

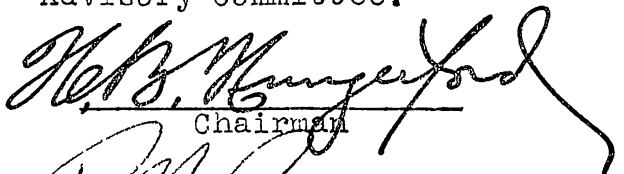
A MONOGRAPH OF THE SALDIDAE (HEMIPTERA).
OF NORTH AND CENTRAL AMERICA
AND THE WEST INDIES

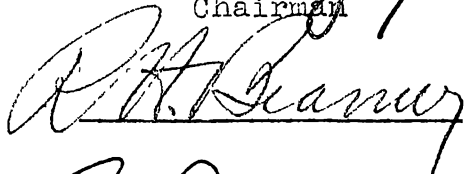
by

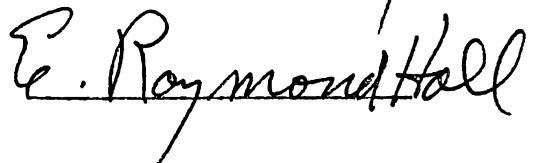
Burton B. Hodgden
A.B., University of Kansas, 1942

Submitted to the Department of
Entomology and the Faculty of the
Graduate School of the Univer-
sity of Kansas in partial ful-
fillment of the requirements
for the degree of Doctor of
Philosophy.

Advisory Committee:


Chairman





May, 1949

ABSTRACT

This paper includes descriptions of three subfamilies, five genera, forty-five species and one subspecies of the family Saldidae (Insecta, Hemiptera) from North America, Central America and the Antilles. In addition to the descriptions, a bibliography and the synonymy is given for each genus, species and subspecies. Detailed data on distribution is presented for each genus, species and subspecies. Keys to the subfamilies, genera, species and subspecies are included.

A new subfamily, Pentacorinae, is described for Pentacora Reuter and Chiloxanthus Reuter. Nine new species are named and described: Salda beameri from New Mexico, Salda dentulata from Grenada, British West Indies, Salda dewsi from Costa Rica and Mexico, Salda hispida from Mexico, Salda hungerfordi from New York and Florida, Salda laviniae from Texas, New Mexico, Arizona, Utah and Colorado, Salda sectilis from the Canal Zone and Panama, Salda tepidaria from Mexico and Salda villosa from California. A new subspecies, Pentacora signoretii yucatanana, is described from Progreso, Yucatan, Mexico.

The following generic names become synonyms:
Lampracanthia Reuter, 1912 (= Salda Fabricius, 1803),

Teloleuca Reuter, 1912 (= Salda Fabricius, 1803),
Ioscytus Reuter, 1912 (= Salda Fabricius, 1803), Micra-
canthia Reuter, 1912 (= Salda Fabricius, 1803), and
Saldula Van Duzee, 1914 (= Salda Fabricius, 1803). The
subgeneric name Chartolampra Bueno, 1923 falls as a
synonym of the genus Salda Fabricius, in which the
writer recognizes no subgenera. The following specific
names become synonyms: Salda borealis, Stal, 1863
(= Acanthia stellata Curtis, 1835), Acanthia bellatrix
Eueno, 1924 (= Salda bifasciata Thomson, 1871), Charto-
scirta (Chartolampra) cursoritans Eueno, 1923 (= Salda
elongata Uhler, 1877), Acanthia celeripedis Bueno, 1924
(= Salda elongata Uhler, 1877), Saldula buenoi McDunnough,
1923 (= Acanthia lugubris Say, 1832), Salda opacipennis
Champion, 1901 (= Salda orbiculata Uhler, 1877), Salda
luctuosa Stal, 1859 (= Acanthia pallipes Fabricius,
1794), Acanthia interstitialis Say, 1825 (= Acanthia
pallipes Fabricius, 1794), Acanthia laticollis Reuter,
1875 (= Acanthia pallipes Fabricius, 1794), Salda
reperta Uhler, 1877 (= Acanthia pallipes Fabricius,
1794), Salda dispersa Uhler, 1893 (= Acanthia pallipes
Fabricius, 1794), Salda explanata Uhler, 1893
(= Acanthia pallipes Fabricius, 1794), Salda tropicalis
Champion, 1901 (= Acanthia pallipes Fabricius, 1794)
and Micracanthia pusilla Van Duzee, 1914 (= Salda quadri-
maculata Champion, 1901). The following varietal names
become synonyms: Salda polita flavicosta Reuter, 1912

(= Salda polita Uhler, 1877) and Saldoidea slossoni wileyi Hungerford, 1922 (= Saldoidea slossoni Osborn, 1901).

The habitats, activities and life cycles of Salda pallipes (F.), Salda humilis (Say) and Salda confluenta (Say) are described. The nomenclatural history of the family is presented and generic concepts are discussed. Owing to the variability of the characteristics employed by Reuter (1912c) as generic criteria several of his generic names are placed as synonyms (see preceding paragraph).

The phylogenetic position of the family is discussed. Affinities with terrestrial and aquatic families as well as with the semiaquatic families of the Hemiptera are disclosed. Morphologically the Saldidae are among the most generalized of the families of Hemiptera. They appear to represent a link between the terrestrial Hemiptera and the secondarily aquatic families. The probable phylogenetic arrangement of the genera begins with Pentacora from which Chiloxanthus is derived. Two groups of genera diverge from Chiloxanthus. The first includes Salda from which arise Calacanthia, Saldoidea and Chartoscirta; the second includes Halosalda from which arise Omania and Orthophrys. Pentacora signoretii (Guerin) appears to be the most

generalized species of the family from the morphological standpoint.

The specific identity of Nearctic and Palaearctic specimens of Salda pallipes (F.), Salda saltatoria (L.) and Salda littoralis (L.) is verified. Nearctic records of the Palaearctic species Salda xanthochila (Fieber) and Salda xanthochila (Zetterstedt) represent misidentifications of Salda pallipes (F.). Chiloxanthus stellatus (Curtis) and Salda bifasciata Thomson are new additions to the list of Holarctic species. In addition to the circumpolar distribution of the Arctic species several distributional patterns have emerged. The saldid fauna of Central America and that of the southwestern United States are similar. The species named from Florida are found to occur along the entire Gulf Coast and the South Atlantic seaboard of the United States; they extend also into Cuba and Porto Rico. Species which are widely distributed in Canada are restricted to the mountain chains of the eastern and western United States. Insular and coastal distribution is noted for the halophilic species Pentacora sphaelata (Uhler), Pentacora pellita (Uhler) and Pentacora signoretii (Guerin).

A MONOGRAPH OF THE SALDIDAE (HEMIPTERA)
OF NORTH AND CENTRAL AMERICA
AND THE WEST INDIES.

Burton B. Hodgden, University of Kansas

CONTENTS

I.	Introduction	1
II.	Biology of the Saldidae	3
	Habitat.	4
	Activity	6
	Food	9
	Mating	11
	Oviposition.	13
	Immature Stages	14
	Hibernation	15
	Collecting Techniques.	16
III.	Taxonomy of the Saldidae	17
	Taxonomic History and Generic Concepts.	17
	Phylogeny.	37
	Distribution	46
	Identification Techniques	48
	Family Characteristics.	54
	Key to Subfamilies	56
	Pentacorinae	57
	<u>Chiloxanthus</u>	58

	<u>Pentacora.</u>	67
	Saldinae	124
	<u>Calacanthia</u>	125
	<u>Salda</u>	132
	Saldoidinae	464
	<u>Saldoida</u>	465
IV.	Acknowledgments.	483
V.	Bibliography.	486
VI.	Index	509
VII.	Plates	.following index

INTRODUCTION

For many years the classification of the American Saldidae has been a difficult task for the hemipterist. No comprehensive monograph exists and few keys are available. This has forced the taxonomist to utilize the original descriptions, or redescrptions, of the individual species, at best a tedious process and one subject to error due to the lack of sufficient comparative data.

Most of the species from America north of Mexico were described by Say in 1832 and by Uhler in his monograph of 1877, which included redescrptions of most of the previously described species, but which did not provide a key. Since 1877 descriptions of new species have been few and are scattered throughout the taxonomic literature. Hungerford (1920a) quotes the original descriptions of the species described prior to that time. Available keys are those of Torre-Bueno (1923b), to the species of Connecticut and adjacent states, Blatchley (1926), to the species of eastern North America, and Usinger (1945), to the species of the genus Saldoida.

Champion (1901) has described the majority of the species recorded from Central America and has provided a useful key for the separation of the species from

this region.

The few known South American species have been described by various authors, principally by Europeans during the nineteenth century. Drake (1948) has published descriptions of several new species, and notes upon the taxonomy of most previously described species. No key exists for the determination of the South American species.

Classification of the species is rendered more difficult by the great variation in color patterns exhibited by some species. Many morphologically distinct species have been identified under a single name owing to similarity in size and color, while many names have been proposed for color or size variants of forms which cannot be distinguished upon a consistent morphological basis. The generic classification has been fully as obscure as that of the species. Reuter (1912) divided the family into many genera, several of which are distinguished from each other by characters which are trivial, highly variable or merely specific in nature.

The principal purpose of this paper is to evaluate the genera and species of the Saldidae of North and Central America and the Antilles and to provide a unified source of taxonomic data concerning them.

The inclusion of the South American species is not feasible, owing to the limited collections from that continent, however, articles concerning South American species are included in the expanded bibliography at the end of the paper. Brief notes on the biology and phylogeny of the Saldidae are included.

BIOLOGY OF THE SALDIDAE

Little is known of the biology of the family. Uhler (1884) published general observations upon the habitats and behavior of American species. The first detailed study of American species was that of Hungerford (1918, 1920a) who figured the eggs and observed the growth and activities of Salda crassicornis Uhler and Salda anthracina Uhler. Wiley (1922) succeeded in rearing Salda major Prov. and Salda pallipes (F.). She described and figured the eggs and each of the nymphal stages of these species. Ekblom (1926) observed the habits of Salda saltatoria (L.) in Sweden and Jordan and Wendt (1938) have recorded observations on Salda littoralis (L.) in Germany. The following brief notes constitute a summary of the observations of the investigators mentioned above, amplified by the observations of the writer on Salda pallipes (F.), Salda humilis (Say) and Salda confluenta (Say).

HABITAT

Saldids are principally shore-dwelling insects. Many species seem to display no preference concerning the nature of the shore; others seem to be more restricted ecologically. Pentacora signoretii (Guérin), Pentacora sphacelata (Uhler), Pentacora mexicana (Van Duzee) and Pentacora pellita (Uhler) are never found on the shores of fresh waters; the latter three species have been found only on ocean beaches and adjacent salt marshes, while Pentacora signoretii has been collected from inland localities which are invariably associated with salt marshed or saline lakes. On the other hand Pentacora ligata (Say) is most usually associated with fresh water, especially small rapid streams. Slosson (1908) has described the environment of Saldoida slossoni Osborn and Saldoida cornuta Osborn. She found them most frequently along the boggy margins of small ponds. Doctor Raymond H. Beamer has observed Saldoida; he has told the writer that they are notably restricted in their distribution, often occupying an area of only a few square yards although there was no apparent difference between their habitat and adjacent areas. The writer has been able to find Salda pallipes in almost any type of fresh water shore environment. This species is also an inhabitant of ocean beaches. Salda humilis is

frequently associated with Salda pallipes on mud flats but ventures farther away from the edge of the water. Salda confluenta may be found in the same locality as Salda pallipes and Salda humilis, but it occupies a different ecological position. It shuns the mud flats, preferring to rest upon rocks and bits of debris at the edge of the water or upon similar objects projecting above the surface of the water.

Saldids may be found some distance removed from the edge of the water. Ekblom (1926) has found Salda saltatoria in moist grassy meadows and upon a wet clay path in a pine forest. The writer has found Salda humilis among mosses growing upon the slopes of a hillside many yards from water. Salda pallipes and Salda humilis have been collected by the writer in shallow, muddy depressions which had previously been inundated but had subsequently lost all traces of open water by evaporation. Uhler (1876) has recorded a similar observation for Pentacora sphaelata. That these insects frequently fly for considerable distances is indicated by their collection in light traps at night; upon one occasion the writer observed a female specimen of Salda humilis in daylight in the business district of Lawrence, Kansas, at least one-fourth of a mile from any typical shore environment. Light trap collections usually yield a predominance of female specimens.

Protective coloration is exhibited by many species. The species of Pentacora, which inhabit sea beaches are predominantly pale yellow, while Pentacora ligata is dark, resembling the color of the dark boulders upon which it rests. Salda pallipes is highly variable in intensity of color. The writer has observed that the pale colored specimens are prevalent upon sandy beaches whereas the dark forms are most frequently observed on mud flats. The eye of the collector is frequently deceived by insects similar in appearance and activity to the saldids. Many kinds of flies and small beetles are confused with Salda pallipes; the resemblance between ants and Saldoidea has been recorded by Slosson (1908). Doctor Beamer has noted that a small beetle resembling Saldoidea is usually found in association with it. Whether or not these similarities are of protective value to the saldids or to the other insects involved is unknown.

ACTIVITY

Observations of activities may be readily carried out by the confinement of specimens in terraria. The writer has utilized large glass terraria, battery jars, finger bowls, petri dishes, jars, bottles and small vials as confinement chambers and rearing quarters.

Damp sand or moistened blotting paper is necessary in the terraria; if insufficient moisture is present the specimens die within a few hours. Coverings for the top of jars are usually unnecessary since the insects cannot fly directly upward. This factor is important because it permits observation of the specimens in the terrarium with a binocular microscope. The binocular microscope may also be used to examine the specimens in terraria made from vials.

The most characteristic activity is the nervous, erratic running or walking about, apparently in search of food. The insect proceeds rapidly for several inches, stops abruptly and then proceeds again, usually at a slight angle to his original direction. While not engaged in searching they are most usually found sitting upon a blade of grass, a stick or a stone preening themselves. The antennae and rostrum are cleaned at frequent intervals by being pulled between the anterior tibiae while the insect industriously rubs the combs of the tibiae against the surface being cleaned. The front legs are used to clean each other. The middle leg is rubbed against either the front leg or hind leg of the same side. The hind tarsi may be rubbed together. The dorsal surface of the hemelytra, the hind wings and the dorsum and venter of the abdomen are cleaned by the combs of the hind tibiae.

These insects are extremely timid and are stimulated to escape activity by the slightest motion or even by the casting of a shadow upon them. The brachypterous forms are incapable of flight and attempt to escape by running and by short jumps. They seek the nearest vegetation, stone or crevice in the earth as a hiding place. The macropterous forms depend upon their rapid flight for escape. The enlarged hind coxae and the elongated, ventrally-spined hind tibiae facilitate a rapid take-off. Their flights are usually short, varying from a few inches to a yard; these flights seldom take them more than a few inches above the surface of the ground or water. If the insect is near the edge of the water, more sustained flights occur. The usual flight path is toward the water although they almost invariably curve back to land upon the shore at a point distant from that from which they arose. If an object is projecting above the surface of the water they will frequently alight upon it instead of returning immediately to the shore. Those which alight in the water apparently do so accidentally. When this happens they swim immediately toward the nearest object or toward the shore. They are clumsy swimmers and are unable to survive long in the water. Individuals which are placed in dishes of water which do not permit escape from the water will

drown within a short time. They are unable to rise in flight from the surface of the water.

FOOD

Observations on the natural food of these insects are scanty. The writer has been unable to observe them feeding in their natural surroundings. They are usually described as predacious insects, however, their extreme timidity seems to argue against the use of active insects as prey; even small active insects placed in the terrarium will survive, their movements causing the saldids to give them a wide berth. Ekblom (1926) has been able to observe the feeding of Salda saltatoria in nature. In describing their feeding he says, ". . . the insect darts about, poking its rostrum into the mud or sand in order to investigate whether it contains anything edible. The only food I have myself seen it consume is a fly larvae living in the damp soil. I have, however, occasionally seen it observing flies and other small, mobile animals above ground, and making clumsy efforts to stalk them, which, however, were never successful. The fly larvae I have seen them attack are those which have chanced to expose themselves, or which the insect had found by probing in the ground. If, for example, a Salda detects a fly larva, it darts forward and sticks its setae repeatedly

into the grub, at the same time hopping round about so as to avoid the violent contortions of the larva. The salivary glands of Salda must certainly have a powerful toxic effect, as the death of the larva ensues very rapidly, after only a couple of minutes. The prey is then sucked out in situ. I have never observed it make much use of its forelegs in catching the prey. It may, however, possibly place one or both fore feet on the prey during the sucking, especially if the larva is not entirely lifeless." Miss Edith Darrow of Johns Hopkins University has sent the writer specimens of Salda pallipes which she found feeding upon live, stranded larvae of the mosquito Anopheles quadrimaculatus Say in the Wilson Dam area of Tennessee. The writer has succeeded in feeding live larvae of the mosquito Culex tarsalis Coquillett to Salda pallipes by placing them upon the blotting paper in the terrarium. Jordan and Wendt (1938) report that Salda littoralis has been observed feeding in nature upon dead caterpillars, a crushed earthworm and upon a dead fish. The writer has frequently observed dead fish upon mud flats which were thickly populated with Salda pallipes and Salda humilis but has never observed the saldids feeding upon the fish.

Hungerford (1918, 1920a), Wiley (1922) and Jordan and Wendt (1938) report the use of dead insects for

food in terraria. The writer has used this source of food routinely. Flies and leafhoppers were the principal insects used owing to convenience of collection in quantity. Larger insects were acceptable, although beetles were usually too hard to permit entry of the rostrum. On larger insects the saldid inserts the rostrum through the soft intersegmental membranes of the abdomen. Jordan and Wendt have used in addition to insects, small pieces of liver, fish and dead earthworms. Hungerford (1918, 1920a) notes that Salda anthracina and Salda crassicornis will feed upon disabled members of their own species. The writer has observed that the males of Salda pallipes, which die soon after the mating period, serve as food for the surviving specimens. The food of the nymph is apparently identical with that of the adults.

MATING

Hungerford (1918, 1920a) has described the mating of Salda anthracina and Salda crassicornis, Ekblom (1926) has described the copulation of Salda saltatoria and Jordan and Wendt (1938) have observed Salda littoralis. The writer has observed the copulation of Salda pallipes, Salda humilis and Salda confluenta. The mechanics of copulation are identical for all species thus far observed. The male follows the female about

upon the surface of the soil. She attempts to avoid his approach and he finally springs upon her with a leap from an inch or more away. The male takes a position above and far to the right or left side of the female, the middle and hind legs of one side resting upon her hemelytra, the legs of the other side behind placed upon the soil or held in the air. The abdomen of the male is twisted 180 degrees and bent downward to enable the insertion of the aedeagus. The female appears complacent during copulation and frequently moves about or feeds. The male uses the free legs to assist him in locomotion when the female moves. The insects seem to be firmly attached but are able to separate immediately if disturbed. It is interesting to note that despite the copulation position employed, the genitalia of both sexes are bilaterally symmetrical. The aedeagus is extruded from the genital capsule through an aperture on the dorsal surface of the capsule. It is directed forward when extruded. The aperture is normally closed by the anal flap. It is this arrangement of the genitalia of the male that necessitates the 180 degree torsion of the tip of the abdomen during mating. Although it has not been observed, it seems logical to infer from morphological evidence that the claspers of the male are locked about the blades of the ovipositor of the female and that the median notch between the terminal processes

of the genital capsule facilitates the clasping. Among the species reported and among those observed by the writer, copulation is apparently most frequent in the spring and early summer in temperate zones. Individuals obtained in the late summer and in the fall rarely copulated in captivity. Copulation is frequent, occurring several times a day over a period of more than a week. The males die within a few days after the end of the mating period.

OVIPOSITION

Hungerford (1918, 1920a) has figured the egg of Salda crassicornis and observed the oviposition habits of the female. Similar observations and figures have been provided by Wiley (1922) for Salda major and Salda pallipes and by Jordan and Wendt (1938) for Salda littoralis. The writer has been unable to observe oviposition or find the eggs of Salda confluenta or Salda humilis although observations were readily made upon Salda pallipes. Oviposition takes place during the mating period and for a period of approximately ten days after the mating period. The incubation period of Salda pallipes at Lawrence, Kansas, in the spring, averaged ten days. All of the species reported insert their eggs into the stems of grasses and other plants or between the leaves of mosses and grasses. The saw-

like blades of the ovipositor are used to slit the stems; only one egg is placed in each slit although several eggs may be inserted close to each other. The average number of eggs per female appears to be from eight to twelve. Jordan and Wendt have recorded oviposition in the sand of a terrarium for Salda littoralis. The writer has attempted to induce such an oviposition method in Salda pallipes by removing all plant material from the terrarium but each attempt has met with failure. The eggs are from three to four times as long as wide, moderately curved, and narrower at one end than at the other. They are at first white in color although red eye spots soon appear; the entire egg appears orange immediately before hatching. The surface is minutely reticulated.

IMMATURE STAGES

The nymphs of Saldids are greatly flattened and are oval in outline. They are unable to leap in the manner of the adults and move about by walking steadily in a constant direction at a moderate speed. The general appearance and locomotion is remarkably suggestive of the nymphs of bedbugs. There are five nymphal stadia, during which progressive development takes place. The nymphs increase in size at a constant ratio

from one molt to the succeeding molt. The wing pads first appear in the fourth instar and are well developed in the fifth instar. Ocelli are absent during all of the nymphal period. In temperate climates each of the stadia lasts from three to five days. Wiley (1922) has recorded the life history and has figured and described all nymphal instars of Salda pallipes and Salda major in detail. Similar observations and figures for Salda littoralis have been published by Jordan and Wendt (1938).

HIBERNATION

Ekblom (1926) suggests that Salda saltatoria probably hibernates as an adult among mosses, under tree bark and in similar protected locations. The writer has been unable to collect saldids during the periods when they were not apparent upon the shores. The habit of saldids of utilizing holes or crevices in the earth or even digging holes in the sand as hiding places may provide a clue to their place of hibernation. Routine collections of Salda pallipes, Salda humilis and Salda confluenta at Lawrence, Kansas, indicate that overwintering is in the adult stage; the earliest records for each species over a three year period have invariably been of adults, of which the females proved to be gravid. Only a few specimens are found in early

collections. Nymphs do not appear until approximately two weeks after the earliest collections of adults. Jordan and Wendt (1938) report that Salda littoralis overwinters in the egg stage. It seems reasonable to assume that a similar condition may obtain for the Boreal and Arctic species of the Western Hemisphere. Collection records indicate continuous breeding in the southern one-third of the United States, Central America and the Antillean islands.

COLLECTING TECHNIQUES

The collection of saldids affords a challenge to the speed, skill and patience of the collector comparable to that presented by the collecting of tiger beetles. The extreme speed and alertness makes them difficult to collect individually. The writer has been most successful in the collection of individual specimens when using a vial with a mouth diameter of one inch as a "cage" to be placed quickly over the saldid from above. A card slipped under the lip of the vial will enable its inversion to be effected without the loss of the live specimen. The insect may then be transferred to another vial containing a small quantity of moist paper or moss. If the specimen is to be killed a wide-mouthed killing bottle may be used in the

same manner. The use of an aspirator involves careful approach to the specimen. If the aspirator nozzle is held directly above the specimen it may be brought within a fraction of an inch of the insect. If the saldid has taken refuge in a crevice the aspirator may be used readily. Collecting at night with a flashlight and an aspirator is successful, as is the use of a light-trap near the shore. Saldids which alight in the water may be captured with the hand; the trampling of emergent aquatic vegetation will frequently yield many specimens. For quantity collecting the use of a sweep net waved back and forth a few inches above the shore or the shore vegetation is most satisfactory. It has been observed, however, that a disproportionate number of males will be collected by this method.

TAXONOMIC HISTORY AND GENERIC CONCEPTS

The taxonomic history of the Saldidae is characterized by nomenclatural confusion. It has been deeply involved in questions of genotype fixation and even today the validity of Salda is in question. Foremost in the confusion has been the long standing argument concerning the proper genotypes for the polytypic genera Cimex Linnaeus, Acanthia Fabricius and Salda Fabricius. In order to most readily understand the principal

features of the question it seems best to arrange the principal publications concerned in a chronological order and to provide appropriate annotations.

1758. Linnaeus establishes Cimex for eighty-five species, listing C. lectularius L. first and including C. littoralis L. and C. saltatorius L. All are new species.
1775. Fabricius establishes Acanthia for fifteen species, listing A. lectularia (L.) first and including A. littoralis (L.). The latter species is considered by Reuter (1912c) to be a misidentification of C. saltatorius L.
1794. Fabricius expands Acanthia to include forty-five species of which A. lectularia (L.) is first and A. zosteræ F. is described, and is listed as the second species. Reuter (1912c) believes that the latter species is a synonym of C. littoralis L.
1797. Latreille limits Acanthia to littoral forms but names no species.
1803. Fabricius includes Cimex lectularius L. and a related species in Acanthia, removing the

shore bugs and other species to a new genus Salda. A. zosteræ F. (= C. littoralis L.) is listed first; A. littoralis F. (= C. saltatorius L.) is included.

1804. Latreille lists A. littoralis (L.) and A. zosteræ F. as examples of Acanthia. Lists C. lectularius L. as type of Cimex. This is accepted by the International Commission as the first valid genotype designation for Cimex.
1807. Latreille includes A. zosteræ F., A. saltatoria (L.), A. littoralis (L.), and other littoral species as examples of Acanthia.
1810. Latreille reverses his position of 1804 and lists A. lectularia (L.) as type of Acanthia. The shore bugs are included in Acanthia, thus returning the situation to where it was before Fabricius established Salda in 1803.
1829. Fallen limits Acanthia to A. lectularia (L.) but renames the genus Clinocoris. According to the International Commission he thus eliminates all species but A. lectularia from consideration as genotype of Acanthia. Shore bugs are included under the genus Salda.

1835. Curtis lists A. littoralis (L.) as type of Acanthia.
1838. Blanchard designates C. grylloides L. 1761 as type of Salda by publishing its name, and a figure in a work bearing the following statement on the title page "Édition accompagnée de planches gravées représentant les types de tous les genres."
1843. Amyot and Serville establish Sciodopterus for A. flavipes F. (= C. muelleri Gmel.).
1848. Blanchard revises his previous (1838) type fixation and cites Cimex littoralis L. as type of Salda.
1899. Kirkaldy considers that Latreille's (1797) restriction of Acanthia to littoral forms definitely limits the genus to A. littoralis (L.) and its allies.
1910. Van Duzee states that the type of Acanthia is A. lectularia (L.) upon the basis of Fabricius' (1803) removal of other species to Salda. He states that Acanthia must fall as a synonym of Cimex.
1912. Reuter says that Latreille (1797) was justi-

fied in restricting Acanthia to littoral forms and that he established A. littoralis F. (= C. saltatorius L.) as the genotype in 1802. He was mistaken on the latter date; 1804 is accepted by the International Commission. Salda is considered as a separate genus with A. zosteræ F. (= C. littoralis L.) as type, based upon the belief that Fabricius indicated types by the first listed species. Sciodopterus is rejected as a synonym of Salda because its type, A. flavipes F. (= C. muelleri Gmel.), is congeneric with the type of Salda.

1914. Van Duzee does not recognize Latreille's restriction of Acanthia as constituting a type designation; he considers that Fabricius (1803) was justified in restricting Acanthia to A. lectularia and A. hemiptera. He considers that the position of A. lectularia as the first listed species constitutes a type designation by Fabricius and that Fabricius likewise indicated A. zosteræ as a genotype by listing it first under Salda. His synonymy of Acanthia F. with Cimex L. leaves the Acanthia concept of Latreille and Reuter without a valid name, therefore he proposes Saldula as a substitute

name with C. saltatorius L. as the genotype.

1924. Opinion 81 (Stiles, 1924) of the International Commission on Zoological Nomenclature rules that Latreille (1804) established C. lectularius L. as the genotype of Cimex. It is reasoned that all species except A. lectularia (L.) are eliminated from consideration as the genotype of Acanthia. A. saltatoria (L.) and A. zosteræ F. were not original species in the genus; A. littoralis (L.) was not included in Clinocoris Fallen (Acanthia renamed), therefore it cannot be considered since a genotype for Acanthia had not been designated prior to the renaming. In such a case it is ruled that the type of either of the names is automatically considered to be the type of the other. A. lectularia (L.) is the only species in Clinocoris, therefore it becomes the type of both Clinocoris and Acanthia. In view of the fact that Cimex Linnaeus 1758 and Acanthia Fabricius 1775 have the same species as their genotypes Acanthia is ruled to be a synonym of Cimex. A further ruling states that Fabricius (1803) did not designate genotypes.

1943. China reviews the genotypes of British genera. He discovers that the first valid type fixation for Salda is that of Blanchard (1838), designating C. grylloides L. as the genotype. He notes that Blanchard (1848) revises his former designation and cites C. littoralis L. as the genotype of Salda. He requests action by the International Commission on Zoological Nomenclature to reject Blanchard's 1838 genotype designation and to recognize Blanchard's 1848 designation of C. littoralis L. as the genotype of Salda.

As may be seen from the preceding annotations, the position of Acanthia has been determined by the International Commission on Zoological Nomenclature. The synonymy of Acanthia Fabricius 1775 with Cimex causes Acanthia Latreille 1797, 1804 and of many subsequent authors to become invalid; it is the latter concept of Acanthia which is renamed Saldula by Van Duzee (1914b). The availability of Salda as a generic name in the family including the shore bugs is still unsettled. If Salda is removed from the family the name Saldidae must also be abandoned. The first available name for the replacement of Salda would be Sciadopterus Amyot and Serville. This problem was

reviewed by China (1943) and it seems desirable to quote his petition to the International Commission on Zoological Nomenclature in which the addition of Salda to the official list of generic names and its retention within the family Saldidae is requested: "We are of the opinion that it is highly undesirable to accept the first valid type citation for the genus Salda Fabricius 1803, vis. that of Blanchard 1838 (Cuvier, Le Règne Animal, Disciples edition: pl. 90) whereby the type is fixed as Salda grylloides Linnaeus ---Cimex grylloides Linnaeus 1758. This would mean that the well-known name Salda would need to be transferred to another family (LYGAEIDAE) and the family SALDIDAE left without an available family name. In addition the well-known Lygaeid name Geocoris Fallen would sink as a synonym of Salda Fabricius 1803.

"We are emphatically of the opinion that the foregoing change would lead to greater confusion than uniformity. Accordingly we recommend that in the exercise of the plenary power conferred on them by the International Zoological Congress, the International Commission on Zoological Nomenclature should as soon as possible take the steps laid down by the Congress for the promulgation of an Opinion to the following effect:--

"Blanchard's original 1838 (in Cuvier, Le Règne Animal, Disciples edition: pl. 90) citation of Cimex grylloides Linnaeus 1758 as type of Salda Fabricius 1803 (Syst. Rhyng. :113) is to be rejected and replaced by Blanchard's 1848 (in Orbigny, Dict. univ. Hist. nat. 11: 311 and 312) citation of Cimex littoralis Linnaeus 1758. The name Salda Fabricius 1803 (type Cimex littoralis Linnaeus 1758) is hereby added to the Official List of Generic Names and is not to be transferred from the SALDIDAE to the LYGAEIDAE to replace Geocoris Fallen."

The writer has inspected Blanchard's 1838 figure of Salda grylloides. There seems to be no doubt that a type designation was made and a search of the literature does not reveal a previous genotype designation. Fallen (1807) has used Salda for the littoral forms and has removed C. grylloides to Lygaeus. In 1814 Fallen proposes the name Geocoris for grylloides and its relatives. It would appear that the exclusion of grylloides from Salda by Fallen would be valuable support for Dr. China's request. The name Salda with Cimex littoralis L. as genotype is used in the present paper in view of the request for its addition to the official list of generic names.

The shore bugs, prior to the description of

Saldoida by Osborn (1901), excepting the synonymic Sciodopterus, were grouped under a single genus which was called Salda or Acanthia, depending upon the preferences or convictions of the authors. As a general rule American and English writers used Salda and continental European writers used Acanthia. Eighteen names have been applied as designations for genera or subgenera of the Saldidae. Of these, Salda, Acanthia and Saldula have been discussed above. The first name proposed specifically for a saldid was Sciodopterus, which was used by Amyot and Serville (1843) to designate the brachypterous species Acanthia flavipes F. (= C. muelleri Gmelin). This name has had limited application; it was used by Reuter (1895) as a subgenus of Acanthia and by Provancher (1872) as a genus for his new species bouchervillei. Provancher (1888) retained Sciodopterus for bouchervillei in his "Petite Faune . ." Reuter (1912c) has pointed out that the genotypes of Salda and Sciodopterus are congeneric; when he elevated his subgeneric concept of Sciodopterus to generic rank he adopted for it the Fabrician name Salda. Chartoscirta was proposed by Stål (1868a) as a subgenus of Salda for Salda elegantula Fallen. Reuter (1891) proposed two further subgenera for Acanthia, Calacanthia for Salda trybomi J. Sahlberg and Salda alpicola J. Sahlberg (= S. trybomi

J. Sahlberg) and Chiloxanthus for Salda pilosa Fallen and Salda borealis Stål (= A. stellata Curtis). These subgenera were elevated to generic rank by Reuter (1912c).

The first genus to be described from Nearctic species was Saldoida, established by Osborn (1901) for two new species from Florida, Saldoida slossoni Osborn and Saldoida cornuta Osborn. Subsequently two other species of Saldoida have been described, one from Formosa, the other from the Phillipines. Reuter (1912c) designated S. slossoni Osborn as the genotype. Orthophrys was proposed by Horvath (1911) with Acanthia (Chiloxanthus) pygmaea Reuter as the genotype and only species. Reuter (1912c) published the most important paper upon the genera of Saldidae, "Zur Generischen Teilung der Palaarktischen und Nearktischen Acanthiaden". As previously mentioned, he abandoned his previous broad interpretation of Acanthia, limiting that name to A. saltatoria (L.) and closely allied species. The subgeneric concepts of Chartoscirta Stål, Calacanthia Reuter, Chiloxanthus Reuter and Salda Fabricius were elevated to generic rank and five new genera were named. Three of the new genera were named from Nearctic species, Pentacora, with Salda signoretii Guerin as genotype, Ioscytus, a monotypic genus for Salda polita Uhler and Lampracanthia, likewise monotypic,

for Salda crassicornis Uhler. The others, Halosalda, a monotypic genus for Salda lateralis Fallen and Teloleuca, with Salda riparia Fallen as genotype, were Palaearctic. Subsequent to Reuter's generic revision Horvath (1915) has described Omania with Omania coleoptrata Horvath as the genotype and only species. Dollfusella was described by China (1938) with Dollfusella minutissima China as the genotype and only species. Poisson (1943) has pointed out that D. minutissima China is a synonym of O. coleoptrata Horvath and that Dollfusella must consequently fall as a synonym of Omania. The genus is confined to the shores of the Mediterranean. Bueno (1923a) described a subgenus, Chartolampra, within Chartoscirta for Chartoscirta (Chartolampra) cursitans Bueno (= Salda elongata Uhler). He did not place this species properly in Reuter's generic system; it is actually applicable to Teloleuca Reuter, and falls, with that genus, as a synonym of Salda Fabricius.

In the study of the specimens and literature for the preparation of this paper the writer has carefully analyzed the bases of the Reuterian generic concepts. The characteristics used by Reuter in his key to the genera and in his descriptions of the genera are, for the most part, highly variable or trivial. Such characteristics as the lateral extent of the anterior

lobe of the pronotum, the punctation of the sulcus behind the anterior lobe, the degree of distinctness of the corial veins, the degree of production of the base of the first areole of the membrane before the base of the second areole, the degree of tumidity of the antennae and the coloration of the hemelytra lead to confusion. They are subject to a wide range of interpretation by the individual systematist and are highly variable, even within a given species. Reuter himself recognized that many of them were not absolute. His characteristics concerning the shape of the last abdominal sternum of the female and the number and arrangement of the areoles of the membrane appear to be satisfactory constant and definitive.

It is the writer's belief that the difficulty of application of Reuter's genera to the various species has been a hindrance to the classification of Saldids and has been responsible for the avoidance of the family by revisors. Many hemipterists, among them Bueno (1923a, 1924) and Parshley (1921), have complained of the evanescence of the Reuterian characters. In order to facilitate the taxonomic study of the Nearctic species, it has become necessary to regroup the species under generic concepts which differ from those of Reuter. Many of the Palaearctic species, including genotypes, have been examined in connection

with the reinterpretation of genera. Saldoidea, Pentacora and Chiloxanthus are well distinguished groups; they require no changes from their original interpretation. It has been necessary, however, to place Lampracanthia, Teloleuca, Micracanthia, Saldula and Ioscytus into synonymy with Salda. Salda crassicornis Uhler, the genotype of Lampracanthia has so many features in common with Salda littoralis (L.) and its close relatives that it is impractical to retain it in a genus distinct from Salda littoralis. It is possible to demonstrate the identity of Salda, Saldula and Micracanthia by means of a series of species which are generically inseparable. Beginning with Salda littoralis (L.) this series progresses through the brachypterous form of Salda bouchervillei (Prov.) to the macropterous form of that species and thence through Salda lugubris (Say), Salda major Prov., Salda nigrita (Parsh.) and Salda pallipes (F.) to Salda saltatoria (L.), the genotype of Saldula. Salda marginalis Fallen, the genotype of Micracanthia may be linked to this series through Salda humilis (Say) and Salda pallipes (F.); indeed, Reuter found it necessary to employ trivial characters to separate Micracanthia from Acanthia (renamed Saldula) at the time of its description. Teloleuca is not morphologically separable from Salda; it is based only upon color.

characteristics which are valid only for the determination of species. Ioscytus contains only Salda polita Uhler, which is closely related to Salda separata Uhler and Salda sulcicollis Champ. and must be considered congeneric with them.

The writer is doubtful of the validity of Calacanthia. It bears a resemblance to Salda in many morphological features but in view of the ready identification of its genotype, C. trybomi J. Sahlberg, by the distinctive antennae, adjacent ocelli and greatly protuberant eyes, it has been retained as a distinct genus, bearing in mind that the differences cited may actually be specific rather than generic. Further collections from the Arctic regions should clarify this question. Since species resembling those assigned by Reuter to Chartoscirta have not been found in the Western Hemisphere, the relationships of this genus have not been studied extensively; preliminary investigations indicate that it too may be found to be a synonym of Salda. Orthophrys pygmaea (Reuter) and Omania coleoptrata Horvath have not been seen by the writer, consequently no conclusions have been reached concerning their genera. Orthophrys mexicanus Van Duzee has been removed to Pentacora; it was incorrectly assigned to Orthophrys since the description of the genus indicates that the membrane has four areoles

whereas P. mexicana (Van D.) has five areoles.

Reuter (1912c) established two subfamilies in his classification of the Saldidae; these were Saldoidinae and Acanthianae. Van Duzee (1916) proposed Saldinae as a new name to replace Acanthianae in view of the synonymy of Acanthia with Cimex. The writer believes that Pentacora and Chiloxanthus form a group sufficiently distinguished to warrant subfamily status, therefore the genera which are characterized by the possession of five areoles in the membrane, acute terminal processes of the male genitalia and a truncated last abdominal sternum in the female are grouped into a new subfamily, Pentacorinae.

The present taxonomic status of the higher categories is indicated beneath:

Family Saldidae Amyot and Serville 1843.

Saldoidinae Reuter 1912.

Saldoida Osborn 1901, genotype: Sal-
doida slossoni Osborn.

Saldinae Van Duzee 1916.

Salda Fabricius 1803, genotype: Cimex
littoralis Linnaeus.

Synonyms:

Acanthia Latreille 1797, 1804,
and authors (nec Fabricius 1775).

Sciadopterus Amyot and Serville

1843, genotype: Acanthia flavipes F. (= Cimex muelleri Gmelin).

Lampracanthia Reuter 1912, genotype:

Salda crassicornis Uhler.

Teloleuca Reuter 1912, genotype:

Salda riparia Fallen.

Ioscytus Reuter 1912, genotype:

Salda polita Uhler.

Micracanthia Reuter 1912, genotype:

Salda marginalis Fallen.

Saldula Van Duzee 1914, genotype:

Cimex saltatorius Linnaeus.

Chartolampra Torre-Bueno 1923, geno-

type: Chartoscirta (Chartolampra)

cursitans Torre-Bueno (= Salda

elongata Uhler).

Chartoscirta Stål 1868, genotype: Salda

elegantula Fallen.

Calacanthia Reuter 1891, genotype: Salda

trybomi J. Sahlberg.

Orthophrys Horvath 1911, genotype: Acanthia

(Chiloxanthus) pygmaea Reuter.

Halosalda Reuter 1912, genotype: Salda

lateralis Fallen.

Omania Horvath 1915, genotype: Omania
coleoptrata Horvath.

Synonym:

Dollfusella China 1938, genotype:

Dollfusella minutissima China

(= Omania coleoptrata Horvath).

Pentacorinae new subfamily.

Chiloxanthus Reuter 1891, genotype: Salda
pilosa Fallen.

Pentacora Reuter 1912, genotype: Salda
signoretii Guérin.

The first American saldid to be described was Acanthia interstitialis Say 1825 (= Acanthia pallipes F.). In 1832 Say's "Descriptions of New Species of Heteropterous Hemiptera of North America" appeared. Included in it were the descriptions of six saldids, of which one, Acanthia hirta Say, remains unrecognizable. The next paper of importance was Uhler's monograph of the "Saldae" in the Bulletin of the United States Geological and Geographical Surveys of the Territories III, which was published in 1877. In this paper were published descriptions or notes upon twenty-three North American species, nine of which were described as new; two of these new species are synonyms. Unfortunately Uhler provided no key to the species and few comparative notes. The only

treatment of the Saldidae of Central America is that of Champion (1901) in *Biologia Centrali-Americana*. He keyed ten species, describing seven of these as new; one of the new species is a synonym. All of Champion's new species were figured.

In 1916 Van Duzee brought forth his Check List of the Hemiptera and in 1917 his Catalog of the Hemiptera in which he listed thirty-three species of Saldidae from America north of Mexico. The next significant paper was Hungerford's "Biology and Ecology of the Aquatic and Semiaquatic Hemiptera" which appeared in 1920. The eggs of saldids were figured for the first time. Although primarily biological this paper was of taxonomic value since Reuter's key to the genera was translated and the original descriptions of North American species were quoted. This paper is still of value from a reference standpoint; the original descriptions of our species are scattered among many publications, many of which are difficult to obtain.

The first keys to Nearctic species appeared in "Hemiptera of Connecticut" published in 1923. These were written by Bueno and were restricted to the saldid fauna of Connecticut and adjacent states. Reuter's key to the genera was paraphrased and nineteen species were keyed, principally upon color char-

acteristics; six of these are synonyms. In 1926 Blatchley's "Heteroptera of Eastern North America" was published. Portions of the Reuterian generic key were again paraphrased and twenty Nearctic species were keyed and redescribed; eight of these are synonyms. No further general papers devoted to the Saldidae of the Western Hemisphere have appeared. The most significant paper of recent years is Usinger's "Review of the Genus Saldoidea" which appeared in 1945. The species of Saldoidea were keyed and distribution records were given for them.

In addition to the publications discussed above, the following catalogues have been valuable to the writer: Reuter (1895), "Species Palaearcticae Generis Acanthia"; Lethierry and Severin (1896) "Catalogue Général des Hémiptères"; Kirkaldy and Bueno (1909) "Catalog of American Aquatic and Semi-Aquatic Hemiptera"; Oshanin (1909) "Verzeichnis der Palaearctischen Hemipteren" and (1912) "Katalog der Palaarktischen Hemipteren".

The following keys have been helpful in the determination of European and Eurasian species: Stichel (1934) "Illustrierte Bestimmungstabellen der Deutschen Wanzen"; Börner (1935) in "Tierwelt Mitteleuropas".

PHYLOGENY

The Saldidae have played an important part in the various attempts to determine the relationships between the families of the Hemiptera. Osborn (1895) believed it probable that " in some such generalized form as may be represented now by the Saldidae we may find the stock from which the group is branched, one line becoming more aquatic and reaching the extreme of specialization in this direction, in such groups as Nepidae, Notonectidae, and Corisidae, the other branch furnishing the terrestrial and arboreal families ". Ekblom (1926), after a comparative study of the mouthparts and the male and female genitalia of several families of the Hemiptera, concluded that the Saldidae were the closest living relatives of the original hemipterans. In 1929 he published a paper devoted to the phylogeny of the order, basing his conclusions principally upon the comparative morphology of the mandibular levers. On this basis, as well as upon the generalized construction of the female genitalia, he again concluded that the Saldidae were near the primitive stem. In addition he believed that their littoral habitat and their methods of feeding and oviposition represent a primitive mode of existence. He proposed a hypothetical ancestral group of littoral

and predacious nature, the Protosalidae, from which he derived all living Hemiptera. His classification of the living Hemiptera consisted of Latreille's Geocorisae and Hydrocorisae, Dufour's Amphibicorisae and Börner's Sandaliorrhyncha. All of these groups were considered derivatives of Protosalidae. The Geocorisae became littoral (Saldidae) or terrestrial; the remaining groups became aquatic or semi-aquatic or littoral. The Amphibicorisae (including the Hydrometridae, Veliidae, Gerridae, Mesovelidae, Hebridae, Ochteridae and Gelastocoridae) and the Sandaliorrhyncha (including the single family Corixidae) were presumed to have diverged separately from the Protosalidae at an early date, while the Hydrocorisae (including all of the aquatic families, excepting Corixidae) were considered to display a more recent relationship with the Geocorisae (including Saldidae and all terrestrial families). More specifically, Ekblom found the Nepidae and the Notonectidae quite similar to the Saldidae in the structure of their mouthparts. He suggested a possible link between the Hydrocorisae and the Geocorisae by means of the Nepidae and Saldidae. He stated that the Amphibicorisae resemble the Saldidae in certain features of the head capsule and the claspers of the male genitalia. He considered the Nabidae to be the nearest terrestrial relative of the

Saldidae.

Spooner (1938) published a comprehensive study of the phylogeny of the Hemiptera, basing his conclusions upon the morphology of the head capsule. His principle criteria for the indication of a generalized form were the possession of a broad flaplike labrum and of small juga, although other features of the head were considered. He believed the most primitive families to be the Cimicidae and Anthocoridae, closely followed by the Saldidae. Spooner was unable to agree with Ekblom's contention that a primitive ancestor was probably littoral, if the basis for the contention was concerned with habits, although he did agree that ". . . the Saldidae are comparatively primitive in head structure and are near the generalized type." He readily accepted the four main groups employed by Ekblom. In an attempt to correlate these groups he pointed out that the modification of the mandibular lever of the Ochteridae toward those of the generalized Geocorisae might possibly indicate the origin of the Amphibicorisae from that group. The Ochteridae were further compared to the Gelastocoridae in their own group, and to the Naucoridae and Noto-nectidae in the Hydrocorisae. It was postulated that these families represent a bridge between their re-

spective groups. Spooner was unable to relate the Sandaliorrhyncha to the remaining groups, but he noted a resemblance between the clypeus of the Corixidae and the Saldidae. He grouped the Saldidae with such terrestrial families as the Cimicidae, Anthocoridae, Reduviidae and Nabidae.

China (1933) presented a comprehensive phylogenetic chart of the Hemiptera. He did not designate any given family or group of families as a present day representative of the primitive ancestral Hemiptera. However, he stated that the Corixidae might well represent an early offshoot from primitive homopteroid forms, whereas the rest of the truly aquatic bugs were descended from predacious terrestrial forms of the littoral type at a much later date. He grouped the Gerridae, Veliidae, Hydrometridae, Hebridae and Mesoveliidae as derivatives of early Nabid-like forms. He indicated the closest relatives of the Saldidae to be the Aepophilidae, Leptopodidae, Leotichidae and Velocipedidae.

Spooner did not believe that such classifications of the Hemiptera as Fieber's Cryptocerata and Gymnocerata, based upon the insertion of the antennae, Kirkaldy's Pagiopoda and Trachalopoda, based upon the articulation of the intermediate coxae, or Reuter's

elaborate classification (Hydrobiotica, Anonychia, etc.), based upon the ocelli, arolii and the shape of the egg, were indicative of true phylogenetic relationships. China warned against the exaggeration of the importance of the male genitalia as clues to phylogeny, pointing out that such systems as that of Singh-Pruthi (1925) resulted in the placing of families in relationships vastly different from those indicated by other characteristics.

A recurrent hypothesis occurs throughout the literature concerning the origin of the aquatic Hemiptera from littoral ancestors. Uhler (1884) and Osborn (1895) suggested such derivations. Hungerford (1920a) indicated a progression from the Saldidae through the Ochteridae and Gelastocoridae to the Naucoridae. China (1933) described a sequence from the Saldidae and the Ochteridae through the Gelastocoridae to the Nepidae and thence through the Belostomatidae to the Naucoridae. Spooner (1938) demonstrated phylogenetically significant morphological similarities among the generalized Geocorisae (including Saldidae), the Ochteridae, Gelastocoridae, Naucoridae and the Noto-nectidae. Ekblom (1929) believed that the littoral families and the aquatic families arose separately from his Protosalidae. He did not consider that such littoral families as Ochteridae and Gelastocoridae

represented intermediaries between the Saldidae and the aquatic families. However, Spooner's subsequent interpretation and amplification of Ekblom's data demonstrated that the existence of littoral-aquatic series is not precluded by Ekblom's morphological findings. The bases for these serial arrangements have ranged from superficial resemblance through gradation of habits and habitats to comparative morphological studies.

An analysis of the data presented above reveals a unanimity of opinion concerning the generalized nature of the Saldidae. Even though one is not so positive as Ekblom in asserting their phylogenetic position as the present day representatives of an ancestral form, there appear to be sufficient grounds to indicate their evolution at an early period. The fact that the Saldidae are unique in displaying affinities with the aquatic, semiaquatic and terrestrial families emphasizes the importance of considering the Saldidae in any phylogenetic study of the order.

The presentation of varied lines of evidence lends credence to the hypothesis that the Saldidae represent forms which were ancestral to the aquatic and littoral families, exclusive of the Corixidae. It appears most probable that these families devel-

oped by evolution from the prototypical representatives of a series of families represented today by the Saldidae, Ochteridae, Gelastocoridae, and Naucoridae, in the order given. From the Naucoridae two separate lines of development seem probable, one terminating in the Belostomatidae with the Nepidae as an intermediary, the other consisting of the Noto-nectidae. Whether or not the Saldidae are ancestral to the semi-aquatic, surface-dwelling families and the terrestrial families is problematical, however, it is generally agreed that they are among, and related to, the most generalized families of the land-dwelling families; these include, in addition to the Saldidae, the Nabidae (from which arose, according to China, the semi-aquatic, surface-dwelling families), Reduviidae, Anthocoridae and Cimicidae.

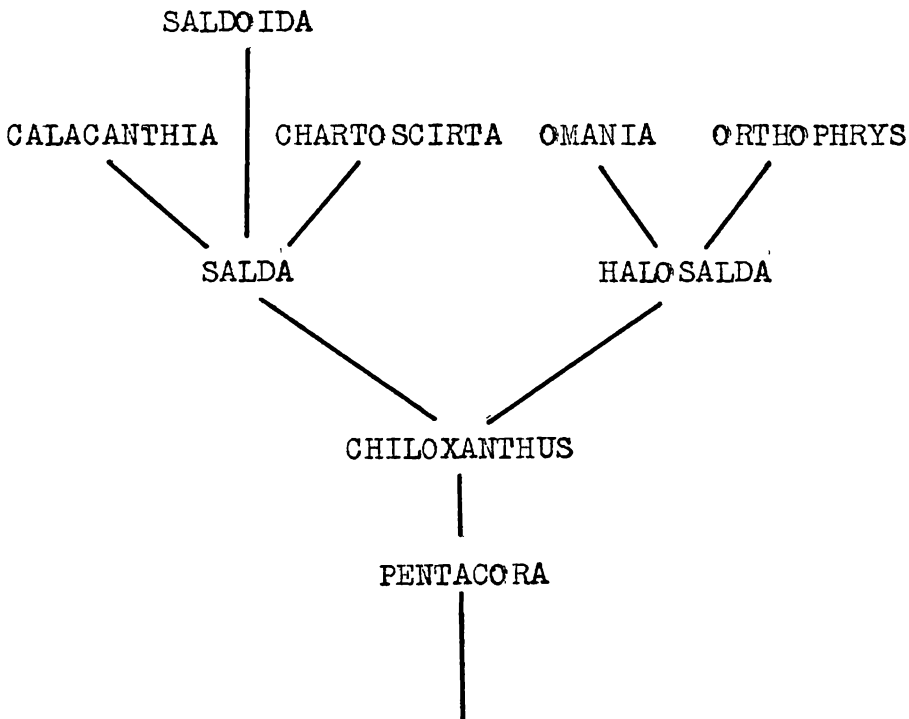
Features which seem to indicate specialization within the family include brachyptery, with consequent loss of flight, swollen antennae, bizarre orthogenetic development of the pronotum, fusion of the terminal processes of the male genital capsule and the reduction of the number of areoles in the membrane. Upon these bases a phylogenetic arrangement of the genera may be readily postulated. The genus Pentacora has five complete areoles in the membrane,

brachyptery is relatively rare, the pronotum is not modified and the antennae are slender and long.

Pentacora signoretii has a unique feature of special interest; the lateral margins of the pronotum and embolium are provided with a row of short, stout setae. In other species this condition is found only in the nymphal stages, which have similar setae along the lateral margins of the pronotum and the anterior wing pads. Chiloxanthus is similar to Pentacora, except that the fourth areole of the wing is reduced, perhaps indicating a transitional stage between the five-looped and the four-looped membrane. Halosalda has but one species; it has slender antennae, four loops in the membrane and does not exhibit brachyptery. Salda and Chartoscirta have four loops in the membrane, and frequently have swollen antennae; macropterous forms are more numerous than brachypterous forms. Calacanthia, Omania and Orthophrys are brachypterous, have four loops in the membrane and have the pronotum somewhat modified; Calacanthia is brachypterous, has four loops in the membrane and has unique flattened antennae. Saldoidea is most frequently brachypterous, has four loops in the membrane, partly fused terminal processes and is unique in the bizarre, orthogenetic development of the pronotum. Of the genera discussed above Halosalda, Orthophrys and Omania are entirely

halophilic; the majority of the species of Pentacora are halophilic. The other genera are predominantly inhabitants of fresh water localities.

The distribution among the genera of the morphological and ecological characteristics mentioned above indicates that a phylogenetic arrangement of the genera would probably be similar to that illustrated in the figure beneath. Upon the basis of the retention of nymphal characteristics as well as upon other morphological features, the writer regards Pentacora signoretii (Guérin) as the most generalized species of the Saldidae. Its generalized nature, as well as its ease of collection in quantity, should recommend it as a species for morphological investigation.



DISTRIBUTION

Each description in the taxonomic portion of this paper is followed by a section entitled "data on distribution". Previous published records for the species and its synonyms are indicated in the first paragraph of the section; the remainder of the section is devoted to listing the specimens examined by the writer in the course of preparing the paper. The great degree of confusion in the classification of the American species must be borne in mind when inspecting the published records of distribution.

The range of most species is extended by the distribution data recorded in this paper; when a new record of distribution is made for a country, state or province, the name of the political area is preceded by an asterisk. The countries are listed alphabetically; the provinces and territories of Canada and the states of Mexico and the United States are listed alphabetically under the country to which they pertain. Alaska, Porto Rico and the Virgin Islands are listed under their own initial letter, not under the major heading of the United States. The locality, date, collector and number of specimens of each sex are listed; unless brachypterous and macrop-
terous forms are separately enumerated it is to be

assumed that the specimens are all of the form described in the taxonomic section preceding the distribution. If the specimens belong to the Francis Huntington Snow Entomological Collections no special designation is indicated; if they have been loaned to the writer by a museum or private collector, a parenthetical entry indicates the source of the specimens from each locality. Type specimens which are mentioned in the "location of types" section are not listed in the "data on distribution" section.

Circumpolar distribution seems established for several species. Salda saltatoria (L.), Salda littoralis (L.) and Salda pallipes (F.) are common Palearctic species found in the Western Hemisphere. The well known Acanthia interstitialis Say must fall as a synonym of Salda pallipes. American records for Acanthia xanthochila Fieber and Acanthia opacula Zetterstedt are misidentifications of color varieties of Salda pallipes. New additions to the list of Holarctic species are Salda bifasciata Thomson, of which Acanthia bellatrix Bueno becomes a synonym, and Chiloxanthus stellatus (Curtis), of which Salda borealis Stål becomes a synonym. Calacanthia trybomi has been recorded here as an American species for the second time. The specimen involved was compared

with European specimens. Van Duzee (1919) had previously recorded the species but had been unable to compare it with European specimens.

Several general distributional patterns have emerged. Central America, Mexico and the South-western quarter of the United States have many species in common. The species of the Gulf Coast of the United States extend up the Southern half of the Atlantic Seaboard and into the Carribean islands. The fauna of Canada and the northern half of the United States is similar, although some species occurring commonly in Canada are restricted to mountainous regions in the eastern and western United States. The line of the 100th meridian across the Dakotas, Nebraska and Kansas appears to be as effective as a barrier in the case of saldids as it is in other groups of insects. Coastal distribution applies to the halophilous species although Pentacora signoretii (Guérin) is found at inland salt water localities.

IDENTIFICATION TECHNIQUES

Much of the confusion in the classification of the species of Saldidae has arisen through the dependence on color patterns for the differentiation of

species. Structural characteristics have usually been omitted or subordinated to elaborate color characterizations in the keys and descriptions; this has caused many misidentifications and has led to the description of many synonyms since, in most cases, the color descriptions are completely applicable only to the specimen from which they were written. In this paper a color description is given for each of the species, however, it is intended to serve as a guide to the color patterns most frequently found in that species and must be flexibly interpreted, since a wide range of variation from the typical color pattern is found in many species. In those species where certain color characteristics are stable, such characteristics are indicated in the key to the species or in the comparative notes.

The principal structural characteristics which have proven valuable are the vestiture of the dorsal surfaces, antennae, legs and eyes; the comparative lengths or widths of various parts of the insect and the shape of the terminal processes of the genital capsule and left clasper of the male. The dorsal surfaces and other structures may be clothed with stiff, erect setae which are relatively longer than such pubescence as may be present, or they may be clothed

with a fine, recumbent golden pubescence or with minute, recumbent setae. It is frequently necessary to view the specimen in silhouette or from a lateral aspect to ascertain the nature of the vestiture. The most commonly used proportional measurements are those of the head, antenna, pronotum and hind tibia. All measurements are maximum; the writer has found that a combination of 9X oculars, with a squared reticle and 6.8X objective lenses on the binocular is excellent for accurate measurement of all structures, although lower magnifications will suffice for the larger species. The width of the head includes the eyes; the width of the pronotum is measured across the humeral angles; the lengths of the anterior and posterior lobes of the pronotum are measured along the median line, using the sulci of the pronotum as limiting points (the collar is not included in the measurement of the anterior lobe). The antennal segments are measured individually, disregarding the small, beadlike subsegments which often are visible between the elongated segments; the first segment of the antenna must be measured in ventral aspect. One of the measurements is always given the proportionate value of 100, the other measurement is compared to the first, consequently the proportions are actually expressions of the

percentage value of the first measurement in comparison to the second. The antennal segmentation is derived from a comparison of the lengths of the individual segments to their aggregate length, which is given the value of 100; thus the antennal formula expresses the relative proportions of the segments as percentages of the total length of the antenna. It is necessary to ascertain that all surfaces or segments which are to be measured are as nearly horizontal as possible. The use of a mound of stiff modeling clay upon a microscope slide or upon a cork angle will facilitate the minor adjustments necessary to achieve the horizontal position. The writer has found that the use of a slide rule greatly facilitates the conversion of measurements into percentage ratios. Limited variations from the proportions quoted in the descriptions may be expected. Whenever proportions are used as key characteristics it is intended that the couplets of the keys be interpreted strictly, since they are phrased in such a manner as to be mutually exclusive after considering the maximum variation found within the species separated by the couplets.

In order to examine the male genitalia it is usually necessary to remove the genital capsule, although the shape of the terminal processes of the

genital capsule may frequently be observed in the caudal aspect of intact specimens. After relaxing a male specimen with a drop of five percent alcohol it is not difficult to remove the genital capsule with fine dissecting needles or a pair of fine-pointed (BB) forceps. The capsule is boiled in ten percent potassium hydroxide for approximately five minutes and is neutralized in a one percent solution of hydrochloric acid. It is then examined under glycerin on a well-slide. Fine dissecting needles, made from "minuten-nadeln" may be used to tease the left clasper from its attachment within the capsule. The clasper is examined while lying with the stem directed toward the observer and the blade pointed toward the observer's right. The paired, dorsally directed, flat processes at the apex of the genital capsule have not received a name in previous literature; the writer has called these structures the terminal processes of the male genital capsule. The terminal processes are of taxonomic value in Pentacora and, to a lesser extent, in other genera; they should be viewed from a caudal aspect, which necessitates placing the genital capsule on end. After examination the genital capsule and the clasper may be stored in a tiny vial containing a small amount of glycerin. The vial may be pinned through its cork beneath the specimen to which

the genitalia belong. A few examinations of the ovipositors of females of several species were made with unsatisfactory results from the standpoint of specific determination. The aedeagus and the structures associated with it are likewise unsatisfactory as taxonomic aids.

Other structures used in classification are illustrated on Plate I. It should be noted that the areoles of the membrane are numbered consecutively from the first areole near the mesal margin of the membrane to the fourth (or fifth in Pentacorinae) near the lateral margin. It should be noted that the writer employs the term "corium" in the strict sense, that is to say, not including the embolium.

SALDIDAE

Family characteristics: Minute to medium sized bugs, somewhat flattened dorso-ventrally, oval or obovate in general shape. Head broad, eyes reniform, moderately to greatly exserted; vertex provided with two ocelli, eyes emarginate on each side of vertex. Apex of frons often raised into a carinate ridge; clypeus prominent; labrum large, flaplike. Rostrum long, usually extending beyond middle coxae; three segmented, second segment much longer than first or third. Antennae long, four segmented, second segment usually longest, third and fourth segments golden pubescent, bearing scattered, longer, erect setae. Pronotum transverse, usually broadly emarginate on posterior margin; anterior lobe medially foveate and separated from collar and posterior lobe by sulci. Scutellum large, transversely depressed across middle. Hemelytra composed of clavus, corium and embolium which are distinctly separated by sutures and a distinct membrane bearing four or five elongate areoles. The sutures of the hemelytra may be obsolete in brachypterous forms and the membrane may be coriaceous in such forms. Hind wings of macropterous forms membranous, folded beneath hemelytra, nearly as long as hemelytra in macropterous forms; in brachypterous

forms hind wings are never visible, are usually not folded and are often reduced to mere flaps. Episterna of prothorax produced into curved, ventrally directed plates before anterior coxae; epimera of prothorax similarly produced beside anterior coxae. Anterior and middle legs not fitted for jumping or grasping; coxae large; femora and tibiae normal; tarsi three segmented, the first segment extremely reduced; tarsal claws two. Hind legs fitted for jumping; coxae large, horizontal, directed posteriorly; trochanters prominent, elongate; femora long, slightly swollen; tibiae long, slender; tarsi similar to those of other legs. All femora provided with a pair of short, curved spines before apex above; all tibiae more or less spinose, provided with a comb at apex beneath, remainder of apex spinose; tarsi often spinose beneath. Abdominal segments and genitalia bilaterally symmetrical. Last sternum of abdomen of female truncated or produced beneath ovipositor. Genital capsule of male produced into a dorsally directed, flat process on each side of a median notch; these are designated as the terminal processes. Claspers sickle shaped, the blades adjacent to each other in resting position.

KEY TO SUBFAMILIES OF SALDIDAE

1. Anterior lobe of pronotum produced into
a pair of prominent dorsally directed
conical or thornlike processes .

SALDOIDINAE Reuter
(p. 464)

- Anterior lobe of pronotum slightly convex
to greatly arched, not produced into
paired processes . 2

2. (1) Membrane of hemelytron with four areoles .

SALDINAE Van Duzee
(p. 124)

- Membrane of hemelytron with five areoles,
of which the fourth may be reduced .

PENTACORINAE n. subf.
(p. 57)

PENTACORINAE new subfamily

Head broad, eyes moderately exserted, vertex broad. Pronotum transversely trapezoidal, the anterior lobe moderately convex. Suture between corium and embolium complete in macropterous form, obsolete beyond middle of hemelytron in brachypterous form. Membrane with five areoles. Last abdominal sternum of female truncate, not produced into a long, rounded plate; preceding sternum medially constricted. Terminal processes of genital capsule of male acute. Macropterous forms common; brachypterous forms rare.

KEY TO GENERA OF SUBFAMILY PENTACORINAE

1. Membrane of hemelytron with five oblong areoles; the fourth areole not triangular, completely separating the third and fifth areoles . .Pentacora Reuter
(p. 67)

Membrane of hemelytron with four oblong areoles; the fourth areole triangular, the third and fifth areoles touching beyond apex of fourth areole .Chiloxanthus Reuter
(p. 58)

Chiloxanthus Reuter

1891. Reuter, O. M. Medd. Soc. Faun. Flor. Fenn. XVII, p. 145 (as subgenus of Acanthia for Salda pilosa Fallen and Salda borealis Stal.).
1895. Reuter, O. M. Acta Soc. Sci. Fenn. XXI, No. 2, p. 4 (as subgenus of Acanthia).
1909. Oshanin, B. Verz. Pal. Hemip. p. 87 (as subgenus of Acanthia).
1911. Kirtschenko, A. N. Ann. Mus. Zool. Acad. Imp. Petersburg XVI, p. 539 (as subgenus of Acanthia).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 11 (to generic rank; S. pilosa Fallen as genotype).
1912. Oshanin, B. Katal. Pal. Hemip. p. 87.
1916. Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1917. Van Duzee, E. P. Catalog of Hemip. North Amer., p. 440.
1920. Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 59.
1934. Stichel, W. Illust. Bestimmungstabellen Deutsch. Wanz., Lief. 10, p. 297.
1943. China, W. E. Generic Names of Brit. Hemip., p. 277.

Macropterous form: Larger species than the average size for the family. General shape broadly oval, hemelytra nearly flat. Head vertical, nearly as wide as anterior width of pronotum, eyes moderately exserted; ocelli broadly separated. Apex of frons not forming a carinate ridge. Antennae slender, second segment longest. Pronotum broadly trapezoidal, lateral margins moderately convergent; median length of posterior lobe approximately one-half of median length of anterior lobe, posterior margin broadly emarginate. Sutures and veins of hemelytra distinct; membrane distinct, with five areoles of which the fourth is typically foreshortened, the third and fifth touching beyond its apex. Next to last abdominal sternum of female medially constricted; last abdominal sternum of female truncated, not produced into a long, rounded plate beneath ovipositor. Terminal processes of genital capsule of male acute.

Brachypterous form: Brachypterous forms are not known.

Genotype: Salda pilosa Fallen.

Comparative notes: Most closely resembles Pentacora Reuter from which it may be distinguished by the reduced fourth areole of the membrane.

Distribution: Holarctic; principally from arctic and subarctic localities, extending southward to England, Germany and Wisconsin.

Chiloxanthus stellatus (Curtis)

(Plate II, figures 6a, 6b)

1835. Acanthia stellata Curtis, John. Ross' Second Voyage, Appendix, p. lxxv (describes from American Arctic).
1868. Salda borealis Stål, Carl. Ofv. Svenska Vet.-Akad. Förh. XXV, No. 6, p. 391 (describes from Lapland).
1871. Salda borealis, Thomson, C. G. Opusc. Entom., Fasc. IV, p. 405 (from Lapland).
1873. Acanthia stellata, Stal, Carl. Enum. Hemip. III, p. 149.
1877. Salda stellata, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 442 (quotes original description).
1878. Salda latifrons Sahlberg, John. Kongl. Svenska Vet.-Akad. Handl. XVI, p. 32 (describes synonym from Siberia).
1880. Salda borealis, Sahlberg, John. Christ. Vid. Selsk. Forh. IX, p. 8.
1886. Salda stellata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1891. Acanthia (Chiloxanthus) borealis Reuter, O. M. Medd. Soc. Fauna Flora Fennica XVII, p. 145 (in new subgenus).

1895. Acanthia (Chiloxanthus) borealis, Reuter, O. M. Acta Soc. Sci. Fennicae XXI, p. 34 (gives synonymy).
1896. Salda stellata, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 223.
1909. Acanthia stellata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X., p. 178.
1910. Salda stellata, Banks, Nathan. Catalog Nearct. Hemipt., p. 13.
1916. Chiloxanthus stellata, Van Duzee, E. P. Check List Hemipt. North Amer., p. 50.
1917. Chiloxanthus stellata, Van Duzee, E. P. Catalog of Hemipt. North Amer., p. 440.
1919. Chiloxanthus stellata, Van Duzee, E. P. Report Canad. Arctic Exped. III, Part F, p. 4 (records from Alaska, Northwest Territories).
1920. Chiloxanthus stellata, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 59 (quotes original description).

Size: Length 5.70 mm. to 6.00 mm. male; 6.60 mm. to 6.70 mm. female. Width of pronotum 2.10 mm. to 2.25 mm. male; 2.40 mm. to 2.48 mm. female.

Color: General color black, marked with yellow; yellow markings obsolete in dark specimens. Eyes pale

brown to dark brown. Disc of frons, vertex and venter of head black, remainder of head yellow; labrum margined with brown. Antennae yellow-brown to red-brown, the first and second segments paler above. Rostrum yellow-brown to brown. Anterior lobe of pronotum black; posterior lobe black; lateral margins yellow or orange-yellow. Scutellum black. Hemelytra black, membrane brown-yellow mottled with brown. Embolium marked at middle with a diffused yellow spot. Lateral margin of corium with a yellow spot at base, at end of basal half and on apical third, the first two spots usually connected by a narrow yellow line; occasionally flecks of yellow occur at apex of corium. Venter of thorax black, the expanded plates of the episternum and epimeron which extend before and beside the anterior coxae, ivory; lateral margin of prothorax orange or orange-yellow; collar of prothorax anteriorly margined with yellow beneath. Abdominal sterna brown, narrowly margined with yellow apically, last abdominal sternum of female entirely brown. Genital capsule of male dark brown, terminal processes yellow-brown. Anterior coxae brown basally, yellow apically, other coxae brown; femora yellow with a row of dark dots, or completely infuscated, above and beneath; trochanters yellow or yellow-brown; tibiae and tarsi yellow-brown, tipped with brown.

Spines of legs and of first antennal segment black.

Structural characteristics: General shape broadly oval. Clothed above and beneath with fine, golden, recumbent pubescence. Second antennal segment clothed with short, fine, recumbent black setae and a few scattered, long, erect, black setae. Width of head as compared to width of pronotum 68 : 100 male; 67 : 100 female. Frons lustrous, pubescent; apex of frons not forming a ridge, medially sulcate above clypeus; frons not depressed subapically. Vertex lustrous, pubescent. Antennae long, slender, length of antennae as compared to length of hind tibia 103 100 male, 88 100 female; length of second antennal segment as compared to width of head 83 100 male, 76 100 female. Antennal segmentation 1 2 3 : 4:: 14 39 24 23 male; 15 39 24 22 female. Rostrum usually extending beyond middle of hind coxae. Pronotum lustrous; anterior lobe minutely scabrous, slightly elevated, depressed behind median fovea, median fovea located at end of anterior third of anterior lobe. Posterior lobe broadly explanate on each side of posterior two-thirds of anterior lobe; lateral margins slightly convexly curved; posterior margin broadly and shallowly emarginate. Median length of posterior lobe as

compared to median length of anterior lobe :: 54
 100 male; 57 100 female. Scutellum lustrous, minutely transversely rugulose. Hemelytra slightly convex, lustrous, minutely scabrous. Veins of corium indistinct; veins of membrane distinct. Posterior margin of last abdominal sternum of female shallowly, concavely sinuated at apex. Terminal processes of male genital capsule and left clasper of the male are figured on Plate II, figures 6a, 6b. Length of posterior tibia as compared to width of head 208
 100 male; 220 100 female. Brachypterous forms are not known.

Comparative notes: This species is the only member of the genus recorded from the Western Hemisphere. The Palearctic C. pilosus (Fallen), the genotype, is smaller, the hemelytra are yellow, and the dorsal surfaces, legs and antennae are densely clothed with long, erect, stiff setae.

Location of types: Described from a single headless specimen from Boreal America. The sex of this specimen is not indicated in the description. The location of the type is unknown to the writer although it probably is with the part of the Curtis Collection reported by Horn (1926) to be among the collections in the Melbourne Museum. Specimens of

Chiloxanthus stellatus from North America are identical with European specimens of Salda borealis Stål. Since A. stellata has priority, Salda borealis and its synonym Salda latifrons J. Sahlberg must be considered as synonyms. The types of Salda borealis and Salda latifrons are reported, in the original descriptions, to be in the Stockholm Museum.

Data on distribution: Recorded in the Western Hemisphere from Alaska and Northwest Territory. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

ALASKA: Umiat, June 26, 1947, L. O. Jachowski, 1 female (U. S. N. M.); Point Barrow, July, 1882, John Murdock, 1 female (U. S. N. M.); Point Barrow, 1883, John Murdock, 2 males.

CANADA: Northwest Territories: Bernard Harbour, July 15, 1 female, Aug. 7, 1 male (Canadian Arctic Expedition).

* U. S. A.: * Wisconsin: Beaver Dam, W. E. Snyder, 1 male (Parshley).

Pentacora Reuter

1912. Reuter, O. M. *Gfv. Finska Vet.-Söc. Forh.*, LIV, Afd. A, No. 12, p. 10 (new genus, designates *Salda signoretii* Guerin as genotype).
1916. Van Duzee, E. P. *Check List Hemip. North Amer.*, p. 50.
1917. Van Duzee, E. P. *Catalog of Hemip. North Amer.*, p. 439.
1920. Hungerford, H. B. *Kans. Univ. Sci. Bull.* XI, p. 56.
1923. Torre-Bueno, J. R. de la. *in Hemip. of Conn.*, *Conn. Geol. Nat. Hist. Surv. Bull.* 34, p. 410.
1923. Torre-Bueno, J. R. de la. *in Addenda et Corrigenda to Hemip. of Conn.*
1926. Blatchley, W. S. *Heteroptera of Eastern North Amer.*, p. 1004.

Macropterous form: Larger species than average size for the family. General shape elongate-oval, hemelytra weakly arched. Head vertical, nearly as wide as anterior width of the pronotum, eyes moderately exserted; ocelli separated by at least the width of an ocellus. Apex of frons not forming a carinate ridge. Antennal segments slender, second segment longest. Pronotum broadly trapezoidal, lateral margins slightly to moderately convergent; median length

of posterior lobe approximately half of median length of anterior lobe; lateral margins explanate on each side of anterior lobe, posterior margin broadly emarginate. Sutures and veins of hemelytra distinct; membrane distinct, with five elongate, oblong areoles, these forming an evenly gradate series. Embolium of female with a submarginal ridge terminating near end of median third of embolium, or with a tubercle at this location. Abdominal sterna (except last sternum) of female medially constricted; last abdominal sternum of female truncate, not produced into a long, rounded plate beneath ovipositor. Terminal processes of genital capsule of male acute.

Brachypterous form: Only one species, P. mexicana (Van Duzee) exhibits brachyptery. Smaller than macropterous species, general shape obovate. Median length of posterior lobe of pronotum approximately one-third of median length of anterior lobe. Posterior margin concavely curved, not emarginate. Sutures and veins of hemelytra partly obsolescent. Membrane reduced, foreshortened, first areole projecting anteriorly far beyond second, fifth areole reduced to a subcoriaceous triangle. Similar to macropterous forms in other features.

Genotype: Salda signoretii Guérin-Ménéville.

Comparative notes: Resembles Chiloxanthus

Reuter in number of areoles in membrane, general shape of pronotum, and in the truncate last abdominal sternum of female. These characteristics will serve to distinguish it from the other genera. The complete, oblong fourth areole of the membrane will distinguish Pentacora from Chiloxanthus.

Distribution: Found principally along the coasts of North and Central America and in the Islands of the Gulf of Mexico and Western Atlantic. No species have been found further north than California on the Pacific coast. P. signoretii (Guérin) and P. ligata (Say) have been collected at various inland points.

KEY TO PENTACORA REUTER

1. Dorsal surfaces clothed with long stiff
erect setae . 2
- Dorsal surfaces clothed with short recumbent
pubescence or setae . 3
2. (1) Second antennal segment and hind tibiae pilose, many setae twice as long as the diameter of the segment bearing them .
- . P. pellita (Uhl.)
(p. 88)
- Second antennal segment and hind tibiae pu-

bescent, setae not twice as long as diameter of segment bearing them

.P. ligata (Say)
(p. 72)

3. (1) Lateral margins of pronotum and embolium with a row of conspicuous short stout setae; second antennal segment longer than width of head . . 4

Lateral margins of pronotum and embolium lacking such setae; length of second antennal segment subequal to or shorter than width of head . 5

4. (3) Distance between anterior edge of black band across posterior half of embolium and apex of embolium subequal to width of head .

.P. signoretii signoretii (Guér.)
(p. 98)

Distance between anterior edge of black band across posterior half of embolium and apex of embolium little more than one-half of width of head

. P. signoretii yucatana n. subsp.
(p. 111)

5. (3) Anterior lobe of pronotum approximately twice as long as posterior lobe on median line; fourth antennal segment

Pentacora ligata (Say)

(Plate II, figs. 1a, 1b)

1832. Acanthia ligata Say, Thomas. Heteroptera
New Harmony, p. 34 (describes from Indiana).
1857. Acanthia ligata, Say, Thomas. Fitch Reprint,
p. 804 in Trans. N. Y. State Agr. Soc. XVII
(reprints original description).
1859. Acanthia ligata, Say, Thomas. Compl. Writings
II (edited by Le Conte), p. 361 (reprints
original description).
1872. Salda variegata Provancher, L'Abbé L. Nat.
Canad. IV, p. 107 (original description of
synonym from Quebec).
1873. Acanthia ligata, Stål, Carl. Enum. Hemip.
in Kongl. Svenska Akad. Handl. XI, p. 149.
1876. Salda ligata, Uhler, P. R. Bull. U. S. Geol.
Geog. Surv. I, p. 333 (records from Nebr.,
Minn., Ill., Ind., Me., Mass., Md., N. C. and
Quebec).
1877. Salda ligata, Uhler, P. R. Bull. U. S. Geol.
Geog. Surv, III, p. 432 (redescribes, records
from Md., Mass., Ill., Me., Ont., Manit. and
Quebec).
1878. Salda ligata, Uhler, P. R. Proc. Boston Soc.
Nat Hist. XIX, p. 431 (records from Mass. in

- T. W. Harris collection).
1878. Acanthia maritima (Harris MS), Uhler, P. R. Proc. Boston Soc. Nat. Hist. XIX, p. 431 (records specimen from "Mass.", thus labeled in T. W. Harris collection).
1886. Salda ligata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1886. Salda variegata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1888. Salda ligata, Provancher, L'Abbé L. Pet. Faune Ent. Canad. III, p. 189 (redescribes, synonymizes his S. variegata).
1888. Salda variegata, Provancher, L'Abbé L. Pet. Faune Ent. Canad. III, p. 189 (as synonym of S. ligata).
1894. Salda ligata, Van Duzee, E. P. Bull. Buffalo Soc. Nat. Sci. V, p. 184 (records from N. Y.).
1896. Salda ligata, Lethierry, L., and Severin, G. Catalogue Gén. Hémip. III, p. 219.
1896. Salda variegata, Lethierry, L., and Severin, G. Catalogue Gén. Hémip. III, p. 219 (as synonym of S. ligata (Say)).
1898. Salda ligata, Osborn, Herbert. Proc. Iowa Acad. Sci. V, p. 234 (records from Iowa).
1909. Acanthia ligata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.

1910. Salda ligata, Banks, Nathan. Catalog Nearct. Hemip., p. 12.
1910. Salda variegata, Banks, Nathan. Catalog Nearct. Hemip., p. 12 (as synonym of S. ligata).
1912. Salda ligata, Van Duzee, E. P. Canad. Ent. XLIV, p. 324 (seen by him in Provancher collection).
1912. Pentacora ligata, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 11 (places in his new genus).
1914. Pentacora ligata, Parshley, H. M. Psyche XXI, p. 140 (records from Maine).
1916. Pentacora ligata, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Pentacora variegata, Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (as synonym of P. ligata (Say)).
1917. Pentacora ligata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 439.
1917. Pentacora ligata, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 109 (records from Me., H. H., Vt., Mass.).
1917. Pentacora variegata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 440 (as synonym of P. ligata (Say)).
1920. Pentacora ligata, Hungerford, H. B. Kans.

- Univ. Sci. Bull. XI, p. 58 (quotes Uhler's re-
description).
1923. Pentacora ligata, Torre-Bueno, J. R. de la,
in Hemip. of Conn., Conn. Geol. Nat. Hist.
Surv. Bull. 34, p. 411 (keys, says not re-
corded from Conn.).
1923. Pentacora ligata, Torre-Bueno, J. R. de la.
in Addenda et Corrigenda to Hemip. of Conn.
(keys in revised key to Pentacora).
1926. Pentacora ligata, Blatchley, W. S. Heteropt.
of Eastern North Amer., p. 1005, fig. 202
(keys, redescribes, records from N. Car., Md.,
figures adult).
1928. Pentacora ligata, Torre-Bueno, J. R. de la.
in Cornell Univ. Agr. Expt. Sta. Memoir 101,
Insects of N. Y., p. 137 (records from N. Y.).
1930. Pentacora ligata, Walley, G. S.. Canad. Ent.
LXII, p. 77 (records from Quebec).
1938. Pentacora ligata, Brimley, C. S. Insects of
North Carolina, p. 83 (records from North Caro-
lina).

Size: Length 4.50 mm. to 6.46 mm. male; 6.30 mm.
to 7.07 mm. female. Width of pronotum 1.95 mm. to
2.10 mm. male; 2.07 mm. to 2.41 mm. female.

Color: General color dark with pale spots, the

dark color varying from brown to black, the pale from ivory to orange depending upon the degree of color intensity of the specimen. Eyes pale brown to black. Vertex black with a pair of pale spots behind ocelli. Frons medially black, pale edged; clypeus pale to dark, labrum pale. Gula dark medially, pale laterally. Rostrum dark brown. First and second antennal segments pale above, dark beneath, base of first segment entirely dark; third and fourth antennal segments pale brown to dark brown. Anterior lobe of pronotum black; posterior lobe black, lateral margins pale (usually excepting the extreme edge); a pale spot on posterior margin at each end of the median third of width of pronotum. Scutellum black, its margins pale at apex; with a pair of lateral pale spots at end of basal half. Clavus dark, usually with a pale spot near end of median third; corium dark with three or more pale spots, or entirely dark; a dark spot at nodal furrow; membrane smoky brown or black. Thoracic sclerites black, broadly pale margined. Each abdominal sternum dark, pale margined. Genital capsule of male dark, its apex pale, terminal processes brown. Coxae dark, usually pale apically; other segments of leg pale, femora and tibiae longitudinally dark-striped above and beneath, tibiae and tarsi dark-tipped. spines of legs and of first antennal segment black.

Structural characteristics: General shape elongate oval. Clothed with long, golden pubescence above and long, silvery pubescence beneath. Vertex, pronotum, scutellum and hemelytra (except membrane) clothed with stiff, erect setae. Antennae clothed with short, black setae and short golden pubescence.

Width of head as compared to width of pronotum 62

100 male: 57 to 100 female. Apex of frons moderately elevated, forming a broad ridge; frons depressed

dubapically and before ocelli. Vertex smooth behind ocelli. Rostrum usually extending slightly beyond

base of hind coxae. Antennae slender, long; length of antenna as compared to length of hind tibia ::

106 100 male, 100 100 female; length of second antennal segment as compared to width of head 94 :

100 male, 106 100 female. Antennal segmentation

1 2 3 4 15 38 24 23 male; 14 40 24

22 female. Pronotum lustrous, minutely scabrous;

median length of posterior lobe as compared to median

length of anterior lobe 57 100 male, 55 100

female; anterior lobe moderately elevated, deeply

foveate near center, transversely impressed across

fovea; posterior lobe narrowly but distinctly explanate

on each side of anterior lobe; lateral margins moder-

ately concavely curved. Scutellum lustrous, minutely

scabrous. Hemelytra lustrous and, excepting the

membrane, minutely scabrous. Embolium of female with a submarginal ridge, the distance between apex of ridge to apex of embolium slightly less than width of head. Venter of last abdominal segment of female broadly and shallowly sinuate at apex. Terminal processes of male genital capsule and left clasper of male are figured on Plate II, figures 1a, 1b. Length of posterior tibia as compared to width of head 234 100 male; 253 100 female. Brachypterous forms are not known.

Comparative notes: This species may be distinguished from the other members of the genus by the proportional lengths of the antennal segments, by the concavely curved lateral margins of the pronotum, and by the details of the genital capsule and claspers of the male. The stiff, erect vestiture of the dorsal surfaces will distinguish it from P. signoretii (Guér.) and P. sphacelata (Uhl.). P. pellita (Uhl.) has long, erect setae on the second segment of the antenna and on the tibiae, and the erect setae of the dorsal surfaces are distinctly longer in that species.

Location of types: Described from "Indiana". Since Say's types are lost, a male labeled "Carp Creek, Cheboygan Co., Mich., August 6, 1948, H. B. Hungerford" is designated as a neotype. This

specimen is in the Francis Huntington Snow Entomological Collections, University of Kansas. The type of Salda variegata Prov. is in the Quebec Public Museum.

Data on distribution: Recorded in Canada from Manitoba, Ontario and Quebec, and in the United States from Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Minnesota, Nebraska, New Hampshire, New York, North Carolina and Vermont. In addition to the neotype the following specimens have been examined (new records for major political areas are indicated by an asterisk):

CANADA: Ontario: Minaki, July 4, 1928, J. McDunnough, 1 female (Strickland); Ottawa, Aug. 14, 1904, W. Metcalfe, 1 female; Ring Lake, 1 female; Windigo Isle, Lake Nipigon, July 27, 1923, N. K. Bigelow, 2 females.

Quebec: Laurentians, Terrebonne County, Aug. 20, 1902, 2 males; Hemmingford, June 30, 1923, C. H. Curran, 2 females.

U. S. A.: * Georgia: Thomasville, June 30, 1948, E. L. Todd, 19 males, 5 females; Thomasville, June 30, 1948; R. H. Beamer, 1 male; Dahlonga, July 31, 1945, P. W. Fattig, 1 male (U. S. N. M.).

Kansas: Neosho County, June 26, 1920, W. E.

Hoffman, 3 males, 9 females.

* Louisiana: Mandeville, June 16, 1917, R. C. Shannon, 2 females (Cornell Univ.).

Maryland: Plummer's Island, Aug. 22, 1943
R. H. Bemaer, 11 males, 12 females; Plummer's Island, May 24, 1906, B. H. Clemmons, 1 female; Williamsport, Sept. 27, 1916, H. L. Parker, 1 male (Parshley);
Burnt Mills, May 5, 1923, J. C. Bradley, 2 females (Cornell Univ.).

Massachusetts: Andover, 1 male (Uhler Coll., U. S. N. M.).

* Michigan: Carp Creek, Cheboygan County, Aug. 6, 1948, H. B. Hungerford, 3 males, 10 females.

Minnesota: Two Harbors, Aug. 9, 1922, H. B. Hungerford, 15 males, 5 females; Gabro Lake Portage, Lake County, Aug. 31, 1920, H. H. Knight, 3 males.

New Hampshire: Glen House, July 20, 1915, C. W. Johnson, 1 male (Parshley); Franconia, 2 females (Slosson Coll., A. M. N. H.).

New York: Cedar River, July 6, 1934, M. W. Sanderson, 2 females; White Plains, Sept. 21, 1907, 2 males; Juanita Island, Lake George, Aug. 20, 1920, 2 males, 3 females; Juanita Island, Lake George, Aug. 29, 1920, M. D. Leonard, 3 females, Sept. 1, 1920, M. D. Leonard, 1 male, 3 females (Cornell Univ.);
Dutchess County, June 19, 1920, F. W. Whiting, 2 males,

1 female; Portage, June 21, 1914, H. H. Knight, 2 males, 1 female, Aug. 9, 1914, H. H. Knight, 1 male; Ft. Montgomery, June 14, 1914, F. M. Schott, 1 female; Ithaca, Aug. 14, G. P. Engelhardt, 1 female; Ithaca, Aug. 5, 1891, 1 male (Cornell Univ.); Ithaca, July 4, 1914, 2 females (Cornell Univ.); Ithaca, July 2, 1935, P. P. Babi, 1 male, 4 females, Aug. 19, 1936, P. P. Babi, 16 males, 14 females, Aug. 24, 1936, P. P. Babi, 2 males, 3 females, Aug. 23, 1936, P. P. Babi, 1 male, 6 females (Cornell Univ.); Chatham, Aug. 15, 1904, 1 female (Parshley); Indian Falls, Essex County, Aug. 30, 1946, 4 males, 1 female (Cornell Univ.).

North Carolina: Naiad Falls, Highlands, Macon County, 4000 ft., June 30, 1938, W. H. Ball, 1 female (U. S. N. M.).

* Pennsylvania: Red Hill, June 20, 1920, J. K. Primm, 1 female.

* Tennessee: Knoxville, July 23, 1890, 1 female (U. S. N. M.).

* Texas: Del Rio, July 8, 1938, R. I. Sailer, 5 males, 4 females; Del Rio, July 8, 1938, D. W. Craik, 1 male, 1 female; Del Rio, July 8, 1938, L. W. Hepner, 4 males, 3 females; Del Rio, July 7, 1938, Jean Russell, 1 male.

Vermont: Middlebury, July 1912, 1 male, 1 female

(Parshley); Scarsburg, Sept. 5, 1919, H. M. Parshley
1 male (Parshley).

* Virginia: Falls Church, June 4, 1 male;
Natural Bridge, Aug. 22, 1918, A. N. Caudell, 2 males
(U. S. N. M.); Richmond, 1 male (Slosson Coll., A.
M. N. H.).

* West Virginia: Smoke Hole, Aug. 7, 1930,
J. G. Needham, 1 male, 1 female, Aug. 8, 1930, J.
G. Needham, 27 males, 21 females (Cornell Univ.).

Pentacora mexicana (Van Duzee)

1923. Orthophrys mexicanus Van Duzee, E. P. Proc. Calif. Acad. Sci. XII, p. 165 (describes from one female from beach drift in Lower California).

Size: Length 3.30 mm. female. Width of pronotum 1.20 mm. female.

Color: General color yellow, marked with brown and black. Eyes dark brown. Frons dark brown, margined with yellow above clypeus and on each side next to eyes. Vertex black, marked with orange-yellow on each side next to eyes and with an orange-yellow spot on each side behind ocelli. Clypeus brown, labrum yellow, gular region brown. First segment of rostrum yellow, second segment dark brown, third segment pale brown. Antennae dark brown. Collar of prothorax yellow; anterior lobe of pronotum black, its anterior margin narrowly yellow; posterior lobe brown, with a yellow spot on posterior margin on each side of a median brown area, lateral margins yellow. Scutellum black, its basal third narrowly margined on each side with orange-brown, its apical third orange-yellow. Clavus brown, the ridge separating it from corium and an elongate spot on its basal third yellow-white; a yellow spot opposite apex of scutellum.

Corium brown, with two yellow spots near base, a lateral yellow spot at the middle and two pale streaks at its apex. Embolium yellow, with a polished, brown oblong spot at end of apical third, this spot not touching lateral margin, and with a transverse brown band at end of median third, median half of this band opaque, lateral half polished; an opaque brown spot at apex. Membrane yellow, veins surrounding the first areole yellow, other veins brown. Venter of thoracic segments yellow, marked with brown along the sutures. Sterna of abdomen dark brown, each sternum, except last sternum of female, narrowly margined with yellow apically. Coxae brown, marked with yellow apically; other segments brown; femora marked above with a yellow spot at apex; tibiae marked with yellow subbasally and subapically, middle and hind tibiae yellow beneath. Spines of first antennal segment and of legs dark brown.

Structural characteristics (Brachypterous form):

General shape obovate. Venter clothed with fine, silver pubescence; legs clothed with fine, golden and silver pubescence; first and second antennal segments and dorsal surfaces, except areoles of membrane, clothed with short dark setae; a longer single seta at each posterior angle of pronotum. Width of head as compared to width of pronotum 77 100 female.

Frons lustrous, minutely scabrous, convex, not medially depressed or conspicuously sulcate; vertex lustrous, minutely scabrous; space between ocelli distinctly broader than width of an ocellus. Rostrum extending slightly beyond apex of hind coxae.

Antennae slender, moderately long; length of antenna as compared to length of hind tibia 112 100 female; length of second antennal segment as compared to width of head :: 80 100 female. Antennal segmentation 1 2 3 4 18 37 22 23 female.

Pronotum lustrous, moderately scabrous; posterior lobe with small transverse rugulae; sulcus between anterior and posterior lobes obsolescent at middle; median length of posterior lobe as compared to median length of anterior lobe 34 100 female. Anterior lobe slightly elevated, with a shallow median fovea before the middle and a shallow punctation on each side of median fovea; posterior lobe narrowly explanate on each side of anterior lobe, lateral margins straight, posterior margin slightly concave. Scutellum as wide as long, lustrous, transversely rugulose on disc; transversely depressed at end of basal third and at end of median third. Claval suture obsolete; a longitudinal ridge extends from humeral angle of hemelytron to apex of the commissure; suture between corium and embolium obsolete on apical half of

hemelytron; nodal furrow obsolete. Hemelytra opaque except basal half of embolium and a marginal brown spot on apical half. First areole of membrane projecting anteriorly far beyond second, second to fifth areoles forming a gradate series, the fifth areole reduced to a triangle. Posterior margin of last ventral segment of female not notched or sinuated. Length of posterior tibia as compared to width of head 221 100 female. Macropterous forms are not known.

Comparative notes: This species may be distinguished from other members of the genus by its smaller size, antennal segmentation, widely spaced ocelli, longer rostrum and by the shape of the posterior margin of the pronotum.

Location of types: The holotype, a female specimen from Puerto Refugio, Angel de la Guardia Island, Gulf of California, Baja California, Mexico June 29, 1921, E. P. Van Duzee, is in the collection of the California Academy of Sciences. It was collected under tide-washed kelp along the beach. The preceding description is written from the holotype. Van Duzee placed this species in the genus Orthophrys Horvath which contains only O. pygmaea (Reuter) from the region of the Mediterranean. This species

agrees with the original description of the genus in size, general shape, in the possession of a long rostrum and in the wide space between the ocelli. Van Duzee stated that the membrane is provided with four areoles, the exterior one being a sub-equilateral triangle. Apparently he had overlooked the first areole since, including his external triangular areole there are five areoles present. This species agrees with the distinctive characteristics of the genus Pentacora Reuter in number of areoles in the membrane, shape of venter of last abdominal segment of female, the lack of a carinate ridge at the apex of the frons, shape and structure of the pronotum, and the presence of a polished area at the margin of the embolium near the end of the median third of the embolium. It also agrees with the general color pattern characteristic of Pentacora. In consideration of the agreement with Pentacora. Reuter it seems desirable to transfer this species to this genus.

Data on distribution: Known only from the holotype.

Pentacora pellita (Uhler)

(Plate II figures 2a, 2b)

1877. Salda pellita Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 433 (describes from Mass.).
1886. Salda pellita, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1896. Salda pellita, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 222.
1906. Salda vagata, (Uhler MS), Snow, F. H. Trans. Kans. Acad. Sci. XX, pt. 1, p. 153 (records from Texas).
1909. Acanthia pellita, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.
1909. Acanthia vagator, Smith, J. B. Insects of N. J., Hemip. in Ann. Rept. N. J. State Mus., 1909, p. 166 (records from New Jersey under a Uhler manuscript name).
1910. Salda pellita, Banks, Nathan. Catalog Ne-arct. Hemip., p. 12.
1912. Pentacora hirta, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 11 (places in his new genus, identifies species incorrectly).
1914. Acanthia xanthochila limbosa, Barber, H. G.

- Bull. Amer. Mus. Nat. Hist. XXXIII, p. 449
(records from Florida, a misidentification).
1916. Pentacora hirta, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Salda vagata, (Uhler MS), Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (lists as synonym of P. hirta).
1916. Saldula pellita, Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (apparently not known to him).
1917. Pentacora hirta, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 439.
1917. Salda vagata, (Uhler MS), Van Duzee, E. P. Catalog of Hemip. North Amer., p. 439 (lists as synonym of P. hirta).
1917. Saldula pellita, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 445 (apparently not known to him).
1917. Saldula pellita, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 111 (records from Mass.).
1917. Saldula xanthochila limbosa. Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 111 (records from Conn., a misidentification).
1919. Pentacora hirta, Parshley, H. M. Canad. Ent.

- LI, p. 72 (records from Conn., a revision of identification for his Saldula xanthochila limbosa recorded above).
1920. Saldula pellita, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 71 (quotes original description).
1923. Pentacora pellita, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 411 (keys).
1923. Pentacora hirta, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 411 (keys, records from Conn.).
1923. Pentacora hirta, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. (revises key, calls P. pellita a synonym).
1923. Pentacora pellita, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. ("Should be given as synonym of hirta").
1926. Pentacora hirta, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1006 (a misidentification, redescribes, records from Fla., N. J.).
1926. Salda pellita, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1007 (lists as synonym of P. hirta).

1928. Pentacora hirta, Torre-Bueno, J. R. de la.
in Cornell Univ. Agr. Expt. Sta. Memoir 101,
Insects of N. Y., p. 137 (records from N. Y.).

Size: Length 4.75 mm. to 6.38 mm. male; 5.40 mm. to 6.60 mm. female. Width of pronotum 1.70 mm. to 2.33 mm. male; 1.86 mm. to 2.40 mm. female.

Color: General color yellow, with black and brown markings. The dark color varies from pale brown to black depending upon degree of color intensity of specimen. Occasional specimens are entirely yellow with exception of dark, mottled markings on scutellum. Eyes pale brown to dark brown. Vertex brown to black, a yellow or brown line next to eyes on each side extends posteriorly beyond the ocelli. Remainder of head yellow, frequently marked with brown or black on frons, gula, clypeus and labrum. Rostrum light brown to dark brown. First and second antennal segments yellow-brown to red-brown; third and fourth antennal segments red-brown. Anterior lobe of pronotum black; posterior lobe black medially, usually pale laterally with a dark spot near humeral angles, lateral margins pale. Scutellum dark brown to black, with a subapical spot on lateral margin of each side. Clavus usually entirely dark, corium dark brown medially, fading

to pale brown laterally, embolium pale brown medially, fading to yellow laterally, membrane mottled smoky-brown. In dark specimens clavus, corium and medial half of embolium are black, lateral half of embolium yellow, membrane smoky-black. Venter of thoracic segments black, broadly margined with yellow. Sterna of abdomen brown, occasionally each sternum black at base. Genital capsule of male brown, its terminal processes yellow. Coxae brown to black basally, yellow apically; other segments of legs yellow to red-brown. Spines of legs black.

Structural characteristics: General shape elongate oval. Venter clothed with long silvery or golden pubescence. Legs, first and second antennal segments and all dorsal surfaces except membrane clothed with long, stiff, erect setae. Width of head as compared to width of pronotum :: 63 100 male; 59 100 female. Frons slightly depressed subapically. Frons and vertex smooth, polished. Rostrum usually extending beyond middle of hind coxae. Antennae slender, long; length of antenna as compared to length of hind tibia 124 100 male, 126 : 100 female; length of second antennal segment as compared to width of head 96 100 male, 101 100 female. Antennal segmentation, 1 2 3 : 4 :: 15 35 26 24 male; 15 36 26 23 female. Pronotum polished, smooth; median length of posterior lobe as compared to median length of

anterior lobe :: 57 100 male, 52 100 female. Anterior lobe moderately elevated, with a deep, median, bipunctate fovea before center, and with a shallow, lateral punctation each side of median fovea; posterior lobe narrowly but markedly explanate on each side of anterior lobe; lateral margins straight. Scutellum polished, smooth. Hemelytra, excepting membrane, polished, minutely punctate at base of each seta. Female with a submarginal tubercle at middle of posterior half of embolium. Posterior margin of venter of last abdominal segment of female not notched or sinuated. Terminal processes of male genital capsule and left clasper of male are figured on Plate II, figures 2a and 2b. Length of posterior tibia as compared to width of head 221 100 male; 225 100 female. Brachypterous forms are not known, although in some specimens the membrane is not as elongated as usual, causing the specimen to appear oval in general facies.

Comparative notes: This species can be distinguished from the other members of the genus by its polished dorsal surface, and by its dense vestiture of long, erect setae on the legs and second antennal segment. The details of the genital capsule and claspers of the male are distinctive.

Location of types: Uhler described this species from "near Chelsea, July 9" and "the vicinity of Newtonville" in Massachusetts. His description applies to the relatively rare pale form of this species. Five specimens, two males and three females labeled "Mass." from the Uhler collection in the United States National Museum fit his description. A male specimen is designated as a lectoholotype, a female is designated as a lectoallotype and the male and two females are designated as cotypes. This species has usually been designated Acanthia hirta Say, and Bueno (1923c) considers Salda pellita Uhler to be a synonym of A. hirta Say. Say's A. hirta is inadequately described, the description applying to Acanthia confluenta Say as well as it does to the present species. However, it is not completely applicable to any species which the writer has examined. Say describes A. hirta from "Indiana"; all known records of the present species are from seacoast localities. In view of the circumstances of distribution as well as the vagueness of the description it seems advisable to revive Uhler's S. pellita from synonymy with Acanthia hirta Say. The latter species remains unrecognizable.

Data on distribution: Recorded in the United

States from Connecticut, Florida, Massachusetts, New Jersey, New York and Texas. Van Duzee (1917) lists it from Quebec in Canada. In addition to the type series, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

* MEXICO: Mexico, N. O. 5676, on banana, June 2, 1931, 1 female (U. S. N. M.).

U. S. A.: Connecticut: New Haven, June 28, 1916, W. E. Britton, 1 female (Parshley); Madison, July 12, 1917, B. H. Walden, 2 females (Parshley); Guilford, June 26, 1918, B. H. Walden, 1 male (Parshley).

Florida: Long Key, July 23, 1948, L. D. Beamer, 1 female; Yankeetown, July 7, 1948, B. T. McDermott, 4 males, 3 females; Lower Matecumbe Key, March 14, 1947, L. D. Beamer, 1 female; Hudson, July 13, 1939, R. H. Beamer, 1 female; Royal Palm Park, July 21, 1948, R. H. Beamer, 1 male, 1 female; Biscayne Bay, 1 male (Uhler Coll., U. S. N. M.); Biscayne Bay, 2 males, 1 female (Slosson Coll., A. M. N. H.); Marco, April 17, 1912, 2 males, 1 female (A. M. N. H.); Lakeland, May 8, 1912, 1 male (A. M. N. H.); Fort Meyers, March 30, 1912, 3 males, 1 female (A. M. N. H.); South Bay, Lake Okeechobee, May 2, 1912,

1 female (A. M. N. H.); Everglade, April 9, 1 male, 5 females, April 11, 1 male, 2 females, April 14, 2 males, 3 females (A. M. N. H.).

* Louisiana: Buras, June 21, 1948, R. H. Beamer, 2 females; Sabine River Ferry, opposite Orange, June 20, 1917, 32 males, 22 females (Cornell Univ.); Grand Isle, April 13, 1944, 1 female (U. S. N. M.).

* Maryland: Maryland, 2 males, 1 female (Salda vagator, det. Uhler; Uhler Coll., U. S. N. M.).

Massachusetts: Nantuck, Aug. 1, 3 females (Uhler Coll., U. S. N. M.).

* Mississippi: Biloxi, June 25, 1948, R. H. Beamer, 1 female.

* New Hampshire: Hampton, Aug. 8, 1910, S. Albert Shaw, 2 females (Parshley).

New Jersey: Point Pleasant, July 1, 1914, F. Schott, 1 female; South Amboy, Aug. 21, 2 males, 3 females (A. M. N. H.).

New York: Rye Beach, Aug. 21, 1909, 3 males, 7 females, Aug. 30, 1909, 2 males, 1 female, July 17, 1909, 2 males, 1 female; Rockaway Beach, Long Island, July 1909, 2 females; Mamaroneck, Oct. 10, 1924, 1 male; Orient, Long Island, June 22, 1942, R. Latham, 1 male, 4 females (U. S. N. M.); Cold-

spring Harbor, Long Island, July 30, 1920, J. R. de la Torre-Bueno, 2 males, 6 females; Coldspring Harbor, Long Island, July 1, 1931, C. H. Curran, 1 female (A. M. N. H.); Coldspring Harbor, Long Island, July 23, 1919, H. M. Parshley, 1 male, 1 female, July 20, 1920, H. M. Parshley, 6 males, 5 females, July 21, 1920, H. M. Parshley, 1 male, 1 female, July 22, 1920, H. M. Parshley, 1 female, July 23, 1920, H. M. Parshley, 1 male, 4 females, July 30, 1920, H. M. Parshley, 10 males, 5 females (Parshley).

Texas: Brazoria County, Aug. 10, 1928, R. H. Beamer, 1 male, 2 females; Galveston, May, F. H. Snow, 1 male; Victoria, April 5, 1907, J. D. Mitchell, 1 male (U. S. N. M.).

Pentacora signoretii signoretii (Guérin)

(Plate II figures 3a, 3b)

1856. Salda signoretii Guérin-Ménéville, F. E. Hémipteros in de la Sagra's Hist. Nat. de la Isla de Cuba, Part II, Tomo VII, p. 167 (describes from Cuba, remarks in Spanish).
1857. Salda signoretii, Guérin-Ménéville, F. E. Hémiptères in de la Sagra's Hist. Nat. de l'Île de Cuba, VII, p. 401, Pl. XIII, Fig. 10 (reprint of original description, remarks in French).
1862. Salda ornata Stål, Carl. Stettiner Ent. Zeit. XXIII, p. 458 (describes synonym from Vera Cruz, Mexico).
1873. Acanthia signoretii, Stål, Carl. Enum. Hemip. III, p. 148.
1873. Acanthia ornata, Stål, Carl. Enum. Hemip. III, p. 149.
1876. Salda signoretii, Uhler, P. R. U. S. Geol. Geog. Surv. I, p. 333 (records from Tex., Md., Mass., Mexico and Cuba).
1877. Salda signoretii, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 431 (redescribes, redescribes, records from Mass., N. C., Ga., Md., Cuba and Sonora, Mexico).
1884. Salda signoretii, Popenoe, E. A. Trans. Kans.

- Acad. Sci. IX, p. 63 (records from Kansas).
1884. Salda signoretii, Uhler, P. R. in Kingsley's Standard Nat. Hist. II, p. 265 fig. 321 (notes on biology).
1886. Salda ornata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1886. Salda signoretii, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1888. Salda signoretii, Uhler, P. R. in Riverside Nat. Hist. II, p. 265, Fig. 321 (identical with Kingsley's Nat. Hist.).
1896. Salda ornata, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 221.
1896. Salda signoreti, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 223.
1901. Salda signoretii, Champion, G. C. Biol. Centr.-Amer., Rynch., Vol. II, p. 339, Tab. 20, fig. 2 (keys, notes taxonomic characteristics, records from Ga., Cuba, and Mexico, says S. ornata, Stål is a synonym).
1901. Salda ornata, Champion, G. C. Biol. Centr.-Amer., Rynch., Vol. II, p. 339, Tab. 20, fig. 2 (examines and figures Stål's type, placing it as a synonym of S. signoretii Guérin).
1906. Salda signoreti, Barber, H. G. Sci. Bull., Brooklyn Inst. of Arts and Sciences I, p. 287

(records from Texas).

1909. Acanthia signoretii, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 178.
1910. Acanthia signoretii, Smith, J. B. Insects of N. J., Hemip. in Ann. Rep. N. J. State Mus., 1909, p. 166 (records from New Jersey).
1910. Salda signoretii, Banks, Nathan. Catalog Nearct. Hemip., p. 13.
1910. Salda ornata, Banks, Nathan. Catalog Nearct. Hemip., p. 13 (lists as synonym of S. signoretii).
1912. Pentacora signoreti, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 11 (designates as type of new genus).
1914. Pentacora signoretii, Van Duzee, E. P. Trans. San Diego Soc. Nat. Hist. II, p. 32 (records from Calif.).
1914. Acanthia signoreti, Barber, H. G. Bull. Amer. Mus. Nat. Hist. XXXIII, p. 499 (records from Florida).
1916. Pentacora signoreti, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Pentacora ornata, Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (lists as synonym of P. signoreti).
1917. Pentacora signoreti, Parshley, H. M. Occas.

- Papers Boston Soc. Nat. Hist. VII, p. 109
(records from Mass.).
1917. Pentacora signoreti, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 439.
1917. Pentacora ornata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 439 (lists as synonym of P. signoreti).
1920. Pentacora signoreti, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 56, color Pl. III, fig. 10 (quotes Uhler's redescription, figures).
1920. Pentacora signoreti, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 334, Pl. XXXII, fig. 6 (figures male genitalia and suggests these may be of taxonomic value).
1923. Pentacora signoreti, Van Duzee, E. P. Proc. Calif. Acad. Sci. XII, p. 166 (records from Lower California, Mexico).
1923. Pentacora signoretii, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 410 (keys, records from New York).
1923. Pentacora signoretii, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. (keys in revised key to Pentacora).
1925. Acanthia signoretii, Hungerford, H. B., and Beamer, R. H. Ent. News XXXVI, p. 264 (records from Kansas).

1926. Pentacora signoreti, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1005 fig. 201 (keys, redescribes, records from Florida and Texas).
1928. Pentacora signoreti, Torre-Bueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 137 (records from New York).
1938. Pentacora signoreti, Brimley, C. S. Insects of North Carolina, p. 83 (records from North Carolina).
1943. Pentacora signoreti, Harris, H. M. Jl. Kans. Ent. Soc. XVI, p. 152 (records from South Dakota).

Size: Length 5.70 mm. to 7.40 mm. male; 6.15 mm. to 8.19 mm. female. Width of pronotum 2.00 mm. to 2.51 mm. male; 2.14 mm. to 2.85 mm. female.

Color: General color pale with darker markings which vary from pale brown to black according to degree of infuscation of individual specimen. Eyes yellow, red or brown. Vertex black with a pair of yellow spots behind ocelli. Remainder of head yellow except a median, longitudinal, dark band on gula. First and second antennal segments yellow, first infuscated beneath, second often slightly darkened beneath; third and fourth segments dark yellow to red-brown. Rostrum brown. Anterior lobe of pronotum black, frequently with several yellow spots; posterior lobe dark medially,

yellow laterally, with dark spots near humeral angles. Scutellum black, marked with a lateral yellow spot on each side at end of basal half and with a lateral yellow spot on each side before apex. Clavus and corium dark, variably spotted or streaked with yellow; embolium yellow to ivory with a dark spot at end of basal third and a dark band at end of apical third; a dark spot at nodal furrow; membrane smoky brown or black, pale at apex. Venter of thorax yellow to ivory, mesosternum black. Venter of abdomen pale, each segment brown basally, fading to yellow apically. Genital capsule of male dark with apex and terminal processes yellow. Coxae dark basally, pale apically; other segments of legs yellow; femora often broadly dark striped above; tibiae and tarsi usually dark tipped. Spines of legs and of first antennal segment black.

Structural characteristics: General shape elongate oval. Clothed with short, golden pubescence and short, fine, black setae. A single row of short, coarse, black setae along lateral margins of pronotum and hemelytra. Width of head as compared with width of pronotum 61 100 male; 60 100 female. Apex of frons slightly elevated, frons depressed subapically. Frons with a distinct median, longitudinal sulcus above clypeus. Vertex smooth behind ocelli. Rostrum

usually extending to apex of hind coxae. Antennae slender, long; length of antenna as compared to length of hind tibia :: 105 : 100 male, 106 100 female; length of second segment as compared to width of head 118 100 male, 122 100 female. Antennal segmentation, 1 2 3 : 4 :: 15 48 22 15 male; 16 48 22 14 female. Pronotum lustrous, minutely scabrous. Median length of posterior lobe as compared to median length of anterior lobe 50 100 male; 51 100 female. Anterior lobe moderately elevated, deeply foveate near center, transversely impressed across fovea. Posterior lobe moderately explanate on each side of anterior lobe; lateral margins straight or slightly convex. Scutellum minutely scabrous, lustrous. Hemelytra, except membrane, minutely scabrous, lustrous. Female with a submarginal ridge on the embolium, the ridge terminating abruptly, distance from apex of ridge to apex of the embolium nearly or quite equal to width of head. Relative position of apex of ridge is indicated in male by anterior edge of a black band across the embolium near end of medial third of embolium. Veins of corium distinct. Venter of last abdominal segment of female notched at apex. Terminal processes of male genital capsule and the left clasper of male are figured on Plate II, figures 3a and 3b. Length of posterior tibia as compared to width of head

238 100 male; 244 100 female. Brachypterous forms are not known.

Comparative notes: This species can be distinguished from all other members of the family by the row of short, coarse setae along the lateral margins of the pronotum and hemelytra. It can be distinguished from the other members of the genus by the relatively longer second antennal segment and by the details of the genital capsule and of the claspers of the male. P. signoretii (Guér.) and P. sphacelata (Uhl.) lack the long stiff, erect bristles of the pronotum and hemelytra which are characteristic of P. pellita (Uhl.) and P. ligata (Say). P. sphacelata (Uhl.) is distinctly smaller than P. signoretii (Guér.) and is drab in color.

Location of types: According to Horn (1926) the Hemiptera from the Guérin collection are in the Naples Museum; presumably the types of P. signoretii are among the specimens in this collection. The type of Acanthia ornata Stål is in the Stockholm Museum.

Data on distribution: Recorded from Cuba, from Vera Cruz, Baja California and Sonora in Mexico, and in the United States from California, Florida, Georgia, Kansas, Maryland, Massachusetts, New Jersey, New York, North Carolina, South Dakota and Texas. The following

specimens have been examined (new records for major political areas are indicated by an asterisk):

* BRITISH WEST INDIES: St. Kitts, Sept. 21, 1936, Chaplin and Blackwelder, 1 female (U. S. N. M.).

* CANADA: * Manitoba: Red Deer River, Aug. 3, 1937, R. H. Beamer, 63 males, 37 females; Red Deer River, Aug. 3, 1937, C. L. Johnston, 1 male; Baldur, July 22, 1921, P. N. Vroom, 3 males, 1 female; Baldur, July 17, 1921, N. Criddle, 1 female (Parshley).

CUBA: Cuba, 1 male (Uhler Coll., U. S. N. M.); Playa, Jaimanita, Habana, Aug. 25, 1925, F. Cervera, 1 male, 1 female.

* DOMINICAN REPUBLIC: Puerto Plata, May 7 - 8, 1915, 1 female (A. M. N. H.).

* GUATEMALA: Salina de Ocapan, n. w. of Champerico, March 26, 1947, Miller and Holloway, 1 male, 1 female (U. S. N. M.).

* HAITÍ: Fond Parisien, Feb. 11 - 18, 1928, 5 males, 7 females (A. M. N. H.).

MEXICO: Baja California: Venancio, July 17, 1938, Michelbacher and Ross, 20 males, 12 females (Calif. Acad. Sci.); San Quintin, May 9, 1938, W. E. Simonds, 2 males, 10 females (Calif. Acad. Sci.).

* Chihuahua: San Antonio, July 15, 1927, R. H. Beamer, 1 female.

* Sinaloa: Mazatlan, Feb. 29, 1918, Kusche, 2 females (U. S. N. M.).

* PORTO RICO: Adjuntas, Feb. 16, 1935, C. Mendez, 1 male, 1 female; Maunabo, Jan. 15, 1940, G. N. Wolcott and L. F. Martorell 1 male, 1 female (U. S. N. M.).

U. S. A.: California: Palm City, Aug. 7, 1935, Jack Beamer, 1 female; Salton Sea, Imperial County, June 30, 1927, H. Notman, 2 females; Oceanside, July 17, 1925, 3 females (U. S. N. M.).

Florida: Vero Beach, Sept. 26, 1927, E. M. Becton, 1 male; Yankeetown, July 7, 1948, B. T. McDermott, 8 males, 7 females; Key West, March 6, 1905, Fred K. Knab, 1 male, 1 female (U. S. N. M.); Biscayne Bay, 1 female (Slosson Coll., A. M. N. H.); Marco, April 17, 1912, 1 female (A. M. N. H.); Punta Gorda, Nov. 13 - 16, 1911, 2 males, 1 female.

Kansas: Stafford County, Salt Marsh, June 25, 1936, J. D. Beamer, 9 males, 10 females; Meade County, Aug. 14, 1945, R. H. Beamer, 5 males, 4 females; Hodgeman County, July 17 - 25, 1917, 3 males, 2 females; Reno County, Aug. 13 - 20, 1917, 2 males, 9 females; Kiowa County, July 4, 1923, R. H. Beamer, 5 males, July 5, 1923, R. H. Beamer, 1 male, 3 females; Kiowa County,

July 5, 1923, L. C. Woodruff, 1 female; Kiowa County,
 July, 1923, C. H. Martin, 2 males; Clark County, June,
 F. H. Snow, 32 males, 23 females; Mitchell County,
 Aug. 25, 3 males, 2 females (Kansas State Coll.);
 Republic County, July 6, 1 female (Kansas State Coll.);
 West Kansas, Popenoe, 1 female (Uhler Coll., U. S. N.
 M.).

Louisiana: Cameron, June 17, 1948, R. H. Beamer,
 1 female.

Massachusetts: Woods Hole, July 22, 1899, A. L.
 Melander, 1 female; Woods Hole, July 22, 1899, C. T.
 Bures, 1 female (Parshley); Woods Hole, Aug. 1900, 1
 male.

* Mississippi: Cat Island, Sept. 7, 1920, H. L.
 Dozier, 1 female (Parshley); Ocean Springs, May 30,
 1931, H. Dietrich, 1 female (Cornell Univ.).

New Jersey: Cape May, Aug. 19, 1902, Van Duzee,
 1 female.

* New Mexico: Eddy County, July 12, 1927, R. H.
 Beamer, 1 female; Chaves County, July 8, 1927, L. A.
 Anderson, 1 male, 3 females; 25 mi. w. of Tularosa,
 July 1, 1940, R. H. Beamer, 31 males, 32 females; 25 mi.
 w. of Tularosa, July 1, 1940, D. E. Hardy, 4 males, 6
 females.

New York: Manursing Island, Rye, July 9, 1925,
 1 male; Long Beach, Long Island, Aug. 20, 1916, F. M.

Schott, 1 female; Babylon, Gilgo Beach, Long Island, July 25, 1919, H. M. Parshley, 1 male, 2 females (Parshley).

* North Dakota: Tappen, July 23, 1937, R. H. Beamer, 1 male, 1 female; Devil's Lake, July 25, 1920, T. H. Hubbell, 1 female; Devil's Lake, June 30, 1921, C. K. Sibley, 2 males, 5 females, July 5, 1921, C. K. Sibley, 1 male, 2 females, July 6, 1921, C. K. Sibley, 1 male, July 7, 1921, C. K. Sibley, 1 female (Cornell Univ.).

South Dakota: Burdette, July 20, 1937, R. H. Beamer, 4 males, 1 female; Burdette, July 20, 1937, H. T. Peters, 3 males, 4 females; Waubay Refuge, June 22, 1940, H. C. Severin, 26 males, 21 females (Severin).

Texas: Cameron County, Aug. 3, 1928, R. H. Beamer, 1 male, 3 females; Cameron County, Aug. 3, 1928, L. D. Beamer, 3 males, 3 females; Del Rio, Aug. 9, 1921, 1 male; Galveston, Nov. 2, 1932, L. D. Tuthill, 3 males, 4 females; Galveston, May, F. H. Snow, 5 males, 6 females; Galveston, May 30, 1918, J. C. Bradley, 1 male, 6 females (Cornell Univ.); Aransas County, Aug. 6, 1928, J. G. Shaw, 3 males, 8 females; Brownsville, June 3 males, 3 females; Brownsville, May 31, 1927, H. Notman, 1 male; Brownsville, July 18 - 20, 1933, C. Sabrosky, 2 males, 1 female (Kansas State Coll.); Rockport, Aug. 7, 1928, J. G. Shaw, 1 male; Brooks County, July 25,

1928, R. H. Beamer, 1 male; Eastland County, May 6,
1921, Grace Wiley, 3 males, 4 females; Port Isabel,
Aug. 5, 1 male (U. S. N. M.); Port Isabel, April 25,
1895, 1 male (U. S. N. M.); Corpus Christi, March 18,
1908, Jones and Pratt, 3 females (U. S. N. M.); Boca
Chica; June 3, 1921, E. P. Van Duzee, 1 male.

* Utah: Saltair, July 5, J. M. Aldrich, 2 males,
1 female (U. S. N. M.); Salt Lake County, Oct. 16,
1909, 1 male (Cornell Univ.).

* VIRGIN ISLANDS: Christiansted, St. Croix, 1941,
H. A. Beatty, 5 males, 3 females.

Pentacora signoretii yucatana new subspecies

(Plate II, figures 4a, 4b)

Size: Length 5.56 mm. to 6.31 mm. male; 6.22 mm. to 6.90 mm. female. Width of pronotum 2.02 mm. to 2.25 mm. male; 2.22 mm. to 2.55 mm. female.

Color: General color ivory with brown and black markings. Eyes yellow or ivory, often mottled with brown or black. Vertex black with a pair of yellow spots behind ocelli. Remainder of head yellow excepting a median longitudinal dark band on gula. First and second antennal segments yellow above, red-brown below, third and fourth segments dark yellow to red-brown. Rostrum dark brown. Anterior lobe of pronotum black, with several yellow spots; posterior lobe black medially, ivory laterally, with dark spots near humeral angles. Scutellum black, marked with a lateral yellow spot on each side at end of basal half and with a lateral yellow spot on each side before apex. Clavus and corium brown, with several ivory spots of variable extent; embolium ivory, frequently discolored with brown at end of basal third, banded with brown or black at end of medial third; a brown or black spot at nodal furrow; membrane smoky-brown, a transverse yellow band at end of basal third, apices of areoles pale yellow. Venter of thorax ivory, mesosternum black. Venter of

abdomen pale, each segment brown basally, fading to ivory apically. Genital capsule of male brown basally with its apex and terminal processes ivory. Coxae brown basally, ivory apically; other segments of legs ivory, often marked with brown apically. Spines of legs and of first antennal segment black.

Structural characteristics: General shape elongate oval. Clothed with short, golden pubescence and short, fine, black setae. A single row of short, coarse, black setae extends along lateral margins of pronotum and hemelytra. Width of head as compared with width of pronotum 63 100 male; 61 100 female. Apex of frons slightly elevated, frons depressed subapically. Frons with a distinct median longitudinal sulcus above clypeus. Vertex smooth behind ocelli. Rostrum usually extending to apex of hind coxae. Antennae slender, long; length of antenna as compared to length of hind tibia 112 100 male, 116 100 female; length of second segment as compared to width of head 128 100 male, 132 100 female. Antennal segmentation, 1 2 3 4 15 : 48 22 15 male; 15 49 21 15 female. Pronotum lustrous, minutely scabrous. Median length of posterior lobe as compared to median length of anterior lobe 50 100 male; 50 : 100 female. Anterior lobe moderately elevated, deeply foveate near center, transversely impressed across fovea.

Posterior lobe moderately explanate on each side of anterior lobe; lateral margins straight or slightly convex. Scutellum minutely scabrous, lustrous. Hemelytra, except membrane, minutely scabrous, lustrous. Female with a submarginal ridge on the embolium, the ridge terminating abruptly, distance from apex of ridge to apex of embolium little more than half width of the head. Relative position of apex of the ridge is indicated in male by anterior edge of a black band across embolium beyond the end of medial third of embolium. Venter of last abdominal segment of female notched at apex. Terminal processes of male genital capsule and left clasper of male are figured on Plate II, figures 4a and 4b. Length of posterior tibia as compared to width of head:: 241 100 male; 232 100 female. Brachypterous forms are not known.

Comparative notes: This subspecies can be distinguished from P. signoretii signoretii (Guér.) by the lesser distance between the apex of the submarginal ridge on the embolium of the female and the apex of the embolium. In P. signoretii yucatana the distance is only slightly more than one-half the width of the head; in the typical subspecies it is nearly or quite equal to the width of the head. In the male the relative position of the apex of the ridge is marked by the anterior edge of a dark band across the embolium near

the end of the medial third of the embolium. P. signoretii yucatan is smaller than the usual specimens of P. signoretii signoretii (Guér.), and is usually paler.

Location of types: Holotype: Progreso, Yucatan, Mexico, Aug. 27, 1936, H. D. Thomas, male.

Allotype: Progreso, Yucatan, Mexico, Aug. 27, 1936, H. D. Thomas, female

Paratypes: Progreso, Yucatan, Mexico, Aug. 27, 1936, H. D. Thomas, thirteen males and six females.

The type series is in the Francis Huntington Snow Entomological Collections, University of Kansas. This series is considered as a subspecies in consideration of its resemblance to a named species. The specific differences in this genus are well-marked; no species closely resembles another.

Data on distribution: Known only from the type series.

Pentacora sphacelata (Uhler)

(Plate II figures 5a, 5b)

1877. Salda sphacelata Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 434 (describes from Mass., Md., Calif., and Cuba).
1886. Salda sphacelata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1896. Salda sphacelata, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 223.
1906. Salda sphacelata, Snow, F. H. Trans. Kans. Acad. Sci. XX, Part I, p. 153 (records from Texas).
1906. Salda sphacelata, Barber, H. G. Sci. Bull., Brooklyn Inst. of Arts and Sciences I, p. 288 (records from Texas).
1909. Acanthia sphacelata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 178.
1910. Acanthia sphacelata, Smith, J. E. Insects of New Jersey, Hemip. in Ann. Rept. N. J. State Mus., 1909 p. 166 (records from New Jersey).
1910. Salda sphacelata, Banks, Nathan. Catalog Ne-arct. Hemip., p. 13.
1914. Salda sphacelata, Barber, H. G. Bull. Amer. Mus. Nat. Hist. XXXIII, p. 499 (records from Florida).

1916. Saldula sphacelata, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1917. Saldula sphacelata, Parshley, H. M. Canad. Ent. XLIX, p. 48 (records from beach drift in Massachusetts).
1917. Saldula sphacelata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 444.
1917. Saldula sphacelata, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 111 (records from Me., Mass. and Rhode Island).
1920. Saldula sphacelata, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 69 (quotes original description).
1923. Saldula sphacelata, Van Duzee, E. P. Proc Calif. Acad. Sci. XII, p. 166 (records from Lower California, Mexico).
1923. Pentacora sphacelata, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 412 (records from Conn., keys).
1923. Pentacora sphacelata, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. (keys in his revised key to Pentacora).
1926. Pentacora sphacelata, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1006 (keys, redescribes, records from Florida).

1928. Pentacora sphacelata, Torre-Bueno, J. R. de la.
in Cornell Univ. Agr. Expt. Sta. Memoir 101,
Insects of N. Y., p. 137 (records from New York).
1939. Pentacora sphacelata, Barber, H. G. Sci. Surv.
Porto Rico, N. Y. Acad. Sci. XIV, p. 415 (records
from Porto Rico).

Size: Length 3.83 mm. to 4.90 mm. male; 4.55 mm.
to 5.80 mm. female. Width of pronotum 1.29 mm. to 1.72
mm. male; 1.58 mm. to 2.10 mm. female.

Color: General color gray-yellow, variably marked
with gray-brown or black. Eyes yellow-brown to dark
brown. Head yellow, sulci on frons, ocellar region,
posterior edge of vertex, a longitudinal median band
behind ocelli and areas behind eyes dark brown or black;
often dark on middle of gula. First and second anten-
nal segments yellow beneath, red-brown above, third and
fourth segments red-brown. Rostrum pale brown. Anter-
ior lobe of pronotum yellow, variably mottled with
brown or black, sulcus behind it black; posterior lobe
yellow, often darkened medially and at each humeral
angle. Scutellum dark brown to black, a yellow spot
on each lateral margin of basal half; apical third to
half broadly margined with yellow. Clavus gray-yellow,
streaked with gray-brown; corium gray-yellow, veins
gray-brown, often with gray-brown areas between veins;

embolium gray-yellow, medially streaked with gray-brown, polished submarginal depression at end of medial third of embolium usually brown; membrane gray-yellow, veins and a few spots near base of first three areoles gray-brown. Venter of thorax yellow, medially brown to black. Venter of abdomen yellow, usually with brown spots on each segment; each segment often brown basally. Genital capsule of male yellow, often infuscated basally. Coxae brown basally, yellow apically; other segments of legs yellow, femora often brown-spotted. Spines of legs and of first antennal segment black.

Structural characteristics: General shape elongate oval. Clothed with short, golden pubescence and short, fine, black setae above and with silver pubescence beneath. Legs and first and second antennal segments clothed with short, fine black setae. Width of head as compared to width of pronotum 72 100 male; 66 : 100 female. Apex of frons moderately elevated; frons depressed subapically, indistinctly longitudinally sulcate between eyes. Vertex smooth behind ocelli. Rostrum usually extending to apex of hind coxa. Antennae slender, long; length of antenna as compared to length of hind tibia :: 124 100 male, 112 100 female; length of second antennal segment as compared with width of head 90 100 male, 97 100 female.

Antennal segmentation, 1 2 3 : 4 15 37 26
 22 male; 15 39 25 21 female. Pronotum lustrous,
 minutely scabrous; median length of posterior lobe as
 compared to median length of anterior lobe 48 100
 male, 45 100 female; anterior lobe moderately elevated
 with a deep, median, bipunctate fovea before center and
 an obsolete punctation on each side of median fovea;
 posterior lobe narrowly explanate on each side of an-
 terior lobe; lateral margins straight or slightly con-
 cave. Scutellum lustrous, minutely scabrous. Hemelytra
 lustrous and, excepting membrane, minutely scabrous.
 Submarginal ridge of embolium of female obsolete; a
 polished submarginal depression on embolium of female,
 followed by a polished tubercle is located at end of
 median third of embolium of female. Posterior margin
 of venter of last abdominal segment of female evenly
 rounded. Terminal processes of male genital capsule
 and the left clasper of the male are figured on Plate
 II figures 5a and 5b. Length of posterior tibia as
 compared to width of head 190 100 male; 220
 100 female. Brachypterous forms are not known.

Comparative notes: The smaller size and gray-
 yellow color serve to distinguish this species
 from the other macropterous members of the genus.
 It may be distinguished from P. mexicanus (Van D.) by
 the antennal segmentation and general shape. It lacks

the short, coarse bristles along the margins of the hemelytra and pronotum which are characteristic of P. signoretii (Guér.) and its dorsal surfaces are not clothed with the long, erect, setae found in P. pellita (Uhl.) and P. ligata (Say). The details of the genital capsule and claspers of the male are specific.

Location of types: Described by Uhler from "Newtonville, Chelsea and Braintree, Mass., in July; also on Sinepuxent Beach, Maryland, in July and August." He records further specimens from Cuba and San Diego, California in his description. Three specimens of P. sphacelata are among Uhler's specimens in the United States National Museum; one mutilated female is labeled "Cuba", another female is labeled "Nantuck, Aug. 1" and the third, a male, bears no locality label. None of these specimens is determined by Uhler. In the absence of an established representative of the type series I have designated the male specimen from the Uhler Collection as a neotype, although there is no proof that it may not be a specimen from the type series. The labels on this specimen read, "P. R. Uhler Collection" and "Pentacora sphacelata Uhl., J. R. T. B. det. 1921."

Data on distribution: Recorded from Cuba, Mexico, Lower California and Porto Rico, and in the United States from California, Connecticut, Florida, Maine, Mary-

land, Massachusetts, New Jersey, New York, Rhode Island, and Texas. In addition to the neotype the following specimens have been examined (new records for major political areas are indicated by an asterisk):

CANADA: New Brunswick: Shippigan, July 14, 1931, J. M. Aldrich, 2 females (U. S. N. M.).

CUBA: Cuba, 1 female (Uhler Coll., U. S. N. M.); Cape San Antonio, May 25, 1914, Henderson and Bartsch, 1 male (U. S. N. M.).

MEXICO: Baja California: San José Island, Gulf of California, June 10, 1921, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); Gonzales Bay, April 29, 1921, E. P. Van Duzee, 2 males (Calif. Acad. Sci.).

PORTO RICO: Porto Rico, near shore, 1 male (A. M. N. H.); Aguirre, Aug. 15, 1935, H. L. Dozier, 1 male (U. S. N. M.).

U. S. A.: California: Palm City, July 19, 1940, D. E. Hardy, 1 female; Palm City, Aug. 7, 1935, R. H. Beamer, 4 females; sunset Beach, July 30, 1935, R. H. Beamer, 1 male.

Connecticut: Mystic, Aug. 19, 1934, P. W. Oman, 1 female (U. S. N. M.).

Florida: Homestead, Aug. 9, 1930, L. D. Tuthill,

1 female; Royal Palm Park, July 22, 1948, R. H. Beamer,
 1 male; Yankeetown, July 7, 1948, B. T. McDermott,
 4 males; Fort Meyers, Aug. 11, 1930, J. Nottingham, 1
 male; Tortugas, June 6, 1931, A. S. Pearse, 6 males, 7
 females, July 7, A. S. Pearse, 1 male, 1 female; Bis-
 cayne Bay, 4 males, 1 female (Slosson Coll., A. M. N.
 H.); Marco, April 17, 1912, 2 males, 2 females (A. M. N.
 H.).

* Louisiana: Cameron, June 17, 1948, R. H.
 Beamer, 10 males, 8 females; Cameron, June 17, 1948,
 E. L. Todd, 1 female; Mandeville, June 24, 1948, E. L.
 Todd, 1 male.

Maine: Cutt's Island, Katery Point, Aug. 25,
 R. Thaxter, 1 male (U. S. N. M.).

Massachusetts: Beach Bluff, June 21, 1915, 1
 male (Parshley); Edgartown, Aug. 22, 1912, 1 female
 (Parshley); Nantuck, Aug. 1, 1 female (Uhler Coll.,
 U. S. N. M.); Ipswich, June 20, 1926, Durlington,
 1 female (British Mus.).

* Mississippi: Orange Grove, July 10, 1934,
 M. E. Griffith, 1 female.

New Jersey: Cape May, Aug. 19, 1902, E. P. Van
 Duzee, 1 female; Avalon, Aug. 8, 1909, G. M. Greene,
 1 male (U. S. N. M.).

New York: Manursing Island, Rye, July 9, 1925,
 1 female; Rye Beach, Aug. 21, 1909, 5 males, 5 females;

Gilgo Beach, Long Island, July 27, 1920, P. W. Whiting 1 female; Babylon, Long Island, Aug, 3, 1923, 3 males, 5 females; Gilgo Beach, Babylon, Long Island, July 25, 1919, H. M. Parshley, 10 males, 11 females (Parshley); Cold Springs Harbor, Long Island, July 28, 1920, J. R. de la Torre-Bueno, 1 female, July 29, 1920, J. R. de la Torre-Bueno, 1 male; Cold Springs Harbor, Long Island, July 13, 1931, C. H. Curran, 1 male (A. M. N. H.); Cold Springs Harbor, Long Island, July 20, 1920, H. M. Parshley, 2 males, July 30, 1920, H. M. Parshley, 4 males, 2 females, July 31, 1920, H. M. Parshley, 1 male (Parshley); Mattituck, Long Island, June 26, 1946, Roy Latham, 1 male (U. S. N. M.).

Rhode Island: Buttonwoods, July 25, 1911, 1 male (Parshley).

Texas: Brazoria County, Aug. 10, 1928, R. H. Beamer, 2 males, 10 females, Aug. 12, 1928, R. H. Beamer, 11 males, 9 females; Brazoria County, Aug. 9, 1928, J. G. Shaw, 1 female; Ceder Lane, Aug. 9, 1928, R. H. Beamer, 5 males, 8 females; Brownsville, June, F. H. Snow, 2 males, 5 females; Esper Ranch, Brownsville, 1 male (U. S. N. M.); Brownsville, May 11, 1938, Deputy 1 female (U. S. N. M.); Galveston, May, F. H. Snow, 1 female; Galveston, June 1900, C. T. Brues, 3 females (Parshley); Galveston, Nov. 2, 1932, L. D. Tuthill, 10 males, 7 females; Port Isabel, June 29, 1895, 3 females (U. S. N. M.).

SALDINAE Van Duzee

Head narrow to broad, eyes moderately to greatly exserted, vertex broad. Pronotum narrowly to broadly trapezoidal or lunate. Sutures of hemelytra obsolete or distinct. Membrane with four areoles. Last abdominal sternum of female produced into a long, rounded plate beneath ovipositor; preceding sternum rarely medially constricted. Terminal processes of genital capsule of male bluntly rounded, distinctly separated. Macropterous forms more common than brachypterous forms.

KEY TO THE GENERA OF THE SUBFAMILY SALDINAE
IN THE WESTERN HEMISPHERE

1. First and second antennal segments flattened,
oval in cross-section, the flattened sides
glabrous Calacanthia Reuter
(p. 125)

First and second antennal segments not flattened,
round in cross-section, evenly pubescent or setose over entire surface

Salda Fabricius
(p. 132)

Calacanthia Reuter

1891. Reuter, O. M. Medd. Soc. Faun. Flor. Fenn. XVII, p. 145 (as subgenus of Acanthia for Salda trybomi J. Sahlberg and Salda alpicola J. Sahlberg).
1895. Reuter, O. M. Acta Soc. Sci. Fenn. XXI, No. 2, p. 5 (as subgenus of Acanthia).
1906. Kirkaldy, G. W. Trans. Amer. Ent. Soc. XXXIII, p. 148 (as subgenus of Acanthia).
1909. Oshanin, B. Verz. Pal. Hemip. p. 585 (as subgenus of Acanthia).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 19 (to generic rank; S. trybomi J. Sahlberg as genotype).
1912. Oshanin, B. Katal. Pal. Hemip. p. 89.
1934. Stichel, Wolfgang. Ill. Bestimmungstabel Deutsch. Wanz., Lief. 10, p. 298.

Brachypterous form: Slightly larger than average size for family. General shape obovate; hemelytra weakly arched. Head oblique, wider than anterior width of pronotum. Eyes strongly exserted; ocelli adjacent. Apex of frons forming a carinate ridge which is obsolete at middle. First and second segments of antennae flattened, oval in cross-section, flattened areas glabrous; second segment longest. Pronotum narrowly

trapezoidal; lateral margins straight; posterior margin concavely curved. Sutures and veins of hemelytra partly obsolete, excepting veins of membrane. Membrane reduced, foreshortened, first areole produced far before the base of second areole. Last abdominal sternum of female produced into a long, rounded plate beneath ovipositor. Terminal processes of genital capsule of male bluntly rounded, distinctly separated.

Macropterous form: Macropterous forms are not known.

Genotype: Salda trybomi J. Sahlberg.

Comparative notes: The flattened, partly glabrous first and second antennal segments will distinguish this genus from Salda Fabricius, which it most closely resembles.

Distribution: Holarctic; found in arctic and subarctic areas.

Calacanthia trybomi J. Sahlberg

(Plate II, figures 7a, 7b)

1878. Salda trybomi Sahlberg, John. Kongl. Svenska Vet.-Akad. Handl. XVI, p. 35 (describes from Siberia).
1880. Salda alpicola Sahlberg, John. Christ. Vid. Selsk. Forh. IX, p. 8 (describes synonym from Norway).
1891. Acanthia (Calacanthia) trybomi, Reuter, O. M. Medd. Soc. Fauna Flora Fennica, XVII, p. 145 (in new subgenus).
1891. Acanthia (Calacanthia) alpicola, Reuter, O. M. Medd. Soc. Fauna Flora Fennica, XVII, p. 145 (in new subgenus).
1895. Acanthia (Calacanthia) trybomi, Reuter, O. M. Acta Soc. Sci. Fennicae XXI, p. 37 (gives synonymy).
1912. Calacanthia trybomi, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 19 (as genotype).
1919. Calacanthia trybomi, Van Duzee, E. P. Rept. Canad. Arctic Exped. III, Part F, p. 4 (records from Alaska and Northwest Territories).

Size: Length 4.50 mm. male. Width of pronotum

1.56 mm. male.

Color: General color black marked with yellow. Eyes dark brown. Head black, apex of frons, clypeus and labrum yellow-brown. Rostrum dark brown. First and second antennal segment yellow-brown above, black beneath; third and fourth segments red-brown. Pronotum black, lateral margins narrowly yellow. Scutellum black. Venter of thorax black, episternal plates before anterior, middle and posterior coxae yellow-white; lateral margin of prothorax yellow beneath. Clavus black, with a yellow streak at middle of base and on middle before apex. Corium yellow with a black spot on middle at end of basal third, posterior half mostly black, yellow at outer angle at apex. Embolium black, spotted with yellow on medial two-thirds, at end of basal third, at middle and before apex. Membrane yellow, infuscated at base of first three areoles and in middle of last three areoles. Venter of abdomen dark brown, sterna narrowly margined with yellow-brown posteriorly. Genital capsule of male dark brown. Coxae yellow-brown; trochanters yellow-brown; femora dark brown, yellow-brown beneath; tibiae yellow-brown annulated with dark brown at base, apex and four evenly spaced locations along length; second tarsal segment yellow; third tarsal segment brown. Spines of

legs and of first antennal segment black.

Structural characteristics: (Brachypterous male):

General shape obovate. Clothed with fine, golden pubescence above and beneath, on legs, third and fourth antennal segments and sides of first and second antennal segments. Head, pronotum, scutellum and hemelytra clothed with scattered, long, stiff, erect, dark setae; shorter erect setae scattered on sides of second antennal segment; first antennal segment with prominent spines along sides. Width of head as compared to width of pronotum 91 100 male. Frons and vertex lustrous, minutely scabrous; apex of frons raised into a broad carinate ridge which is obsolete above the clypeus and curves moderately upwards at the ends; frons convex. Ocelli touching; eyes strongly protuberant above and at sides of head. Rostrum extending to apex of middle coxae. Antennae long, first and second segments broad, flattened, oval in cross-section; glabrous and polished above and beneath; third segment fusiform. Length of antenna as compared to length of hind tibia :: 108 100 male; length of second antennal segment as compared to width of head 69 100 male. Antennal segmentation, 1 2 3 4 19 32 24 25 male. Pronotum lustrous, minutely scabrous; posterior lobe obsoletely transversely rugulose; median length of posterior lobe as compared to median length of

anterior lobe 33 100 male. Anterior lobe moderately elevated, the sulcus behind it shallow. Median fovea deep, located at end of anterior third of anterior lobe; anterior lobe obsolete depressed behind median fovea. Posterior lobe broadly explanate along lateral margins and narrowly explanate along each side of anterior lobe. Lateral margins straight, strongly convergent. Scutellum lustrous, minutely scabrous. Corium, clavus and embolium lustrous, the black areas opaque. Membrane lustrous, brown spots within areoles opaque. Sutures of hemelytra obsolete. Corial veins obsolete; veins of membrane distinct. First areole produced for two-thirds of its length before base of second areole. Hind wings not visible beyond apex of abdomen. Terminal process of male genital capsule and left clasper of male are figured on Plate II figures 7a and 7b. Length of posterior tibia as compared to width of head 200 100 male. Macropterous forms of this species are not known.

Comparative notes: The broad, flattened first and second antennal segments, which are polished and glabrous above and beneath will distinguish this species from all other members of the family. The eyes are more greatly exserted than in the majority of species.

Location of types: The types of this species and

its synonym Salda alpicola J. Sahlberg, are in the Stockholm Museum.

Data on distribution: Normally from northern localities in the Palaearctic region. Reported by Van Duzee (1919) from Collinson Point, Alaska, June 23, 1914, six adults, and from Bernard Harbour, Northwest Territory, July 19, 1915, one nymph. The following specimen is described above:

Northwest Territory, Aklavik, July 28, 1931,
Owen Bryant, 1 male (Bryant).

SALDA Fabricius

1803. Fabricius, J. C. Syst. Rhyng., p. 113 (new genus removing fifteen species from Acanthia Fabricius, 1775 (= Cimex Linnaeus 1758) and adding two new species; Acanthia zosteræ F. 1794 (= Cimex littoralis L. 1758) is first listed species).
1804. Latreille, P. A. Hist. Nat. Crust. Ins. XII, p. 240 (Acanthia F. 1775; including five littoral species).
1807. Fallen, C. F. Monog. Cimic. Suec., p. 28 (uses Salda for littoral forms).
1829. Fallen, C. F. Hemip. Suec., Cimic., p. 71.
1835. Curtis, J. British Entom. XII, Pl. 548 (Acanthia).
1838. Blanchard, Emile. Cuvier's Règne Animal, Atlas Pl. 90 (designates Cimex grylloides L. 1761 as genotype).
1843. Amyot, C. J. B., and Serville, J. G. A. Hist. Nat. Ins., Hemip., p. 404 (Salda used for all species except Acanthia flavipes F. 1794 (= Cimex muelleri Gmelin 1788) which is the type of new synonymic genus Sciadopterus).
1848. Blanchard, Emile. Orbigny's Dict. Univ. Hist. Nat. XI, p. 311 (revises 1838 type fixation for Salda and cites Cimex littoralis L. 1758 as type).
1865. Douglas, J. W., and Scott, J. Brit. Hemip. I,

- p. 316 (Salda).
1868. Stål, Carl. Hemip. Fabr. I, p. 90.
1868. Stål, Carl. Öfv. Svenska Vet. Akad. Förh. XXV, No. 6, p. 387.
1871. Thomson, C. G. Opus. Ent. IV, p. 403.
1873. Stål, Carl. Enum. Hemip, III, p. 148.
1877. Uhler, P. R. Bull. U. S. Geol. Geog. Surv., III, p. 430.
1886. Uhler, P. R. Check List Hemip. North Amer., p. 27.
1888. Provancher, L'Abbé L. Pet. Faune Ent. Canad. III, p. 188.
1888. Provancher, L'Abbé L. Pet. Faune Ent. Canad. III, p. 191 (Sciadopterus).
1895. Reuter, O. M. Acta. Soc. Sci. Fenn. XXI, No. 2, p. 3 (Acanthia as genus and subgenus).
1895. Reuter, O. M. Acta Soc. Sci. Fenn. XXI, No. 2, p. 5 (Sciadopterus as subgenus of Acanthia).
1896. Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 215.
1899. Kirkaldy, G. W. Entom. XXXIII, p. 219 (mistakenly states that Latreille in 1797 named littoralis as type of Acanthia F. 1775).
1901. Champion, G. C. Biol. Centr.-Amer., Rynch., Vol. II, p. 338.
1906. Kirkaldy, G. W. Trans. Amer. Ent. Soc. XXXIII,

- p. 148 (Acanthia).
1909. Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 175 (Acanthia).
1909. Oshanin, B. Verz. Pal. Hemip. p. 581 (Acanthia as genus and subgenus).
1909. Oshanin, B. Verz. Pal. Hemip. p. 583 (Sciodopterus as subgenus of Acanthia).
1910. Van Duzee, E. P. Ent. News XXI, p. 141 (Acanthia F. 1775 regarded as synonym of Cimex L. 1758).
1910. Banks, Nathan. Catalog Nearct. Hemip., p. 11.
1911. Horvath, Geza. Ann. Mus. Nat. Hung. IX, p. 335 (Acanthia).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 13 (Salda to replace Sciodopterus; raised to generic rank with Cimex littoralis L. as genotype).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 14 (Acanthia; subgenus raised to generic rank, Cimex saltatorius L. as genotype).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 16 (Micracanthia as new genus with Salda marginalis Fallen as genotype).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 17 (Teloleuca, new genus

- with Acanthia pellucens (F.) (= S. riparia Fallen as genotype).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 19 (Ioscytus, new genus for Salda polita Uhler).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 21 (Lampracanthia, new genus with Salda crassicornis Uhler as genotype).
1912. Oshanin, B. Katal. Pal. Hemip., p. 88 (Acanthia).
1912. Oshanin, B. Katal. Pal. Hemip., p. 89 (Micracanthia).
1912. Oshanin, B. Katal. Pal. Hemip., p. 89 (Telo-leuca).
1912. Oshanin, B. Katal. Pal. Hemip. p. 90 (Salda).
1914. Van Duzee, E. P. Canad. Entom. XLVI, p. 387 (Saldula proposed as new name for Acanthia as restricted by Reuter in 1912).
1916. Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (Salda, Saldula).
1916. Van Duzee, E. P. Check List Hemip. North Amer., p. 51 (Micracanthia, Ioscytus, Lampracanthia).
1917. Van Duzee, E. P. Catalog of Hemip. North Amer., p. 438 (Salda, sens. lat.).
1917. Van Duzee, E. P. Catalog of Hemip. North Amer., p. 440 (Salda, sens. str.).
1917. Van Duzee, E. P. Catalog of Hemip. North Amer.,

- p. 441 (Saldula).
1917. Van Duzee, E. P. Catalog of Hemip North Amer.,
p. 446 (Micracanthia).
1917. Van Duzee, E. P. Catalog of Hemip. North Amer.,
p. 447 (Ioscytus, Lampracanthia).
1920. Hungerford, H. B. Kans. Univ. Sci. Bull. XI,
p. 58 (Salda).
1920. Hungerford, H. B. Kans. Univ. Sci. Bull. XI,
p. 62 (Saldula).
1920. Hungerford, H. B. Kans. Univ. Sci. Bull. XI,
p. 74 (Micracanthia).
1920. Hungerford, H. B. Kans. Univ. Sci. Bull. XI,
p. 76 (Ioscytus).
1920. Hungerford, H. B. Kans. Univ. Sci. Bull. XI,
p. 77 (Lampracanthia).
1923. Torre-Bueno, J. R. de la. Bull. Brooklyn Ent.
Soc. XVIII, p. 151 (Chartolampra as new subgenus
of Chartoscirta which was erroneously identi-
fied; for cursitans, new species).
1923. Torre-Bueno, J. R. de la. Hemip. of Conn.,
Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 412
(Saldula).
1923. Torre-Bueno, J. R. de la. Hemip. of Conn.,
Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 415
(Micracanthia, Lampracanthia).
1923. Torre-Bueno, J. R. de la. Addenda et Corrigenda

- to Hemip. of Conn. (Lampracanthia, Saldula).
1926. Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1007 (Salda).
1926. Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1008 (Saldula).
1926. Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1013 (Micracanthia).
1926. Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1014 (Lampracanthia).
1926. Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1016 (Chartoscirta subg. Chartolampra Bueno 1923).
1934. Stichel, Wolfgang. Ill. Bestimmungstabel. Deutsch. Wanz., Lief. 10, p. 298 (Salda, Saldula).
1934. Stichel, Wolfgang. Ill. Bestimmungstabel. Deutsch. Wanz., Lief. 10, p. 303 (Teloleuca, Micracanthia).
1943. China, W. E. Generic Names of Brit. Hemip., p. 276 (Salda; calls attention to Blanchard's 1838 designation of Cimex grylloides L. as genotype and his change to Cimex littoralis L. in 1848; Salda thus must belong in Lygaeidae; suspension of rules requested).
1943. China, W. E. Generic Names of Brit. Hemip., p. 278 (Saldula, Teloleuca, Micracanthia).

Macropterous form: Small to large in comparison with average size for family. General shape oval to elongate-oval; hemelytra slightly arched. Head vertical or oblique, narrower to wider than anterior width of pronotum. Eyes slightly to strongly exserted; ocelli narrowly to widely separated. Apex of frons usually raised into a carinate ridge which is frequently obsolete in the middle. Antennae slender or swollen, second segment usually longest. Pronotum narrowly to broadly trapezoidal or lunate; lateral margins slightly to strongly convergent; median length of posterior lobe usually more than half of median length of anterior lobe; lateral margins often explanate on each side of anterior lobe; posterior margin broadly emarginate. Sutures and veins of hemelytra usually distinct; membrane distinct with four elongate, oblong areoles which form an evenly gradate series, rarely the first areole is produced far before the base of the second. Anterior and posterior margins of penultimate abdominal sternum of female usually parallel; last abdominal sternum of female produced into a long, rounded plate beneath ovipositor. Terminal processes of genital capsule of male bluntly rounded, distinctly separated.

Brachypterous form: Similar to macropterous form, differing principally in features listed below. General shape obovate or oval. Median length of posterior

lobe of pronotum often one-half or less than one-half of median length of anterior lobe. Posterior margin of pronotum broadly emarginate or concavely curved. Hemelytra often strongly arched; sutures and veins frequently partly obsolete; membrane usually partly or entirely coriaceous, reduced and foreshortened with first areole distinctly produced beyond base of second areole.

Genotype: Cimex littoralis Linnaeus.

Comparative notes: Can be distinguished from Calacanthia Reuter by the first and second segments of the antennae, which are not flattened, and which are round in cross-section and evenly pubescent or setose. The eyes are not so strongly exerted as those of Calacanthia.

Distribution: Cosmopolitan.

KEY TO SALDA FABRICIUS

1. Pronotum, scutellum and hemelytra clothed
with stiff, erect setae 2
- Pronotum, scutellum and hemelytra glabrous
or clothed with recumbent golden pubes-
cence 17

2. (1) Humeral angles of pronotum strongly up-
turned . S. crassicornis Uhl.
(p. 212)
- Humeral angles of pronotum not upturned . 3
3. (2) Eyes clothed with scattered conspicuous erect
setae which are longer than width of a
row of ommatidia . 4
- Eyes glabrous or minutely setose; setae, when
present, never longer than width of a row
of ommatidia . .8
4. (3) Corium (except base) and embolium polished,
not duller than scutellum
- S. hispida n. sp.
(p. 238)
- Corium and embolium (excepting lateral
margin) opaque, duller than scutellum . 5
5. (4) Hemelytra ornamented with pruinose blue
spots . . 6
- Hemelytra lacking pruinose blue spots . .
- S. separata Uhl.
(p. 423)
6. (5) Corium with a large pruinose blue spot at
apex next to claval suture; anterior
lobe of pronotum deeply longitudinally
depressed behind median fovea .
- . S. villosa n. sp.
(p. 459.)

Corium lacking large pruinose blue spot at apex next to claval suture; anterior lobe of pronotum continuously arched behind median fovea 7

7. (6) Lateral margins of pronotum straight; general shape elongate-oval

S. severini (Harris)
(p.432)

Lateral margins of pronotum convexly curved; general shape broad-oval

S. orbiculata Uhl.
(p.315)

8. (3) Third and fourth antennal segments swollen . .9
Third and fourth antennal segments slender .. 10

9. (8) Second antennal segment clothed with erect setae which are equal in length of longer than diameter of segment; corium polished, minutely scabrous, densely pilose

S. tepidaria n. sp.
(p. 449)

Second antennal segment not clothed as above; corium opaque, smooth, setae scattered . . 10

10. (9) Apical half of scutellum swollen, as greatly elevated as basal half. S. beameri n. sp.
(p. 160)

Apical half of scutellum nearly flat or slightly convex, never as greatly elevated as basal half. S. polita Uhl.
(p. 390)

11. (8) Clavus, pronotum and scutellum equally polished . . . 12

Clavus opaque, duller than pronotum and scutellum . . . 13

12. (11) Anterior lobe of pronotum strongly arched between its anterior and posterior bounding sulci; lateral margins of pronotum convexly curved .

S. confluenta (Say)
(p. 203)

Anterior lobe of pronotum nearly flat; lateral margins of pronotum straight .

S. laevis Champ.
(p. 266)

13. (11) Anterior lobe of pronotum longitudinally depressed behind median fovea

S. sulcicollis Champ.
(p. 442)

Anterior lobe of pronotum continuously arched behind median fovea . . . 14

14. (13) Frons deeply medially sulcate; lateral margins of pronotum yellow .. S. dewsi n. sp.
(p. 223)

Frons not sulcate; pronotum entirely

black . . 15

15. (14) Second antennal segment clothed with erect
setae similar to those of hemelytra

S. comatula (Parsh.)
(p.193)

Second antennal segment clothed with short
recumbent pubescence . .16

16. (15) Length of second antennal segment at least
three-fourths of width of head

S. laviniae n. sp.
(p. 270)

Length of second antennal segment less than
three-fourths of width of head .

S. comata Champ.
(p.184)

17. (1) Median length of anterior lobe of pro-
notum at least twice median length
of posterior lobe . 18

Median length of anterior lobe less than
twice median length of posterior lobe .
.25

18. (17) Clavus with a prominent yellow spot before
apex; embolium banded or spotted with
white . 19

- Clavus and embolium black, unspotted 21
19. (18) Frons distinctly medially sulcate between
 eyes .S. elongata Uhl.
 (p. 229)
- Frons obsolete or not at all medially
 sulcate . 20
20. (19) Lateral margin of pronotum with a yellow
 spot before humeral angle
- . S. bifasciata Thoms.
 (p. 164)
- Pronotum entirely black. S. saltatoria (L.)
 (p. 410)
21. (18) Episternal plates before anterior and
 middle coxae equally broadly margined
 with white; hemelytra (including mem-
 brane) black, unspotted .
- S. obscura Prov.
 (p. 308)
- Episternal plates before middle coxae
 black or more narrowly margined with
 white than those before anterior
 coxae; hemelytra black, usually marked
 with yellow 22
22. (21) Disc of corium glabrous 23
- Disc of corium densely pubescent 24

23. (22) Disc of frons densely golden pubescent,
 scabrous S. bouchervillei (Prov.)
 (p. 170)

Disc of frons glabrous; plainly rugulose .

S. anthracina Uhl.
 (p. 154)

24. (22) Episternal plates before anterior coxae
 white or broadly margined with white;
 anterior coxae black, tipped with
 yellow-white S. lugubris (Say)
 (p. 281)

Episternal plates before anterior coxae
 black; at least apical half of anterior
 coxae yellow-white

S. littoralis (L.)
 (p. 275)

25. (17) Second antennal segment equal to or
 shorter than third segment .26
 Second antennal segment longer than third
 segment 27

26. (25) Apical half of scutellum swollen; anterior
 lobe of pronotum continuously
 arched behind median fovea .

S. hungerfordi n. sp.
 (p. 260)

Apical half of scutellum not swollen;
 anterior lobe of pronotum depressed

behind median fovea. .S. pumila (Blatch.)
(p. 397)

27. (25) Frons distinctly medially sulcate be-
tween eyes 28
Frons not medially sulcate between eyes .32
28. (27) Lateral margins of pronotum yellow op-
posite posterior lobe 29
Pronotum entirely black 30
29. (28) Fourth antennal segment with a broad median
pale ringS. ventralis Stål
(p. 453)
Fourth antennal segment entirely dark or
pale tippedS. abdominalis Champ.
(p. 149)
30. (28) Genital capsule of male flattened pos-
teriorly, terminal processes broad,
median notch shallow; left clasper
not toothedS. sulcata (Barber)
(p. 437)
Genital capsule of male rounded poster-
iorly, terminal processes narrow, med-
ian notch deep; left clasper with a
distinct ventrally directed tooth . . 31
31. (30) Last tarsal segment yellow
. .S. dentulata n. sp.
(p. 218)

35. (34) Second antennal segment palest at apex .

S. pallipes (F.)
(p. 324)

Second antennal segment concolorous

or darkest at apex . . 36

36. (35) Embolium pale, marked with brown or black;

femora pale .S. humilis (Say)
(p. 242)

Embolium black with a white spot on basal
third and apical third of lateral mar-
gin; femora dark .

S. quadrimaculata Champ.
(p. 403)

Salda abdominalis (Champion)

(Plate III, figures 1a, 1b)

1901. Salda abdominalis Champion, G. C. Biol. Centr.-Amer., Rynch., Vol. II, p. 343, Tab. 20, fig. 10 (describes from Guatemala).
1909. Acanthia abdominalis, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 175.

Size: Length 3.09 mm. to 4.08 mm. male; 3.38 mm. to 3.87 mm. female. Width of pronotum 1.18 mm. to 1.42 mm. male; 1.32 mm. to 1.50 mm. female.

Color: General color black marked with yellow. Eyes pale brown, red-brown or violet. Venter of head black, vertex black with a yellow spot diagonally behind each ocellus, frons black except apex and a yellow spot on each side next to eye. Clypeus yellow, labrum yellow marked with brown. Rostrum yellow or yellow-brown. First antennal segment yellow, remaining segments red-brown, tip of fourth segment pale. Pronotum black, lateral margins yellow except apex and base. Scutellum black. Venter of thorax black; ventral margin of pronotum yellow; episternal plates before anterior and middle coxae broadly margined with white. Hemelytra black marked with yellow and pruinose

areas. Clavus black with a yellow spot at humeral angle, on median margin near base and on middle near apex. Corium black with an oblong yellow spot near lateral margin at end of basal half, and a round spot on middle at apex, pruinose along claval suture. Embolium yellow with a black streak near base, on middle at end of basal half and a black band at beginning of apical half, this band contiguous with black marking of corium and not attaining the lateral margin of the embolium. Embolium black along nodal furrow. Membrane brown, veins and spots within the areoles infused with dark brown or black. Abdominal sterna yellow to brown; last abdominal sternum of female brown, produced portion white, frequently with a brown median stripe. Genital capsule of male brown. Coxae brown basally, yellow apically; trochanters yellow-white; femora yellow-white basally pale brown apically; tibiae pale brown, broadly ringed with yellow subbasally and subapically; second tarsal segment yellow, third tarsal segment brown. Spines of legs brown.

Structural characteristics: General shape oval, tapering posteriorly. Clothed with fine, recumbent, golden pubescence. Width of head as compared to width of pronotum 71 100 male; 64 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a carinate ridge which is sharply upturned

at ends; frons deeply sulcate along median line, each side forming a definite lobe. Ocelli separated by less than width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae long, slender, third segment nearly cylindrical; length of antenna as compared to length of hind tibia 104 100 male, 102 100 female; length of second antennal segment as compared to width of head 52 100 male, 61 100 female. Antennal segmentation 1 2 3 4 17 30 27 26 male; 17 33 25 25 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 60 100 male, 75 100 female. Anterior lobe strongly elevated, the sulcus separating it from posterior lobe deeply incised; median fovea of anterior lobe located at end of anterior third, anterior lobe transversely depressed across fovea. Posterior lobe distinctly explanate, lateral margins slightly convexly curved, distinctly sulcate along the inner edge of the yellow margins. Scutellum lustrous, minutely scabrous. Hemelytra opaque, excepting a narrow lustrous lateral margin on embolium. Sutures of hemelytra distinct, corial veins obsolete. Veins of membrane distinct; areoles forming an evenly gradate series. Posterior margin of last abdominal sternum of female not evenly rounded, emarginate on each side of the center; ster-

num distinctly produced, approximately four times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of the male are figured on Plate III figures 1a and 1b. Length of posterior tibia as compared with width of head 168 100 male; 185 100 female. Brachypterous forms are not known.

Comparative notes: Most closely resembles S. ventralis Stål and S. dewsi new species. It can be distinguished from S. ventralis by the less strongly convergent pronotal margins, by the color pattern of the hemelytra and by the details of the male genitalia. It lacks the pale band around the middle of the fourth antennal segment which is characteristic of S. ventralis. It can be distinguished from S. dewsi by its less elongated shape and by the genitalia of the male; it lacks the erect setae of the hemelytra found in S. dewsi.

Location of types: Described by Champion from six specimens, male and female, from San Joaquin and San Geronimo in Guatemala. These specimens are in the British Museum.

Data on distribution: The only record is that of the type series. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

* COSTA RICA: San José, June and July, 1931, Henrich Schmidt, 40 males, 37 females; San José, Purchased 1932, Henrich Schmidt, 130 males, 132 females; Rio Virilla, Dec. 26, 1931, Henrich Schmidt, 21 males, 5 females.

* MEXICO: * Mexico: Real de Arriba, Temescaltepec, June 23, 1933, H. E. Hinton and R. L. Usinger, 1 male, July 4, 1933, H. E. Hinton and R. L. Usinger, 2 males (Usinger Coll.); Tejupilco, Temescaltepec, July 16, 1933, H. E. Hinton and R. L. Usinger, 1 male (Usinger Coll.).

* Vera Cruz: Cordoba, Jan. 16, 1908, Fred Knab, 1 female, April 1, 1908, Fred Knab, 1 female (U. S. N. M.).

Salda anthracina Uhler

(Plate III, figures 2a, 2b)

1877. Salda anthracina Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 438 (describes from Pa.).
1886. Salda anthracina, Uhler, P. R. Check List Hemip. North Amer., p. 50 (lists).
1896. Salda anthracina, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 216.
1909. Acanthia anthracina, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 175.
1910. Salda anthracina, Banks, Nathan. Catalog Nearct. Hemip., p. 11.
1912. Lampracanthia anthracina, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 21 (places in his new genus with L. crassicornis as genotype).
1916. Salda anthracina, Van Duzee, E. P. Check List Hemip. North Amer., p. 27.
1917. Salda anthracina, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 441.
1918. Salda anthracina, Hungerford, H. B. Jl. N. Y. Ent. Soc. XXVI, p. 16, Pl. I (doubts it is Lampracanthia; life history and biological notes; fig-

- ures eggs in situ; records from New York).
1920. Salda anthracina, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, pp. 61, 81, Pl. V, VI and X (quotes original description; biological notes; photo of adult, eggs in situ, and figures egg in situ).
1923. Lampracanthia anthracina, Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XVIII, p. 151 (records from N. Y., believes it is probably a dimorph of L. coriacea).
1923. Lampracanthia anthracina, Torre-Bueno, J. R. de la, in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 416 (may be dimorph of L. coriacea).
1923. Saldula anthracina, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. ("coriacea Uhler and its synonym anthracina Uhler belong in the genus Saldula").
1926. Lampracanthia anthracina, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1015 (keys and describes, says Bueno's synonymy with L. coriacea is incorrect, records from Ala.).
1927. Lampracanthia anthracina, Downes, W. D. Proc. Ent. Soc. Br. Col. (1927) No. 23, p. 15 (records from Br. Col.).
1928. Salda anthracina, Torre-Bueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects

of N. Y., p. 137 (says all N. Y. records are S. coriacea).

Size: Length 5.10 mm. to 5.88 mm. male; 6.02 mm. to 6.65 mm. female. Width of pronotum 1.82 mm. to 2.03 mm. male; 2.10 mm. to 2.26 mm. female. -----

Color: General color black. Legs yellow. Eyes pale brown to dark brown. Head black, excepting an obsolete brown spot on each side of ocelli. Rostrum dark brown to black. First antennal segment black; second segment yellow to red-brown; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black. Hemelytra black, unspotted. Abdominal sterna dark brown, narrowly margined with yellow-brown posteriorly; last abdominal sternum of female entirely brown. Genital capsule of male dark brown. Coxae black, tipped with yellow; trochanters yellow; femora yellow, variably spotted with red-brown; tibiae yellow, tipped with dark brown; second tarsal segment yellow; third segment dark brown. Spines of legs black.

Structural characteristics: (Brachypterous form): General shape obovate. Clothed with dense, recumbent, golden pubescence on venter of abdomen, legs and antennae. Venter of head and thorax sparsely pubescent; margins of labrum, juga and clypeus sparsely pubescent; frons and vertex glabrous, excepting a narrow line next

to eyes; pronotum, scutellum and hemelytra glabrous. Second antennal segment clothed with several long, stiff, erect setae. Width of head as compared to width of pronotum 80 100 male; 75 100 female. Frons polished, transversely rugulose; a raised ridge extends from basal angle of clypeus obliquely upward to eye, frons not otherwise ridged at apex; frons with a short, broad median sulcus between eyes. Vertex distinctly rugulose. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 118 100 male, 130 100 female; length of second antennal segment as compared to width of head 73 100 male, 76 100 female. Antennal segmentation 1 2 3 4 17 34 24 25 male; 17 35 23 25 female. Pronotum polished, minutely scabrous; posterior lobe transversely rugulose; median length of posterior lobe as compared to median length of anterior lobe 47 100 male, 49 100 female. Anterior lobe almost imperceptible elevated, the sulcus behind it obsolete; median fovea obsolete, located before middle of anterior lobe. Posterior lobe not explanate along lateral margins; lateral margins straight, strongly convergent. Scutellum polished, scabrous; posterior third obsolete, transversely rugulose. Clavus, corium and embolium smooth, polished, not punctate except

for a row of punctations near claval suture and along inner margin of clavus. Membrane of same texture as corium. Sutures of hemelytra obsolete excepting basal half of sutures between corium and embolium; corial veins obsolete; veins of membrane distinct. Membrane reduced, first areole produced half its length before base of second areole. Hind wings not visible beyond apex of abdomen. Posterior margin of last abdominal segment of female sinuated on sides and broadly truncated at apex; sternum greatly produced, more than four times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate III figures 2a and 2b. Length of posterior tibia as compared to width of head 186 100 male; 157 100 female. Macropterous forms are not known.

Comparative notes: Most closely resembles S. bouchervillei (Prov.) from which it can be distinguished by the more elongated frons, which is transversely rugulose and distinctly sulcated on the median line between the eyes, by the shorter hind tibiae, measured in comparison to the width of the head, and by the smooth hemelytra and obsolete corial veins. The glabrous condition of the frons and vertex will further separate it from that species. The unrelieved black coloration of the head, thorax and hemelytra is characteristic.

Location of types: A male specimen in the Uhler Collection in the United States National Museum bears the following label in Uhler's handwriting, "Salda anthracina Uhler, Pa.". This specimen is designated as the lectoholotype. Two female specimens from the Uhler Collection bear a label, "Penn.". One of these is badly broken. The better preserved specimen is designated as the lectoallotype, the broken specimen as a cotype.

Data on distribution: Recorded from British Columbia in Canada and in the United States from Alabama, New York and Pennsylvania. In addition to the lectoallotype and the cotype, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

U. S. A.: * New Hampshire: Franconia, 1 female (Slosson Coll., A. M. N. H.).

New York: Ithaca, H. B. Hungerford, 3 males, 5 females; White Plains, July 4, 1918, J. R. de la Torre-Bueno, 1 male.

Salda beameri new species

(Plate III, figures 3a, 3b)

Size: Length 2.70 mm. male; 2.91 mm. female.

Width of pronotum 1.04 mm. male; 1.04 mm. female.

Color: General color black, marked with brown, yellow and white. Eyes pale brown. Head black; clypeus, labrum and rostrum yellow-brown; a brown spot on each side of ocelli. First and second antennal segments yellow-brown, third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black. Clavus black with a yellow spot on middle opposite apex of scutellum, red-brown behind the yellow spot, apex pruinose. Corium red-brown, base and veins black, with a white spot near lateral margin at middle and a yellow-white spot on lateral margin at end of basal fourth, pruinose along claval suture. Embolium yellow-white with a transverse dark band at end of medial third and at apex, these bands red-brown basally, black apically. Membrane dark brown, pruinose basally and laterally, with a yellow spot at apex of second areole. Abdominal sterna black, narrowly margined with brown posteriorly; last abdominal sternum of female brown-black basally, produced portion yellow-brown. Genital capsule of male brown. Coxae black or brown, tipped with yellow; trochanters yellow;

femora yellow basally, brown apically; tibiae yellow-brown; tarsi yellow. Spines of legs black.

Structural characteristics: General shape obovate. Dorsal surfaces clothed with scattered, long, erect, stiff, black setae; venter, legs and antennae clothed with fine, recumbent, golden pubescence. Width of head as compared to width of pronotum 79 100 male; 84 100 female. Frons polished, obsoletely transversely rugulose, not medially sulcate; apex of frons not raised into a carinate ridge. Vertex polished, smooth. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, third and fourth segments swollen, fusiform; length of antennae as compared to length of hind tibia 136 100 male, 134 100 female; length of second antennal segment as compared to width of head 63 100 male, 58 100 female. Antennal segmentation 1 2 3 4 19 27 26 28 male; 19 27 26 28 female. Pronotum polished, smooth; median length of posterior lobe as compared to median length of anterior lobe 83 100 male; 73 100 female. Anterior lobe strongly elevated, sulcus separating it from posterior lobe moderately incised, distinctly punctate. Median fovea located on anterior third of anterior lobe. Posterior lobe narrowly explanate along lateral margins; lateral margins straight, strongly convergent. Scu-

tellum polished, smooth, swollen, depressed at end of basal half. Clavus, corium and medial half of transverse dark bands of embolium opaque; remainder of embolium and membrane lustrous. Sutures of hemelytra distinct; veins of corium obsolete, their position marked by the black coloration; veins of membrane distinct excepting those surrounding fourth areole. Areoles of membrane forming an evenly gradate series, excepting fourth areole which is reduced to an oval beside the base of the third areole. Posterior margin of last abdominal sternum of female evenly rounded; sternum moderately produced, approximately three times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of the male are figured on Plate III, figures 3a and 3b. Length of posterior tibia as compared to width of head 136 100 male; 134 100 female. Brachypterous forms are not known.

Comparative notes: Most closely resembles S. polita Uhler in general facies. It can be distinguished from that species by its smaller size, antennal segmentation, hemelytral pattern, inflated scutellum and by the terminal processes of the genital capsule of the male. S. beameri bears a general resemblance to Saldoidea slossoni Osborn in color and antennal structure,

but lacks the prominent conical processes of the pronotum present in that species.

Location of types:

Holotype: Las Cruces, New Mexico, April 30, 1948,
L. D. Beamer, female.

Allotype: Las Cruces, New Mexico, April 30, 1948,
R. H. Beamer, male.

The holotype and allotype are in the Francis Huntington Snow Entomological Collections. Named for Dr. R. H. Beamer whose extensive collecting trips have provided a large number of the specimens studied in the preparation of this paper.

Data on distribution: Known only from the type series.

Salda bifasciata Thomson

(Plate III figures 4a, 4b)

1828. Salda riparia, Zetterstedt, J. W. Faun. Lapp.
p. 478 (not S. riparia Fallen).
1840. Salda riparia, Zetterstedt, J. W. Ins. Lapp.
p. 267.
1871. Salda bifasciata Thomson, C. G. Opusc. Entom.,
Fasc. IV, p. 404 (describes from Lapland).
1878. Salda serior Sahlberg, John. Kongl. Svenska
Vet.-Akad. Handl. XVI, p. 33 (describes synonym
from Siberia).
1895. Acanthia (Acanthia) bifasciata, Reuter, O. M.
Acta Soc. Sci. Fennicae XXI, p. 38 (gives
synonymy).
1924. Acanthia bellatrix Torre-Bueno, J. R. de la.
Canad. Ent. LVI, p. 298 (describes synonym from
Alberta, Canada).

Size: Length 4.59 mm. to 4.63 mm. male; 5.15 mm.
to 5.63 mm. female. Width of pronotum 1.50 mm. to
1.65 mm. male; 1.77 mm. to 1.91 mm. female.

Color: General color black, marked with white.
Eyes pale brown to dark brown. Head black, with a
yellow spot on each side of ocelli; apex of frons, cly-
peus and middle of labrum yellow. Rostrum dark brown.

First antennal segment yellow above, brown beneath; second segment yellow to red-brown; third and fourth segments red-brown. Pronotum black, with a yellow spot on lateral margins before humeral angle. Scutellum black. Venter of thorax black; episternal plates before anterior and middle coxae broadly margined with white, before hind coxae narrowly margined with white; posterior half of lateral margin of pronotum yellow beneath. Clavus black, the apical half velvety, with an elongate yellow spot on medial margin behind base, and a brilliant yellow spot on middle opposite apex of scutellum. Corium black, with an elongate yellow spot along lateral margin from end of basal fifth to middle, a small spot at apex and a small spot on disc. Embolium black, with a broad transverse yellow band from end of basal fourth to middle and a smaller band before apex. Membrane yellow-brown, veins pale brown, each areole with one or two infuscated spots. Abdominal sterna red-brown to dark brown, narrowly margined with yellow; last abdominal sternum of female brown basally and medially, sides of the produced portion broadly yellow. Genital capsule of male dark brown; coxae black tipped with yellow; trochanters yellow; femora yellow, variably spotted with brown and infuscated beneath; tibiae yellow, infuscated subbasally and apically, with an infuscated spot on middle of anterior

and middle tibiae, several such spots along hind tibiae; second tarsal segment yellow; third tarsal segment brown. Spines of legs black.

Structural characteristics: General shape elongate-oval. Venter of head, thorax and abdomen clothed with dense, recumbent, fine, silvery pubescence; all other surfaces golden pubescent. Width of head as compared to width of pronotum 82 100 male; 68 100 female. Frons and vertex lustrous, minutely scabrous; apex of frons raised into a carinate ridge which is obsolete but not sulcate in the middle and strongly upturned at ends; frons convex, rarely obsoletely sulcate on median line between eyes. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment nearly cylindrical; length of antenna as compared to length of hind tibia 103 100 male, 95 100 female; length of second antennal segment as compared to width of head 82 100 male, 97 100 female. Antennal segmentation 1 2 3 4 17 37 21 25 male; 15 40 22 : 23 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 32 100 male, 43 100 female. Anterior lobe slightly elevated, sulcus behind it shallow. Median fovea shallow, located before middle of anterior lobe. Posterior lobe

broadly explanate along lateral margins and narrowly explanate on each side of anterior lobe; lateral margins straight or slightly, convexly curved, strongly convergent. Scutellum lustrous, minutely scabrous, posterior half obsolete, minutely, transversely rugulose. Clavus, corium and embolium opaque, smooth; membrane lustrous. Sutures of hemelytra and veins of membrane distinct; corial veins obsolete. First areole of membrane produced approximately one-fifth of its length before base of second areole. Posterior margin of last abdominal sternum of female rounded, slightly truncated at apex; sternum moderately produced, approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate III, figures 4a and 4b. Length of posterior tibia as compared to width of head 216 100 male; 253 100 female. Brachypterous forms are not known.

Comparative notes: Most closely resembles S. elongata Uhler from which it can be distinguished by the differently patterned hemelytra, the yellow spot on the lateral margin of the pronotum, the broader pronotum and the convex frons which lacks the deep, prominent middle sulcus characteristic of S. elongata.

Location of types: The type series of Salda

bifasciata is in the Lund Museum and the types of its synonym Salda serior J. Sahlberg are in the Stockholm Museum. Acanthia bellatrix Bueno, 1924 is identical with the European Salda bifasciata. The following types of A. bellatrix are in the Canadian National Collections:

Holotype: Waterton Lakes, Alberta, June 30, 1923,
J. McDunnough, male.

Allotype: Waterton Lakes, Alberta, June 29, 1923,
J. McDunnough, female.

Paratypes: Waterton Lakes, Alberta, June 29, 1923,
J. McDunnough, one female.

Waterton Lakes, Alberta, June 30, 1923,
J. McDunnough, one male.

The following paratypes are in the Bueno Collection in the Francis Huntington Snow Entomological Collections and have been examined by the writer: Waterton Lakes, June 29, 1923, J. McDunnough, one male and one female, June 30, 1923, J. McDunnough, two females.

Data on distribution: This species is normally found in subarctic localities in the Holarctic Region. It is recorded in the Western Hemisphere under the name Acanthia bellatrix Bueno, from Alberta. In addition to the paratypes of A. bellatrix mentioned in

"location of types" above, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

* ALASKA: Tom's Lake, Naknek, July 8, 1919, J. S. Hine, 2 males (J. C. Lutz); Tom's Village, Naknek Lake, July 1919, J. S. Hine, 1 female (J. C. Lutz).

CANADA: Alberta: Waterton, July 10, 1923, E. H. Strickland, 2 females (Strickland).

* U. S. A.: * Washington: Mt. Rainier, Aug. Dyar and Caudell, 1 male, 2 females (U. S. N. M.); Paradise Valley, Mt. Rainier, Aug. 30, 1928, 1 male (Cornell Univ.); Paradise Park, Mt. Rainier, Aug. 1917, A. L. Melander, 1 female.

Salda bouchervillei (Provancher)

(Plate III figures 5a, 5b)

1872. Salda coriacea Uhler, P. R. Fifth Ann. Rept. U. S. Geog. Surv. for 1871, 1872, p. 431 (describes from Utah; a homonym of Salda coriacea (Fabricius) 1803).
1872. Sciodopterus bouchervillei Provancher, L'Abbe' L. Naturaliste Canad. IV, p. 106 (describes from Quebec).
1876. Salda coriacea, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. I, p. 334.
1877. Salda coriacea, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 436 (redescribes, records from Mass., Ill., Colo., Utah, B. C. and Manit.).
1878. Salda coriacea, Uhler, P. R. Proc. Boston Soc. Nat. Hist. XIX, p. 433 (in T. W. Harris' collection).
1878. Acanthia coriacea, (Say MS) Uhler, P. R. Proc. Boston Soc. Nat. Hist. XIX, p. 433 (says the specimen in T. W. Harris' collection labeled by Say is S. coriacea).
1886. Salda bouchervillei, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1886. Salda coriacea, Uhler, P. R. Check List Hemip. North Amer., p. 27.

1888. Sciodopterus bouchervillei, Provancher, L'Abbe' L. Petite Faune Ent. Canad. III, p. 192 (keys, redescribes).
1892. Salda coriacea, Osborn, Herbert. Proc. Iowa Acad. Sci. I, p. 129 (records from Iowa).
1895. Salda coriacea, Gillette, C. P., and Baker, C. F. Colorado Agr. Expt. Sta. Bull. No. 31, p. 62 (records from Colorado).
1896. Salda bouchervillei, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 216.
1896. Salda coriacea, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 217.
1909. Acanthia bouchervillei, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 175.
1909. Acanthia coriacea, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 176.
1910. Salda bouchervillei, Banks, Nathan. Catalog Nearct. Hemipt., p. 11.
1910. Salda coriacea, Banks, Nathan. Catalog Nearct. Hemipt., p. 11.
1910. Acanthia coriacea, Smith, J. B. Insects of N. J., Hemipt. in Ann. Rept. N. J. State Mus., 1909, p. 166.
1912. Sciodopterus bouchervillei, Van Duzee, E. P.

- Canad. Ent. XLIV, p. 324 (examines Provancher's collection, says S. bouchervillei, Prov. and S. coriacea Uhler are identical).
1912. Salda coriacea, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 13 (a specimen determined as "S. coriacea Uhl." by Uhler is believed to be S. littoralis (L.)).
1913. Acanthia coriacea, Torre-Bueno, J. R. de la. Ent. News, XXIV, p. 20.
1914. Acanthia coriacea, Parshley, H. M. Psyche XXI, p. 140 (records from Maine).
1916. Salda coriacea, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Sciodopterus bouchervillei, Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (lists as synonym of S. coriacea Uhl.).
1917. Salda coriacea, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 441.
1917. Sciodopterus bouchervillei, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 441 (lists as synonym of S. coriacea).
1917. Salda coriacea, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 109 (records from Me., Mass. and Conn.).
1919. Salda coriacea, Hussey, R. F. Occas. Papers Mus. Zool. Univ. Michigan, No. 75, p. 14 (records from Michigan).

1920. Salda coriacea, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 60 (quotes Uhler's 1877 re-description).
1923. Lampracanthia coriacea, Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XVIII, p. 150 (records from New York, believes it may be a dimorphic form of L. anthracina).
1923. Lampracanthia coriacea, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 416 (believes it may be a dimorph of L. anthracina, records from Conn.).
1923. Saldula coriacea, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. (removes from Lampracanthia).
1926. Lampracanthia coriacea, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1015, fig. 203 (keys, redescribes, figures, records from Indiana and New York).
1927. Lampracanthia coriacea, Downes, W. D. Proc. Ent. Soc. Br. Col. (1927) No. 23, p. 15 (records from Br. Col.).
1928. Salda coriacea, Torre-Bueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 137 (records from N. Y.).
1934. Salda coriacea, Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XXIX, p. 157 (records from Ore.).

1937. Salda coriacea, Harris, H. M. Iowa State Coll. Jl. Sci. XI, p. 175 (records from South Dakota).
1948. Salda coriacea, Hussey, R. F. Bull. Brooklyn Ent. Soc. XLIII, p. 153 (Salda coriacea, Uhler 1872 is a homonym of Salda coriacea (Fabricius) 1803).
1948. Salda bouchervillei, Hussey, R. F. Bull. Brooklyn Ent. Soc. XLIII, p. 153 (name revived to replace Salda coriacea Uhler 1872).

Size: (Brachypterous form): Length 5.786 mm. to 6.62 mm. male; 6.55 mm. to 7.45 mm. female. Width of pronotum 2.12 mm. to 2.40 mm. male; 2.33 mm. to 2.55 mm. female. (Macropterous form): Length 7.08 mm. to 7.33 mm. male; 7.35 mm. to 8.11 mm. female. Width of pronotum 2.40 mm. to 2.41 mm. male; 2.57 mm. to 2.70 mm. female.

Color: General color black, legs yellow. Eyes pale brown to dark brown. Head black, with a yellow spot on each side of ocelli; apex of frons, middle of slypeus and labrum yellow to yellow-brown. Rostrum dark brown. First antennal segment yellow above, black beneath; second segment yellow to red-brown; third and fourth segments red-brown to dark brown. Pronotum, scutellum and venter of thorax black; episternal plates before anterior coxae often narrowly margined with

yellow. Clavus black; corium black, with a line of widely separated small, pale spots inside lateral margin and on disc; embolium black, membrane dark brown (in macropterous forms membrane yellow-brown, veins red-brown). Abdominal sterna red-brown to dark brown, narrowly margined with yellow posteriorly; last abdominal sternum of female brown, often narrowly margined with yellow posteriorly. Genital capsule of male dark brown. Coxae dark brown or black, tipped with yellow; trochanters yellow-brown; femora black or dark brown, anterior edge yellow or yellow-brown; tarsi yellow, infuscated apically and basally, tipped with dark brown; second tarsal segment yellow, third tarsal segment brown. Spines of legs and of first antennal segment black.

Structural characteristics: (Brachypterous form):
 General shape broadly oval. Clothed with a fine, recumbent, silvery pubescence beneath head and thorax, and with a fine, recumbent golden pubescence on legs, antennae, frons, vertex, edges of pronotum, base of scutellum, lateral margins of embolium and venter of abdomen. Second antennal segment clothed with scattered, long, erect, stiff setae. Corium and clavus glabrous. Width of head as compared to width of pronotum 72 100 male; 70 100 female. Frons and

vertex lustrous, minutely scabrous; apex of frons raised into a carinate ridge which is obsolete in the middle and curves strongly upward to eyes; frons obsoletely sulcate on median line between eyes. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 103 100 male, 99 100 female; length of second antennal segment as compared to width of head 81 100 male, 79 100 female. Antennal segmentation 1 2 3 4 16 36 24 24 male; 17 36 24 23 female. Pronotum polished; posterior lobe obsoletely, minutely, transversely rugulose; median length of posterior lobe as compared to median length of anterior lobe 42. 100 male, 42 100 female. Anterior lobe slightly elevated, sulcus behind it shallow. Median fovea shallow, located before middle of anterior lobe; anterior lobe minutely, punctately depressed on each side of median fovea. Posterior lobe broadly explanate along lateral margins and narrowly explanate on each side of anterior lobe; lateral margins slightly convexly curved, moderately convergent. Scutellum polished, minutely scabrous, posterior half obsoletely, transversely rugulose. Clavus, corium and embolium polished, obsoletely coarsely punctate; membrane polished, of same texture

as corium, minutely rugulose. Sutures and veins of hemelytra distinct. First areole produced nearly half its length before base of second areole. Hind wings not visible beyond apex of abdomen. Posterior margin of last abdominal sternum of female sinuated on sides, broadly truncated at apex; approximately three and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate III, figures 5a and 5b.

Length of posterior tibia as compared to width of head

219 100 male; 221 100 female. (Macropterous

form): General shape elongate, oblong, oval. Width

of head as compared to width of pronotum 68 100

male; 63 100 female. Length of antenna as compared

to length of hind tibia 109 100 male, 104 100

female; length of second antennal segment as compared

to width of head 83 100 male, 93 100 female.

Antennal segmentation 1 2 3 4 16 35 24

25 male; 16 38 23 23 female. Median length of

posterior lobe of pronotum as compared to median length

of anterior lobe of pronotum 44 100 male; 49

100 female. Membrane coriaceous next to corium and

embolium, membranous apically; areoles forming an evenly

gradate series excepting first areole which is pro-

duced for approximately one-third its length before

the base of the second areole; margin beyond areoles

broad, membranous. Hind wings extending to apex of

areoles of membrane, visible beyond apex of abdomen.

Length of posterior tibia as compared to width of head

215 100 male; 231 100 female. Resembles brachypterous forms in other features.

Comparative notes: Most closely resembles S. littoralis (L.) from which it may be distinguished by the glabrous corium and clavus and the dark anterior coxae. It can be distinguished from S. anthracina Uhler by the shorter frons, which is pubescent, minutely scabrous and is raised into a carinate ridge at the apex. The posterior tibiae are longer in comparison with the width of the head and the length of the antennae than in S. anthracina.

Location of types: The type series is in the Provancher Collection in the Quebec Public Museum. The type of S. coriacea Uhler is a female from Ogden, Utah, which is type #731 in the Uhler Collection in the United States National Museum. Dr. R. I. Sailer has examined this type and reports that the head, pronotum, most of the thorax and the abdomen have been destroyed by dermestids. This species has been most commonly known by the name Salda coriacea Uhler, 1872. Hussey (1948) has called attention to the fact that Salda coriacea Uhler is a homonym of Salda coriacea (Fabricius). The Fabrician species was originally

described as Acanthia coriacea Fabricius, 1794 and was placed in his new genus Salda in 1803. The species is a mirid belonging to the genus Orthocephalus. It is therefore necessary, as Hussey suggests, that the first valid name applied to the species, Sciodopterus bouchervillei Provancher, 1872, be used henceforth. The macropterous form is described above; the following morphotypes are designated:

Morphoholotype: Desplaines River, Illinois,
June 22, 1904, male.

Morphoallotype: Douglas Lake, Michigan, July 4,
1923, H. B. Hungerford, fe-
male.

Morphoparatypes: The specimens designated as macropterous in "data on distribution" below represent morphoparatypes.

The morphoholotype and morphoallotype are in the Francis Huntington Snow Entomological Collections; the morphoparatypes are in the Snow Collection or in the collections indicated after the locality.

Data on distribution: Recorded in Canada from British Columbia, Manitoba, Ontario and Quebec and in the United States from Colorado, Connecticut, Illinois, Indiana, Iowa, Maine, Massachusetts, Michigan, New Jersey, New York, Oregon, South Dakota and Utah. In addition to the morphoholotype and morphoallotype the following specimens have been examined (new records from major political areas are indicated by an asterisk):

* ALASKA: Eklutna, July 5, 1947, 1 female (macropterous), (U. S. N. M.).

CANADA: * Alberta: Waterton Lakes, June 29, 1923, J. McDunnouth, 1 female, June 30, 1923, J. McDunnouth, 1 male, 1 female; Edmonton, 1932, Owen Bryant, 1 female; Waterton, July 10, 1923, E. H. Strickland, 2 males, 2 females (Strickland); Gull Lake, June 21, 1929, E. H. Strickland, 1 female (Strickland); Jasper Park, Aug. 19, 1915, 2 males, 10 females (A. M. N. H.).

* New Brunswick: Penobsquis, July 21, 1927, C. A. Frost, 2 males, 2 females, July 20, 1929, C. A. Frost, 1 female.

* Newfoundland: Stephenville, Bay St. George, July 12, 1 male (U. S. N. M.).

* Nova Scotia: Boisdale, Cape Breton, July 18 - 19, 1 female.

Ontario: Grimsby, 1 female (macropterous), (Uhler

Coll., U. S. N. M.).

Quebec: Montreal Island, July 2, 1903, 1 female (macropterous).

U. S. A.: Arizona: White Mountains, 1943, Owen Bryant, 2 males, 1 female (Bryant).

California: Arnold Meadow, Madera County, Aug. 15, 1920, Henry Dietrich, 1 female; Siskiyou County, A. Koebele, 1 female (U. S. N. M.).

Colorado: Creede, July 6, 1937, C. L. Johnston, 1 male, 6 females; Colorado, T. Pergande, 1 female (U. S. N. M.); Boulder, 1 male (Uhler Coll., U. S. N. M.); Tennessee Pass, Aug. 6 - 8, 1920, 1 female (A. M. N. H.); Fountain Valley, El Paso County, June 23, 1940, Gertsch and Hook, 1 female (A. M. N. H.).

Illinois: See "Location of types" above.

* Kansas: Cheyenne County, July 3, 1925, R. H. Beamer, 1 female; Coldwater, June 19, 1927, R. H. Beamer, 1 male; Coldwater, June 19, 1927, H. B. Hungerford, 1 female.

Maine: Greenwood, June 21, 1921, C. A. Frost, 1 female (Parshley); Weld, June 30, 1938, C. A. Frost, 1 male (U. S. N. M.).

Massachusetts: Massachusetts, 1 female (Uhler Coll., U. S. N. M.).

Michigan: Munising, June 26, 1910, 1 female

(macropterous), (U. S. N. M.); Big Stone Bay, July 22, 1927, E. M. Becton, 1 female (macropterous), (Mich. Univ. Biol. Sta. Coll.); Cheboygan County, July 28, 1930, C. Lord, 1 female (macropterous, (Mich. Univ. Biol. Sta. Coll.)); Cheboygan, July 6, 1939, Daphne Carnochan, 1 female (Mich. Univ. Biol. Sta. Coll.); Cheboygan County, July 18, 1931, H. B. Hungerford, 1 male, 1 female (female macropterous), July 24, 1930, H. B. Hungerford, 1 male, 2 females, July 30, 1948, H. B. Hungerford, 1 female (macropterous); Nelson Lake, Cheboygan County, July 17, 1948, T. Wayne Porter, 1 female (macropterous).

* Minnesota: Ottertail County, 1 female (macropterous), (Uhler Coll., U. S. N. M.).

* New Hampshire: Franconia, 1 female (Slosson Coll., A. M. N. H.); Crawford Notch, 1 male, 1 female (Slosson Coll., A. M. N. H.); antrim, June 25, 1933, C. A. Frost, 1 female (U. S. N. M.).

* New Mexico: Weed, June 28, 1947, L. D. Beamer, 2 females.

New York: North Fairhaven, June 4, 1921, 1 female (macropterous), (Cornell Univ.); Oakfield, Genesee County, June 26, 1922, H. Notman, 1 female; Fort Hunter, Montgomery County, May 31, 1921, H. Notman, 1 female; Vernel Center, S. W. Frost, 1 female; Wallface Mountain, Essex County, July 11, 1922,

H. Notman, 1 male, 1 female, July 9, 1922, H. Notman, 1 female (macropterous); Coldspring Harbor, Long Island, June 22, 1931, C. H. Curran, 1 female (A. M. N. H.).

* North Dakota: Devil's Lake, July 23, 1920, T. H. Hubbell, 1 female (Parshley).

Oregon: North Powder, July 13, 1931, M. W. Sander-son, 1 female (Macropterous); Mt. Rainier National Forest, July 5, 1933, G. P. Engelhardt, 1 male.

South Dakota: Capa, June 1, 1921, H. C. Severin, 1 male, 2 females (Parshley; Lake Oakwood, June 14, 1923, H. C. Severin 3 males, 2 females (Severin); Lake Oakwood, June 28, 1929, G. I. Gilbertson, 1 male (Severin).

* Wisconsin: Beaver Dam, June 23, 1909, W. E. Snyder, 1 male (macropterous), (U..S. N. M.).

Wyoming: Carbon County, 1 male, 1 female (A. M. N. H.).

Salda comata Champion

(Plate III, figures 6a, 6b)

1901. Salda comata Champion G. C. Biol. Centr.-
Amer., Rynch., Vol. II, p. 341, Tab. 20, fig.
6 (describes from Mexico).
1909. Acanthia comata, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent.
Soc. Wash. X, p. 175.
- 1922, Saldula comata, Parshley, H. M. Ent. News
XXXIII, p. 71 (S. comata Champ. 1901 is con-
generic with S. comata Parsh., 1921, which is
renamed S. comatula).

Size: Length 3.35 mm. to 3.90 mm. male; 3.80 mm.
to 4.62 mm. female. Width of pronotum 1.26 mm. to
1.50 mm. male; 1.47 mm. to 1.78 mm. female.

Color: The following color description is that
of average specimens. Mealanic forms are found in which
the black areas of the hemelytra are more greatly ex-
panded. Teneral specimens, from which this species
was originally described, are paler, marked with brown
instead of black and have yellow markings along the
lateral margins of the pronotum. General color black,
marked with yellow. Head black, with a yellow spot on
each side of ocelli; apex of frons, clypeus and middle

of labrum yellow. Rostrum red-brown. First antennal segment black beneath, yellow above and at apex; second segment dark brown, its apical fourth yellow; third and fourth segments dark brown. Pronotum and scutellum black; venter of thorax black, episternal plates before anterior coxae usually narrowly margined with yellow-brown. Clavus black with a yellow spot on middle near apex. Corium black basally, brown apically, with a large, oval yellow spot along lateral margin, extending from end of basal fourth to middle, a brown spot usually located in middle of yellow spot; apical fifth yellow along lateral margin, other scattered yellow spots usually present. Embolium yellow, basal fourth black, transversely banded with brown behind middle of length of embolium. Nodal furrow brown. Membrane yellow to yellow-brown, veins brown, usually one or two brown streaks occur within first three areoles. Abdominal sternae brown to dark brown, narrowly margined with yellow posteriorly; last abdominal sternum of female brown basally, broadly margined with yellow posteriorly. Genital capsule of male brown. Coxae brown or black, tipped with yellow; trochanters yellow, variably spotted with brown, the posterior edge brown or black; tibiae yellow to yellow-brown, infuscated at base and tipped with brown; tarsi yellow, each segment tipped with brown. Spines of legs brown.

Structural characteristics: General shape oblong-oval. Clothed above with fine, recumbent, golden pubescence and a dense pile of long, erect, stiff setae; with a fine, recumbent, silvery pubescence beneath. Legs and antennae clothed with fine, golden pubescence. Width of head as compared to width of pronotum 72 100 male; 56 100 female. Frons and vertex lustrous; apex of frons raised into a curved carinate ridge which is medially sulcate in the male and obsolete above the clypeus in the female; frons not medially sulcate. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae moderately long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 108 100 male, 100 100 female; length of second antennal segment as compared to width of head 66 100 male, 64 100 female. Antennal segmentation 1 2 3 4 18 36 23 23 male; 17 37 23 23 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 75 100 male, 72 100 female. Anterior lobe moderately elevated, sulcus behind it moderately incised; median fovea located at end of basal third of anterior lobe, anterior lobe transversely depressed across median fovea. Posterior lobe narrowly explanate on each side of anterior lobe; lateral margins slightly convexly

curved, strongly convergent. Scutellum lustrous, minutely scabrous, posterior half obsoletely, transversely rugulose. Clavus opaque, remainder of hemelytron lustrous and (excepting membrane) minutely scabrous. Veins and sutures of hemelytra distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female rounded; sternum moderately produced, approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate III, figures 6a and 6b. Length of posterior tibia as compared to width of head 157 100 male; 174 100 female. Brachypterous forms are not known.

Comparative notes: Most closely resembles S. comatula (Parshley). The pilose second antennal segment and hind tibiae of S. comatula will distinguish it from S. comata. The lateral margins of the pronotum are less strongly curved and more narrowly explanate than those of S. comatula. The pilosity of the hemelytra will distinguish it from S. pallipes (F.).

Location of types: Described from several teneral specimens, mostly in very bad condition. These specimens, male and female, are from Pedregal, Mexico. The type series is in the British Museum.

Data on distribution: Recorded only from the type series. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

* GUATEMALA: Gualan, Jan. 14, 1905, 2 females.

* HONDURAS: Progreso, March 30, 1923, T. H. Hubbell, 4 males, 3 females; Maloa farm, Aguan river valley, April 10, 1923, T. H. Hubbell, 1 male, 2 females.

MEXICO: Chihuahua: Carimechi, Rio Mayo, Dec. 12, 1934, H. S. Gentry, 1 male.

* Mexico: Real de Arriba, Temescaltepec, May 26, 1933, H. E. Hinton, and R. L. Usinger, 5 males, 4 females, June 4, 1933, H. E. Hinton and R. L. Usinger, 1 male, 2 females, June 10, 1933, H. E. Hinton and R. L. Usinger, 4 males (Usinger); Tejupilco, Temescaltepec, June 16, 1933, H. E. Hinton and R. L. Usinger, 1 female, June 17, 1933, H. E. Hinton and R. L. Usinger, 2 males, June 18, 1933, H. E. Hinton and R. L. Usinger, 1 female (Usinger).

* Sonora: Arroyo de los Mescales, Rio Mayo, Feb. 16, 1935, H. S. Gentry 1 female (Calif. Acad. Sci.).

* Tamaulipas: San José', April, 1910, 3 males, 5 females.

* U. S. A.: * Arizona: Nogales, June 25, 1923, R. H. Beamer, 12 males, 11 females; Castle Hot Springs, Aug. 4, 1941, E. L. Todd, 3 males, 2 females; Castle Hot Springs, Aug. 4, 1941, L. H. Banker, 1 female; Coconino County, July 1, 1929, P. W. Oman, 3 females; Kaibab Forest, Aug. 9, 1936, M. B. Jackson, 2 females; Santa Rita Mts., July 9, 1947, L. D. Beamer, 2 males, , 2 females; Florida Canyon, Santa Rita Mts., March 4, 1935, J. R. de la Torre-Bueno, 1 male, 1 female; Miami, July 22, 1932, R. H. Beamer, 1 male; Baboquivari Mts., July 24, 1941, R. H. Beamer, 1 male; Kit's Peak, Rincon, Baboquivari Mts., Aug. 7-9, 1916, 3 males (A. M. N. H.); Grand Canyon, July 3, 1914, J. C. Bradley, 1 female (Cornell Univ.); Ruby, July 27, 1941, R. H. Beamer, 1 female; Sunnyside Canyon, Huachuca Mts., July 9, 1940, D. E. Hardy, 1 male; Tucson, March 25, 1933, Owen Bryant, 1 female (Bryant); Tucson, 1936, Owen Bryant, 2 females; Santa Catalina Mts., 1936, Owen Bryant, 1 male; Bear Canyon, Santa Catalina Mts., March 13, 1936, J. R. de la Torre-Bueno, 1 male, 1 female; Sabino Canyon, Santa Catalina Mts., Oct. 31, 1934, J. R. de la Torre-Bueno, 1 female, June 12, 1935, J. R. de la Torre-Bueno, 1 female, July 20, 1940, J. R. de la Torre-Bueno, 1 female, June 3, 1945, J. R. de la Torre-Bueno, 1 male; Douglas, April 30, 1933, W. W. Jones, 1 female; Catalina Springs, April 27, E. A.

Swarz, 1 male, (U. S. N. M.); Williams, July 16,
 Barber and Swarz, 1 female (U. S. N. M.); Williams,
 June 2, H. Barber, 2 males, 2 females (U. S. N. M.);
 Hot Springs, June 25, H. Barber, 2 females (U. S. N.
 M.); Tubac, June 24, 1933, P. W. Oman, 6 males, 8 fe-
 males (U. S. N. M.); Yarnell, July 11, 1941, R. H.
 Beamer, 2 males, 4 females; Maricopa County, July 1,
 1929, R. H. Beamer, 4 males, 5 females; Maricopa County,
 July 2, 1929, P. W. Oman, 2 females; Chiricahua Mts.,
 July 8, 1932, R. H. Beamer, 1 male, July 5, 1940, R. H.
 Beamer, 2 females, July 3, 1947, R. H. Beamer, 4 males,
 9 females; Chiricahua Mts., July 4, 1940, D. E. Hardy,
 1 male, 2 females; Oak Creek Canyon, July 15, 1947,
 L. D. Beamer, 8 males, 5 females; Oak Creek Canyon,
 July 9, 1941, Burton Hodgden, 1 female; Granite Dells,
 July 12, 1947, R. H. Beamer, 5 males, 2 females.

California: Carmel, June 29, 1931, R. L. Usinger,
 2 males, 2 females (Usinger); Albany, Feb. 26, 1921,
 C. T. Dodds, 1 male, 1 female, March 16, 1921, C. T.
 Dodds, 1 male, 1 female (Dodds); Gaviota, July 19,
 1933, R. H. Beamer, 1 male; California, Dec. 25, 1922,
 J. G. Needham, 1 female; Argus Mts., April, 1891, 1
 female (U. S. N. M.); Panamint Mts., April 18, 1891,
 1 female (U. S. N. M.); Los Angeles County, 1 male
 (U. S. N. M.); Sequoia National Forest, June 10,
 1935, P. W. Oman, 1 female (U. S. N. M.); Palm Springs,

Oct. 2, Hubbard, 1 male (U. S. N. M.); San Diego, Aug. 13, 1 female (U. S. N. M.); Clayton, July 20, 1935, R. H. Beamer, 3 males, 1 female; Kernville, July 24, 1940, R. H. Beamer, 2 males, 1 female; Nipomo, July 24, 1935, Jack Beamer, 1 male, 1 female; Alpine, July 9, 1929, P. W. Oman, 1 male; Luguna Mts., July 6, 1929, R. H. Beamer, 1 female; Palmdale, July 22, 1940, D. E. Hardy, 1 male; Savage Canyon, Whittier, March 22, 1930, C. H. Martin, 3 males, 10 females; San Jacinto Mts., Aug. 6, 1935, R. H. Beamer, 1 male; Salt-dale, July 26, 1947, L. D. Beamer, 1 male; Quail Springs, Riverside County, May 31, 1947, G. C. Varley, 3 males (British Museum); Claremont, July 29, 1935, Jack Beamer, 1 female; Mokelumne Hill, Calaveras County, May 27, 1931, R. L. Usinger, 1 male, 1 female (Usinger); San Clemente Island, March 25, 1922, C. T. Dodds, 2 males (Calif Acad. Sci.); Pine Canyon, Mt. Diablo, May 23, 1937, R. L. Usinger, 3 males, 2 females (Calif. Acad. Sci.); Santa Cruz Island, May 17, 1919, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); Sausalito, Oct. 29, 1921, 1 female (Calif. Acad. Sci.).

* New Mexico: Chaves County, July 8, 1927, R. H. Beamer, 1 female; Las Vegas, Hot Springs, Aug. 2, H. S. Barber, 1 female (U. S. N. M.).

* Oregon: Ashland, A. P. Morse, 1 male (Baker Coll., U. S. N. M.).

* Texas: Pinto, July 7, 1938, D. W. Craik, 1 female; Frijole, July 16, 1933, R. H. Beamer, 1 male; Brooks County, July 25, 1928, R. H. Beamer, 3 males, 7 females; Ft. Davis, June 20, 1947, L. D. Beamer, 1 male; Sutton County, July 20, 1928, J. G. Shaw, 2 males, 3 females; Austin, April 20, 1900, 1 female (Parshley); Del Rio, July 8, 1938, R. I. Sailer, 11 males, 2 females; Del Rio, July 7, 1938, Jean Russell, 1 female; Del Rio, July 8, 1938, D. W. Craik, 3 females; Del Rio, May 27, 1912, J. D. Mitchell, 1 female; Austin, Dec. 10, 1928, J. O. Martin, 1 male, 1 female (Calif. Acad. Sci.).

Salda comatula (Parshley)

(Plate III, figures 7a, 7b)

1921. Saldula comata Parshley, H. M. Proc. Ent. Soc. Br. Col. (1921), No. 18, p. 21 (describes from Br. Col.).
1922. Saldula comatula, Parshley, H. M. Ent. News XXXIII, p. 71 (new name for Saldula comata Parsh., 1921 which is congeneric with Salda comata Champ., 1901).
1927. Saldula comata, Downes, W. Proc. Ent. Soc. Br. Col. (1927), No. 23, p. 23 (records from Br. Col.).
1937. Saldula comatula, Harris, H. M. Iowa St. Coll. Jl. Sci. XI, p. 175 (records from S. Dak.).
1944. Saldula comatula, Harris, H. M., and Shull, W. E. Iowa St. Coll. Jl. Sci. XVIII, p. 208 (records from Idaho).

Size: Length 4.37 mm. to 5.27 mm. male; 4.52 mm. to 5.72 mm. female. Width of pronotum 1.54 mm. to 1.95 mm. male; 1.62 mm. to 2.03 mm. female.

Color: Color extremely variable, ranging from pale to dark forms. The following description is typical of average specimens. The dark areas mentioned below are greatly expanded in darker specimens, often

entirely obscuring the pale areas; in lighter specimens, the pale areas predominate at the expense of the dark areas. Head black, with a yellow spot on each side of ocelli; raised apex of frons, clypeus and center of labrum yellow. Eyes pale brown to dark brown. Rostrum dark brown. First antennal segment black beneath, yellow above and at apex; second segment dark brown, its apical fourth yellow; third and fourth segments dark brown. Pronotum and scutellum black; venter of thorax black, episternal plates before anterior and median coxae usually narrowly margined with yellow-white. Clavus black with an elongate, triangular white spot opposite commissure. Corium black basally and along claval suture, remainder yellow with a black spot near lateral margin at end of basal third and with veins infumed with black (in palest forms corium yellow excepting black base; in darkest forms corium entirely black). Embolium yellow, black basally with a submarginal black streak which may be along the entire length, or broken into black spots, one before middle and one at end of medial third (in darkest forms embolium entirely black with an orange spot along lateral margin at beginning of apical half and with one or two pale spots on the middle). Nodal furrow brown or black. Membrane yellow to yellow-brown, veins darker and usually with one or two dark spots or

streaks within each areole. Abdominal sterna pale brown to dark brown, usually narrowly margined with yellow or yellow-brown posteriorly; last abdominal sternum of female dark brown basally, produced portion yellow-white. Genital capsule of male brown. Coxae black or brown, tipped with yellow; trochanters yellow; femora yellow to yellow-brown variably spotted with brown, the posterior edge black; tibiae yellow to yellow-brown, infuscated at base; tarsi yellow, each segment tipped with brown. Spines of legs black.

Structural characteristics: General shape oblong-oval. Clothed above with fine, recumbent, golden pubescence and a dense pile of long, erect, stiff, dark setae; with fine silvery pubescence beneath, many of the hairs erect. Legs and antennae clothed with fine pubescence and many long, erect, stiff setae. Width of head as compared to width of pronotum 68 100 male; 64 100 female. Frons and vertex lustrous; apex of frons raised into a curved carinate ridge which is obsolete above the clypeus; frons not medially sulcate. Ocelli separated by the width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae moderately long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 106 100 male, 101 100 female; length of second antennal segment as compared to width of head

68 100 male, 67 100 female. Antennal segmentation
 1 2 3 4 18 37 22 23 male; 18 37 22

23 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 81 100 male, 72 100 female. Anterior lobe moderately elevated, sulcus behind it moderately incised; median fovea located at end of basal third of anterior lobe; anterior lobe transversely depressed across median fovea, obsoletely, punctately depressed on each side of median fovea. Posterior lobe distinctly explanate along lateral margins and on each side of anterior lobe; lateral margins convexly curved, moderately convergent. Scutellum lustrous, minutely scabrous, posterior half obsoletely, transversely rugulose. Clavus opaque, remainder of hemelytron lustrous and (excepting membrane) minutely scabrous. Veins and sutures of hemelytra distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female rounded; sternum moderately produced, approximately three times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate III, figures 7a and 7b. Length of posterior tibia as compared to width of head
 174 100 male; 179 100 female. Brachypterous forms are not known.

Comparative notes: Most closely resembles S. comata Champion. The pilose second antennal segment and hind tibiae, the medially obsolete carinate ridge at the apex of the frons and the relative lengths of the antennal segments will distinguish S. comatula from S. comata. The pilosity of the hemelytra will distinguish it from S. pallipes (F.).

Location of types: The holotype, a male specimen from Beaver Lake, Saanich District, British Columbia, June 17, 1919, W. Downes, is in the Canadian National Museum. The allotype, a female from the same series is in the collection of H. M. Parshley; a female paratype from Vernon, British Columbia, September 26, 1918, W. Downes, is in the Downes collection. The allotype has been examined in the preparation of this redescription.

Data on distribution: Recorded from British Columbia in Canada and in the United States from Idaho and South Dakota. In addition to the allotype the following specimens have been examined (new records for major political areas are indicated by an asterisk):

CANADA: * Alberta: Morley, Nov. 3, 1928, Owen Bryant, 1 female.

British Columbia: Merritt, Aug. 3, 1931, 1 female; Kamloopa, Nov. 1, 1929, Owen Bryant, 1 female (Bryant); Kelowna, May 20, 1917, R. C. Treherne, 1 male (Parshley); Kaslo, R. P. Currie, 1 female (U. S. N. M.).

U. S. A.: California: Tehacnapi, July 7, 1933, R. H. Beamer, 3 males; West Berkeley, April 27, 1921, C. T. Dodds, 1 male, 3 females (Dodds); Berkeley, May 19, 1921, 1 female (Calif. Acad. Sci.); Berkeley, C. T. Dodds, 1 female (Calif. Acad. Sci.); Berkeley, April 26, 1933, Jean Linsdale, 1 female; Savage Canyon, Whittier, March 22, 1930, C. H. Martin, 2 females; Mammoth Lakes, July 29, 1940, L. C. Kuitert, 3 males, 13 females; Mammoth Lakes, July 29, 1940, R. H. Beamer, 13 males, 11 females; Onyx, July 23, 1940, L. C. Kuitert, 5 males, 7 females; Onyx, July 23, 1940, R. H. Beamer, 1 male; Walnut Creek, June 15, 1931, R. L. Usinger, 2 females (Usinger); Lathrop, A. P. Morse, 1 male (Baker Coll., U. S. N. M.); Red Rock Canyon, Kern County, May 18, 1937, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); San Francisco County, Oct. 3, 1908, E. C. Van Dyke, 1 male, 2 females (Calif. Acad. Sci.); Santa Cruz, June 3, 1919, E. P. Van Duzee, 1 male (Calif. Acad. Sci.); Carmel, March 1, 1936, L. S. Sievin, 1 male (Calif. Acad. Sci.); Carmel, June 21, 1911, E. C.

Van Dyke, 1 male (Calif. Acad. Sci.); Oakland, June, 1935, E. S. Ross, 5 males, June 19, 1936, E. S. Ross, 1 female (Calif. Acad. Sci.); Albany, Feb. 26, 1921, C. T. Dodds, 3 males (Calif. Acad. Sci.); Albany, Alameda County, Oct. 14, 1923, J. O. Martin, 4 males, 6 females (Calif. Acad. Sci.).

* Colorado: Ft. Collins, Aug. 21, 1926, R. H. Beamer, 3 males, 1 female, Aug. 21, 1925, R. H. Beamer, 7 males, 3 females; Ft. Collins, Aug. 21, 1926, R. H. Beamer, and L. D. Beamer, 3 males, 5 females; Ft. Collins, Sept. 3, 1901, 1 male; Lyons, July 9, 1937, R. H. Beamer, 1 male, 3 females; Glen Haven, July 24, 1946, P. B. Lawson, 1 female; Maybell, June 30, 1931, R. H. Beamer, 1 female; Clear Creek Canyon, 1 female, (Uhler Coll., U. S. N. M.); Denver, 3 males, 1 female, (Uhler Coll., U. S. N. M.); Colorado, 1 male (Uhler Coll., U. S. N. M.); Ft. Collins, Aug., C. F. Baker, 1 female (Baker Coll., U. S. N. M.); Ft. Collins, Nov. 15, 1893, C. F. Baker, 2 males, 2 females (Baker Coll., U. S. N. M.).

Idaho: Nampa, July 8, 1931, L. D. Anderson, 11 males, 23 females; Burley, July 6, 1931, L. D. Anderson, 4 males, 13 females; Burley, July 6, 1931, M. W. Sanderson, 2 males, 1 female; Carey, July 27, 1926, J. S. Stanford, 1 female (Cornell Univ.); Snake River, 1 male (U. S. N. M.).

* Kansas: Phillips County, July 8, 1926, R. H. Beamer, 2 males; Scott County, June 20, 1925, H. O. Deay, 1 female.

* Montana: Whitehall, Aug. 13, 1931, M. W. Sanderson, 1 female; Drummond, Aug. 11, 1931, R. H. Beamer, 1 male; Manhattan, July 11, 1935, P. W. Oman 1 male (U. S. N. M.); Flathead Lake, Aug. 2, 1929, R. T. Young, 1 female (U. S. N. M.).

* Nevada: Carson City, Aug. 9, 1929, P. W. Oman, 3 males, 1 female; Carson City, Aug. 9, 1929, R. H. Beamer, 1 male, 3 females; Mt. Rose, 1 male (Bryant); Wells, June 24, 1927, J. M. Aldrich, 1 male, 3 females (U. S. N. M.).

* New Mexico: Socorro County, Aug. 18, 1927, R. H. Beamer, 1 male.

Oregon: Worden, July 1, 1935, R. H. Beamer, 4 males, 2 females; South of Worden, July 1, 1935, P. W. Oman, 2 males (U. S. N. M.); Umatilla, July 14, 1931, L. D. Anderson, 1 male; North Powder, July 13, 1931, R. H. Beamer, 5 males, 11 females; North Powder, July 13, 1931, M. W. Sanderson, 2 females; Anthony Lake, July 11, 1931, H. T. Peters, 1 male; Anthony Lake, July 11, 1931, J. Nottingham, 1 male; Haines, July 10, 1931, L. D. Anderson, 1 female; Dixie, July 8, 1931, L. D. Anderson, 2 females; Hot Lake, July 13, 1931, M. W. Sanderson, 1 male, 1 female; Yamhill, Feb.

3, 1934, E. S. Ross, 2 females (Calif. Acad. Sci.).

South Dakota: Piedmont, July 17, 1937, R. H. Beamer, 1 male; Wasta, July 17, 1937, R. H. Beamer, 3 females; Wasta, July 17, 1937, C. L. Johnston, 1 female; Hill City, T. Pergande, 1 female (U. S. N. M.); Sand Hills, Batesland, June 20, 1928, H. C. Severin, 2 males (Severin); Larive Lake, June 22, 1940, H. C. Severin, 1 male, 1 female (Severin).

* Utah: Duchesne, Aug. 17, 1940, L. C. Kuitert, 6 males, 2 females; Fish Lake, Aug. 16, 1929, P. W. Oman, 1 male, 1 female; Weber Canyon, July 4, 1931, J. Nottingham, 2 males, 2 females; Vernal, Aug. 2, 1947, L. D. Beamer, 1 male, 1 female; Vernal, Aug. 2, 1947, R. E. Elbel, 2 males, 2 females; Salt Lake City, June 1923, 1 male; Salt Lake City, 1 female; Garfield, July 9, 1911, 1 female; Beaver River Dam, Beaver County, Aug. 18, 1927, H. Notman, 1 male; Myton, Sept. 6, 1938, G. F. Knowlton, and F. C. Harmston, 1 male (U. S. N. M.); Far West, July 2, 1934, W. L. Thomas, 1 female (U. S. N. M.); Mill Creek, Aug. 22, 1938, G. F. Knowlton, 1 male (U. S. N. M.); Milford, Sept. 16, 1938, G. F. Knowlton and F. C. Harmston, 1 female (U. S. N. M.); Beaver Canyon, July 25, 1 female (U. S. N. M.); Cache Junction, July 2, 1913, H. R. Hagan, 1 male (U. S. N. M.).

* Washington: Ellensburg, Aug. 24, 1928, M. D.

Leonard, 1 male (Cornell Univ.); Uniontown, June 26, 1932, J. M. Aldrich, 1 female (U. S. N. M.); Washougal, June 25, 1948, V. D. Roth, 1 female (Ore. St. Coll.).

* Wyoming: Bath Lake, Yellowstone National Park, Aug. 18, 1918, A. L. Melander, 1 female.

Salda confluenta (Say)

(Plate III, figures 8z, 8b)

1832. Acanthia confluenta Say, Thomas. Heteroptera New Harmony, p. 35 (describes, "Inhabits U. S.>").
1857. Acanthia confluenta, Say, Thomas. Fitch Reprint, p. 805 in Trans, N. Y. State Agr. Soc. XVII (reprints original description).
1859. Acanthia confluens, Le Conte, J. L. Complete Writings of Thomas Say II, p. 361 (emends specific name, reprints original description).
1873. Acanthia confluens, Stål, Carl. Enum Hemip. III, p. 149.
1877. Salda confluens, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 433 (is not acquainted with the species).
1886. Salda confluens, Uhler, P. R. Check List Hemip. North Amer. p. 27.
1896. Salda confluens, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 217.
1908. Acanthia confluenta, Torre-Bueno, J. R. de la. Jl. N. Y. Ent. Soc. XVI, p. 236 (records from New York).
1909. Acanthia confluenta, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 176.

1910. Acanthia confluenta, Smith, J. B. Insects of N. J., Hemip. in Rept. N. J. State. Mus., 1909, p. 166 (records from New Jersey).
1910. Salda confluens, Banks, Nathan. Catalog Nearct. Hemip., p. 11.
1912. Acanthia confluens, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 15 (places in Acanthia as restricted here).
1916. Saldula confluenta, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula confluens, Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (notes Le Conte's emendation).
1917. Saldula confluenta, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 442.
1917. Saldula confluens, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 442 (notes Le Conte's emendation).
1917. Saldula confluens, Parshley, H. M. Hemip. of New England in Occas. Papers Boston Soc. Nat. Hist. VII, p. 110 (records from Conn.).
1920. Saldula confluenta, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 63 (quotes original description).
1923. Saldula confluenta, Torre-Eueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv.

- Bull. 34, p. 413 (keys, records from Conn.).
1926. Saldula confluenta, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1010, Fig. 202a (describes, records from New York).
1928. Saldula confluenta, Torre-Bueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 137 (records from N. Y.).
1943. Saldula confluenta, Harris, H. M. Jl. Kansas Ent. Soc. XVI, p. 152 (records from S. D.).

Size: Length 4.86 mm. to 5.30 mm. male; 6.18 mm. to 6.30 mm. female. Width of pronotum 1.80 mm. to 1.98 mm. male; 2.15 mm. to 2.18 mm. female.

Color: General color black, marked with yellow. Head black, with a yellow spot on each side of ocelli; clypeus yellow to black, raised apex of frons often yellow at ends. Rostrum yellow-brown to dark brown. First antennal segment yellow above, brown beneath; second segment yellow to dark brown; third and fourth segments dark brown. Pronotum, scutellum and venter of thorax black. Clavus black, with an oblong yellow spot opposite anterior end of commissure. Corium black, with a yellow spot near lateral margin behind middle and on middle near apex, another yellow spot often present immediately before spot near apex. Embolium yellow, black basally and with a narrow, black line along extreme

outer edge; a broad, transverse, black band behind middle usually extending to lateral margin; nodal furrow black. Membrane yellow-brown, margin behind and inside of areoles infumed with brown, two transverse, infumed brown bands cross the membrane. Abdominal sterna dark brown, usually narrowly margined with yellow posteriorly; last abdominal sternum of female dark brown basally, the produced portion yellow. Genital capsule of male dark brown. Coxae black basally, yellow apically; trochanters yellow-white; femora yellow-white basally, yellow-brown apically, variously spotted with brown; tibiae yellow-brown, yellow subapically, tipped with dark brown; second tarsal segment yellow, third segment dark brown or tipped with brown. Spines of legs black.

Structural characteristics: General shape broadly oval, tapering posteriorly. Clothed with fine, golden, pubescence, dorsal surfaces with a dense pile of long, stiff, erect, dark setae. Width of head as compared to width of pronotum 62 100 male; 61 100 female. Frons and vertex lustrous, minutely scabrous; apex of frons raised into a carinate ridge which is obsolete in the middle and sharply upturned at the ends; frons convex or obsolete sulcate on median line between eyes. Ocelli separated by slightly less than the width of an ocellus. Rostrum extending beyond middle of hind

coxae. Antennae long, slender, third segment nearly cylindrical; length of antenna as compared to length of hind tibia 104 100 male; 95 100 female; length of second antennal segment as compared to width of head 88 100 male, 87 100 female. Antennal segmentation 1 2 3 4 15 41 22 22 male; 16 43 20 21 female. Pronotum polished, obsoletely, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 56 100 male, 60 100 female. Anterior lobe moderately elevated, sulci before and behind it coarsely punctate. Median fovea located at end of anterior third of anterior lobe; anterior lobe obsoletely, punctately depressed on each side of median fovea. Posterior lobe broadly explanate along lateral margins and on each side of anterior lobe; lateral margins slightly convexly curved, moderately convergent. Scutellum polished, smooth. Clavus, corium and embolium polished, obsoletely punctate; membrane lustrous. Sutures and veins of hemelytra distinct; Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded; sternum greatly produced, slightly more than three times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate III, figures 8a and 8b.

Length of posterior tibia as compared to width of head
205 100 male; 2.4 100 female.

Comparative notes: Most closely resembles *S. sulcicollis* Champion. It can be distinguished from that species by the broad, yellow markings of the hemelytra, the polished clavus and the longer second antennal segment (measured in comparison to the width of the head). The anterior lobe of the pronotum is not depressed along the median line behind the median fovea as it is in *S. sulcicollis*. General facies similar to *Pentacora pellita* (Uhler) which is easily separated from *S. confluenta* by the possession of five areoles in the membrane.

Location of types: Described by Say from "U.S." Say's types have been destroyed. The following male is designated as a neotype: Carp Creek, Cheboygan County, Michigan, August 6, 1948, H. B. Hungerford. The neotype is in the Francis Huntington Snow Entomological Collections.

Data on distribution: Recorded from Quebec in

Canada, and in the United States from Connecticut, New Jersey, New York and South Dakota. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

CANADA: * Ontario: Ottawa, July 17, 1904, W. Metcalfe, 1 male; Ottawa, July 6, 1907, W. Metcalfe, 1 female (U. S. N. M.).

U. S. A.: Illinois: Desplaines River, June 22, 1904, 1 female; Urbana, 1 female (Uhler Coll., U. S. N. M.).

Iowa: Pleasant Valley, June 26, 1930, H. M. Harris, 1 male (Severin).

Kansas: Cherokee County, June 6, 1926, R. H. Beamer, 3 females; Douglas County, June 15, 1948, Burton Hodgden, 3 males, 1 female; May 22, 1948, Burton Hodgden, 1 male.

Maine: Meddybemps, July 17, 1922, M. E. Sim and R. J. Sim, 1 female.

Massachusetts: Chicopee, June 16, 1896, 1 male (Baker Coll., U. S. N. M.); Lake Buel, Hartsville, July 7, 1930, J. R. de la Torre-Eueno, 4 males.

Michigan: Cheboygan, July 15, 1939, Arlene I Whittemore, 1 female (Mich. Univ. Biol. Sta. Coll.); Cheboygan County, July 14, H. B. Hungerford, 1 male,

Aug. 4, 1933, H. B. Hungerford, 1 female, July 30, 1948, H. B. Hungerford, 3 males, Aug. 6, 1948, H. B. Hungerford, 3 males, Aug. 7, 1948, H. B. Hungerford, 1 male, Aug. 16, 1948, H. B. Hungerford, 3 males, 2 females, Aug. 17, H. B. Hungerford, 1 female; Douglas Lake, July 15, 1926, Charles Martin, 1 female; Douglas Lake, July 23, 1924, H. B. Hungerford, 1 female, July 24, 1924, H. B. Hungerford, 1 male, Aug. 2, 1924, H. B. Hungerford, 2 males, 6 females, July 20, 1926, H. B. Hungerford, 1 female; Walnut Lake, June 26, 1906, 1 female.

Minnesota: Ottertail County, 1 male, 1 female (Uhler Coll., U. S. N. M.).

* Missouri: Kansas City, May 20, F. Rogers, 1 male.

New Jersey: Westfield, July 3, 1904, 1 male.

New York: Yaphank, Long Island, July 8, 1913, J. R. de la Torre-Bueno, 2 males, July 9, 1913, J. R. de la Torre-Bueno, 2 males, 1 female, July 11, 1913, J. R. de la Torre-Bueno, 1 male, July 23, 1913, J. R. de la Torre-Bueno, 1 male, 1 female; White Plains, June 20, 1908, J. R. de la Torre-Bueno, 2 males, 1 female, June 21, 1908, J. R. de la Torre-Bueno, 1 male, July 4, 1917, J. R. de la Torre-Bueno, 1 female; Mud Pond, McLean Res., Ithaca, Aug. 17, 1925, 1 male (Cornell Univ.).

South Dakota: Volga, June 19, 1921, 1 male, 1 female (Parshley); Lake Hendricks, July 12, 1922, H. C. Severin, 1 male (Severin); Brookings, July 5, 1940, H. C. Severin, 1 female (Severin).

* Vermont: Newport, 1 male (Slosson Coll., A. M. N. H.).

Salda crassicornis Uhler

(Plate III, figures 9a, 9b)

1877. Salda crassicornis Uhler P. R. Bull. U. S. Geol. Geog. Surv. III, p. 438 (describes from "vicinity of the Saskatchewan River").
1886. Salda crassicornis, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1896. Salda crassicornis, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 217.
1909. Acanthia crassicornis, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 176.
1910. Salda crassicornis, Banks, Nathan, Catalog Nearct. Hemip., p. 11.
1912. Lampracanthia crassicornis, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 21 (designates as type of new genus).
1916. Lampracanthia crassicornis, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Lampracanthia crassicornis, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 447 (records from New Hampshire).
1918. Lampracanthia crassicornis, Hungerford, H. B. Jl. N. Y. Ent. Soc. XXVI, p. 17, Pl. I (gives life history and biological notes; figures egg

in situ and abdomen of both sexes; records from Ithaca, N. Y.).

1920. Lampracanthia crassicornis, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, pp. 77, 80, Pl. VI, X (quotes original description, photo and figure of eggs in situ, figures abdomen of both sexes).
1923. Lampracanthia crassicornis, Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XVIII, p. 151 (records from N. Y.).
1923. Lampracanthia crassicornis, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 416 (keys, not yet recorded from Conn.).
1923. Lampracanthia crassicornis, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. ("Lampracanthia Reuter contains only one species--crassicornis Uhler.")
1926. Lampracanthia crassicornis, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1016 (records from Indiana).
1928. Lampracanthia crassicornis, Torre-Bueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 138 (records from N. Y.).

Size: Length 3.75 mm. to 4.05 mm. male; 4.20 mm. to 4.47 mm. female. Width of pronotum 1.08 mm. to 1.20 mm. male; 1.24 mm. to 1.32 mm. female.

Color: General color black, legs yellow. Head, thorax and hemelytra polished black. Venter of abdomen polished, dark brown, often apex of each sternum pale brown. Eyes dark brown. First antennal segment yellow-brown, second antennal segment yellow, third and fourth antennal segments dark brown. Rostrum yellow-brown. Coxae, trochanters and basal portions of femora yellow, remainder of legs yellow-brown, tibiae and tarsi tipped with brown. Spines of tibiae dark brown or black.

Structural characteristics: (Brachypterous form): General shape obovate, head broad. Dorsal surfaces clothed with long, stiff, erect, black setae. Venter of abdomen clothed with long, semi-erect, golden pubescence. First and second antennal segments clothed with fine, black setae. Legs clothed with fine, golden, recumbent pubescence and fine, black, recumbent setae. Eyes clothed with scattered short, erect setae. Width of head as compared to width of pronotum at posterior angles 98 100 male, 87 100 female; width of head as compared to width of pronotum at anterior angles 166 100 male, 175 100 female. Frons

lustrous, golden pubescent, minutely scabrous, not depressed or medially sulcate; a curving ridge on each side extends diagonally upward from basal angles of clypeus to eye; apex of frons not forming a transverse, carinate ridge above clypeus. Ocelli separated by the width of an ocellus. Vertex polished, obsoletely rugulose. Rostrum usually extending to apex of hind coxae. Antennae long, stout, third and fourth segments moderately swollen, thicker than first and second segments, fourth segment slightly thicker than third. Length of antennae as compared to length of hind tibia :: 114 100 male, 110 100 female; length of second antennal segment as compared to width of head 75 100 male, 79 100 female. Antennal segmentation, 1 2 : 3 4 16 32 24 28 male; 16 33 23 28 female. Pronotum polished, sulcus behind collar distinctly punctate, sulcus between anterior and posterior lobes obsolescent at center; anterior lobe smooth, with a shallow median fovea at end of anterior third of its length; posterior lobe obsoletely transversely rugulose, narrowly explanate on each side of posterior half of anterior lobe, humeral angles acute, strongly reflected upward, lateral margins distinctly concave, posterior margin concavely curved between humeral angles; median length of posterior lobe as compared to

median length of anterior lobe 27 100 male, 27
 100 female; width of pronotum at anterior angles as
 compared to width of pronotum at humeral angles
 60 100 male, 57 100 female. Scutellum polished,
 basal half smooth, apical half transversely rugulose;
 apical half reflected upward. Clavus, corium, embolium
 and membrane fused, entirely coriaceous, highly polished;
 veins of corium and membrane obsolete; a ridge extending
 from humeral angle to apex of hemelytral commissure in-
 dicates position of lateral margin of clavus. Venter
 of last abdominal segment of female evenly rounded,
 produced, its median length more than twice length
 of preceding sternum. Terminal processes of male geni-
 tal capsule and left clasper of male are figured on
 Plate III, figures 9a and 9b. Length of posterior tibia
 as compared with width of head 204 100 male; 219
 100 female. Macropterous forms are not known.

Comparative notes: The structure of the pronotum
 will distinguish this species from all other species
 of the Saldidae.

Location of types: Uhler described this species
 from "one specimen from the vicinity of the Saskatche-
 wan river collected by Robert Kennicott". This speci-
 men is type #25238 in the Uhler Collection in the
 United States National Museum. The abdomen is missing

but the context of the description indicates that the type is a female. A male labeled "Ithaca, N. Y., H. B. Hungerford" is designated as the allotype and is placed in the Francis Huntington Snow Entomological Collections. The males listed in "data on distribution" are designated as paratypes; they are in the Snow Collections or in the collections indicated after the locality.

Data on distribution: Recorded from "vicinity of Saskatchewan river", Indiana, New Hampshire and New York. In addition to the allotype the following specimens have been examined (new records from major political areas are indicated by an asterisk):

CANADA: * Quebec: Laval, June 4, 1938, 2 females.

U. S. A. Michigan: Cheboygan County, Aug. 2, 1943, James Lee Norman, 1 female (Univ. of Mich. Biol. Sta. Coll.).

New Hampshire: Franconia, 1 male, 1 female (Slosson Coll., A. N. H.); Franconia, 1 male, 1 female (Uhler Coll., U. S. N. M.).

New York: Ithaca, H. B. Hungerford, 10 males, 6 females.

Salda dentulata new species

(Plate III, figures 10a, 10b)

Size: Length 3.00 mm. to 3.16 mm. male; 3.19 mm. to 3.49 mm. female. Width of pronotum 1.17 mm. to 1.17 mm. male; 1.18 mm. to 1.34 mm. female.

Color: General color black anteriorly, brown spotted with white posteriorly. Eyes dark brown to red-brown. Head black excepting bucculae, apex of frons (occasionally the apical half), clypeus and labrum which are yellow or yellow-brown. A yellow-brown spot is located next to eyes apposite ocelli. Rostrum yellow-brown. First antennal segment yellow above, yellow-brown beneath; second segment yellow-brown; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black, episternal plates before anterior and middle coxae margined with yellow-brown. Clavus brown-black with a white spot on the middle near the apex. Corium brown with large white spots on lateral margin at end of basal fourth and at middle and with blue-white spots near apex, one near lateral margin, the other near the middle. Embolium yellow, brown on median margin on basal fourth and with brown spots on middle and medial margin at middle and on the apical third, a blue-white spot is located in the inner apical angle. Membrane pale, yellow-brown,

veins darker brown, infumed along veins and in transverse bands across the areoles at ends of the basal and medium thirds of areoles, these bands do not attain edges of membrane. Abdominal sterna brown, narrowly margined posteriorly with yellow at the sides; last abdominal sternum of female brown, produced portion yellow-white. Genital capsule of male brown. Coxae brown, tipped with yellow; trochanters yellow; femora yellow basally, yellow-brown apically; tibiae yellow, narrowly brown basally and apically; tarsi yellow. Spines of legs brown.

Structural characteristics: General shape oval. Clothed with fine, recumbent pubescence, golden above, silvery beneath. Width of head as compared to width of pronotum 75 100 male; 75 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a carinate ridge which is sulcate in middle and moderately upturned at ends. Frons distinctly sulcate along median line. Ocelli separated by less than the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment nearly cylindrical; length of antennae as compared to length of hind tibia :: 110 : 100 male, 117 : 100 female; length of second antennal segment as compared to width of head :: 60 : 100 male, 62 : 100 female. Antennal segmentation 1 : 2 : 3 : 4 ::

15 : 34 : 25 : 26 male; 16 : 34 : 25 : 25 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe :: 77 : 100 male, 84 : 100 female. Anterior lobe moderately elevated, sulcus separating it from the posterior lobe moderately incised; median fovea located before the middle. Posterior lobe narrowly explanate, lateral margins straight or slightly concavely curved, strongly convergent. Scutellum lustrous, minutely scabrous, posterior half minutely transversely rugulose. Clavus opaque, remainder of the hemelytra lustrous. Sutures of hemelytra distinct; corial veins indistinct, nevertheless visible; veins of membrane distinct, areoles forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded, sternum moderately produced, approximately four times as long as preceding sternum. Terminal processes of the male genital capsule and left clasper of the male are figured on Plate III, figures 10a and 10b. Clasper armed on inside of swollen portion with a short, ventrally directed tooth. Length of posterior tibia as compared to width of head :: 159 : 100 male; 158 : 100 female. Brachypterous forms are not known.

Comparative notes: Closely related to S. sulcata (Barber) and S. sectilis new species, from which it can be distinguished by the color pattern of the hem-

elytra and the shape of the terminal processes of the genital capsule of the male. The evenly rounded apex of the genital capsule of the male and the tooth on the clasper will further distinguish this species from S. sulcata. The third tarsal segment of all legs is yellow in this species, and brown in S. sectilis.

Location of types:

Holotype: Telescope Estate (Windward side),
Grenada, W. I., H. H. Smith, male
(P. R. Uhler Collection in the
United States National Museum).

Allotype: Mount Gay Estate (Leeward Side),
Grenada, W. I., H. H. Smith, female
(P. R. Uhler Collection in the
United States National Museum).

Paratypes: Telescope Estate (Windward side),
Grenada, W. I., H. H. Smith, one
male, one female.

Mount Gay Estate (Leeward side),
Grenada, W. I., H. H. Smith, one
male.

Grenada, W. I., H. H. Smith, one
female.

Grenada, W. I., one male.

Uhler (1894) recorded the type series under the name Salda humilis. He said, ". . . specimens of this species were found on August 15 on the margins of pools of water. Two different sizes occur, the one normal as in the Eastern U. S. and Cuba, the other longer and with a somewhat narrower abdomen." Barber (1939) called attention to the presence of a new species in this series, saying, ". . . Uhler reported M. humilis from Grenada. Of the 8 Grenada specimens from the Uhler Collection in the U. S. National Museum, only one is the true M. humilis, the others represent an undescribed species quite different from M. sulcata." Examination of the eight specimens mentioned by Barber confirms his statement. One specimen, correctly determined as Micracanthia humilis by Barber is present among them and may be readily distinguished from the others, which constitute the type series of S. dentulata. The holotype, allotype and three paratypes are in the United States National Museum, one male and one female paratype are in the Francis Huntington Snow Entomological Collections.

Data on distribution: Known only from the type series.

Salda dewsi new species

(Plate III, figures 11a, 11b)

Size: Length 3.61 mm. to 3.95 mm. male; 4.21 mm. to 4.40 mm. female. Width of pronotum 1.32 mm. to 1.40 mm. male; 1.50 mm. to 1.56 mm. female.

Color: General color black, margined with yellow. Eyes light brown to dark brown. Venter of head black, vertex black with a yellow spot on each side diagonally behind each ocellus; frons black basally and on each side of median sulcus, yellow apically and next to eyes. Clypeus yellow, labrum yellow, margined with brown. Rostrum brown. First antennal segment red-brown beneath, yellow above; second, third and fourth segments red-brown. Pronotum black, lateral margins black basally and apically, median third yellow. Scutellum black. Venter of thorax black, lateral margins of pronotum yellow beneath, episternal plates before anterior and middle coxae broadly margined with white. Hemelytra black with yellow and pruinose areas. Clavus black with a yellow spot at humeral angle and a yellow-white spot on middle near apex. Corium black, medial half pruinose, an oval yellow spot on lateral margin at end of basal half, apex narrowly yellow margined. Embolium black, lateral margin yellow, an elongate

white spot on medial margin at end of basal third and an elongate median white spot on apical third, this spot contiguous apically with the yellow margin. Membrane brown, veins infused with darker brown. Abdominal sterna yellow to brown; last abdominal sternum of female brown, produced portion white. Genital capsule of male brown. Coxae brown, often tipped with yellow; trochanters yellow; femora yellow basally, brown apically; tibiae yellow-brown or yellow, tipped with brown; second tarsal segment yellow, third tarsal segment brown; spines of legs brown.

Structural characteristics: General shape elongate oval, tapering posteriorly. Clothed with a fine, recumbent, golden pubescence; third and fourth segments of antennae with a few erect setae. Head, pronotum, scutellum and hemelytra clothed with short, erect, stiff, black setae. Width of head as compared to width of pronotum 67 100 male; 61 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a carinate ridge which curves evenly upward to eyes and which is sulcate in middle. Frons deeply sulcate along median line, each side forming a definite lobe. Ocelli separated by slightly less than the width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae long, slender, third

segment nearly cylindrical; length of antenna as compared to length of hind tibia 109 100 male, 109 100 female; length of second antennal segment as compared to width of head 70 100 male, 73 100 female. Antennal segmentation 1 2 3 4 16 32 26 26 male; 16 32 26 26 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 80 100 male, 80 100 female. Anterior lobe moderately elevated, sulcus separating it from the posterior lobe deeply incised; median fovea located at end of anterior third, anterior lobe transversely depressed across median fovea and obsoletely punctately depressed on each side of median fovea. Posterior lobe narrowly explanate, lateral margins straight or slightly convexly curved, distinctly sulcate along the inner edge of yellow markings of the lateral margins, Scutellum lustrous, minutely scabrous, posterior half minutely, transversely rugulose. Clavus opaque, corium lustrous, embolium lustrous excepting black areas which are opaque. Sutures of hemelytra distinct. Corial veins indistinct, nevertheless visible. Veins of membrane distinct, areoles forming an evenly gradate series. Posterior margin of last abdominal sternum of female not evenly rounded, emarginate on each side of the center, sternum distinctly produced, approximately

three times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate III, figures 11a and 11b. Length of posterior tibia as compared with width of head 202 100 male; 204 100 female. Brachypterous forms are not known.

Comparative notes: Most closely resembles S. abdominalis Champion. The more elongate shape, the color pattern of the hemelytra, the erect setae of the dorsal surfaces will distinguish it from S. abdominalis. S. ventralis Stål can be distinguished from this species by the color pattern of the hemelytra and by the pale band around the middle of the fourth antennal segment, as well as by the recumbent pubescence on the dorsal surfaces. The terminal processes of the male genital capsule of S. dewsi are distinctive.

Location of types: This species was first recognized as new by Samuel C. Dews and a description was written by him in "The Saldidae of the Western Hemisphere in the Snow Entomological Collections", an unpublished manuscript on file in the library of the University of Kansas. A type series marked with Dews' manuscript name is in the Francis Huntington Snow Entomological Collections. These specimens,

along with additional specimens now available form the type series of S. dewsi; type specimens are from the following localities:

Holotype: San José, Costa Rica, June and July 1931, Heinrich Schmidt, male.

Allotype: San José, Costa Rica, June and July 1931, Heinrich Schmidt, female.

Paratypes: San José, Costa Rica, June and July 1931, Heinrich Schmidt, 22 males, 27 females.

San José, Costa Rica, Purchased 1932, Heinrich Schmidt, 2 males, 2 females.

Rio Virilla, Costa Rica, Dec. 20, 1931, Heinrich Schmidt, 6 males, 4 females.

Carimechi, Rio Mayo, Chihuahua, Mexico, Dec. 12, 1934, H. S. Gentry, 1 female.

Temescaltepec, Mexico, Mexico, June 1 - 2, 1933, H. E. Hinton and R. L. Usinger, 1 female (Calif. Acad. Sci.).

Cuernavaca, Morelos, Mexico, May 1945,

N. L. H. Krauss, 1 female (U. S.
N. M.).

Cordoba, Vera Cruz, Mexico, April 1,

1908, Fred K. Knab, 1 male, 1
female (U. S. N. M.).

The holotype, allotype and those paratypes not specifically listed from other museums are in the Francis Huntington Snow Entomological Collections. The paratypes marked Calif. Acad. Sci. and U. S. N. M. above are, respectively in the collections of the California Academy of Sciences and of the United States National Museum.

Data on distribution: Known only from the type series.

Salda elongata Uhler

(Plate IV, figures 1a, 1b)

1877. Salda elongata Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 448 (describes from Br. Col.).
1886. Salda elongata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1896. Salda elongata, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 217.
1909. Acanthia elongata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 176.
1910. Salda elongata, Banks, Nathan. Catalog Nearct. Hemip., p. 11.
1916. Saldula elongata, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Saldula elongata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 445.
1920. Saldula elongata, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 72 (quotes original description).
1923. Chartoscirta (Chartolampra) cursitans Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XVIII, p. 151 (original descriptions of synonym, describes from N. Y. as type of new

subgenus).

1924. Acanthia celeripedis Torre-Bueno, J. R. de la. Canad. Ent. LVI, p. 296 (original description of synonym, describes from Alta.).
1926. Chartoscirta (Chartolampra) cursitans, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1017 (re-describes).
1928. Chartoscirta (Chartolampra) cursitans, Torre-Bueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 138 (records from New York).

Size: (Macropterous form): Length 4.80 mm. to 5.19 mm. male; 5.50 mm. to 6.31 mm. female. Width of pronotum 1.47 mm. to 1.50 mm. male; 1.79 mm. to 1.93 mm. female. (Brachypterous form): Length 4.96 mm. to 5.01 mm. male; 5.33 mm. to 6.36 mm. female. Width of pronotum 1.47 mm. to 1.56 mm. male; 1.62 mm. to 1.93 mm. female.

Color: General color black, marked with white. Eyes dark brown. Head black, with yellow spots on each side of ocelli; apex of frons, clypeus and middle of labrum yellow. Rostrum dark brown to black. First antennal segment yellow above, dark-brown beneath; second, third and fourth segments red-brown. Pronotum,

scutellum and venter of thorax black; episternal plates before coxae often narrowly to broadly margined with white. Clavus black, apex velvety, with an elongate yellow spot on middle before apex; corium black, with a yellow spot on lateral margin at end of basal fifth and at apex and scattered yellow spots on disc; embolium black, with scattered yellow spots on basal half and a broad yellow band before the apex. Membrane yellow-brown, veins brown, with a transverse row of infuscated spots within the areoles subbasally and subapically. Abdominal sterna dark brown, narrowly margined with yellow-brown posteriorly; last abdominal sternum of female dark brown basally, produced portion yellow-white, often dark brown medially. Genital capsule of male dark brown. Coxae black, tipped with yellow; trochanters yellow, often infuscated beneath; femora yellow-brown, often infuscated or spotted with brown above and beneath; tibiae yellow-brown, dark brown at base and apex; second tarsal segment yellow, third tarsal segment brown. Spines of legs dark brown.

Structural characteristics: (Macropterous forms):

General shape elongate-oval or slightly obovate. Venter of head and thorax clothed with dense, recumbent, fine silvery pubescence; all other surfaces golden pubescent. Width of head as compared to width of pronotum 80 100 male; 71 100 female. Frons and

vertex lustrous; minutely scabrous; apex of frons raised into a carinate ridge which is obsolete and sulcate in the middle and strongly upturned at ends; frons deeply sulcate on median line between eyes. Ocelli separated by slightly less than the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 120 100 male, 104 100 female; length of second antennal segment as compared to width of head 91 ; 100 male, 102 100 female. Antennal segmentation 1 2 3 4 15 37 23 25 male; 15 41 22 22 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 40 100 male, 43 100 female. Anterior lobe slightly elevated, sulcus behind it shallow. Median fovea shallow, located before middle of anterior lobe; anterior lobe slightly depressed behind and across median fovea, often minutely, punctately depressed on each side of median fovea. Posterior lobe narrowly explanate along lateral margins and on each side of anterior lobe; lateral margins straight, strongly convergent. Scutellum lustrous, minutely scabrous, posterior half minutely, transversely rugulose. Clavus, corium and embolium opaque, smooth; membrane lustrous. Sutures

of hemelytra and veins of membrane distinct; corial veins obsolete. First areole of membrane produced approximately one-fifth of its length before base of second areole. Posterior margin of last abdominal sternum of female rounded; sternum moderately produced, approximately twice as long as preceding sternum. Terminal processes of male genital capsule and left clasper of mare are figured on Plate IV, figures 1a and 1b. Length of posterior tibia as compared to width of head 206 100 male; 239 100 female. (Brachypterous form): General shape obovate. Width of head as compared to width of pronotum 82 100 male; 83 100 female. Length of antenna as compared to length of hind tibia 108 100 male, 99 100 female; length of second antennal segment as compared to width of head 100 100 male, 101 100 female. Antennal segmentation 1 2 3 4 16 39 23 22 male; 16 41 24 21 female. Median length of posterior lobe of pronotum as compared to median length of anterior lobe of pronotum 39 100 male; 47 100 female. First areole of membrane produced approximately one-third of its length before base of second areole. Length of posterior tibia as compared to width of head 235 100 male; 246 100 female. Resembles macropterous form in all other features.

Comparative notes: Most closely resembles S.

bifasciata Thomson, from which it may be distinguished by the differently patterned hemelytra, the concolorous black lateral margins of the pronotum, the deeply medially sulcate frons and the narrower pronotum.

Location of types: Described from a single female from British Columbia which is in the Museum of Comparative Zoology at Harvard College. A male from Tom's Lake, Naknek, Alaska, July 8, 1919, taken by James S. Hine, is designated as the allotype. This specimen is in the Francis Huntington Snow Entomological Collections. A male from Homer, Alaska, July 24, 1945, J. C. Chamberlin, belonging to the United States National Museum is designated as a paratype. The following brachypterous morphotypes are designated:

Morphoholotype: Cheboygan County, Michigan,
July 30, 1931, Wilber, female
(Snow Collection).

Morphoallotype: Peaks Island, Maine, 1926, J. D.
Sherman, Jr., male (U. S. N. M.).

Morphoparatypes: Mt. Washington, New Hampshire,
female (W. H. Ashmead Collection,
U. S. N. M.).

Marshall Pass, Colorado, 10,250 ft.

Sept. 16, 1917, R. C. Shannon,
female (Cornell Univ.).

Harry Creek, Marshall Pass,
Colorado, 9000 - 18,850 ft.,
Sept. 16, 1917, R. C. Shannon,
male (Cornell Univ.).

Ottawa, Canada, female (Snow
Collection).

The type series of Chartoscirta (Chartolampra) cursitans Bueno, 1923 has been examined and proves to be the brachypterous form of S. elongata. The types of C. cursitans are in the Bueno Collection in the Francis Huntington Snow Entomological Collections. They include the following specimens:

Holotype: Lake Tear, Mt. Marcy, Essex County,
New York, July 27, 1922, H. Notman,
J. D. Sherman, Jr., collector,
female.

Allotype: Same data as holotype, male.

Paratype: Same data as holotype, male.

Acanthia celeripedis Bueno, 1924, is a macropterous form of S. elongata. The male holotype of A. celeri-

pedis from Nordegg, Alberta, July 25, 1921, J. McDunnough, and the female allotype, Nordegg, Alberta, July 18, 1921, J. McDunnough, are in the Canadian National Collection. The male paratype from Nordegg, Alberta, July 18, 1921, J. McDunnough is in the Bueno Collection in the Francis Huntington Snow Entomological Collections and has been examined by the writer.

Data on distribution: This species and its synonyms have been recorded from Alberta and British Columbia in Canada and in the United States from New York. In addition to the specimens mentioned in "location of types" above, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

* ALASKA: Tom's Village, Naknek Lake, July 1919, J. S. Hine, 2 females (J. C. Lutz).

CANADA: Alberta: See "location of types" above.

British Columbia: Yoho Park, Field, July, 1927, Titus Ulke, 1 female (U. S. N. M.).

* Ontario: See "location of types" above.

* Yukon: Dawson, June 23, 1916, E. P. Van Duzee, 1 female (Calif. Acad. Sci.).

U. S. A.: * Colorado: See "location of types" above.

* Maine: See "location of types" above.

* Michigan: See "location of types" above.

* New Hampshire: White Mts., July 23, 1930, C.

A. Frost, 1 female. See "location of types" above.

New York: See "location of types" above.

Salda hispida new species

Size: Length 5.03 mm. to 5.50 mm. female. Width of pronotum 1.80 mm. to 1.90 mm. female.

Color: General color black. Head black with a yellow spot on each side of ocelli; clypeus and middle of labrum yellow. Rostrum yellow above, brown beneath. First antennal segment yellow above, brown beneath; second, third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black. Clavus black, inner three-fourths pruinose, excepting area along commissure and apex. Corium black, with a yellow or pruinose spot on lateral margin at end of basal fourth and on middle near apex. Embolium black, with a yellow spot on lateral margin at middle of apical third. Membrane brown, veins dark brown, one or two dark brown spots within each areole. Abdominal sterna, including last abdominal sternum of female, dark brown, narrowly margined with yellow posteriorly. Coxae black, tipped with yellow; trochanters yellow; femora brown, variously spotted with darker brown, yellow at apex; tibiae yellow or yellow-brown, dark brown at base and apex and broadly ringed with brown on middle; second tarsal segment yellow; third segment brown. Spines of legs black.

Structural characteristics: General shape broadly oval. Clothed with long, recumbent, golden pubescence

above and on venter of thorax; with short, recumbent, pubescence on frons and third and fourth antennal segments; with long, erect, golden pubescence on venter of abdomen. Dorsal surfaces, excepting membrane, antennae and tibiae clothed with long, stiff, erect, dark or golden setae; eyes with scattered, short, erect, dark setae. Width of head as compared to width of pronotum

70 100 female. Frons and vertex lustrous, scabrous; apex of frons not raised into a carinate ridge; frons obsoletely sulcate along median line between eyes. Ocelli separated by less than the width of an ocellus. Rostrum extending to apex of hind coxae.

Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 110

100 female; length of second antennal segment as compared to width of head 65 100 female. Antennal

segmentation 1 2 3 4 17 34 23 26 fe-

male. Pronotum polished, obsoletely, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 67 100 female.

Anterior lobe moderately elevated, sulci before and behind it moderately incised, coarsely punctate, posterior sulcus distinctly, anteriorly sinuated in middle. Median fovea located before middle of anterior lobe; anterior lobe slightly depressed along median line behind median fovea; obsoletely, punctately, depressed on each side of median fovea. Posterior lobe

narrowly, distinctly explanate along lateral margins and on each side of anterior lobe; lateral margins straight, moderately convergent. Scutellum polished, obsolete, minutely rugulose. Clavus opaque on pruinose area, remainder of hemelytron polished and (excepting membrane) minutely scabrous. Sutures of hemelytra distinct; corial veins indistinct, veins of membrane distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female truncate, slightly sinuated; sternum slightly more than twice as long as preceding sternum. Length of posterior tibia as compared to width of head 172 100 female. Brachypterous forms are not known.

Comparative notes: Most closely resembles S. sulcicollis Champion from which it can be distinguished by the prominent, erect setae of the eyes and hind tibiae. The details of the color of the legs and antennae differ from those of S. sulcicollis and the anterior lobe of the pronotum is not so deeply depressed on the median line behind the median fovea.

Location of types:

Holotype: Real de Arriba, Temescaltepec, Mexico, Mexico, May 23, 1933, H. E. Hinton and R. L. Usinger, female.

Paratypes: Real de Arriba, Temescaltepec, Mexico,
Mexico, May 22, 1933, R. L. Usinger,
female.

Amecameca, Mexico, Mexico, March 3,
1928, received from Dr. Dampf,
1932, female.

The left antenna is missing from the holotype. The holotype is in the collection of R. L. Usinger; the paratypes are in the Francis Huntington Snow Entomological Collections.

Data on distribution: Known only from the type series.

Salda humilis (Say)

(Plate IV, figures 2a, 2b)

1832. Acanthia humilis Say, Thomas. Heteroptera New Harmony, p. 35 (describes from Florida).
1857. Acanthia humilis, Say, Thomas. Fitch Reprint, p. 805. in Trans. N. Y. State Agr. Soc. XVII, (reprints original description).
1859. Acanthia humilis, Say, Thomas. Complete Writings (edited by J. L. Le Conte) II, p. 360 (reprints original description).
1873. Acanthia humilis, Stål, Carl. Enum. Hemip. III, p. 149.
1876. Salda humilis, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. I, p. 334.
1877. Salda humilis, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 451 (redescribes, records from Md., Fla., Tex., Ill., Pa., Mass., N. C., Ga. and District of Columbia).
1886. Salda humilis, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1892. Salda humilis, Osborn, Herbert. Proc. Iowa Acad. Sci. I, p. 129 (records from Iowa).
1893. Salda humilis, Cockerell, T. D. A. Trans. Amer. Ent. Soc. XX, p. 364 (records from Colorado).
1893. Salda humilis, Uhler, P. R. Proc. Ent. Soc.

- Wash. II, p. 382 (records from Utah).
1893. Salda humilis, Uhler, P. R. Proc. Zool. Soc. London (1893) p. 706 (records from St. Vincent, B. W. I.).
1894. Salda humilis, Van Duzee, E. P. Bull. Buffalo Soc. Nat. Sci. V, p. 185 (records from New York).
1894. Salda humilis, Uhler, P. R. Proc. Zool. Soc. London (1894) p. 212 (in part; records from Grenada, B. W. I.).
1895. Salda humilis, Gillette, C. P., and Baker, C. F. Colo. Agr. Expt. Sta. Bull. 31, p. 62 (record from Colorado).
1896. Salda humilis, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 218.
1904. Salda humilis, Crevecoeur, F. F. Trans. Kans. Acad. Sci. XIX, p. 234 (records from Kansas).
1908. Acanthia humilis, Torre-Bueno, J. R. de la. Jl. New York Ent. Soc. XVI, p. 236 (records from New York).
1909. Acanthia humilis, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 176.
1910. Acanthia humilis, Smith, J. B. Insects of N. J., Hemip. in Ann. Rept. N. J. State Mus., 1909, p. 166 (records from New Jersey).
1910. Salda humilis, Banks, Nathan. Catalog Nearct.

Hemip., p. 12.

1912. Micracanthia humilis, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 16 (in new genus).
1914. Acanthia humilis, Barber, H. G. Bull. Amer., Mus. Nat. Hist. XXXIII, p. 499 (records from Florida).
1916. Micracanthia humilis, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Micracanthia humilis, Parshley, H. M. Canad. Ent. XLIX, p. 48 (records from beach drift in Massachusetts).
1917. Micracanthia humilis, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 112 (records from N. H., Vt., and Mass.).
1917. Micracanthia humilis, Van Duzee, E. P. Catalog of Hemip. North Amer. p. 446.
1920. Micracanthia humilis, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 74 (quotes Uhler's re-description).
1923. Micranthia humilis, Barber, H. G. Amer. Mus. Novit. No. 75, p. 13 (records from Porto Rico).
1923. Micracanthia humilis, Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XVIII, p. 150 (records from New York).
1923. Micracanthia humilis, Torre-Bueno, J. R. de la.

- in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 415 (records from Conn.).
1925. Salda humilis, Hungerford, H. B., and Beamer, R. H. Ent. News XXXVI, p. 263 (quotes Crevecoeur's Kansas record).
1926. Micracanthia humilis, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1013 (redescribes, records from Indiana and Florida).
1928. Micracanthia humilis, Torre-Beuno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 138 (records from New York).
1937. Micracantha humilis, Harris, H. M. Iowa St. Coll. Jl. Sci. XI, p. 175 (records from South Dakota).
1938. Micracanthia humilis, Brimley, C. S. Insects of North Carolina, p. 83 (records from North Carolina).

Size: Length 2.51 mm. to 3.24 mm. male; 2.85 mm. to 3.60 mm. female. Width of pronotum 0.98 mm. to 1.20 mm. male; 1.16 mm. to 1.41 mm. female.

Color: General color black marked with white. Eyes red-brown to dark brown. Head black with a yellow spot on each side of ocelli; apex of frons yellow, clypeus yellow, labrum dark brown, yellow on disc. First antennal segment yellow-brown, dark brown

at base; second segment pale brown, third and fourth segments dark brown. Rostrum yellow-brown. Pronotum, scutellum and venter of thorax black. Clavus black, with a white spot on middle near apex. Corium black with a white spot on lateral margin at end of basal fourth and at middle, the latter usually prominent, rarely obsolete; a small white spot at middle near apex and at inner apical angle. In well preserved or fresh specimens the corium is bronze pruinose along claval suture on its apical half. Coloration of embolium variable, usually yellow with the base black, and with a more or less expanded black spot on medial half at end of median third of length of embolium, this spot varying from an obsolete dark streak to an elongate dark area covering medial half of embolium, usually covering approximately one-third of length of medial half; lateral margin usually yellow, occasionally the black spot reaches the lateral margin; a white spot is located on the medial margin before the apex. Nodal furrow usually black. Membrane yellow-white, veins brown, one or two brown streaks within each areole. Abdominal sterna black or brown; last abdominal sternum of female black or brown basally, produced portion yellow-white. Genital capsule of male dark brown or black. Coxae brown or black, tipped with white; trochanters yellow-white; femora yellow-white basally

pale brown apically; tibia yellow, infuscated basally and tipped with dark brown; tarsi yellow tipped with dark brown. Spines of legs black.

Structural characteristics: General shape oval. Clothed with fine, recumbent pubescence, golden above, silvery beneath. Width of head as compared to width of pronotum 67 : 100 male; 75 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a carinate ridge which is obsoletely sulcate in the middle and strongly upturned at ends. Frons convex, rarely obsoletely sulcate along median line. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia :: 120 100 male, 113 100 female; length of second antennal segment as compared to width of head 54 100 male, 53 100 female. Antennal segmentation 1 2 3 4 :: 17 30 25 28 male; 17 31 25 27 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 76 100 male, 85 100 female. Anterior lobe moderately elevated, sulcus separating it from posterior lobe moderately incised; median fovea located before the middle of anterior lobe. Posterior

lobe not explanate along lateral margins; lateral margins straight, convexly curved before humeral angle, strongly convergent. Scutellum lustrous, minutely scabrous, posterior half minutely, transversely rugulose. Clavus and corium opaque, embolium and membrane lustrous. Sutures of hemelytra distinct; corial veins obsolete; veins of membrane distinct, areoles forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded; sternum moderately produced, approximately four times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate IV, figures 2a and 2b. Length of posterior tibia as compared to width of head 150 100 male; 150
100 female. Erachypterous forms are not known.

Comparative notes: Most closely resembles S. quadrimaculata Champion which has shorter antennae and hind tibiae (in comparison to width of head), differently patterned hemelytra and is smaller in size. The pale femora and rostrum, the predominant white color of the embolium and the white spot at the end of the basal fourth of the lateral margin of the corium will serve to distinguish this species from S. quadrimaculata. The third antennal segment of S. humilis is distinctly longer than the distance between the inner margins of the eyes, measured on a line tangent to the posterior

edge of the ocelli; the third antennal segment of S. quadrimaculata is subequal to the distance between the eyes at this point.

Location of types: Described by Say from Florida. Since Say's types have been destroyed the following specimen is designated as a neotype; Suwannee Springs, Florida, July 3, 1948, R. H. Beamer, male. The neotype is in the Francis Huntington Snow Entomological Collections.

Data on distribution: Recorded from Grenada and St. Vincent in the British West Indies, from Ontario in Canada, from Porto Rico and in the United States from Colorado, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Dakota, Texas and Utah. In addition to the neotype the following specimens have been examined (new records from major political areas are indicated by an asterisk):

ALASKA: Matanuska, July 15 - 21, 1945, J. C. Chamberlin, 1 female, July 29 - Aug. 4, 1945, J. C. Chamberlin, 1 male, 1 female.

BRITISH WEST INDIES: Grenada: Telescope Estate, Windward Side, H. H. Smith, 1 female (Uhler Coll.,

U. S. N. M.).

CANADA: * British Columbia: Oliver, Aug. 6, 1931, J. Nottingham, 1 male, 1 female.

Ontario: Ottawa, May 27, 1904, W. Metcalfe, 1 female, June 19, 1904, 1 male; Ottawa, June 21, 1920, H. G. Crawford, 2 females (Parshley); Ridgeway, May 31, 1886, E. P. Van Duzee, 4 females (U. S. N. M.).

* CANAL ZONE: Gamboa, Aug. 31, 1918, H. F. Dietz, 1 female (U. S. N. M.).

* CUBA: Santiago de las Vegas, Nov. 6, 1922, S. C. Bruner, 1 male; South of Pinar Rio, Sept. 12 - 23, 1913, 1 male (A. M. N. H.); North of Vinales, Sept. 16 - 22, 1913, 1 male (A. M. N. H.).

* HONDURAS: Progreso, March 30, 1923, T. H. Hubbell, 1 female.

U. S. A.: Alabama: Decatur, July 6, 1939, J. D. Beamer, 1 female.

* Arizona: Castle Hot Springs, Aug. 4, 1941, E. L. Todd, 1 male, 3 females; Ruby, Aug. 13, 1940, D. E. Hardy, 1 female.

* Arkansas: Scott County, Aug. 24, 1928, R. H. Beamer, 1 female; Eureka Springs, July 4, 1934, M. E. Griffith, 1 male.

Colorado: Happy Hollow, July 21, 1898, 1 male
(Usinger Coll.).

Connecticut: Mystic, Aug. 8, 1946, R. H. Beamer,
1 male; Colchester, Aug. 10, 1946, R. H. Beamer, 1 male,
2 females; Avon Old Farms, Avon, June 25, 1929, C. H.
Curran, 1 female (A. M. N. H.).

District of Columbia: Washington, July 2, 1904,
O. Heidemann, 1 female (Cornell Univ.); District of
Columbia, 1 female (Uhler Coll., U. S. N. M.).

Florida: Suwannee Springs, July 3, 1948, R. H.
Beamer, 11 males, 5 females; Suwannee Springs, July 3,
1948, L. D. Beamer, 1 female; Suwannee Springs, July 3,
1948, B. T. McDermott, 7 males, 1 female; Sanford,
Sept. 9, 1931, C. O. Bare, 2 females; LaBelle, March 13,
1947, R. H. Beamer, 1 male, 2 females, July 19, 1947, R.
H. Beamer, 2 females; Ft. Walton, June 27, 1948, R. H.
Beamer, 1 male, 1 female; Lacochee, July 7, 1948,
R. H. Beamer, 1 female; Otter Creek, July 6, 1948,
R. H. Beamer, 2 females; Lake Placid, July 13, 1948,
R. H. Beamer, 1 male, 2 females; Lake Placid, July 13,
1948, B. T. McDermott, 1 female; Sarasota, Jan. 21,
1944, 2 females (U. S. N. M.); Jacksonville, 1 male
(Slosson Coll., A. M. N. H.); Waldo, Aug. 18, 1930,
P. W. Oman, 1 female.

Georgia: Okefenokee Swamp, July 25, 1939, R. H.
Beamer, 1 female; Thomasville, June 30, 1948, R. H.

Beamer, 1 male; Thomasville, June 30, 1948, E. L. Todd, 3 males, 3 females.

Illinois: Paxton, July 13, 1946, R. H. Beamer, 2 males, 1 female; Orland Park, July 13, 1946, R. H. Beamer, 6 males, 2 females; White Heath, Sept. 20, 1919, 1 male (U. S. N. M.); Chicago, Aug. 1, 1905, C. T. Brues, 2 females (Parshley).

Iowa: Ames, May 23, 1929, H. M. Harris, 1 male 1 female (Severin); Farmington, July 14, 1927, Johnston, 1 male (Severin).

Kansas: Meade County, July 14, 1944, R. H. Beamer, 5 males, 6 females, Sept. 9, 1944, R. H. Beamer, 1 male, Sept. 13, 1944, R. H. Beamer, 10 males, 1 female; Garden City, Aug. 10, 1945, R. H. Beamer, 1 male; Sun City, Sept. 14, 1944, R. H. Beamer, 1 female; Newton, Aug. 3, 1945, R. H. Beamer, 1 male; Liberal, Aug. 16, 1945, R. H. Beamer, 1 female; Manhattan, Sept. 13, 1923, H. B. Hungerford, 1 male; Eoubon County, Aug. 31, 1924, E. P. Breakey, 1 female; Miami County, 1916, R. H. Beamer, 1 female; Hodgeman County, July 17 - 25, 1917, 1 male; Johnson County, Aug. 6, 1946, Burton Hodgden, 1 female; Holton, June 16, 1946, Burton Hodgden, 2 males, 2 females; Soldier, June 16, 1946, Burton Hodgden, 4 males, July 27, 1946, Burton Hodgden, 2 females; DeSoto, Aug. 10, 1946, Burton Hodgden, 2 males; Tonganoxie, Aug. 5, 1946, Burton Hodgden, 1 female,

Sept. 24, 1947, Burton Hodgden, 2 males; Douglas County, June 24, 1946, Burton Hodgden, 1 male, July 27, 1946, Burton Hodgden, 1 female, July 29, 1946, Burton Hodgden, 3 males, 3 females, July 30, 1946, Burton Hodgden, 1 male, 1 female; Aug. 8, 1946, Burton Hodgden, 1 male, July 3, 1947, Burton Hodgden, 1 male, 4 females, July 7, 1947, Burton Hodgden, 4 males, 4 females; Douglas County, C. P. Alexander, 1 male; Lawrence, July 10, 1935, L. S. Henderson, 1 female; Medora, July 2, 1927, R. H. Beamer, 2 males, 2 females; Butler County, 1916, R. H. Beamer, 2 females; Sumner County, 1916, R. H. Beamer, 1 male; Muscotah, June 28, 1946, R. H. Beamer, 1 male; Hutchinson, Aug. 5, 1945, R. H. Beamer, 1 male; Atchison County, July 11, 1924, 4 females; Riley County, June 8, J. B. Norton, 2 males, 4 females, Aug. 26, J. B. Norton, 1 male, 1 female (Kans. State Coll.); Riley County, June 28, G. A. Dean, 1 female (Kans. State Coll.); Riley County, Sept. 3, E. E. Faville, 1 male; Neosho County, June 26, 1920, W. E. Hoffman, 1 male, 2 females.

* Kentucky: Fordsville, Aug. 25, 1915, G. G. Ainslie, 1 male (U. S. N. M.).

* Louisiana: Bassier Parish, Feb. 3, 1938, W. F. Turner, 1 male (U. S. N. M.).

Maryland: Plummer's Island, Aug. 22, 1943, R. H. Beamer, 4 males; Plummer's Island, May 19, 1914,

R. C. Shannon, 1 male (U. S. N. M.); Piney Point, Aug. 26, 1946, R. I. Sailer, 1 male (U. S. N. M.); Cabin John Bridge, June 27, 1897, 1 female (U. S. N. M.); Maryland, July 7, 1 female (Uhler Coll., U. S. N. M.).

Massachusetts: Beach Bluff, July 18, 1914, H. M. Parshley, 2 females, June 21, 1915, H. M. Parshley, 2 males, Aug. 1, 1916, H. M. Parshley, 2 males, 3 females, Aug. 6, 1917, H. M. Parshley, 1 female (Parshley); Forrest Hills, June 1, 1915, H. M. Parshley, 1 female (Parshley); Newton, June 16 - 26, 1914, J. R. de la Torre-Bueno, 1 male (Parshley).

* Michigan: Cheboygan County, July 17, 1948, T. Wayne Porter, 2 females; Cheboygan County, July 27, 1936, H. B. Hungerford, 1 female, July 20, 1938, H. B. Hungerford, 1 male, July 17, 1948, H. B. Hungerford, 1 male, Aug. 6, 1948, H. B. Hungerford, 1 male; Cheboygan County, 1935, Milton Sanderson, 1 female, July 17, 1936, Milton Sanderson, 2 males; Cheboygan County, July 15, 1942, Edward L. Todd, 1 male; Douglas Lake, June 29, 1923, H. B. Hungerford, 1 male; Emmett County, Aug. 5, 1948, H. B. Hungerford, 2 males; Dearborn, July 30, 1926, Ray Dahlinger, 3 males, 2 females (U. S. N. M.).

* Minnesota: Anoka County, June 11, 1920, H. H. Knight, 1 female; St. Anthony Park, July 6, 1921, H. H. Knight, 1 female; Park Point, Duluth, June 15 - 17,

1940, Gertsch and Hook, 1 male (A. M. N. H.).

Mississippi: Fulton, July 14, 1930, L. D. Tuthill, 1 female; Iuka, July 14, 1930, R. H. Beamer, 1 female.

* Missouri: Rockaway Beach, Lake Tanneycomo, Aug. 27, 1948, Burton Hodgden, 1 female; Columbia, May 26 - June 8, 1906, C. R. Crosby, 2 males (Cornell Coll.); Bigelow, Aug. 23, 1914, 1 male (A. M. N. H.).

* New Hampshire: Mt. Washington, 1 male, 2 females (Slosson Coll., A. M. N. H.).

New Jersey: Ft. Lee District, May 28, 1904, 1 male; Westfield, June 19, 1904, 1 male, July 3, 1904, 1 female, July 9, 1904, 1 female; Elberon, June 7, 1914, F. M. Schott, 1 male; Milltown, July, 1917, 1 male (A. M. N. H.).

* New Mexico: Estancia, Aug. 1925, C. H. Martin, 1 female; Estancia, June 30, 1947, R. H. Beamer, 1 male; Ruidoso, June 26, 1940, R. H. Beamer, 1 female; Santa Fe, July 20, 1936, R. H. Beamer, 3 males, 2 females.

New York: South Dayton, July 23, 1948, R. H. Beamer, 2 females; Lancaster, July 25, 1946, L. D. Beamer, 1 female; Lancaster, July 25, 1946, R. H. Beamer, 2 males; Lake Placid, July 30, 1946, R. H. Beamer, 2 females; Paul Smith, July 29, 1946, R. H. Beamer, 1 female; Ashford, July 22, 1946, R. H. Beamer,

1 female; Mt. Kisco, July 15, 1923, 1 male; Hamburg, Aug. 28, E. P. Van Duzee, 1 male; Lake Tear, Mt. Marcy, Essex County, July 27, 1922, H. Notman, 1 female; Nichols, Tioga County, May 30, 1942, H. Notman, 1 female; Canisteo, Steuben County, June 3, 1922, H. Notman, 2 males, June 8, 1922, H. Notman, 3 males, 3 females; Wallface Mt., Essex County, July 2, 1922, H. Notman, 2 males, 2 females, July 11, 1922, H. Notman, 1 female; Tarrytown, July 23, 1907, 4 males; Valhalla, May 27, 1908, 1 male, 1 female; Amityville, July 18, 1 female; Coldspring Harbor, July 31, 1920, J. R. de la Torre-Bueno, 3 males, 4 females; Yaphank, Long Island, July 12, 1913, J. R. de la Torre-Bueno, 1 male, 1 female; Mosholu, May 29, 1904, 1 male, 1 female; June 11, 1904, 1 male, July 4, 1905, 3 males; White Plains, Aug. 3, 1908, J. R. de la Torre-Bueno, 1 female, July 31, 1909, J. R. de la Torre-Bueno, 1 male, Oct. 8, 1916, J. R. de la Torre-Bueno, 1 female, Oct. 12, 1916, J. R. de la Torre-Bueno, 2 males, 1 female, Aug. 12, 1917, J. R. de la Torre-Bueno, 2 males, 1 female, July 11, 1919, J. R. de la Torre-Bueno, 1 female, Sept. 25, 1920, J. R. de la Torre-Bueno, 1 female, June 5, 1923, J. R. de la Torre-Bueno, 3 females, July 10, 1923, J. R. de la Torre-Bueno, 3 females; Ithaca, June 5, 1936, P. P. Babiy, 1 female (Cornell Univ.); Freeville, July 4, 1904, 1 female (Cornell Univ.); Riverhead, June 20,

1934, H. Dietrich, 1 female (Cornell Univ.); North Fairhaven, June 4, 1921, 1 female (Cornell Univ.); White Plains, June 28, 1919, J. R. de la Torre-Bueno and H. M. Parshley, 1 female (Parshley); Coldspring Harbor, Long Island, Aug. 8, 1919, H. M. Parshley, 1 male, 1 female, July 11, 1919, H. M. Parshley, 1 female, July 27, 1920, H. M. Parshley, 2 females, July 31, 1920, H. M. Parshley, 8 males, 2 females (Parshley); Gowanda, Aug. 19, 1898, E. P. Van Duzee, 1 male.

North Carolina: Lake Toxaway, 1 female (Slosson Coll., A. M. N. H.); Willington, Oct. 3, 1938, P. W. Oman, 1 male, (U. S. N. M.); Highlands, April, 1936, R. C. Shannon, 1 male (U. S. N. M.); Greensborough, June, 1901, F. C. Pratt, 1 male (Cornell Univ.).

North Dakota: Tokio, July 28, 1937, R. H. Beamer, 1 female.

Ohio: Rome, July 19, 1946, R. H. Beamer, 1 male, 1 female; Barberton, July 15, 1936, L. J. Lipovsky, 1 male; Fairfield County, Sept. 30, 1934, Robert Goslin, 1 female (U. S. N. M.).

* Oklahoma: Tuskahoma, May 23, 1928, R. H. Beamer, 1 male.

Pennsylvania: Susquehanna River, Northumberland County, Aug. 25, 1932, J. M. Brennen, 2 males, 1 female; Ashland, Aug. 21, 1946, R. H. Beamer, 1 male;

Stroudsburg, Aug. 19, 1946, R. H. Beamer, 1 female; Pennsylvania, 1 female; Pennsylvania, 1 male (Uhler Coll., U. S. N. M.); Greensburg, M. Wirtner, 1 male.

* South Carolina: Florence, April 11, 1930, O. L. Cartwright, 1 male (U. S. N. M.).

South Dakota: Houghton, July 22, 1937, R. H. Beamer, 1 female; Big Stone, Aug. 27, 1921, H. C. Severin, 1 female (Parshley); Brookings, June 21, 1943, H. C. Severin, 4 males, 2 females, June 24, 1944, H. C. Severin, 1 female, Aug. 1, 1945, H. C. Severin, 1 female, Aug. 6, 1945, H. C. Severin, 2 females (Severin); Ft. Thompson, June 27, 1946, H. C. Severin, 1 female (Severin); Martin, Sept. 11, 1948, H. C. Severin, 1 male (Severin); Vermilion, July 21, 1945, H. C. Severin, 1 female, July 30, 1945, H. C. Severin, 1 male (Severin).

Tennessee: Clarksville, 1 male, 2 females (U. S. N. M.); Clarksville, July 2, 1939, J. D. Beamer, 1 female; Nashville, Sept. 3, 1915, G. G. Ainslie, 1 female (U. S. N. M.).

Texas: Brooks County, July 25, 1928, R. H. Beamer, 2 males, 7 females; Cisco, June 19, 1947, L. D. Beamer, 1 female;

Utah: Kanab, Aug. 9, 1936, R. H. Beamer, 23 males, 12 females; Vernal, Aug. 2, 1947, R. H. Beamer, 2 females.

* Virginia: Norfolk, Sept. 4, 1943, R. H. Beamer, 3 males, 5 females; Dismal Swamp, Sept. 4, 1943, R. H. Beamer, 1 female; Arlington, Aug. 1, 1943, R. H. Beamer, 1 male; Mt. Lake, Sept. 2, 1946, R. H. Beamer, 1 female.

* Wisconsin: Wisconsin, 1 male; Milwaukee, June 8, 1942, P. B. Lawson, 1 male, 1 female.

Salda hungerfordi new species

(Plate IV, figures 3a, 3b)

Size: (Brachypterous form): Length 2.27 mm. to 2.66 mm. male; 2.83 mm. to 3.00 mm. female. Width of pronotum 0.86 mm. to 1.02 mm. male; 0.98 mm. to 1.05 mm. female. (Macropterous form): Length 3.37 mm. female. Width of pronotum 0.85 mm. female.

Color: General color black bordered with white. Eyes pale brown to dark brown. Head black with a yellow spot on each side of ocelli. Apex of frons yellow or brown, yellow next to eyes; clypeus and labrum yellow or yellow-brown; bucculae yellow-brown. First antennal segment yellow-brown, second segment pale brown, third and fourth segments red-brown. Rostrum yellow to yellow-brown. Pronotum, scutellum and venter of thorax black. Clavus black with a yellow spot near angle at anterior end of commissure, base pruinose. Corium black, pruinose along basal half of lateral margin and along claval suture (on faded specimens pruinose markings are not apparent); often a yellow-white spot on lateral margin at end of basal fourth. Embolium yellow-brown or yellow-white with a black, triangular spot on medial half behind the middle of the length of the embolium; a white spot is located immediately posterior to the black triangle; yellow-

brown or yellow-white area often infuscated with an obscure pattern. Nodal furrow yellow to dark brown. Membrane yellow-brown, medial edge darker. Abdominal sterna yellow to brown, last abdominal sternum of female brown basally, produced portion yellow-brown. Genital capsule of male brown. Coxae black or brown, tipped with yellow; trochanters yellow; femora yellow basally, yellow-brown apically; tibiae yellow, tipped with brown and often infuscated on middle; tarsi yellow, tipped with brown. Spines of legs brown.

Structural characteristics: (Brachypterous form):

General shape obovate. Clothed with fine, recumbent, golden pubescence above and on abdomen and with silvery pubescence on the venter of the thorax. Width of head as compared to width of pronotum 89 100 male; 81 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a straight, carinate ridge which is sulcate at middle and moderately upturned at ends on male, obsolete at middle on female. Frons convex, not sulcate on median line. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment nearly cylindrical; length of antenna as compared to length of hind tibia 136 100 male, 136 100 female; length of second antennal segment as compared to width of head 49 100 male,

52 100 female. Antennal segmentation 1 2 3
 4 18 24 29 29 male; 18 26 28 28 female.
 Pronotum lustrous, minutely scabrous; median length of
 posterior lobe as compared to median length of anterior
 lobe 65 100 male, 60 100 female. Anterior lobe
 strongly elevated, sulcus separating it from posterior
 lobe moderately incised; median fovea located at end
 of anterior third of anterior lobe. Posterior lobe
 not explanate along lateral margins; lateral margins
 slightly concavely curved, strongly convergent. Scu-
 tellum lustrous; apical two-thirds transversely rugu-
 lose, slightly inflated; basal third minutely scabrous.
 Clavus, corium and black of embolium opaque; membrane
 and remainder of embolium lustrous. Claval suture
 and suture between corium and embolium distinct;
 nodal furrow obsolete. Veins of corium obsolete;
 veins of membrane distinct, excepting outer marginal
 vein of fourth areole. Membrane reduced, narrow,
 fourth areole coriaceous, not distinguished from em-
 bolium; the three distinct areoles forming an evenly
 gradate series. Posterior margin of last abdominal
 sternum of female evenly rounded; sternum moderately
 produced, approximately two and one-half times as long
 as preceding sternum. Terminal processes of male
 genital capsule and left clasper of male are figured
 on Plate IV, figures 3a and 3b. Length of posterior

tibia as compared to width of head 147 100 male;
 148 100 female. (Macropterous form): General shape
 obovate. Width of head as compared to width of pro-
 notum 80 100 female; length of second antennal
 segment as compared to width of head 54 100 fe-
 male. Length of first antennal segment as compared
 to length of second antennal segment 67 100 fe-
 male, third and fourth segments missing in the
 specimen at hand. Median length of posterior lobe of
 pronotum as compared to median length of anterior
 lobe of pronotum 85 100 female. Anterior lobe
 more strongly elevated than in brachypterous form.
 Apex of scutellum strongly inflated, polished, obso-
 letely, minutely, transversely rugulose. Membrane
 broader than in brachypterous form, fourth areole more
 distinct. Hind wings extending nearly to apex of
 hemelytra, plainly visible. Length of hind tibia as
 compared to width of head 159 100 female.
 Identical with brachypterous form in all other features.

Comparative notes: Most closely resembles S.
pumila (Blatchley) from which it can be distinguished
 by the more strongly elevated anterior lobe of the
 pronotum, which is not depressed behind the median
 fovea, by the inflated apical portion of the scutellum
 and by the terminal processes of the male genital cap-
 sule. The obovate shape of both the brachypterous and

macropterous forms differ from the posteriorly tapered shape of S. pumila.

Location of types:

Holotype: Coldspring Harbor, Long Island, July 30, 1920, J. R. de la Torre-Bueno, male, brachypterous.

Allotype: Rye Beach, New York, July 17, 1909, one female, brachypterous

Paratypes: Coldspring Harbor, Long Island, July 30, 1920, J. R. de la Torre-Bueno, female, brachypterous.

Coldspring Harbor, Long Island, July 30, 1920, J. R. de la Torre-Bueno, four males, two females, brachypterous

Morphoholotype: Lower Matecumba Key, Florida, March 14, 1947, L. D. Beamer, female, macropterous.

The type series is in the Francis Huntington Snow Entomological Collections. The holotype, allotype and paratypes are from the J. R. de la Torre-Bueno Collection in the Snow Collections.

Named for Doctor H. B. Hungerford whose long

experience in the study of the aquatic and semiaquatic Hemiptera has been of great assistance to the writer in the preparation of this paper.

Data on distribution: Known only from the type series.

Salda laevis Champion

(Plate IV, figures 4a, 4b)

1901. Salda laevis Champion G. C. Biol. Centr.-
Amer., Rynch., Vol. II, p. 339, Tab. 20, fig.
3 (describes from Guatemala).
1909. Acanthia laevis, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent.
Soc. Wash. X, p. 176.

Size: Length 4.81 mm. male; 5.20 mm. female.

Width of pronotum 1.68 mm. male; 1.73 mm. female.

Color: General color black. Head black, apex of frons, clypeus and middle of labrum yellow. Rostrum yellow-brown. First antennal segment yellow-brown above, dark brown beneath; second segment yellow-brown, its apical sixth dark brown; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black. Hemelytra brown-black, membrane dark brown basally, yellow-brown apically. A yellow spot near lateral margin of corium behind middle and near lateral margin of embolium before apex. Sterna of abdomen brown-black, narrowly margined with yellow apically. Last abdominal sternum of female dark brown. Genital capsuel of male dark brown. Coxae brown basally, yellow apically; trochanters yellow; femora yellow basally,

brown apically; tibiae yellow, tipped with brown; second tarsal segment yellow, third segment brown. Spines of legs dark brown.

Structural characteristics: General shape oblong-oval. Clothed with long, erect, stiff, dark setae above and with fine, golden pubescence beneath, on legs and third and fourth antennal segments; pubescence of thorax and legs recumbent, erect on abdomen. First and second antennal segments clothed with long, semi-erect, dark setae. Width of head as compared to width of pronotum 73 100 male; 70 100 female. Frons polished, minutely scabrous; apex raised into a curved carinate ridge which is obsolete above the clypeus and at the end; frons obsoletely sulcate along median line. Vertex polished, smooth. Ocelli separated by approximately the width of an ocellus. Rostrum extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 117 100 male, 114 100 female; length of second antennal segment as compared to width of head 80 100 male, 84 100 female. Antennal segmentation 1 2 3 4 14 39 22 25 male; 14 41 21 24 female. Pronotum polished, smooth; median length of posterior lobe as compared to median length of anterior lobe 74 100 male,

74 100 female. Anterior lobe scarcely elevated, sulci before and behind it slightly incised, coarsely punctate. Median fovea located before middle of anterior lobe; anterior lobe obsoletely, punctately depressed on each side of median fovea. Posterior lobe narrowly explanate along lateral margins and on each side of anterior lobe; lateral margins straight. Scutellum polished, obsoletely rugulose. Hemelytra polished, obsoletely scabrous. Claval suture indistinct, other sutures distinct. Corial veins obsolete, veins of membrane distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded; sternum moderately produced, approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of mare are figured on Plate IV, figures 4a and 4b. Length of posterior tibia as compared to width of head 181 100 male; 180 100 female. Brachypterous forms are not known.

Comparative notes: Found in the same area as S. sulcicollis Champion, S. tepidaria new species and S. hispida new species; most closely resembles these species. The smooth, polished clavus and the flat pronotum will distinguish it from these species. It differs also in the antennal segmentation and in the

details of the vestiture.

Location of types: Described from three specimens, males and females from San Geronimo, Guatemala, G. C. Champion. These specimens are in the British Museum.

Data on distribution: Recorded only from the type series. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

* MEXICO: * Mexico: Real de Arriba, Temescaltepec, June 13, 1933, H. E. Hinton and R. L. Usinger, 1 male, 1 female, May 27, 1933, H. E. Hinton and R. L. Usinger, 1 male, 1 female (Usinger Coll.).

Salda laviniae new species

(Plate IV, figures 5a, 5b)

Size: Length 4.32 mm. to 4.46 mm. male; 4.55 mm. to 4.90 mm. female. Width of pronotum 1.54 mm. to 1.62 mm. male; 1.76 mm. to 1.80 mm. female.

Color: General color black; hemelytra yellow, marked with black and brown. Head black, with a yellow spot on each side of ocelli, raised apex of frons, clypeus and middle of labrum yellow. Eyes pale brown to dark brown. Rostrum dark brown. First antennal segment dark brown beneath, yellow above and at apex; second segment red-brown, its apical fourth yellow; third and fourth segments dark brown. Pronotum and scutellum black; venter of thorax black, episternal plates before anterior coxae usually narrowly margined with yellow. Clavus black, with an elongate, triangular white spot opposite commissure. Corium yellow, black basally, infuscated on disc and along veins on apical third. Embolium yellow, base black, with a transverse dark brown band at end of medial third. Nodal furrow brown. Membrane yellow-white, infuscated at base and within each areole. In darkest forms hemelytra (excepting membrane) are black with a yellow spot near apex of clavus, on lateral margin of corium at middle

and at end of basal fourth and on the middle of embolium near apex. Abdominal sterna dark brown, narrowly margined with yellow posteriorly; last abdominal sternum of female dark brown basally, produced portion yellow-white. Genital capsule of male dark brown. Coxae black or brown, tipped with yellow; trochanters yellow or dark brown; femora yellow, frequently black above and beneath and on the posterior edge; tibiae yellow to yellow-brown, infuscated basally, tipped with brown; tarsi yellow tipped with brown. Spines of legs and first antennal segment black.

Structural characteristics: General shape elongate-oval. Clothed above with dense pile of long, erect, stiff, dark setae; with fine, silvery pubescence beneath; legs and antennae clothed with fine, golden pubescence. Width of head as compared to width of pronotum 67 100 male; 64 100 female. Frons lustrous, minutely scabrous; apex of frons raised into a swollen ridge which is sulcate at middle; frons not medially sulcate. Vertex polished, smooth. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae long, slender, third segment nearly cylindrical; length of antennae as compared to length of hind tibia 104 100 female, (antennae broken

in male specimens); length of second antennal segment as compared to width of head 79 100 male, 86 100 female. Antennal segmentation 1 2 3 : 4 19 40 - - male (third and fourth segments missing in male specimens); 18 40 22 20 female. Pronotum polished, smooth; median length of posterior lobe as compared to median length of anterior lobe 83 100 male, 82 100 female. Anterior lobe moderately elevated, sulcus behind it moderately incised; median fovea located at end of basal third of anterior lobe; anterior lobe obsolete, punctately depressed on each side of median fovea. Posterior lobe distinctly explanate along lateral margins and on each side of anterior lobe; lateral margins straight, strongly convergent. Scutellum polished, smooth. Clavus opaque; remainder of hemelytra lustrous. Veins and sutures of hemelytra distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female rounded; sternum moderately produced, approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate IV, figures 5a and 5b. Length of posterior tibia as compared to width of head 207 100 female; (hind tibia missing in male specimens). Brachypterous forms are not known.

Comparative notes: Most closely resembles S. comata Champion and S. comatula (Parshley) from which it can be distinguished by the greater length of the second antennal segment and the straight lateral margins of the pronotum. It is more elongate than these species, the apex of the frons is more greatly swollen and the sides of the pronotum are more directly convergent. It lacks the erect setae of the second antennal segment and of the hind tibia which are found in S. comatula. It can be distinguished from S. pallipes (F.) by the pilosity of the hemelytra.

Location of types:

Holotype: Big Bend Park Hot Springs, Texas,
April 11, 1949, C. D. Michener
and R. H. Beamer, male.

Allotype: Big Bend Park Hot Springs, Texas,
April 11, 1949, C. D. Michener
and R. H. Beamer, female.

Paratypes: Big Bend Park Hot Springs, Texas,
April 11, 1949, C. D. Michener
and R. H. Beamer, three males and
four females.

Grand Junction, Colorado, June 14,
1927, J. M. Aldrich, one female

(U. S. N. M.).

Arizona, Collection W. H. Ashmead,
one male (U. S. N. M.).

Jemez Springs, New Mexico, July 1,
1941, R. H. Beamer, two females.

Palisades, Colorado, Aug. 16, 1936,
M. B. Jackson, one female.

Bluff, Utah, Aug. 30, 1942, G. F.
Knowlton, one male (U. S. N. M.).

The holotype and allotype are in the Francis Huntington Snow Entomological Collections; the paratypes are in the Snow Collections and in the collections of the United States National Museum.

Named for the writer's wife, Mrs. Lavinia Richards Hodgden, whose assistance in the preparation of the manuscript of this paper has been invaluable.

Data on distribution: Known only from the type series.

Salda littoralis (Linnaeus)

(Plate IV, figures 6a, 6b)

1758. Cimex littoralis Linnaeus, C. Syst. Nat.,
Edn. 10, p. 442.
1775. Acanthia littoralis, Fabricius, J. C. Syst.
Ent. p. 694.
1807. Salda littoralis, Fallen, C. F. Monog. Cimic.
Sueciae, p. 28.
- (For further references concerning S. littoralis and
its Palaearctic records and synonyms see Reuter, O. M.,
1895 Acta Soc. Sci. Fennicae XXI, p. 35, Oshanin, B.
1909, Verz. Pala. Hemip. I, Lief. III, p. 583 and Van
Duzee, E. P. 1917, Catalog of Hemip. Amer., p. 440.)
1877. Salda littoralis, Uhler, P. R. Bull. U. S.
Geol. Geog. Surv. III, p. 439 (records from
Illinois and Utah).
1886. Salda littoralis, Uhler, P. R. Check List
Hemip. North Amer., p. 27.
1893. Salda littoralis, Uhler, P. R. Proc. Entom.
Soc. Wash., II, p. 382 (records from Utah, a
misidentification, actually S. lugubris).
1894. Salda littoralis, Van Duzee, E. P. Bull. Buf-
falo Soc. Nat. Sci. V, p. 185 (records from
New York).
1896. Salda littoralis, Lethierry, L., and Severin,

- G. Catalogue Gén. Hémipt. III, p. 219.
1909. Acanthia littoralis, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.
1910. Salda littoralis, Banks, Nathan. Catalog Nearct. Hemip., p. 12.
1912. Salda littoralis, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh. LIV, Afd. A, No. 12, p. 13 (as genotype of Salda; lists as Nearctic).
1916. Salda littoralis, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1917. Salda littoralis, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 441.
1920. Salda littoralis, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 59 (quotes Uhler's 1877 re-description).
1924. Acanthia obscura, Torre-Bueno, J. R. de la. Canad. Ent. LVI, p. 300 (records from Saskatchewan, a misidentification).
1926. Salda littoralis, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1007.

Size: Length 5.25 mm. to 6.09 mm. male; 6.70 mm. to 7.00 mm. female; Width of pronotum 1.83 mm. to 1.98 mm. male; 2.28 mm. to 2.30 mm. female.

Color: General color black, legs yellow, Eyes

red-brown. Head black, with a yellow spot on each side of ocelli; apex of frons, middle of clypeus and labrum yellow. Rostrum yellow-brown. First antennal segment yellow above, black beneath; second segment yellow, red-brown near apex; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black; episternal plates before anterior coxae entirely black. Clavus black; corium black, with a line of widely separated yellow spots inside lateral margin and on disc; embolium black; membrane dark brown, areoles black. Abdominal sterna dark brown, narrowly margined with yellow posteriorly; last abdominal sternum of female brown, broadly margined with white posteriorly. Genital capsule of male dark brown. Coxae yellow, brown at base; trochanters yellow; femora yellow, variably spotted with brown and striped with dark brown along posterior edge; tarsi yellow, tipped with brown, usually slightly infuscated subbasally; second tarsal segment yellow; third tarsal segment red-brown. Spines of legs and of first antennal segment black.

Structural characteristics: (Brachypterous form):

General shape broad-oval. Clothed with fine, recumbent, silvery pubescence on venter of thorax and head; with fine, recumbent, golden pubescence on all other parts except membrane and eyes. Clavus, corium and embolium densely golden pubescent. Second antennal segment

with one or more long, stiff, erect setae. Width of head as compared to width of pronotum 74 100 male; 67 100 female. Frons and vertex lustrous, minutely scabrous; apex raised into a carinate ridge which is obsolete at middle and strongly upturned at ends; frons obsoletely sulcate on median line between eyes. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 96 100 male, 96 100 female; length of second antennal segment as compared to width of head 86 100 male, 85 100 female. Antennal segmentation 1 2 3 4 16 38 23 23 male; 16 38 23 23 female. Pronotum lustrous; posterior lobe obsoletely, minutely, transversely rugulose; median length of posterior lobe as compared to median length of anterior lobe 47 100 male, 40 100 female. Anterior lobe slightly elevated, sulcus behind it shallow. Median fovea shallow, transverse, located before middle of anterior lobe. Posterior lobe broadly explanate along lateral margins and on each side of anterior lobe; lateral margins distinctly, convexly curved, moderately convergent. Scutellum lustrous, minutely scabrous, posterior half minutely, transversely rugulose. Clavus, corium and embolium lustrous, minutely,

transversely rugulose, not coarsely punctate. Membrane lustrous, not coriaceous, veins polished and contrasting. Sutures and veins of hemelytra distinct. First areole produced slightly less than one-half its length before base of second areole. Hind wings not visible beyond apex of abdomen. Posterior margin of last abdominal sternum of female rounded, slightly truncated at apex; sternum moderately produced, approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate IV, figures 6a and 6b. Length of posterior tibia as compared to width of head 232 100 male; 227 100 female. Macropterous forms are not known.

Comparative notes: Most closely resembles the brachypterous form of S. bouchervillei (Prov.) from which it can be distinguished by the pubescent corium and clavus, the lack of coarse punctations on the disc of the corium, the less coriaceous membrane and the yellow coxae. The lateral margins of the pronotum are more distinctly convexly curved than those of S. bouchervillei.

Location of types: Described from "Europae littoribus". Presumably the type is in the Linnaeus collection at the Linnean Society of London.

Data on distribution: Recorded from Quebec in Canada and in the United States from California, Illinois, Indiana, New York and Utah. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

* ALASKA: Katmai, Aug. 20, 1917, James S. Hine, 1 male; Kussiloff, July 1898, W. H. Evans, 1 male (U. S. N. M.).

CANADA: Quebec: South Quebec, W. H. Ashnead, 1 female (U. S. N. M.).

* Saskatchewan: Arcola, June 10, 1922, N. Criddle, 2 females (determined as Acanthia obscura by Bueno).

Salda lugubris (Say)

(Plate IV, figures 7a, 7b)

1832. *Acanthia lugubris* Say, Thomas. Heteroptera New Harmony, p. 34 (describes from "Missouri").
1857. *Acanthia lugubris*, Say, Thomas. Fitch Reprint, in Trans. N. Y. State Agr. Soc. XVII, p. 804 (reprints original description).
1859. *Acanthia lugubris*, Say, Thomas. Complete Writings (edited by J. L. Le Conte) II, p. 360 (reprints original description).
1873. *Acanthia lugubris*, Stål, Carl. Enum. Hemip. III, p. 149.
1877. *Salda lugubris*, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 442 (lists, is unable to identify).
1886. *Salda lugubris*, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1896. *Salda lugubris*, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 220.
1909. *Acanthia lugubris*, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 117.
1910. *Salda lugubris*, Banks, Nathan. Catalog Nearct. Hemip., p. 12.
1916. *Saldula lugubris*, Van Duzee, E. P. Check List

- Hemip. North Amer., p. 50.
1917. Saldula lugubris, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 445.
1920. Saldula lugubris, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 72 (quotes original description).
1924. Acanthia obscura, Torre-Bueno, J. R. de la. Canad. Ent. LVI, p. 300 (records, misidentified).
1925. Saldula buenoi McDunnough, J. Canad. Ent. LVII, p. 259 (describes synonym from Alberta. These are the A. obscura of Bueno in preceding reference).
1943. Salda buenoi, Harris. H. M. Jl. Kans. Ent. Soc. XVI, p. 152 (records from South Dakota).

Size: (Brachypterous form): Length 5.26 mm. to 6.17 mm. male; 4.66 mm. to 7.52 mm. female. Width of pronotum 1.81 mm. to 2.00 mm. male; 1.55 mm. to 2.56 mm. female. (Macropterous form): Length 6.66 mm. male; 6.03 mm. to 7.52 mm. female. Width of pronotum 2.23 mm. male; 1.92 mm. to 2.45 mm. female.

Color: General color black. Eyes pale brown to dark brown. Head black, with a yellow spot on each side of ocelli; apex of frons, middle of clypeus and labrum yellow. Rostrum dark brown. First antennal segment yellow above, black beneath; second segment

yellow, infuscated apically; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black; episternal plates before anterior coxae yellow-white or broadly margined with yellow-white, those before middle coxae narrowly margined with yellow-white. Clavus black, corium black usually with a white spot on lateral margin at apex. Embolium black; membrane yellow-brown, veins brown, each areole infuscated at base and in middle. Abdominal sterna red-brown, narrowly margined with yellow posteriorly; last sternum of female red-brown, broadly margined with yellow posteriorly. Genital capsule of male dark brown. Coxae black, tipped with yellow; trochanters yellow; femora yellow, often infuscated above and beneath; tibiae yellow, tipped with brown; second tarsal segment yellow, third segment brown. Spines of legs, and of first antennal segment black.

Structural characteristics: (Brachypterous form):

General shape oval or obovate. Clothed with dense, recumbent, silvery pubescence beneath head and thorax and with dense, golden pubescence on legs, antennae, venter of abdomen and all dorsal surfaces. Second antennal segment with one or more long, stiff, erect setae.

Width of head as compared to width of pronotum 74

100 male; 72 100 female. Frons and vertex lustrous,

minutely scabrous; apex of frons raised into a carinate ridge which is obsolete at middle and strongly curved upwards at ends toward eyes; frons convex or obsoletely sulcate on median line between eyes. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antennae as compared to length of hind tibia 108 100 male, 105 100 female; length of second antennal segment as compared to width of head 90 100 female, 93 100 female. Antennal segmentation 1 2 3 4 15 36 24 25 male; 15 38 24 23 female. Pronotum lustrous, minutely scabrous; posterior lobe obsoletely, minutely, transversely rugulose; median length of posterior lobe as compared to median length of anterior lobe 44 100 male, 49 100 female. Anterior lobe slightly elevated, the sulcus behind it shallow. median fovea shallow, located before middle of anterior lobe. Posterior lobe broadly explanate along lateral margins and more narrowly explanate on each side of anterior lobe; lateral margins straight, slightly curved at anterior and posterior ends; moderately convergent. Scutellum lustrous, minutely scabrous, posterior half minutely, transversely rugulose. Clavus, corium and embolium lustrous, minutely scabrous. Membrane not coriaceous, lustrous, veins lustrous; variably re-

duced, often not distinguishable from membrane of macropterous forms. Sutures and veins of hemelytra distinct. First areole produced approximately one-third of its length before base of second areole. Hind wings not visible beyond apex of abdomen. Posterior margin of last abdominal sternum of female sinuated at sides, broadly truncated at apex; sternum greatly produced, approximately three and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate IV, figures 7a and 7b. Length of posterior tibia as compared to width of head 233 100 male; 235 100 female. (Macropterous form): General shape elongate-oval. Width of head as compared to width of pronotum 66 100 male; 72 100 female. Length of antenna as compared to length of hind tibia 101 100 male, 113 100 female; length of second antennal segment as compared to width of head 88 100 male, 83 100 female. Antennal segmentation 1 2 3 4 15 39 23 23 male; 15 36 23 26 female. Median length of posterior lobe of pronotum as compared to median length of anterior lobe of pronotum 37 100 male; 43 100 female. Lateral margins of pronotum not as distinctly curved at base and apex as those of brachypterous forms. Hind wings visible beyond apex of abdomen. Length of posterior tibia as compared to

width of head 223 100 male; 210 100 female.
 Resembles brachypterous form in all other features.

Comparative notes: Most closely resembles S. obscura Provancher from which it can be distinguished by the lustrous texture of the surface as compared to the highly polished surface of S. obscura. The frons is distinctly shorter; the general color is paler and it lacks the broadly white margined episternal plates before the middle coxae which are typical of S. obscura. The yellow markings of the clypeus and labrum are lacking in the latter species. The densely golden pubescent corium and clavus will distinguish S. lugubris from S. bouchervillei (Provancher).

Location of types: Described from "Missouri", which at the time of the description included a large part of the North Central United States. Since Say's type is lost the following brachypterous female is designated as the neotype: "Yellowstone Nat. Pk., Mont. 22 - 28 - VI, G. C. C. Collr." This specimen is from the J. R. de la Torre-Bueno collection in the Francis Huntington Snow Entomological Collections. The following specimens are designated as morphotypes:

Morphoholotype: Ft. Collins, Colorado, May 20,
 1895, C. F. Baker, female.

(Baker Coll., U. S. N. M.).

Morphoallotype: Gull Lake, Alberta, June 21, 1929,
E. H. Strickland, male (Strick-
land Coll.).

Morphoparatypes: Montana, female, (Uhler Coll.,
U. S. N. M.). Bears penciled
determination label "Salda
lugubris Say, Bueno det. 1921."

Giveout, Idaho, July 7, 1920,
female (A. M. N. H.).

Nevada, female (Uhler Coll., U.
S. N. M.).

The morphotype series is in the United States National Museum, the American Museum of Natural History and the collection of E. H. Strickland, as indicated after each locality above. A male and a female paratype of Saldula buenoi McDunnough, 1925, from Waterton, Alberta, June 30, 1924, H. L. Seamans, have been examined. These prove to be identical with S. lugubris; since the latter name has priority, S. buenoi must be considered a synonym of S. lugubris. The holotype of S. buenoi, a male specimen from Waterton Park, Alberta, June 30,

J. McDunnough is type #1419 in the Canadian National Collection. The allotype; a female from the same series, with seven male and nine female paratypes collected from Waterton Park on June 29 and 30 by H. L. Seaman and J. McDunnough are also in the Canadian National Collection. The paratypes examined are in the Snow Collections.

Data on distribution: Recorded only from Say's "Missouri". The synonym, S. buenoi has been recorded from Alberta in Canada and in the United States from South Dakota. In addition to the types listed above, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

CANADA: Alberta: Waterton Lakes, July 20, 1923, J. McDunnough, 1 female, June 30, 1923, J. McDunnough, 1 male (determined by Bueno as Acanthia obscura); Gull Lake, June 21, 1929, E. H. Strickland, 1 male, 3 females (Strickland).

U. S. A.: * Arizona: Grand Canyon, July 19, 1934, D. Rockefeller, 3 males, 2 females (A. M. N. H.); Grand Canyon, July 19, 1934, P. E. Geier, 1 male (A. M. N. H.); Grand Canyon, July 19, 1934, E. L. Bell, 1 female (A. M. N. H.); Kaibab Forest, Aug. 9, 1936, M. B. Jackson, 1 male, 2 females.

* Colorado: See "location of types" above.

* Idaho: See "location of types" above.

* Kansas: Stafford County Salt Flats, June 29, 1936, P. W. Oman, 1 female (U. S. N. M.).

* Montana: See "location of types" above.

* Nevada: Ruby Mountains, July 11, 1934, H. B. Stafford, 1 female (U. S. N. M.).

* New Mexico: Cowles, July 18, 1936, R. H. Beamer, 1 male; Santa Fe, July 9, 1931, F. E. Lutz, 1 female.

* North Dakota: Nelson County, Stump Lake, July 24, 1920, T. H. Hubbell, 1 female.

* South Dakota: Capa, June 1, 1921, H. C. Severin, 2 males (Parshley).

Utah: Springville, June 14, 1946, C. E. Hopla, 1 female; Salt Lake, June 14, 1891, 1 male, 1 female, June 25, 1891, 1 female (Uhler Coll., U. S. N. M., determined as Salda littoralis by Uhler); Ogden, 1 female (Uhler Coll., U. S. N. M.).

* Wyoming: Yellowstone National Park, Aug. 3, 1930, 1 female (A. M. N. H.).

Salda major Provancher

(Plate IV, figures 8a, 8b)

1872. Salda major Provancher, L'Abbe' L. Nat. Canad. IV, p. 107 (describes from Quebec).
1876. Salda lugubris, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. I, p. 333 (a misidentification).
1877. Salda deplanata Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 442 (original description of synonym from Me., Mass., N. Y., Md., Tex., N. M., Mo., Ill., Mich., Minn., Ont., Northwest Territories).
1884. Salda deplanata, Popenoe, E. A. Trans. Kans. Acad. Sci. IX, p. 63 (records from Kansas).
1886. Salda deplanata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1886. Salda major, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1888. Salda major, Provancher, L'Abbe' L. Pet. Faune Ent. Canad. III, p. 190 (redescribes).
1894. Salda deplanata, Van Duzee, E. P. Bull. Buffalo Soc. Nat. Sci, V, p. 185 (records from New York).
1896. Salda deplanata, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 217.
1896. Salda major, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 220.

1898. Salda deplanata, Osborn, Herbert. Proc. Iowa Acad. Sci. V, p. 234 (records from Iowa).
1905. Salda deplanata, Van Duzee, E. P. N. Y. St. Mus. Bull. 97 in Rept. of State Entomologist for 1904, p. 550 (records from New York).
1909. Acanthia deplanata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 176.
1909. Acanthia major, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.
1910. Acanthia deplanata, Smith, J. B. Insects of N. J., Hemip. in Ann. Rept. N. J. State Mus., 1909, p. 166 (records from New Jersey).
1910. Salda deplanata, Banks, Nathan. Catalog Nearct. Hemip., p. 11.
1910. Salda major, Banks, Nathan. Catalog Nearct. Hemip., p. 12.
1912. Acanthia deplanata, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 14 (belongs to Acanthia as restricted).
1912. Salda major, Van Duzee, E. P. Canad. Ent. XLIV, p. 324 (seen by him in Provancher collection, says Salda deplanata Uhler is a synonym of this species).
1912. Salda deplanata, Van Duzee, E. P. Canad. Ent.

- XLIV, p. 324 (says S. deplanata Uhler, 1877 is a synonym of S. major Prov. 1872).
1914. Acanthia major, Parshley, H. M. Psyche XXI, p. 140 (records from Maine).
1916. Saldula major, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula deplanata, Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (lists as synonym of S. major Prov.).
1916. Saldula lugubris (Uhler, nec Say), Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (notes Uhler's misidentification).
1917. Saldula major, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 441.
1917. Saldula deplanata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 441 (lists as synonym of S. major Prov.).
1917. Saldula lugubris (Uhler, nec Say), Van Duzee, E. P. Catalog of Hemip. North Amer., p. 442 (notes Uhler's misidentification).
1917. Saldula major, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 110 (records from Me., N. H., Mass.).
1917. Saldula major, Parshley, H. M. Canad. Ent. XLIX, p. 48 (records from ocean drift in Mass.).
1920. Saldula major, Hungerford, H. B. Kans. Univ.

- Sci. Bull. XI, p. 62 (quotes Uhler's description of S. deplanata).
1923. Saldula major, Wiley, G. O. Kans. Univ. Sci. Bull., XIV, p. 301, Pl. XXXIV (figures, and describes all stages of life history, records from Kansas).
1923. Acanthia major, Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XVIII, p. 150 (records from N. Y.).
1923. Saldula major, Torre-Bueno, J. R. de la in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 413 (keys, says not recorded from Conn.).
1923. Saldula major, Torre-Bueno, J. R. de la, in Addenda et Corrigenda to Hemip. of Conn. (revises key to Saldula).
1925. Salda deplanata, Hungerford, H. B., and Beamer, R. H. Ent. News XXXVI, p. 263 (cite Popenoe's (1884) record from Kans.).
1925. Acanthia deplanata, Hungerford, H. B., and Beamer, R. H. Ent. News XXXVI, p. 264 (cite Kirkaldy and Bueno's (1909) record from Kans.).
1926. Saldula major, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1009 (keys, redescribes, records from Ind., N. Car., Ga.).
1928. Saldula major, Torre-Bueno, J. R. de la. in

- Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 137 (records from N. Y.).
1930. Saldula major, Walley, G. S. Canad. Ent. LXII, p. 77 (records from Quebec).
1937. Saldula major, Harris, H. M. Iowa St. Coll. Jl. Sci. XI, p. 175 (records from South Dakota).
1938. Saldula deplanata, Brimley, C. S. Insects of North Carolina p. 83.

Size: Length 5.97 mm. to 6.60 mm. male; 6.15 mm. to 7.89 mm. female. Width of pronotum 2.10 mm. to 2.33 mm. male; 2.11 mm. to 2.71 mm. female.

Color: General color black, membrane brown. Eyes pale brown to black. Head black, except apex of clypeus, center of labrum, a spot on each side of clypeus and a spot next to the eyes opposite the ocelli; these areas are colored brown. First antennal segment yellow-brown above, black beneath; second segment yellow-brown; third and fourth segments red-brown. Rostrum brown, black at base. Pronotum and scutellum narrowly margined with yellow-brown. Hemelytra black with a yellow spot at end of medial one-third of clavus, scattered yellow spots on corium and embolium. Membrane pale brown, with darker brown spots inside the areoles. Venter of abdomen black, each sternum margined apically with brown. Last sternum of female black, narrowly

margined with yellow apically. Male genital capsule black. Coxae black; trochanters brown; femora black, yellow-brown apically and on anterior edge; tibiae yellow to pale brown, dark brown apically; tarsi yellow, last segment dark brown. In dark specimens the pale markings may be brown instead of yellow or may be completely absent. Spines of legs black.

Structural characteristics: General shape oval. Clothed with fine, recumbent golden pubescence. Second antennal segment clothed with short, fine recumbent, black setae and one or more longer erect setae; third and fourth segments with scattered longer erect setae. Width of head as compared to width of pronotum 65 100 male; 63 100 female. Frons and vertex lustrous, minutely scabrous, densely pubescent; ridge between basal angle of clypeus and eye indistinct at ends; ocelli separated by the width of an ocellus. Rostrum usually extending beyond middle of hind coxae. Antennae long, slender; length of antenna as compared to length of hind tibia 110 100 male, 103 100 female; length of second antennal segment as compared to width of head 87 100 male, 83 100 female. Antennal segmentation 1 2 : 3 4 13 36 25 : 26 male; 14 37 ; 23 26 female. Pronotum lustrous, minutely scabrous, densely pubescent; median length of

posterior lobe as compared to median length of anterior lobe 64 100 male, 54 100 female; anterior lobe slightly elevated, with a shallow median, bipunctate fovea before middle, obsolete, punctately, depressed on each side of median fovea; sulcus behind anterior lobe not deeply incised, most distinct on each side of posterior half of anterior lobe, obsolete opposite anterior half of anterior lobe. Posterior lobe moderately explanate on each side of anterior lobe; lateral margins moderately convergent, straight or slightly convexly curved, curving rapidly inward anterior to median fovea. Scutellum lustrous, minutely scabrous, posterior half transversely rugulose, densely pubescent. Hemelytra lustrous and, excepting membrane, minutely scabrous and densely pubescent. All sutures and the veins of corium, clavus and membrane distinct. Posterior margin of last abdominal sternum of female rounded, sternum produced, nearly three times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate IV, figures 8a and 8b. Length of posterior tibia as compared to width of head 221 ; 100 male; 228 100 female. brachypterous forms are not known.

Comparative notes: Most closely resembles the macropterous form of S. bouchervillei (Prov.) from

which it can be distinguished by the evenly distributed, dense pubescence of the hemelytra. The shape of the left clasper of the male is highly characteristic, the heellike protuberance is not found on the clasper of any other American saldid.

Location of types: Provancher's types are in the Quebec Public Museum. An examination of these by Van Duzee (1912) showed this species to be identical with S. deplanata Uhler. Cotypes of Uhler's S. deplanata from Massachusetts (one female), Charles, Massachusetts (two females), Mackenzie River, Northwest Territory (one female), and New York (one male) in the Uhler Collection in the United States National Museum have been examined.

Data on distribution: Recorded in Canada from Northwest Territory, Ontario and Quebec and in the United States from Georgia, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New Mexico, New York, North Carolina, South Dakota and Texas. In addition to the Uhler cotypes the following specimens have been examined (new records from major political areas are indicated by an asterisk):

CANADA: * Nova Scotia: Cheticamp, Cape Breton,

June - July, 1917, F. Johansen, 1 female (Parshley).

Quebec: Chambly County, July 19, 1902, 1 female.

* MEXICO: Puebla: July 24, 1937, H. D. Thomas, 1 female.

U. S. A.: * Arizona: Arivaca, July 10, 1947, L. D. Beamer, 1 male.

* Connecticut: Windsor, Aug. 29, 1895, L. B. Woodriff, 1 female (A. M. N. H.).

* Florida: Santa Rosa Island, Okaloosa County, May 16, 1927, H. Notman, 1 male.

Illinois: Desplaines River, June 22, 1904, 1 male, 2 females; Paxton, July 13, 1946, R. H. Beamer, 1 female.

Kansas: Topeka, July 8, 1 female (U. S. N. M.); Riley County, June 7, J. B. Norton, 1 male, 1 female, June 8, 3 males, 1 female (Kans. State Coll.); St. George, June 27, 1 male (Kans. State Coll.); Douglas County, Oct. 25, 1944, R. H. Beamer, 4 males, 1 female, Oct. 30, 1944, R. H. Beamer, 30 males, 5 females; Lakeview, Douglas County, Oct. 3, 1925, H. B. Hungerford, 1 female; Atchison County, July 11, 1924, R. H. Beamer, 2 males; Muscotah, May 30, 1946, R. H. Beamer, 1 male; Kansas, 1 female.

Maine: Paris, July 1, 1932, C. A. Frost, 1 female (U. S. N. M.).

Massachusetts: Massachusetts, 1 female (Uhler Coll.,

U. S. N. M.); Framingham, Sept. 1, 1912, C. A. Frost, 1 male (U. S. N. M.); Beach Bluff, Aug. 6, 1917, H. M. Parshley, 3 females (Parshley).

Michigan: Douglas Lake, Aug. 12, 1927, E. M. Becton, 1 female.

Minnesota: Rochester, July 16, 1921, H. B. Hungerford, 1 female.

Missouri: Kansas City, June 10, F. Rogers, 1 male.

New Hampshire: Berlin, July 24, 1930, C. A. Frost, 1 male; White Mountains, July 23, 1930, C. A. Frost, 2 females; Mt. Washington, Aug. 6, 1906, 1 male; Mt. Washington, Aug. 6, 1906, G. P. Engelhardt, 2 males, 1 female (Cornell Univ.); Mt. Washington, July 7, 1 female (Parshley); Franconia, 1 male (Slosson Coll., A. M. N. H.).

New Jersey: Glen Ridge, June 17, 1906, 1 male, June 23, 1906, 1 male; Lakehurst, 1 female; South Amboy, Beutenmuller, 1 female (A. M. N. H.); Whitesbog, July 16, 1914, H. B. Scammell, 1 female (U. S. N. M.).

New Mexico: Torrance County, July 1925, C. H. Martin, 2 males, 2 females.

New York: East New York, June 4, 1905, 3 females; Mosholu, June 10, 1905, 1 female (A. M. N. H.); New Lots, Long Island, May 29, 1891, 1 male (A. M. N. H.); Far Rockaway, June 4, 1904, L. B. Woodruff, 1 female

(A. M. N. H.); Cols Spring Harbor, Long Island, July 31, 1920, H. M. Parshley, 1 female (Parshley); Cranberry Lake, Aug. 20, 1920, C. J. Drake, 1 female; White Plains, July 20, 1912, 1 female; White Plains, July 8, 1917, J. R. de la Torre-Bueno, 6 males, 3 females, Sept. 19, 1920, J. R. de la Torre-Bueno, 1 male, 2 females, Oct. 3, 1920, J. R. de la Torre-Bueno, 1 male; Wallface Mt., Essex County, July 9, 1922, H. Notman, 2 males, 3 females; Mt. Redfield, Essex County, July 19, 1919, H. Notman, 1 female; Oteora Park, Tannersville, Aug. 21, 1932, J. R. de la Torre-Bueno, 1 male; Camp Upton, Long Island, Aug. 20, 1918, 1 female; Mosholu, June 11, 1904, 1 female:

North Carolina: Lake Toxaway, 1 female (Slosson Coll., A. M. N. H.); Southern Pines, May 26, 1922, A. H. Manee, 1 male; Southern Pines, May 6, 1910, A. H. Manee, 1 female (Parshley).

* South Carolina: Florence, April 11, 1930, G. L. Cartwright, 1 male, 1 female (U. S. N. M.).

South Dakota: Newton Hills, Canton, June 24, 1935, H. C. Severin, 1 female (Severin).

Texas: Medina Lake, San Antonio, Bexar County, June 3, 1927, H. Notman, 2 females; Cisco, June 19, 1947, R. H. Beamer, 1 female; Ft. Davis, June 22, 1947, R. H. Beamer, 1 female; Richmond, March 19, 1907, Cushman and Pierce, 1 male (U. S. N. M.).

* Virginia: Glencarlyn, May 30, 1906, D. H.
Clemons, 1 female (U. S. N. M.).

Salda nigrita (Parshley)

(Plate IV, figures 9a, 9b)

1921. Saldula nigrita Parshley, H. M. Proc. Ent. Soc. Br. Col. (1921), No. 18, p. 23 (describes from Br. Col.).
1927. Saldula nigrita, Downes, W. Proc. Ent. Soc. Br. Col. (1927), No. 23, p. 15 (records from Br. Col.).

Size: Length 4.97 mm. to 5.69 mm. male; 5.41 mm. to 6.20 mm. female. Width of pronotum 1.85 mm. to 2.03 mm. male; 1.97 mm. to 2.22 mm. female.

Color: Color variable, the dark form, as described below, most common. General color black. Head black, with a yellow spot on each side of ocelli; apex of frons, elypeus and middle of labrum yellow. Rostrum dark brown. First antennal segment black beneath, yellow above and at apex; second segment dark brown or black, its apical fourth yellow-brown; third and fourth segments dark brown. Pronotum, scutellum black and venter of abdomen black, episternal plates before anterior coxae narrowly margined with yellow. Clavus black, with a yellow spot on middle near apex. Corium black, with a yellow spot on middle near apex and at beginning of apical fourth; three evenly spaced

yellow spots along lateral margin. The corial pattern of pale specimens represents an expansion of these pale spots. Embolium black with a yellow-white spot on middle before apex and at middle of length of embolium. In pale forms the embolium is predominantly yellow with a black base and longitudinal submarginal dark stripe which may be interrupted. Membrane yellow-white to brown, infuscated within the areoles or concolorous. Abdominal sterna pale brown to dark brown; posterior margins narrowly yellow; last abdominal sternum of female brown, rarely narrowly pale margined apically. Genital capsule of male brown. Coxae brown or black, tipped with yellow; trochanters brown; femora dark brown or black, anterior edge yellow; tibiae dark brown, banded with yellow subapically; tarsi yellow, third segment of anterior and middle tarsi (rarely of hind tarsi) brown. Spines of legs and of first antennal segment black.

Structural characteristics: General shape elongate-oval. Clothed with dense, fine, recumbent, golden pubescence above and on legs and antennae; with dense, fine, recumbent, silvery pubescence beneath. Frons and vertex with a median patch of curved, stiff, semi-erect, dark setae; a few similar setae are on anterior lobe of pronotum. Width of head as compared to width

of pronotum 58 100 male; 59 100 female. Frons and vertex lustrous, minutely scabrous; apex of frons raised into a carinate ridge which is obsolete above clypeus and moderately upturned at ends. Ocelli separated by slightly less than the width of an ocellus. Rostrum usually extending to apex of middle coxae.

Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 105 100 male, 109 100 female; length of second antennal segment as compared to width of head 91 100 male, 86 100 female. Antennal segmentation 1 2 3 4 :: 15 39 24 22 male; 16 38 24 22 female.

Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 92 100 male, 85 100 female.

Anterior lobe moderately elevated, the sulcus behind it moderately incised; median fovea located before middle of anterior lobe; anterior lobe transversely depressed across median fovea, punctately depressed on each side of median fovea. Posterior lobe distinctly explanate on each side of anterior lobe; lateral margins slightly convexly curved, moderately convergent. Scutellum lustrous, minutely scabrous, posterior half minutely, transversely rugulose. Clavus opaque, remainder of hemelytron lustrous and (excepting membrane) minutely scabrous. Veins and sutures of hemelytra distinct.

Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female rounded; sternum moderately produced, approximately three times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate IV, figures 9a and 9b. Length of posterior tibia as compared to width of head

227	100 male;	208	100 female.
-----	-----------	-----	-------------

Brachypterous forms are not known.

Comparative notes: Most closely resembles S. lavinia new species. The pilosity of the hemelytra will distinguish S. lavinia from S. nigrita. Distinguished from S. pallipes (F.) by the longer second antennal segment (in comparison to the width of the head), by its larger size and by its more elongate shape.

Location of types: The type series is from Duncan, British Columbia, September 17, 1919, W. Downes. The holotype, a female specimen, is in the Canadian National Museum, the allotype, a male specimen, is in the Downes' collection and the paratypes are in the collection of H. M. Parshley. One male and two female paratypes have been examined in the preparation of this redescription. A specimen from the Uhler Collection in the United States National Museum labeled "Franconia,

N. H., bears a manuscript name written by Uhler on his determination label.

Data on distribution: Recorded only from the type series. In addition to the paratypes, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

CANADA: Alberta: Lethbridge, 1 female (Strickland).

British Columbia: Duncan, Sept. 17, 1919, W. Downes, 1 male, 1 female; Saanich District, Aug. 9, 1921, W. Downes, 2 males, 1 female, Aug. 15, 1921, W. Downes, 1 male; Vancouver, 1 male (Baker Coll., U. S. N. M.).

Manitoba: Red Deer River, Aug. 3, 1937, R. H. Beamer, 2 females.

Newfoundland: Spruce Brook, Aug. 10, 8 males, 4 females (U. S. N. M.); Humber Mouth, Bay of Islands, Aug. 7, 1 male (U. S. N. M.).

Yukon Territory: Dawson, June 5, 1946, Owen Bryant, 1 female (Bryant); Dawson, June 16, 1928, R. E. Barrett, 1 female (Calif. Acad. Sci.).

U. S. A.: * California: Moomouth Lakes, July 29, 1940, L. C. Kuitert, 1 female; Mouth of Van Duzen River, July 26, 1938, E. C. Van Dyke, 1 female (Calif.

Acad. Sci.); Shasta Springs, June 12, 1920, C. L. Fox, 1 male (Calif. Acad. Sci.).

* Colorado: Craig, Aug. 18, 1940, L. C. Kuitert, 1 female; Rio Grande River, Del Norte, Rio Grande County, Sept. 7, 1927, H. Notman, 1 female.

* Idaho: Umatilla, March 4, 1909, J. A. Hyslop, 1 female (U. S. N. M.).

* Montana: Bennett, Aug. 12, 1931, M. W. Sanderson, 1 male; Lake Josephine, Glacier Park, June 22, 1923, H. Notman, 1 male.

* New Hampshire: Franconia, 2 males, 1 female (Uhler Coll., U. S. N. M.); Franconia, 2 males, 2 females (Slosson Coll., A. M. N. H.); Mt. Washington, 1 male (Slosson Coll., A. M. N. H.).

New Mexico: Jemez Springs, July 1, 1941, R. H. Beamer, 1 female.

Oregon: Umatilla, July 14, 1931, M. W. Sanderson, 1 female; Hood River, July 1931, R. H. Beamer, 1 male; Hood River, June 12, 1920, E. C. Van Dyke, 1 female (Calif. Acad. Sci.).

Utah: Weber Canyon, July 4, 1931, J. Nottingham, 4 males, 2 females.

Washington: Hoover, July 17, 1921, A. L. Melander, 1 female; Colfax, Sept. 19, 1932, R. E. Rodock, 2 males (U. S. N. M.); Easton, 1 male (U. S. N. M.); Toppenish, April 9, 1925, M. C. Lane, 1 female (U. S. N. M.).

Salda obscura Provancher

(Plate IV, figures 10a, 10b)

1872. Salda obscura Provancher, L'Abbé L. Nat. Canad. IV, p. 107 (describes from Quebec).
1888. Salda obscura, Provancher, L'Abbé L. Pet. Faune Ent. Canad. III, p. 190 (redescribes).
1896. Salda obscura, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 220.
1909. Acanthia obscura, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.
1910. Salda obscura, Banks, Nathan. Catalog Nearct. Hemip., p. 12.
1912. Salda obscura, Van Duzee, E. P. Canad. Ent. XLIV, p. 324 (examines Provancher collection, incorrectly places S. obscura as a synonym of S. littoralis).
1912. Salda littoralis, Van Duzee, E. P. Canad. Ent. XLIV, p. 324 (incorrectly places S. obscura as a synonym of S. littoralis).
1916. Salda obscura, Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (lists incorrectly as synonym of S. littoralis).
1916. Salda littoralis, Van Duzee, E. P. Check List Hemip. North Amer., p. 50 (in part).

1917. Salda obscura, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 441 (incorrectly lists as synonym of S. littoralis).
1917. Salda littoralis, Van Duzee, E. P. Catalog of hemip. North Amer., p. 441 (in part).
1924. Acanthia obscura, Torre-Bueno, J. R. de la. Canad. Ent. LVI, p. 300 (revives S. obscura from Van Duzee's synonymy but mistakes S. lugubris and S. littoralis for it).
1925. Saldula obscura, McDunnough, J. Canad. Ent. LVII, p. 257. (says the specimens from Alberta, identified by Bueno as Acanthia obscura are misidentified. Describes them as a new species, Saldula buenoi, which is actually a synonym of S. lugubris. Correctly identifies S. obscura, redescribes it and records it from Alberta and from Anticosta Island, Quebec.).
1937. Salda obscura, Harris, H. M. Iowa St. Coll. Jl. Sci. XI, p. 175 (records from South Dakota).
1944. Salda obscura, Harris, H. M., and Shull, W. E. Iowa St. Coll. Jl. Sci. XVIII, p. 207 (records from Idaho).

Size: Length 4.78 mm. to 5.49 mm. male; 5.27 mm. to 6.70 mm. female. Width of pronotum 1.59 mm. to 1.68 mm. male; 1.77 mm. to 1.95 mm. female.

Color: General color black. Eyes dark brown to black. Head black, with a yellow spot on each side of ocelli. Rostrum black basally, dark brown apically. First antennal segment yellow above, black beneath; second antennal segment red-brown, often yellow above; third and fourth antennal segments red-brown. Pronotum, scutellum and venter of thorax black; episternal plates before anterior coxae yellow-white, before middle coxae broadly white margined apically. Hemelytra entirely black, unspotted. Abdominal sterna dark brown; last abdominal sternum of female dark brown basally, broadly margined with white posteriorly. Genital capsule of male dark brown to black. Coxae black basally, yellow apically; trochanters yellow; femora yellow basally, black or dark brown apically, tipped with yellow; tibiae yellow to yellow-brown, dark brown apically; second tarsal segment yellow; third tarsal segment dark brown. Spines of legs and of first antennal segment black.

Structural characteristics: General shape elongate-oval, broadened posteriorly. Venter of head and thorax clothed with fine, recumbent, silvery pubescence; venter of abdomen, legs and antennae clothed with fine, recumbent golden, pubescence; frons, vertex, thorax and hemelytra clothed with scattered pubescence which is so

minute that it is nearly invisible. Second antennal segment with one or more long, stiff, erect setae.

Width of head as compared to width of pronotum 76

100 male; 72 100 female. Frons and vertex polished, minutely scabrous; apex of frons raised into a carinate ridge which is obsolete at middle and strongly curved upward at ends toward eyes; frons convex or obsoletely sulcate on median line between eyes. Ocelli separated by approximately the width of an ocellus. Rostrum

usually extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 116 100

male, 128 100 female; length of second antennal segment as compared to width of head 86 100 male;

94 100 female. Antennal segmentation 1 2 3 4
14 36 25 25 male; 14 38 24 24 female.

Pronotum polished, minutely scabrous; posterior lobe transversely rugulose; median length of posterior lobe as compared to median length of anterior lobe 38

100 male, 41 100 female. Anterior lobe moderately elevated, sulcus behind it shallow. Median fovea

shallow, located at end of anterior third of anterior lobe. Posterior lobe broadly explanate along lateral

margins and narrowly explanate on each side of anterior lobe; lateral margins straight; strongly convergent.

Scutellum polished, minutely scabrous, posterior half

obsoletely, transversely rugulose. Clavus, corium and embolium polished, obsoletely, transversely rugulose, minutely punctate. Membrane polished, coriaceous, obsoletely, minutely, transversely rugulose. Sutures and veins of hemelytra distinct. First areole produced slightly less than one-half its length before base of second areole. Hind wings not visible beyond apex of abdomen. Posterior margins of last abdominal sternum of female slightly sinuated at sides, rounded at apex; sternum greatly produced, approximately three and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate IV, figures 10a and 10b. Length of posterior tibia as compared to width of head

207	100 male;	195	100 female.
-----	-----------	-----	-------------

Comparative notes: Most closely resembles S. lugubris (Say) from which it can be distinguished by the highly polished hemelytra. The general color is darker than that of S. lugubris. The broadly pale-margined episternal plates, the elongated frons and the black clypeus are further distinguishing characteristics of this species.

Location of types: The type series is in the Quebec Public Museum. It was examined by Van Duzee (1912) who erroneously declared it to be a synonym of

S. littoralis (L.). This error was corrected by McDunnough (1925).

Data on distribution: Recorded from Alberta and Quebec in Canada and in the United States from Idaho and South Dakota. The following specimens have been examined (new records for major political areas are indicated by an asterisk):

ALASKA: Rampart, July, 1915, J. A. Kusche, 1 female (Calif. Acad. Sci.).

CANADA: Alberta: Banff, July 1, 1925, Owen Bryant, 1 female (Bryant).

British Columbia: British Columbia, 1 male (Uhler Coll., U. S. N. M.); Terrace, M. E. Hippisley, 1 male (U. S. N. M.); London Hill Mine, Bear Lake, July 21, R. E. Currie, 1 female (U. S. N. M.).

* Newfoundland: Stephenville, Bay St. George, 1 female (U. S. N. M.); Codroy, July - Aug. 1905, L. P. Gratacap, 1 female (A. M. N. H.).

* Ontario: Prince Edward County, June 1, 1919, Brimley, 1 female (Parshley).

U. S. A.: Colorado: Summit, Gore Mt., Toponas, July 10, 1927, J. C. Bradley, 1 female (Cornell Univ.); Steamboat Springs, Aug. 15, 1943, Owen Bryant, 1 male, 1 female, May 10, 1944, Owen Bryant, 2 females, July 1,

1944, Owen Bryant, 1 female.

New Hampshire: Mt. Washington, 1 female (Slosson Coll., A. M. N. H.).

* Oregon: Blue Mountains, June 7, 1938, E. C. Van Dyke, 1 female (Calif. Acad. Sci.).

South Dakota: Englewood, June 18, 1925, G. I. Gilbertson, 1 male (Severin).

Utah: Brigham, June 10, 1938, Knowlton, Hardy and Stains, 1 female.

* Washington: Paradise Valley, July 17, 1920, E. C. Van Dyke, 1 female (Calif. Acad. Sci.).

Salda orbiculata Uhler

(Plate IV, figures 11a, 11b)

1877. Salda orbiculata Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 450 (describes from Calif., Mass., Pa., N. Y., Ill., Tex.).
1886. Salda orbiculata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1894. Salda orbiculata, Van Duzee, E. P. Bull. Buffalo Soc. Nat. Sci. V, p. 185 (records from New York).
1896. Salda orbiculata, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 221.
1901. Salda opacipennis Champion, G. C. Biol. Centr.-Amer., Rynch., Vol. 2, p. 340, Tab. 20, fig. 5 (describes synonym from Guerrero, Mexico).
1909. Acanthia opacipennis, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.
1909. Acanthia orbiculata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.
1910. Salda orbiculata, Banks, Nathan. Catalog Ne-arct. Hemip., p. 12.
1912. Acanthia orbiculata, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.

1917. Saldula orbiculata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 442.
1917. Saldula orbiculata, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 110 (records from Mass.).
1920. Saldula orbiculata, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 63 (quotes original description).
1923. Saldula orbiculata, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 413 ("not yet recorded from Connecticut").
- 1926. Saldula orbiculata, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1010 (redescribes, records from Indiana).
1928. Saldula orbiculata, Torre-Bueno, J. R. de la. in Cornell Univ. Agr. Scept. Sta. Memoir 101, Insects of N. Y., p. 138 (records from New York).
1943. Saldula orbiculata, Harris, H. M. Jl. Kans. Ent. Soc. XVI, p. 152 (compares with M. severini).
1943. Saldula orbiculatus, Harris, H. M. Jl. Kans. Ent. Soc. XVI, p. 152 (a misspelling).

Size: Length 3.33 mm. to 5.42 mm. male; 3.61 mm. to 4.47 mm. female. width of pronotum 1.43 mm. to

1.66 mm. male; 1.43 mm. to 1.82 mm. female.

Color: General color black, marked with brilliant, pruinose, blue spots. Eyes pale brown to dark brown. Head black, with a yellow spot on each side of ocelli; apex of frons, clypeus and labrum yellow. Rostrum brown. First antennal segment yellow; second segment yellow to red-brown; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black; episternal plates before anterior and middle coxae narrowly margined with yellow. Clavus black, with a large, pruinose, blue spot near anterior end of comisure. Corium black, with a large, pruinose, blue spot behind base, on lateral margin behind middle and on middle of apex. Embolium black, lateral margin narrowly to broadly yellow; a pruinose, blue spot merging with yellow margin before middle and before apex. Membrane yellow-brown, the areoles variously marked with pruinose, white spots. In faded specimens the pruinose spots of the hemelytra appear yellow, violet or white. Abdominal sterna, including last abdominal sternum of female, dark brown, narrowly margined with yellow posteriorly. Genital capsule of male dark brown. Coxae black basally, yellow apically; trochanters, femora and tibiae yellow; femora often spotted with brown; the tibiae brown at apex; tarsi yellow

tipped with brown. Spines of legs black.

Structural characteristics: General shape broad, short, oval. Clothed with golden pubescence and with dense pile of long, stiff, erect setae on body, hemelytra, head, antennae and legs. Setae of hind tibiae subequal in length to those of head and hemelytra. Eyes clothed with stiff, erect, prominent setae. Width of head as compared to width of pronotum 75 100 male; 69 100 female. Frons and vertex polished, smooth; apex of frons raised into a carinate ridge which is obsolete at middle and evenly curved toward eyes; frons convex, not medially sulcate between eyes. Ocelli separated by more than the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 118 100 male, 114 100 female; length of second antennal segment as compared to width of head 55 100 male, 54 100 female. Antennal segmentation 1 2 3 4 :: 20 32 24 24 male; 18 34 24 24 female. Pronotum polished, smooth; median length of posterior lobe as compared to median length of anterior lobe 71 100 male; 70 100 female. Anterior lobe strongly elevated, sulcus behind it deeply incised; median fovea located before middle of anterior lobe; anterior lobe often obsoletely depressed on median line behind

median fovea. Posterior lobe broadly explanate along lateral margins and on each side of anterior lobe; lateral margins distinctly convexly curved, moderately convergent. Scutellum polished, smooth, moderately swollen, deeply transversely depressed across middle. Hemelytra opaque; lateral third of embolium lustrous; clavus polished along anterior two-thirds of commissure; pruinose areas of membrane opaque, remainder of membrane lustrous. Sutures of hemelytra distinct, excepting apical third of suture between corium and embolium; corial veins obsolete; veins of membrane distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female rounded; sternum approximately two and one-third times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate IV, figures 11a and 11b. Length of posterior tibia as compared to width of head

145	100 male;	139	100 female.
-----	-----------	-----	-------------

Brachypterous forms are not known.

Comparative notes: Most closely resembles S. villosa new species from which it can be distinguished by the color pattern of the hemelytra, the shorter hind tibiae and second antennal segments, measured in comparison to the width of the head and by the partly

opaque apex of the clavus along the commissure. It lacks the polished lateral margin of the corium and the deep depression behind the median fovea found in S. villosa. It can be distinguished from S. severini (Harris) by the broadly explanate, convexly curved lateral margins of the pronotum, the longer setae of the hind tibiae and larger expanse of the pruinose, blue spots of the hemelytra.

Location of types: In his original description Uhler stated that S. orbiculata ". occurs in Eastern Massachusetts, Pennsylvania, New York, Illinois and Texas, and the Museum of Comparative Zoology has specimens from Calaveras and San Diego, Cal." A female specimen in the Uhler Collection in the United States National Museum bearing the label "Salda orbiculata Uhler, Mass.," in Uhler's handwriting is designated as the lectoholotype. Doctor R. I. Sailer has examined this specimen and mentions that it has been remounted on a paper point, that the abdomen is broken off but glued to the same point; the specimen is otherwise in good shape. A male from the Uhler Collection, labeled "Andov." is designated as the lectoallotype and three females from the Uhler Collection are designated as cotypes. These specimens are from "Mass.," "Penn.," and "Ill." Doctor J. Bequaert states that three type specimens of

S. orbiculata are in the Museum of Comparative Zoology at Harvard College. These presumably represent the California specimens mentioned by Uhler. These specimens possibly are S. villosa new species, which has been found only in California and which closely resembles S. orbiculata in general appearance. R. J. Izzard has compared specimens of S. orbiculata with the holotype of Salda opacipennis Champion and reports that the two species are identical. Since S. orbiculata has priority, S. opacipennis must fall as a synonym of the former species. The holotype of S. opacipennis, a male taken by H. H. Smith at Omilteme, Guerrero, Mexico, is in the British Museum.

Data on distribution: Recorded from Guerrero in Mexico and in the United States from California, Illinois, Indiana, Massachusetts, New York, Ohio, Pennsylvania and Texas. In addition to the lecto-allotype and cotypes mentioned above the following specimens have been examined (new records from major political areas are indicated by an asterisk):

* CANADA: * New Brunswick: Penobsquis, July 20, 1929, C. A. Frost, 1 female.

Ontario: Ottawa, July 2, 1912, Beaulieu, 1 male (Parshley).

Newfoundland: Bay of Islands, July 21 - 24, 1 female (A. M. N. H.).

U. S. A.: Illinois: Lake Forest, June 13, 1906, J. G. Needham, 1 male; Bloomington, 1 male (U. S. N. M.).

Kansas: Riley County, June 7, J. E. Norton, 2 females, Sept. 5, J. B. Norton, 1 male, 1 female; Coldwater, June 19, 1927, R. H. Beamer, 1 female.

* Maryland: Great Falls, June 11, 1904, 1 female (Cornell Univ.); Odenton, July 17, 1906, 1 male (Cornell Univ.).

Massachusetts: Northampton, June 22, 1921, H. M. Parshley, 1 female (Parshley); Monterey, July 13, 1919, C. A. Frost, 1 female (Parshley).

Michigan: Cheboygan County, Aug. 17, 1948, H. B. Hungerford, 1 female; Cheboygan County, July 9, 1948, Mary Creger, 1 female.

* New Jersey: Westfield, June 19, 1 male, July 3, 1 female, July 16, 1 female.

New York: White Plains, July 4, 1917, 1 female, June 19, 1915, 1 male; Amityville, Long Island, July 18, 1925, 1 male, 11 females; Wosholu, June 11, 1904, 2 females, Oct. 1, 1904, 1 female, June 10, 1905, 1 male, 2 females, July 4, 1905, 1 male, 1 female, July 10, 1905, 1 female.

Pennsylvania: Ashland, Aug. 21, 1946, R. H.

Beamer, 1 female.

Texas: Texas, 1 female (C. V. Riley Coll., U.
S. N. M.).

Salda pallipes (Fabricius)

(Plate V, figures 1a, 1b)

1794. Acanthia pallipes Fabricius, J. C. Ent. Syst. IV, p. 71 (describes from Denmark).
1803. Salda pallipes, Fabricius, J. C. Syst. Rhyng., p. 115 (in his new genus Salda).

(For further references concerning S. pallipes and Palaearctic records and synonyms pertaining to it see Reuter, O. M., 1895 Acta Soc. Sci. Fennicae, XXI, p. 47, Oshanin, B., 1909, Verz. Pala. Hemip. I, Lief. III, p. 595, and Van Duzee, E. P., 1917, Catalog of Hemip. North Amer., p. 443.)

1825. Acanthia interstitialis Say, Thomas. Jl. Acad. Nat. Sci. Philad. IV, p. 324 (describes synonym from "shore of the Missouri river").
1859. Salda luctuosa Stål, Carl. Freg. Eugen. Resa III, p. 263 (describes synonym from California).
1869. Acanthia interstitialis, Say, Thomas. American Entomology I (Edited by Le Conte), p. 248 (reprints original description).
1871. Salda interstitialis, Uhler, P. R. in Packard's "On Insects inhabiting salt water", Amer. Jl. Sci. and Arts I, p. 105 (an accidental inhabitant of salt water, redescribes, records from Cali-

fornia).

1871. Acanthia pallipes, Thomson, C. G. Opusc. Ent. IV, p. 407 (records from Sitka).
1872. Salda interstitialis, Uhler, P. R. in Hayden's Surv. Terr., Rept. for 1871, p. 421.
1873. Acanthia interstitialis, Stål, Carl. Enum. Hemip. III, p. 149.
1873. Acanthia coxalis Stål, Carl. Enum. Hemip. III, p. 149 (describes synonym from Cuba).
1873. Acanthia luctuosa, Stål, Carl. Enum. Hemip. III, p. 149 (says approaches A. pallipes, being distinguished by the color of the hemelytra, records from Wisconsin and New Jersey).
1873. Acanthia pallipes, Stål, Carl. Enum. Hemip. III, p. 149 (records from Sitka and suggests this common Boreal American species was probably described by Say).
1875. Salda interstitialis, Uhler, P. R. in Rept. Geog. Geol. Surv. Terr. West of 100th Merid. V, Engr. Dept., U. S. Army, p. 840 (records from Colorado).
1875. Acanthia laticollis Reuter, O. M. Petit. Nouv. Ent. I, p. 544 (describes synonym from Sitka).
1876. Salda interstitialis, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. I, p. 333 (records from Tex., N. M., Calif., Colo., Nebr., Mo., Ill., Mich.,

Me., Fla., Er. Col., Cuba and Haiti).

1876. Salda luctuosa, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. I, p. 334 (records from California).
1877. Salda interstitialis, Uhler, P. R. in Wheeler's Rept. Chief. Engr. for 1877, p. 1330.
1877. Salda interstitialis, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 444 (redescribes, notes color variations, records from Mo., Mass., Md., Nebr., Ill. and "Dakota").
1877. Salda luctuosa, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 445 (translates original description).
1877. Salda pallipes, Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 446 (describes Nearctic forms, records from Calif., Utah, N. M., Colo., N. J., Md., Haiti and Cuba).
1877. Salda reperta Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 447 (describes from Massachusetts, "very closely related to S. interstitialis, Say, and perhaps only a variety of it").
1878. Acanthia laticollis, Reuter, O. M. Ofv. Finska. Vet.-Soc. Förh. XXI, p. 61.
1878. Salda interstitialis, Uhler, P. R. Proc. Boston Soc. Nat. Hist. XIX, p. 431 (in T. W. Harris collection).

1878. Acanthia alternata (Say MS) Uhler, P. R. Proc. Boston Soc. Nat. Hist., XIX, p. 431 (says the specimen in T. W. Harris' collection labeled by Say is S. interstitialis).
1886. Salda coxalis, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1886. Salda interstitialis, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1886. Salda luctuosa, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1886. Salda pallipes, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1886. Salda reperta, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1888. Salda littoralis, Provancher, L'Abbe' L. Pet. Faune Ent. Canad. III, p. 191 (a misidentification).
1888. Salda lugubris, Provancher, L'Abbe' L. Pet. Faune Ent. Canad. III, p. 191 (a misidentification).
1889. Salda interstitialis, Van Duzee, E. P. Canad. Ent. XXI, p. 6 (records as a Canadian species).
1890. Acanthia pallipes laticollis, Reuter, O. M. Rev. d'Ent. IX, p. 251 (reduces his A. laticollis to a variety of A. pallipes).
1892. Salda interstitialis, Osborn, Herbert. Proc. Iowa Acad. Sci. I, Part II, p. 129 (records from Iowa).

1893. Salda interstitialis, Cockerell, T. D. A. Trans. Amer. Ent. Soc. XX, p. 364 (records from Colorado).
1893. Salda interstitialis, Uhler, P. R. Proc. Ent. Soc. Wash. II, p. 382 (records from Utah).
1893. Salda dispersa Uhler, P. R. Proc. Ent. Soc. Wash. II, p. 383 (describes synonym from Utah, records from Colo. "Very closely related to S. pallipes Fab. of Europe, and having the white marks of the hemelytra essentially the same as in that species. The general form is also the same. This insect varies so much in the amount and distribution of the white marking of the hemelytra that no satisfactory definition can be given of its ornamentation.").
1893. Salda explanata Uhler, P. R. Proc. Ent. Soc. Wash. II, p. 383 (describes synonym from Utah).
1894. Salda interstitialis, Van Duzee, E. P. Bull. Buffalo Soc. Nat. Sci. V, p. 185 (records from New York).
1894. Salda pallipes, Van Duzee, E. P. Bull. Buffalo Soc. Nat. Sci. V., p. 185 (records from New York).
1894. Salda explanata, Uhler, P. R. Proc. Calif. Acad. Sci., Series 2, IV, p. 290 (records from Lower California, Mexico).
1894. Salda interstitialis, Uhler, P. R. Proc. Calif. Acad. Sci., Series 2, IV, p. 290 (records from

- Lower California, Mexico).
1894. Salda pallipes, Uhler, P. R. Proc. Calif. Acad. Sci., Series 2, IV, p. 290 (records from Lower California, Mexico).
1895. Salda dispersa, Gillette, C. P., and Baker, C. F. Colo. Agr. Expt. Sta. Bull. 31, p. 62 (record from Colorado).
1895. Salda interstitialis, Gillette, C. P., and Baker, C. F. Colo. Agr. Expt. Sta. bull. 31, p. 62 (record from Colorado).
1895. Salda pallipes, Gillette, C. P., and Baker, C. F. Colo. Agr. Expt. Sta. Bull. 31, p. 62 (record from Colorado).
1896. Salda coxalis, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 217.
1896. Salda dispersa, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 217.
1896. Salda explanata, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 217.
1896. Salda interstitialis, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 218.
1896. Salda laticollis, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 219.
1896. Salda luctuosa, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 220.
1896. Salda opacula, Lethierry, L., and Severin, G.

- Catalogue Gén. Hémipt. III, p. 220 (Nearctic records only).
1896. Salda pallipes, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 221.
1896. Salda reperta, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 222.
1901. Salda tropicalis Champion, G. C. Biol. Centr.-Amer., Rynch., Vol. II, p. 341, Tab. 20, fig. 7 (describes synonym from Guatemala and Panama).
1904. Salda pallipes, Uhler, P. R. Proc. U. S. Nat. Mus. XXVII, p. 364 (records from New Mexico).
1904. Salda interstitialis, Crevecoeur, F. F. Trans. Kans. Acad. Sci. XIX, p. 234 (records from Kansas).
1905. Salda pallipes, Van Duzee, E. P. N. Y. St. Mus. Bull. 97 in Rept. of State Entomologist for 1904, p. 440 (records from New York).
1907. Acanthia pallipes, Tucker, E. S. Kans. Univ. Sci. Bull. IV, p. 61 (records from Colorado).
1909. Acanthia coxalis, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X., p. 176.
1909. Acanthia dispersa, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 176.
1909. Acanthia explanata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc.

- Wash. X, p. 176.
1909. Acanthia laticollis, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent. Soc.
Wash. X, p. 176.
1909. Acanthia luctuosa, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent. Soc.
Wash. X, p. 177.
1909. Acanthia opacula, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent. Soc.
Wash. X, p. 177 (Nearctic records only).
1909. Acanthia pallipes, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent.
Soc. Wash. X, p. 177.
1909. Acanthia reperta, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent.
Soc. Wash. X, p. 177.
1909. Acanthia tropicalis, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent.
Soc. Wash. X, p. 178.
1910. Acanthia interstitialis, Smith, J. B. Insects
of N. J., Hemip. in Ann. Rept. N. J. State Mus.,
1909, p. 166 (records from New Jersey).
1910. Acanthia pallipes, Smith, J. B. Insects of N.
J., Hemip. in Ann. Rept. N. J. State Mus., 1909,
p. 166 (records from New Jersey).
1910. Acanthia reperta, Smith, J. B. Insects of N. J.,

- Hemip. in Ann. Rept. N. J. State Mus., 1909,
p. 166 (records from New Jersey).
1910. Acanthia xanthochila, Smith, J. B. Insects of
N. J., Hemip. in Ann. Rept. N. J. State Mus.,
1909, p. 166 (records from New Jersey).
1910. Salda dispersa, Banks, Nathan. Catalog Nearct.
Hemip., p. 11.
1910. Salda explanata, Banks, Nathan. Catalog Nearct.
Hemip., p. 11.
1910. Salda interstitialis, Banks, Nathan. Catalog
Nearct. Hemip., p. 12.
1910. Salda laticollis, Banks, Nathan. Catalog Ne-
arct. Hemip., p. 12.
1910. Salda luctuosa, Banks, Nathan. Catalog Nearct.
Hemip. p. 12.
1910. Salda opacula, Banks, Nathan. Catalog Nearct.
Hemip., p. 12.
1910. Salda pallipes, Banks, Nathan. Catalog Nearct.
Hemip., p. 12.
1910. Salda reperta, Banks, Nathan. Catalog Nearct.
Hemip., p. 12.
1910. Salda xanthochila, Banks, Nathan. Catalog Ne-
arct. Hemip., p. 13.
1912. Acanthia laticollis, Reuter, O. M. Ofv. Finska
Vet.-Soc. Förh., LIV, Afd. A, No. 7, p. 71.
1912. Acanthia dispersa, Reuter, O. M. Ofv. Finska

- Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 15
(belongs in Acanthia as restricted).
1912. Acanthia explanata, Reuter, O. M. Ofv. Finska
Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 15
(belongs in Acanthia as restricted).
1912. Acanthia interstitialis, Reuter, O. M. Ofv.
Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12,
p. 15 (belongs in Acanthia as restricted).
1912. Acanthia laticollis, Reuter, O. M. Ofv. Finska
Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 15
(belongs in Acanthia as restricted, distinguishes
from A. pallipes by color and degree of conver-
gence of pronotal margins).
1912. Acanthia opacula marginella, Reuter, O. M.
Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No.
12, p. 15 (belongs in Acanthia as restricted).
1912. Acanthia pallipes, Reuter, O. M. Ofv. Finska
Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 15
(belongs in Acanthia as restricted).
1912. Salda littoralis, Van Duzee, E. P. Canad. Ent.
XLIV, p. 324 (says S. littoralis in Provancher's
collection is S. interstitialis).
1912. Salda interstitialis, Van Duzee, E. P. Canad.
Ent. XLIV, p. 324 (Provancher's S. littoralis is
this species).
1912. Salda lugubris, Van Duzee, E. P. Canad. Ent.

- XLIV, p. 324 (says specimens in Provancher's collection are probably S. reperta).
1912. Salda repleta, Van Duzee, E. P. Canad. Ent. XLIV, p. 324 (a misspelling of reperta).
1913. Acanthia xanthochila, Torre-Buneo, J. R. de la. Ent. News XXIV, p. 20.
1914. Saldula interstitialis, Van Duzee, E. P. Trans. San Diego Soc. Nat. Hist. II, p. 32 (records from California).
1914. Acanthia interstitialis, Barber, H. G. Bull. Amer. Mus. Nat. Hist. XXXIII, p. 499 (records from Florida).
1914. Acanthia pallipes, Barber, H. G. Bull. Amer. Mus. Nat. Hist. XXXIII, p. 499 (records from Florida).
1916. Saldula interstitialis, Van Duzee, E. P. Univ. of Calif. Agr. Expt. Sta. Tech. Bull. I, p. 235 (records from California).
1916. Saldula dispersa, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula explanata, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula interstitialis, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula laticollis, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.

1916. Saldula opacula, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula pallipes, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula reperta, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula xanthochila, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1916. Saldula luctuosa, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Saldula opacula, Parshley, H. M. Canad. Ent. XLIX, p. 48 (records from beach drift in Mass.).
1917. Saldula pallipes, Parshley, H. M. Canad. Ent. XLIX, p. 48 (records from beach drift in Mass.).
1917. Saldula interstitialis, Parshley, H. Occas. Papers Boston Soc. Nat. Hist. VII, p. 110 (records from Me., N. H., Vt., Mass., R. I., and Conn.).
1917. Saldula opacula, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 111 (records from Maine and Massachusetts).
1917. Saldula pallipes, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 111 (records from Me., N. H., Vt., Mass., R. I., and Conn.).
1917. Saldula reperta, Parshley, H. M. Occas. Papers

- Boston Soc. Nat. Hist. VII, p. 111 (records from N. H., and Mass.).
1917. Saldula dispersa, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 442.
1917. Saldula explanata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 442.
1917. Saldula interstitialis, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 442.
1917. Saldula reperta, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 443.
1917. Saldula xanthochila, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 443.
1917. Saldula pallipes, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 443.
1917. Saldula laticollis, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 444.
1917. Saldula opacula, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 444.
1917. Saldula luctuosa, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 445.
1918. Saldula explanata, Van Duzee, E. P. Proc. Calif. Acad. Sci., 4th Ser. VII, p. 285 (records from California).
1918. Saldula interstitialis, Van Duzee, E. P. Proc. Calif. Acad. Sci., 4th Ser. VII, p. 285 (records from California).

1918. Saldula dispersa, Van Duzee, E. P. Proc. Calif. Acad. Sci., 4th Ser. VII, p. 286 (records from California).
1919. Saldula pallipes, Hussey, R. F. Occas. Papers Mus. Zool. Univ. of Mich., No. 75, p. 14 (records from Michigan).
1920. Saldula explanata, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 64 (quotes original description).
1920. Saldula dispersa, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 65 (quotes original description).
1920. Saldula interstitialis, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 65 (quotes Uhler's redescription).
1920. Saldula reperta, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 67 (quotes original description).
1920. Saldula xanthochila, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 68 (quotes original description).
1920. Saldula xanthochila limbosa, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 68 (quotes original description).
1920. Saldula pallipes, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 68 (quotes Uhler's redescription).

1920. Saldula laticollis, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 69 (quotes original description).
1920. Saldula opauula, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 70 (quotes original description).
1920. Saldula luctuosa, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 73 (quotes Uhler's translation of original description).
1923. Saldula pallipes, Barber, H. G. Amer. Mus. Novit. No. 75, p. 13 (records from Porto Rico).
1923. Acanthia interstitialis, Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XVIII, p. 150 (records from New York).
1923. Acanthia reperta, Torre-Bueno, J. R. de la. Bull. Brooklyn Ent. Soc. XVIII, p. 150 (records from New York).
1923. Saldula interstitialis, Van Duzee, E. P. Proc. Calif. Acad. Sci. XII, p. 166 (records from Lower California).
1923. Saldula interstitialis, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 413 (keys, records from Conn.; "It may turn out to be nothing but a dark variety of S. pallipes, Fabricius").

1923. Saldula opacula, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 414 (keys, records from Mass., and N. Y.).
1923. Saldula pallipes dimidiata, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 414 (keys, records from Connecticut).
1923. Saldula reperta, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 414 (keys, records from Connecticut).
1923. Saldula xanthochila, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 414 (keys, records from Connecticut).
1923. Saldula pallipes, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. ("What has previously passed as pallipes Fabr. is a light-colored form of the highly variable interstitialis Say, to which all American records of pallipes should be transferred. S. pallipes is not known to occur in the United States. ").
1923. Salda interstitialis, Torre-Bueno, J. R. de la. in Addenda et Corrigenda to Hemip. of Conn. (see S. pallipes in preceding reference).

1923. Saldula pallipes, Wiley, G. O. Kans. Univ. Sci. Bull. XIV, p. 304, Pl. XXXV (describes and figures all stages of life history, records from Kansas).
1925. Salda interstitialis, Hungerford, H. B., and Beamer, R. H. Ent. News XXXVI, p. 263 (quote Crevecoeur's Kansas record).
1926. Saldula xanthochila, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1009 (keys, describes American forms).
1926. Saldula xanthochila limbosa, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1009 (records from Conn. and New Jersey).
1926. Saldula interstitialis, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1011 (keys, redescrines, records from Indiana and Florida).
1926. Saldula pallipes, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1011 (says American records refer to pale forms of S. interstitialis).
1926. Saldula opacula, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1012 (keys, quotes original description).
1926. Saldula reperta, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1012 (keys, redescrines, records from Ind., Fla., N. Y. and N. H.).

1927. Saldula explanata, Downes, W. Proc. Ent. Soc. Br. Col. (1927) No. 23, p. 15 (records from British Columbia).
1927. Saldula interstitialis, Downes, W. Proc. Ent. Soc. Br. Col. (1927) No. 23, p. 15 (records from British Columbia).
1928. Saldula interstitialis, Torre-Eueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 138 (records from New York).
1928. Saldula opacula, Torre-Eueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 138 (records from New York).
1928. Saldula reperta, Torre-Eueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 138 (records from New York).
1928. Saldula xanthochila, Torre-Eueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 138 (records from New York).
1930. Saldula interstitialis, Walley, G. S. Canad. Ent. LXII, p. 77 (records from Quebec).
1930. Saldula opacula, Walley, G. S. Canad. Ent. LXII, p. 77 (records from Quebec).
1931. Saldula interstitialis, Torre-Eueno, J. R. de la. Bull. Brooklyn Ent. Soc. XXVI, p. 136 (records from Florida).

1934. Saldula interstitialis, Torre-Eueno, J. R. de la. Bull. Brooklyn Ent. Soc. XXIX, p. 157 (records from Utah).
1937. Saldula interstitialis, Harris, H. M. Iowa St. Coll. Jl. Sci., XI, p. 175 (records from South Dakota).
1937. Saldula xanthochila, Harris, H. M. Iowa St. Coll. Jl. Sci. XI, p. 175 (records from South Dakota).
1938. Saldula reperta, Brimley, C. S. Insects of North Carolina, p. 83 (records from North Carolina).
1939. Saldula pallipes, Barber, H. G. Sci. Surv. Porto Rico, N. Y. Acad. Sci. XIV, p. 415 (records from Porto Rico).
1944. Saldula interstitialis, Harris, H. M., and Shull, W. E. Iowa St. Coll. Jl. Sci. XVIII, p. 207 (records from Idaho).
1944. Saldula reperta, Harris, H. M., and Shull, W. E. Iowa St. Coll. Jl. Sci. XVIII, p. 207 (records from Idaho).
1944. Saldula explanata, Harris, H. M., and Shull, W. E. Iowa St. Coll. Jl. Sci. XVIII, p. 307 (records from Idaho).
1944. Saldula xanthochila, Harris, H. M., and Shull, W. E. Iowa St. Coll. Jl. Sci. XVIII, p. 208 (re-

cords from Idaho).

Size: Length 2.71 mm. to 5.20 mm. male (average length 3.70 mm.); 5.31 mm. to 6.01 mm. female (average length 4.20 mm.). Width of pronotum 0.92 mm. to 1.95 mm. male (average length 1.32 mm.); 1.32 mm. to 2.25 mm. female (average width 1.55 mm.).

Color: Color extremely variable, ranging from pale to dark forms. The following description is typical of average colored forms. The dark areas mentioned below are greatly expanded in darker specimens, often entirely obscuring the pale areas; in lighter specimens, the pale areas predominate at the expense of the dark areas. Head black, raised apex of frons, clypeus and center of labrum yellow. Eyes dark brown. Rostrum dark brown. First antennal segment black beneath, yellow above; second segment dark brown, its apical third to fourth yellow; third and fourth segments dark brown. Pronotum black (in pale forms the posterior lobe is often yellow, or the lateral margins are yellow); scutellum black. Clavus black with a yellow spot near apex (clavus often yellow in pale forms, or with apical one-third yellow). Corium brown to black, with an elongate pale spot along apical half of lateral margin, a dark spot in center of pale spot, an elongate pale spot along lateral margin on apical one-fourth, two

or three small pale spots on disc of corium. Embolium pale, with a sub-marginal dark line or row of black spots (usually four, the most constant being situated at end of median third of embolium), and with a median white spot on apical one-fourth (embolium usually black in dark forms, with a marginal yellow spot at end of median third, often entirely yellow in pale forms). Membrane pale yellow, each areole bearing one or two elongate brown spots (general color smoky-brown in dark specimens, often marked with yellow at apex of each areole). Venter of thorax black, episternal plates before anterior coxae narrowly margined with yellow (varies from entirely yellow to entirely black). Venter of abdomen dark brown (in pale forms sterna are broadly pale-margined apically). Last sternum of female brown or black, apical one-half to two-thirds yellow. Genital capsule of male brown. Legs entirely pale in pale forms, in dark forms coxae are black, trochanters yellow-brown, femora dark brown or black above and beneath, tibiae yellow-brown with broad bands of dark brown and the tarsi are tipped with dark brown, last segment frequently entirely brown. Many intermediate states of infuscation may occur. Spines of tibiae and of first antennal segment dark brown to black.

Structural characteristics: General shape oblong

oval. Clothed with fine, recumbent, golden pubescence above and fine, recumbent, silvery pubescence beneath. Antennae and legs clothed with fine, recumbent, golden pubescence. Width of head as compared to width of pronotum 69 100 male; 68 100 female. Frons and vertex lustrous, pubescent, minutely scabrous; apex of frons raised into a carinate ridge, ridge obsolescent above clypeus; frons not medially sulcate. Ocelli separated by the width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae moderately long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 102 100 male, 102 100 female; length of second antennal segment as compared to width of head 61 100 male, 64 100 female. Antennal segmentation 1 2 3 4 17 35 24 24 male; 16 36 24 24 female. Pronotum lustrous, minutely scabrous, pubescent; median length of posterior lobe as compared to median length of anterior lobe 70 100 male, 64 100 female; anterior lobe moderately elevated, with a distinct, deep, median fovea before the middle and an obsolete punctate depression on each side of median fovea; sulcus behind anterior lobe moderately incised. Posterior lobe slightly to greatly explanate on each side of anterior

lobe; lateral margins moderately convergent, straight to convexly curved. Scutellum lustrous, pubescent, minutely scabrous, posterior half minutely, transversely rugulose. Clavus opaque; remainder of hemelytron lustrous and (excepting membrane) minutely scabrous. Veins and sutures of hemelytra distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female rounded; sternum moderately produced, approximately three times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 1a and 1b. Length of posterior tibia as compared to width of head 176 100 male; 173 100 female. Brachypterous forms are not known.

Comparative notes: Most closely resembles S. nigrita (Parshley) which has a relatively longer second antennal segment and is more elongate in general shape. The long erect setae of the hemelytra will distinguish S. comata Champion, S. comatula (Parshley) and S. lavinae new species from S. pallipes.

Location of types: Acanthia pallipes was described and named by Fabricius in 1794. In the original description he records the species from "Habitat in Dania Mus. Dom. Lund". On his trip to European museums in

1926, Doctor Hungerford examined the specimens of S. pallipes in the museum at Copenhagen, Denmark and found that none of the specimens was marked as a type; however, one specimen from "Museum Seh and T. Lund.", with an old paper label, was present. The specimen with the "Lund" label probably is from Fabricius' type series. The species is highly variable in color, antennal segmentation, shape of pronotum and size. This variability has lead to the proposal of many synonyms. The most common name for this species in North America is Acanthia interstitialis Say. American hemipterists have commonly identified dark specimens as interstitialis and pale specimens as pallipes. Comparisons between extensive series of American pallipes and interstitialis show them to be structurally identical; they are likewise identical with European specimens of S. pallipes. Say described A. interstitialis from the " shore of Missouri River"; the type has been destroyed. Uhler has proposed three synonyms. Salda reperta Uhler, the types of which are in the Museum of Comparative Zoology at Harvard College, was described from Cambridge, Massachusetts with the remark that it is " perhaps only a variety of S. interstitialis". Salda dispersa Uhler was described from Salt Lake, Utah, June 13 - 25, 1891. A female from this locality, taken on June 13, 1891,

and a male and a female taken June 25, 1891, have been examined. These specimens, from the Uhler Collection in the United States National Museum, are cotypes. Another cotype female from Salt Lake, taken on June 14, 1891, in the United States National Museum, has not been examined. Uhler noted in his description that S. dispersa is "very closely related to S. pallipes Fab. of Europe, and having the white marks of the hemelytra the same as in that species. The general form is also the same." It was separated from pallipes on the basis of a "narrower pronotum". Salda explanata Uhler was described from City Canon, June 26, and from Ogden and Alta, Utah. A female cotype labeled Ogden, Utah, July 3, 1891, has been examined. This specimen is in the Uhler Collection in the United States National Museum. Specimens from high altitudes have the lateral margins of the pronotum more explanate and curved than specimens from lower elevations. Intermediate forms occur, presenting a completely graduated series between S. explanata and S. pallipes. Acanthia laticollis Reuter described from Sitka, Alaska, is apparently a synonym. Specimens from Alaska which correspond to the description are merely dark forms of S. pallipes. Reuter himself reduced A. laticollis to the rank of a variety of A. pallipes in 1890, but raised it again to specific rank in 1912, principally on the

basis of the details of the color pattern. The type of Acanthia coxalis Stal, described from Cuba, has been examined. It is a color variant of S. pallipes. The type is a female in the Stockholm Museum. The type of Salda luctuosa Stal, described from San Francisco, California, is a male in the Stockholm Museum. The writer can match the description of S. luctuosa only with extremely melanic specimens of S. pallipes from that locality. Salda tropicalis Champion, described from San Geronimo and Guatemala City, Guatemala and from Volcan de Chirique, Panama is merely a color variant of S. pallipes. Mr. R. J. Izzard has compared specimens of S. pallipes with type types of S. tropicalis and finds that the specimens agree. The type series is in the British Museum. Records of S. xanthochila Fieber and A. opacula Zetterstedt from the Western Hemisphere represent color variants of S. pallipes which resemble the color pattern of these European species. An examination of the European specimens in the Snow Collection suggests that many of the described European species represent color variants of S. pallipes. Although no geographical significance appears to apply to color variations in S. pallipes, extensive subspeciation is indicated by the graduated and intergrading variations in the antennal segmentation and the shape of the pronotum. Perhaps some of the species here listed as

synonyms may prove to represent subspecies upon the application of geographical and ecological analysis of variations among them. In view of the cosmopolitan distribution of the species it seems evident that such an analysis must entail the study of extensive collections from the entire Palaearctic region, especially from Siberia, in addition to the Nearctic specimens. Piece-meal or haphazard approaches to such a study would lead to confusion; a carefully controlled examination of the species over its entire range is necessary in order to produce a significant picture of the complex inter-relationship among its geographical and ecological variants.

Data on distribution: Reported in the region covered by this paper from Alaska, British Columbia, Ontario and Quebec in Canada, Cuba, Guatemala, Haiti, Baja California in Mexico, Panama, Porto Rico and in the United States from California, Colorado, Connecticut, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Pennsylvania, Rhode Island, South Dakota, Texas, Utah, Vermont and Wisconsin. In addition to the holotype of A. coxalis Stål, and the cotypes of S. explanata Uhler and S. dispersa Uhler,

the following specimens have been examined (new records from major political areas are indicated by an asterisk):

ALASKA: Anchorage, July 19, 1921, J. M. Aldrich, 26 males, 23 females; June 13, 1921, J. M. Aldrich, 1 male (U. S. N. M.); Ft. Yukon, L. E. Winecoff, 4 males, 2 females; (U. S. N. M.); Rampart, July 15, 1916, E. P. Clark, 1 male, 1 female (U. S. N. M.); Skagway, June 4, 1921, J. M. Aldrich, 4 males, 1 female (U. S. N. M.); Matanuska, May, 19 - 20, 1944, J. C. Chamberlin, 2 males, Aug. 14, 1944, J. C. Chamberlin, 2 males, Aug. 14, 1944, J. C. Chamberlin, 1 female, Sept. 24, 1944, J. C. Chamberlin, 1 male, May 27, 1945, J. C. Chamberlin, 1 female, June 1, 1945, J. C. Chamberlin, 1 male, Aug. 17, 1945, J. C. Chamberlin, 1 female, Sept. 9, 1945, J. C. Chamberlin, 1 female, Sept. 27, 1945, J. C. Chamberlin, 1 male, 3 females (U. S. N. M.); Healy, July 7, 1921, J. M. Aldrich, 1 male (U. S. N. M.); Umiat, June 13, 1947, K. L. Knight, 1 male (U. S. N. M.); Ft. Wrangel, Wicknam, 1 male (U. S. N. M.); Government Railroad, 1921, J. M. Aldrich, 1 male, 1 female (U. S. N. M.); Homer, July 21, 1945, J. C. Chamberlin, 1 male (U. S. N. M.); Stickline River flats, Aug. 31, 1921, E. P. Walker, 1 female (Bryant); Circle, June 13, 1946, 3 females (Bryant); Savonski, Naknek Lake, Aug. 1, 1919, 2 females (J. C. Lutz); Tom's Village, Naknek Lake, July 1919, 1 female (J. C. Lutz).

CANADA: Alberta: Tofield, Aug. 29, 1922, F. S. Carr, 5 males, 3 females; Tofield, Sept. 15, 1924, E. H. Strickland, 1 male, 4 females (Strickland); Banff, May 27, 1922, C. B. D. Garrett, 1 male, 1 female; Banff, Aug. 5, 1934, C. A. Frost, 1 male (U. S. N. M.); Nordegg, July 25, 1936, E. H. Strickland, 2 males (Strickland); Medicine Hat, 1 male (Strickland); Medicine Hat, Sept. 29, 1939, J. L. Carr, 1 male (Strickland); Cooking Lake, July 11, 1937, F. O. Morrison, 1 male, Aug. 12, 1937, F. O. Morrison 1 female (Strickland); Elk Island, May 16, 1937, E. H. Strickland, 1 male (Strickland); Lethbridge, 1 female (Strickland); Edmonton, April 2, 1930, R. W. Salt, 1 male, April 4, 1941, R. W. Salt, 1 female (Strickland); Edmonton, Sept. 4, 1936, E. H. Strickland, 1 male, May 24, 1946, E. H. Strickland, 1 female (Strickland); Jasper Park, Aug. 1915, 1 female (A. M. H.); Strathmore, June 2, 1932, Owen Bryant, 1 male (Bryant).

British Columbia: British Columbia, April 10, 1897, G. W. Taylor, 1 female (Parshley); Shawnigan, July 20, 1919, W. Downes, 1 male (Parshley); Saanich District, June 17, 1919, W. Downes, 1 male, 1 female (Parshley); Agassiz, Sept. 9, 1919, C. G. Hewitt, 1 female (Parshley); Vaisseau, June 14, 1919, W. B. Anderson, 1 female (Parshley); Skanagan Falls, June 16, 1919, W. B. Anderson, 1 male (Parshley); Victoria,

4 females (Parshley); Victoria, July 4, 1912, J. B. Wallis, 3 females (U. S. N. M.); Kokanee Mt., Aug. 10, 1903, R. P. Currie, 1 female (U. S. N. M.); Bear Lake, July 20, 1903, A. N. Caudell, 1 female (U. S. N. M.); Corfield, Vancouver Island, Sept. 29, 1895, C. Livingstone, 1 female (*Salda pelleata* Uhler MS), (U. S. N. M.); Banks of Cowichan river, Corfield, Vancouver Island, Oct. 20, 1895, C. Livingstone, 2 females, (U. S. N. M.); Kaslo, Aug. 3, R. P. Currie, 2 males, 4 females, June 29, 1903, R. P. Currie, 2 males, 2 females (U. S. N. M.); Kaslo, Aug. 5, A. N. Caudell, 1 male (U. S. N. M.); Carbonate, Columbia River, British Columbia, July 7 - 12, 1908, J. C. Bradley, 1 male (Cornell Univ.); Downie Creek, Selkirk Mts., Aug. 14, 1905, J. C. Bradley, 2 males, 2 females (Cornell Univ.); Terrace, Mrs. Hippisley, 1 male, 5 females; Oliver, Aug. 6, 1931, L. D. Anderson, 1 female; Merritt, Aug. 3, 1931, L. D. Anderson, 1 male; Vernon, July 28, 1946, Hugh B. Leech, 1 female (Calif. Acad. Sci.); Nanaimo Biol. Sta., July 25, 1920, E. P. Van Duzee, 7 males, 7 females (Calif. Acad. Sci.).

* Manitoba: Russell, Aug. 1, 1937, R. H. Beamer, 32 males, 33 females; Red Deer River, Aug. 3, 1937, R. H. Beamer, 5 males, 4 females; Hartney, July 31, 1937, R. H. Beamer, 2 males; Shoal Lake, July 31, 1937, H. T. Peters, 1 female; Husavick, Aug. 27, 1912,

Coates, 1 male.

* New Brunswick: Shippigan, July 14, 1931, J. M. Aldrich, 1 male (U. S. N. M.); Penobscuis, July 27, 1926, C. A. Frost, 2 females.

Newfoundland: Cape Ray, July 17, 1 male, 4 females (U. S. N. M.); Bay of Islands, July 21 - 24, 1 female (A. N. H.).

Northwest Territory: Ft. Resolution, Mackenzie District, June 29, 1940, A. Dutilly, 2 females (U. S. N. M.); Aklavik, June 5, 1931, Owen Bryant, 1 female, July 25, 1931, Owen Bryant, 1 male, 1 female, Aug. 5, 1930, Owen Bryant, 1 female, Aug. 26, 1929, Owen Bryant, 1 male (Bryant).

Nova Scotia: Truro, July 1, 1913, R. Matheson, 3 males, 3 females, July 12, 1913, R. Matheson, 1 male, 1 female (Cornell Univ.).

Ontario: Prince Edward County, May 16, 1920, Brimley, 1 female (Parshley); Ridgeway, June 24, 1900, E. P. Van Duzee, 1 female; Fickerel Park, July 28, 1906, W. Metcalfe, 1 male, 1 female; Toronto, July 14, 1894, 1 female (U. S. N. M.); Ottawa, Sept. 26, 1922, C. H. Curran, 1 female, June 7, 1923, C. H. Curran, 1 female; Toronto, R. J. Crew, 1 male (Baker Coll., U. S. N. M.); Toronto, Summer of 1896, R. J. Crew, 1 male (Baker Coll., U. S. N. M.); Fort Erie, July 5, 1926, M. C. Van Duzee, 1 female (Calif. Acad. Sci.).

Quebec: Montreal Island, July 22, 1926, G. Beaulieu, 1 female (Parshley); Lanorrie, June 21, 1915, G. Beaulieu, 1 male (Parshley); Impreuil, Aug. 10, 1902, 1 male; Grande Vallee, Gaspé, July 20, 1931, J. M. Aldrich, 3 males, 1 female (U. S. N. M.); Gaspé Bay, July 18, 1931, J. M. Aldrich, 7 males, 5 females (U. S. N. M.); Anse au Griffon, July 19, 1931, J. M. Aldrich, 1 male (U. S. N. M.); Pt. Neuf, 2 males (Uhler Coll., U. S. N. M.); Chambley County, July 19, 1902, 1 female (Calif. Acad. Sci.).

Saskatchewan: Oxbow, May 14, 1907, Fred K. Knab, 4 males, 2 females, May 15, 1907, Fred K. Knab, 1 male, 1 female, May 30, 1907, Fred K. Knab, 2 males, 2 females (U. S. N. M.).

Yukon Territory: Whitehorse, May 30, 1918, J. A. Kusche, 1 female (U. S. M.).

CUBA: Cuba, 1 female (Uhler Coll., U. S. N. M.); Santiago de las Vegas, Sept. 5, 1923, S. C. Bruner and J. J. Acuna, 2 males, 3 females.

COSTA RICA: Rio Virilla, Dec. 26, 1931, Heinrich Schmidt, 1 female; San José, Heinrich Schmidt, 1 female; San José, April 1928, J. F. Tristan, 3 males (U. S. N. M.).

GUATEMALÀ: Concepcion, C. N. Ainslie, 1 male, 1 female (U. S. N. M.); Near Guatemala City, 1932,

C. N. Ainslie, 1 male, 2 females (U. S. N. M.).

HAITI: Petionville, July 28, 1931, H. L. Dozier, 1 female (U. S. N. M.).

HONDURAS: Progreso, March 30, 1923, T. H. Hubbell, 1 male, 2 females.

MEXICO: Baja California: Lower California, 1 male, 1 female (Uhler Coll., U. S. N. M.).

* Colima: Sentinela, Jan 28, 1930, A. Dampf, 1 male.

Mexico: Ameca meca, March 3, 1928, A. Dampf, 2 males; Real de Arriba, Temescaltepec, June 4, 1933, H. E. Hinton and R. L. Usinger, 2 males, 2 females, May 25, 1933, H. E. Hinton and R. L. Usinger, 1 male, June 9, 1933, H. E. Hinton and R. L. Usinger, 2 females (Usinger).

* Michoacán: Carapa, Sept. 18, 1938, L. J. Lipovsky, 3 males, 3 females.

Morelos: Tepoztlan, Aug. 1, 1938, L. J. Lipovsky, 1 female.

Nuevo Leon: Monterey, Nov. 22, 1932, L. D. Tuthill, 1 male.

Tabasco: Frontera, June 9, 1928, A. Dampf, 1 male.

PORTO RICO: Mayaguez, March 27, 1936, J. A. Ramos,

1 male, 2 females; Guanica Lagoon, Jan. 11, 1936,
 J. A. Ramos, 1 male; Guanica Lagoon, June 10, 1946,
 J. Maldonado Capriles, 1 male (U. S. N. M.); Cartagena
 Lagoon, May 25, 1931, S. T. Danforth, 1 male, 1 female
 (U. S. N. M.); Culebra Island, Feb. 1899, August Busck,
 1 female (U. S. N. M.); Ensenada, June 14 - 19, 1915,
 1 female (A. M. N. H.).

U. S. A.: Alabama: Coden, Oct. 22, 1916, 1
 male, (A. M. N. H.).

Arizona: Grand Canyon, July 19, 1934, P. E.
 Geier, 1 female (A. M. N. H.); Near Kit's Peak, Babo-
 quivari Mts., 1 female (A. M. N. H.); Santa Catalina
 Mts., May 25, 1937, Owen Bryant, 1 male, 1 female
 (Bryant); White Mts., June 20, 1943, Owen Bryant, 1
 female (Bryant); White Mts., July 6, 1 female; Castle
 Hot Springs, Aug. 4, 1941, E. L. Todd, 3 males, 1 fe-
 male; Flagstaff, July 14, 1947, L. D. Beamer, 1 male,
 3 females; Miami, July 22, 1932, R. H. Beamer, 6 males,
 11 females; Sunnyside Canyon, Huachuca Mts., July 9,
 1940, E. E. Kenaga, 1 female; Picacho Lake, Dec. 8,
 1934, 3 males, 3 females; Kaibab Forest, Aug. 9, 1936,
 M. B. Jackson, 1 male, 2 females; Kaibab Forest, Aug.
 9, 1936, R. H. Beamer, 2 males; Ruby, July 27, 1941,
 L. H. Banker, 4 males, 2 females; Ruby, July 27, 1941,
 R. H. Beamer, 1 male; Oak Creek Canyon, July 9, 1941,

R. H. Beamer, 2 males; Tucson, 1936, Owen Bryant, 1 male; Tucson, May 31, 1935, J. R. de la Torre-Bueno, 2 males, 4 females; Yarnell, July 11, 1941, R. H. Beamer, 5 males, 3 females; Maricopa County, July 2, 1929, P. W. Oman, 1 male, 3 females; Maricopa County, July 1, 1929, R. H. Beamer, 1 male, 3 females; Nogales, June 25, 1933, R. H. Beamer, 4 males, 9 females; Chiricahua Mts., July 5, 1940, D. E. Hardy, 2 males, 2 females; Chiricahua Mts., July 3, 1947, R. H. Beamer, 2 males, 1 female, July 5, 1947, R. H. Beamer, 1 female; Chiricahua Mts., July 3, 1947, L. D. Beamer, 1 male, 1 female; Santa Rita Mts., July 9, 1947, L. D. Beamer, 1 male; Granite Dells, July 12, 1947, R. H. Beamer, 6 males, 3 females; Mt. Lemon, April 29, 1948, L. D. Beamer, 3 males, 2 females; Mt. Lemon, April 29, 1948, R. H. Beamer, 1 female; Sabino Canyon, April 28, 1948, R. H. Beamer, 1 male; Prescott, July 12, 1947, L. D. Beamer, 1 male; Prescott, July 12, 1947, R. H. Beamer, 2 males; Tucson, July 7, 1947, R. H. Beamer, 1 male; Sentinel, July 23, 1941, R. H. Beamer, 14 males, 13 females; Coconino County, July 1, 1929, R. H. Beamer, 4 males, 4 females; Coconino County, July 1, 1929, P. W. Oman, 1 male, 1 female; Coconino County, July 1, 1929, L. D. Anderson, 2 males; Coconino County, Aug. 18, 1927, P. A. Readio, 25 males, 22 females; Coconino County, Howard's Lake, June 24, 1927, H. Notman, 1 male;

Ft. Yuma, April 6, H. G. Hubbard, 1 female, April 8, H. G. Hubbard, 1 female (U. S. N. M.); Hot Springs, June 26, H. S. Barber, 1 male (U. S. N. M.); White Mts., July 1 - 15, 1925, D. C. Davis, 1 male (U. S. N. M.); Flagstaff, July 4, Barber and Swarz, 1 female; Chiricahua Mts., June 24, H. G. Hubbard, 1 male (U. S. N. M.); Williams, July 16, Barber and Swarz, 1 male, 2 females (U. S. N. M.); Tubac, June 24, 1933, P. W. Oman, 2 males, 3 females (U. S. N. M.); St. Johns, June 1932, G. Heid, 1 male (Calif. Acad. Sci.).

California: Mammoth Lakes, July 29, 1940, R. H. Beamer, 8 males, 6 females; Mammoth Lakes, July 29, 1940, L. C. Kuitert, 13 males, 13 females; Tehachapi, July 7, 1933, R. H. Beamer, 2 males, 1 female; Cuyamaca Lake, July 6, 1929, P. W. Oman, 1 male; Sunset Beach, July 30, 1935, R. H. Beamer, 1 male; Big Bear Lake, July 26, 1932, R. H. Beamer, 2 males, 3 females; Big Bear Lake, July 26, 1932, J. D. Beamer, 1 male; Del Mar, July 22, 1947, R. H. Beamer, 2 males, 2 females; Eureka, July 15, 1935, R. H. Beamer, 3 males, 1 female; Mono Lake, July 28, 1947, R. H. Beamer, 1 male; Mint Canyon, July 6, 1933, J. D. Beamer, 2 males; Gaviota, July 19, 1933, R. H. Beamer, 1 male; Three Rivers, Aug. 5, 1940, E. E. Kenaga, 1 male, 1 female; Clayton, July 20, 1935, R. H. Beamer, 2 males, 4 females; Salinas, July 18, 1933, R. H. Beamer, 1 male; Palmdale,

July 22, 1940, D. E. Hardy, 1 male, 1 female; Hipomo,
 July 24, 1935, R. H. Beamer, 1 female; Lemon Cove,
 July 26, 1929, R. H. Beamer, 1 male, 1 female; Arroyo
 Seco River, Aug. 8, 1938, R. I. Sailer, 1 female;
 Anza, July 12, 1941, Burton Hodgden, 1 male, 1 female;
 Otay, Aug. 9, 1935, Jack Beamer, 1 female; Saltdale,
 July 26, 1947, R. H. Beamer, 1 female; Saltdale, July
 26, 1947, L. D. Beamer, 1 female; Lone Pine, July 28,
 1940, R. H. Beamer, 1 female; Tuolumne Meadows, Aug. 1,
 1940, L. C. Kuitert, 1 male, 2 females; Southern
 California, 1 male; Echo, Aug. 10, 1940, R. H. Beamer,
 13 males, 9 females; Mad River, Arcata, Humboldt County,
 July 28, 1927, H. Notman, 1 female; Sequoia Park,
 Tulare County, July 22, 1927, H. Notman, 1 male;
 Buckman Springs, San Diego County, July 1, 1927, H.
 Notman, 1 female; Cedar Pass, Alturas, Modoc County,
 Aug. 3, 1927, H. Notman, 1 male; Lake Elsinor, Aug. 2,
 1911, 1 male; Elsinor, C. F. Baker, 1 male, 4 females,
 (Uhler Coll., U. S. N. M.); San Diego, 1 male (Uhler
 Coll., U. S. N. M.); Auburn, Nov. 29, 1937, 1 male, 1
 female (U. S. N. M.); Placer County, 1 male (Uhler
 Coll., U. S. N. M.); California, 1 male, 1 female
 (Uhler Coll., U. S. N. M.); California, T. Behrens,
 1 male (Uhler Coll., U. S. N. M.); Woodland, May 3,
 1933, E. C. Zimmerman, 1 male, May 26, 1933, E. C.
 Zimmerman, 3 males (U. S. N. M.); San Clemente Island,

T. D. A. Cockerell, 1 male (U. S. N. M.); San Joaquin River, Newman, June 16, J. M. Aldrich, 1 male, 1 female (U. S. N. M.); Los Angeles County, 1 female (U. S. N. M.); West of Califa, June 12, 1935, P. W. Oman, 1 male; Los Angeles, July 29, 1897, A. P. Morse, 2 males, 3 females (Baker Coll., U. S. N. M.); Lathrop, Aug. 18, 1897, A. P. Morse, 4 males, 5 females (Baker Coll., U. S. N. M.); Sacramento, Aug. 27, 1897, A. P. Morse, 3 males, 4 females (Baker Coll., U. S. N. M.); Tehama, Aug. 28, 1897, A. P. Morse, 2 males, 2 females (Baker Coll., U. S. N. M.); Middle Creek, Lake County, July 7, 1932, R. L. Usinger, 2 females (Usinger); Davis, June 26, 1932, R. L. Usinger, 2 males (Usinger); Walnut Creek, June 15, 1931, R. L. Usinger, 2 males (Usinger); Albany, Feb. 26, 1921, C. T. Dodds, 1 male, 1 female (Dodds); West Berkeley, April 27, 1921, C. T. Dodds, 2 females (Dodds); Emery, Oct. 19, 1921, C. T. Dodds, 1 female (Dodds); Putah Creek, Monticello, Dec. 1917, J. C. Bradley, 1 male (Cornell Univ.); Ross, April 28, 1918, J. C. Bradley, 1 male (Cornell Univ.); San Clemente Island, April 12, 1923, 1 male (Cornell Univ.); Joachella, May 2, 1918, J. C. Bradley, 1 male (Cornell Univ.); Coalinga, Fresno County, June 1 - 3, 1907, J. C. Bradley, 1 female (Cornell Univ.); Needles, April 1 - 7, 1918, J. C. Bradley, 1 female (Cornell Univ.); Rattlesnake Creek Tulare County, Aug. 2, 1915,

1 male (Cornell Univ.); Lake Calhoun, Nov. 27, 1937, Owen Bryant, 1 female (Bryant); Truckee, Aug. 9, 1921, 1 female (A. M. N. H.); Templeton, San Luis Obispo County, March 22, 1931, E. P. Van Duzee, 2 males, 14 females (Calif. Acad. Sci.); Bridgeport, Mono County, June 23, 1929, R. L. Usinger, 14 males, 12 females (Calif. Acad. Sci.); Bridgeport, Mono County, June 23, 1929, E. P. Van Duzee, 1 male, 3 females (Calif. Acad. Sci.); Fallen Leaf, El Dorado County, July, 1915, E. P. Van Duzee, 2 males, 7 females (Calif. Acad. Sci.); Lower Lake, Lake County, May 14, 1922, E. P. Van Duzee, 9 males, 14 females (Calif. Acad. Sci.); Upper Lake, Lake County, May 17, 1922, E. P. Van Duzee, 1 male (Calif. Acad. Sci.); Truckee, July 6, 1927, E. P. Van Duzee, 7 males, 6 females (Calif. Acad. Sci.); Eubbs Creek, Canyon, Kings River, Fresno County, July 9, 1910, E. C. Van Dyke, 2 females (Calif. Acad. Sci.); Cariso Creek, San Diego County, Dec. 19, 1927, F. E. Blaisdell, 2 males, 3 females (Calif. Acad. Sci.); Amedee, July 21 - 28, Wickham, 1 female (Calif. Acad. Sci.); Laguna Beach, July 1921, C. T. D., 1 female (Calif. Acad. Sci.); Forest Home, San Bernadino County, June 14, 1928, E. C. Van Dyke, 1 female (Calif. Acad. Sci.); Hopland, May 9, 1926, E. P. Van Duzee, 2 males (Calif. Acad. Sci.); Big Pine, Inyo County, June 16, 1929, R. L. Usinger, 1 male, 1 female (Calif. Acad. Sci.); Independence, Inyo County, June 13, 1929, R. L. Usinger, 1 male (Calif.

Acad. Sci.); Davis, May 11, 1933, E. C. Zimmermann, 2 males (Calif. Acad. Sci.); Woodland, May 3, 1933, E. C. Zimmermann, 2 males (Calif. Acad. Sci.); Santa Cruz, June 3, 1919, E. P. Van Duzee, 4 males, 1 female (Calif. Acad. Sci.); Eryson, Monterey County, May 18, 1920, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); San Francisco County, Oct. 3, 1908, E. C. Van Dyke, 1 male (Calif. Acad. Sci.); Keen Camp, Riverside County, June 6 - 12, 1917, E. P. Van Duzee, 1 male (Calif. Acad. Sci.); Poso Creek, Kern County, June 5, 1929, E. P. Van Duzee, 1 male (Calif. Acad. Sci.); Needles, Nov. 27, 1921, J. A. Kusche, 1 female (Calif. Acad. Sci.); Stone Canyon, Monterey County, April 21, 1919, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); La Jolla, April 5, 1915, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); Yankee Hill, Butte County, March 20, 1928, H. H. Kiefer, 1 male (Calif. Acad. Sci.); Huntington Lake, Fresno County, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); Gold Lake, Sierra County, July 4, 1921, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); Marin County, July 13, 1919, W. M. Giffard, 1 female (Calif. Acad. Sci.); Crater Lake, June 16, 1935, W. H. Lange, 2 females; (Calif. Acad. Sci.); Coalinga, Fresno County, March 19, 1931, E. P. Van Duzee, 1 male (Calif. Acad. Sci.); Bullfrog, Fresno County, July 11, 1910, E. C. Van Dyke, 1 female (Calif. Acad. Sci.); Coachella, May 19, 1928, E.

C. Van Dyke, 1 male, 1 female (Calif. Acad. Sci.); Mt. Lyell, July 7, 1935, E. C. Z. 2 females (Calif. Acad. Sci.); Lyell Aanyon, July 8, 1935, E. C. Z. 1 male (Calif. Acad. Sci.); San Diego County, May 8, 1913, E. P. Van Duzee, 2 males, 2 females, Sept. 13, 1913, E. P. Van Duzee, 1 female (Calif. Acad. Sci.); Carmel, May 27, 1922, 1 male (Calif. Acad. Sci.); Carmel, April 10, 1932, L. S. Sievin, 1 male (Calif. Acad. Sci.); Placer County, July, A Koebele, 1 male, 1 female (Calif. Acad. Sci.); Siskiyou County, A. Koebele, 1 male, 1 female (Calif. Acad. Sci.); Martin's Springs Lassen County, July 4, 1922, J. O. Martin, 1 male (Calif. Acad. Sci.).

Colorado: Estes Park, Mary's Lake, Aug. 22, 1919, H. B. Hungerford, 6 males, 4 females; Ft. Collins, Aug. 21, 1925, R. H. Beamer, 24 males, 14 females; Ft. Collins, July 31, 1898, 1 male; Ft. Collins, Sept. 20, 1899, 1 female; Ft. Collins, Aug. 21, 1926, R. H. Beamer and L. D. Beamer, 2 males, 2 females; Pingree Park, Aug. 1924, R. H. Beamer and P. B. Lawson, 5 males, 8 females, Aug. 1925, R. H. Beamer and P. B. Lawson, 2 males, 3 females; Grand Lake, Aug. 6, 1947, R. H. Beamer, 10 males, 13 females; Rocky Mt. National Park, Aug. 5, 1947, R. H. Beamer, 1 female; Fall River Pass, Rocky Mt. National Park, Aug. 17, 1936, R. H. Beamer, 1 female; Raymonds, July 10, 1937, R. H. Beamer, 1 male; Walden, Aug. 4, 1947, R. H. Beamer, 6 males, 2 females;

Phantom Canyon, Aug. 1919, H. B. Hungerford, 1 male, 1 female; Craig, Aug. 3, 1947, R. H. Beamer, 1 male; Creede, July 6, 1937, C. L. Johnston, 2 females; Creede, July 6, 1937, R. H. Beamer, 1 female; Peyton, Aug. 19, 1936, D. R. Lindsay, 1 female; Lyons, July 9, 1937, H. T. Peters, 1 female; Douglas County, June 18, 1939, Ralf S. Martin, 1 female; Northgate, Aug. 20, 1931, M. W. Sanderson, 4 males, 7 females; Golden, Sept. 11, 1946, Burton Hodgden, 3 males, 2 females; Golden, Sept. 11, 1946, Lavinia Hodgden, 1 female; Nederland, July 10, 1937, R. H. Beamer, 1 female; Nederland, July 10, 1937, H. T. Peters, 1 male; Cameron's Pass, Aug. 20, 1940, L. C. Kuitert, 2 females; Cameron's Pass, Aug. 20, 1940, R. H. Beamer, 4 females; Glen Haven, July 24, 1946, P. B. Lawson, 1 female; Rabbit Ear Pass, Aug. 3, 1947, R. H. Beamer, 1 male, 1 female; Steamboat Springs, Oct. 1, 1941, Owen Bryant, 2 females, Oct. 1, 1943, Owen Bryant, 1 female, April 1, 1944, Owen Bryant, 1 female, May 10, 1944, Owen Bryant, 1 female, Aug. 15, 1944, Owen Bryant, 5 females, Sept. 20, 1944, Owen Bryant, 1 female, Sept. 27, 1947, Owen Bryant, 1 male, 1 female (Bryant); Crocho Lake, Oct. 1, 1941, Owen Bryant, 1 female (Bryant); Cameron Pass, Aug. 19 - 22, 1940, C. Sabrosky, 1 male, 3 females (U. S. N. .); Grand Mesa, July 7, 1938, U. Lanham, 1 male, 1 female (U. S. N. M.); Colorado, 1 male,

1 female (Uhler Coll., U. S. N. M.); Denver, 1 male, 3 females (Uhler. Coll., U. S. N. M.); Ft. Collins, May 20, 1895, C. F. Baker, 3 males, 1 female (Baker Coll., U. S. N. M.); Foothills 6 miles west of Ft. Collins, April 25, 1896, 1 male, 1 female (Baker Coll., U. S. N. M.); Forrester's, July 19, 1895, C. F. Baker, 2 males (Baker Coll., U. S. N. M.); Fort Collins; June , C. F. Baker, 1 male, 2 females (Baker Coll., U. S. N. M.); Forrester's Ranch, Aug. 3, 1896, C. F. Baker, 1 male, 1 female (Baker Coll., U. S. N. M.); Grizzly Creek, July 24, 1896, C. F. Baker, 1 male, (Baker Coll., U. S. N. M.); Forrester's Ranch, Larimer County, Aug. 3, 1896, C. F. Baker, 2 females (Baker Coll., U. S. N. M.); Ft. Collins, Nov. 15, 1893, C. F. Baker, 1 female (Baker, Coll., U. S. N. M.); Rist Canyon, Larimer County, May 6, 1895, C. F. Baker, 1 male (Baker Coll., U. S. N. M.); Fort Collins, Sept. 4, 1895, C. F. Baker, 1 female (Baker Coll., U. S. N. ...); Fort Collins, C. F. Baker, 1 male (Baker Coll., U. S. N. M.); Chambers Lake, July 18, 1895, C. F. Baker, 1 male (Baker Coll., U. S. N. M.); Marshall Pass, Sept. 16, 1917, R. C. Shannon, 1 male (Cornell Univ.); Electric Lake, La Plata County, June 28 - 30, 1919, 7 males, 6 females (A. N. M.H.); Pagosa Springs, June 21 - 23, 1919, 1 female (A. M. N. H.); Boulder, May 27 - 28, 1922, 3 females (A. M. N. H.); Gregory Canyon, Boulder, June 20,

1922, 2 males (A. M. N. H.); Gould, Aug. 18, 1941, H. C. Severin, 2 males, 2 females (Severin); Lake Agnes, near Cameron Pass, Aug. 20, 1940, H. C. Severin, 1 male (Severin).

Connecticut: Norwich, Aug. 6, 1946, R. H. Beamer, 1 female; New Haven, March 25, 1911, A. E. Champlain, 1 female; Litchfield, Nov. 18, 1921, H. Notman, 1 male; Olga, July 28, 1909, H. L. Parker, 1 male (U. S. N. M.); Olga, July 8, 1909, 1 male (Parshley).

District of Columbia: Washington, July 26, 1924, E. A. Schwarz, 1 male (U. S. N. M.); District of Columbia, Oct. 15, 1886, 1 female, Aug. 20, 1886, 1 male (U. S. N. M.).

Florida: Ft. Myers, Aug. 11, 1930, J. Nottingham, 1 male; Fruitville, Aug. 11, 1930, R. H. Beamer, 1 female; Suwannee Springs, July 3, 1948, R. H. Beamer, 1 male; Sanford, Sept. 7, 1931, C. O. Bare, 4 males, 2 females; La Belle, July 16, 1939, P. W. Oman, 1 female; Royal Palm Park, March 14, 1930, W. S. Blatchley, 1 male (U. S. N. M.); Royal Palm Park, W. S. Blatchley, 1 male, 8 females (Br. Mus.); Jacksonville, 1 female (U. S. N. M.); Paradise Key, Feb. 19, E. A. Schwarz, 1 male (U. S. N. M.); Gainesville, Sept. 1935, 1 female (U. S. N. M.); Miami, Feb. 23, 1912, Fred K. Knab, 1 female, Dec. 2, 1912, Fred, K. Knab, 1 female (U. S. N. M.); Biscayne Bay, 1 female (Uhler Coll., U. S. N. M.);

Biscayne Bay, 1 male, 2 females (Slosson Coll., A. M. N. H.); Tampa, Feb. 7, 1921, 3 females (J. C. Lutz); Jacksonville, 1 female (Slosson Coll., A. M. N. H.); Ormond, 1 male (Slosson Coll., A. M. N. H.); Everglade, April 9, 1912, 1 female (A. N. H.); Deland, March 24 - 26, 1939, F. E. Lutz, 1 female (A. M. N. H.); Florida, W. S. Blatchley, Feb. - Mar. 1930, 1 male, 3 females (Br. Mus.).

* Georgia: Helen, July 19, 1945, P. W. Fattig, 1 female (U. S. N. .); Peach County, May 18, 1943, W. F. Turner, 1 male, June 17, 1943, W. F. Turner, 1 male (U. S. N. M.).

Idaho: Bliss, July 7, 1931, M. W. Sanderson, 5 males, 6 females; Bliss, July 7, 1931, H. T. Peters, 6 males, 5 females; Bliss, July 7, 1931, L. D. Anderson, 1 male; Hampa, July 8, 1931, L. D. Anderson, 4 males, 5 females; Burley, July 6, 1931, M. W. Sanderson, 3 males, 1 female; Burley, July 6, 1931, L. D. Anderson, 2 females; Julietta, May 31, 1933, R. E. Rodock, 2 males, 2 females (U. S. N. M.); Lewiston, Sept. 21, 1932, R. E. Rodock, 1 male, 2 females (U. S. N. M.); Moscow, July 24, 1925, C. L. Fox, 1 male (Calif. Acad. Sci.).

Illinois: Morgan County, F. M. McElfresh, 1 female (U. S. N. .); South Illinois, 1 female (Uhler Coll., U. S. N. M.); Illinois, 2 males (Uhler, Coll., U. S. N. M.).

Indiana: Kosciusko County, Aug. 11, 1932, George E. Gould, 1 male, 2 females; Lafayette, 1932, George

E. Gould, 1 male, 1 female.

Iowa: Fairport, Aug. 29, 1922, 1 female.

Kansas: Lakeview, Douglas County, July 16, 1930, Sam Dews, 20 males, 36 females; Douglas County, 1916, H. B. Hungerford, 8 males, 6 females; Douglas County, June 23, 1946, Burton Hodgden, 3 females, July 29, 1946, Burton Hodgden, 1 male, 3 females, Aug. 1, 1946, Burton Hodgden, 1 male, Aug. 8, 1946, Burton Hodgden, 1 female, Oct. 1, 1946, Burton Hodgden, 1 male, Oct. 3, 1946, Burton Hodgden, 1 male, April 28, 1947, Burton Hodgden, 2 females, June 25, 1947, Burton Hodgden, 1 male, July 3, 1947, Burton Hodgden, 2 males, 1 female, July 7, 1947, Burton Hodgden, 2 females, April 16, 1948, Burton Hodgden, 1 female; Douglas County, 1930, Merrle Gish, 1 female; Douglas County, H. B. Hungerford, 1 male, 1 female; Douglas County, Oct. 23, 1926, H. B. Hungerford, 1 male; Douglas County, Oct. 20, 1932, L. S. Henderson, 1 female; Lawrence, June 26, 1935, L. S. Henderson, 3 males, 8 females, June 29, 1935, L. S. Henderson, 2 females, July 10, 1935, L. S. Henderson, 2 females, March 18, 1933, L. S. Henderson, 1 female; Lawrence, July 5, 1941, L. C. Kuitert, 1 female; Lawrence, Oct. 31, 1936, D. R. Lindsay, 3 males, 1 female; Atchison County, July 11, 1924, R. H. Beamer, 11 males, 8 females; McPherson County, June 26, 1923, W. J. Brown, 1 male, 2 females; McPherson County, June 26, 1923, R. H. Beamer, 2 males; McPherson

County, Clarence Bare, 3 females; Meade County, July 11, 1944, R. H. Beamer, 1 female, July 24, 1944, R. H. Beamer, 3 males, Sept. 13, 1944, R. H. Beamer, 6 females; Neosho County, June 26, 1920, William E. Hoffman, 5 males, 4 females; Great Bend, June 5, 1939, R. H. Beamer, 5 males; Scott County, June 20, 1925, H. G. Deay, 2 males, 2 females; Scott County, June 21, 1925, R. H. Beamer, 1 male, 2 females; Soldier, June 16, 1946, Burton Hodgden, 2 males, 3 females, July 24, 1946, Burton Hodgden, 1 female; De Soto, Aug. 10, 1946, Burton Hodgden, 14 males, 6 females; Sunflower, Johnson County, Aug. 6, 1946, Burton Hodgden, 2 males, 1 female; Tonganoxie, Sept. 24, 1947, Burton Hodgden, 8 males, 1 female; Decatur County, July 6, 1925, R. H. Beamer, 2 males, 1 female; Wichita, June 9, 1935, Beamer, Penner and Sanderson, 1 male; Clark County, May, F. H. Snow, 1 female, June, F. H. Snow, 1 female; Gray County, July 9 - 15, 1917, 3 females; Hodgeman County, July 17 - 25, 1917, 1 male, 2 females; Reno County, Aug. 13 - 20, 1917, 7 males, 19 females; Kiowa County, April 12, 1925, C. O. Bare, 1 female; Medora, July 2, 1927, R. H. beamer, 1 male; Medora, July 3, 1927, L. D. Anderson, 2 males; Manhattan, Sept. 13, 1923, H. B. Hungerford, 1 female; Riley County, April 22, 1924, H. B. Hungerford, 1 male, 2 females; Riley County, Popenoe, Aug. 9, 1 male, July 17, Popenoe, 1 male;

Riley County, Aug. 9, J. B. Norton, 2 males, 1 female;
 Riley County, Aug. 9, Popenoe, 3 males, 1 female (Kansas
 State Coll.); Riley County, Aug. 9, J. B. Norton, 5
 males, 5 females, Aug. 28, J. B. Norton, 1 male, 2 fe-
 males (Kansas State Coll.); Riley County, April, Pope-
 noe, 1 female (U. S. N. M.); Kansas, 1 male (U. S. N.
 M.); Garnett, June 20, 1931, P. W. Oman, 1 female
 (U. S. N. M.).

* Louisiana: Mandeville, June 24, 1948, E. L.
 Todd, 3 males, 8 females; Mandeville, June 24, 1948,
 R. H. Beamer, 8 males, 6 females; Luras, June 21,
 1948, R. H. Beamer, 3 males; Fifteen miles East of
 Creole, June 18, 1948, E. T. McDermott, 1 female;
 Rainey Refuge, Vermilion County, July 22, 1925, C. C.
 Sperry, 1 male; Mandeville, June 16, 1917, R. C.
 Shannon, 1 male (Cornell Univ.); Sabine River Ferry,
 opposite Orange, June 20, 1917, 3 males, 3 females
 (Cornell Univ.).

Laine: Orono, May 3, 1914, H. L. Parshley, 1
 male; Paris, July 10, 1914, C. A. Frost, 1 male, July
 4, 1915, C. A. Frost, 1 male (Parshley).

Maryland: Plummer's Island, Aug. 22, 1943, R.
 H. Beamer, 1 male; Chesapeake Beach, July 18, 1908,
 H. S. Earber, 1 female (U. S. N. M.).

Massachusetts: Lake Wyola, Sutherland, Oct. 12,
 1926, 2 males, 9 females; Wellesley, June 2, 1891, 1

female (Uhler Coll., U. S. N. M.); Andover, 2 females, (Uhler Coll., U. S. N. M.); Melrose High, April 22, D. H. Clemons, 1 male (U. S. N. M.); Beach Bluff, Aug. 6, 1917, H. M. Parshley, 3 males, 11 females, July 18, 1915, H. M. Parshley, 2 females (Parshley); Forest Hills, June 1, 1915, H. M. Parshley, 2 males, 2 females, Sept. 30, 1915, H. M. Parshley, 2 males, 2 females (Parshley); Lynn, Aug. 7, 1914, H. M. Parshley, 3 males, 2 females (Parshley); Northhampton, June 22, 1921, H. M. Parshley, 1 male (Parshley); Wellesley, Nov. 10, 1890, A. P. Morse, 1 female (Parshley).

Michigan: Emmett County, Aug. 5, 1948, H. B. Hungerford, 1 male, 2 females, July 30, 1948, H. B. Hungerford, 1 male; Emmett County, July 14, 1925, Milton Sanderson, 2 males, 6 females; Cheboygan County, 1948, H. B. Hungerford, 1 male; Park Creek, Cheboygan County, July 30, 1948, H. B. Hungerford, 18 males, 10 females, Aug. 6, 1948, H. B. Hungerford, 4 males, 7 females, Aug. 16, 1948, H. B. Hungerford, 11 males, 7 females, Aug. 17, 1948, H. B. Hungerford, 8 males, 3 females; Cheboygan County, July 13, 1942, H. B. Hungerford, 6 males, 4 females, July 27, 1936, H. B. Hungerford, 2 females, July 18, 1931, H. B. Hungerford, 1 male, July 20, 1938, H. B. Hungerford, 2 males, 1 female; Smith Bog, Cheboygan County, July 26, 1929, H. B. Hungerford, 1 male, 4 females; Cheboygan County,

July 15, 1942, Edward L. Todd, 5 males, 6 females;
Cheboygan County, June 28, 1940, R. I. Sailer, 1 fe-
male, July 7, 1940, R. I. Sailer, 1 female; Cheboygan
County, July 25, 1932, J. O. Nottingham, 2 females,
Aug. 11, 1932, J. O. Nottingham, 1 male; Cheboygan
County, July 17, 1936, Milton Sanderson, 1 male, 1 fe-
male; Cheboygan County, Aug. 1947, Rosemary Eliot, 1
male (Mich. Univ. Biol. Sta.); Cheboygan County, July
21, 1947, Cyril Appleton, 1 female (Mich. Univ. Biol.
Sta.); Cheboygan County, July 12, 1948, Mary Creager,
1 female (Mich. Univ. Biol. Sta.); Cheboygan County,
July 12, 1948, Jack D. Finer, 1 female, July 19, 1948,
Jack D. Finer, 1 male (Mich. Univ. Biol. Sta.); Che-
boygan County, Aug. 6, 1948, James E. Fotte, 1 female
(Mich. Univ. Biol. Sta.); Cheboygan County, July 12,
1948, Roland DeRenzo, 1 female (Mich. Univ. Biol. Sta.);
Cheboygan County, July 12, 1948, Charles Pierson, 1
female (Mich. Univ. Biol. Sta.); Cheboygan County,
July 12, 1948, Thomasine Neering, 1 male (Mich. Univ.
Biol. Sta.); Cheboygan, July 6, 1939, Reece Sailer,
1 male, 1 female (Mich. Univ. Biol. Sta.); Cheboygan,
July 5, 1939, Isabelle Baird, 2 females, July 8, 1939,
Isabelle Baird, 1 female, July 6, 1939, Isabelle Baird,
1 male, July 15, 1939, Isabelle Baird, 1 male, July 23,
1939, Isabelle Baird, 2 females (Mich. Univ. Biol. Sta.);
Douglas Lake, June 29, 1923, H. b. Hungerford, 10 males,

14 females, July 3, 1923, H. B. Hungerford, 2 males,
 4 females, July 4, 1923, H. B. Hungerford, 9 males, 8
 females, July 6, 1923, H. B. Hungerford, 3 males, July
 31, 1923, H. B. Hungerford, 1 male, Aug. 1, 1923, H. B.
 Hungerford, 1 male, Aug. 3, 1923, H. B. Hungerford, 1
 female, July 30, 1924, H. B. Hungerford, 1 male, July
 24, 1925, H. B. Hungerford, 1 male, July 2, 1927, H. B.
 Hungerford, 2 males, 1 female, July 23, 1927, H. B.
 Hungerford, 5 males, 4 females, July 29, 1927, H. B.
 Hungerford, 1 female; Douglas Lake, July 15, 1926,
 Charles Martin, 1 female, July 29, 1926, Charles Martin,
 1 female; Nigger Creek, Mullett Lake, July 30, 1925,
 H. B. Hungerford, 1 female, Aug. 4, 1925, H. B. Hunger-
 ford, 1 female; Marquette, May 11, 1923, H. Notman,
 2 females; Had Island, Lake Michigan, July 9, 1939,
 I Baird, 1 male, 1 female (Mich. Univ. Biol. Sta.);
 Ludington, Aug. 19, 1916, 1 male (U. S. N. M.);
 Munising, June 22, 1911, 1 female (U. S. N. M.); Ottawa
 County, Aug. 27, 1 female (U. S. N. M.).

Minnesota: Two Harbors, Aug. 9, 1922, H. B.
 Hungerford, 18 males, 20 females; Rochester, July 16,
 1921, H. B. Hungerford, 14 males, 9 females; Jackson,
 July 26, 1935, P. W. Oman, 1 male (U. S. N. M.); St.
 Anthony Park, July 6, 1921, H. H. Knight, 1 female;
 Taylor Falls, St. Croix River, Aug. 6, 1922, H. B.
 Hungerford, 1 female; Lake County, Aug. 15, 1922, H. B.

Hungerford, 1 female; Minnesota, 1 male, (Uhler Coll., U. S. N. M.); Ottertail County, 2 males, 3 females (Uhler Coll., U. S. N. M.); Lake Minnetanka, Excelsior, Sept. 6, 1937, G. O. Wiley, 5 females (J. C. Lutz).

Missouri: Rockaway Beach, Aug. 27, 1948, Burton Hodgden, 4 males, 2 females; St. Joseph 2 females (Uhler Coll., U. S. N. M.); Carondeles, Oct. 14, 1877, 1 female (Uhler Coll., U. S. N. M.).

Montana: Beaver Creek, Aug. 1913, S. J. Hunter, 3 females; Bennett, Aug. 12, 1931, L. D. Anderson, 1 female; Bennett, Aug. 12, 1931, M. W. Sanderson, 1 female; Missoula, Aug. 11, 1931, R. H. Beamer, 1 male, 2 females; Missoula, Aug. 11, 1931, M. W. Sanderson, 1 male, 1 female; Jackson, W. b. Sheppard, 1 female (U. S. N. M.); Bozeman, H. Osborn, 1 male, 1 female (U. S. N. M.).

Nebraska: Jefferson County, April 20, 1924, R. H. Beamer and H. B. Hungerford, 6 females; Genoa, Sept. 10, 1931, H. T. Peters, 4 males, 3 females; West Point, June 1884, 1 female (U. S. N. M.); Lincoln, March 11, 1 female (U. S. N. M.).

Nevada: Ely, Aug. 13, 1940, D. E. Hardy, 1 male, 1 female; Ely, Aug. 13, 1940, L. C. Kuitert, 4 females; Carson City, Aug. 9, 1929, Paul W. Oman, 1 male; Carson City, Aug. 9, 1929, R. H. Beamer, 1 female; Eureka, Aug. 8, 1936, R. H. Beamer, 1 male; Baker, White

Pine County, Aug. 16, 1927, H. Notman, 1 male, 1 female; Soda Lakes, near Hazen, July 13, 1911, 1 female; Pyramid Lake, July 16, 1911, 1 male, 1 female; Gerlach, Washoe County, May 29, 1939, P. C. Ting, M. A. Gazier, J. A. Downes and F. Aitken, 1 female (U. S. N. M.); Wells, June 24, 1927, J. M. Aldrich, 1 male, 2 females (U. S. N. L.); Elko, Wickham, 1 female (U. S. N. M.); Nevada, 2 males, 2 females (Uhler Coll., U. S. N. M.); Reno Hot Springs, June 2, 1931, L. S. Sievin, 1 female (Calif. Acad. Sci.).

New Jersey: Westfield, July 3, 1904, 1 male; Hoboken, March 14, 1886, 2 males, 3 females; Hoboken, March 13, 1887, 1 female (U. S. N. M.); Whitesbog, April 10, 1914, 1 male (U. S. N. M.); New Jersey, 1 female (Uhler Coll., U. S. N. M.); Weehawken, Aug. 28, 1894, E. B. Southwick, 5 males, 10 females (A. M. N. H.); New Durham, Aug. 30, 1894, 7 males, 6 females (A. M. N. H.); Anglesea, Aug. 23, 1902, E. P. Van Duzee, 1 male, 1 female (Slosson Coll., A. M. N. H.).

New Mexico: Jemez Springs, July 1, 1941, Burt Hodgden, 12 males, 2 females; Jemez Springs, July 1, 1941, E. L. Todd, 4 males, 1 female; Jemez Springs, July 1, 1941, R. H. Deamer, 1 female; Jemez Springs, Aug. 24, 1919, Woodgate, 2 females; Estancia, Aug. 1925, C. H. Martin, 8 males, 9 females; Tajique, June 25, 1940, D. E. Hardy, 3 males, 2 females; Tajique,

June 25, 1941, E. L. Todd, 1 female; Ruidoso, June 26, 1940, D. E. Hardy, 1 female; Twenty-five miles west of Tularosa, July 1, 1940, R. Beamer, 3 males, 1 female; Twenty-five miles West of Tularosa, July 1, 1940, D. E. Hardy, 1 male, 1 female; White Oak, July 1, 1923, K. C. Doering, 2 females; Santa Fe, July 20, 1936, R. H. Beamer, 1 male, 3 females; Cloudcroft, June 27, 1940, R. H. Beamer, 3 males; Cowles, July 18, 1936, R. H. Beamer, 2 males, 1 female; Torrance County, July 1925, C. H. Martin, 6 males, 6 females; Colfax County, Aug. 21, 1927, L. D. Anderson, 2 males, 3 females; Colfax County, Aug. 21, 1927, P. A. Readio, 5 males, 5 females; Weed, June 28, 1947, L. D. Beamer, 4 males, 2 females; Weed, June 28, 1947, R. H. Beamer, 1 male, 1 female; Mescalero, June 27, 1947, L. D. Beamer, 1 female; May 1, 1948, L. D. Beamer, 1 female; Sandia Mts., 1 female; Albuquerque, 1 female; Albuquerque, June 16, 1909, F. C. Pratt, 1 male (U. S. N. M.); Las Vegas Hot Springs, Aug. 2, H. S. Barber, 1 female (U. S. N. M.); Ft. Defiance, 1 male, 1 female (U. S. N. M.).

New York: Raquette Lake, July 26, 1946, R. H. Beamer, 1 female; Lake Placid, July 30, 1946, R. H. Beamer, 1 male, 1 female; Gilgo Beach, Babylon, Long Island, July 25, 1919, H. M. Parshley, 1 female (Parshley); Wanakena, Aug. 1 - 7, 1917, C. J. Drake, 1 female (Parshley); Buffalo, June 19, 1900, E. P. Van Duzee,

2 males, 2 females; Buffalo, E. P. Van Duzee, 2 females (U. S. N. M.); Rochester, June 20, 1891, 1 male (U. S. N. M.); Tompkin's Cove, Sept. 13, 1910, 1 male, 3 females (A. N. H.); Cold Spring Harbor, June 30, 1930, C. H. Curran, 1 male, 2 females (A. M. N. H.); Cold Spring Harbor, July 29, 1920, J. R. de la Torre-Bueno, 1 male, 2 females; Cold Spring Harbor, Long Island, July 4, 1920, H. M. Parshley, 1 female, July 11, 1920, H. M. Parshley, 1 female, July 15, 1920, H. M. Parshley, 9 males, 5 females, July 20, 1920, H. M. Parshley, 2 males, 2 females, July 21, 1920, H. M. Parshley, 1 female, July 27, 1920, H. M. Parshley, 2 males, 1 female, July 29, 1920, H. M. Parshley, 3 males, 2 females, July 31, 1920, H. M. Parshley, 27 males, 19 females (Parshley); Canisteo, Steuben County, June 3, 1922, H. Notman, 7 males, 8 females, June 5, 1922, H. Notman, 2 females, June 8, 1922, H. Notman, 2 females; Oakfield, Genesee County, June 21, 1922, H. Notman, 1 male, June 23, 1922, H. Notman, 1 male, June 26, 1922, H. Notman, 10 males, 8 females; Lake Tear, Lt. Marcy, Essex County, July 27, 1922, H. Notman, 1 male; Wall-face Mt., Essex County, July 13, 1922, H. Notman, 1 male, 1 female; Indian Pass, Essex County, July 10, 1922, H. Notman, 2 males, 2 females; North Beach, Long Island, June 14, 1917, F. Schott, 1 female; Carmel,

Putnam County, Aug. 11, 1923, 1 female; Babylon, Long Island, Aug. 3, 1923, 1 male, 2 females; Valhalla, Aug. 18, 1923, 1 female; Yaphank, Long Island, July 12, 1913, J. R. de la Torre-Bueno, 1 female; White Plains, July 24, 1909, J. R. de la Torre-Bueno, 1 female, Aug. 8, 1917, J. R. de la Torre-Bueno, 1 male, April 27, 1919, J. R. de la Torre-Bueno, 1 male, Sept. 19, 1920, J. R. de la Torre-Bueno, 5 males, 1 female, Sept. 25, 1920, J. R. de la Torre-Bueno, 3 males, Oct. 2, 1920, J. R. de la Torre-Bueno, 1 female, Oct. 3, 1920, J. R. de la Torre-Bueno, 1 male, 2 females, Oct. 11, 1924, J. R. de la Torre-Bueno, 1 female, March 8, 1925, J. R. de la Torre-Bueno, 1 male, Sept. 28, 1930, J. R. de la Torre-Bueno, 1 female; Ithaca, April 7, 1941, E. D. McDonald, 1 female (Cornell Univ.); Beebe Lake, Ithaca, June 15, 1935, P. P. Babi, 1 female (Cornell Univ.); Taughanick, Ithaca, Oct. 25, 1914, 1 male (Cornell Univ.); Ithaca, May 17, 1913, 1 male, July 4, 1913, 1 female, July 9, 1923, 1 female, Aug. 29, 1935, 1 female (Cornell Univ.); Penn Yan, July 12, 1925, P. P. Babi, 1 male (Cornell Univ.); White Plains, J. R. de la Torre-Bueno, 1 male, 3 females (British Mus.).

North Carolina: Wilmington, April 1935, David G. Hall, 3 males (U. S. N. M.); Hot Springs, 1 male (Slosson Coll., A. I. N. H.).

North Dakota: Leonard, July 25, 1937, R. H.

Beamer, 1 male; Sanborn, July 23, 1937, C. L. Johnston, 1 female; Knox, July 28, 1937, R. H. Beamer, 1 male; McVille, July 27, 1937, R. H. Beamer, 1 female; Linton, July 23, 1937, H. T. Peters, 1 male; Lake Metigoshe, July 30, 1937, R. H. Beamer, 2 males, 1 female; Tappen, July 23, 1937, R. H. Beamer, 1 female; Northwood, July 27, 1937, H. T. Peters, 1 female.

* Ohio: Cleveland, June 29, 1934, M. W. Sanderson, 1 male, 2 females; Shores of Lake Erie, 1 female (U. S. N. M.).

* Oregon: North Powder, July 13, 1931, R. H. Beamer, 26 males, 6 females; North Powder, July 13, 1931, M. W. Sanderson, 2 males, 6 females; North Powder, July 13, 1931, L. D. Anderson, 1 male; Culver City, July 10, 1935, R. H. Beamer, 25 males, 15 females; Waldport, July 11, 1935, R. H. Beamer, 1 male; Waldport, July 4, 1925, 1 male, 5 females (U. S. N. M.); Waldport, J. E. Davis, 1 female; Anthony Lake, July 11, 1931, J. Nottingham, 2 males; Hot Lake, July 13, 1931, M. W. Sanderson, 1 male, 1 female; Hot Lake, July 13, 1931, J. Nottingham, 1 female; Dixie, July 8, 1931, M. W. Sanderson, 3 males, 1 female; Dixie, July 8, 1931, L. D. Anderson, 1 female; Dixie, July 8, 1931, R. H. Beamer, 1 female; Meacham, July 14, 1931, J. Nottingham, 3 males, 5 females; Meacham, July 14, 1931, H. T. Peters, 1 male; Worden, July 1, 1935, R. H. Beamer, 23 males, 11 females; Worden, July 1, 1935, J. D. Beamer,

1 male; Worden, July 1, 1935, R. H. Beamer, Jr., 3 females; Worden, July 1, 1935, Jean Russell, 1 female; South of Worden, July 1, 1935, P. W. Oman, 8 males, 8 females (U. S. N. M.); Boardman, July 15, 1931, M. W. Sanderson, 3 males, 4 females; Boardman, July 15, 1931, J. Nottingham, 2 males; Boardman, July 15, 1931, H. T. Peters, 1 male; Boardman, July 15, 1931, R. H. Beamer, 1 female; Boardman, July 15, 1931, L. D. Anderson, 1 female; Hood River, July 17, 1931, L. D. Anderson, 2 males; Umatilla, July 14, 1931, M. W. Sanderson, 31 males, 25 females; Umatilla, July 14, 1931, L. D. Anderson, 1 female; Criterion, July 2, 1935, R. H. Beamer, 1 female; Mt. Hood, July 3, 1935, R. H. Beamer, 4 males, 1 female; Haines, July 10, 1931, M. W. Sanderson, 1 male, 3 females; Haines, July 10, 1931, J. Nottingham, 1 female; Coos Bay, Coos County, Aug. 8, 1923, H. Notman, 1 male, 1 female; Aug. 7, 1923, H. Notman, 1 male; North Powder Lakes, Aug. 25, 1913, W. D. Edmonston, 4 males, 2 females (U. S. N. M.); Abert Lake, Aug. 2, Evermann, 1 male (U. S. N. M.); Ashland, Sept. 7, 1897, A. P. Morse, 1 male, 4 females (Baker Coll., U. S. N. M.); Portland, Sept. 18, 1897, A. P. Morse, 2 females (Baker Coll., U. S. N. M.); Independence, July 25, 1934, N. P. Larson, 1 male (Oregon State Coll.); Narrows, July 1, 1906, 2 males (Oregon State Coll.);

Blitzen River, July 6, 1906, 1 female (Oregon State Coll.); Willamette River, Sept. 3 - 7, 1932, Joe Schuh, 1 female (Oregon State Coll.); Corvallis, May 27, 1900, 1 male (Oregon State Coll.); Corvallis, April 15, 1930, Joe Schuh, 1 female (Oregon State Coll.); St. Helens, June 22, 1948, V. D. Roth, 1 male (Oregon State Coll.); 15 miles south of Mitchell, Aug. 9, 1943, V. D. Roth, 1 male, 1 female (Oregon State Coll.); Taft, Feb. 1935, 2 males, 1 female (Calif. Acad. Sci.); Diamond Lake, Douglas County, July 16, 1934, E. J. Van Dyke, 3 males, 4 females (Calif. Acad. Sci.); Cannon Beach, June 10, 1927, E. C. Van Dyke, 1 male (Calif. Acad. Sci.); Mt. Hood, July 26, 1929, E. C. Van Dyke, 1 female (Calif. Acad. Sci.); Waldport, June 6, 1925, E. P. Van Duzee, 3 males, 3 females (Calif. Acad. Sci.).

Pennsylvania: Susquehanna River, Northumberland County, Aug. 25, 1932, J. M. Brennen, 45 males, 55 females; Stroudsburg, Aug. 19, 1936, R. H. Beamer, 1 female.

South Dakota: Burdette, July 20, 1937, R. H. Beamer, 42 males, 37 females; Burdette, July 20, 1937, H. T. Peters, 7 males, 23 females; Draper, July 19, 1937, H. T. Peters, 1 female; Piedmont, July 17, 1937, R. H. Beamer, 1 male, 1 female; Wasta, July 17, 1937, R. H. Beamer, 2 females; Redfield, July 20, 1937, R. H. Beamer, 3 females; Redfield, July 20, 1937, C. L.

Johnston, 2 males; Brookings, H. Osborn, 1 male (U. S. N. M.); Brookings, May 23, 1921, H. C. Severin, 3 males, June 27, 1921, H. C. Severin, 2 females, June 28, 1921, H. C. Severin, 1 female (Parshley); Big Stone, Aug. 27, 1921, H. C. Severin, 2 males, 4 females (Parshley); Pierre, Aug. 6, 1919, 1 female (Parshley); Brookings, July 22, 1922, H. C. Severin, 1 male, June 12, 1923, H. C. Severin, 1 male, 1 female, June 25, 1930, H. C. Severin, 1 female, Oct. 8, 1930, H. C. Severin, 1 male, June 21, 1943, H. C. Severin, 8 males, 19 females, June 23, 1943, H. C. Severin, 1 male, June 26, 1943, H. C. Severin, 1 male, June 28, 1943, H. C. Severin, 2 males, July 23, 1943, H. C. Severin, 1 male, 4 females, July 25, 1943, H. C. Severin, 1 female, July 27, 1945, H. C. Severin, 1 male, June 15, 1944, H. C. Severin, 2 females, June 24, 1944, H. C. Severin, 2 males, July 22, 1945, H. C. Severin, 1 female, July 25, 1945, H. C. Severin, 1 male, Aug. 1, 1945, H. C. Severin, 1 male, 11 females, Aug. 6, 1945, H. C. Severin, 1 male, 2 females (Severin); Brookings, Aug. 20, 1942, N. Larson, 1 female (Severin); White River, July 23, 1939, H. C. Severin, 1 female (Severin); Wood, July 23, 1939, H. C. Severin, 1 female (Severin); Black Hills, 10 miles north of Wind Cave, June 22, 1940, H. C. Severin, 1 male (Severin); Springfield, June 21, 1924, H. C. Severin, 1 male, (Severin); Canton, June 16, 1924, H. C.

Severin, 1 female (Severin); Kennebec, July 11, 1940,
 H. C. Severin (Severin); Oak Lake, Aug. 7, 1940, H. C.
 Severin, 1 female (Severin); Oak Lake, Aug. 7, 1940,
 G. B. Spawn, 1 female (Severin); Rapid City, June 22,
 1940, H. C. Severin, 1 female (Severin); State Game
 Lodge, June 17, 1941, H. C. Severin, 1 female (Severin);
 5 miles west of Parmlee, Sept. 14, 1940, G. B. Spawn,
 1 female (Severin); Devil's Gulch, Garretson, Aug. 20,
 1940, G. B. Spawn, 1 female (Severin); Smithwick, June
 21, 1940, H. C. Severin, 1 male (Severin); Wisland,
 June 15, 1941, H. C. Severin, 1 female (Severin); Leola,
 June 25, 1940, H. C. Severin, 1 female (Severin);
 Stockade Lake, Custer, June 22, 1940, H. C. Severin,
 2 females (Severin); Clear Lake, Aug. 7, 1940, H. C.
 Severin, 1 male, 4 females (Severin); Pukwana, June
 11, 1940, H. C. Severin, 3 males, 3 females (Severin);
 Roswell, Aug. 13, 1942, H. C. Severin, 1 male, 3 fe-
 males (Severin); Britton, June 14, 1941, H. C. Severin,
 1 male, 1 female (Severin); Chamberlain, July 22,
 1942, H. C. Severin, 1 male, 1 female (Severin);
 Spearfish, Aug. 1, 1944, G. B. Spawn, 2 females (Severin);
 Selby, Aug. 11, 1942, G. B. Spawn, 22 males, 24 fe-
 males (Severin); Tinton, July 26, 1947, H. C. Severin,
 1 male (Severin); Dupree, June 25, 1947, H. C. Severin,
 1 female (Severin); Florence, Sept. 7, 1948, H. C.
 Severin, 1 male (Severin); Lake Poinsett, Aug. 29,

1927, H. C. Severin, 1 male, 2 females (Severin);
 Sand Hills, Batesland, June 20, 1928, H. C. Severin,
 1 male, 1 female (Severin); Centerville, June 14,
 1928, H. C. Severin, 1 male (Severin); Madison, April
 28, H. C. Severin, 1 female (Severin); Newton Hills,
 Canton, June 25, 1935, H. C. Severin, 3 females
 (Severin); Hecla, June 18, 1944, H. C. Severin, 1
 female, June 20, 1944, H. C. Severin, 1 female, June
 26, 1944, H. C. Severin, 1 female, Aug. 2, 1944, H.
 C. Severin, 1 female (Severin); Sturgis, July 21,
 1947, H. C. Severin, 1 male (Severin); Jordon, June
 14, 1940, H. C. Severin, 1 male (Severin); Ft.
 Thompson, July 8, 1943, D. T. Murdock, 2 males, 1 fe-
 male (Severin); Lake Oakwood, June 14, 1923, H. C.
 Severin, 1 female (Severin); Wolsey, Aug. 12, 1942,
 G. B. Spawn, 1 male (Severin); Faith, June 26, 1942,
 G. B. Spawn, 1 female (Severin); Larive Lake, June 22,
 1940, H. C. Severin, 1 female (Severin); Lake Hendricks,
 July 12, 1922, H. C. Severin, 2 males, 5 females,
 (Severin); Hills City, July 16, 1945, H. C. Severin, 1
 female, (Severin); Waubay Refuge, June 22, 1940, H.
 C. Severin, 1 male, 15 females (Severin); Waubay, July
 26, 1924, H. C. Severin, 2 males, 4 females, Sept. 13,
 1929, H. C. Severin, 1 female (Severin); Vermillion,
 July 24, 1945, H. C. Severin, 4 females (Severin);
 Elk Point, July 18, 1945, H. C. Severin, 2 females,

July 22, 1945, H. C. Severin, 1 male, 2 females, July 25, 1945, H. C. Severin, 1 male, Aug. 8, 1945, H. C. Severin, 1 female, Aug. 13, 1945, H. C. Severin, 1 female, Sept. 1, 1945, H. C. Severin, 1 male, Sept. 13, 1945, H. C. Severin, 1 male, July 8, 1946, H. C. Severin, 1 male, Aug. 1, 1946, H. C. Severin, 1 female (Severin); Highmore, June 22, 1944, H. C. Severin, 1 female, July 1, 1944, H. C. Severin, 1 male, 1 female, July 16, 1944, H. C. Severin, 1 male, July 15, 1945, H. C. Severin, 1 female, July 20, 1945, H. C. Severin, 1 male, July 26, 1945, H. C. Severin, 4 females (Severin).

Tennessees: Clarksville, 1 male (U. S. N. M.); Knoxville, Dec. 1889, 1 female (U. S. N. M.).

Texas: Tornillo, June 26, 1947, R. H. Beamer, 3 males, 4 females; Ft. Davis, June 22, 1947, R. H. Beamer, 1 male; Frijole, July 16, 1933, R. H. Beamer, 1 female; Presidio County, July 16, 1927, R. H. Beamer, 1 male; Dallas County, Oct. 28, 1937, D. D. Millspaugh, 1 male, 1 female; Dallas, June, 1 male (Parshley); Port Arthur, Sept. 15, 1930, 1 female (U. S. N. M.); El Paso, July 24, 1914, J. C. Bradley, 1 female (Cornell Univ.).

Utah: Duchesne, Aug. 17, 1940, L. C. Kuitert, 17 males, 4 females; Fremonton, July 5, 1931, J. O. Nottingham, 6 males, 12 females; Fish Lake, Aug. 16, 1929, R. H. Beamer, 1 male, 1 female; Fish Lake, Aug. 16, 1929, P. W. Oman, 10 males, 1 female; Weber Canyon,

July 4, 1931, J. Nottingham, 22 males, 33 females;
 Vernal, Aug. 2, 1947, R. E. Abel, 5 males, 1 female;
 Park City, Aug. 1, 1947, R. H. Beamer, 1 female;
 Spanish Fork, Aug. 15, 1940, L. C. Kuitert, 1 male, 1
 female; Pintura, Aug. 11, 1929, R. H. Beamer, 1 male;
 Garfield, July 9, 1911, 1 male; Beaver, Beaver County,
 Aug. 18, 1927, H. Notman, 1 male, Aug. 19, 1927, H.
 Notman, 2 females; Corinne, Sept. 19, 1929, G. F.
 Knowlton, 1 male (U. S. N. M.); Seven miles West of
 Corinne; May 11, 1934, G. F. Knowlton, 1 female (U. S.
 N. M.); Logan, March 11, 1934, T. O. Thatcher, 1 fe-
 male (U. S. N. M.); Lluff, Aug. 30, 1942, G. F.
 Knowlton, 2 females (U. S. N. M.); Near Salt Lake,
 Drake and Andre, 1 female (U. S. N. M.); Saltair,
 Great Salt Lake, July 5, J. M. Aldrich, 1 male, 2 fe-
 males (U. S. N. M.); Mt. Timpanogos, July 8, 1922,
 E. P. Van Duzee, 1 male, 1 female (Calif. Acad. Sci.);
 Saltair, Wickham, 1 female (Calif. Acad. Sci.).

Virginia: Natural Bridge, Aug. 22, 1918, A. N.
 Caudell, 2 males, 1 female (U. S. N. M.).

Washington: Kalama River, July 21, 1931, J.
 Nottingham, 7 males, 7 females; Kalama River, July 21,
 1931, H. T. Peters, 1 male; Kalama River, July 21,
 1931, L. D. Anderson, 1 female; Mt. Baker, July 29,
 1931, J. Nottingham, 1 female; Conway, July 28, 1931,
 H. T. Peters, 1 male, 1 female; Arlington, July 28,

1931, W. Sanderson, 1 male, 1 female; Arlington, July 28, 1931, J. Nottingham, 1 male, 1 female; Quinalt, July 26, 1931, L. D. Anderson, 5 males, 9 females; Quinalt, July 26, 1931, M. W. Sanderson, 1 male, 6 females; Mt. Adams, July 24, 1921, A. L. Melander, 1 female; Mazama Ridge, Mt. Rainier, July 31, 1923, H. Notman, 1 male; Paradise Valley, Mt. Rainier, July 11, 1915, 19 males, 27 females (Cornell Univ.); Mt. Rainier, 1915, 7 males, 9 females (Cornell Univ.); Mt. Rainier, National Park, Aug. 31, 1928, M. D. Leonard, 1 male (Cornell Univ.); Prosser, July 8, 1935, P. W. Oman, 1 male, 3 females (U. S. N. M.); Sumner, July 6, 1935, P. W. Oman, 1 male, 2 females (U. S. N. M.); Sprague, June 28, R. C. Shannon, 1 male (U. S. N. M.); Easton, 1 female (U. S. N. M.); Seattle, 1 female (U. S. N. M.); Olympia, Feb. 9, 1944, 1 female (U. S. N. M.); Olympia, 1 female (U. S. N. M.); Olympia, 3 females (Uhler Coll., U. S. N. M.); Northbend, King County, July 10, 1920, Helen Van Duzee, 1 male, 2 females (Calif. Acad. Sci.); Northbend, King County, July 10, 1920, E. P. Van Duzee, 2 males, 2 females (Calif. Acad. Sci.); Paradise Park, Mt. Rainier, July 15 - 31, 1905, E. C. Van Dyke, 1 female (Calif. Acad. Sci.).

Wisconsin: Milwaukee, June 8, 1942, P. B. Lawson, 9 males, 5 females; Milwaukee County, July 6, 1900, 1 male; Wisconsin, July, 1 female; Beaver Dam, June 24, 1910,

W. E. Snyder, 1 female (Parshley).

* Wyoming: Yellowstone Park, Aug. 15, 1931, J. Nottingham, 13 males, 19 females; Yellowstone Park, Aug. 15, 1931, M. W. Sanderson, 17 males, 24 females; Frypan Lake, Yellowstone Park, Aug. 15, 1931, J. Nottingham, 23 males, 19 females; Frypan Lake, Yellowstone Park, Aug. 15, 1931, L. D. Anderson, 22 males, 19 females; Frypan Lake, Yellowstone Park, Aug. 15, 1931, R. H. Beamer, 40 males, 22 females; Frypan Lake, Yellowstone Park, Aug. 15, 1931, H. T. Peters, 1 male, 3 females; Grand Teton National Park, Aug. 18, 1931, M. W. Sanderson, 1 male, 5 females; Yellowstone Park, Aug. 1915, 2 males, 5 females (Cornell Univ.); Yellowstone Park, Aug. 22, 1915, 2 males, 1 female (Cornell Univ.); Big Horn Mts., July 15, 1896, R. P. Currie, 1 female (U. S. N. M.); Klikitat Valley, Thorpe's, Wyoming Territory, July 10, 1882, 1 female (Uhler Coll., U.S. N. M.); Jackson, July 13 - 17, 1920, 1 female (A. N. H.).

Salda polita Uhler

(Plate V, figures 2a, 2b)

1877. Salda polita Uhler, P. R. Bull. U. S. Geol. Geog. Surv. III, p. 441 (describes from California).
1886. Salda polita, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1893. Salda polita, Uhler, P. R. Proc. Ent. Soc. Wash. II, p. 383 (records from Utah).
1896. Salda polita, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 222.
1906. Salda polita, Snow, F. H. Trans. Kans. Acad. Sci. XX, Pt. 1, p. 180 (records from Arizona).
1909. Acanthia polita, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.
1910. Salda polita, Banks, Nathan. Catalog Nearct. Hemip., p. 12.
1912. Ioscytus polita, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 20 (designates as type of new genus).
1912. Ioscytus polita flavicosta Reuter, O. M. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 21 (designates specimens from Utah as a new variety).
1914. Ioscytus politus, Van Duzee, E. P. Trans. San

- Diego Soc. Nat. Hist. II, p. 32 (records from California and Colorado).
1916. Ioscytus politus, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1916. Ioscytus politus flavicosta, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Ioscytus politus, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 447.
1917. Ioscytus politus flavicosta, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 447.
1920. Ioscytus politus, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 76 (quotes original description).
1920. Ioscytus politus flavicosta, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 77 (translation of original description).

Size: Length 3.50 mm. to 4.15 mm. male; 3.83 mm. to 4.81 mm. female: Width of pronotum 1.20 mm. to 1.39 mm. male; 1.32 mm. to 1.72 mm. female.

Color: Color extremely variable, ranging from specimens which are entirely black to those whose hemelytra are almost entirely red. The following description is written from specimens which most nearly approximate a typical pattern. General color black, with red hemelytra. Head black, with a yellow spot on

each side of ocelli. Clypeus, middle of labrum and raised apex of frons red. Rostrum brown. First and second antennal segments red; third and fourth segments brown-black. Pronotum and scutellum black; venter of thorax black, episternal plates before anterior and middle coxae narrowly margined with yellow. Clavus black; corium red, occasionally mottled with black or entirely black; embolium yellow, often broadly marked with black on medial half and before apex, rarely entirely black. Membrane yellow-brown, darker apically and medially. Abdominal sterna black, narrowly margined with yellow-brown posteriorly; last abdominal sternum of female black, with a quadrangular yellow spot on middle at apex. Genital capsule of male dark brown or black. Coxae black, tipped with yellow; trochanters yellow; femora yellow, apical half usually red; tibiae yellow or orange; tarsi yellow, last segment brown apically. Spines of legs black.

Structural characteristics: General shape oval to elongate-oval. Clothed with fine, depressed, golden pubescence on clavus, legs, antennae, frons and venter of abdomen; pronotum and scutellum are occasionally densely pubescent; venter of head and thorax densely silvery pubescent. Dorsal surfaces with many scattered, long, stiff, erect, black setae. Width of head as compared to width of pronotum 74 100 male; 76 100

female. Frons lustrous, minutely scabrous; apex of frons raised into a curved carinate ridge which is sulcate in the middle; frons not sulcate along median line between eyes. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long; third and fourth segments distinctly swollen, fusiform; second segment slender or swollen. Length of antenna as compared to length of hind tibia 116 100 male, 128 100 female; length of second antennal segment as compared to width of head 68 100 male, 86 100 female. Antennal segmentation 1 2 3 4 17 29 ; 27 27 male; 16 34 24 26 female. Pronotum polished, smooth, rugulose along lateral margins; median length of posterior lobe as compared to median length of anterior lobe 66 100 male, 60 100 female. Anterior lobe strongly elevated, sulcus behind it deeply incised; this sulcus and sulcus before anterior lobe coarsely punctate. Median fovea located on anterior third of anterior lobe; anterior lobe obsoletely, punctately depressed on each side of median fovea. Posterior lobe distinctly explanate along lateral margins and on each side of anterior lobe; lateral margins straight or slightly, convexly curved, strongly convergent. Scutellum polished, obsoletely, minutely scabrous on anterior half. transversely rugulose on pos-

terior half. Clavus opaque; corium and membrane lustrous, embolium polished. Lateral half of embolium upturned. Claval suture distinct; suture between corium and embolium obsolete behind middle; corial veins obsolete, veins of membrane distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded; sternum approximately twice as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 2a and 2b. Length of posterior tibia as compared to width of head 206 100 male; 197 100 female. Brachypterous forms are not known.

Comparative notes: The red hemelytra of typically colored specimens is characteristic of this species. In all specimens examined the red coloration is found on the clypeus and on the apex of the frons. The swollen antennae and the stiff, black setae of the hemelytra will distinguish S. polita from most of the species. S. polita resembles S. beameri new species in general facies but may be distinguished by the larger size, different hemelytral coloration, and by the male genitalia. The scutellum is slightly convex in S. polita, distinctly swollen in S. beameri.

Location of types: Described from San Diego,

California. The type series is represented by one specimen in the Museum of Comparative Zoology at Harvard College

Data on distribution: Recorded from Arizona, California, Colorado and Utah. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

U. S. A.: Arizona: Hot Springs, June 24, H. S. Barber, 1 male (U. S. N. M.); Tucson, Dec. 1897 - Jan. 1898, R. E. Kunze, 2 males (Eaker Coll., U. S. N. M.); Phoenix, Aug. 2 - 7, 1917, 2 males (Cornell Univ.); Phoenix, Jan. 1, 1905, J. R. de la Torre-Eueno, 1 female; Maricopa County, July 2, 1929, P. W. Oman, 1 male; Indian Hot Springs, Aug. 6, 1941, R. H. Beamer, 1 male, 1 female.

California: Onyx, July 23, 1940, R. H. Beamer, 1 male; California, 1 female (U. S. N. M.); Tulare, Aug. 5, 1897, A. P. Morse, 1 female (Uhler Coll., U. S. N. M.); Goodyear Bar, Sierra County, June 5, 1928, E. H. Nast, 1 female (Calif. Acad. Sci.); Coachella, May 19, 1928, E. C. Van Dyke, 1 male (Calif. Acad. Sci.); Pittsburg, Nov. 25, 1928, E. P. Van Duzee, 1 female (Calif. Acad. Sci.).

Colorado: Western Colorado, Sept. 28, 1921, Grace Wiley, 3 males, 2 females; Denver, July 12, 1903,

E. P. Van Duzee, 1 male, 2 females.

* New Mexico: Estancia, Aug. 19, 1925, C. H. Martin, 1 female; Las Vegas Hot Springs, March 27, T. D. A. Cockerell, 1 female (U. S. N. M.).

Oregon: North Powder, July 13, 1931, M. W. Sanderson, 1 male; North Powder, July 13, 1931, H. T. Peters, 1 female.

Utah: Vernal, Aug. 2, 1947, R. E. Elbel, 2 males, 1 female; Emery County, Sept. 20, 1921, 4 females; Salt Lake, June 14, 1891, 2 females, June 25, 1891, 2 females (Uhler Coll., U. S. N. M.); Salt Lake, June 25, 1891, 1 female.

Salda pumila (Blatchley)

(Plate V, figures 5a, 3b)

1928. Micranthia pumila Blatchley, W. S. Jl. New York Ent. Soc. XXXVI, p. 22 (describes from Florida).
1930. Micranthia pumila, Blatchley, W. S. in Blatchleyana, p. 66, (calls attention to typographical error in spelling of specific name in original description).
1939. Micracanthia humilis, Barber, H. G. Sci. Surv. Porto Rico, N. Y. Acad. Sci, XIV, p. 417 (a misidentification; records from Porto Rico).

Size: Length 2.40 mm. to 2.80 mm. male; 2.65 mm. to 3.19 mm. female. Width of pronotum 0.87 mm. to 1.05 mm. male; 0.99 mm. to 1.17 mm. female.

Color: General color black marked with white, brown and pruinose blue, pattern on hemelytra vivid (in faded specimens the pruinose blue markings are lacking). -eyes red-brown to dark brown. Head black with a yellow spot on each side of ocelli. Apex of frons yellow, rarely black; clypeus yellow or brown; labrum dark brown, rarely red-brown, frequently yellow on the middle; apex of bucculae yellow. First antennal segment yellow-brown to dark brown beneath,

yellow to yellow-brown above; second segment yellow-brown to dark brown, third and fourth segments red-brown to brown-black. Rostrum yellow to yellow-brown. Pronotum, scutellum and venter of thorax black. Clavus black with a white spot at middle near apex; corium black with pruinose blue markings along lateral margin on basal half and along claval suture on posterior third (in faded specimens white spots are found which were obscured by the pruinose areas of well preserved specimens); embolium yellow-white along lateral margin, white on median half, with a black triangle with its base on medial margin at end of median third of the length of embolium; other brown or black markings are usually present before and behind the black triangle. Nodal furrow usually brown. Membrane yellow-white with contrasting brown veins, slightly infumed along veins and marked with one or two diffused brown spots in each areole. Abdominal sterna brown to black, usually narrowly margined with yellow apically; last abdominal sternum of female brown to black, narrowly margined with yellow-white apically. Genital capsule of male dark brown or black. Coxae black or brown, narrowly tipped with yellow; trochanters yellow, femora yellow to yellow-brown, palest basally; tibiae yellow to yellow-brown, brown-tipped apically and basally; tarsi yellow tipped with brown. Spines of legs dark brown to

black.

Structural characteristics: General shape oval.

Clothed with a fine, recumbent pubescence, golden above, silvery beneath. Width of head as compared to width of pronotum 85 100 male; 81 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a straight carinate ridge which is sulcate at middle and slightly upturned at ends. Frons convex, rarely obsolete sulcate along median line. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, the third segment nearly cylindrical; length of antennae as compared to length of hind tibia 137 100 male, 133 100 female; length of second antennal segment as compared to width of head 45 100 male, 44 100 female. Antennal segmentation 1 2 3 4 17 24 29 29 male; 18 25 29 28 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 80 100 male; 78 100 female. Anterior lobe moderately elevated, sulcus separating it from the posterior lobe moderately incised; median fovea located before middle of anterior lobe; anterior lobe slightly depressed behind median fovea. Posterior lobe narrowly explanate along lateral margins; lateral margin straight or

slightly concavely curved, strongly convergent. Scutellum lustrous, minutely scabrous, posterior half minutely, transversely rugulose. Clavus, corium and black triangle of embolium opaque, remainder of hemelytron lustrous. Sutures of hemelytra distinct; corial veins obsolete; veins of membrane distinct, areoles forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded; sternum moderately produced, approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 3a and 3b. Length of posterior tibia as compared to width of head 136 100 male; 135 100 female. Brachypterous forms are not known.

Comparative notes: The dark color of the labrum and the relative proportion of the antennal segments will distinguish this species from S. humilis and S. quadrimaculata. The second antennal segment is shorter than the third segment in S. pumila but longer in S. humilis and S. quadrimaculata. S. pumila most closely resembles S. hungerfordi new species but lacks the polished, inflated apical half of the scutellum characteristic of that species; the anterior lobe of the pronotum of S. pumila is not so strongly elevated and is slightly depressed behind the median fovea.

Location of types: The holotype is a male from Royal Palm Park, Florida, April 6, 1927, collected by W. S. Blatchley. A female paratype from Dunedin, Florida, February 20, 1922, W. S. Blatchley, is designated as the allotype. The paratype, whose sex is unknown to the writer, is from Ft. Myers, Florida, April 26. These specimens are in the Blatchley collection at Purdue University. The holotype and allotype have been examined by the writer.

Data on distribution: Recorded only from the type series from Florida. In addition to the holotype and allotype the following specimens have been examined (new records from major political areas are indicated by an asterisk):

CUBA: Ojo de Agua, El Estero del Rio Yumuri, Matanzas, June 12, 1932, P. J. Bermudez, 1 female.

PORTO RICO: Tortuguero Lake, March 20, 1935, J. G. Diaz, 1 female; Ponce, Nov. 15, 1946, J. Maldonado Capriles, 1 male, 2 females (Usinger); San Juan, July 9 - 12, 1914, 1 male (A. M. H.).

U. S. A.: Florida: Pensacola, July 12, 1934, R. H. Beamer, 1 female; Archer, July 31, 1930, R. H. Beamer, 1 female; Lacoochee, Aug. 18, 1930, Paul W. Oman, 1 male; LaBelle, March 13, 1947, R. H. Beamer,

1 female; Branford, July 31, 1930, Paul W. Oman, 1 female; Homestead, March 14, 1947, R. H. Beamer, 1 male; Fruitville, Aug. 11, 1930, Paul W. Oman, 1 male; South Bay, March 13, 1947, R. H. Beamer, 2 males, 1 female; Lee County, Jan. 27, 1944, 1 female (U. S. N. M.); Jacksonville, 1 female (U. S. N. M.); Santa Rosa Island, Okaloosa County, May 16, 1927, H. Notman, 3 females; Ponce de Leon, July 13, 1934, R. H. Beamer, 1 male.

Georgia: Macon, July 25, 1930, Paul W. Oman, 1 male; Savannah, May 1943, R. L. Usinger, 1 male (Usinger).

Louisiana: Slidell, June 25, 1948, R. H. Beamer, 1 female; 15 miles east of Creole, June 18, 1948, R. H. Beamer, 1 male; Mandeville, June 24, 1948, R. H. Beamer, 1 male; Covington, June 23, 1948, R. H. Beamer, 1 male.

* Maryland: 2.3 miles east of Piney Point, July 12, 1931, H. S. Barber, 2 males (U. S. N. M.).

Pennsylvania: Peck's Pond, Aug. 20, 1946, L. D. Beamer, 1 male.

Texas: Aransas Pass, Jan 2, 1946, R. H. Beamer, 1 male.

Virginia: Norfolk, July 13, 1934, R. H. Beamer, 1 male, Sept. 4, 1943, R. H. Beamer, 1 female; Norfolk, Aug. 11, 1934, P. McKinstry, 4 females.

Salda quadrimaculata Champion

(Plate V, figures 4a, 4b)

1901. Salda quadrimaculata Champion, G. C. Biol. Centr.-Amer., Rynch. II, p. 342, Tab. XX, fig. VIII (describes from Panama).
1909. Acanthia quadrimaculata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 177.
1914. Micranthia pusilla Van Duzee, E. P. Trans. San Diego Soc. Nat. Hist. II, p. 32 (describes synonym from Calif.).
1916. Micracanthia pusilla, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Micracanthia pusilla, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 447.
1918. Micracanthia pusilla, Van Duzee, E. P. Proc. Calif. Acad. Sci., 4th Series, VII, p. 286 (records from Calif.).
1920. Micracanthia pusilla, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 75 (quotes original description).
1923. Micranthia pusilla, Van Duzee, E. P. Proc. Calif. Acad. Sci. XII, p. 166 (records from Lower California).
1944. Micracanthia pusilla, Harris, H. M., and Shull,

W. E. Iowa State Coll. Jl. Sci. XVIII, p. 208
(record from Idaho).

Size: Length 2.40 mm. to 2.85 mm. male; 2.92 mm. to 3.03 mm. female, Width of pronotum 0.97 mm. to 1.18 mm. male; 1.17 mm. to 1.20 mm. female.

Color: General color black marked with white. Eyes dark brown. Head black with a yellow spot on each side of ocelli; apex of frons brown or yellow; clypeus brown or yellow, labrum dark brown or black, pale brown on middle. First antennal segment yellow above black beneath, second segment pale brown to dark brown, third and fourth segment dark brown. Rostrum dark brown. Pronotum, scutellum and venter of thorax black. Clavus black with a white spot on middle near apex. Corium black with a white spot near lateral margin at middle, and another near middle of apex; in well preserved specimens apical half of corium is pruinose along claval suture. Embolium black with a transverse yellow-white band at end of basal third and on middle of apical third. Nodal furrow black. Membrane yellow-brown, with one or two brown spots within each areole, veins brown. Abdominal sterna dark brown or black, last abdominal sternum of female brown basally and medially, produced portion white laterally and apically. Genital capsule of male dark brown or

black. Coxae dark brown or black; trochanters yellow; femora dark brown or black, tipped with yellow; tibiae yellow-brown, tipped with brown basally and apically, often infuscated at middle; tarsi yellow, tipped with brown. Spines of legs black.

Structural characteristics: General shape oval. Clothed with a fine, recumbent pubescence, golden above, silvery beneath. Width of head as compared to width of pronotum 77 100 male; 78 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a carinate ridge which is obsoletely sulcate at middle and upturned at a right angle at ends. Frons convex, rarely obsoletely sulcate along the median line. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae moderately long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 108 100 male, 108 100 female; length of second antennal segment as compared to width of head 47 100 male, 45 100 female. Antennal segmentation 1 2 3 4 18 31 24 27 male; 17 31 25 27 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 84 100 male, 84 100 female. Anterior lobe moderately

elevated, sulcus separating it from posterior lobe moderately incised; median fovea located before middle of anterior lobe. Posterior lobe not explanate along lateral margins; lateral margins straight or slightly convexly curved, strongly convergent. Scutellum lustrous, minutely scabrous. Clavus, corium and the black marking behind middle of embolium opaque. Anterior half and lateral margin of embolium and membrane lustrous. Sutures of hemelytra distinct; corial veins obsolete; veins of membrane distinct, areoles forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded; sternum moderately produced, more than four times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 4a and 4b. Length of posterior tibia as compared to width of head 130 100 male; 136 100 female. Brachypterous forms are not known.

Comparative notes: This species resembles S. humilis (Say) which has longer antennae (in comparison to width of head), differently patterned hemelytra and is larger in size. The dark brown or black femora, the dark brown rostrum the predominant black color of the embolium and the lack of a white spot at end of basal fourth of the lateral margin of the corium will serve to distinguish this species from S. humilis.

The third antennal segment of S. quadrimaculata is subequal to the distance between the inner margins of the eyes, measured on a line tangent to the posterior edge of the ocelli; the third antennal segment of S. humilis is distinctly longer than the distance between the eyes at this point.

Location of types: Described from two females from Pena Elanca, Panama, collected by G. C. Champion. These specimens are in the British Museum. A male labeled "Eishop, California, July 27, 1947, R. H. Beamer" is described above and is designated as the allotype; the males listed below in "data on distribution" are designated as parallotypes. The allotype is in the Francis Huntington Snow Entomological Collections; the parallotypes are in the Snow Collections; or in the collections of the museums listed after the specimens. S. quadrimaculata is identical with Micranthia pusilla Van Duzee, 1914. M. pusilla must be considered to be a synonym of S. quadrimaculata since the latter name has priority. The types of M. pusilla, three males and two females from Lakeside and Alpine, California, are in the collection of the California Academy of Sciences.

Data on distribution: This species and its synonym are recorded from Panama, Baja California in

Mexico and in the United States from California and Idaho. The male specimens listed below are paratypes. In addition to the allotype, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

MEXICO: Chihuahua: Carimechi, Rio Mayo, Dec. 12, 1934, H. S. Gentry, 1 male, 2 females.

Mexico: Real de Arriba, Temescaltepec, May 25, 1933, H. E. Hinton and R. L. Usinger, 1 female, June 4, 1933, H. E. Hinton and R. L. Usinger, 2 females (Usinger).

U. S. A.: California: Onyx, July 23, 1940, R. H. Beamer, 3 females; Onyx, July 23, 1940, L. C. Kuitert, 1 male; Campo, July 18, 1940, R. H. Beamer, 2 males, 2 females; Kernville, July 24, 1940, R. H. Beamer, 1 female; Mammoth Lakes, July 29, 1940, R. H. Beamer, 1 male, 1 female; Owens Lake, July 26, 1947, R. H. Beamer, 1 female; California, 1 female; Colfax, Aug. 8, 1921, 1 male (A. M. N. H.); Fresno, April 27, E. A. Schwarz, 1 female (U. S. N. M.); Tehama, Aug. 28, 1897, A. P. Morse, 1 male (Baker Coll., U. S. N. M.); Yosemite Valley, Aug. 10, 1897, A. P. Morse, 1 female (Baker Coll., U. S. N. M.); Jenny Lind, Calaveras County, Oct. 21, 1917, J. C. Eradley, 1 female (Cornell Univ.); Los Angeles, 1 male

(Uhler Coll., U. S. N. M.); Mokelumne Hill, Calaveras County, June 27, 1931, R. L. Usinger, 1 female (Usinger); Bridgeport, Mono County, June 23, 1929, R. L. Usinger, 2 females (Calif. Acad. Sci.); Lake Tahoe, Bijou, June 27, 1929, R. L. Usinger, 1 male (Calif. Acad. Sci.).

Idaho: Jerome, Sept. 12, 1931, 1 male (U. S. N. M.).

* Montana: Missoula, Aug. 11, 1931, R. H. Beamer, 1 male, 1 female; Eozeman, H. Osborn, 1 female (U. S. N. M.).

* Nevada: Yerington, Lyon County, July 13, 1909, J. P. Eaumberger, 1 female.

Utah: Washington County, 1 male (U. S. N. M.); Duchesne, Aug. 17, 1940, L. C. Kuitert, 1 male.

Salda saltatoria (Linnaeus)

(Plate V, figures 5a, 5b)

1758. Cimex saltatorius Linnaeus, C. Syst. Nat.,
Edn. 10, p. 448 (describes from "Europa").

(For further references concerning the Palaearctic records and synonyms of S. saltatoria see Reuter, O. M. 1895, Acta Soc. Sci. Fennicae XXI, p. 42, Oshanin, B. 1909, Verz. Pala. Hemip. I, Lief. III, p. 591 and Van Duzee, E. P. 1917, Catalog of Hemip. Amer., p. 445.)

1873. Acanthia saltatoria, Stal, C. Enum. Hemip. III,
p. 149 (records from New York, Illinois).

1876. Salda saltatoria, Uhler, P. R. U. S. Geol.
Geog. Surv. I, p. 334 (records from British
Columbia, Nebraska, Illinois, New York and
Maine).

1886. Salda saltatoria, Uhler, P. R. Check List
Hemip. North Amer., p. 27.

1896. Salda saltatoria, Lethierry, L., and Severin,
G. Catalogue Gén. Hémipt. III, p. 223.

1901. Salda saltatoria, Champion, G. C. Biol. Centr.-
Amer., Rynch. Vol. II, p. 341 (records from
Guatemala).

1909. Acanthia saltatoria, Kirkaldy, G. W., and Torre-

- Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 178.
1910. Salda saltatoria, Eanks, Nathan. Catalog Nearct. Hemip., p. 12.
1912. Acanthia saltatoria, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 14 (as genotype of Acanthia).
1914. Saldula saltatoria, Van Duzee, E. P. Canad. Ent. XLVI, p. 387 (as genotype of Saldula, new name for Acanthia).
1916. Saldula saltatoria, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Saldula saltatoria, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 445.
1917. Saldula saltatoria, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 111 (records from Massachusetts, Rhode Island and Connecticut).
1920. Saldula saltatoria, Hungerford, H. E. Kans. Univ. Sci. Bull, XI, p. 73.
1923. Saldula saltatoria, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 415 (keys, records from Connecticut).
1926. Saldula saltatoria, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1011 (redescribes).
1928. Saldula saltatoria, Torre-Bueno, J. R. de la.

in Cornell Univ. Agr. Expt. Sta. Memoir 101,
Insects of N. Y., p. 138 (records from New York).

Size: Length 3.19 mm. to 3.73 mm. male; 3.36 mm. to 4.24 mm. female. Width of pronotum 1.28 mm. to 1.41 mm. male; 1.28 mm. to 1.67 mm. female.

Color: General color black, marked with yellow and pruinose blue areas. On faded specimens pruinose areas are absent. Eyes brown. Head black with a yellow spot on each side of ocelli; apex of frons, clypeus and middle of labrum yellow; apex of bucculae yellow. Rostrum yellow-brown. First antennal segment black beneath yellow above; second segment red-brown, apical fourth yellow-brown; third and fourth segments dark brown. Pronotum and scutellum black; venter of thorax black, episternal plates before anterior and middle coxae narrowly margined with yellow. Clavus black, pruinose blue at base, with a prominent, brilliant yellow, elongate spot opposite commissure. Corium black, with pruinose blue or yellow spots scattered on surface, the most prominent spot is an elongate-oval ring along lateral margin extending from end of basal fourth to middle; a prominent brilliant yellow, elongate streak on apical fourth near lateral margin. Embolium black with a white spot on middle near apex and pruinose spots at end of apical third and at middle;

lateral margin yellow from end of basal fourth to middle. Membrane yellow-brown, veins dark brown; areoles pruinose blue at base and marked with one or two dark brown spots. Abdominal sterna pale brown to dark brown usually narrowly margined with yellow apically; last abdominal sternum of female brown, narrowly margined with yellow apically. Genital capsule of male brown. Coxae brown or black, tipped with yellow; trochanters yellow tinged with brown; femora yellow, variably spotted with brown, posterior edge dark brown or black; tibiae yellow-brown, dark at base, pale at apex, tipped with brown; second tarsal segment yellow, third segment brown. Spines of legs dark brown.

Structural characteristics: General shape oval. Clothed with fine, recumbent, golden pubescence above, on legs and on antennae, with fine, recumbent, silvery pubescence beneath. Width of head as compared to width of pronotum 73 100 male; 73 100 female. Frons and vertex lustrous, minutely scabrous; apex of frons raised into a carinate ridge which is obsolete above clypeus and moderately upturned at ends. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment nearly cylindrical;

length of antenna as compared to length of hind tibia
 105 100 male, 106 100 female; length of second
 antennal segment as compared to width of head 57
 100 male, 57 100 female. Antennal segmentation 1
 2 3 4 18 34 23 25 male; 19 35 22 24
 female. Pronotum lustrous, minutely scabrous; median
 length of posterior lobe as compared to median length
 of anterior lobe 71 100 male, 60 100 female.
 Anterior lobe moderately elevated, sulcus behind it
 moderately incised and slightly sinuated anteriorly at
 middle; median fovea located before middle of anterior
 lobe; anterior lobe depressed along median line behind
 median fovea. Posterior lobe distinctly explanate on
 each side of anterior lobe; lateral margins slightly,
 convexly curved, moderately convergent. Scutellum
 lustrous, minutely scabrous, posterior half minutely,
 transversely rugulose. Clavus opaque, remainder of
 hemelytron lustrous and (excepting membrane) minutely
 scabrous. Veins and sutures of hemelytra distinct.
 Areoles of membrane forming an evenly gradate series.
 Posterior margin of last abdominal sternum of female
 evenly rounded; sternum moderately produced, approxi-
 mately three times as long as preceding sternum. Ter-
 minal processes of male genital capsule and left
 clasper of male are figured on Plate V, figures 5a and
 5b. Length of posterior tibia as compared to width of

head 155 100 male; 154 100 female. Trachypterous forms are not known.

Comparative notes: Most closely resembles S. pallipes (F.) from which it can be distinguished by the brilliant yellow markings of the clavus and corium, the pruinose blue markings on the membrane and by the depression of the anterior lobe of the pronotum on the median line behind the median fovea.

Location of types: Described by Linnaeus from "Europa". Presumably the type is in Linnaeus' collection at the Linnean Society of London.

Data on distribution: Recorded from British Columbia in Canada, from Guatemala and in the United States from Connecticut, Illinois, Maine, Massachusetts, Nebraska, New York, and Rhode Island. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

ALASKA: Bethel, Sept. 25, 1917, A. H. Twitchell, 1 male, 1 female; Circle, June 10, 1946, Owen Bryant, 1 male (Bryant); Matanuska, May 27, 1945, J. C. Chamberlin, 1 male, Aug. 17, 1945, J. C. Chamberlin, 1 female, Aug. 27, 1945, J. C. Chamberlin, 1 female (U. S. N. M.); Nome, Aug. 13, 1913, E. C. Van Dyke, 1

male (Calif. Acad. Sci.).

CANADA: British Columbia: Ferrace, 1936, Mrs. M. E. Hippisley, 2 females (U. S. N. M.); Kaslo, June 29, 1893, R. P. Currie, 1 male, 1 female (U. S. N. M.); Downie Creek, Selkirk Mts., Aug. 14, 1905, J. C. Bradley, 2 females.

Manitoba: Aweme, April 6, 1917, N. Criddle, 3 males (Parshley).

Northwest Territory: Aklavik, Sept. 12, 1930, Owen Bryant, 2 females, April 27, 1931, Owen Bryant, 1 female, June 12, 1931, Owen Bryant, 1 male (Bryant).

* Ontario: Ottawa, 2 females; Ottawa, Aug. 14, 1912, Beaulieu, 1 female (Parshley).

Quebec: Hebertville, July 29, 1934, C. R. Crosby, 1 female (Cornell Univ.).

U. S. A.: * California: Mad River, Arcata, Humboldt County, July 28, 1927, H. Notman, 1 male; Santa Cruz Mts., 1 male, 2 females (Koebele Coll., Calif. Acad. Sci.); Siskiyou County, 1 female (Calif. Acad. Sci.).

Connecticut: New Haven, March 20, 1921, 1 female.

District of Columbia: Washington, March 3, 1 female (U. S. N. M.); Piney Branch, Washington, April 23, 1905, D. H. Clemons, 1 male (U. S. N. M.).

Kansas: Riley County, Popenoe, 1 female (U. S. N. H.).

Massachusetts: Hopkinton, May 21, 1916, C. A. Frost, 1 male; Harwich, July 4, 1930, C. A. Frost, 1 male; Framingham, March 24, 1928, C. A. Frost, 1 female, Sept. 6, 1921, C. A. Frost, 1 male; Framingham, Sept. 7, 1936, C. A. Frost, 1 male, 1 female, Dec. 2, 1934, C. A. Frost, 1 female (U. S. N. H.); Framingham, April 25, 1920, C. A. Frost, 1 female (Parshley).

Michigan: Warren Woods, E. K. Warren Preserve, Berrien County, June 27, 1919, R. F. Hussey, 1 male; Carp Creek, Cheboygan County, Aug. 7, 1948, H. B. Hungerford, 1 male, Aug. 16, 1948, H. B. Hungerford, 1 male, 2 females, Aug. 17, 1948, H. B. Hungerford, 2 females.

New York: White Plains, May 1, 1909, J. R. de la Torre-Bueno, 1 female, April 22, 1914, J. R. de la Torre-bueno, 1 male; Mosholu, June 11, 1904, 1 male, 1 female, July 4, 1905, J. R. de la Torre-Bueno, 1 female; Wallface Mt., Essex County, July 13, 1922, H. Notman, 1 male; Valhalla, May 6, 1922, 1 male, 1 female; Scarsdale, Sept. 5, 1908, 1 female; Huntington, Long Island, Feb. 10, 1924, F. M. Schott, 1 female; Staten Island, July 9, 1905, 2 females; Staten Island, Feb. 16, 1913, 2 males (A. M. N. H.); Brownsville, April 25, 1911, 2 males, 3 females, July 2, 1911, 1 male (A. M. N. H.).

New Jersey: Riverton, April 14, 1901, G. M. Greene, 1 male (U. S. N. M.); Ft. Lee District, May 28, 1904, 1 male, 2 females.

* Oregon: North Powder, July 13, 1931, M. W. Sanderson, 1 female.

Utah: Logan, July 16, 1933, T. O. Thatcher, 1 male (U. S. N. M.).

Virginia: Rosslyn, March 24, Fred K. Knab, 1 female (Cornell Univ.).

Wisconsin: Beaver Dam, Dec. 5, 1912, W. E. Snyder, 1 male (Parshley).

Salda sectilis new species

(Plate V, figures 6a, 6b)

Size: Length 2.98 mm. to 3.27 mm. male; 3.39 mm. to 3.45 mm. female. Width of pronotum 1.06 mm. to 1.16 mm. male; 1.18 mm. to 1.18 mm. female.

Color: General color black marked with yellow and brown. Eyes dark brown. Head black excepting yellow apex of the bucculae and a yellow spot on each side next to eyes opposite ocelli. Apex of frons, clypeus and labrum yellow. First antennal segment yellow-brown, remaining segments red-brown. Rostrum yellow or yellow-brown. Pronotum, scutellum and venter of thorax black, episternal plates before anterior and middle coxae margined with yellow-brown. Clavus black, with a small yellow streak at humeral angle and with a yellow spot on middle near apex. Corium brown-black with a yellow spot near lateral margin at end of basal fourth, at middle and with a small yellow spot near middle at apex; colors of the corium blended, not forming definite patterns. Embolium yellow with a broad transverse black band on middle of apical half, brown streaks occur before and behind band, lateral margin brown at end of this band; a large white spot is located near medial margin before and behind dark band. Membrane yellow-brown, veins dark brown, in-

fumed brown bands traverse membrane at end of basal third and at middle; these bands do not attain edges of membrane. Abdominal sterna brown, narrowly margined with yellow apically; last abdominal sternum of female brown, produced portion yellow. Genital capsule of male brown. Coxae brown, tipped with yellow; trochanters yellow; femora yellow basally, yellow-brown apically; tibiae yellow, narrowly brown basally and apically, often infuscated beyond middle; second tarsal segment, yellow, third segment brown. Spines of legs brown.

Structural characteristics: General shape oval, tapering posteriorly. Clothed with fine, recumbent pubescence, golden above, silvery beneath. Width of head as compared to width of pronotum 77 100 male; 83 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a carinate ridge which is medially sulcate and moderately upturned at ends. Frons distinctly sulcate along median line. Ocelli separated by less than width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment nearly cylindrical; length of antenna as compared to length of hind tibia 123 100 male, 120 100 female; length of second antennal segment as compared to width of head 72 100 male, 66 100 female. Antennal segmentation 1 2 3 4 15 35 25 25 male; 15 35 25 25

female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 80 100 male, 80 100 female. Anterior lobe strongly elevated, sulcus separating it from posterior lobe moderately incised; median fovea located at end of median third of anterior lobe, anterior lobe transversely depressed across median fovea . Posterior lobe narrowly explanate, lateral margins straight or slightly concavely curved, strongly convergent. Scutellum lustrous, minutely scabrous. Clavus opaque, remainder of hemelytron lustrous. Sutures of hemelytra distinct; corial veins obsolete; veins of membrane distinct, areoles forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded; sternum moderately produced, approximately three times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 6a and 6b. Clasper armed on inside of swollen portion with a short, ventrally directed tooth. Length of posterior tibia as compared to width of head 162 100 male; 155 100 female. Brachypterous forms are not known.

Comparative notes: Salda sectilis is closely related to S. sulcata (Barber) and S. dentulata new species, but is distinguished by the blending of the colors in the pattern of the hemelytra and the shape of the term-

inal processes of the genital capsule of the male. The evenly rounded apex of the genital capsule of the male and the tooth on the clasper will further distinguish this species from S. sulcata.

Location of types:

Holotype: Red Tank, Canal Zone, April 14, 1923,
R. C. Shannon, male (United States
National Museum).

Allotype: Red Tank, Canal Zone, April 14, 1923
R. C. Shannon, female (Francis
Huntington Snow Entomological
Collections).

Paratypes: XX Plantation, six miles east of Porto
Bello, Panama, Feb. 19, 1930, T. O.
Zschokke, one male (California
Academy of Sciences).

Paraiso, Canal Zone, Jan. 28, 1911,
August Eusck, one female (United
States National Museum).

The types are deposited in the museums listed after each locality.

Data on distribution: Known only from the type series.

Salda separata Uhler

(Plate V, figures 7a, 7b)

1878. Salda separata Uhler, P. R. Proc. Boston Soc. Nat. Hist. XIX, p. 432 (describes from T. W. Harris collection, recording from "Canada West, New Hampshire, Massachusetts and Pennsylvania").
1886. Salda separata, Uhler, P. R. Check List Hemip. North Amer., p. 27.
1896. Salda separata, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 223.
1909. Acanthia separata, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 178.
1910. Salda separata, Banks, Nathan. Catalog Nearct. Hemip., p. 13.
1916. Saldula separata, Van Duzee, E. P. Check List Hemip. North Amer., p. 50.
1917. Saldula separata, Van Duzee, E. P. Catalog of Hemip. North Amer., p. 443.
1917. Saldula separata, Parshley, H. M. Occas. Papers Boston Soc. Nat. Hist. VII, p. 110 (records from Vermont).
1920. Saldula separata, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 66 (quotes original description).
1923. Acanthia separata, Torre-Bueno, J. R. de la.

- Bull. Brooklyn Ent. Soc. XVIII, p. 150 (records from New York).
1923. Saldula separata, Torre-Bueno, J. R. de la. in Hemip. of Conn., Conn. Geol. Nat. Hist. Surv. Bull. 34, p. 414 (keys, not yet recorded from Conn.).
1926. Saldula separata, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1012 (redescribes, records from Mass.).
1928. Saldula separata, Torre-Bueno, J. R. de la. in Cornell Univ. Agr. Expt. Sta. Memoir 101, Insects of N. Y., p. 138 (records from New York).
1930. Saldula separata, Walley, G. S. Canad. Ent. LXII, p. 77 (records from Quebec).

Size: (Macropterous form): Length 4.06 mm. to 4.84 mm. male; 5.35 mm. to 5.57 mm. female. Width of pronotum 1.49 mm. to 1.68 mm. male; 1.67 mm. to 1.80 mm. female. (Brachypterous form): Length 3.59 mm. to 3.94 mm. male; 4.13 mm. to 4.44 mm. female. Width of pronotum 1.36 mm. to 1.41 mm. male; 1.47 mm. to 1.50 mm. female.

Color: General color black. Eyes violet to dark brown. Head black, with a yellow spot on each side of ocelli next to eyes; apex of frons and clypeus yellow; labrum yellow, margined with brown. Rostrum brown.

First antennal segment yellow, infuscated beneath; second segment yellow-brown to dark brown; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black; episternal plates before anterior coxae occasionally yellow-white. Clavus black, usually with a yellow spot near anterior end of commissure. Corium black, frequently with a white spot near lateral margin at apex. Embolium black, with a marginal yellow spot in middle of apical third. Membrane yellow-brown, infuscated at base and on middle. Abdominal sterna dark brown, narrowly margined with yellow apically; last abdominal sternum of female dark brown, produced portion white laterally and apically, brown basally and medially. Genital capsule of male brown. Coxae brown or black basally, yellow apically; trochanters yellow; femora yellow, infuscated beneath and subapically; tibiae yellow, infuscated sub-basally and tipped with brown; tarsi yellow tipped with brown. Spines of legs black.

Structural characteristics: (Macropterous form):

General shape oval. Clothed with fine, recumbent, golden pubescence above and on third and fourth antennal segments; venter of abdomen golden pubescent, many of the hairs erect; venter of thorax with short, recumbent, silvery pubescence. Dorsal surfaces, second

antennal segment and tibiae with a dense pile of long, stiff, erect setae. Eyes with scattered, short, stiff, erect, prominent, dark setae. Width of head as compared to width of pronotum 80 100 male; 77 100 female. Frons and vertex lustrous, minutely scabrous; apex of frons raised into a carinate ridge, which is prominent in males, obsolete in females. Frons convex, not medially sulcate between eyes. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 118 100 male, 117 100 female; length of second antennal segment as compared to width of head 61 100 male, 61 100 female. Antennal segmentation 1 2 3 4 16 34 24 26 male; 17 34 24 25 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 50 100 male, 50 100 female. Anterior lobe slightly elevated, sulcus behind it moderately incised; median fovea located before middle of anterior lobe; anterior lobe slightly depressed on median line behind median fovea and obsoletely, punctately, depressed on each side of median fovea. Posterior lobe narrowly explanate on each side of anterior lobe; lateral margins slightly, convexly curved, moderately convergent. Scutellum

lustrous, minutely scabrous, posterior half obsolete, transversely rugulose. Hemelytra opaque; minutely scabrous. Sutures of hemelytra distinct; veins of corium obsolete; veins of membrane distinct. Membrane normal, with fourth areole occasionally coriaceous; areoles forming a gradate series, first areole produced anteriorly. Posterior margin of last abdominal sternum of female evenly rounded; sternum approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 7a and 7b.

Length of posterior tibia as compared to width of head

154 100 male; 152 100 female. (Erachypterous

form): General shape oval. Width of head as compared to width of pronotum 89 100 male; 80 100 female.

Length of antenna as compared to length of hind tibia

116 100 male, 106 100 female; length of second

antennal segment as compared to width of head 59

100 male, 59 100 female. Antennal segmentation 1

2 3 4 16 33 24 27 male; 17 34 24 25

female. Median length of posterior lobe of pronotum as compared to median length of anterior lobe of pronotum

44 100 male; 44 100 female. Membrane reduced,

width of margin beyond and inside of areoles less than width of an areole. Fourth areole entirely coriaceous.

Length of posterior tibia as compared to width of head

152 100 male; 165 100 female. Resembles mac-

ropterous forms in other features.

Comparative notes: This species resembles S. orbiculata Uhler, but lacks the brilliant pruinose blue spots of the hemelytra. Also, in S. separata the pronotum is differently shaped and the insect is more elongate. S. orbiculata has a polished, smooth vertex and pronotum; S. separata has these areas minutely scabrous.

Location of types: Described from a single specimen in the T. W. Harris collection. This specimen, now in the Harris Collection in the Museum of Comparative Zoology at Harvard College, has been examined by Mr. Nathan Banks and is reported to be a female. A male specimen from Indian Pass, Essex County, New York, July 10, 1922, H. Notman, from the Eueno Collection in the Francis Huntington Snow Entomological Collection is designated as the allotype. The macropterous male specimens listed in "data on distribution" below are designated as parallotypes. The brachypterous form is described and the following types are designated:

Morphoholotype: Rabbit Ear Pass, Colorado,
August 3, 1947, L. D. Beamer,
male.

Morphoallotype: Cranberry Lake, New York, July
22, 1920, C. J. Drake, female.

Morphoparatypes: The brachypterous specimens listed in "data on distribution" below are morphoparatypes.

The morphoholotype and morphoallotype are in the Francis Huntington Snow Entomological Collections. The paratypes and morphoparatypes are in the Snow Collections and in the collections listed after the specimens in "data on distribution" below.

Data on distribution: Recorded from Quebec in Canada, and in the United States from Massachusetts, New Hampshire, New York, Pennsylvania and Vermont. In addition to the allotype, morphoholotype and morphoallotype, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

CANADA: * Newfoundland: Cape Ray, Aug. 17, 1 male, 1 female (brachypterous), (U. S. N. M.).

* Ontario: Grimsby, 1 female (brachypterous), (Uhler Coll., U. S. N. M.); Sandford, June 1906, 1 female (brachypterous), (Cornell Univ.); Ottawa, 1 male, 1 female.

Quebec: Chambly County, July 19, 1902, 1 female; Hull, July 19, 1914, J. I. Beaulne, 1 female (brachy-

pteros), (Parshley).

U. S. A.: Colorado: Foothills, 5 miles west of Ft. Collins, Aug. 4, 1895, C. F. Baker, 1 female (Uhler Coll., U. S. N. M.); Ft. Collins, Aug. 15, 1895, C. F. Baker, 1 female (Baker Coll., U. S. N. M.); Forrester's, July 19, 1895, C. F. Baker, 1 female (Baker Coll., U. S. N. M.); Chamber's Lake, Aug. 6, 1896, C. F. Laker, 1 male (Baker Coll., U. S. N. M.).

Illinois: Illinois, 1 female (Uhler Coll., U. S. N. M.).

Massachusetts: Andover, 1 female (Uhler Coll., U. S. N. M.); Monterey, July 15, 1919, C. A. Frost, 1 male (Parshley).

Michigan: Douglas Lake, July 23, 1927, H. B. Hungerford, 2 males; Lake Michigan, 1924, H. B. Hungerford, 1 female; Byron, June 29, 1904, E. S. G. Titus, 1 female (U. S. N. M.).

New Hampshire: Westerville, July 15, 1 female (Uhler Coll., U. S. N. M.); Pinkham, July 28, 1930, C. A. Frost, 1 female (brachypterous); Hampton, June 23, 1918, S. Albert Shaw, 1 female (Parshley); Mt. Washington, 4 males (Slosson Coll., A. N. H.).

New Jersey: Whitesbog, July 20, 1914, H. B. Scammell, 1 male (brachypterous), (U. S. N. M.).

New York: Wallface Mountain, Essex County, July

9, 1922, H. Notman, 1 male (macropterous), July 10, 1922, H. Notman, 1 male (brachypterous); Indian Pass, Essex County, July 10, 1922, H. Notman, 1 male, 1 female; Lake Tear, Mt. Marcy, Essex County, July 27, 1922, H. Notman, 2 females; Mt. Marcy, July 9, 1918, C. R. Crosby, 1 female (Cornell Univ.); Cranberry Lake, July 22, 1920, C. J. Drake, 2 females (brachypterous).

Maine: Weld, June 29, 1938, C. A. Frost, 1 female (U. S. N. W.).

South Dakota: Brookings, June 24, 1921, H. C. Severin, 1 female (brachypterous), (Parshley); Englewood, July 26, 1947, H. C. Severin, 1 female (Severin).

West Virginia: Aurora, Aug. 19, 1904, O. Heidemann, 1 female (Cornell Univ.).

Salda severini (Harris)

(Plate V, figures 8a, 8b)

1937. Saldula n. sp., Harris, n. Iowa St. Coll. J1. Sci. XI, p. 175 (records an undescribed species from South Dakota).
1943. Saldula severini Harris, H. M. J1. Kans. Ent. Soc. XVI, p. 152 (describes from South Dakota and Iowa).

Size: Length 3.23 mm. to 3.50 mm. male; 3.73 mm. to 4.14 mm. female. Width of pronotum 1.28 mm. to 1.35 mm. male; 1.40 mm. to 1.56 mm. female.

Color: General color black, marked with brilliant pruinose bleu spots. Eyes pale brown to dark brown. Head black, with a yellow spot on each side of ocelli; apex of frons, clypeus and labrum yellow. Rostrum yellow-brown. First antennal segment yellow, infuscated beneath; second segment yellow to red-brown; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black; episternal plates before anterior coxae narrowly margined with yellow. Clavus black, with a pruinose blue spot near lateral margin at end of basal fourth, behind middle and at apex; a pruinose blue spot on middle at apex. Embolium black, lateral margin yellow; a pruinose blue spot merging

with yellow margin before middle and before apex. Membrane white, infumed with brown; veins brown, one or two infumed brown spots within each areole. In faded specimens the pruinose spots of the hemelytra appear yellow, violet or white. Abdominal sterna dark brown, narrowly margined with yellow posteriorly; last abdominal sternum of female brown basally, produced portion yellow. Genital capsule of male dark brown. Coxae black, tipped with yellow; trochanters, femora and tibiae yellow, tibiae infuscated at base and on middle; tarsi yellow tipped with brown. Spines of legs black.

Structural characteristics: General shape oval. Clothed with golden pubescence and with a dense pile of long, stiff, erect setae on body, hemelytra, head, antennae and legs. Setae of hind tibiae distinctly shorter than those of head and hemelytra, often reduced to a pubescence. Eyes clothed with stiff, erect, prominent setae. Width of head as compared to width of pronotum 80 100 male; 74 100 female. Frons and vertex polished, smooth; apex of frons raised into a carinate ridge which is obsolete at middle and evenly curved toward eyes. Frons convex, not medially sulcate between eyes. Ocelli separated by at least one and one-half times the width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae long,

slender, third segment fusiform; length of antenna as compared to length of hind tibia 122 100 male, 126 100 female; length of second antennal segment as compared to width of head 53 100 male, 54 100 female. Antennal segmentation 1 2 3 4 20 33 23 24 male; 21 33 22 24 female. Pronotum polished, smooth; median length of posterior lobe as compared to median length of anterior lobe 72 100 male, 80 100 female. Anterior lobe moderately elevated, sulcus behind it moderately incised; median fovea located before middle of anterior lobe; anterior lobe slightly depressed on median line behind median fovea. Posterior lobe narrowly explanate along lateral margins and on each side of anterior lobe; lateral margins straight, strongly convergent. Scutellum polished, moderately convex. Hemelytra opaque; lateral third of embolium polished; clavus polished along anterior one-half to two-thirds of commissure; membrane lustrous, not pruinose. Sutures of hemelytra distinct; corial veins obsolete; veins of membrane distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female rounded; sternum approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 8a and 8b. Length of pos-

terior tibia as compared to width of head 135 100
 male; 126 100 female. Brachypterous forms are not
 known.

Comparative notes: This species resembles S. orbiculata Uhler from which it can be distinguished by the narrowly explanate, straight lateral margins of the pronotum, the shorter setae of the hind tibia and the smaller expanse of the pruinose blue spots of the nemelytra. S. severini is narrower in comparison to its length than S. orbiculata and is readily distinguished from S. villosa new species by the lack of the deep depression behind the median fovea of the anterior lobe of the pronotum.

Location of types: The following information concerning the types is given by Harris in the original description, "Holotype, male, Waubay, S. Dakota, June 22, 1939, H. C. Severin; allotype, Lost Island Lake, Palo Alto County, Iowa, September 16, 1932, H. M. Harris (in author's collection)." Neither Doctor Harris nor Mr. Severin are able to locate the types of this species in their collections.

Data on distribution: Recorded only from the type series from Iowa and South Dakota. The following specimens have been examined (new records from major political areas are indicated by an asterisk):

* MEXICO: * Mexico: Real de Arriba, Temescaltepec, June 9, 1933, H. E. Hinton and R. L. Usinger, 1 female (Usinger).

U. S. A.: * California: Los Angeles County, 1 female (U. S. N. M.).

Kansas: Scott County, June 19, 1925, R. H. Beamer, 1 male.

* New Mexico: Weed, June 28, 1947, R. H. Beamer, 1 male; Mescalero, June 27, 1947, R. H. Beamer, 1 male, 1 female.

Texas: Ft. Davis, June 22, 1947, R. H. Beamer, 4 females.

Salda sulcata (Barber)

(Plate V, figures 9a, 9b)

1923. Micranthia species, Barber, H. G. Amer. Mus. Novit., No. 75, p. 13 (records from Porto Rico).
1939. Micracanthia sulcata Barber, H. G. Sci. Surv. Porto Rico, N. Y. Acad. Sci. XIV, p. 415 (describes from Porto Rico).

Size: Length 2.90 mm. to 3.39 mm. male; 3.01 mm. to 3.69 mm. female. Width of pronotum 0.90 mm. to 1.28 mm. male; 1.17 mm. to 1.41 mm. female.

Color: General color black, marked with yellow spots and pruinose blue areas. Eyes violet or brown. Head black, apex of frons and a spot on vertex diagonally behind and beside each ocellus yellow. Labrum, clypeus and bucculae yellow. Rostrum yellow or yellow-brown. First and second antennal segments yellow, third and fourth segments red-brown, fourth segment pale tipped. Pronotum, scutellum and venter of thorax black. Hemelytra black with yellow and pruinose blue areas. Clavus black with a yellow-white spot on middle near apex; corium black with a yellow spot near lateral margin at end of basal one-fourth, at end of median third and at middle of apex, inner half pruinose blue, median third of lateral margin pruinose blue;

embolium black, lateral margin yellow, a yellow spot at end of basal fourth and along medial margin before apex, disc pruinose blue. Membrane yellow-brown, the veins brown, second areole infumed with brown at end of basal third. Abdominal stern brown, narrowly margined with yellow posteriorly; last abdominal sternum of female brown basally, produced portion white. Genital capsule of male dark brown basally and laterally, pale brown medially and apically. Coxae black or dark brown, tipped with white; trochanters white; femora white basally, yellow-brown apically; tibiae yellow-white, brown basally and apically; tarsi yellow-white, last segment infuscated. Spines of legs brown.

Structural characteristics: General shape oval. Clothed with fine, recumbent pubescence, golden above, silvery beneath. Width of head as compared to width of pronotum 72 100 male; 68 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a carinate ridge which is medially sulcate and slightly upturned at ends. Frons deeply sulcate along median line, each side forming a definite lobe. Ocelli separated by less than the width of an ocellus. Rostrum usually extending beyond middle of hind coxae. Antennae long, slender, third segment nearly cylindrical; length of antenna as compared to length of hind tibia

110 100 male, 110 100 female; length of second antennal segment as compared to width of head 60

100 male, 58 100 female. Antennal segmentation 1 2 3 4 16 32 26 26 male; 16 32 26 26 female. Pronotum lustrous, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 83 100 male, 80 100 female. Anterior lobe moderately elevated, sulcus separating it from posterior lobe moderately incised; median fovea located before the middle of anterior lobe; anterior lobe transversely depressed across median fovea. Posterior lobe narrowly explanate, lateral margins straight, strongly convergent. Scutellum lustrous, minutely scabrous, posterior half minutely, transversely rugulose. Hemelytra opaque, excepting membrane, pruinose areas and lateral margin of embolium, which are lustrous. Sutures of hemelytra distinct, corial veins indistinct. Veins of membrane distinct, areoles forming an evenly gradate series. Posterior margin of last abdominal sternum of female not evenly rounded; a lobe on each side of the middle is strongly upturned, causing the segment to form a trough; sternum greatly produced, more than four times longer than preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 9a and 9b. Apex of male

genital capsule is flat and indented. Length of posterior tibia as compared to width of head 168 100 male, 167 100 female. Brachypterous forms are not known.

Comparative notes: This species resembles S. abdominalis Champion from which it can be distinguished by the smaller size and entirely black pronotum. The flat indented apex of the genital capsule of the male, the broad terminal processes and shallow median notch of the genital capsule and the shape of the clasper will distinguish S. sulcata from all other *saldids*. The deep sulcus of the frons will distinguish S. sulcata from S. humilis (Say) and S. pumila (Blatchley).

Location of types: The holotype is a male from Coamo Springs, Porto Rico, July 17 - 19, 1914, H. S. Earber. It is in the American Museum of Natural History. One male paratype from Cicales, Porto Rico, Nov. 28, 1921, F. Sein, is Paratype #51594 in the United States National Museum. The male paratype has been studied by the writer.

Data on distribution: Recorded only from the type series. In addition to the male paratype listed above, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

BRITISH WEST INDIES: Palm Beach, Montego Bay,
Jamaica, March 11, 1911, 1 male, 1 female (A. L. H.
H.).

CUFA: Cayamas, March 11, E. A. Schwarz, 1
female (U. S. N. M.).

PORTO RICO: Yunez River, Florida, Feb. 8, 1935,
J. G. Diaz, 5 males, 1 female.

Salda sulcicollis Champion

(Plate V, figures 10a, 10b)

1901. Salda sulcicollis Champion, G. C. Biol. Centr.-Amer., Rynch., Vol. 2, p. 340, Tab. 20, fig. 4 (describes from Mexico, Guatemala and Panama).
1906. Acanthia sulcicollis, Torre-Bueno, J. R. de la. Ent. News XVII, p. 54 (records from Costa Rica).
1909. Acanthia sulcicollis, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 178.
1912. Salda sulcicollis, Reuter, O. M. Ofv. Finska Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 21 (suggests it may be a macropterous species of Lampracanthia).

Size: (Macropterous form): Length 4.00 mm. to 4.51 mm. male; 4.29 mm. to 5.27 mm. female. Width of pronotum 1.36 mm. to 1.47 mm. male; 1.40 mm. to 1.62 mm. female. (Brachypterous form): Length 3.54 mm. to 4.36 mm. male; 4.20 mm. to 5.04 mm. female. Width of pronotum 1.20 mm. to 1.40 mm. male; 1.41 mm. to 1.72 mm. female.

Color: General color black marked with yellow. Head black, with a yellow spot on each side of ocelli;

clypeus, middle of labrum and frons on each side of basal half of clypeus yellow. Rostrum yellow above, yellow-brown beneath. First antennal segment yellow; second segment yellow, apical fifth red-brown; third and fourth segments red-brown. Pronotum, scutellum and venter of thorax black. Clavus black, inner three-fourths pruinose excepting along commissure and at apex. Corium black, with a yellow spot near lateral margin at middle and at end of basal fourth; another yellow spot on middle near apex. Embolium black, with a yellow spot on lateral margin at beginning of apical fourth. Membrane yellow-brown, veins brown, infuscated spots within areoles forming two transverse bands across membrane. Abdominal sterna, including last abdominal sternum of female, dark brown narrowly margined with yellow posteriorly. Genital capsule of male dark brown. Coxae yellow, tinged with brown basally; trochanters yellow; femora yellow, with rows of obsolete brown dots; tibiae yellow, brown basally and at apex, anterior and middle tibiae with a broad, brown band on middle; first tarsal segment yellow, third segment brown. Spines of legs dark brown.

Structural characteristics: (Macropterous form):

General shape elongate-oval. Clothed with long, golden pubescence and long, stiff, erect setae above;

with long, golden pubescence beneath and on legs; short, recumbent, golden pubescence on frons and fourth antennal segment; antennae clothed with long, stiff, semi-erect, dark setae. Width of head as compared to width of pronotum 82 100 male; 79 100 female. Frons and vertex lustrous, minutely scabrous; apex of frons not raised into a carinate ridge; frons slightly sulcate along median line between eyes. Ocelli separated by slightly less than the width of an ocellus. Rostrum extending to apex of hind coxae. Antennae long, slender, third segment fusiform; length of antenna as compared to length of hind tibia 119 100 male, 112 100 female; length of second antennal segment as compared to width of head 74 100 male, 69 100 female. Antennal segmentation 1 2 3 4 15 36 23 25 male; 16 35 23 26 female. Pronotum polished, obsoletely, minutely scabrous; median length of posterior lobe as compared to median length of anterior lobe 73 100 male, 75 100 female. Anterior lobe moderately elevated, sulci before and behind it moderately incised, coarsely punctate, posterior sulcus distinctly, anteriorly sinuated in middle. Median fovea located before middle of anterior lobe; anterior lobe deeply depressed along median line behind median fovea, obsoletely, punctately depressed on each side of median fovea. Posterior lobe narrowly, dis-

tinctly explanate along lateral margins and on each side of anterior lobe; lateral margins straight, slightly constricted opposite middle of anterior lobe, strongly convergent. Scutellum polished, smooth. Clavus opaque on pruinose area, remainder of hemelytron polished. Sutures distinct, except apical third of suture between corium and embolium. Corial veins obsolete, veins of membrane distinct. Areoles of membrane forming an evenly gradate series. Margin of membrane beyond apex of second areole longer than width of second areole. Hind wings extending nearly to apex of hemelytra. Posterior margin of last abdominal sternum of female evenly rounded; sternum slightly more than twice as long as preceding sternum. Terminal processes of genital capsule of male and left clasper of mare are figured on Plate V, figures 10a and 10b. Length of posterior tibia as compared to width of head :: 172 100 male; 174 100 female. (Erachypterous form): General shape oval. Width of head as compared to width of pronotum 90 100 male, 82 100 female; length of second antennal segment as compared to width of head 71 100 male; 75 100 female; length of antennae as compared to length of hind tibia 119 100 male, 116 100 female. Antennal segmentation 1 2 3 4 15 35 25 25 male; 15 36 24 25 female. Median length of posterior lobe of pronotum as

compared to median length of anterior lobe 75 100 male; 75 100 female. Lateral margins of pronotum straight. Areoles of membrane shorter than those of macropterous forms, margin inside and beyond areoles reduced; width of margin at apex of second areole subequal to width of second areole. Hind wings not extending beyond apex of abdomen. Length of hind tibia as compared to width of head 175 100 male; 180 100 female. Identical with macropterous form in all other features.

Comparative notes: This species resembles S. laevis Champion, S. tepidaria new species and S. hispida new species. The pilose eyes, antennae and legs of S. hispida, the smooth pronotum and vertex and polished clavus of S. laevis, and the swollen antennae of S. tepidaria will distinguish these species from S. sulcicollis. The deeply, longitudinally depressed anterior lobe of the pronotum is characteristic of this species.

Location of types: The type series, including males and females is from the following localities: Omiltene, Guerrero, Mexico, collected by H. H. Smith; Coban, San Joaquin, Guatemala City, Capetillo, Panajachel and San Geronimo in Vera Paz, Guatemala, collected by G. C. Champion; Volcan de Chiriqui, 4000 feet, collected by G. C. Champion. A female from Cuernavaca,

Mexico, which has been compared with a cotype has been studied in the preparation of this paper. The brachypterous dimorph is described above and the following types are designated:

Morphoholotype: Rio Virilla, Costa Rica, December 20, 1931, Heinrich Schmidt, Purchased from collector, male.

Morphoallotype: Rio Virilla, Costa Rica, December 20, 1931, Heinrich Schmidt, Purchased from collector, female.

Morphoparatypes: The specimens listed as brachypterous in "data on distribution" below.

Data on distribution: Recorded from Costa Rica, Guatemala, Guerrero in Mexico and Panama. In addition to the morphoholotype and morphoallotype, the following specimens have been examined (new records from major political areas are indicated by an asterisk):

COSTA RICA: Rio Virilla, Dec. 26, 1931, Heinrich Schmidt, 45 males, 66 females (29 males and 44 females brachypterous); Rio Torres, Feb. 10, 1932, Heinrich Schmidt, 7 males, 19 females (3 males and 8 females brachypterous); La Palma, April 1905, P. Biolley, 1

female (brachypterous); San José, June and July 1931, Heinrich Schmidt, 8 males, 21 females (4 males and 14 females brachypterous); San José, Heinrich Schmidt, 29 males, 42 males (20 males and 27 females brachypterous).

MEXICO: Mexico: Tejupilco, Temascaltepec, 1340 m., June - July 1933, H. E. Hinton and R. L. Usinger, 1 female (brachypterous), (Usinger Coll.).

Morelos: Cuernavaca, Oct. 1944 N. L. H. Krauss, 1 female compared with cotype (U. S. N. M.).

Salda tepidaria new species

Size: Length 4.81 mm. female. Width of pronotum 1.66 mm. female.

Color: General color black. Head black, with an orange spot on each side of ocelli; clypeus and labrum brown, labrum yellow on middle. Rostrum red-brown. First antennal segment red-brown, tipped with yellow; second, third and fourth segments red-brown. Eyes pale brown. Pronotum, scutellum and venter of thorax black. Hemelytra brown-black, with an obscure yellow spot on middle of corium before apex and at base of second areole; apical half of membrane paler than base. Sterna of abdomen dark brown, narrowly margined with yellow apically; last abdominal sternum of female dark brown basally, produced portion paler and narrowly margined with yellow-brown apically. Anterior coxae black basally, yellow apically; trochanters yellow; femora dark brown, apical basally and broadly tipped with yellow; tibiae yellow-brown, infuscated subbasally and tipped with brown; second tarsal segment, yellow, third red-brown. Spines of legs black.

Structural characteristics: General shape oval. Clothed with fine, recumbent, golden pubescence beneath, on legs and on third and fourth antennal segments; anterior femora clothed with long, fine, erect, golden

setae beneath; antennal segments with scattered, long, stiff, erect, dark setae; dorsal surfaces, excepting membrane, clothed with stiff, semi-erect, dark setae those of head longest. Width of head as compared to width of pronotum 75 100 female. Frons polished, minutely, transversely rugulose, distinctly sulcate between eyes along median line; apex of frons forming an obsolete carinate ridge between basal angles of clypeus and eyes. Vertex polished, obsoletely, minutely scabrous. Ocelli separated by less than the width of an ocellus. Rostrum extending to apex of hind coxae. Antennae moderately long, second, third and fourth segments moderately swollen, second tapering evenly from narrow base to broad apex, third and fourth fusiform. Length of antenna as compared to length of hind tibia 120 100 female; length of second antennal segment as compared to width of head 62 100 female. Antennal segmentation 1 2 3 4 16 31 24 29 female. Pronotum polished, posterior lobe obsoletely, transversely rugulose; median length of posterior lobe as compared to median length of anterior lobe 78 100 female. Anterior lobe moderately elevated, sulci before and behind it moderately incised and coarsely punctate, posterior sulcus slightly sinuated anteriorly in middle; median fovea located at end of anterior third of anterior lobe;

anterior lobe transversely depressed across median fovea, obsolete, punctately depressed on each side of median fovea. Posterior lobe distinctly explanate along lateral margins and narrowly explanate on each side of anterior lobe; lateral margins slightly concavely curved anteriorly, straight along middle, convexly curved posteriorly. Scutellum polished, posterior half obsolete, transversely rugulose. Clavus opaque, polished along commissure, remainder of hemelytron lustrous and (excepting membrane) minutely scabrous. Veins and sutures of hemelytra distinct. Areoles of membrane forming an evenly gradate series. Posterior margin of last abdominal sternum of female evenly rounded; sternum moderately produced, approximately two and one-half times as long as preceding sternum. Length of posterior tibia as compared to width of head 168 100 female. Known only from the female. Erachypterous forms are not known.

Comparative notes: S. tepidaria resembles S. polita Uhler but lacks the raised, carinate ridge at apex of frons and the dense golden pubescence on the pronotum and clavus. The long, erect setae of the second antennal segment, the differently shaped pronotum, the median sulcus of the frons and the polished head and pronotum will further distinguish S. tepidaria

from S. polita. The swollen antennae will distinguish S. tepidaria from S. laevis Champion, S. sulcicollis Champion and S. hispida new species which are similar in general facies and are found in the same area.

Location of type:

Holotype: Real de Arriba, Temescaltepec, Mexico,
Mexico, May 23, 1933, H. E. Hinton
and R. L. Usinger, female.

This specimen is in the collection of R. L. Usinger.

Data on distribution: Known only from the holotype.

Salda ventralis Stål

(Plate V, figures 11a, 11b)

1860. Salda ventralis Stål, Carl. Kongl. Svenska Vet.-Acad. Handl. II, p. 81 (describes from Brazil).
1873. Acanthia ventralis, Stål, Carl. Enum Hemip. III, p. 148 (keys).
1896. Salda ventralis, Lethierry, L., and Severin, G. Catalogue Gén. Hémipt. III, p. 224.
1901. Salda ventralis, Champion, J. C. Biol. Centr.-Amer., Rynch., Vol. 2, p. 342, Tab. 20, fig. 9 (redescribes, keys, records from Guatemala and Panama).
1909. Acanthia ventralis, Kirkaldy, G. W., and Torre-Eueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X., p. 178.
1940. Saldula ventralis, Costa Lima, A da. Insetos do Brazil II, Hemip., p. 310, fig. 431 (records from Brazil).
1948. Saldula ventralis, Drake, C. J., and Carvalho, J. C. M. Rev. de Entomologia XIX, p. 477 (records from Brazil).

Size: Length 3.12 mm. to 3.30 mm. male; 3.20 mm. to 3.80 mm. female. Width of pronotum 1.20 mm. to 1.24

mm. male; 1.18 mm. to 1.45 mm. female.

Color: General color black marked with yellow. Eyes brown. Venter of head black, vertex black with a yellow spot on each side next to eye diagonally behind each ocellus; the spot extending anteriorly even with ocellus; basal half of frons black, apical half yellow. Clypeus and labrum yellow. Rostrum yellow or yellow-brown. First antennal segment white, second and third segments red-brown, fourth segment red-brown basally and apically, its middle occupied by a broad pale band. Pronotum black, lateral margins black basally and apically, yellow opposite posterior lobe. Scutellum black. Venter of thorax black, the lateral margin of pronotum yellow beneath, the episternal plates before middle coxae broadly margined with white, episternal plates before anterior coxae frequently narrowly margined with white. Hemelytra black with yellow and pruinose areas. Clavus black with a yellow spot at humeral angles, on medial margin at base and on middle near apex. Corium black with an oval yellow spot near lateral margin, extending from end of apical quarter to end of apical half, and with lateral two-thirds of the apex orange-yellow; pruinose along claval suture. Embolium yellow with a black band at beginning of apical half, this band contiguous with black markings of corium and usually not attaining the lateral margin of embolium.

Median third of the apical one-fourth of the embolium pruinose black. Membrane brown, veins slightly infumed with darker brown. Abdominal sterna pale brown to dark brown, usually narrowly margined with yellow-white apically; last abdominal sternum of female brown, produced portion white, frequently with a brown median stripe. Genital capsule of male brown. Coxae brown, often tipped with yellow; trochanters yellow; femora yellow basally, brown apically; tibiae yellow, tipped with brown; second tarsal segment yellow, third tarsal segment brown. Spines of legs brown.

Structural characteristics: General shape narrowly oval, tapering posteriorly. Clothed with fine, recumbent, golden pubescence. Width of head as compared to width of pronotum 75 100 male; 65 100 female. Frons and vertex lustrous, minutely scabrous. Apex of frons raised into a carinate ridge which is sulcate at middle and sharply upturned at ends. Frons deeply sulcate along median line, each side forming a definite lobe which is produced into a tubercle next to eyes at narrowest part of frons. Ocelli separated by less than the width of an ocellus, the vertex strongly depressed between ocelli and eyes. Eyes prominent, protruding before the frons and above the vertex. Rostrum usually extending to apex of hind coxae. Antennae long, slender, third segment nearly cylindrical; length of antenna as

compared to length of hind tibia 116 100 male,
 110 100 female; length of second antennal segment as
 compared to width of head 55 100 male, 60 100
 female. Antennal segmentation 1 2 3 4 19
 28 27 26 male; 18 31 26 25 female. Prono-
 tum lustrous, minutely scabrous; median length of
 posterior lobe as compared to median length of anterior
 lobe 80 100 male, 81 100 female. Anterior lobe
 strongly elevated, sulcus separating it from the pos-
 terior lobe deeply incised; median fovea located on
 anterior third. Posterior lobe narrowly explanate,
 lateral margins straight, strongly convergent, distinctly
 sulcate along the inner edge of yellow markings of
 lateral margins. Scutellum lustrous, minutely scabrous,
 posterior half minutely transversely rugulose. Hemelytra
 opaque excepting membrane, a narrow lustrous lateral
 margin on embolium. Sutures of hemelytra distinct,
 corial veins obsolete. Veins of membrane distinct,
 areoles forming an evenly gradate series. Posterior
 margin of last abdominal sternum of female not evenly
 rounded, emarginate on each side of the center, sternum
 distinctly produced, approximately four times as long as
 preceding sternum. Terminal processes of male genital
 capsule and left clasper of male are figured on Plate
 V, figures 11a and 11b. Length of posterior tibia as
 compared with width of head 166 100 male; 180

100 female. Erachypterous forms are not known.

Comparative notes: This species resembles S. abdominalis Champion and S. dewsi new species. The more strongly convergent pronotal margins, the color pattern of the hemelytra, and the pale band around the middle of the fourth antennal segment will distinguish S. ventralis from S. abdominalis and S. dewsi. The median projection between the terminal processes of the male genital capsule is lacking in S. dewsi and S. abdominalis.

Location of types: Described from Rio de Janeiro, Brazil. The type, a male, is in the Stockholm Museum. Champion examined this type while writing his redescription for *Biologia Centrali-Americana* and stated that it was in a mutilated condition, without an apical joint on the antenna. A female labeled "San José, Costa Rica, June - July, 1931, Heinrich Schmidt" is designated as the allotype. The females listed in "data on distribution" below are designated as par-allotypes. The allotype and parallotypes are in the Francis Huntington Snow Entomological Collections.

Data on distribution: Recorded from Brazil, Guatemala and Panama. In addition to the allotype the following specimens have been examined (new records from major political areas are indicated by an asterisk):

COSTA RICA: San José, June - July, 1931,
Heinrich Schmidt, 19 males, 24 females; San José,
Purchased, 1932, Heinrich Schmidt, 12 males, 13 fe-
males; Rio Virilla, Dec. 26, 1931, Heinrich Schmidt,
11 males, 9 females.

Salda villosa new species

(Plate V, figures 12a, 12b)

Size: Length 3.99 mm. to 4.09 mm. male; 4.29 mm. female. Width of pronotum 1.60 mm. to 1.65 mm. male; 1.65 mm. female.

Color: General color black, marked with pruinose blue and yellow spots. Eyes pale brown to red-brown. Head black, with a yellow spot on each side of ocelli; clypeus and labrum yellow; raised apex of frons yellow next to eyes. Rostrum yellow above, yellow-brown beneath. First antennal segment yellow, infuscated beneath and at apex; second, third, and fourth antennal segments red-brown. Pronotum, scutellum and venter of thorax black; episternal plates before anterior and middle coxae narrowly margined with yellow. Clavus black, with a small, elongate, yellow spot near anterior end of commissure. Corium black, with a small pruinose blue spot on middle at end of basal fourth, a larger one on middle at end of basal half, and the largest pruinose blue spot near claval suture before apex; the largest pruinose blue spot margined laterally with an elongate, yellow-white spot; another yellow-white spot is near lateral margin of corium at beginning of apical fourth, small yellow or white flecks

are before apex at lateral margin and near middle. Embolium black, lateral third to half yellow-brown, excepting base, nodal furrow and a dark area at beginning of apical fourth; pruinose blue spots at end of basal third and before apex along medial margin and on middle at middle of length of embolium. Membrane dark brown, areoles variably spotted with yellow-white pruinose patches. In faded specimens pruinose spots of hemelytra are represented by yellow areas. Abdominal sterna dark brown, narrowly margined with yellow posteriorly; last abdominal sternum of female dark brown basally, the produced portion yellow, margined with brown. Genital capsule of male dark brown. Coxae black basally, broadly yellow apically; trochanters yellow; femora yellow, variably spotted with brown; tibia yellow, infuscated at base and at tip, often ringed with yellow-brown on middle; tarsi yellow tipped with brown. Spines of legs black.

Structural characteristics: (Brachypterous form):

General shape broadly oval. Clothed with golden pubescence and with a dense pile of long, stiff, erect setae on body, hemelytra, head, antennae and legs. Setae of hind tibiae shorter than those of head and hemelytra. Eyes clothed with stiff, erect, prominent setae. Width of head as compared to width of pronotum 76 100 male; 67 100 female. Frons polished, smooth; apex

raised into a carinate ridge which is obsolete at middle and evenly curved toward eyes; frons convex, not medially sulcate between eyes. Ocelli separated by approximately the width of an ocellus. Rostrum usually extending to middle of hind coxae. Antennae long, slender, the third segment fusiform; length of antenna as compared to length of hind tibia 115 100 male, 116 100 female; length of second antennal segment as compared to width of head 61 100 male, 63 100 female. Antennal segmentation 1 2 3 4 17 34 24 25 male; 17 34 24 25 female. Pronotum polished, smooth; median length of posterior lobe as compared to median length of anterior lobe 49 100 male, 56 100 female. Anterior lobe moderately elevated, sulcus behind it moderately incised; median fovea located before middle of anterior lobe; anterior lobe deeply depressed on median line behind median fovea. Posterior lobe broadly explanate along lateral margins and on each side of anterior lobe; lateral margins convexly curved, strongly convergent. Scutellum polished, smooth; slightly convex, not swollen. Hemelytra opaque; lateral third to half of embolium polished; clavus polished along entire length of commissure; corium narrowly polished on anterior two-thirds along suture between embolium and corium; membrane lustrous. Sutures of hemelytra distinct; corial veins obsolete; veins of

membrane distinct. Areoles of membrane forming an evenly gradate series, first areole slightly produced basally. Posterior margin of last abdominal sternum of female rounded; sternum approximately two and one-half times as long as preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate V, figures 12a and 12b. Length of posterior tibia as compared to width of head 156/100 male; 161/100 female. Macropterous forms are not known.

Comparative notes: This species resembles S. orbiculata Uhler. S. villosa can be distinguished from S. orbiculata by the distinct deep depression of the anterior lobe of the pronotum behind the median fovea, by the color pattern of the hemelytra and by the longer hind tibia and second antennal segment, measured in comparison to the width of the head. These same features, in addition to the convexly curved lateral margins of the pronotum, will distinguish S. villosa from S. severini (Harris),

Location of types:

Holotype: Ingleside, California, December 20, 1920, Henry Dietrich, male.

Allotype: Ingleside, California, December 20,

1920, Henry Dietrich, female.

Paratypes: Ingleside, California, December 20,
1920, Henry Dietrich, one male.

Sonoma County, California, one male.

The holotype, allotype and one paratype are in the Francis Huntington Snow Entomological Collections; the paratype from Sonoma County, California is in the United States National Museum.

SALDOIDINAE Reuter

Head large, eyes prominent, vertex narrow. Pronotum with a prominent, erect, conical or thornlike process on each side of median line. Suture between corium and embolium obsolete beyond middle of hemelytron in both macropterous and brachypterous forms. Membrane with four areoles. Terminal processes of genital capsule of male bluntly rounded, fused at base. Macropterous forms rare; brachypterous forms common.

This subfamily contains only the genus Saldoidea Osborn.

Saldoida Osborn

1901. Osborn, Herbert. Canad. Ent. XXXIII, p. 181 (new genus for S. cornuta and S. slossoni).
1906. Kirkaldy, G. W. Trans. Amer. Ent. Soc. XXXII, p. 148 (designates S. slossoni as genotype).
1912. Reuter, O. M. Ofv. Finska Vet.-Soc. Förh. LIV Afd. A. No. 12, p. 23 (redescribes, establishes subfamily Saldoidinae for Saldoida).
1916. Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Van Duzee, E. P. Catalog of Hemip. North Amer., p. 447.
1920. Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 78 (quotes original description).
1926. Blatchley, W. S. Heteroptera of Eastern North America, p. 1017 (redescribes).
1945. Usinger, R. L. Bull. Brooklyn Ent. Soc. XL, p. 116 (bibliography and key to species).

Erachypterous form: Small species with prominent antennae. General shape obovate, hemelytra arched.

Head much broader than width of pronotum at anterior angles. Eyes large, strongly exserted. Ocelli separated by less than width of an ocellus. Apex of frons flat or forming an obsolete ridge. Third and fourth antennal segments swollen; third segment longest, second segment

shorter than third or fourth segments. Pronotum narrowly trapizoidal, constricted at the sides, posterior portions of lateral margins converging rapidly, anterior portions nearly parallel; posterior margin of pronotum broadly and shallowly emarginate; humeral angles upturned. Anterior lobe or pronotum occupied by a pair of prominent, erect, conical or thornlike processes. Veins of corium and membrane obsolete, the membrane entirely coriaceous. Venter of last abdominal segment of female rounded, produced beneath ovipositor. Terminal processes of genital capsule of male bluntly rounded, adjacent, partly fused on median line.

Macropterous form: General shape oblong, tapering posteriorly. Width of pronotum at humeral angles relatively greater than that of brachypterous forms in comparison to width at anterior angles. Membrane distinct, veins of the membrane distinct, forming four areoles, of which the second and third are broadest and longest. Agrees with brachypterous form in all other features.

Genotype: Saldoida slossoni Osborn.

Comparative notes: The prominent processes of the anterior lobe of the pronotum will distinguish this genus from the other genera of Saldidae.

Distribution: Known from outside the United States by S. bakeri Poppius, from the Phillipine Islands, and S. armata Horvath, from Formosa. In the United States it has been collected from scattered localities in the South Atlantic and Gulf Coast states. Intensive collecting will probably reveal its presence in Mexico.

KEY TO THE SPECIES OF SALDOIDA

1. Conical processes of pronotum black, pubescent; humeral angles of pronotum acute, sharply upturned; apex of scutellum (brachypterous forms) flat or slightly convex S. cornuta Osb.
(p. 468)

- Conical processes of pronotum yellow to brown, a few erect, stiff setae on the processes, not pubescent; humeral angles of pronotum rounded at apex, slightly upturned; apex of scutellum (brachypterous forms) grossly inflated, bulbous S. slossoni Osb.
(p. 474).

Saldoidea cornuta Osborn

(Plate II, figures 8a, 8b)

1901. Saldoidea cornuta Osborn, Herbert. Can. Ent. XXXIII, p. 182 (describes from Fla.; with S. slossoni constitutes new genus).
1908. Saldoidea cornuta, Slosson, A. T. Ent. News, XIX, p. 424 (notes on collecting and observations of habits).
1909. Saldoidea cornuta, Kirkaldy, G. W., and Torre-Bueno, J. R. de la. Catalogue in Proc. Ent. Soc. Wash. X, p. 178.
1910. Saldoidea cornuta, Banks, Nathan. Catalog Nearct. Hemip., p. 13.
1914. Saldoidea cornuta, Earber, H. G. Bull. Am. Mus. Nat. Hist. XXXIII, p. 499 (records from Fla.).
1916. Saldoidea cornuta, Van Duzee, E. P. Check List Hemip. North Amer., p. 51.
1917. Saldoidea cornuta, Van Duzee, E. P. Catalog Hemip. North Amer., p. 447.
1920. Saldoidea cornuta, Hungerford, H. B. Kans. Univ. Sci. Bull. XI, p. 79 (quotes original description).
1926. Saldoidea cornuta, Blatchley, W. S. Heterop. Eastern North Amer., p. 1018 (keys, redescribes, records from Florida).

1945. Saldoida cornuta, Usinger, R. L. Bull. Brooklyn Ent. Soc. XL, p. 116 (keys, records from Florida).

Size: Length 2.37 mm. to 2.67 mm. male; 2.55 mm. to 2.85 mm. female. Width of pronotum 0.70 mm. to 0.72 mm. male; 0.76 mm. to 0.86 mm. female.

Color: General color brown marked with black, antennae white-tipped. Eyes red-brown to dark brown. Head black, except apices of juga, the clypeus, labrum and bucculae which are brown, orange or red. First antennal segment yellow-brown with a basal black spot beneath; second segment yellow-brown, its apical third yellow-white; third dark purple-brown; fourth white or yellow, red or brown at base. Rostrum red, red-brown, or brown. Thorax black, excepting the upturned humeral angles, which are yellow-brown, and a narrow brown margin on the episternal plates before the coxae. Clavus, corium and apical half of embolium opaque, orange-brown or red-brown; apex and base of clavus and base of embolium pruinose. A pruinose gray triangular spot on disc of corium is contiguous with pruinose marking of the embolium. Apex of corium and base of membrane pruinose, corium narrowly yellow beyond apex of clavus; claval suture black. Base of embolium and lateral margins polished, hyaline or hyaline white. Membrane polished, yellow or pale brown. Sterna of

abdomen yellow, brown, or black; last sternum of female broadly hyaline brown apically. Genital capsule of male black. Coxae, trochanters and basal one-fourth to half of femora yellow, rest of femora red; red-brown of brown; tibiae yellow or orange, tarsi yellow. Spines of legs black.

Structural characteristics: (Brachypterous form):

General shape obovate. Hemelytra and apex of scutellum clothed with scattered long, erect stiff, dark setae. Head, except eyes, pronotum, scutellum, legs, ventral surfaces and antennae clothed with dense, recumbent, fine, silvery, golden or bronze pubescence. Width of head as compared to width of pronotum at humeral angles 110 100 male, 95 100 female; width of head as compared to width of pronotum at anterior angles 164 100 male, 153 100 female. Frons, lustrous, minutely scabrous, convex, not medially punctate between eyes; apex of frons not forming a ridge above clypeus but with straight ridges extending obliquely upward from basal angles of clypeus to the eyes. Vertex lustrous, minutely scabrous. Rostrum usually extending to apex of hind coxae. Antennae long, second segment swollen apically; third and fourth segments swollen, thicker than first and second segments, third segment markedly thicker than fourth. Length of antenna as compared to

length of hind tibia 129 100 male, 122 100 female; length of second antennal segment as compared to width of head 49 100 male, 47 100 female. Antennal segmentation 1 2 3 4 18 21 34 27 male; 17 22 35 26 female. Anterior lobe of pronotum lustrous, minutely scabrous, the sulci bounding it distinctly punctate. Conical processes of anterior lobe slightly divergent, acute apically, pubescent, not provided with erect setae. Median fovea located at end of anterior third of anterior lobe between conical processes. Posterior lobe polished, humeral angles markedly produced, acute, strongly upturned; lateral margins sharply constricted near end of median third of pronotum, posterior lobe forming a narrow ridge on each side of anterior lobe; posterior margins broadly and shallowly emarginate. Median length of posterior lobe as compared to median length of anterior lobe 33 100 male; 29 100 female; width of pronotum at humeral angles 64 100 male, 62 100 female. Scutellum lustrous, minutely scabrous; apical half strongly upturned, flat or slightly convex, never swollen or bulbous. Hemelytra arched; clavus, corium and apical half of embolium, except lateral margin, opaque. Claval suture distinct; suture between embolium and corium obsolete beyond middle of hemelytron; veins of corium obsolete. Lateral margins and basal half of

embolium polished. Membrane polished, coriaceous, the veins nearly or entirely obsolete. Venter of last abdominal segment of female rounded, produced, approximately three times longer than the preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate II, figures 8a and 8b. Length of hind tibia as compared to width of head

176	100 male;	178	100 female.
-----	-----------	-----	-------------

Macropterous forms are not known.

Comparative notes: This species resembles Saldoidea slossoni Osborn from which it can be distinguished by the black color of the conical processes, the pubescence of the conical processes, the acute sharply upturned humeral angles, the flat apical half of the scutellum and by the antennal segmentation. S. cornuta is usually smaller than S. slossoni and the species are differently colored.

Location of types: Described from a single brachypterous female collected by Mrs. Annie Trumbull Slosson at Jacksonville, Florida in 1898. This specimen, the holotype, is in the Ohio State University Collection. A brachypterous male specimen labeled "Lake Placid, Florida July 13, 1948, E. L. Todd" is designated as the allotype. The males listed below under "data on distribution" are designated as parallotypes. The

allotype is in the Francis Huntington Snow Entomological Collections. The parallotypes are in the Snow Collections or in the American Museum of Natural History as indicated below in "data on distribution".

Data on distribution: Recorded from Florida. In addition to the allotype designated above, the following specimens, all brachypterous, have been examined (new records from major political areas are indicated by an asterisk).

U. S. A.: Alabama; Mobile, June 26, 1948, R. H. Beamer, 1 male.

Florida: Lake Placid, July 13, 1948, E. L. Todd, 6 males, 2 females; Lake Placid, July 13, 1948, H. W. Crowder, 8 males; Lake Placid, July 13, 1948, B. T. McDermott, 6 males, 5 females; Lake Placid, July 13, 1948, L. D. Beamer, 1 female; Lake Placid, July 13, 1948, R. H. Beamer, 2 males, 3 females; Jacksonville, 1 female (Slosson Coll., A. M. N. H.); Bellaire, 2 males, 2 females (Slosson Coll., A. M. N. H.).

Saldoidea slossoni Osborn

(Plate II, figures 9a, 9b)

1901. Saldoidea slossoni Osborn, Herbert. Canad. Ent.
XXXIII, p. 181 (describes from Florida; with
S. cornuta constitutes new genus).
1908. Saldoidea slossoni, Slosson, A. T. Ent. News
XIX, p. 424 (notes on biology).
1909. Saldoidea slossoni, Kirkaldy, G. W., and Torre-
Bueno, J. R. de la. Catalogue in Proc. Ent.
Soc. Wash. X, p. 178,
1910. Saldoidea slossoni, Fanks, Nathan. Catalog
Nearct. Hemip., p. 13.
1912. Saldoidea slossoni, Reuter, O. M. Ofv. Finska
Vet.-Soc. Förh., LIV, Afd. A, No. 12, p. 24
(lists as genotype of Saldoidea).
1914. Saldoidea slossoni, Barber, H. G. Bull. Amer.
Mus. Nat. Hist. XXXIII, p. 499 (records from
Florida).
1916. Saldoidea slossoni, Van Duzee, E. P. Check List
Hemip. North Amer., p. 51.
1917. Saldoidea slossoni, Van Duzee, E. P. Catalog of
Hemip. North Amer., p. 447.
1920. Saldoidea slossoni, Hungerford, H. B. Kans. Univ.
Sci. Bull. XI, p. 78 (quotes original description).
1922. Saldoidea slossoni wileyi, Hungerford, H. B. Bull.

Brooklyn Ent. Soc. XVII, p. 64 (describes synonymic variety from Texas).

1926. Saldoidea slossoni, Blatchley, W. S. Heteropt. of Eastern North Amer., p. 1017 (keys, records from Florida).
1945. Saldoidea slossoni, Usinger, R. L. Bull. Brooklyn Ent. Soc. XL, p. 116 (records from Virginia, Georgia and Florida).
1945. Saldoidea slossoni wilevi, Usinger, R. L. Bull. Brooklyn Ent. Soc. XL, p. 116 (says Hungerford's variety is probably a synonym).

Size: (Brachypterous forms): Length 2.40 mm. to 3.00 mm. male; 2.70 mm. to 3.31 mm. female. Width of pronotum 0.68 mm. to 0.83 mm. male; 0.80 mm. to 0.92 mm. female. (Macropterous forms): Length 3.00 mm. to 3.04 mm. male; 3.15 mm. to 3.17 mm. female. Width of pronotum 0.87 mm. to 0.93 mm. male; 0.94 mm. to 0.95 mm. female.

Color: General color brown marked with black, antennae white-tipped. Eyes yellow-brown to dark-brown. Head yellow-brown, vertex and base of frons often black. First antennal segment yellow, often infuscated above σ at base; second segment brown, its apex (occasionally the apical half) white; third segment brown; fourth segment white to yellow-brown, its basal fifth brown.

Rostrum yellow-brown. Anterior lobe of pronotum yellow-brown to black, conical processes yellow-brown; posterior lobe yellow-brown. Anterior half of scutellum yellow-brown to black, inflated posterior half yellow-brown, the apex black. In macropterous forms the scutellum is entirely black. Clavus, corium and embolium, excepting lateral margin and base of embolium, opaque. Clavus brown, its apex often black; claval suture black; corium and medial two-thirds of embolium brown; lateral third of embolium hyaline. Embolium and corium marked with an oblique pruinose, white crescent at end of basal half of hemelytra, and with a pruinose spot on corium at end of opaque portion; corium dark brown immediately before pruinose crescent, yellow-brown before dark brown area. Membrane area polished, hyaline brown or black-brown, lateral and apical margins hyaline brown. In macropterous forms the basal half of membrane is polished, dark brown, the apical half hyaline white or gray; the veins gray-brown. Venter of thorax yellow-brown, rarely marked with black. Venter of abdomen yellow-brown to dark brown, the last two or three sterna usually black; last sternum of female black, usually hyaline apically. Genital capsule of male black. Coxae, trochanters and basal fourth to half of femora yellow-white; remainder of femora brown; tibiae and tarsi yellow, tipped with

dark brown. Spines of legs black.

Structural characteristics: (Erachypterous forms):

General shape obovate. Dorsal surfaces clothed with scattered long, erect, stiff, black setae. Ventral surfaces clothed with fine, golden or silvery pubescence. Legs clothed with fine, golden pubescence and fine, black, recumbent setae. First and second antennal segments clothed with short, fine, black setae. Width of head as compared to width of pronotum at humeral angles 111 100 male, 108 100 female; width of head as compared to width of pronotum at anterior angles 164 100 male, 162 100 female. Frons lustrous, minutely scabrous, medially punctately depressed between eyes; apex raised into a flat ridge which turns upward at the ends and extends to the eyes. Vertex polished anteriorly, lustrous and minutely scabrous posteriorly. Rostrum usually extending to apex of hind coxae. Antennae long, second segment swollen apically; third and fourth segments swollen, much thicker than first and second segments, third thicker than fourth. Length of antenna as compared to length of hind tibia 132 100 male, 126 100 female; length of second antennal segment as compared to width of head 56 100 male, 53 100 female. Antennal segmentation 1 2 3 4 19 24 30 27 male;

18 24 30 28 female. Pronotum polished; sulci bounding the anterior lobe distinctly punctate; conical processes of anterior lobe slightly divergent, rounded apically, and clothed with scattered erect setae which are shorter than the setae of the hemelytra. Median fovea located at end of anterior third of anterior lobe, between conical processes. Posterior lobe polished, humeral angles rounded, slightly produced and directed slightly upward; lateral margins sharply constricted behind middle of pronotum, posterior lobe forming a narrow ridge on each side of anterior lobe; posterior margins broadly and shallowly emarginate. Median length of posterior lobe as compared to median length of anterior lobe 33 100 male, 29 100 female; width of pronotum at anterior angles as compared to width of pronotum at humeral angles 67 100 male, 67 100 female. Basal half of scutellum minutely scabrous, golden pubescent; apical half swollen, bulbous, polished. Hemelytra arched; clavus, corium and a quadrangle on embolium opaque, sparsely golden pubescent; base of embolium and lateral margin polished; claval suture distinct, suture between embolium and corium obsolete posterior to middle of corium, veins of corium obsolete. Membrane polished, coriaceous, veins nearly or entirely obsolete. Hemelytra extending slightly beyond abdomen. Venter of last abdominal seg-

ment of female rounded, produced, its median length more than twice the median length of the preceding sternum. Terminal processes of male genital capsule and left clasper of male are figured on Plate II, figures 9a and 9b. Length of posterior tibia as compared to width of head 176 100 male; 177 100 female. (Macropterous form): General shape oblong, tapered posteriorly. Width of head as compared to width of pronotum at humeral angles 89 100 male, 87 100 female. Width of head as compared to width of pronotum at anterior angles 163 100 male, 154 100 female. Pronotum as in brachypterous forms except more deeply concavely emarginate; wider posteriorly in comparison with anterior width, width of pronotum at anterior angles as compared with width of pronotum at humeral angles 54 100 male, 56 100 female; posterior lobe relatively longer than in brachypterous forms, median length of posterior lobe as compared to median length of anterior lobe 53 100 male, 46 100 female. Hemelytra extending far beyond apex of abdomen; membrane distinct, polished; veins of the membrane distinct, base of the first areole distinctly anterior to base of second, first and fourth areoles shorter and narrower than second and third. Apical and medial margins of membrane at least as wide as second areole. Macropterous forms do not differ significantly

from the brachypterous forms in other respects.

Comparative notes: This species resembles Saldoidea cornuta Osborn from which it can be distinguished by the yellow-brown color of the conical processes, the scattered erect setae of the conical processes, the less acute and less upturned humeral angles, the swollen, bulbous apex of the scutellum (in brachypterous specimens) and by the antennal segmentation. S. slossoni is usually larger than S. cornuta and the species are differently colored.

Location of types: Described from a single brachypterous female collected by Mrs. Annie Trumbull Slosson at Punta Gordo, Florida in 1898. This specimen, the holotype, is in the Ohio State University Collection. A brachypterous male labeled "Lake Placid, Florida, July 13, 1948, R. H. Beamer" is designated as the allotype. The males listed below under "data on distribution" are designated as parallotypes. The following macropterous specimens constitute a morphotype series:

Morphoholotype: Lake Placid, Florida, July 13,
1948, E. L. Todd, male.

Morphoallotype: Lake Placid, Florida, July 13,

1948, R. H. Beamer, female.

Morphoparatypes: Norfolk, Virginia, Aug. 29, 1946

R. H. Beamer, one male.

Cape Henry, Virginia, Aug. 29,

1946, R. H. Beamer, one female.

The allotype, parallotypes and the morphotype series are in the Francis Huntington Snow Entomological Collections. In 1922 Hungerford named a variety, Saldoida slossoni wileyi, from a female from Big Sandy Creek, Eastland County, Texas, June 18, 1921, collected by Grace Wiley. Usinger (1945) has suggested that this variety is probably a synonym of S. slossoni. The type of this variety is in the Francis Huntington Snow Entomological Collections and has been examined and compared with typical specimens of S. slossoni; no differences beyond slightly larger size and minor color differences within the range of normal variation can be found, consequently this variety is treated as a synonym.

Data on distribution: Recorded from Florida, Texas, Virginia and Georgia. Besides the holotype of S. slossoni wileyi Hungerford, the allotype established above and the morphotype series the following specimens, all brachypterous, have been examined (new records from

major political areas are indicated by an asterisk):

U. S. A.: * Alabama: Mobile, June 26, 1948, L. D. Beamer, 1 male; Mobile, June 26, 1948, R. H. Beamer, 1 male, 1 female.

Florida: Belleaire, 3 females (Slosson Coll., A. M. N. H.); Iamonia, June 30, 1948, R. H. Beamer, 1 male; Lake Placid, July 13, 1948, R. H. Beamer, 1 female; Lake Placid, July 13, 1948, L. D. Beamer, 1 male, 1 female; Lake Placid, July 13, 1948, B. T. McDermott, 1 female; Lake Placid, July 13, 1948, H. W. Crowder, 3 males, 1 female.

Texas: Cisco, June 19, 1947, R. H. Beamer, 2 males, 3 females; Cisco, June 19, 1947, L. D. Beamer, 3 males, 2 females; Cisco, June 19, 1947, H. S. Wallace, 1 male, 1 female.

Virginia: Norfolk, Aug. 29, 1946, R. H. Beamer, 28 males, 48 females; Cape Henry, Aug. 29, 1946, R. H. Beamer, 19 males, 20 females.

ACKNOWLEDGMENTS

The writer wished to express his gratitude to the following persons:

Professor H. E. Hungerford, under whose direction this study was carried out, has given advice and criticism, based on his long experience in the study of the aquatic and semiaquatic Hemiptera. Professor Raymond H. Eamer, in direct charge of the Francis Huntington Snow Entomological Collections, has provided the majority of the specimens studied; many were collected by field parties under his direction. Since the beginning of the study Professor Eamer has made special effort to collect saldids, especially those of the genus Saldoida. Professor E. Raymond Hall has offered valuable suggestions on the preparation of the manuscript. Doctor Kathleen C. Doering has given advice on morphological problems and Doctor Charles D. Michener has given advice on nomenclature and intraspecific variation.

Doctor Edward A. Chapin of the United States National Museum permitted examination of the collection of Saldidae in that Museum, including the Uhler collection which is indispensable in the preparation of a revision of North American Saldidae. Doctor Reece I. Sailer has provided information on the types in the

Uhler collection and on the localities of the specimens in the Baker collection, both in the United States National Museum.

Doctors Mont A. Cazier of the American Museum of Natural History, Edward S. Ross of the California Academy of Sciences, Henry Dietrich of Cornell University and Roger C. Smith of Kansas State College lent the Saldidae from the collections in their charge. Doctors Howard M. Parshley and Robert L. Usinger and Messrs. John C. Lutz, Edgar H. Strickland and Harry C. Severin lent the Saldidae from their private collections.

Doctors W. E. China of the British Museum, G. Stuart Walley of the Canadian National Museum and Howard O. Deay of Purdue University generously loaned or exchanged specimens from the collections in their charge. The late Mr. J. R. de la Torre-Bueno compared specimens with the types in his collection. The Bueno collection, now in the Francis Huntington Snow Entomological Collections, contains many specimens which were valuable in the interpretation of published determinations and records. Mr. R. J. Izzard of the British Museum compared specimens with the types of the species described by Champion. Doctor Joseph C. Bequeart and Mr. Nathan Fanks of the Museum of Comparative Zoology at Harvard College provided the

writer with information on the Uhler types in that collection.

Mrs. Lucy D. Eeamer, who accompanies Professor Eeamer on the University of Kansas Biological Survey collecting trips, has made special effort to collect saldids for study by the writer. The many other members of the Survey field parties have collected many specimens of Saldidae from the United States and Canada. Mrs. Lavinia Richards Hodgden, the writer's wife has assisted in the preparation and typing of the manuscript; her participation has been invaluable.

BIBLIOGRAPHY

- AMYOT, C. J. B., and SERVILLE, J. G. A. 1843. Histoire Naturelle des Insectes. Hémiptères. Librairie Encyclopedique de Roret, Paris. lxxvi + 675 pp., 12 pl. Paris.
- BANKS, N. 1910. Catalog of the Nearctic Hemiptera Heteroptera. American Entomological Society, Philadelphia. pp. 1 - 104.
- BARBER, H. G. 1906. Hemiptera from Southwestern Texas. Sci. Bull. Brooklyn Inst. of Arts and Sci. I, pp. 255 - 289.
- 1914. Insects of Florida II, Hemiptera. Bull. American Mus. Nat. Hist. XXXIII, pp. 495.- 535.
- 1923. A Preliminary Report on the Hemiptera-Heteroptera of Porto Rico Collected by the American Museum of Natural History. American Mus. Novit., 75, pp. 1 - 13.
- 1925. Hemiptera-Heteroptera from the Williams Galapagos Expedition. Zoologica V, pp. 241 - 254.
- 1934. Hemiptera-Heteroptera in The Norwegian Zoological Expedition to the Galapagos Islands 1925, conducted by Alf Wollebaek. Nyt Mag. Naturvidenskaberne LXXIV, pp. 281 - 289.

- BARBER, H. G. 1959. Insects of Porto Rico and the Virgin Islands XIV, Hemiptera Heteroptera (excepting the Miridae and Coreidae) in Scientific Survey of Porto Rico and the Virgin Islands New York Academy of Sciences, New York, Pt. 3, pp. 263 - 441.
- BERG, C. 1880. Hemiptera Argentina Enumeravit Speciesque Novas. Sociedad Científica Argentina, Buenos Aires. vii + 516 pp.
- 1884. Addenda et Emendanda ad Hemiptera Argentina. Sociedad Científica Argentina, Buenos Aires. pp. 1 - 25.
- BERGROTH, E. 1906. Systematische und Synonymische Bemerkungen über Hemipteren. Wien Entom. Zeit. XXV, pp. 1 - 12.
- BLANCHARD, E. 1852. Hémipteros in Gay, C: Historia física y política de Chile VII. Paris. pp. 113 - 320.
- BLATCHLEY, W. S. 1926. Heteroptera of Eastern North America. The Nature Publishing Company, Indianapolis. pp. 1 - 1116.
- 1928. Notes on the Heteroptera of Eastern North America With Descriptions of New Species, I. J1. New York Entom. Soc. XXXVI, pp. 1 - 23.

- BLATCHLEY, W. S. 1930. *Blatchleyana*, A List of the Published Writings of W. S. Blatchley. The Nature Publishing Company, Indianapolis. pp. 1 - 77.
- BORNER, C. 1935. Rhynchota (Hemiptera) in *Tierwelt Mitteleuropas* IV. Quelle and Meyer, Leipzig. Teil I, Lief. 3, pp. 1 - 262,
- BRIMLEY, C. S. 1938. *Insects of North Carolina*. North Carolina Dept. of Agric., Raleigh. pp. 1 - 560.
- BUTLER, E. A. 1923. *A Biology of the British Hemiptera Heteroptera*. H. F. and G. Witherby, London viii + 682 pp., 7 pl.
- CHAMPION, G. C. 1901. Rhynchota Heteroptera II in *Biologia Centrali - Americana* xvi 416 pp., 22 pl.
- CHINA, W. E. 1933. A New Family of Hemiptera-Heteroptera with Notes on the Phylogeny of the Suborder. *Ann. and Mag. Nat. Hist.*, (10) XII, pp. 180 - 196.
- 1938. A New Genus and Species of Acanthiidae (Saldidae) from the Sinai Peninsula. *Mémoires de l'Institut d'Égypte* XXXVII, pp. 255 - 258, 1 pl.
- 1943. The Generic Names of the British Hemiptera-Heteroptera, with a Check List of the British

species in The Generic Names of British Inseces.

Royal Entomological Society, London. pp. 209 - 342.

COCKERELL, T. D. A. 1893. The Entomology of the Mid-Alpine Zone of Custer County, Colorado. Trans. American Entom. Soc. XX, pp. 305 - 370.

COSTA LIMA, A. da. 1940. Insetos do Brazil. Escola Nacional de Agronomia, Rio de Janeiro. Tomo II, Hemipteros. pp. 1 - 351.

CREVECOEUR, F. F. 1904. Additions to the List of the Hemipterous Fauna of Kansas. Trans. Kansas Acad. Sci., XIX, pp. 232 - 237.

CURTIS, J. 1835. Description of the Insects Brought Home by Commander James Clark Ross' Second Voyage. in Ross, J. C. Narrative of a Second Voyage to the Arctic Regions. London. Nat. Hist. Append. pp. 61 - 80, 1 pl.

DE CARLO, J. A. 1935. Catalogo, con la Bibliografia mas Importante, de los Hémipteros Acuaticos y Semi-acuaticos de Chile. Rev. Chilena Hist. Nat. XXXIX, pp. 105 - 111.

DISTANT, W. L. 1893. Descriptions of New Genera and Species of Neotropical Rhynchota, Trans. Entom. Soc. London (1893), pp. 83 - 96.

- DOWNES, W. 1927. A Preliminary List of the Heteroptera and Homoptera of British Columbia. Proc. Entom. Soc. British Columbia XXIII, pp. 1 - 22.
- DOUGLAS, J. W., and SCOTT, J. 1865. The British Hemiptera I, Hemiptera - Heteroptera. The Ray Society, London. xii + 621 pp., 21 pl.
- DRAKE, C. J., and CARVALHO, J. C. M. 1948. Concerning South American Saldidae (Hemiptera). Revista Entomologia XIX, pp. 473 - 479.
- EKELOM, T. 1926. Morphological and Biological Studies of the Swedish Families of Hemiptera-Heteroptera, Pt. I. Zool. Bidrag Fran Uppsala X, pp. 31 - 279, 267 figs.
- 1929. New Contributions to the Systematic Classification of Hemiptera-Heteroptera. Entom. Tidsk. Utgifven Entom. Foren. Stockholm L, pp. 169 - 180, 16 figs.
- FAERICIUS, J. C. 1775. Systema Entomologia Sistens Insectorum Classes, Ordines, Genera, Species, Adjectis Synonymis, Locis, Descriptionibus, Observationibus. Flensburg and Leipsiz. pp. 1 - 832.
- 1794. Entomologia Systematica Emendata et Aucta, Secundum Classes, Ordines, Genera, Species,

Adjectis, Synonymis, Locis, Observationibus. IV.
Copenhagen. pp. 1 - 572.

FABRICIUS, J. C. 1803. Systema Rhyngotorum Secundum
Ordines, Genera, Species, Adjectis Synonymis, Locis,
Observationibus, Descriptionibus. Brunswick. pp.
1 - 314.

FALLEN, C. F. 1807. Monographia Cimicum Sueciae.
Copenhagen. pp. 1 - 123.

----- 1828. Hemiptera Sueciae Cimicides Eorumque
Familiae Affines. London. pp. i - iv, 1 - 88.

PIEBER, F. X. 1859. Die Europaischen Arten der
Gattung Salda Fab. Wiener Entom. Mon. III, pp.
230 - 241.

FITCH, A. 1857. Fourth Report on the Noxious and
Other Insects of the State of New York. Trans. New
York Agric. Soc. XVII, pp. 687 - 814.

GILLETTE, C. P., and BAKER, C. F. 1895. A Preliminary
List of the Hemiptera of Colorado. Colorado Agric.
Expt. Sta. Bull. 31, pp. 1 - 137.

GUERIN-MENEVILLE, F. E. 1856. Hémipteros in Historia
Fisica Politica y Natural de la Isla de Cuba (by D.
Ramon de la Sagra) VII. Paris. pp. 1 - 868, 20 pl.

- HARRIS, H. M. 1937. Contributions to the South Dakota List of Hemiptera. Iowa State Coll. Jl. Sci. XI, pp. 169 - 176.
- 1943. Additions to the South Dakota List of Hemiptera. Jl. Kansas Entom. Soc. XVI, pp. 150 - 153.
- HARRIS, H. M., and SHULL, W. E. 1944. A Preliminary List of Hemiptera of Idaho. Iowa State Coll. Jl. Sci. XVIII, pp. 199 - 208.
- HEIDEMAN, O. 1901. Hemiptera in Papers From the Hopkins Stanford Galapagos Expedition, 1898 - 1899. Proc. Washington Acad. Sci. III, pp. 363 - 370.
- HORN, W. 1926. Über den Verblieb der Entomologischen Sammlungen der Welt. Supplementa Entomologica No. 12, Privately printed, Berlin. pp. 1 - 133.
- HORVATH, G. von. 1911. Miscellanea Hemipterologica, I - V. Ann. Mus. Nat. Hungarici IX, pp. 327 - 338. 1 pl.
- 1915. Novum Genus Peculiare Acanthidarum. Ann. Mus. Nat. Hungarici XIII, pp. 598 - 599. 1 fig.
- HUNGERFORD, H. B. 1918. Notes on the Oviposition of Some Semi-aquatic Hemiptera. Jl. New York Entom.

Soc. XXVI, No. 2, pp. 12 - 18, 1 pl.

HUNGERFORD, H. B. 1920a. The Biology and Ecology of Aquatic and Semiaquatic Hemiptera. Univ. of Kansas Sci. Bull. XI, pp. 1 - 328, 30 pl.

----- 1920b. The Male Genitalia as Characters of Specific Value in Certain Cryptocerata (Hemiptera-Heteroptera). Univ. of Kansas Sci. Bull. XI, pp. 329 - 335, 2 pl.

----- 1922. Saldoida slossoni Osb. var. wileyi, new var., taken in Texas. Bull. Brooklyn Entom. Soc. XVII, p. 64.

HUNGERFORD, H. B., and BEAMER, R. H. 1925. Report of Collections of Aquatic Hemiptera taken in Cherokee County, Kansas, and Other New Records from the State. Entom. News XXXVI, pp. 262 - 266.

HUSSEY, R. F. 1919. The Waterbugs (Hemiptera) of the Douglas Lake Region, Michigan. Occas. Pap. Mus. Zool., Univ. of Michigan LXXV, pp. 1 - 23.

HUSSEY, R. F. 1949. A Necessary Change of Name (Hemiptera, Saldidae). Bull. Brooklyn Entom. Soc. XLIII, p. 153.

JORDAN, K. H. C., and WENDT, A. 1938. Zur Biologie von Salda litoralis L. (Hemiptera-Heteroptera).

Stettiner Entom. Zeit. IC, pp. 273 - 292.

KIRKALDY, G. W. 1899a. On the Nomenclature of the Rhynchota, Part I. Entomologist XXXII, pp. 217 - 221.

----- 1899b. Sur Quelques Hémiptères Aquatiques Nouveaux ou Peu Connus. Revue d'Entom. XVIII, pp. 85 - 96.

----- 1906. List of the Genera of the Pagiopodous Hemiptera-Heteroptera, with Their Type Species, from 1758 to 1904 (and Also of the Aquatic and Semi-aquatic Prochelopoda). Trans. American Entom. Soc. XXXII, pp. 117 - 156.

KIRKALDY, G. W., and TORRE-EUENO, J. R. de la. 1909. Catalog of American Aquatic and Semi-aquatic Hemiptera. Proc. Ent. Soc. Washington X, pp. 173 - 215.

LATREILLE, P. A. 1796. Précis des Caractères Génériques des Insectes, Disposés dans un Ordre Naturel. Bordeaux. xiii + 201.

----- 1804. Histoire Naturelle Générale et Particulière des Crustacés et des Insectes, III. Paris. xii + 467.

----- 1825. Familles Naturelles du Règne Animal; Exposées Succinctement et dans un Ordre Analytique, avec L'indication de Leurs Genres. Paris. pp. 1 - 570.

- LETHIERRY, L., and SEVERIN, G. 1896. Catalogue Général des Hémiptères III, pp. 1 - 275. R. Friedlander, Berlin.
- LINNAEUS, C. 1758. Systema Naturae per Regna Tria Naturae Secundum Classes, Ordines, Genera, Species, Cum Characteribus, Differentiis, Synonymis, Locis I, Stockholm. Edition X, pp. 1 - 824.
- MASON, J. E. 1889. Aquatic Habit of a Salda. Entom. Monthly Mag. XXV, pp. 236 - 237.
- McDUNNOUGH, J. 1925. Notes on Saldula obscura Prov. with Description of a New Species (Hemiptera). Canadian Entom. LVII, pp. 257 - 260.
- OSBORN, H. 1892. Catalogue of the Hemiptera of Iowa. Proc. Iowa Acad. Sci. I, pp. 120 - 123.
- 1895. The Phylogeny of Hemiptera. Proc. Entom. Soc. Washington III, pp. 185 - 189.
- 1898. Additions to the List of Hemiptera of Iowa with Descriptions of New Species. Proc. Iowa Acad. Sci. V, pp. 232 - 247.
- 1901. New Genus Including Two New Species of Saldidae. Canadian Entom. XXXIII, pp. 181 - 182.
- OSHANIN, B. 1909. Verzeichnis der Palaearctischen

Hemipteren mit Besondener Berücksichtigung Ihrer
Verteilung im Russischen Reiche I. Kaiserlichen
Akademie der Wissenschaften, Berlin. Lief. III,
pp. 587 - 1087.

OSHANIN, B. 1912. Katalog der Palaarktischen Hemip-
teren Kaiserlichen Akademie der Wissenschaften,
Berlin. xvi + 187.

PACKARD, A. S. 1871. On Insects Inhabiting Salt
Water. American Jl. Sci. and Arts I, pp. 100 - 110.

PARSHLEY, H. M. 1914. List of the Hemiptera-Heteroptera
of Maine. Psyche XXI, pp. 139 - 149.

----- 1917a. Insects in Ocean Drift, I. Hemiptera
Heteroptera. Canadian Entom. XLIX, pp. 45 - 48.

----- 1917b. List of the Hemiptera-Heteroptera in
Fauna of New England. Occas. Papers Boston Soc.
Nat. Hist. VII, pp. 1 - 125, 1 map.

----- 1919. New England Hemiptera-Heteroptera, New
Records. Canadian Entom. LI, pp. 70 - 72.

----- 1921. A Report on Some Hemiptera from British
Columbia. Proc. Entom. Soc. British Columbia
(Syst. Ser.), XVIII, pp. 13 - 24, 3 figs.

----- 1922. A Change of Name in the Saldidae (Hemip-

tera). Entom. News XXXIII, p. 71.

PARSNLEY, H. M. 1925. A Bibliography of the North American Hemiptera-Heteroptera. Smith College, Northampton, Massachusetts. ix + 252 pp.

POISSON, R. 1943. Sur la Synonymie de Dollfusella minutissima. China 1938 et Omania coleoptrata Horvath 1915 (Hemiptera: Acanthiidae). Bull. Soc. Entom. France, p. 123.

POPENOE, E. A. 1884. Contributions to a Knowledge of the Hemiptera Fauna of Kansas. Trans. Kansas Acad. Sci. IX, pp. 62 - 64.

PROVANCHER, L'ABBE' L. 1872. Descriptions de Plusieurs Hémiptères Nouveaux. Naturaliste Canadien. IV, pp. 103 - 108.

----- 1886 - 1890. Petite Faune Entomologique du Canada, III, Les Hémiptères. Quebec. pp. 1 - 354, 5 pl.

REUTER, O. M. 1875. Hémiptères Nouveaux. Pet. Nouv. Entom. I, pp. 544 - 545.

-----1891. De Skandinaviskt - Finska, Acanthia - (Salda-) Arterna af Saltatoria - Gruppen. Medd. Soc. Faun. Flor. Fenn. XVII, pp. 144 - 160.

- REUTER, O. M. 1895. Species Palaearcticae Generis
Acanthia Fabr. Latr. Acta Soc. Sci. Fenn. XXI, pp.
 1 - 58, 1 pl.
- 1910. Neue Beiträge zur Phylogenie und Systematik
 der Miridien (Capsidae) Nebst Einleitenden Bemerkung
 über die Phylogenie der Heteropteren-Familien. Acta.
 Soc. Sci. Fenn. XXXVII, pp. 1 - 171. 1 pl.
- 1912a. Bemerkung über mein Neues Heteropterensystem.
 Ofv. Finska Vet.-Soc. Förh. LIV, (A), No. 6, pp. 1 - 62.
- 1912b. Hemipterologische Miscellen. Ofv.
 Finska Vet.-Soc. Förh. LIV, Afd. (A), No. 7, pp.
 1 - 76.
- 1912c. Zur Generischen Teilung der Palaarktischen
 und Nearktischen Acanthiaden. Ofv. Finska Vet.-
 Soc. Förh. LIV, (A), No. 12. pp. 1 - 24.
- SAHLBERG, J. R. 1878. Bidrag till Nordvestra Sibiriens
 Insekt Fauna, Hemiptera Heteroptera, Kongl. Svenska
 Vet.- Akad. Handl. XVI, pp. 1 - 39.
- 1920. Enumeratio Hemipterorum Heteropterorum
 Faunae Fennicae. Editio Secunda Aucta et Emendata.
 Bidrag Kannedom Finland's Natur. Folk LXXIX, pp. 1 -
 227.

- SAUNDERS, E. 1892. Hemiptera Heteroptera of the British Islands. L. Reeve and Company, London. vi + 350 pp.
- SAY, T. 1825. Descriptions of New Hemipterous Insects Collected in The Expedition to The Rocky Mountains, Performed by Order of Mr. Calhoun, Secretary of War, Under Command of Major Long. Jl. Acad. Nat. Sci. Philadelphia IV, pp. 307 - 345.
- 1832. Descriptions of New Species of Heteropterous Hemiptera of North America. Privately printed, New Harmony, Indiana. pp. 1 - 39.
- 1859. The Complete Writings of Thomas Say on the Entomology of North America, with a Memoir of The Author by George Ord. Edited by J. L. Le Conte. Bailliere Brothers, New York. Vol. II, pp. 1 - 814.
- 1869. American Entomology. A Description of the Insects of North American with Illustrations Drawn and Colored After Nature. With a Memoir of the Author by George Ord. Edited by J. L. Le Conte. J. W. Bouton, New York. Vol. I, xxiv + 412 pp., 54 pl.
- SIGFRET, V. 1863. Révision des Hémiptères du Chili. Ann. Soc. Entom. France III, pp. 541 - 588, 3 pl.

- SINGH-PRUTHI, H. 1925. The Morphology of the Male Genitalia in Rhynchota. Trans. Entom Soc. London (1925), pp. 127 - 267.
- SLOSSON, A. T. 1908. A Hunt for Saldoida, Osborn. Entom. News XIX, pp. 424 - 428.
- SMITH, J. B. 1910. A Report on the Insects of New Jersey - Hemiptera. Ann. Report New Jersey State Mus., 1909, pp. 131 - 170.
- SNOW, F. H. 1906a. Some Results of the University of Kansas Entomological Expeditions to Galveston and Brownsville, Texas, in 1904 and 1905. Trans. Kansas Acad. Sci. XX, Pt. I, pp. 136 - 154.
- 1906b. Some Results of the University of Kansas Entomological Expedition to Arizona in 1904 and 1905. Trans. Kansas Acad. Sci., XX, Pt. I, pp. 155 - 181.
- SPOONER, C. S. 1938. The Phylogeny of the Hemiptera Based on A Study of the Head Capsule. Illinois Biol. Monograph XVI, No. 3. Univ. of Illinois, Urbana. pp. 1 - 102, 24 pl.
- STÅL, C. 1859. Hemiptera, Species Novas. Kongl. Svenska Freg. Eugenies Resa Omkring Jorden III, pp. 219 - 298, 2 pl.

- STÅL, C. 1860. Bidrag Till Rio Janeiro-Traktens Hemiptera-Fauna. Kongl. Svenska Vet.-Akad. Handl. II, No. 7. pp. 1 - 84.
- 1862. Hemiptera Mexicana Enumeravit Speciesque Nova Descriptit. Stettiner Entom. Zeit. XXIII, pp. 437 - 462.
- 1863a. Synopsis Saldarum Sueciae. Ofv. Svenska Vet.-Akad. Förh. XXV, No. 6, pp. 387 - 393.
- 1863b. Hemiptera Fabriciana. Fabricianska Hemipter-Arter, Efter de i Kopenhagen Och Kiel Forvarada Typexemplaren Granskade Och Beskrifne. Svenska Vet.-Akad. Handl. VII, No. 2, pp. 1 - 148.
- 1873. Enumeratio Hemipterorum III, Bidrag till en Foreteckning Ofver Alla Hittills Kanda Hemiptera, Jemte Systematiska Meddelanden. Kongl. Svenska Vet.-Akad. Handl. XI, No. 2, pp. 1 - 163.
- STICHEL, W. 1934. Illustrierte Bestimmungstabellen der Deutschen Wanzen (Hemiptera-Heteroptera) Privately printed, Berlin. Lief. 10, pp. 295 - 304.
- STILES, C. W. 1924. Opinions Rendered by the International Commission on Zoological Nomenclature. Opinion 81. Smithsonian Misc. Coll. LXXIII, No. 2, pp. 19 - 32.

- THOMSON, C. G. 1871. Ofversigt af. Sveriges Saldar-arter in Opuscula Entomologica Fascicle IV. Lund. pp. 403 - 409.
- TORRE-BUENO, J. R. de la. 1906. On Some Aquatic Hemiptera from Costa Rica, Central America. Entom. News XVII, pp. 54 - 57.
- 1908. Hemiptera Heteroptera of West Chester County New York. Jl. New York Entom. Soc. XVI, pp. 223 - 238.
- 1913. Some New and Little Known Heteroptera from the Western United States. Entom News XXIV, pp. 20 - 23.
- 1923a. Saldid Genus New to the United States, and a New Species with Notes on Other Water Bugs from the Adirondacks. Bull. Brooklyn Entom. Soc. XVIII, pp. 149 - 154.
- 1923b. Saldidae in Britton, W. E.: The Hemiptera or Sucking Insects of Connecticut. Connecticut State Geol. Nat. Hist. Surv. Bull. XXXIV, pp. 1 - 807, 20 pl.
- 1923c. Addenda and Corrigenda of Hemiptera of Connecticut. Connecticut Geol. and Nat. Hist. Surv. Bull. XXXIV, 4 pp.

- TORRE-BUENO, J. R. de la. 1924. Three Canadian Acanthiidae (Saldidae, Heteroptera). Canadian Entom. LVI, pp. 296 - 300.
- 1928. Saldidae in A List of the Insects of New York with A List of the Spiders and Certain Other Allied Groups. Cornell Agri. Expt. Sta. Memoir 101, pp. 1 - 1121, 1 map.
- 1931. Heteroptera Collected by G. P. Engelhardt in the South and West, II. Bull. Brooklyn Entom. Soc. XXVI, pp. 135 - 139.
- 1934. On Some Heteroptera From the West and Southwest. Bull. Brooklyn Entom. Soc. XXIX, pp. 155 - 157.
- TUCKER, E. S. 1907. Some Results of Desultory Collecting of Insects in Kansas and Colorado. List of Hemiptera Heteroptera. Univ. of Kansas Sci. Bull. IV, pp. 51 - 62.
- UHLER, P. R. 1872. Notices of the Hemiptera of the Western Territories of the United States, Chiefly from the Surveys of Dr. F. V. Hayden. Prelim. Rept. United States Geol. Surv. of Montana. Washington, D. C. pp. 392 - 423.
- 1875. Report Upon the Collections of Hemiptera Made in Portions of Nevada, Utah, California, Colorado,

New Mexico and Arizona during the Years 1871, 1873, and 1874. Rept. United States Geol. Geog. Explorations and Surveys West of the 100th meridian, V (Zoology) pp. 829 - 842, 1 pl.

UHLER, P. R. 1876. List of Hemiptera of the Region West of the Mississippi River, Including Those Collected During the Hayden Explorations of 1873. Bull. United States Geol. Geog. Surv. of the Territories I, pp. 269 - 361, 3 pl.

----- 1877a. Report Upon the Hemiptera Collected During the Years 1874 and 1875. Ann. Rept. Chief Engr. for 1877, pp. 1322 - 1334.

----- 1877b. Report Upon the Insects Collected by P. R. Uhler During the Explorations of 1875, including Monographs of the Families Cydnidae and Saldae, and the Hemiptera Collected by A. S. Packard, Jr., M. D. Bull. United States Geol. Geog. Surv. III, pp. 355 - 475, 2 pl.

----- 1878. Notices of the Hemiptera Heteroptera in the Collection of the Late T. W. Harris, M. D. Proc. Boston Soc. Nat. Hist. XIX, pp. 365 - 446.

----- 1884. Hemiptera in Kingsley's Stand. Nat. Hist II. S. E. Sassino and Company, Boston. pp. 204 - 296, 1 pl.

- UHLER, P. R. 1886. Check List of the Hemiptera Heteroptera of North America. Brooklyn Entom. Soc., Brooklyn. pp. 1 - 34.
- 1893a. Summary of the Collection of Hemiptera Secured by Mr. E. A. Schwarz in Utah. Proc. Entom. Soc. Washington II, pp. 366 - 385.
- 1893b. A List of the Hemiptera-Heteroptera Collected in the Island of St. Vincent by Mr. Herbert H. Smith, with Descriptions of New Genera and Species. Proc. Zool. Soc. London, 1893, pp. 705 - 719.
- 1894a. Observations Upon the Heteropterous Hemiptera of Lower California with Descriptions of New Species. Proc. California Acad. Sci. Ser. 2, IV, pp. 223 - 295.
- 1894b. On the Hemiptera-Heteroptera of the Island of Grenada, West Indies. Proc. Zool Soc. London, 1894, pp. 167 - 224.
- 1904. List of the Hemiptera-Heteroptera of Las Vegas Hot Springs, New Mexico, Collected by Messrs. E. A. Schwarz and Herbert S. Barber. Proc. United States Nat. Mus. XXVII, pp. 349 - 364.
- USINGER, R. L. 1945. Review of the Genus Saldoida

with New Records for Georgia and Virginia (Hemiptera, Saldidae). Bull. Brooklyn Entom. Soc. XL, pp. 116 - 118.

VAN DUZEE, E. P. 1889. Hemiptera from Muskoka Lake District. Canadian Entom. XXI, pp. 1 - 11.

----- 1894. A List of the Hemiptera of Buffalo and Vicinity. Bull. Buffalo Soc Nat. Sci. V, pp. 167 - 204.

----- 1905. A List of Hemiptera Taken in the Adirondack Mountains. New York State Mus. Bull 97 in Rept. State Entomologist for 1904, pp. 546 - 556.

----- 1910. Kirkaldy's Catalog of the Hemiptera. An Appreciation with Digressions. Entom. News XXI, pp. 140 - 143.

----- 1911. Taxonomy of Family Names. Entom. News, XXII, pp. 431 - 432.

----- 1912. Synonymy of the Provancher Collection of Hemiptera. Canadian Entom. XLIV, pp. 317 - 329.

----- 1914a. A Preliminary List of the Hemiptera of San Diego County, California. Trans. San Diego Soc. Nat. Hist. II pp. 1 - 57.

----- 1914b. Nomenclatural and Critical Notes on

Hemiptera. Canadian Entom. XLIV, pp. 377 - 389.

VAN DUZEE, E. P. 1916a. Check List of the Hemiptera (excepting Aphididae, Aleurodidae and Coccidae) of America, North of Mexico. New York Entom. Soc., New York. xi + 111 pp.

----- 1916b. Notes on Some Hemiptera Taken Near Lake Tahoe, California. Univ. of California Agri. Expt. Sta. Tech. Bull. I, pp. 229 - 249.

----- 1917. Catalogue of the Hemiptera of America North of Mexico excepting Aphididae, Coccidae and Aleurodidae. Univ. of California, Berkeley. xiv + 902 pp.

----- 1918. Report Upon A Collection of Hemiptera Made by Walter Giffard in 1916 and 1917, Chiefly in California. Proc. California Acad. Sci., 4th Series, VII, pp. 249 - 318.

----- 1919. Hemiptera in Report of the Canadian Arctic Expedition, 1913 - 1918, III, Pt. F; pp. 1 - 5.

----- 1923. Hemiptera in Expedition of the California Academy of Sciences to the Gulf of California in 1921. Proc. California Acad. Sci., 4th Series, pp. 123 - 200.

WILEY, G. O. 1923. Life History Notes on Two Species

of Saldidae (Hemiptera) Found in Kansas. Univ. of
Kansas Sci. Bull. XIV, pp. 301 - 307, 2 pl.

WALLEY, G. S. 1930. Heteroptera from the North Shore
of the Gulf of St. Lawrence, Canadian Entom. LXII,
pp. 75 - 81.

ZETTERSTEDT, J. W. 1828. Fauna Insectorum Lapponica
Hammone xx + 563pp

ZETTERSTEDT, J. W. 1840. Insecta Lapponica Descripta.
Leipzig. 1140 pages in double numbered columns.

Transmitted, May 20, 1949.

INDEX

	Page
<u>abdominalis</u> Champion (<u>Salda</u>)	149
<u>ACANTHIA</u> Latreille	132
<u>alpicola</u> (J. Sahlberg) (<u>Calacanthia</u>)	127
<u>alternata</u> (Uhler) (<u>Salda</u>)	327
<u>antracina</u> Uhler (<u>Salda</u>)	154
<u>beameri</u> n. sp. (<u>Salda</u>)	160
* <u>bellatrix</u> (Bueno) (<u>Salda</u>)	164
<u>bifasciata</u> Thomson (<u>Salda</u>)	164
<u>borealis</u> (Stål) (<u>Chiloxanthus</u>)	61
<u>bouchervillei</u> (Provancher) (<u>Salda</u>)	170
<u>buenoi</u> (McDunnough) (<u>Salda</u>)	282
<u>CALACANTHIA</u> Reuter	125
<u>celeripedis</u> (Bueno) (<u>Salda</u>)	230
* <u>CHARITOLAMPRA</u> Bueno (<u>Salda</u>)	137
<u>CHILOXANTHUS</u> Reuter	58
<u>comata</u> Champion (<u>Salda</u>)	184
<u>comatula</u> (Parshley) (<u>Salda</u>)	193
<u>confluenta</u> (Say) (<u>Salda</u>)	203
* <u>coriacea</u> Uhler (<u>Salda</u>)	170
<u>cornuta</u> Osborn (<u>Saldoidea</u>)	468
<u>coxalis</u> (Stål) (<u>Salda</u>)	325
<u>crassicornis</u> Uhler (<u>Salda</u>)	212
<u>cursitans</u> (Bueno) (<u>Salda</u>)	229
<u>dentulata</u> n. sp. (<u>Salda</u>)	218
* <u>deplanata</u> Uhler (<u>Salda</u>)	290
<u>dewsi</u> n. sp. (<u>Salda</u>)	223
<u>dispersa</u> Uhler (<u>Salda</u>)	328
<u>elongata</u> Uhler (<u>Salda</u>)	229
* <u>explanata</u> Uhler (<u>Salda</u>)	328
<u>hirta</u> Say (<u>Acanthia</u>)	94
<u>hispida</u> n. sp. (<u>Salda</u>)	238
<u>humilis</u> (Say) (<u>Salda</u>)	242
<u>hungerfordi</u> n. sp. (<u>Salda</u>)	260
<u>interstitialis</u> (Say) (<u>Salda</u>)	324
<u>IOSCYFUS</u> Reuter.	135
<u>laevis</u> Champion (<u>Salda</u>)	266
<u>LAMPACANTHIA</u> Reuter	135
<u>laticollis</u> (Reuter) (<u>Salda</u>)	325
<u>latifrons</u> (J. Sahlberg) (<u>Chiloxanthus</u>)	61

<u>laviniae</u> n. sp. (<u>Salda</u>) .	270
<u>ligata</u> (Say) (<u>Pentacora</u>)	72
<u>littoralis</u> (Linnaeus) (<u>Salda</u>)	275
<u>luctuosa</u> Stål (<u>Salda</u>)	324
<u>lugubris</u> (Say) (<u>Salda</u>)	.231
<u>major</u> Provancher (<u>Salda</u>) . .	.290
<u>maritima</u> (Uhler) (<u>Pentacora</u>) . . .	73
<u>mexicana</u> (Van Duzee) (<u>Pentacora</u>)	. 83
MICRACANTHIA Reuter134
<u>nigrita</u> (Parshley) (<u>Salda</u>)	302
<u>obscura</u> Provancher (<u>Salda</u>)	308
<u>orbiculata</u> Uhler (<u>Salda</u>) .	.315
<u>ornata</u> (Stål) (<u>Pentacora</u>)	98
<u>pallipes</u> (Fabricius) (<u>Salda</u>)	324
<u>pellita</u> (Uhler) (<u>Pentacora</u>)	88
PENTACORA Reuter	67
PENTACORINAE n. subf.	57
<u>polita</u> Uhler (<u>Salda</u>)390
<u>polita flavicosta</u> (Reuter) (<u>Salda</u>)	.390
<u>pumila</u> (Blatchley) (<u>Salda</u>)	397
<u>pusilla</u> (Van Duzee) (<u>Salda</u>)	403
<u>quadrinaculata</u> Champion (<u>Salda</u>)	403
<u>reperta</u> Uhler (<u>Salda</u>)	326
SALDA Fabricius	132
SALDIDAE Amyot and Serville	.54
SALDINAE Van Duzee	124
SALDOIDA Osborn. .	465
SALDOIDINAE Reuter	.464
SALDULA Van Duzee	135
<u>saltatoria</u> (Linnaeus) (<u>Salda</u>) .	410
SCIODOPTERUS Amyot and Serville	132
<u>sectilis</u> n. sp. (<u>Salda</u>)	419
<u>separata</u> Uhler (<u>Salda</u>) . .	423
<u>serior</u> J. Sahlberg (<u>Salda</u>)	164
<u>severini</u> (Harris) (<u>Salda</u>)	432
<u>signoretii signoretii</u> (Guérin) (<u>Pentacora</u>)	98
<u>signoretii yucatanana</u> n. subsp. (<u>Pentacora</u>)	111
<u>slossoni</u> Osborn (<u>Saldoida</u>)	474
<u>slossoni wileyi</u> Hungerford (<u>Saldoida</u>) .	474
<u>sphacelata</u> (Uhler) (<u>Pentacora</u>)115
<u>stellatus</u> (Curtis) (<u>Chiloxanthus</u>)	61
<u>sulcata</u> (Barber) (<u>Salda</u>)	437
<u>sulcicollis</u> Champion (<u>Salda</u>)	.442

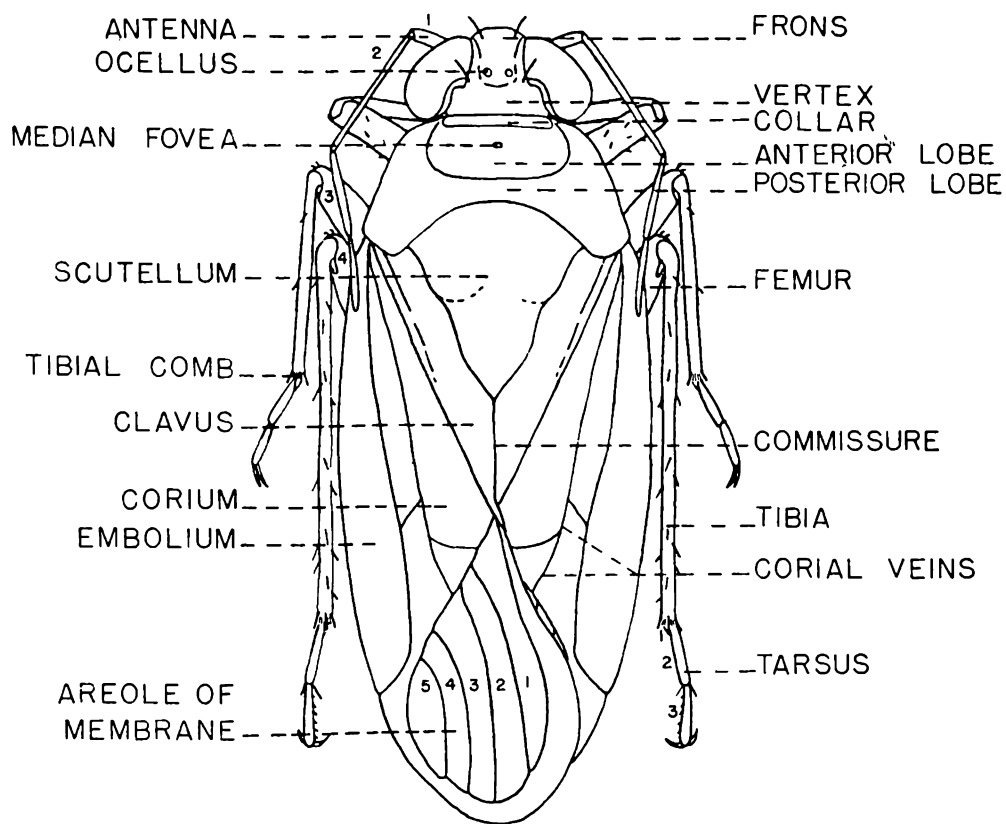
<u>PELOLEUCA</u> Reuter.	134
<u>tepidaria</u> n. sp. (<u>Salda</u>) .	449
<u>tropicalis</u> Champion (<u>Salda</u>)	530
<u>trybomi</u> (J. Sahlberg) (<u>Calacanthia</u>)	. . 127
<u>vagata</u> (Snow) (<u>Pentacora</u>) .	88
<u>vagator</u> (Smith) (<u>Pentacora</u>)	88
<u>variegata</u> (Provancher) (<u>Pentacora</u>)	. 72
<u>ventralis</u> Stål (<u>Salda</u>)	453
<u>villosa</u> n. sp. (<u>Salda</u>)	. 459

PLATES

PLATE I.

- Figure 1. Pentacora sphacelata (Uhler). Dorsal aspect.
- Figure 2. Chiloxanthus stellatus (Curtis). Right hemelytron.
- Figure 3. Salda nigrita (Parshley). Right hemelytron.
- Figure 4. Pentacora signoretii signoretii (Guérin-Méneville).
Dorsal aspect of genital capsule of male.

PLATE I



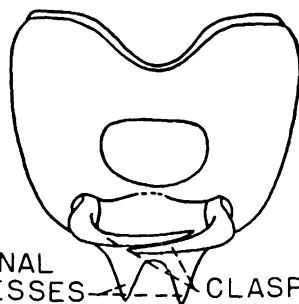
1 PENTACORA SPHACELATA



HEMELYTRON OF
 CH'LOXANTHUS



3 HEMELYTRON OF
 SALDA



4 GENITAL CAPSULE
 OF PENTACORA

TERMINAL
 PROCESSES
 CLASPERS

PLATE II.

Figure 1. Pentacora ligata (Say).

- 1 a. Caudal aspect of left clasper of male.
- 1 b. Caudal aspect of terminal processes of male.

Figure 2. Pentacora pellita (Uhler).

- 2 a. Caudal aspect of left clasper of male.
- 2 b. Caudal aspect of terminal processes of male.

Figure 3. Pentacora signoretii signoretii (Guérin-Méneville).

- 3 a. Caudal aspect of left clasper of male.
- 3 b. Caudal aspect of terminal processes of male.

Figure 4. Pentacora signoretii yucata new subspecies.

- 4 a. Caudal aspect of left clasper of male.
- 4 b. Caudal aspect of terminal processes of male.

Figure 5. Pentacora sphaclata (Uhler).

- 5 a. Caudal aspect of left clasper of male.
- 5 b. Caudal aspect of terminal processes of male.

Figure 6. Chiloxanthus stellatus (Curtis).

- 6 a. Caudal aspect of left clasper of male.
- 6 b. Caudal aspect of terminal processes of male.

Figure 7. Calacanthia trybomi (J. Sahlberg).

- 7 a. Caudal aspect of left clasper of male.
- 7 b. Caudal aspect of terminal processes of male.

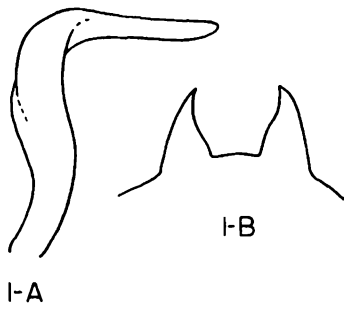
Figure 8. Saldoida cornuta Osborn.

- 8 a. Caudal aspect of left clasper of male.
- 8 b. Caudal aspect of terminal processes of male.

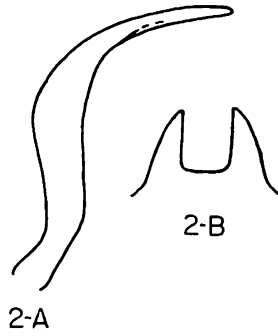
Figure 9. Saldoida slossoni Osborn.

- 9 a. Caudal aspect of left clasper of male.
- 9 b. Caudal aspect of terminal processes of male.

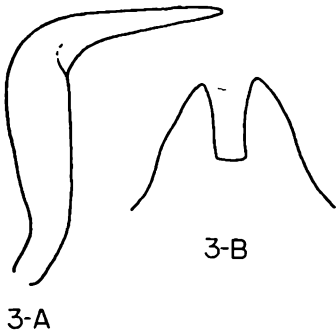
PLATE II



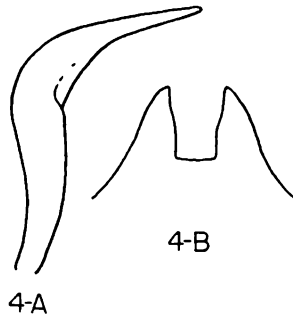
1 P LIGATA



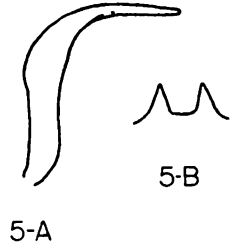
2 P PELLITA



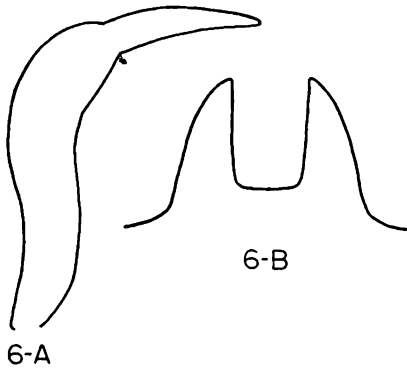
3 P SIGNORETII
SIGNORETII



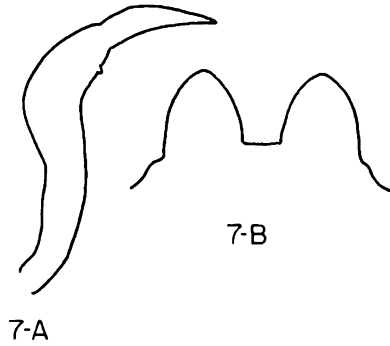
4 P SIGNORETII
YUCATANA



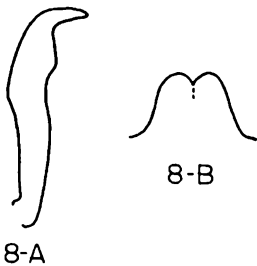
5 P SPHACELATA



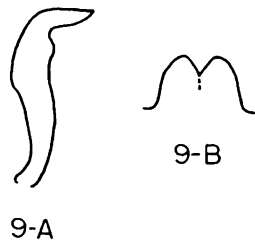
6 C STELLATUS



7 C TRYBOMI



8 S CORNUTA

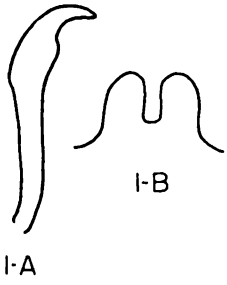


9 S SLOSSONI

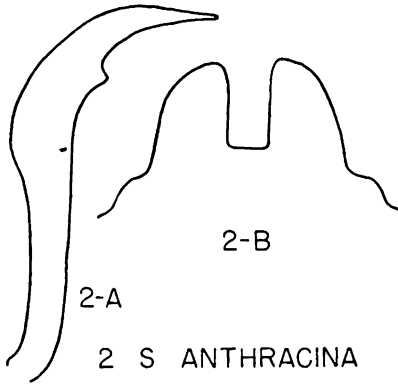
PLATE III.

- Figure 1. Salda abdominalis Champion.
1 a. Caudal aspect of left clasper of male.
1 b. Caudal aspect of terminal processes of male.
- Figure 2. Salda anthracina Uhler.
2 a. Caudal aspect of left clasper of male.
2 b. Caudal aspect of terminal processes of male.
- Figure 3. Salda beameri new species.
3 a. Caudal aspect of left clasper of male.
3 b. Caudal aspect of terminal processes of male.
- Figure 4. Salda bifasciata Thomson.
4 a. Caudal aspect of left clasper of male.
4 b. Caudal aspect of terminal processes of male.
- Figure 5. Salda bouchervillei (Provancher).
5 a. Caudal aspect of left clasper of male.
5 b. Caudal aspect of terminal processes of male.
- Figure 6. Salda comata Champion.
6 a. Caudal aspect of left clasper of male.
6 b. Caudal aspect of terminal processes of male.
- Figure 7. Salda comatula (Parshley).
7 a. Caudal aspect of left clasper of male.
7 b. Caudal aspect of terminal processes of male.
- Figure 8. Salda confluenta (Say).
8 a. Caudal aspect of left clasper of male.
8 b. Caudal aspect of terminal processes of male.
- Figure 9. Salda crassicornis Uhler.
9 a. Caudal aspect of left clasper of male.
9 b. Caudal aspect of terminal processes of male.
- Figure 10. Salda dentulata new species.
10 a. Caudal aspect of left clasper of male.
10 b. Caudal aspect of terminal processes of male.
- Figure 11. Salda dewsi new species.
11 a. Caudal aspect of left clasper of male.
11 b. Caudal aspect of terminal processes of male.

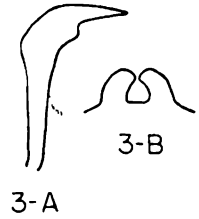
PLATE III



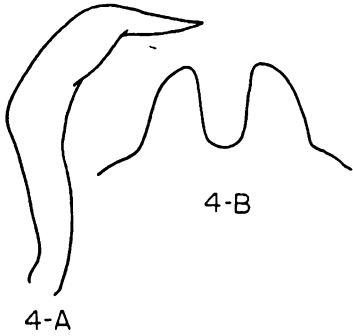
1 S ABDOMINALIS



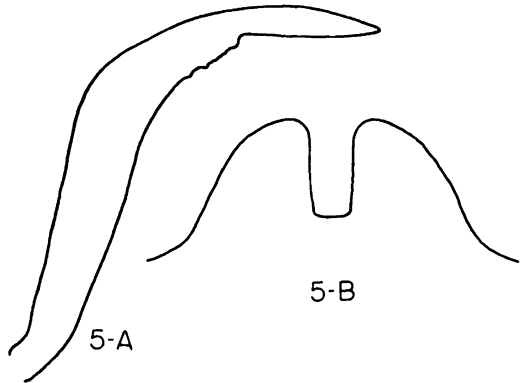
2 S ANTHRACINA



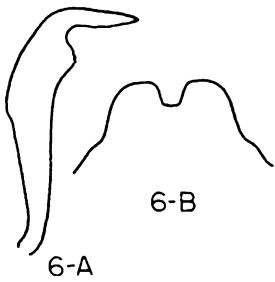
3 S BEAMERI



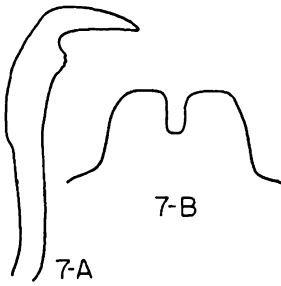
4 S BIFASCIATA



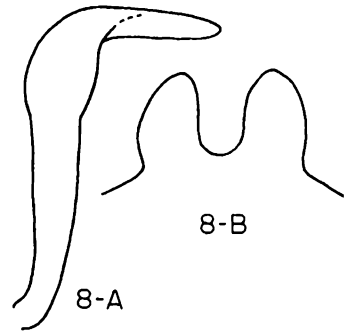
5 S BOUCHEVILLEI



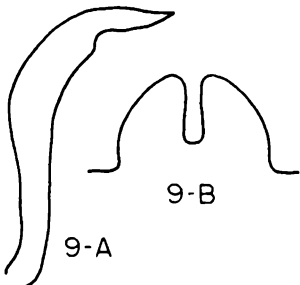
6 S COMATA



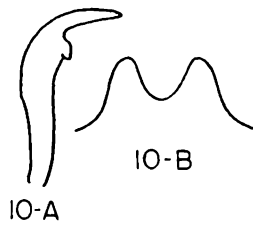
7 S COMATULA



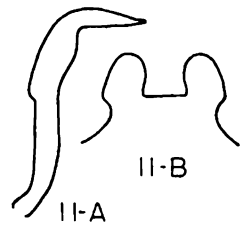
8 S CONFLUENTA



9 S CRASSICORNIS



10 S DENTULATA

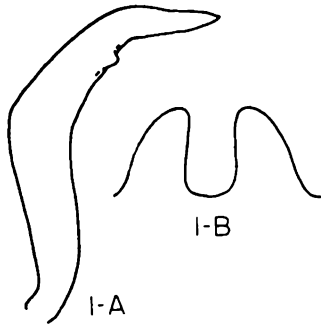


11 S DEWSI

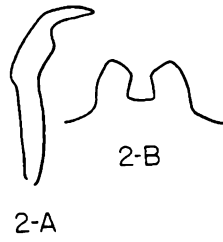
PLATE IV.

- Figure 1. Salda elongata Uhler.
1 a. Caudal aspect of left clasper of male.
1 b. Caudal aspect of terminal processes of male.
- Figure 2. Salda humilis (Say).
2 a. Caudal aspect of left clasper of male.
2 b. Caudal aspect of terminal processes of male.
- Figure 3. Salda hungerfordi new species.
3 a. Caudal aspect of left clasper of male.
3 b. Caudal aspect of terminal processes of male.
- Figure 4. Salda laevis Champion.
4 a. Caudal aspect of left clasper of male.
4 b. Caudal aspect of terminal processes of male.
- Figure 5. Salda lavinia new species.
5 a. Caudal aspect of left clasper of male.
5 b. Caudal aspect of terminal processes of male.
- Figure 6. Salda littoralis (Linnaeus).
6 a. Caudal aspect of left clasper of male.
6 b. Caudal aspect of terminal processes of male.
- Figure 7. Salda lugubris (Say).
7 a. Caudal aspect of left clasper of male.
7 b. Caudal aspect of terminal processes of male.
- Figure 8. Salda major Provancher.
8 a. Caudal aspect of left clasper of male.
8 b. Caudal aspect of terminal processes of male.
- Figure 9. Salda nigrita (Parshley).
9 a. Caudal aspect of left clasper of male.
9 b. Caudal aspect of terminal processes of male.
- Figure 10. Salda obscura Provancher.
10 a. Caudal aspect of left clasper of male.
10 b. Caudal aspect of terminal processes of male.
- Figure 11. Salda orbiculata Uhler.
11 a. Caudal aspect of left clasper of male.
11 b. Caudal aspect of terminal processes of male.

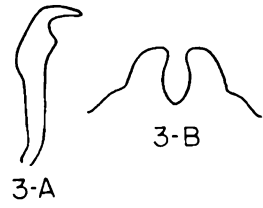
PLATE IV



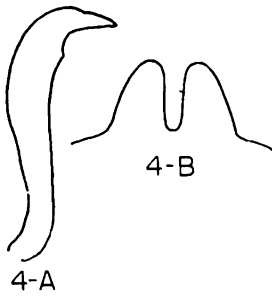
1 S ELONGATA



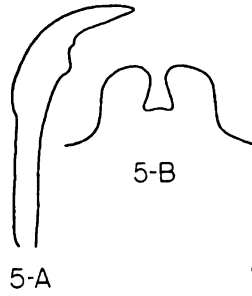
2 S HUMILIS



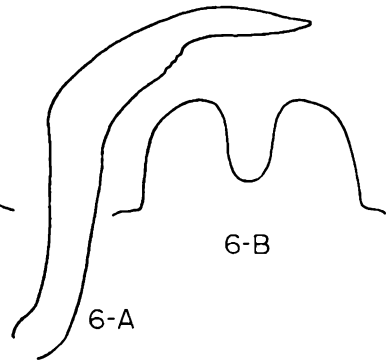
3 S HUNGERFORDI



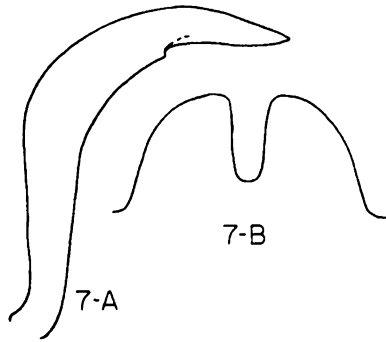
4 S LAEVIS



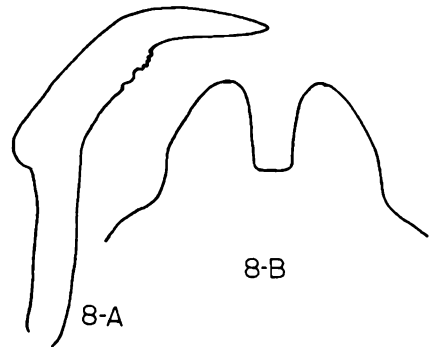
5 S LAVINIAE



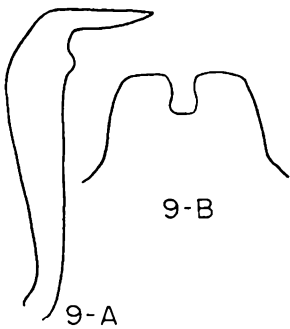
6 S LITTORALIS



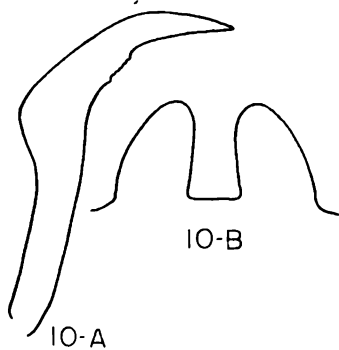
7 S LUGUBRIS



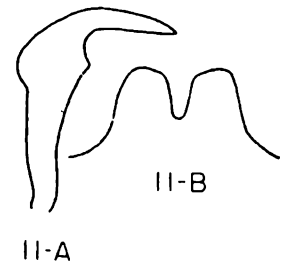
8 S MAJOR



9 S NIGRITA



10 S OBSCURA

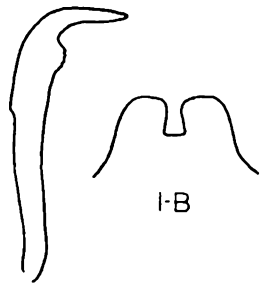


11 S ORBICULATA

PLATE V.

- Figure 1. Salda pallipes (Fabricius).
1 a. Caudal aspect of left clasper of male.
1 b. Caudal aspect of terminal processes of male.
- Figure 2. Salda polita Uhler.
2 a. Caudal aspect of left clasper of male.
2 b. Caudal aspect of terminal processes of male.
- Figure 3. Salda pumila (Blatchley).
3 a. Caudal aspect of left clasper of male.
3 b. Caudal aspect of terminal processes of male.
- Figure 4. Salda quadrimaculata Champion.
4 a. Caudal aspect of left clasper of male.
4 b. Caudal aspect of terminal processes of male.
- Figure 5. Salda saltatoria (Linnaeus).
5 a. Caudal aspect of left clasper of male.
5 b. Caudal aspect of terminal processes of male.
- Figure 6. Salda sectilis new species.
6 a. Caudal aspect of left clasper of male.
6 b. Caudal aspect of terminal processes of male.
- Figure 7. Salda separata Uhler.
7 a. Caudal aspect of left clasper of male.
7 b. Caudal aspect of terminal processes of male.
- Figure 8. Salda severini (Harris).
8 a. Caudal aspect of left clasper of male.
8 b. Caudal aspect of terminal processes of male.
- Figure 9. Salda sulcata (Barber).
9 a. Caudal aspect of left clasper of male.
9 b. Caudal aspect of terminal processes of male.
- Figure 10. Salda sulcicollis Champion.
10 a. Caudal aspect of left clasper of male.
10 b. Caudal aspect of terminal processes of male.
- Figure 11. Salda ventralis Stål.
11 a. Caudal aspect of left clasper of male.
11 b. Caudal aspect of terminal processes of male.
- Figure 12. Salda villosa new species.
12 a. Caudal aspect of left clasper of male.
12 b. Caudal aspect of terminal processes of male.

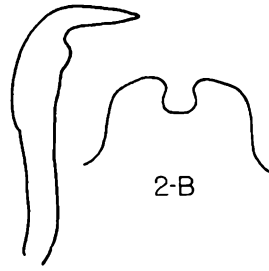
PLATE V



1-A

1-B

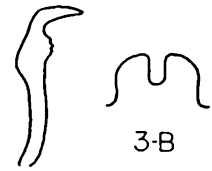
1 S PALLIPES



2-A

2-B

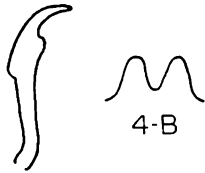
2 S POLITA



3-A

3-B

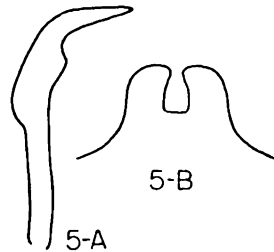
3 S PUMILA



4-A

4-B

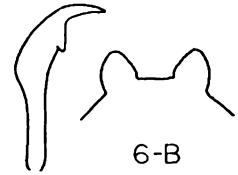
4 S QUADRIMACULATA



5-A

5-B

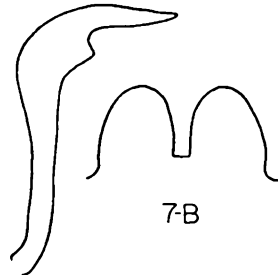
5 S SALTATORIA



6-A

6-B

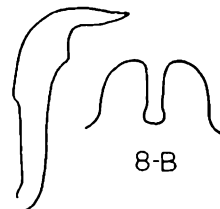
6 S SECTILIS



7-A

7-B

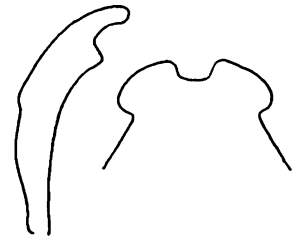
7 S SEPARATA



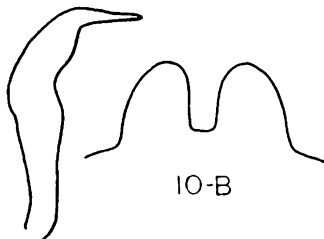
8-A

8-B

8 S SEVERINI



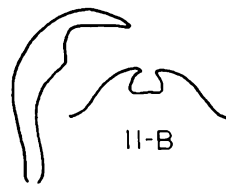
9 S SULCATA



10-A

10-B

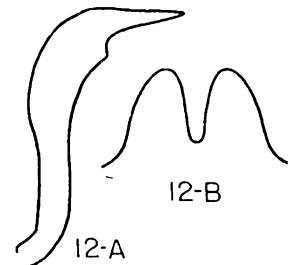
10 S SULCICOLLIS



11-A

11-B

11 S VENTRALIS



12-A

12-B

12 S VILLOSA