dark brown head, pronotum and scutellum) will mark this species from its congeners.

DESCRIPTION.—From two males and two females. Color: Head, pronotum, scutellum, and vague band across basal fourth of corium blackish brown, corium mostly translucent yellow; venter reddish brown, legs paler.

MALE: Oval, sides parallel.

Head: Length about four-fifths width, 0.49(0.48–0.50):0.61(0.58–0.64); interocular width, 0.34(0.33–0.36); clypeus surpassing truncated juga by less than own width, with four apical pegs; juga with five marginal pegs; surface cribrately punctate except on clypeus and base. Antennal segments: I, 0.13(0.13–0.13); II, 0.03(0.03–0.04); III, 0.26(0.26–0.26); IV, 0.23(0.23–0.23); V, 0.26(0.26–0.26). Labium reaching between middle coxae. Labial segments: I, 0.26(0.26–0.26); II, 0.30(0.30–0.30); III, 0.31(0.31–0.32); IV, 0.23(0.22–0.24).

Pronotum: Length almost two-thirds width, 0.96(0.92–1.00):1.54(1.45–1.63); anterior margin moderately concave, cupped behind eyes; transverse impression distinct, marked by row of coarse punctures; anterior lobe moderately tumid, strongly and closely punctate laterally, apically, medially, posteriorly and on most of calli; posterior lobe, including umbones, with crowded, strong punctures.

Scutellum: Length more than three-fourths width, 0.58(0.56–0.61):0.75(0.70–0.80).

Hemelytron: Mesocorium hyaline with few punctures near apex; exocorium uniformly and closely punctate across entire width.

Propleuron: Prosternal carinae anteriorly higher than labial II, bluntly triangular with apex ventrally.

Legs: Anterior tibia with oblique, premedian, stout spine unequally furcate, with small, subapical spine on posterior margin; anterior tibia without median angulation ventrally; posterior femur with strong, subapical angulation dorsally, and ventrally with strong, bifid, subapical tooth.

Terminalia: Gonostylus as illustrated (fig. 289).

Length of body: 2.52(2.42–2.63).

FEMALE: Similar to male, but without the secondary sexual modifications.

Head: Length-width ratio, 0.49(0.47–0.51):0.63(0.63–0.63); interocular width, 0.34 (0.34–0.35). Antennal segments: I, 0.13(0.13–0.13); II, 0.03(0.03–0.03); III, 0.25(0.24–0.26); IV, 0.23(0.23–0.23); V, 0.25(0.25–0.26). Labial segments: I, 0.24(0.23–0.25); II, 0.28(0.28–0.28); III, 0.32(0.31–0.33); IV, 0.23(0.23–0.23).

Pronotum: Length-width ratio, 0.94(0.88–1.00):1.58(1.53–1.64).

Scutellum: Length-width ratio, 0.63(0.60–0.66):0.78(0.70–0.86).

Length of body: 2.52(2.44–2.60):

TYPE DATA: Stål described his species from a female (Stock) from "Rio Janeiro."

SPECIMENS STUDIED: 3 males, 3 females.

BRAZIL: [Rio de Janeiro], F. Sahlb., "Typus," 1 female (Stock). Nova Teutonia, Santa Catarina, Jan. 4, 1953, May 8, 1952, Sept. 22, 1929, 1952, F. Plauermann, 3 males, 2 females (JCL).

DISCUSSION: Van Duzee (1917, p. 23) designated this species as the genotype of Stål's *Magoa*.

Amnestus diminuat Barber

Amnestus diminuat Barber, 1939, p. 274, fig. 1.

DIAGNOSIS.—Among the species with four marginal pegs on the jugum this one may be recognized by its extremely small size (length of body, 1.60) and the very short labium which does not attain middle coxae.

DESCRIPTION.—Based on the male paratype, the only specimen available for study. Elongate-oval, sides subparallel.

Head: Length about three-fourths width, 0.34:0.43; interocular width, 0.24; clypeus very slightly surpassing apices of juga but continuing outline; surface with coarse, close punctures, except on transversely rugulose clypeus; jugum with four marginal pegs. Antennal segments: I, 0.08; II, 0.02; III, 0.15; IV, 0.13; V, 0.16. Bucculae

almost half as long as labial I, not as high as labial II; labium reaching middle of mesosternum. Labial segments: I, 0.12; II, 0.14; III, 0.20; IV, 0.13.

Pronotum: Length two-thirds width, 0.63:0.90; anterior margin very feebly doubly emarginate, cupped behind eyes; lateral margin feebly sinuate at basal third; transverse impression obtuse, feebly impressed, its included row of punctures not enlarged; anterior lobe subapically and laterally with two irregular rows of coarser punctures, midline and large patch on calli with numerous smaller punctures; posterior lobe, except umbones, with numerous distinct punctures becoming finer posteriorly.

Scutellum: Wider than long, 0.53:0.36.

Hemelytron: Mesocorium impunctate discally except at extreme outer, apical angle; exocorium uniformly and closely punctured over entire area.

Propleuron: Prosternal carinae lobulate, about as high as labial II, slightly more steeply terminated posteriorly.

Legs: Anterior femur ventrally with oblique, stout, blunt, pre-median spine; anterior tibia neither angled nor spined ventrally near middle; posterior femur ventrally with oblique, simple, subapical spine, dorsally with subapical angulation; posterior tibia more or less compressed, straight.

Length of body: 1.60.

TYPE DATA.—Barber gave the type locality of his male type (USNM) as "Adjuntas, Porto Rico."

SPECIMEN STUDIED.—1 male (USNM 51580), Adjuntas, Puerto Rico, Apr. 21, 1933, Faxon, Anderson, Mills, Oakley, in net above woods.

DISCUSSION.—The present concept of this species is based on the male paratype (USNM). The specimen agrees well with the original description and figure, differing only in the spelling of the trivial name on the determination label, where it is spelled without the "a," obviously a lapsus.

Amnestus explanatus, new species

PLATE FIGURES 64, 290

DIAGNOSIS.—Among the species with four marginal pegs on each jugum, this one may be recognized by the narrowly but distinctly explanate costal margins plus the anterior margin of the pronotum being distinctly wider than the head (fig. 64).

DESCRIPTION.—Based on the holotype male. Elongate, subparallel.

Color: Yellowish brown, coria, legs, and labium somewhat paler.

Head: Length more than three-fourths width, 0.44:0.56; interocular width, 0.27; clypeus distinctly surpassing apices of jugs; latter with

four, small marginal pegs; surface, except clypeus, with coarse, close punctures. Antennal segments: I, 0.10; II, 0.02; III, 0.26; IV and V missing. Labium reaching mesosternum. Labial segments: I, 0.19; II, 0.23; III, 0.25; IV, 0.22.

Pronotum: Length more than half width, 0.73:1.24; anterior margin wider than head, broadly, moderately concave, lateral angle cupped behind eye; lateral margin straight and subparallel on basal half; transverse impression obtuse, punctate; anterior lobe moderately tumid, coarsely punctate laterally, subapically, along midline and over most of disc of calli; posterior lobe with crowded, coarse punctures, except on dorsolateral face of umbones.

Scutellum: Length-width ratio, 0.50:0.60.

Hemelytron: Mesocorium discally virtually impunctate; exocorium closely and coarsely punctate for full width; costal margin narrowly but distinctly explanate and recurved, width of explanate area nearly equal to diameter of hind tibia.

Propleuron: Prosternal carinae higher than labial II, ventral margin distinctly concave.

Legs: Anterior femur ventrally with straight, simple, oblique spine near basal third; anterior tibia ventrally with very weak, obtuse angulation medially; posterior femur ventrally with subapical spine very short, oblique, simple, acute.

Terminalia: Gonostylus as illustrated (fig. 290).

Length of body: 2.21.

TYPE DATA.—Holotype male (JCL) labeled "Horqueta, Paraguay, 45 miles E, Paraguay Riv., I-27, 1934, Alberto Schulze."

DISCUSSION.—The unusual condition of the explanate costal margin suggested the specific name proposed here.

Amnestus forreri Distant

PLATE FIGURE 291

Amnestus forreri Distant, 1893, p. 452

DIAGNOSIS.—The present species and *cribratus* differ from all other species of *Amnestus* with five marginal pegs on jugum in having numerous distinct punctures on the pronotal umbones and having most of the disc of the calli coarsely and closely punctate similar to the lateral parts of the anterior pronotal lobe; they may be separated from each other by the shape of the prosternal carinae—*cribratus* has these structures concave ventrally with a strongly triangular lobe anteriorly, while *forreri* has the ventral margin of these carinae virtually straight.

DESCRIPTION.—Based on two males. Elongate-oval, sides almost parallel.

Color: Most of head, anterior lobe of pronotum, scutellum, and

most of ventral surface yellowish brown; posterior lobe of pronotum, clavi, coria and appendages yellowish.

Head: Length slightly shorter than width, 0.60(0.60–0.60):0.66(0.66–0.67); interocular width, 0.38(0.37–0.40); clypeus surpassing juga by distance equalling one-half its own width; surface coarsely and closely punctate except on clypeus and apical halves of juga; jugum with five marginal pegs, anterior one or two abruptly longer than others. Antennal segments: I, 0.13(0.13–0.14); II, 0.03(0.03–0.04); III, 0.30(0.30–0.30); IV, 0.26(0.26–??); V, 0.30(0.30–??). Labium reaching almost to bases of middle coxae. Labial segments: I, 0.24(0.23–0.26); II, 0.38(0.36–0.41); III, 0.25(0.24–0.26); IV, 0.23(0.23–0.24).

Pronotum: Length three-fourths width, 1.23(1.23–1.23):1.61(1.61–1.62); anterior margin very feebly concave, cupped behind eyes; lateral margin sinuate near base; transverse impression weak except laterally, marked by row of coarse punctures; anterior lobe with broad band of coarse punctures laterally and subapically; and with numerous close-set moderate punctures along midline and over most of calli; posterior lobe, including umbones, with very numerous, close-set punctures becoming finer posteriorly.

Scutellum: Wider than long, 0.85(0.84–0.85):0.67(0.66–0.68).

Hemelytron: Mesocorium impunctate except for two rows paralleling claval suture; exocorium distinctly and strongly punctate virtually to costa.

Propleuron: Prosternal carinae higher than labial II, anterior margin roundly perpendicular, ventral margin straight and almost horizontal, posterior end lower but abruptly terminated.

Legs: Anterior femur ventrally with premedian oblique spine very unevenly furcate and with subapical small tubercle on posteroventral margin; anterior tibia ventrally neither angled nor spined at middle; posterior femur ventrally with subapical spine stout, oblique, shorter than height of femur, subequally furcate at apex, dorsally with subapical angulation.

Terminalia: Gonostylus as illustrated (fig. 291).

Length of body: 2.89(2.82–2.96).

TYPE DATA.—The types (BrM) are listed as coming from "Mexico, Ventanas in Durango (Forrer): Panama, Volcan de Chiriqui 4000 to 6000 feet (Champion)."

SPECIMENS STUDIED.—2 males.

PANAMA: *Canal Zone*: Barro Colorado Island, Oct.–Nov., 1941, Jas. Zetek. No. 4915, 1 male (USNM). Cano Saddle, Gatun Lake, May 3, 1923, R. C. Shannon, 1 male (USNM).

DISCUSSION.—The two individuals reported on here were the only Central American specimens seen with the anterior pronotal lobe

being darker than the posterior one. This unusual feature coupled with the fact that both specimens came from one of the original countries of capture combine to establish the present interpretation of Distant's species. This result conforms with H. G. Barber's conclusions as one of the specimens bears his determination as *forreri*.

Amnestus foveatus, new species

PLATE FIGURE 39, 293

DIAGNOSIS.—The greatly enlarged prosternal carinae with the large blackened fovea will separate *foveatus* from the other species of the genus.

DESCRIPTION.—MALE: Elongate-oval, widest behind middle.

Head: Length more than two-thirds width, 0.47(0.42–0.53):0.61(0.56–0.67); interocular width, 0.35(0.33–0.38); clypeus slightly surpassing apices of juga; surface shining, anteocular part impunctate, remainder with numerous crowded punctures; jugum with five small marginal pegs becoming shorter and finer toward eyes. Antennal segments: I, 0.13(0.13–0.15); II, 0.04(0.03–0.05); III, 0.23(0.23–0.26); IV, 0.22(0.20–0.26); V, 0.23(0.23–0.25). Bucculae reduced, about one-third as long as labial I and subequal to it in height; labium reaching apices of hind coxae. Labial segments: I, 0.21(0.19–0.26); II, 0.25(0.23–0.26); III, 0.25(0.23–0.27); IV, 0.23(0.23–0.25).

Pronotum: Length two-thirds width, 0.90(0.78–1.02):1.45(1.36–1.61); anterior margin doubly emarginate, cupped behind eyes; lateral margin with broad, shallow, rounded emargination near base; transverse impression distinct, marked by row of coarse punctures; anterior lobe feebly or not tumid, with broad band of coarse punctures subapically and laterally, calli and intercallar area with numerous, moderate, distinct punctures; posterior lobe, except umbones, with numerous separated punctures becoming obsolete posteriorly.

Scutellum: Wider than long, 0.62(0.58–0.70):0.57(0.54–0.64); disc polished, with numerous coarse punctures.

Hemelytron: Mesocorium discally with scattered small punctures; exocorium uniformly punctured throughout.

Propleuron: Prosternal carinae subquadrate, more than twice as high as labial II, with large fuscous to black fovea basally on posterior half (fig. 39).

Legs: Anterior femur with stout, submedian ventral spine with shallow emargination in apical truncation; anterior tibia with ventral margin neither angled nor spined; posterior tibia ventrally with subapical angulation on spine, and dorsally with subapical angulation.

Terminalia: Gonostylus as illustrated (fig. 293).

Length of body: 2.41(2.21–2.66).

Female: Similar to male, but anterior and posterior femora without armature described for that sex.

Head: Length-width ratio, 0.48(0.44–0.51):0.60(0.57–0.63); interocular width, 0.35(0.34–0.40). Antennal segments: I, 0.13(0.13–0.15); II, 0.03(0.03–0.04); III, 0.22(0.22–0.23); IV, 0.20(0.19–0.22); V, 0.23(0.23–0.24). Labial segments: I, 0.22(0.21–0.23); II, 0.25(0.23–0.27); III, 0.25(0.23–0.27); IV, 0.21(0.20–0.23).

Pronotum: Length-width ratio, 0.79(0.72–0.86):1.40(1.35–1.31).

Scutellum: Length-width ratio, 0.56(0.53–0.61):0.62(0.60–0.66).

Length of body: 2.28(2.15–2.47).

TYPE DATA.—Holotype male (JCL) and allotype female (JCL), "Nova Teutonia. Sta. Catarina, Brazil, X–II, 1952, F. Plaumann." Paratypes: Same data as types but various dates: 5 males, Aug. 8, Sept. 24, and Oct. 11; 8 females, Aug. 8, 18, Oct. 5, 9, 11, 14, 23 (all JCL).

DISCUSSION.—The prominent, blackened fovea near the base of the prosternal carinae suggested the specific name.

Amnestus lateralis Signoret

PLATE FIGURE 286a

Amnestus lateralis Signoret, 1883, p. 369, pl. 10, fig. 193.—Lethierry and Severin, 1893, p. 75.

DIAGNOSIS.—Among the species with five jugal pegs, this species may be recognized by its hemelytral color—the clavus and basal area of the mesocorium are much lighter than the exocorium and apical part of the mesocorium; or structurally it is separable from all the above-mentioned species by having the mesocorial disc sparsely but evenly punctate for its full length, i.e., without a submedian, impunctate area.

DESCRIPTION.—Based on one male and one female. MALE: Elongate, sides subparallel.

Head: Length more than three-fourths width, 0.54:0.65; interocular width, 0.39; clypeus slightly surpassing juga; latter with five marginal pegs, anteocular part polished, impunctate. Antennal segments: I, 0.18; II, 0.07; III, 0.35; IV, 0.27; V, 0.30. Labium reaching bases of middle coxae. Labial segments: I, 0.20; II, 0.26; III, 0.35; IV, 0.23.

Pronotum: Length more than half width, 1.09:1.66; anterior margin deeply concave, anterolateral angles truncated behind eyes; lateral margins straight and slightly converging on basal half, thence broadly rounded to apex; transverse impression deep, sinuate, punctate; anterior lobe with subapical band of coarse punctures, with few scattered minute punctures on midline and calli and laterally with one or two rows of punctures finer than those of transverse impression;

posterior lobe with numerous well-separated punctures becoming finer posteriorly; umbones impunctate.

Scutellum: Length-width ratio, 0.68:0.86.

Hemelytron: Exocorium with numerous, close, moderately coarse punctures across full width; mesocorial disc with sparser, finer punctures scattered along full length.

Propleuron: Prosternal carinae about as high as labial II, margins strongly convex.

Legs: Anterior femur with submedian spine strongly oblique, apex weakly and unevenly furcate, posteroventral margin with distinct, subapical spine; anterior tibia with median ventral angulation but no subbasal spine; posterior femur with a prominent, tubercle-like angulation dorsally near apex, and ventrally with a strong, simple subapical spine which is curved posteriorly.

Terminalia: Gonostylus as illustrated (fig. 286a).

Length of body: 2.64.

FEMALE: Similar to male but lacking leg modifications mentioned for that sex and having transverse pronotal impression obtuse.

Head: Length-width ratio, 0.53:0.61; interocular width, 0.38. Antennal segments: I, 0.12; II, 0.07; III, 0.26; IV and V missing. Labial segments: I, 0.18; II, 0.21; III, 0.40; IV, 0.14.

Pronotum: Length-width ratio, 0.81:1.46.

Scutellum: Length-width ratio, 0.60:0.71.

Length of body: 2.24.

TYPE DATA.—Signoret described this species from specimens from "Brésil" and "Buenos-Ayres." The types have not been located.

SPECIMENS STUDIED.—1 male and 1 female:

ARGENTINA: La Plata, 1 male, 1 female (Hung).

DISCUSSION.—Signoret's description and illustration of the mesocorial punctation and the unique corial coloring leave no doubt about the identity of this form. The only real discrepancy between the specimens available and his illustration lies in the few lateral punctures on the anterior pronotal lobe in contrast to the crowded punctures of the sketch.

Amnestus lautipennis (Stål)

PLATE FIGURES 75, 292

Magoa lautipennis Stål, 1860, p. 14.—Walker, 1867, p. 170.

Amnestus lautipennis Stål, 1876, p. 21.—Signoret, 1883, p. 371, pl. 10, fig. 196.—

Lethierry and Severin, 1893, p. 75.

DIAGNOSIS.—The low, rounded prosternal carinae coupled with the unmarked, yellow coria which are distinctly paler than the dark brown pronotum and scutellum will mark this from the other small (less than 2.5) species with five marginal, jugal pegs.

DESCRIPTION.—Based on two males. Oval, widest behind middle.

Color: Head, pronotum and scutellum reddish brown, coria yellow, unmarked; venter paler reddish brown, legs and labium yellow.

Head: Length about four-fifths width, 0.42(0.41–0.44):0.52(0.52–0.53); interocular width, 0.31(0.30–0.31); clypeus slightly longer than juga; latter with five marginal pegs; surface distinctly punctate on juga and between eyes. Antennal segments: I, 0.12(0.12–0.13); II, 0.03(0.03–0.03); III, 0.17(0.16–0.18); IV, 0.20(0.20–0.20); V, 0.22(0.21–0.23). Labium reaching bases of middle coxae. Labial segments: I, 0.17(0.16–0.18); II, 0.23(0.23–0.23); III, 0.26(0.26–0.27); IV, 0.22(0.21–0.23).

Pronotum: Length about two-thirds width, 0.79(0.74–0.84):1.20(1.16–1.25); anterior margin shallowly concave; lateral margins straight on basal half; transverse impression distinct, with row of coarse punctures; anterior lobe moderately tumid, with several rows of coarse punctures laterally and subapically, with few small punctures on midline and on disc of calli; posterior lobe with scattered punctures; umbones impunctate, not continued to anterior lobe as impunctate ridge.

Scutellum: Length-width ratio, 0.44(0.43–0.45):0.53(0.50–0.56).

Hemelytron: Mesocorium with few scattered punctures apically; exocorium punctate for full width.

Propleuron: Prosternal carinae lower than labial II, rounded.

Legs: Anterior femur ventrally with oblique, stout, unequally furcate spine near basal third; anterior tibia not angled near middle of ventral margin; posterior femur ventrally with subapical spine compressed, obliquely truncated at apex, as long as two-thirds femoral height.

Terminalia: Gonostylus as illustrated (fig. 292).

Length of body: 2.08(1.89–2.28).

TYPE DATA.—Since no type locality was recorded by Stål, one may assume from the title of his paper that it was Rio de Janeiro. The type specimen (Stock), a male, bears the simple label "Brasil."

SPECIMENS STUDIED.—2 males.

BRAZIL: No exact locality, "Typus," 1 male (Stock); on cabbage, intercepted at New Orleans, La., Mar. 9, 1938, 1 male (USNM).

Annestus pallidus Zimmer

PLATE FIGURE 294

Annectus [!] *pallidus* Zimmer, 1910, p. 166, fig. 10.

Annestus pallidus Van Duzee, 1917, p. 23.—Torre Bueno, 1939, p. 183.

DIAGNOSIS.—The almost concolorous reddish brown head, pronotum, scutellum, and corium, plus the shorter labium which does

not reach posterior coxae, will separate this species from all of those with five marginal pegs on the jugum.

DESCRIPTION.—Color: Dorsally and ventrally, except for legs and labium, almost unicolorous reddish brown to piceous.

MALE: Oval, widest behind middle.

Head: Length more than three-fourths width, 0.44(0.40–0.53):0.57(0.50–0.70); interocular width, 0.36(0.31–0.44); clypeus as long as juga, latter with five subequal, marginal pegs; surface, except clypeus and apex of jugum, coarsely punctate. Antennal segments: I, 0.12(0.10–0.17); II, 0.03(0.02–0.04); III, 0.28(0.23–0.36); IV, 0.28(0.23–0.33); V, 0.28(0.23–0.36). Labium attaining middle of metasternum. Labial segments: I, 0.22(0.20–0.26); II, 0.30(0.27–0.39); III, 0.39(0.31–0.53); IV, 0.26(0.23–0.31).

Pronotum: Length about two-thirds width, 0.90(0.76–1.30):1.44(1.21–1.44); anterior margin shallowly concave, almost straight across; lateral margin straight on basal half; transverse impression obsolete, marked by vague row of punctures; anterior lobe with three to four irregular rows of moderate to coarse punctures laterally, subapically and along median band, calli mostly polished, with few fine punctures discally; posterior lobe, except umbones, with widely scattered punctures.

Scutellum: Length-width ratio, 0.61(0.50–0.81):0.74(0.63–0.90).

Hemelytron: Mesocorium with few scattered, obsolete punctures discally; exocorium abundantly punctate across full width.

Propleuron: Prosternal carinae lower than labial II, rounded.

Legs: Anterior femur ventrally with premedian spine strong, oblique, unevenly bifid, and with blackish, subapical tubercle on posteroventral margin; anterior tibia neither angled nor spined mid-ventrally; posterior femur not angled dorsally near apex, ventrally with subapical spine short, less than half height of femur.

Terminalia: Gonostylus as illustrated (fig. 294).

Length of body: 2.56(2.08–3.26).

FEMALE: Similar to male, but without secondary sexual modifications.

Head: Length-width ratio, 0.48(0.43–0.60):0.60(0.53–0.73); interocular width, 0.36(0.31–0.46). Antennal segments: I, 0.12(0.10–0.16); II, 0.03(0.02–0.04); III, 0.25(0.20–0.33); IV, 0.24(0.19–0.32); V, 0.25(0.20–0.33). Labial segments: I, 0.21(0.20–0.23); II, 0.24(0.23–0.26); III, 0.36(0.31–0.46); IV, 0.24(0.20–0.33).

Pronotum: Length-width ratio, 0.92(0.80–1.16):1.53(1.31–1.92).

Scutellum: Length-width ratio, 0.63(0.51–0.90):0.77(0.63–0.99).

Length of body: 2.60(2.28–3.20).

TYPE DATA.—Zimmer listed his lone type as a female, but illustrated the typical leg armature of a male, from "South-east Nebraska."

According to a letter from the late Dr. Myron Swenk to Dr. Sailer, the type specimen of this species was accidentally knocked from its pin and lost while it was being incorporated in the collection of the University of Nebraska.

SPECIMENS EXAMINED.—59 males, 107 females.

UNITED STATES: *Arizona*: Oak Creek Canyon, Williams; July. *California*: El Dorado Co., Los Angeles Co., Madera Co.; September. *Colorado*: No exact locality. *Georgia*: Spalding Co.; March. *Illinois*: Algonquin, Aurora, Oakwood, Urbana, White Heath; April to October. *Indiana*: Knox, Marion Co.; July. *Iowa*: Ames, Boone Co., Iowa City, Lake Okoboji, Louisa Co., Moran, Washington; April to October. *Kansas*: Ashland, Lawrence; June, July. *Kentucky*: McCracken Co.; September. *Maryland*: Cabin John; April. *Massachusetts*: Cambridge, Natick; June. *Michigan*: Washtenaw Co.; May. *Nebraska*: West Point; June. *New Jersey*: Bear Swamps, Hackettstown, Madison; May, July. *New Mexico*: Las Vegas, Mesilla Park, West Point; May, July. *New York*: Maspeth, Mosholu, West Hebron; May. *North Carolina*: Black Mts., Gray Beard Mt.; May, September. *Oregon*: Corvallis, McMinnville; October. *Pennsylvania*: Ingram, Philadelphia; May, June, September. *Tennessee*: Hamilton Co.; October. *Texas*: Denison; November. *Virginia*: Augusta Co., Chain Bridge, Fairfax Co.; May, July, September. *Washington*: Puyallup; March.

CANADA: *Ontario*: Ridgeway; October.

DISCUSSION.—In most collections examined, this species has been confused with *spinifrons*. The shorter labium, which here does not exceed the posterior coxae, will separate the two; or in the case of the males, the absence of a midventral angulation on the anterior tibia will mark it from *spinifrons*.

Zimmer's description of his specimen as a female was the result of confusion of the two sexes that was prevalent at that time.

Although several authors have reported this form from light, real ecological notes concerning it are quite few. Blatchley (1926) and Torre Bueno (1939) repeated Stoner's (1920) record of sweeping it from *Antennaria plantaginifolia* (L.) in Iowa. Parshley (1923, p. 780) reported that it may be "occasionally found under stones and by sifting."

Amnestus pusillus Uhler

PLATE FIGURES 63, 163, 164, 184, 295

Amnestus pusillus Uhler, 1876, p. 278; 1877, p. 371; 1886, p. 3.—Signoret, 1883, p. 372, pl. 10, fig. 197.—Lethierry and Severin, 1893, p. 75.—Banks, 1910, p. 98.—Van Duzee, 1917, p. 23.—Torre Bueno, 1939, p. 183.

DIAGNOSIS.—The male of *pusillus* may be easily recognized by the presence on the hind femur of a ventral, subapical spine which is more than one-third as long as the tibia (fig. 164). The female is also strongly marked by the presence of a flattened, polished, glabrous area on the middle of the last sternite (fig. 184) and the presence of a short, oblique, subapical spine on the ventral margin of the posterior

femur (fig. 163), two features which appear to be unique with this species.

DESCRIPTION.—Color: Yellowish tan, coria, legs, and labium usually paler.

MALE: Oval, widest behind midlength.

Head: Length three-fourths width, 0.42(0.41–0.43):0.56(0.53–0.60); interocular width, 0.32(0.31–0.34); clypeus slightly surpassing juga; latter with four marginal pegs becoming finer toward eye; surface, except clypeus, roughly punctate. Antennal segments: I, 0.10(0.07–0.13); II, 0.02(0.02–0.03); III, 0.23(0.21–0.25); IV, 0.23(0.23–0.25); V, 0.23(0.21–0.25). Labium reaching bases of posterior coxae. Labial segments: I, 0.18(0.17–0.20); II, 0.26(0.26–0.27); III, 0.28(0.26–0.30); IV, 0.23(0.20–0.26).

Pronotum: Length more than two-thirds width, 0.91(0.84–1.03):1.32(1.24–1.50); anterior margin moderately concave; lateral margin faintly concave on basal third; transverse impression distinct, marked by regular row of coarser, closer punctures; anterior lobe with coarse punctures in three or four rows laterally and subapically, and along midline and scattered over calli; posterior lobe, except umbones, abundantly punctate.

Scutellum: Length-width ratio, 0.59(0.53–0.66):0.65(0.61–0.72).

Hemelytron: Mesocorium discally with single, irregular row of fine punctures; exocorium punctate for full width.

Propleuron: Prosternal carinae almost as high as labial II, abruptly terminated posteriorly.

Legs: Anterior femur ventrally with submedian spine very short, simple; anterior tibia with two prominent angulations or spines on lower edge (as in fig. 132); posterior femur ventrally with subapical spine very long, more than third length of posterior tibia (fig. 164).

Terminalia: Gonostylus as illustrated (fig. 295).

Length of body: 2.30(2.08–2.66).

FEMALE: Similar to male, but lacking secondary sexual modifications; posterior femur with small, oblique spine ventrally near apex (fig. 163).

Head: Length-width ratio, 0.43(0.43–0.44):0.54(0.53–0.55); interocular width, 0.33(0.33–0.33). Antennal segments: I, 0.10(0.09–0.12); II, 0.02(0.02–0.02); III, 0.21(0.20–0.23); IV, 0.21(0.20–0.23); V, 0.22(0.21–0.24). Labial segments: I, 0.16(0.16–0.17); II, 0.25(0.23–0.28); III, 0.33(0.33–0.33); IV, 0.25(0.25–0.27).

Pronotum: Length-width ratio, 0.73(0.70–0.74):1.24(1.23–1.26).

Scutellum: Length-width ratio, 0.51(0.50–0.53):0.56(0.56–0.57).

Length of body: 2.19(2.15–2.28).

TYPE DATA.—The types are in the U.S. National Museum. In the original description, Uhler reported that this species "Inhabits

Indian Territory, Texas, Cuba, and generally the Eastern United States south of Cape Cod."

SPECIMENS STUDIED.—103 males, 154 females.

CANADA: *Ontario*: Ridgeway; October.

UNITED STATES: *Arizona*: Globe, San Carlos, Thatcher; July, August. *Arkansas*: Hope; October. *California*: Folsom. *Colorado*: No exact locality. *Illinois*: Grand Tower, Pittsfield, Urbana; July, August. *Iowa*: Ames, 4 miles east of Gilbert; May to July. *Kansas*: Caldwell, Riley Co., Wellington; June, July. *Kentucky*: Henderson Co.; September. *Louisiana*: Harahan, Shreveport, Tallulah; July to September. *Maine*: Paris; October. *Maryland*: Plummers Island, Sparrow Point; June to August. *Massachusetts*: Chicopee; August. *Missouri*: Charleston, Columbia, Kansas City, Kinsey, Langdon, Rockport, St. Joseph, St. Louis, Webster Groves; April to September. *Nebraska*: Falls City, Minden; August. *New York*: Queens Co.; June. *Oregon*: Forest Grove; June. *Pennsylvania*: Crisp, Philadelphia, Pittsburgh; August. *Tennessee*: Chattanooga, Clarksville, Hamilton Co., Nashville; July, August, November. *Texas*: Dallas, Devil's River, Kerrville, Victoria; June, July. *Virginia*: Falls Church, Nelson Co.; July, September. *West Virginia*: Cheat Mts.; June.

MEXICO: *Nuevo León*: Monterrey; August.

GUATEMALA: Two specimens labeled "Guatemala" were intercepted during plant inspections in California and Texas; perhaps these represent specimens that had entered shipments after their arrival.

DISCUSSION.—The examination of a great number of specimens of this common species gave a rather comprehensive picture of the range—North America from Maine and Ontario west to Oregon and south to Virginia, Louisiana, and Mexico. An interesting point that results is that *pusillus* is not a member of the West Indian fauna as reported by several early workers and refuted by later authors, including Barber (1939).

Uhler's (1894, p. 227) habit note that "This small insect lurks beneath rubbish in sandy places, where it matches the color of the ground and is thus easily overlooked," summarizes all of the available ecological information on this form except the frequency and abundance with which it comes to light.

Amnestus pusio (Stål)

PLATE FIGURES 162, 296

Magoa pusio Stål, 1860, p. 14.

Magoa [*?*] *pusio* Walker, 1867, p. 171.

Amnestus pusio Stål, 1876, p. 21.—Signoret, 1883, p. 373, pl. 15, fig. 199.—Uhler, 1886, p. 3.—Lethierry and Severin, 1893, p. 75.—Barber and Bruner, 1932, p. 239.

DIAGNOSIS.—The four marginal pegs on the jugum, the small size (1.2–2.1) and the presence of coarse punctures on the disc of the calli will separate this species and *basidentatus* from all others in the genus. The females of these two forms are as yet not separable with certainty, but the males of *pusio* lack spines or angulation on the ventral margin

of the anterior tibia and thereby differ markedly from the males of *basidentatus*, which have two prominent teeth on the ventral margin of the anterior tibia (as in fig. 132).

DESCRIPTION.—Color: Yellowish brown, posterior pronotal lobe and coria usually very slightly lighter, labium and legs pale yellow.

MALE: Oval, widest posterior to midlength.

Head: Length about two-thirds width, 0.37(0.36–0.40):0.49(0.47–0.52); interocular width, 0.26(0.26–0.26); clypeus slightly surpassing jugal, latter with four, subequal, marginal pegs; surface coarsely punctate between eyes. Antennal segments: I, 0.09(0.08–0.10); II, 0.01(0.01–0.02); III, 0.16(0.16–0.18); IV, 0.18(0.17–0.20); V, 0.20(0.19–0.22). Labium attaining posterior coxae. Labial segments: I, 0.14(0.14–0.16); II, 0.24(0.23–0.26); III, 0.26(0.23–0.30); IV, 0.22(0.21–0.23).

Pronotum: Length about two-thirds width, 0.67(0.65–0.70):1.03(1.00–1.06); anterior margin feebly concave; side margins straight or slightly sinuate on basal half; transverse impression prominent, with row of punctures; anterior lobe with large punctures laterally, subapically, medially and scattered over calli; posterior lobe, except umbones, with numerous close-set, coarse punctures.

Scutellum: Length-width ratio, 0.43(0.41–0.46):0.49(0.46–0.53).

Hemelytron: Mesocorium with several small scattered punctures discally; exocorium abundantly punctate across full width.

Propleuron: Prosternal carinae about as high as labial II, more or less abruptly terminated posteriorly.

Legs: Anterior femur ventrally with premedian spine simple or weakly bifid at apex, posteroventral margin with minute, subapical tubercle; anterior tibia neither spined nor distinctly angled on ventral margin; posterior femur ventrally with prominent, triangular tooth near apex of anteroventral margin (fig. 162).

TERMINALIA: Gonostylus as illustrated (fig. 296).

Length of body: 1.82(1.82–1.84).

FEMALE: Similar to male, lacking secondary sexual modifications.

Head: Length-width ratio, 0.41(0.38–0.46):0.54(0.53–0.57); interocular width, 0.31(0.30–0.32). Antennal segments: I, 0.09(0.09–0.10); II, 0.01(0.01–0.02); III, 0.23(0.17–0.30); IV, 0.21(0.20–0.23); V, 0.22(0.20–0.23). Labial segments: I, 0.15(0.14–0.16); II, 0.24(0.23–0.26); III, 0.25(0.23–0.26); IV, 0.22(0.20–0.25).

Pronotum: Length-width ratio, 0.66(0.63–0.73):1.09(1.06–1.16).

Scutellum: Length-width ratio, 0.45(0.44–0.47):0.54(0.51–0.56).

Length of body: 1.91(1.82–2.02).

TYPE DATA.—Stål's type specimen (Stock), a male, bears the word "Brasil" as the locality of capture. No locality was given in the

original description, but the title of Stål's paper suggested that all included forms had come from Rio de Janeiro.

SPECIMENS STUDIED: 138 males.

UNITED STATES: *Texas*: Brownsville; June.

MEXICO: *Chiapas*: Tapachula. *Sinaloa*: Presidio River; September. *Vera-cruz*: Tres Zapotes, Pureza; April, June.

HONDURAS: Lacertilla, Lombardia, Tela.

COSTA RICA: Hamburg Farm; March, April.

PANAMA: *Canal Zone*: Ancón, Barro Colorado Island; January, April, July.

COLOMBIA: No exact locality.

BRAZIL: No exact locality, type.

ECUADOR: Cachabi.

BAHAMAS: South Bimini Island; June.

CUBA: Baragua, Guantánamo, Santo Tomás; May, June.

HAITI: "Diquini," Port au Prince; July, August, November.

DOMINICAN REPUBLIC: San Francisco Mts.; January, September.

PUERTO RICO: Isabella, Ponce, San Juan; March, August.

VIRGIN ISLANDS: St. Croix; May, November.

GRENADA: Balthazar.

DISCUSSION.—Although a number of authors reported this species for the southeastern United States, the large series of *Amnestus* from that region did not yield any specimens. Instead, most of those records appear to belong to the common southeastern species *basidentatus*, which is described as new in the present paper. Another point of interest in relation to the distribution of this species lies in the fact that all specimens, except the type, were found to have come from an area far to the north of the type locality in southern Brazil.

The present state of knowledge does not permit certain recognition of the females of this species. The only female specimens reported upon for the distribution data in this paper were those from within the range indicated by males.

Amnestus radialis, new species

PLATE FIGURES 61, 76, 297

DIAGNOSIS.—Among those species with five pegs on jugal margins, this species may be recognized by the fuscous line along the radial vein and the four long pegs on the apex of the clypeus.

DESCRIPTION.—Based on one male. Elongate, sides subparallel.

Head: Length about three-fourths width, 0.46:0.61; interocular width, 0.33; clypeus slightly surpassing apices of juga, latter with five marginal pegs becoming finer toward eye; surface punctate between eyes. Antennal segments: I, 0.12; II–V, missing. Labium attaining middle coxae. Labial segments: I, 0.16; II, 0.23; III, 0.23; IV, 0.23.

Pronotum: Length more than two-thirds width, 0.96:1.38; anterior margin shallowly concave; lateral margins strongly narrowing from base, slightly concave on basal half; transverse impression moderate,

marked by regular row of crowded, very coarse, elongate punctures; anterior lobe moderately tumid, with two irregular rows of coarse punctures laterally and subapically, disc of calli and midline with scattered, fine punctures; posterior lobe with numerous punctures, these coarser on apical half; umbones impunctate.

Scutellum: Length-width ratio, 0.56:0.67.

Hemelytron: Apical half of mesocorium mostly impunctate; exocorium abundantly punctate for full width.

Propleuron: Prosternal carinae about as high as labial II, obtusely triangular.

Legs: Anterior femur ventrally with large, unevenly furcate spine near basal third; anterior tibia with low, blunt angulation near middle of ventral margin; posterior femur dorsally with subapical angulation, ventrally with weakly curved, subapical spine about as long as two-thirds femoral height.

Terminalia: Gonostylus as illustrated (fig. 297).

Length of body: 2.47.

TYPE DATA.—Holotype male (USNM 64409), "Martinique, W. I., 8-21-29, Bartsch-Hoffmann."

DISCUSSION.—The following species, described as new on the basis of six distinct pegs on the apex of the clypeus, may be simply the female of *radialis*. Female specimens that run to the present species should be checked against the next one to determine if they are not the same and to help evaluate the feature of the additional pegs on the clypeus.

Amnestus sexdentatus, new species

PLATE FIGURE 60

DIAGNOSIS.—The present form, if not based on an aberrant individual, is unique within the genus in possessing six pegs at the apex of the clypeus, the usual four along the margin and one above and one below the margin on the midline (fig. 60).

DESCRIPTION.—Based on one female. Oval, widest behind mid-length.

Head: Length about four-fifths width, 0.47:0.58; interocular width, 0.32; clypeus slightly surpassing apices of juga, with six pegs apically, usual four along margin and one above and one below margin on midline (fig. 60); surface with coarse punctures between eyes. Antennal segments: I, 0.12; II, 0.05; III, 0.23; IV, 0.31; V, missing. Labium attaining middle coxae. Labial segments: I, 0.16; II, 0.26; III, 0.23; IV, 0.16.

Pronotum: Length about three-fourths width, 0.83:1.36; anterior margin shallowly concave; lateral margins strongly narrowing from base, straight on basal half; transverse impression strong only at ends, marked by irregular row of coarse punctures; anterior lobe with two

rows of coarse punctures laterally and subapically, calli and space between with few minute punctures; posterior lobe with widely scattered, fine punctures, umbones impunctate.

Scutellum: Length-width ratio, 0.56:0.68.

Hemelytron: Mesocorium with scattered, distinct punctures for full length; exocorium abundantly punctate to costal margin.

Propleuron: Prosternal carinae less than half as high as labial II, rounded.

Length of body: 2.24.

Color: Head, anterior pronotal lobe and scutellum dark reddish brown; posterior pronotal lobe, except immediately mesad of umbones and along narrow posterior margin, yellowed; clavus and corium yellow, former with apical cloud fuscous, corium with subbasal spot, irregular band along radial vein, and apical margin fuscous; venter mostly reddish brown; labium and legs yellow.

TYPE DATA.—Holotype female (USNM 64410), "Ponce, P. R., IV-4-1946, L. T., J. Maldonado Capriles."

DISCUSSION.—Whether or not the unusual development of two additional pegs on the apex of the clypeus is abnormal must be proven by examination of additional specimens. If the extra pegs prove to be a freak condition, then this may simply be the female of *A. radialis*, new species, to which this specimen will then run in the key.

Amnestus spinifrons (Say)

PLATE FIGURES 2, 37, 113, 131, 160, 168, 173, 185, 298

Cydnus spinifrons Say, 1825, p. 316.

Amnestus spinifrons Dallas, 1851, p. 126.—Walker, 1867, p. 167—Stål, 1876, p. 21.—Uhler, 1877, p. 370; 1886, p. 3.—Signoret, 1883, p. 367, pl. 10, fig. 192.—Lethierry and Severin, 1893, p. 75.—Banks, 1910, p. 99.—Van Duzee, 1917, p. 23.—Torre Bueno, 1939, p. 182.

DIAGNOSIS.—Among those species with the five pegs on each jugum, this species may be recognized by the very long labium which surpasses the hind coxae.

DESCRIPTION.—Color: Dark reddish brown, appendages paler.

MALE: Elongate, sides subparallel.

Head: Length more than three-fourths width, 0.58(0.53–0.66):0.73(0.65–0.78); interocular width, 0.45 (0.42–0.50); clypeus as long as juga, apices continuous; jugum with five marginal spines; surface coarsely punctate on jugum and between eyes. Antennal segments: I, 0.17(0.14–0.20); II, 0.05(0.05–0.06); III, 0.33(0.30–0.36); IV, 0.31(0.27–0.34); V, 0.30(0.26–0.33). Labium reaching apex of sternite III. Labical segments: I, 0.33(0.30–0.40); II, 0.51(0.43–0.56); III, 0.75(0.66–0.83); IV, 0.42(0.40–0.44).

Pronotum: Length about two-thirds width, 1.23(0.95–1.42):1.84-

(1.55–2.02); anterior margin shallowly emarginate; lateral margins constricted subbasally; transverse impression weaker medially, marked by band of coarse punctures; anterior lobe moderately tumid, coarsely punctate laterally and subapically, finely punctate medially and on calli; posterior lobe with scattered, small punctures becoming finer posteriorly, unbones not punctate.

Scutellum: Length little less than width, 0.81(0.65–0.91):0.94(0.78–1.04).

Hemelytron: Mesocorium abundantly punctate except in post-medial area; exocorium closely punctate for full width.

Propleuron: Prosternal carinae rounded, almost as high as labial II.

Legs (figs. 131, 160): Anterior femur with strong, bifid spine ventrally on basal third and small simple one near apex on posterior margin; anterior tibia with decided median angulation ventrally; posterior femur with very short, oblique spur subapically on antero-ventral margin.

Terminalia: Gonostylus as illustrated (fig. 298).

Length of body: 3.43(2.66–3.68).

FEMALE: Similar to male, anterior pronotal lobe not tumid, legs without modifications described.

Head: Length-width ratio, 0.62(0.56–0.66):0.73(0.66–0.80); interocular width, 0.45(0.44–0.48). Antennal segments: I, 0.16(0.15–0.17); II, 0.05(0.05–0.06); III, 0.31(0.26–0.36); IV, 0.42(0.33–0.46).

Pronotum: Length-width ratio, 1.17(0.97–1.36):1.84(1.62–2.08).

Scutellum: Length-width ratio, 0.80(0.71–0.91):0.93(0.87–0.97).

Length of body: 3.15(2.79–3.51).

TYPE DATA.—The types, which Say described from "Pennsylvania" and "Missouri," are probably lost. Uhler (1878, p. 372), however, stated that there were specimens in the T. W. Harris collection (MCZ) which were named "*Cydnus spinifrons* by Mr. Say." These specimens, as well as specimens of certain other species in the Harris collection, have been considered in a special sense. Since Say's collections have been destroyed, and because these specimens represent some of the little-remaining material studied by Say, workers have generally accepted them as sort of substitute types for Say's species. The specimens of *spinifrons* listed by Uhler were reported as "No. 68, Harris Collection, Cambridge, Mass., March 18, 1828, May 15, 1831, Sept. 1831." Obviously, these cannot be the original types because the dates of capture are later than the publication date of the original description.

SPECIMENS STUDIED.—51 males, 42 females.

CANADA: Ontario: Ridgeway; May.

UNITED STATES: Arkansas: Washington Co.; May. District of Columbia: Washington, D.C. Florida: Homestead, Pompano; February. Georgia: Jasper

Co., Peach Co., Upson Co.; February, October. *Illinois*: Chicago, Homer, "N. Ill.," Urbana; March to May. *Iowa*: Ames, Boone, Lake Okoboji; April to June. *Kansas*: Riley Co.; April. *Maryland*: Annapolis, Beltsville; May. *Massachusetts*: Essex, Sherborn; May to July. *Missouri*: Piedmont; March. *North Carolina*: Black Mt.; May. *New Jersey*: Great Notch, Mt. Pleasant, Roselle Park; May. *New York*: Aqueduct, Bayville, Hamburg, Ithaca, Long Island, New York City, Rockaway, Sabael, West Point, Yaphank; April to June, August, October. *Ohio*: St. Mary's; May. *Pennsylvania*: Castle Rock; May. *Tennessee*: Hamilton Co., Roane Co.; February. *Texas*: Tyler; February.

DISCUSSION.—Several authors have listed conditions of capture for their specimens, as follows: Van Duzee (1894, p. 169), "Swept from weeds in low, swampy meadow"; Torre Bueno (1915, p. 277) "in beach drift"; Parshley (1923, p. 780), "sometimes found under stones in spring, after hibernation in the adult condition"; Hendrickson (1930, p. 66), "At *Andropogon furcatus* consociet"; Blatchley (1926, p. 87), "by sweeping herbage or sifting debris in low, moist grounds." Two of the specimens examined bore the field notes, "under drift" and "from soil."

Amnestus subferrugineus (Westwood)

PLATE FIGURES 38, 299

Cydnus subferrugineus Westwood, 1837, p. 19.

Amnestus subferrugineus Walker, 1868, p. 536.—Stål, 1876, p. 21.—Signoret, 1883, p. 373, pl. 10, fig. 198.—Lethierry and Severin, 1893, p. 75.—Barber and Bruner, 1932, p. 239.—Torre Bueno, 1939, p. 183.

DIAGNOSIS.—Among those species with five jugal pegs and length less than 2.5, the present species may be recognized by the vertical anterior edges of the prosternal carinae (fig. 38) and the immaculate coria.

DESCRIPTION.—Color: Head, pronotum, scutellum and venter reddish brown; coria yellowish, immaculate; labium and legs yellow.

MALE: Oval, widest behind middle.

Head: Length four-fifths width, 0.45(0.41–0.51):0.53(0.48–0.60); interocular width, 0.32(0.30–0.34); clypeus slightly surpassing apices of juga; latter with five marginal pegs becoming smaller toward eye; surface with coarse punctures between eyes. Antennal segments: I, 0.11(0.10–0.13); II, 0.03(0.03–0.04); III, 0.27(0.23–0.30); IV, 0.25(0.23–0.27); V, 0.30(0.29–0.31). Labium attaining middle of mesosternum. Labial segments: I, 0.16(0.16–0.18); II, 0.24(0.21–0.29); III, 0.29(0.24–0.32); IV, 0.21(0.20–0.23).

Pronotum: Length two-thirds width, 0.85(0.66–1.01):1.23(1.06–1.37); anterior margin shallowly concave; lateral margins weakly concave at basal fourth; transverse impression strongly impressed, marked by row of slightly coarser punctures; anterior lobe strongly tumid, higher than posterior lobe, virtually impunctate except for

two rows laterally and one subapically; posterior lobe, except calli with numerous, close-set punctures.

Scutellum: Length-width ratio, 0.51(0.43–0.56):0.59(0.50–0.68).

Hemelytron: Mesocorium with few scattered punctures apically; exocorium closely punctate across full width.

Propleuron: Prosternal carinae higher than labial II, bluntly triangular, anterior margin vertical (fig. 38).

Legs: Anterior femur ventrally with abruptly curved, stout spine near middle, this spine faintly emarginate apically; anterior femur ventrally with decided angulation near middle; posterior femur ventrally with subapical, oblique, straight spine about two-thirds as long as femoral height.

Terminalia: Gonostylus as illustrated (fig. 299).

Length of body: 2.13(1.82–2.35).

FEMALE: Similar to male but without secondary sexual modifications.

Head: Length-width ratio, 0.42(0.40–0.46):0.53(0.50–0.56); interocular width, 0.30(0.28–0.32). Antennal segments: I, 0.11(0.10–0.13); II, 0.03(0.02–0.04); III, 0.26(0.23–0.30); IV, 0.24(0.23–0.26); V, 0.27(0.24–0.30). Labial segments: I, 0.16(0.15–0.17); II, 0.22(0.21–0.24); III, 0.26(0.26–0.28); IV, 0.21(0.20–0.23).

Pronotum: Length-width ratio, 0.74(0.63–0.83):1.18(1.03–1.30).

Scutellum: Length-width ratio, 0.50(0.40–0.58):0.55(0.48–0.62).

Length of body: 1.98(1.69–2.15).

TYPE DATA.—The type (OxUniv) was reported by Westwood as having come from "Insula Sti. Vincentii."

SPECIMENS STUDIED.—14 males, 21 females, 6 nymphs.

GUATEMALA: Cacao, Trece Aguas, and Alta Vera Paz, Schwarz and Barber, in cave earth, 2 males, 6 females, 6 nymphs (USNM).

PANAMA: Barro Colorado Island, Dec. 1946–Feb. 1947, J. Zetek, Z-5272, 1 male (USNM); July 20, N. Banks, 1 female (MCZ). Cabima, May 28, 1911, A. Busck, 1 female (USNM). Rfo Chilibrillo bat caves, Aug. 29, 1929, Zetek, Molino, and Shannon, 6 males, 2 females (RCF, USNM).

Summit, Nov. 1946, N. L. H. Krauss, 1 female (USNM).

GRENADA: Grand Étang Road, H. H. Smith, 5 males, 10 females (USNM).

DISCUSSION.—In the mind of the author there is still some doubt as to the present use of the name *subferrugineus*. However, the assignment is made tentatively on the strength of Dr. Graham's replies to certain questions pertaining to the type.

Many of the Central American specimens came from "bat caves." Caudell (1924, p. 136) reported more fully on the Panama specimens under the name *A. uhleri*, as follows: "Numerous in the guano. All but egg stage obtained. This species was collected by Schwarz and Barber 'in cave earth' at Cacao, Trece Aguas, Guatemala, April 3, 1906." These latter specimens were in the series studied.

Amnestus trimaculatus, new species

PLATE FIGURES 40, 84, 288

DIAGNOSIS.—Among the species with five marginal jugal pegs, this one is most easily identified by the impunctate outer half of the exocorium.

DESCRIPTION.—Color: Head, pronotum and scutellum dark reddish brown; coria and clavus yellowed, former with apical margin of exocorium and subbasal spot and apex of clavus light to dark fuscous; venter, in fully colored specimens, as dark as pronotum; legs and labium yellowed.

MALE: Oval; widest behind middle.

Head: Length more than three-fourths width, 0.43(0.39–0.46):0.55(0.51–0.58); interocular width, 0.33(0.30–0.37); jugum with five marginal pegs increasing in length apically; surface with broad shallow punctures between eyes. Antennal segments: I, 0.12(0.11–0.16); II, 0.03(0.03–0.04); III, 0.25(0.23–0.30); IV, 0.24(0.22–0.26); V, 0.26(0.23–0.29). Labium reaching between middle coxae. Labial segments: I, 0.20(0.16–0.23); II, 0.29(0.26–0.31); III, 0.25(0.23–0.27); IV, 0.20(0.20–0.22).

Pronotum: Length almost three-fourths width, 0.96(0.75–1.13):1.35(1.20–1.52); anterior margin shallowly concave; lateral margin weakly concave on basal half; transverse impression obtusely impressed, marked by row of close-set, elongate, coarse punctures; anterior lobe moderately tumid, with two or three irregular rows of coarse punctures laterally and subapically, minutely punctate along midline and on center of calli; posterior lobe with scattered punctures becoming finer posteriorly, umbones impunctate.

Scutellum: Length three-fourths width, 0.49(0.45–0.56):0.65(0.60–0.73).

Hemelytron: Mesocorium with few punctures apically; exocorium impunctate on outer half.

Propleuron: Prosternal carinae higher than labial II, ventral margin concave (fig. 40).

Legs: Anterior femur with unequally bifid spine ventrally on basal third, with short, subapical tubercle on posteroventral margin; anterior tibia obtusely angled ventrally near middle; posterior femur angled dorsally near apex, ventrally with weakly curved, stout spine (about two-thirds of femoral height) at apical fourth.

Terminalia: Gonostylus as illustrated (fig. 288).

Length of body: 2.26(1.87–2.60).

FEMALE: Similar to male but lacking secondary sexual modifications.

Head: Length-width ratio, 0.42(0.38–0.46):0.55(0.52–0.62); interocular width, 0.31(0.30–0.34). Antennal segments: I, 0.13(0.12–0.15);

II, 0.03(0.03–0.04); III, 0.27(0.23–0.38); IV, 0.22(0.20–0.28); V, 0.26(0.23–0.32). Labial segments: I, 0.18(0.16–0.23); II, 0.28(0.26–0.30); III, 0.25(0.23–0.28); IV, 0.20(0.20–0.21).

Pronotum: Length-width ratio, 0.82(0.73–0.90):1.31(1.17–1.46).

Scutellum: Length-width ratio, 0.49(0.46–0.53):0.65(0.58–0.76).

Length of body: 2.18(1.98–2.42).

TYPE DATA.—Holotype male and allotype female (both MCZ), "Soledad, Sta. Clara, Aug. 1932, B. B. Leavitt." Paratypes as follows:

CUBA: Same data as types, 5 males, 8 females (MCZ, RCF). San Vicente, Piñar del Río, July 26–Aug. 5, 1939, C. T. Parsons, 1 female (MCZ). Jarahueca, Oriente Province, July 14–18, 1927, S. C. Bruner, taken in woods, 2 males (KU).

DISCUSSION.—The three black marks on each hemelytron suggested the specific name. At first the author considered this to be the same as Distant's *championi* because of the color pattern but Dr. China's notes on the type reports that that form has the exocorium equally punctate across the full width and so cannot be identified with this one.

Amnestus uhleri Distant

PLATE FIGURES 59, 161, 300

Amnestus uhleri Distant, 1880. p. 453.

DIAGNOSIS.—The large size of the body and the greatly elongated clypeus (surpassing apices of juga by more than its own width) strongly mark this species as different from all others in the genus.

DESCRIPTION.—Based on one male and two females. MALE: Elongate-oval, widest behind midlength.

Head: Length slightly less than width, 0.86:0.93; interocular width, 0.52; clypeus surpassing truncated apices of juga by more than its own width; surface irregular, impunctate, shining; jugum with five marginal pegs becoming thicker and longer distally. Antennal segments: I, 0.23; II, 0.06; III, 0.45; IV, 0.40; V, 0.37. Bucculae higher than labial II, abruptly terminated posteriorly; labium reaching bases of middle coxae. Labial segments: I, 0.31; II, 0.36; III, 0.40; IV, 0.36.

Pronotum: Length about two-thirds width, 1.71:2.28; anterior margin shallowly and simply emarginate, anterior angles not cupped; lateral margins entire, straight and subparallel on basal three-fourths; transverse impression moderate, punctate; anterior lobe tumid, impunctate except for single lateral subapical row of very closely set, coarse punctures; posterior lobe, except umbones, with numerous small punctures.

Scutellum: Width greater than length, 1.10:0.94.

Hemelytron: Mesocorium with numerous punctures becoming finer and closer apically; exocorium with numerous punctures becoming obsolete toward costa; costa subparallel on basal half.

Propleuron: Prosternal carinae about as high as labial II, evanescent anteriorly, obtusely angled posteriorly.

Legs: Anterior femur ventrally with premedian stout, unequally furcate spine; anterior tibia with ventral margin straight, neither angled nor toothed medially; posterior femur with subapical spine spinose almost rectangularly bent at middle (fig. 161).

Terminalia: Gonostylus as illustrated (fig. 300).

Length of body: 4.17.

FEMALE: Similar to male, except anterior pronotal lobe with minute but distinct punctures discally in addition to subapical and lateral rows of coarser punctures; anterior femur not armed ventrally; posterior femur ventrally with simple, moderate, oblique spine subapically.

Head: Length-width ratio, 0.91(0.90–0.92):0.98(0.95–1.02); interocular width, 0.56(0.52–0.60). Antennal segments: I, 0.22(0.22–0.23); II, 0.07(0.07–0.08); III, 0.44(0.43–0.45); IV, 0.35(0.35–0.36); V, 0.38(0.36–0.40). Labial segments: I, 0.33(0.32–0.35); II, 0.36(0.36–0.36); III, 0.44(0.43–0.45); IV, 0.36(0.34–0.38).

Pronotum: Length-width ratio, 1.75(1.62–1.89):2.41(2.28–2.55).

Scutellum: Width-length ratio, 1.29(1.20–1.39):1.06(0.98–1.14).

Length of body: 4.25(4.04–4.46).

TYPE DATA.—The types (BrM) were listed by Distant as coming from "Guatemala, Zapote (Champion); Panama, Volcán de Chiriqui, 4000 to 6000 feet (Champion)."

SPECIMENS STUDIED.—1 male, 2 females.

MEXICO: *Mexico*: Tejuipilco, June 20, 1933, H. E. Hinton, R. L. Usinger, 1 female (RLU). *Veracruz*: Orizaba, Bilimek, 1883, Feb., 1 male, 1 female (Wien).

DISCUSSION.—This "giant" species of *Amnestus* is strongly marked by the greatly prolonged clypeus as well as the type of armature on the posterior femur of both sexes, so it should not be confused with any other known species of the genus.

Unplaced species of *Amnestus*

The following four species were described by Distant (1893). None of these species appeared to be among the material examined and there are not enough data available to permit accurate placement of them in the key or in synonymy. Dr. China informed the author that the types (BrM) are females with five marginal pegs on each jugum. Further study of the types is necessary. To complete the list of species for the region indicated in the title of this paper, the original descriptions are quoted.

Amnestus signoreti Distant*Amnestus signoreti* Distant, 1893, p. 452.

ORIGINAL DESCRIPTION:

Black; lateral and frontal margins of head, lateral margins of pronotum and corium, legs, and antennae pale castaneous. Head with the usual frontal and lateral spines; head, pronotum, scutellum, and corium thickly and coarsely punctate; pronotum with a somewhat obscure transverse incision; membrane pale hyaline, ochraceous at base.

Long. $2\frac{1}{2}$ millim.

Hab. GUATEMALA, Quiché Mts. 7000 to 9000 feet (*Champion*).

The thickly and coarsely punctured upper surface and the pale castaneous lateral margins are the salient features of this species, of which we possess only a single example.

REMARKS.—The Zoological Record (vol. 90, p. 477) review of Carvalho's (Bol. Mus. Nac. Rio de Janeiro, No. 118, 1952) treatment of the Miridae in the Biologia Centrali-Americana reported that *Amnestus signoreti* Distant had been transferred to the mirid genus *Mimoncopeltus*. This is in error. In the above paper Carvalho did not indicate Distant's generic placement of the species; and the reviewer, who apparently overlooked the mirid species *Lygdus signoreti* described in a footnote on page 419, used the combination *Amnestus signoreti* instead.

Amnestus dallasi Distant*Amnestus dallasi* Distant, 1893, p. 453.

ORIGINAL DESCRIPTION:

Black; antennae, eyes, lateral margins of the pronotum, a broad sublateral fascia to the corium, and the legs pale castaneous; membrane pale ochraceous and subhyaline, the base and apex very pale castaneous. Head coarsely punctate, with the frontal and marginal spines well developed; pronotum with an obscure transverse incision, the anterior lobe with a few scattered discal punctures, and thickly and coarsely punctate at the lateral margins, posterior lobe and scutellum thickly and coarsely punctate; corium more finely punctate, the posterior discal and marginal area impunctate.

Long. 5 millim.

Hab. MEXICO, Chilpancingo in Guerrero (*H. H. Smith*).

A single example.

Amnestus bergrothi Distant*Amnestus bergrothi* Distant, 1893, p. 453.

ORIGINAL DESCRIPTION:

Allied to . . . *A. uhleri*, but smaller, the anterior lobe of the pronotum more punctate; apical margin of the corium concolorous, the lateral spines of the head much longer and equal in length to those of the frontal lobe.

Long. 3 millim.

Hab. MEXICO, near the city of Teapa in Tabasco (*H. H. Smith*); GUATEMALA, Pantaleon, Dueñas, San Gerónimo (*Champion*).

Nine examples.

Amnestus stali Distant

Amnestus stali Distant, 1893, p. 454.

ORIGINAL DESCRIPTION:

Head and pronotum castaneous, scutellum black, corium, legs, and antennae ochraceous, apical area of the corium black. Head coarsely punctate, the frontal and lateral spines equally long; pronotum with a distinct transverse impression considerably before the middle, anterior lobe with the anterior and lateral margins thickly and coarsely punctate, and with discal punctures at centre and lateral areas, posterior lobe and scutellum thickly and coarsely punctate; corium more finely punctate, the posterior disc impunctate.

Long. 3 millim.

Hab. GUATEMALA; Quiché Mts. 7000 to 9000 feet (*Champion*).

Allied to the preceding species [*bergrothi*] but structurally distinct by having the pronotum transversely constricted nearer the posterior margin. We have received two examples.

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Plates

(With plate figures 1-300)



2



3



4

General habitus, dorsal view: 1, *Schirus cinctus albonotatus* Dallas; 2, *Amnestus spinifrons* (Say); 3, *Scaptocoris divergens*, new species; 4, *Cydnus aterrimus* (Forster).



5



6



7



8

General habitus, dorsal view: 5, *Rhytidoporus indentatus* (Uhler); 6, *Tominotus signoreti* (Mulsant and Rey); 7, *Onalips nigerrimus* (Dallas); 8, *Microporus obliquus* Uhler.



9



10



11



12

General habitus, dorsal view: 9, *Macroporus repetitus* Uhler; 10, *Cyrtomenus ciliatus* (Palisot de Beauvois); 11, *Prolobodes giganteus* (Burmeister); 12, *Pangaeus congruus* (Uhler).



13



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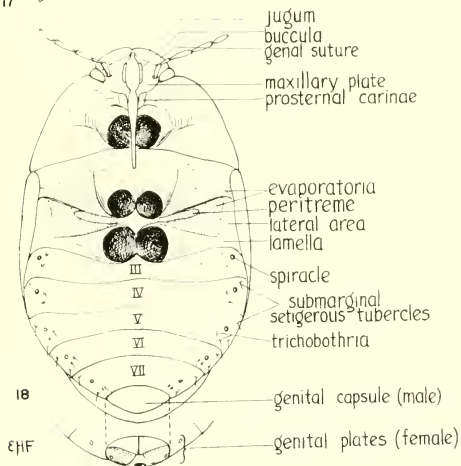
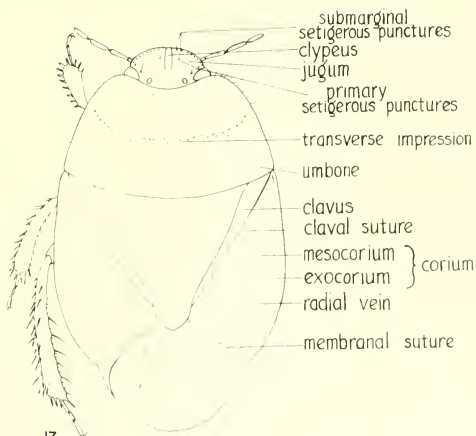


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16

General habitus, dorsal view: 13, *Melanaethus robustus* Uhler; 14, *Pangaeus aethiops* (Fabricius); 15, *Ectinopus holomelas* (Burmeister); 16, *Dallasiellus longulus* (Dallas).



External features used in keys and descriptions: 17, *Prolobodes giganteus*, dorsal view; 18, *Prolobodes giganteus*, ventral view of male, with projection showing external genitalia of female.

PLATE 6. STRUCTURAL DETAILS

Heads—lateral views

- | | |
|---|--|
| 19. <i>Sehirus cinctus</i> , $\times 8$ | 30. <i>Macroporus repetitus</i> , $\times 16$ |
| 20. <i>Scaptocoris divergens</i> , $\times 8$ | 31. <i>Onalips nigerrimus</i> , $\times 13$ |
| 21. <i>Cydnus aterrimus</i> , $\times 8$ | 32. <i>Rhytidoporus indentatus</i> , $\times 16$ |
| 22. <i>Ectinopus holomelas</i> , $\times 12$ | 33. <i>Pangaeus congruus</i> , $\times 13$ |
| 23. <i>Melanaethus robustus</i> , $\times 16$ | 34. <i>Cyrtomenus ciliatus</i> , $\times 13$ |
| 24. <i>Pangaeus aethiops</i> , $\times 6$ | 35. <i>Tomintus signoreti</i> , $\times 13$ |
| 25. <i>Dallasiellus longulus</i> , $\times 9$ | 36. <i>Prolobodes giganteus</i> , $\times 5$ |
| 26. <i>Dallasiellus reflexus</i> , $\times 8$ | 37. <i>Amnestus spinifrons</i> , $\times 16$ |
| 27. <i>Dallasiellus levipennis</i> , $\times 6$ | 38. <i>Amnestus subferrugineus</i> , $\times 21$ |
| 28. <i>Microporus obliquus</i> , $\times 13$ | 39. <i>Amnestus foveatus</i> , $\times 21$ |
| 29. <i>Microporus obliquus</i> , $\times 13$ | 40. <i>Amnestus trimaculatus</i> , $\times 21$ |

Heads—dorsal view

- | | |
|--|---|
| 41. <i>Dallasiellus longulus</i> , $\times 8$ | 46. <i>Pangaeus aethiops</i> , $\times 6$ |
| 42. <i>Dallasiellus lugubris</i> , $\times 8$ | 47. <i>Pangaeus punctinotum</i> , $\times 10$ |
| 43. <i>Dallasiellus lugubris</i> , $\times 8$ | 48. <i>Pangaeus rugiceps</i> , $\times 10$ |
| 44. <i>Dallasiellus bacchinus</i> , $\times 8$ | 49. <i>Pangaeus setosus</i> , $\times 8$ |
| 45. <i>Dallasiellus scilus</i> , $\times 8$ | 50. <i>Melanaethus robustus</i> , $\times 13$ |

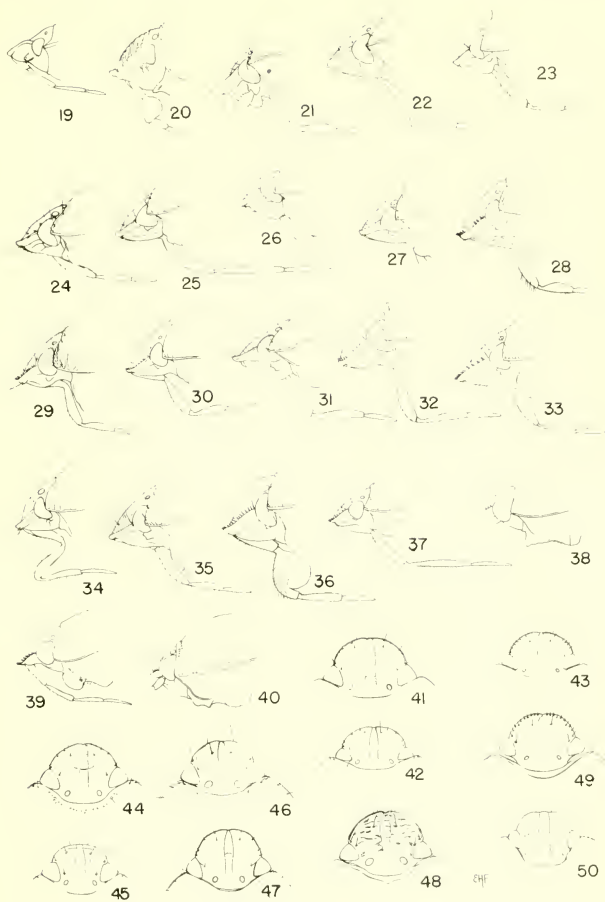


PLATE 7. STRUCTURAL DETAILS

Heads—dorsal views

- | | |
|--|---|
| 51. <i>Scaptocoris divergens</i> , × 8 | 56. <i>Cyrtomenus ciliatus</i> , × 6 |
| 52. <i>Rhytidoporus indenatus</i> , × 10 | 57. <i>Cyrtomenus crassus</i> , × 6 |
| 53. <i>Rhytidoporus barberi</i> , × 10 | 58. <i>Cyrtomenus emarginatus</i> , × 5 |
| 54. <i>Tominotus communis</i> , × 8 | 59. <i>Amnestus uhleri</i> , × 16 |
| 55. <i>Tominotus communis</i> , × 8 | 60. <i>Amnestus sexdentatus</i> , × 21 |
| 61. <i>Amnestus radialis</i> , × 25 | |

Heads and pronota—dorsal view

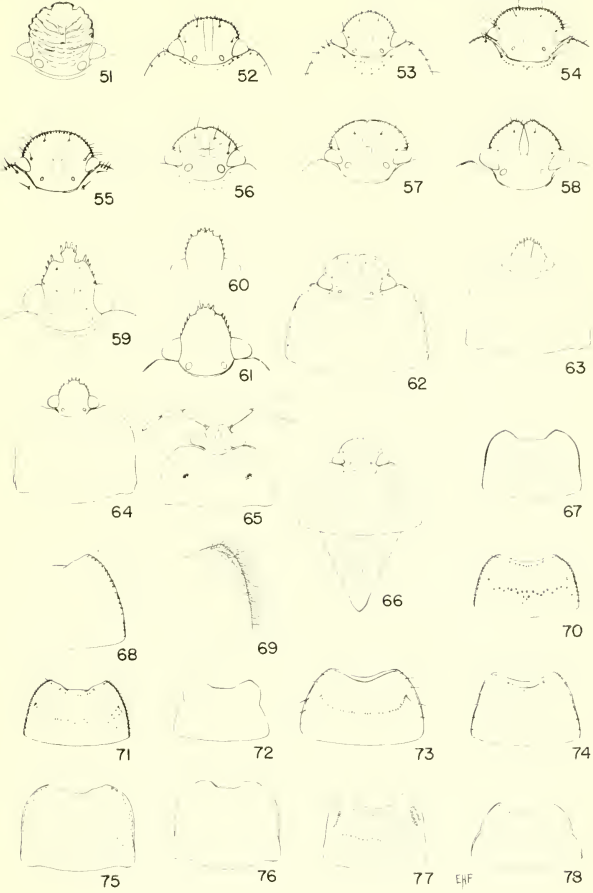
- | | |
|---|---------------------------------------|
| 62. <i>Dallasiellus megaloccephalus</i> , × 5 | 64. <i>Amnestus explanatus</i> , × 16 |
| 63. <i>Amnestus pusillus</i> , × 16 | 65. <i>Garsauria aradooides</i> , × 5 |

Head, pronotum and scutellum—dorsal view

66. *Ectinopus rugoscutum*, × 5

Pronota—dorsal view

- | | |
|--|--|
| 67. <i>Melanaethus noctivagus</i> , × 10 | 73. <i>Pangaeus rugonotum</i> , × 6 |
| 68. <i>Tominotus brevis</i> , × 6 | 74. <i>Pangaeus punctinotum</i> , × 6 |
| 69. <i>Tominotus hogenhoferi</i> , × 5 | 75. <i>Amnestus lautipennis</i> , × 16 |
| 70. <i>Tominotus curvipes</i> , × 3 | 76. <i>Amnestus radialis</i> , × 13 |
| 71. <i>Tominotus curvipes</i> , × 3 | 77. <i>Dallasiellus longirostris</i> , × 6 |
| 72. <i>Tominotus communis</i> , × 4 | 78. <i>Dallasiellus americanus</i> , × 5 |



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PLATE 8. STRUCTURAL DETAILS

Scutelli—dorsal views

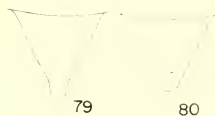
79. *Tominotus communis*, × 5 80. *Tominotus signoreti*, × 6

Hemelytra—dorsal views

81. *Tominotus blanchardi*, × 6 83. *Pangaeus quinquespinosus*, × 5
82. *Tominotus inpuncticollis*, × 5 84. *Amnestus trimaculatus*, × 10

Mesoleusae metapleurae—ventral view

85. *Scapicoris castaneus*, × 8 93a. *Rhytidoporus compactus*, × 13
86. *Sehirus cinctus*, × 13 93b. *Rhytidoporus diminutus*, × 13
87. *Sehirus morio*, × 8 94. *Rhytidoporus lucida*, × 21
88. *Garsauria aradoides*, × 10 95. *Onalips nigerrimus*, × 8
89. *Cydnus aterrimus*, × 8 96. *Melanaethus robustus*, × 25
90a. *Microporus obliquus*, × 16 97. *Melanaethus cavicollis*, × 16
90b-d. *Microporus testudinatus*, × 16 98. *Geotomus punctulatus*, × 16
91. *Macroporus repetitus*, × 21 99. *Aethus indicus*, × 13
92. *Rhytidoporus indentatus*, × 16



79



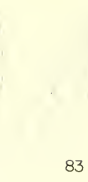
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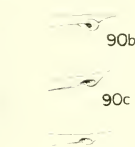
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90a



90b



90c



90d



91



92



93a



93b



94



96



97



98



99

PLATE 9. STRUCTURAL DETAILS

Mesopleurae and metapleurae—ventral view

- | | |
|---|---|
| 100. <i>Ectinopus holomelas</i> , $\times 8$ | 107. <i>Dallasiellus longulus</i> , $\times 10$ |
| 101. <i>Ectinopus muticus</i> , $\times 8$ | 108. <i>Dallasiellus interruptus</i> , $\times 9$ |
| 102. <i>Pangaeus congruus</i> , $\times 16$ | 109. <i>Cyrtomenus ciliatus</i> , $\times 10$ |
| 103. <i>Pangaeus aethiops</i> , $\times 8$ | 110. <i>Prolobodes giganteus</i> , $\times 5$ |
| 104. <i>Pangaeus bilineatus</i> , $\times 8$ | 111. <i>Tominotus signoreti</i> , $\times 16$ |
| 105. <i>Dallasiellus americanus</i> , $\times 13$ | 112. <i>Pseudonalips cribratus</i> , $\times 8$ |
| 106. <i>Dallasiellus discrepans</i> , $\times 6$ | 113. <i>Amnestus spinifrons</i> , $\times 26$ |

Middle coxa—ventral view

114. *Cydnus aterrimus*, $\times 10$

Anterior tibiae—posterior view

115. *Scaptocoris divergens*, $\times 4$

Anterior tibiae—anterior views

- | | |
|---|--|
| 116. <i>Cydnus aterrimus</i> , $\times 4$ | 118. <i>Microporus obliquus</i> , $\times 9$ |
| 117. <i>Tominotus signoreti</i> , $\times 16$ | 119. <i>Onalips nigerrimus</i> , $\times 8$ |



100



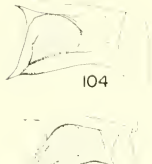
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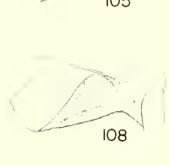
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107



108



109



110



111



112



113



114



116



117



118



119

PLATE 10. STRUCTURAL DETAILS

Anterior tibiae— anterior views

- | | |
|---|---|
| 120. <i>Melanaethus robustus</i> , $\times 21$ | 126. <i>Ectinopus holomelas</i> , $\times 6$ |
| 121. <i>Macroporus repetitus</i> , $\times 21$ | 127. <i>Pangaeus aethiops</i> , $\times 9$ |
| 122. <i>Prolobodes giganteus</i> , $\times 5$ | 128. <i>Dallasiellus dilatipes</i> , $\times 8$ |
| 123. <i>Cyrtomenus ciliatus</i> , $\times 6$ | 129. <i>Dallasiellus longulus</i> , $\times 13$ |
| 124. <i>Rhytidoporus indentatus</i> , $\times 21$ | 130. <i>Sehirus cinctus</i> , $\times 10$ |
| 125. <i>Pangaeus congruus</i> , $\times 8$ | 131. <i>Amnestus spinifrons</i> , $\times 25$ |
| 132. <i>Amnestus basidentatus</i> , $\times 25$ | |

Middle tibia—posterior view

133. *Scaptocoris divergens*, $\times 8$

Posterior tibiae—apical views

- | | |
|--|--|
| 134. <i>Scaptocoris talpa</i> , $\times 5$ | 135. <i>Scaptocoris castaneus</i> , $\times 5$ |
|--|--|

Posterior tibiae—posterior views

- | | |
|--|---|
| 136. <i>Scaptocoris giselleae</i> , $\times 5$ | 146. <i>Rhytidoporus indentatus</i> , $\times 13$ |
| 137. <i>Scaptocoris divergens</i> , $\times 5$ | 147. <i>Onalips nigerrimus</i> , $\times 6$ |
| 138. <i>Sehirus cinctus</i> , $\times 10$ | 148. <i>Dallasiellus discrepans</i> , $\times 5$ |
| 139. <i>Cydnus aterrimus</i> , $\times 3$ | 149. <i>Dallasiellus dilatipes</i> , $\times 5$ |
| 140. <i>Tominotus signoreti</i> , $\times 10$ | 150. <i>Dallasiellus longulus</i> , $\times 8$ |
| 141. <i>Prolobodes giganteus</i> , $\times 4$ | 151. <i>Microporus obliquus</i> , $\times 13$ |
| 142. <i>Cyrtomenus ciliatus</i> , $\times 6$ | 152. <i>Pangaeus congruus</i> , $\times 10$ |
| 143. <i>Macroporus repetitus</i> , $\times 13$ | 153. <i>Pangaeus tuberculipes</i> , $\times 6$ |
| 144. <i>Melanaethus robustus</i> , $\times 16$ | 154. <i>Pangaeus tuberculipes</i> , $\times 6$ |
| 145. <i>Ectinopus holomelas</i> , $\times 3$ | 155. <i>Pangaeus aethiops</i> , $\times 5$ |



PLATE II. STRUCTURAL DETAILS

Posterior legs—posterior views

- | | |
|---|---|
| 156. <i>Pangaeus docilis</i> , $\times 13$ | 160. <i>Amnestus spinifrons</i> , $\times 21$ |
| 157. <i>Pangaeus piceatus</i> , $\times 10$ | 161. <i>Amnestus uhleri</i> , $\times 13$ |
| 158. <i>Pangaeus quinquespinosus</i> , $\times 9$ | 162. <i>Amnestus pusio</i> , $\times 21$ |
| 159. <i>Pangaeus xanthopus</i> , $\times 6$ | 163. <i>Amnestus pusillus</i> , $\times 21$ |
| | 164. <i>Amnestus pusillus</i> , $\times 21$ |

Metathoracic wings—anterior parts

- | | |
|-----------------------------------|---------------------------------|
| 165. <i>Scaptocoris divergens</i> | 167. <i>Cydnus aterrimus</i> |
| 166. <i>Sehirus morio</i> | 168. <i>Amnestus spinifrons</i> |
| | 169. <i>Garsauria aradoides</i> |

Sternites—ventral views

- | | |
|-----------------------------------|---------------------------------|
| 170. <i>Scaptocoris divergens</i> | 172. <i>Cydnus aterrimus</i> |
| 171. <i>Sehirus morio</i> | 173. <i>Amnestus spinifrons</i> |
| | 174. <i>Garsauria aradoides</i> |

Male terminalia—posterior views

- | | |
|--|---|
| 175. <i>Dallasiellus megalcephalus</i> , $\times 12$ | 178. <i>Scaptocoris divergens</i> , $\times 16$ |
| 176. <i>Dallasiellus laevis</i> , $\times 16$ | 179. <i>Amnestus spinifrons</i> , $\times 16$ |
| 177. <i>Pangaeus aethiops</i> , $\times 9$ | 180. <i>Onalips bisinuatus</i> , $\times 2$ |
| | 181. <i>Onalips completus</i> , $\times 2$ |

Female terminalia—posterior views

- | | |
|---|--|
| 182. <i>Ectinopus holomelas</i> , $\times 5$ | 185. <i>Amnestus spinifrons</i> , $\times 16$ |
| 183. <i>Ectinopus rugoscutum</i> , $\times 6$ | 186. <i>Cydnus aterrimus</i> , $\times 16$ |
| 184. <i>Amnestus pusillus</i> , $\times 21$ | 187. <i>Scaptocoris divergens</i> , $\times 8$ |

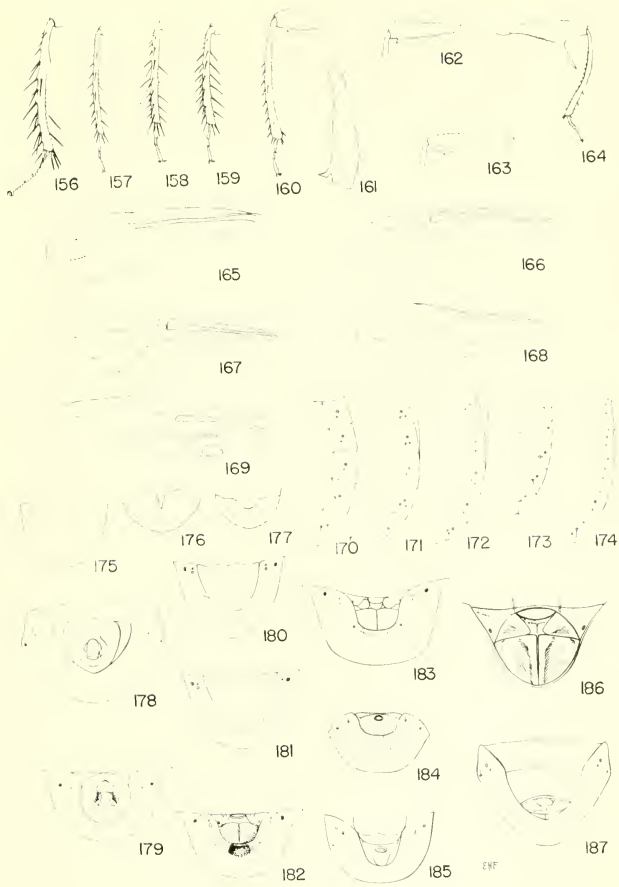


PLATE 12. STRUCTURAL DETAILS

Dextral gonostyli of males—mesal views, $\times 26$

- | | |
|--|--------------------------------------|
| 188. <i>Sehirus cinctus</i> | 215. <i>Melanaethus robustus</i> |
| 189. <i>Scaptocoris divergens</i> | 216. <i>Melanaethus spinolae</i> |
| 190. <i>Scaptocoris minor</i> | 217. <i>Melanaethus subpunctatus</i> |
| 191. <i>Scaptocoris talpa</i> | 218. <i>Melanaethus uhleri</i> |
| 192. <i>Scaptocoris castaneus</i> | 219. <i>Pangaeus congruus</i> |
| 193. <i>Rhytidoporus indentatus</i> | 220. <i>Pangaeus bilineatus</i> |
| 194. <i>Rhytidoporus barberi</i> | 221. <i>Pangaeus rugiceps</i> |
| 195. <i>Rhytidoporus compactus</i> | 222. <i>Pangaeus setosus</i> |
| 196. <i>Microporus repetitus</i> | 223. <i>Pangaeus tuberculipes</i> |
| 197. <i>Microporus testudinatus</i> | 224. <i>Pangaeus pluripunctatus</i> |
| 198. <i>Microporus obliquus</i> | 225. <i>Pangaeus bisetosus</i> |
| 199. Number omitted | 226. <i>Pangaeus docilis</i> |
| 200. <i>Cydnus aterrimus</i> | 227. <i>Pangaeus impressus</i> |
| 201. <i>Ectinopus holomelas</i> | 228. <i>Pangaeus laevigatus</i> |
| 202. <i>Ectinopus rugoseutum</i> | 229. <i>Pangaeus moestus</i> |
| 203. <i>Onalips bisinuatus</i> | 230. <i>Pangaeus neogeus</i> |
| 204. <i>Onalips completus</i> | 231. <i>Pangaeus piceatus</i> |
| 205. <i>Onalips nigerrimus</i> | 232. <i>Pangaeus punctinotum</i> |
| 206. <i>Melanaethus aereus</i> | 233. <i>Pangaeus rubrifemur</i> |
| 207. <i>Melanaethus anthracinus</i> | 234. <i>Pangaeus quinquespinosus</i> |
| 208. <i>Melanaethus cavicollis</i> | 235. <i>Pangaeus aethiops</i> |
| 209. <i>Melanaethus crenatus</i> | 236a. <i>Pangaeus semibrunneus</i> |
| 210. <i>Melanaethus noctivagus</i> | 236b. <i>Pangaeus xanthopus</i> |
| 211. <i>Melanaethus mixtus</i> | 237. <i>Prolobodes giganteus</i> |
| 212. <i>Melanaethus pennsylvanicus</i> | 238. <i>Prolobodes gigas</i> |
| 213. <i>Melanaethus subglaber</i> | 239. <i>Prolobodes reductum</i> |
| 214. <i>Melanaethus planifrons</i> | 240. <i>Cyrtomenus emarginatus</i> |
| 241. <i>Cyrtomenus teter</i> | |

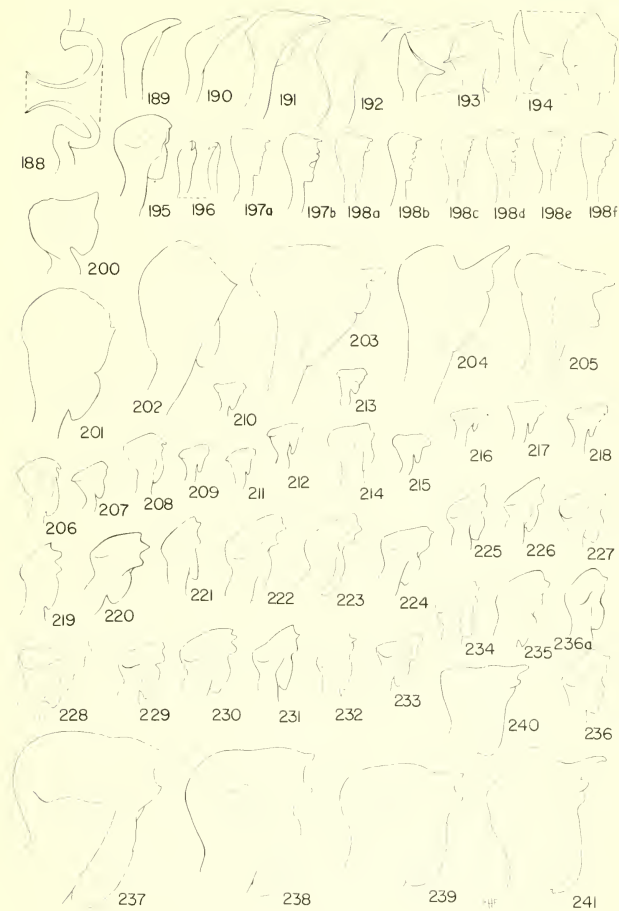
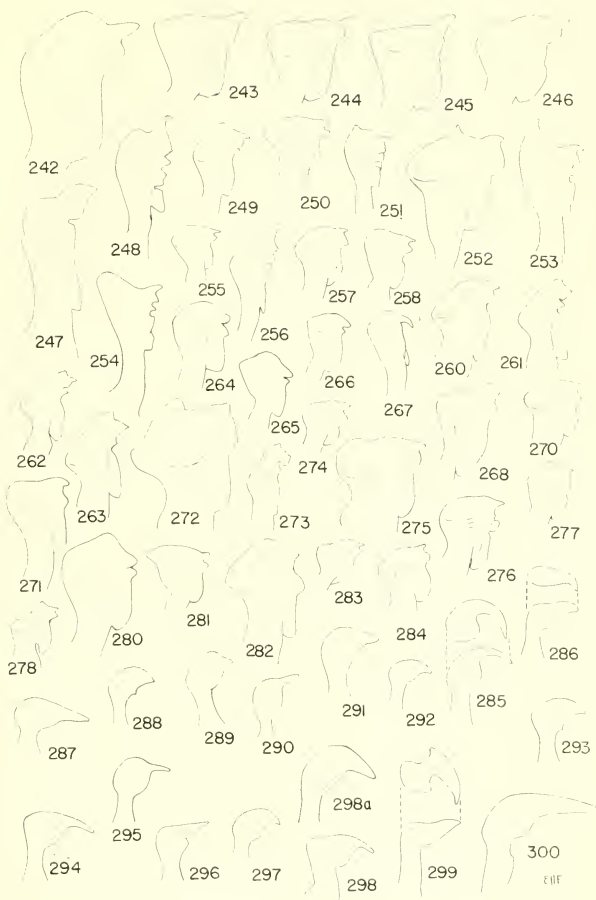


PLATE 13. STRUCTURAL DETAILS

Dextral gonostylus of males—mesal view

Figs. 242–284, $\times 26$; Figs. 285–300, $\times 110$

- | | |
|---|--|
| 242. <i>Cyrtomenus grossus</i> | 272. <i>Dallasiellus dilatipes</i> |
| 243. <i>Cyrtomenus bergi</i> | 273. <i>Dallasiellus fusus</i> |
| 244. <i>Cyrtomenus ciliatus</i> | 274. <i>Dallasiellus lugubris</i> |
| 245. <i>Cyrtomenus crassus</i> | 275. <i>Dallasiellus interruptus</i> |
| 246. <i>Cyrtomenus mirabilis</i> | 276. <i>Dallasiellus longulus</i> |
| 247. <i>Tominotus brevirostris</i> | 277. <i>Dallasiellus murinus</i> |
| 248. <i>Tominotus brevis</i> | 278. <i>Dallasiellus orchidiphilus</i> |
| 249. <i>Tominotus caecus</i> | 279. Number omitted |
| 250. <i>Tominotus communis</i> | 280. <i>Dallasiellus planicollis</i> |
| 251. <i>Tominotus conformis</i> | 281. <i>Dallasiellus puncticeps</i> |
| 252. <i>Tominotus curvipes</i> | 282. <i>Dallasiellus solitaria</i> |
| 253. <i>Tominotus hogenhoferi</i> | 283. <i>Dallasiellus viduus</i> |
| 254. <i>Tominotus impuncticollis</i> | 284. <i>Dallasiellus bacchinus</i> |
| 255. <i>Tominotus laeviculus</i> | 285. <i>Amnestus basidentatus</i> |
| 256. <i>Tominotus signoreti</i> | 286. <i>Amnestus championi</i> |
| 257. <i>Tominotus unisetosus</i> | 286a. <i>Amnestus lateralis</i> |
| 258. <i>Tominotus inconspicuus</i> | 287. <i>Amnestus brunneus</i> |
| 259. Number omitted | 288. <i>Amnestus trimaculatus</i> |
| 260. <i>Dallasiellus californicus</i> | 289. <i>Amnestus cribratus</i> |
| 261. <i>Dallasiellus discrepans</i> | 290. <i>Amnestus explanatus</i> |
| 262. <i>Dallasiellus puncticoria</i> | 291. <i>Amnestus forreri</i> |
| 263. <i>Dallasiellus vanduzeei</i> | 292. <i>Amnestus lautipennis</i> |
| 264. <i>Dallasiellus americanus</i> | 293. <i>Amnestus foveatus</i> |
| 265. <i>Dallasiellus scitus</i> | 294. <i>Amnestus pallidus</i> |
| 266. <i>Dallasiellus laevis</i> | 295. <i>Amnestus pusillus</i> |
| 267. <i>Dallasiellus longirostris</i> | 296. <i>Amnestus pusio</i> |
| 268. <i>Dallasiellus megalocephalus</i> | 297. <i>Amnestus radialis</i> |
| 269. Number omitted | 298. <i>Amnestus spinifrons</i> |
| 270. <i>Dallasiellus alutaceus</i> | 299. <i>Amnestus subferrugineus</i> |
| 271. <i>Dallasiellus bergi</i> | 300. <i>Amnestus uhleri</i> |



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