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A REVIEW OF THE STINK BUGS OF THE GENUS *MECIDEA*

By R. I. SAILER

THE genus *Mecidea* (Hemiptera: Pentatomidae) comprises a group of stink bugs that occur in the subtropical and adjacent temperate parts of the world. Within these regions the distribution of the genus appears to coincide rather closely with that of xerophytic or semixerophytic environments. Notable exceptions exist that may reflect insufficient knowledge. However, if our present information is even reasonably complete, the distribution of the genus as a whole and of its various species raises a number of interesting questions of zoogeographical significance. This paper is written in the hope that clarification of taxonomic relationships may facilitate the usefulness of the genus as a tool for zoogeographic studies.

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The following abbreviations are used for institutions in which type material has been deposited:

A.N.S.P.	Academy of Natural Sciences of Philadelphia.
B.M.	British Museum (Natural History).
C.A.S.	California Academy of Sciences.
I.E.F.M.L.	Instituto de Entomología de Fundación Miguel Lillo.
I.M.U.L.P.	Instituto del Museo de la Universidad de La Plata.
M.A.C.N.	Museo Argentino de Ciencias Naturales.
U.K.S.M.	University of Kansas Snow Entomological Museum.
U.S.N.M.	United States National Museum.

HISTORICAL ACCOUNT

The generic name *Mecidea* was established by Dallas in 1851 for two species, *indica* (Bengal) and *linearis* (locality unknown). Signoret also described a genus in 1851 that he called *Cerataulax*. This genus was based on the species *quadrivittatus* (Mauritius), which was described in the same paper. In October of 1851 Signoret reported that Dallas' "List of Hemipterous Insects in the British Museum" had been published a few days earlier than his paper "Description de Nouvelles Espèces d'Hémiptères (Ann. Soc. Ent. France, ser. 2, vol. 9, pp. 329-348). As a result he listed several corrections on page cviii of the same volume. One of these corrections states that *Cerataulax vittatus* (sic) Signoret must be changed to *Mecidea linearis* Dallas. While there is no doubt of the generic synonymy, reliable evidence that *quadrivittatus* and *linearis* are the same species is lacking.

Subsequent authors have described 13 additional species in the genus *Mecidea*. The present paper treats 1 of them as a synonym, renames 1 homonym, and adds 3 additional new species. This provides the genus with a total of 18 species.

GENERIC RELATIONSHIPS

Mecidea is included with nine other genera in the tribe Mecideini. These genera form a heterogeneous assemblage within the subfamily Pentatominae. They are set apart from the other tribes of the subfamily by a single common character: Abdomen beneath, anterolaterally, with transversely strigose or rugose stridulatory vittae.

Within the tribe extreme differences of size and structure contrast markedly with the close similarity of species within the various genera as far as they are known to me. This suggests a polyphyletic origin for the tribe. Whatever the result of future studies on the tribe Mecideini, there is no doubt that the closest relatives of *Mecidea* are at present found within this tribe. *Mecidea* is thereby clearly associated with a group of genera that are restricted to the Australasian region. This is the more remarkable since *Mecidea* is not known from that region.

DISTRIBUTION AND ITS SIGNIFICANCE

The distribution of *Mecidea* arouses interest because of its remarkably discontinuous nature. Although the genus belongs to a predominantly Australasian tribe, the Australasian Region is the only one of the six major world zoogeographical regions not included in the distribution of the genus. Within these regions the members of the genus are found in arid or semiarid zones lying roughly between latitude 40° N. and latitude 40° S. (See fig. 88.)

At the present time the center of distribution of the genus appears to be in the Abyssinian and Uganda highlands of Africa. Of the 14 Old World species 5 are found in or adjacent to this area. Of these 5 species 2 are widespread, *Mecidea pallidissima* being found eastward as far as Central India and *pallida* over the Near East and the drier parts of Africa north of latitude 10° N. *Mecidea pallida* is, furthermore, closely allied to and possibly identical with *indica* of India and *lepineyi* of the western Sahara. The distribution of *pallida* assumes greater interest with the discovery that the North American species *major* is so closely related that the two may be no more than subspecifically distinct. Furthermore, *longula*, which is known from at

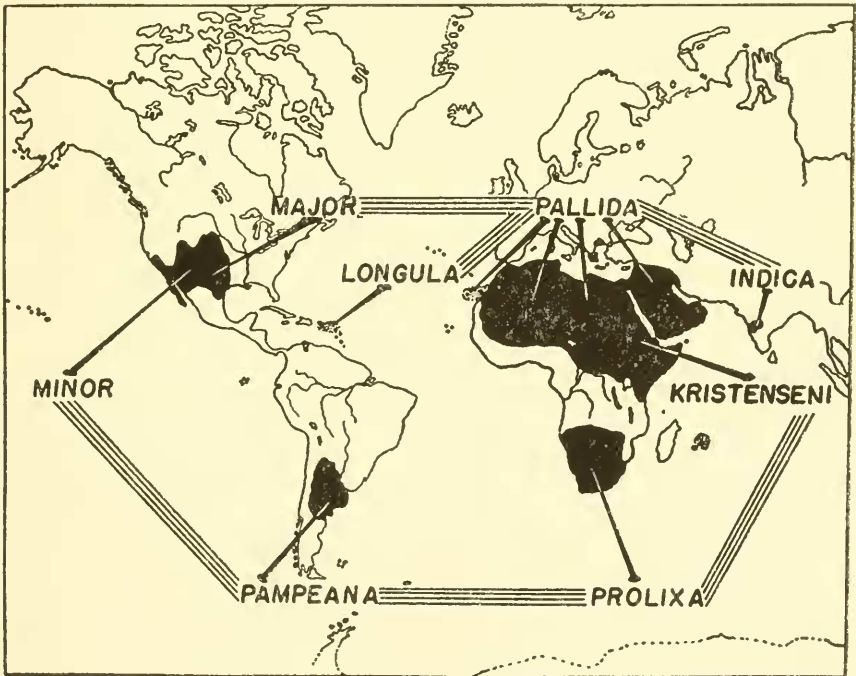


FIGURE 88.—Map showing known distribution of *Mecidea* (in black). Specific names are intended to provide a diagrammatic picture of the distribution of the two principal species groups. Related species are connected by four lines.

least 3 semiarid islands in the West Indies, is clearly derived from *pallida* or from common parent stock.

Of the other three species that are associated with the Abyssinian and Uganda highlands, *Mecidea lutzi* appears to have no close relative and *tellinii* is known only from the original description. However, the third species, *kristenseni*, is clearly allied to the more northern and eastern *pallidissima* and to the South African *prolixa*. Surprisingly enough the two remaining American species, *minor* (southwestern United States and northern Mexico) and *pampeana* (Argentina), both resemble *prolixa* more than they do *pallida*.

If lines are drawn to connect the areas occupied by related species (see fig. 88) one line must reach from India across North Africa through the West Indies to the southwestern United States. The other line may also start in India, pass south through Ethiopia, and South Africa, across the South Atlantic to Argentina and north to the southwestern United States.

Having described the distribution of the genus and correlated it as far as possible with relationships within the genus, there remains the question of how significant this information may be and what if any conclusions may be derived from it.

The possibility that one or more of the species has been transported from one desert area to another through the agency of man cannot be overlooked. On two occasions living specimens of *Mecidea prolixa* have been intercepted by quarantine inspectors at United States ports, each time in shipments of grass seed from South Africa. The very close relationship of *indica*, *pallida*, and *major* may also be used as an argument for a recent dispersal of what may prove to be one species. Also, if we accept the distribution as resulting from environmental discontinuity following topographic and climatic changes, we must be prepared to accept the probability that *pallida* and its derivatives *indica* and *major* have remained virtually unchanged since early Tertiary time (see Johnston, 1940).

The existence of parallel examples of this particular pattern of distribution probably constitutes the best argument in favor of a historico-geological explanation. Among the plants several genera are common to the arid region of southwestern United States and northwestern Mexico and the deserts of Argentina. These have been treated by Johnston (1940), and Cain (1944) has summarized the information concerning discontinuous distribution of plant genera that are known from the desert regions of North America, South America, and Africa. Cain was able to cite four well-marked xerophytic genera as having representatives on all three continents. *Menodora*, one of the four genera, was shown by Steyermark (1932)

to include one North American species that has a variety in South Africa.

Several well-established cases of insect genera that have species distributed among the arid regions of North America, South America, and Africa are known, though in several instances genera so listed in the past do not bear critical scrutiny. It is to be expected that the number of genera exhibiting this distribution will be small, since any relationship shown by these desert floras and faunas must be of very ancient origin, and few genera would be expected to survive the prolonged effects of divergent evolution. This view is amply supported by a large number of tribes and subfamilies that exhibit either this distribution pattern or some variant of it.

Chopard (1938), in a chapter on the habitats of Orthoptera, discussed such relationships and cited 3 subfamilies that contain genera in the desert regions of 2 or more continents. Uvarov (1938) used many of the same genera in an extensive paper on the subject; however, he treated them in tribal rather than subfamily groupings. Uvarov (1937) also mentioned the mecopterous family Bittacidae, which contains 2 allied flightless genera: *Apterobittacus*, which occurs in California; and *Anomalobittacus*, which is known from South Africa. The homopterous genus *Orgerius*, of the family Dictypharidae, has been listed by several authors and most recently by Metcalf (1946) as having about 20 Mediterranean species and at least 4 species in the western United States; however, Ball and Hartzell (1922) expressed the opinion that the Old World species belonged to a different genus and Dr. P. W. Oman, who has examined specimens from both regions, confirms this view. Nevertheless, the tribe Orgeriini remains a good example of the distribution pattern in question.

At the generic level a termite genus, *Amitermes*, appears to provide a distribution picture that is in many respects similar to that of the tribe Mecideini. Like Mecideini it is predominantly Australasian but contains species that are widely distributed in the arid or semiarid parts of southwestern North America, South America, Africa, and Asia. This genus was discussed at some length by Hill (1942). Cockerell (1932) has shown that a genus of bees, *Hesperapis*, occurs in the arid districts of the southwestern United States and under similar conditions in South Africa.

Another genus that has a marked preference for arid or semiarid regions is *Apiocera*, in the dipterous family Apioceridae. Cazier (1941) has provided a generic review of this family and a discussion of the distribution of the family and its 4 genera. Three of the genera have a restricted one-continent distribution; however, the fourth, *Apiocera*, contains 13 known Australasian species, 1 from South Africa, 2 from Chile, and 20 from North America.

Of considerable significance is the thysanuran genus *Machilinus*. While *Machilinus* has not yet been found in South Africa or India its distribution is otherwise remarkably like that of *Mecidea*. Wygodzinsky (1950) calls attention to the minimal possibilities for the active or passive dispersal of machilids and concludes that distribution in this instance is an argument indicating the considerable age of the genus *Machilinus*.

At least two genera are known that provide examples of this distribution pattern, both at the generic and at the specific levels. The first of these is the genus *Leptoconops*, which belongs to the dipterous family Heleidae. This family includes the biting midges and punkies, which are commonly associated with aquatic environments; nevertheless, *Leptoconops* is largely restricted to arid or semiarid regions lying between the parallels of latitude 40° N. and 35° S. Three species are known from Australia, two from South Africa, five from the Mediterranean basin, two from the lower Oriental region, one from South America, and two from North America. In the revision of the genus by Carter (1921), one of the North American species, which has been extremely abundant near Great Salt Lake since that region was first visited by white man, was described as var. *americanus* of the North Africa species *kerteszi* Kieffer. Subsequent workers have reviewed and accepted Carter's opinion.

Finally, there is the leafhopper genus *Circulifer*, which is of interest since it contains the beet leafhopper *C. tenellus* (Baker). The beet leafhopper occurs in the western United States, in xerophytic environments in southern Florida, and in Puerto Rico and the Mediterranean basin. With the exception of *tenellus*, *Circulifer* appears to be restricted to the arid and semiarid parts of the Mediterranean basin eastward to Central Asia. The fact that *tenellus* belongs to *Circulifer* was shown by Oman (1948), and though he emphasized its Old World distribution and relationships, he did not undertake to explain the species' distribution. Of all the cases discussed here, it seems likely that the strongest argument in favor of a recent introduction can be presented for this leafhopper. Nevertheless, together with *Leptoconops kerteszi*, *Circulifer tenellus* has a distribution pattern closely parallel to that for the combined species *Medicea pallida*, *longula*, and *major*.

It therefore appears that in all categories from the family to the species, examples can be cited that point to an ancient faunistic and floristic relationship between the semidesert and desert regions of the Mediterranean basin, South Africa, southern South America, and southwestern North America. Far from being peculiar, the distribution of *Mecidea* in fact fits a rather well-established pattern. Clearly, the genus should be considered in future speculations con-

cerning animal dispersal and zoogeographical relationships.

Bibliographic references to literature concerned with the distribution of the group discussed in this paper may be found on page 503.

CHARACTERS USED FOR SEPARATION OF SPECIES

In general appearance the species of *Mecidea* are very similar (see fig. 89.) They are unusually uniform in size and color, and such differences as do exist can be expressed only as averages. These differences are often as pronounced within species as between species and so have little value for purposes of identification. The characters seeming to have importance for purposes of specific differentiation are those associated with the internal male genitalia, the shape of the pronotum, and with the antennae of both sexes. These characters are relatively stable but are not easy to use. The antennae show such marked sexual dimorphism that the sexes of each species must be treated individually, while examination and comparison of the internal male genitalia involve rather complicated dissection and preparatory technique.

A step-by-step outline of the technique utilized for study of the internal male genitalia follows:

1. Relax specimen. A solution of one-third 95-percent alcohol, one-third ethyl acetate, and one-third water has proved very effective.
2. Detach genital segment from the abdomen and place the segment in a hot solution of 10 percent KOH.
3. Remove the segment as soon as it turns dark brown and place in water.
4. By using two fine teasing needles, each having their points slightly bent, withdraw the aedeagus either through the genital opening or through the open posterior end of the genital segment.
5. Once the aedeagus is free, osmotic pressure will cause the lateral and median penial vesiculae to expand. The lateral vesiculae and often the median vesicula expand to maximum size without further trouble. If the median vesicula fails to escape from its invaginated position above the penisfilum, manipulation and pressure applied to the cylinder of the aedeagus will usually force it out, whereupon it will expand in a normal manner. *Caution:* Care must be exercised not to puncture either the walls of the lobes or of the cylinder of the aedeagus, as this results in the immediate collapse of the vesiculae.
6. After study of a specimen is finished the genital segment and the aedeagus may be placed in a small (10×4 mm.) vial containing a drop of glycerine. The vial may then be corked and attached to the pin containing the corresponding insect. The vesiculae immediately collapse when the aedeagus is placed in glycerine but will reexpand readily when returned to water.

TERMINOLOGY OF THE PARTS OF THE INTERNAL MALE
GENITALIA

The terminology used in this paper is based on that proposed by Alex. D. Baker in "A Study of the Male Genitalia of Canadian Species of Pentatomidae," Can. Journ. Res. vol. 4, pp. 148-220, 1931. Unfortunately the homology of the vesiculae situated at the apex of the aedeagus in *Mecidea* remains obscure. Structures referred to by Baker as titillators are either absent or are represented by the structure treated in the present paper as the median vesicula. This is an unpaired, distensible structure located above the basal attachment of the penisfilum. The structures treated by Baker as the median lobes may be the same as are here termed penial plates. In *Mecidea* these penial plates are paired, sclerotized structures which are connected to each other basally and are attached on their ventral face to the distensible lateral vesiculae. The latter structures are undoubtedly the same as those that Baker called the lateral penis lobes.

The key is unsatisfactory in several respects. The degree of variation shown by the various structures which, of necessity, are used for construction of the key is such that many species must be keyed out in two or more places. In addition, the absence of, or insufficient number of specimens representing several Old World species makes it impossible satisfactorily to key out more than 4 of the 14 species involved.

KEY TO THE SPECIES OF MECIDEA

- | | | |
|--------|--|--|
| 1. | New World..... | 2 |
| | Old World..... | 11 |
| 2. (1) | With dark markings on midventral line of abdomen. | |
| | minor Ruckes (p. 490) | |
| | Without dark markings on midventral line of abdomen..... | 3 |
| 3. (2) | Males..... | 4 |
| | Females..... | 8 |
| 4. (3) | With a tubercule near the posterior ventral margin of the hypopygium
(see pl. 48, fig. 53)..... | minor Ruckes (p. 490) |
| | Without such a tubercule (see pl. 48, fig. 52)..... | 5 |
| 5. (4) | Third segment of antenna shorter than second segment. | |
| | major , new species (p. 486) | |
| | Third segment of antenna equal to or exceeding length of second
segment..... | 6 |
| 6. (5) | Black spots just below abdominal setigerous punctures each with greatest
diameter equal to one-eighth length of its supporting segment. | |
| | major , new species (p. 486) | |
| | Black spots just below abdominal setigerous punctures each with greatest
diameter equal to no more than one-twelfth of its supporting
segment..... | 7 |
| 7. (6) | Pronotum strongly constricted just in front of the humeral angles. | |
| | longula Stål (p. 484) | |
| | Pronotum with lateral margin regularly and shallowly concave from
humeral angle to anterior angle..... | pampeana , new species (p. 495) |

8. (3) Third antennal segment cylindrical.....longula Stål (p. 484)
 Third antennal segment flattened dorsally at least along basal third.. 9
9. (8) Black spots just below abdominal setigerous punctures each with greatest diameter equal to one-eighth length of its supporting segment.
major, new species (p. 486)
 Black spots just below abdominal setigerous punctures each with greatest diameter not exceeding one-twelfth length of its supporting segment 10
10. (9) Width of pronotum just behind calli not exceeding length of second antennal segment.....minor Ruckes (p. 490)
 Width of pronotum just behind calli equal to length of second antennal segment plus at least one-half diameter of eye.
pampeana, new species (p. 495)
11. (1) At least one of the black spots on the abdomen just beneath the setigerous punctures with a diameter three times that of a spiracle.
lutzi, new species (p. 485)
 Black spots on abdomen just beneath the setigerous punctures never with diameter more than twice that of a spiracle..... 12
12. (11) Midventral line of abdomen with a dark mark on at least the sixth visible segment..... 13
 Midventral line of abdomen unmarked..... 14
13. (12) Lateral margins of pronotum noticeably flattened from anterior angle to behind calli, ventral width of margin equal to width of unpunctured area just below.....*kristenseni* Jensen-Haarup (p. 482)
 Lateral margins of pronotum carinate from anterior angle to behind calli but not noticeably flattened from dorsal view, ventral width of margin less than width of unpunctured area just below.
prolixa Stål and possibly *quadrivittata* (Signoret) (pp. 497, 498)
14. (12) Males..... 15
 Females..... 18
15. (14) Third segment of antenna at least twice as long as second segment.
pallidissima Jensen-Haarup (p. 494)
 Third segment of antenna less than twice as long as second segment.. 16
16. (15) Third segment of antenna 1.75 times as long as second segment.
vidali, new name (p. 501)
 Third segment of antenna subequal to or less than length of second segment..... 17
17. (16) Third segment of antenna subequal to second...*linearis* Dallas (p. 483)
tellinii Schouteden (p. 501)
 Third segment of antenna shorter than second...*indica* Dallas (p. 481)
pallida Stål (p. 493)
lepineyi Lindberg (p. 483)
sahariana Wagner (p. 500)
18. (14) Dorsal ridge on second antennal segment strongly flattened and explanate along posterior half...*pallidissima* Jensen-Haarup (p. 494)
 Dorsal ridge on second antennal segment more carinate, not noticeably explanate near base.....*indica* Dallas (p. 481)
pallida Stål (p. 493)
lepineyi Lindberg (p. 483)
sahariana Wagner (p. 500)
rungsi Vidal (p. 499)
straminea Vidal (p. 501)

SYSTEMATIC ARRANGEMENT OF SPECIES¹

- a. Males with penisfilum extending beyond penial plates.....*lutzi*, new species
 aa. Males with penisfilum not reaching apices of penial plates.
- b. Males with dorsal protuberance of median penial vesicula longer than ventral protuberance.
 c. Males without inner apical angles of lateral vesiculae noticeably produced.
 indica Dallas
 pallida Stål
 major, new species
 longula Stål
- cc. Males with inner apical angles of lateral vesiculae noticeably produced.
 kristenseni Jensen-Haarup
 prolixa Stål
 pallidissima Jensen-Haarup
- bb. Males with ventral protuberance of median penial vesiculae longer than dorsal protuberance.....*minor* Ruckes
 pampeana, new species

Genus MECIDEA Dallas

Mecidea DALLAS, List of the specimens of hemipterous insects in the collection of the British Museum, vol. 1, pp. 131, 139, 1851.—STÅL, Hemiptera Africana descripsit Carolus Stål, vol. 1, pp. 79, 132, 1865; Enum. Hemip., vol. 2, p. 17, 1872; Enum. Hemip., vol. 5, p. 34, 1876.—ATKINSON, Journ. Asiat. Soc. Bengal, vol. 56, p. 201, 1887.—DISTANT, Fauna of British India, Rhynchota, vol. 1, p. 140, 1902.—BERGROTH, Proc. Zool. Soc. London, 1905, p. 146.—KIRKALDY, A catalogue of the Hemiptera (Heteroptera) Cimicidae, vol. 1, p. 202, 1909. (Genotype: *M. indica* Dallas, designated by Distant, 1902.)
Cerataulax SIGNORET, Ann. Ent. Soc. France, ser. 2, vol. 9, pp. 335-336 and cviii, 1851. (Genotype: *C. quadrivittatus* Signoret, only included species.)

Body elongate, linear, straw colored, with the punctures sometimes darkened. Color quite uniform throughout genus.

Head somewhat pointed anteriorly; juga longer than tylus, meeting but not fused in front; eyes large, globose, ocelli prominent, nearer eyes than midline of head. Antennae five-segmented and exhibiting sexual dimorphism; second segment three-sided, angles often ridgelike, always longer in the female than in the male; third segment of male proportionately longer than third segment of female, cylindrical and with pubescence similar to fourth segment; third segment of female triangular in cross section at least basally and with pubescence similar to the second segment. Rostrum attaining the middle coxae, first segment not exceeding the bucculae, second segment longer than apical two together.

Pronotum carinate laterally, humeral angles prominent, anterior angles acute, front margin sinuate, not wider than the eyes, hind margin produced posteriorly to the scutellum, truncate across width of scutellum; dorsum coarsely punctured except calli; midline of mesosternum carinate; midline of metasternum broadly and shallowly

¹ Species the relationships of which are uncertain: *lepineyi* Lindberg; *tellini* Schouteden; *linearis* Dallas; *quadrivittata* (Signoret); *rungsii* Vidal; *sahariana* Wagner; *straminea* Vidal; *vidali*, new name.

sulcate. Osteolar canal extending nearly to the dorsoanterior angle of the pruinose area. Femora unarmed, tibiae sulcate. Hemelytra pale to straw colored, vitreous; corium and clavus more or less regularly punctured, punctures often rufescent, exocorium usually paler than corium and exocorial vein, almost straight, raised and conspicuously pale.

Abdomen with striate area on both sides, starting on the first apparent segment at base of the hind coxa and continuing across segments 2 and 3, evanescent on 4; second segment convex medially. Dorsum of abdomen with a dark vitta on each side just inside the connexivum. Ventrally each segment usually has a black spot located on each side around the innermost setigerous puncture (trichobothria). Genital segment of the male with cup dorsoventrally compressed, deeply concave, opening dorsoposteriorly; inferior ridge forming posterior margin, deeply sinuate in ventral view with a notch at median line; proctiger tubular, membranous except basally; claspers of the single-armed type; superior ridge reduced; superior carinae present as an elongate black tuberculate process opposite apices of claspers. Genital plates of female loosely contiguous at apices, gradually divergent basally along median line. Subgenital plates narrowly rounded apically, extending slightly beyond the tergal plate. Apices of lateral plates bluntly acuminate, barely produced beyond posterior margin of tergal plate. Female genitalia without effective diagnostic value.

MECIDEA INDICA Dallas

PLATE 47, FIGURES 1-3; PLATE 48, FIGURES 31, 32

Mecidea indica DALLAS, List of the specimens of hemipterous insects in the collection of the British Museum, vol. 1, p. 139, pl. 3, fig. 3, 1851.—STRÅL, Öfv. Vet. Akad. Förhandl., vol. 13, pt. 3, p. 57, 1856.—WALKER, Catalogue of the specimens of heteropterous Hemiptera (Hemiptera-Heteroptera) in the collection of the British Museum, pt. 1, p. 179, 1867; Enum. Hemip., vol. 5, p. 38, 1876.—ATKINSON, Journ. Asiat. Soc. Bengal, vol. 56, pp. 201-202, 1887.—LETHIERRY and SEVERIN, Catalogue général des Hémiptères, vol. 1, Hétéroptères, Pentatomidae, p. 92, 1893.—DISTANT, Fauna of British India, Rhynchota, vol. 1, pp. 140-141, 1902.—KIRKALDY, A catalogue of the Hemiptera (Heteroptera), vol. 1, Cimicidae, p. 202, 1909.—VAN DUZEE, Catalogue of the Hemiptera of North America, p. 29, 1917.—JENSEN-HAARUP, Ent. Meddel., vol. 14, pt. 1, p. 7, 1922.—CHINA, Ann. Mag. Nat. Hist., ser. 10, vol. 17, p. 97, 1936.

Most clearly related to *Mecidea pallida*, but also near *M. major*. Only three specimens have been available for this study, but it would appear that apart from the penial plates and slightly less carinate lateral margin of the pronotum there is little that will separate *indica* from *major*, and it is even more difficult to distinguish the species from *pallida*. Study of additional specimens of these two species may show that *pallida* and *major* are synonyms of *indica*.

Length: Male, 9.6 mm; width at the humeral angles, 2.5 mm; female, 11.9 mm; width at the humeral angles, 3.2 mm.

Antennae of male: Relative length of segments 30:85:60:80:65. First three segments as shown on plate 48, figure 31.

Antennae of female: Relative length of segments, 40:110:55:lost:lost. First three segments as shown on plate 48, figure 32.

Male genitalia: Penial vesiculae and penial lobes as shown on plate 47, figures 1, 2, and 3.

Variation.—The juga of one female specimen overlap slightly at their apices, while those of the male specimen are divergent.

Type.—In the British Museum.

Distribution.—Recorded by Distant (1902) from Bombay and Poona. One specimen from each of these localities was available, while the third specimen, a male, was collected at Hoshangabad, Central Provinces, India.

Host plants.—None has been recorded.

MECIDEA KRISTENSENI Jensen-Haarup

PLATE 47, FIGURE 19; PLATE 48, FIGURES 50, 51

Mecidea kristenseni JENSEN-HAARUP, Ent. Meddel., vol. 14, pt. 1, pp. 8, 9, fig. 8b, 1922.—LINDBERG, Not. Ent., vol. 18, pt. 3, pp. 85–86, 1938.

Closely related to *Mecidea proluxa* but a little larger and more robust in appearance and with the posterior lobe of the pronotum more convex, clearly distinguished by the shape of the lateral penial vesiculae. The color pattern sets the species apart from all other species of *Mecidea* with the exception of unusually dark specimens of *proluxa*.

The characteristic color was noted by Jensen-Haarup and described as follows: "Body wing covers, three innermost joints of antennae and legs partially more or less densely covered with blackish punctures, which where condensed, form the following dark, longitudinal stripes: two on head, four on pronotum and two on scutellum." The brownish rose-red color that Jensen-Haarup noted as infusing the inner part of the corium is not present in any of the eight specimens available for study. The linear black spots on the midventral line of the abdomen are more pronounced than in either *M. proluxa* or *M. minor* and in several specimens spots are present on each of the last five abdominal segments. The black spots below the setigerous punctures are small, seldom exceeding the diameter of a spiracle. The black vittae on the dorsum of the abdomen are each as broad as the pale intervening area.

Length: Male, 8.7 mm; female, 9.5 mm.

Width at humeral angles: Male, 2.4 mm.; female, 2.8 mm.

Antennae of male: Relative length of segments, 35:60:90:75:65. The last three segments as shown on plate 48, figure 50.

Antennae of female: Relative length of segments, 40:95:70:80:70. The last three segments as shown on plate 48, figure 51.

Male genitalia: Penial plates and lateral penial vesiculae as on plate 47, figure 19. The median penial vesicula is not shown, as it could not be forced out of its invaginated position in any dissection of the three available males.

Variation.—The eight specimens examined were all collected at the same time and place. The most striking variation shown by the series is the degree to which the spots on the median line of the venter of the abdomen are present. In two specimens these spots are present on five segments while on two others only the sixth segment is so marked.

Type.—Presumed to be in the Zoological Museum at Copenhagen.

Distribution.—The species was described from a female specimen collected in Eritrea. The eight specimens that I have studied belong to the British Museum and bear the following data: Abyssinia, plains northwest of Lake Zwai, 5,500 to 6,000 feet, November 1, 1926.

MECIDEA LEPINEYI Lindberg

Mecidea lepinyei LINDBERG, Not. Ent., vol. 18, pt. 3, pp. 85, 87, fig. 1c, 1938.

This species was described from a specimen collected in a region of the west Sahara known as El Djouf. The description does not refer to the sex of the specimen; however, the illustration and description of the antennae are strongly suggestive of a male specimen of *Mecidea pallida*. The fact that the illustration is accompanied by one of a female specimen of *pallida* raises the possibility that Lindberg was not aware of the sexual dimorphism exhibited by the antennae of *Mecidea*. If this is true, it would not be surprising if he failed properly to associate the sexes and decided that his male specimen represented a new species. It seems best, however, not to synonymize the species with *pallida* until the type specimen can be compared with a male of the latter species.

The present location of the type is not apparent from Lindberg's paper.

MECIDEA LINEARIS Dallas

Mecidea linearis DALLAS, List of the specimens of hemipterous insects in the collection of the British Museum, vol. 1, p. 139, 1851.—SIGNORET, Ann. Soc. Ent. France, ser. 2, vol. 9, p. cviii, 1851.—WALKER, Catalogue of the specimens heteropterous Hemiptera (Hemiptera-Heteroptera) in the collection of the British Museum, pt. 3, p. 539, 1868.—STRÅL, Enum. Hemip., vol. 5, p. 38, 1876.—LETHIERRY and SEVERIN, Catalogue général des Hémiptères, vol. 1, Hétéroptères, Pentatomidae, p. 92, 1893.—KIRKALDY, A catalogue of the Hemiptera (Heteroptera), vol. 1, Cimicidae, p. 202, 1909.—DISTANT, Ann. South African Mus., vol. 10, pt. 2, p. 39, 1911.—JENSEN-HAARUP Ent. Meddel., vol. 14, pt. 1, p. 7, 1922.—HESSE, Ann. Transvaal Mus., vol. 16, pt. 4, p. 585, 1935.

The specimen described by Dallas as *Mecidea linearis* bore no locality data. When Signoret in 1851 acknowledged that *Mecidea* Dallas

should be used for *Cerataulax* Signoret he also made his species *Cerataulax quadrivittatus* a synonym of *M. linearis* Dallas. Walker in 1868 accepted this synonymy, but subsequent workers have not (see p. 499). In 1911 Distant reported that *linearis* had been collected in South Africa, and in 1922 Jensen-Haarup remarked in a footnote "According to Dr. E. Bergroth in litt. *M. linearis* proved to be an African species." Hesse in 1935 referred to specimens taken in northern Bechuanaland as *linearis* but at the same time he expressed the opinion that a comparison of the types of *linearis* and *prolixa* would show the two species to be the same.

Dallas, in his brief description of *M. linearis*, states "Antennarum articulo secundo, tertio subaequali." This remark was based on a male specimen and is not characteristic of the males of *prolixa* or of the males of any other African species of which material has been available for study.

While this characteristic of the male antennae is common to *Mecidea major*, *longula*, and *pampeana* these American species lack certain color characteristics described by Dallas. Signoret's description of the color of the female specimen, which he described under the name *Cerataulax quadrivittatus*, suggests that this species and *linearis* may be the same. An examination of male specimens of *quadrivittatus* from Mauritius will be necessary in order to confirm or disprove this possibility.

It is also possible that *linearis* may prove to be an older name for *Mecidea tellinii*. Schouteden's description of the length of the second and third segments of the male antennae of *tellinii* agrees exactly with Dallas' description of this character for *linearis*. On the other hand, Schouteden's specimens are described as being somewhat larger and paler than would be expected if the species were the same.

Type.—In the British Museum.

MECIDEA LONGULA Stål

PLATE 47, FIGURES 7-9; PLATE 48, FIGURES 35, 36, 54, 58

Mecidea longula STÅL, Öfv. Vet. Akad. Förhandl., vol. 11, pt. 8, p. 233, 1854; Öfv. Vet. Akad. Förhandl., vol. 13, pt. 3, p. 57, 1856.—DOHRN, Catalogus Hemipterorum, p. 10, 1859.—STÅL, Enum. Hemip., vol. 2, p. 17, 1872 [excluding Texas record].—LETHIERRY and SEVERIN, Catalogue général des Hémiptères, vol. 1, Hétéroptères, Pentatomidae, vol. 1, p. 92, 1893 [excluding Texas record].—KIRKALDY, A catalogue of the Hemiptera (Heteroptera), vol. 1, Cimicidae, p. 202, 1909 [excluding Texas record].—STONER, Iowa Univ. Stud. Nat. Hist., vol. 10, pt. 1, p. 9, 1922.

Related to *Mecidea major* and *M. pallida* but smaller and slightly more elongate than these species. The antennal characters are distinctive and should serve to distinguish the species. The third antennal segment of the male is equal to or slightly longer than the

second, and the third segment of the female is almost entirely cylindrical. In both *major* and *pallida* the third segment of the female antennae is dorsally flattened, at least along the posterior third.

Color almost identical with *major*; dark punctures along lateral line of thorax and abdomen somewhat less numerous. Black spots just below abdominal setigerous punctures, with greatest diameter equal to one-twelfth length of supporting segments. Spiracles pale.

Form narrowly elongate.

Length: Males, 8.6–9.1 mm.; females, 9.3–10.1 mm.

Width at humeral angles: Males, 2.2–2.6; females, 2.6–2.7.

Antennae of male: Relative length of segments, 35:75:80:70:60. First three segments as shown on plate 48, figure 35.

Antennae of female: Relative length of segments, 40:100:55:70:60. First three segments as shown on plate 48, figure 36.

Male genitalia: Hypopygium, clasper, penial plates, and penial vesiculae as shown on plate 48, figures 54, 58, and plate 47, figures 9, 7, and 8.

Variation.—Sixty specimens from Antigua collected at the same place and date show some slight variation in size and some variation in the relative lengths of the second and third antennal segments of the males. In the case of one male the second segment is slightly less than two-thirds as long as the third.

Type.—Not seen. It should be in the Naturhistoriska Riksmuseum, Stockholm.

Distribution.—ST. BARTHOLOMEW ISLAND (type locality): Antigua, June 21, 1918. PUERTO RICO, Ponce, September 2, 1948.

Host plant.—*Chloris radiata* (Linnaeus) Swartz, reported by Stoner (1922), who added the comment, "I believe that I have never found any pentatomid in greater abundance in a limited area."

MECIDEA LUTZI, new species

PLATE 47, FIGURES 26–28; PLATE 48, FIGURES 39, 40

Resembles *Mecidea pallida* and *M. major* in size and color. Differs notably from these species in having the pronotum barely constricted at the middle and in having the lateral margin of the pronotum more noticeably carinate. The male genitalia are characterized by the elongate penisfilum which, relative to the penial plates, is twice as long as in any other species of *Mecidea*.

Color somewhat variable, usually testaceous with the calloused midline of the pronotum and scutellum paler and the hemelytra quite vitreous. Exocorial vein almost white. Inner basal angle of clavus with small fuscus spot. Black spots below abdominal setigerous punctures large, their diameter usually three times that of a spiracle. Midventral line of abdomen unmarked.

Form rather broadly elongate. Pronotum only slightly constricted near middle, the lateral margins carinate and almost serrate along their anterior third. Abdomen with lateral striate areas continuous along first through fourth and evanescent on fifth and sixth visible segments.

Length: Males, 10.0–11.0 mm.; females, 11.3–11.5 mm.

Width at humeral angles: Males, 3.2–3.4 mm.; females, 3.4–3.5 mm.

Antennae of male (holotype specimen): Relative lengths of segments, 40:90:75:80:70. First three segments as shown on plate 48, figure 39.

Antennae of female (allotype specimen): Relative lengths of segments, 45:115:65:85:70. First three segments as shown on plate 48, figure 40.

Male genitalia: Penial plates, penial vesiculae, and penisfilum as shown on plate 47, figures 26, 27, and 28.

Variation.—There is some variation in color and the degree to which the pronotal margin is carinate. The Kenya specimens tend to be darker and the darkest one has four well-marked longitudinal dark bands on the pronotum and a fuscus spot at the inner apical angle of the corium. Most of the punctures on the corium are also fuscous.

Types.—Holotype, male, Djamba, Belgian Congo, altitude 1,700–1,800 feet, August 9, 1929, H. H. Curtiss (J. C. Lutz collection). Allotype, same data (retained for U.S.N.M. collection, No. 609824).

Paratypes: 1 ♀, same data; 2 ♂, 2 ♀, Athi River Crossing, 16 miles N. N. E. of Kibwezi, Kenya, July 25, 1934, J. A. G. Rehn (A.N.S.P.), 1 ♂ and 1 ♀ retained for U.S.N.M. collection; 1 ♀, Makinda, Kenya, April 5 to 7, 1911, S. A. Neave (B. M.).

Distribution.—Since the two Kenya localities are situated within about 10 miles of each other, the species is in effect known from only two widely separated localities in Equatorial Africa. Djamba (also spelled Djumbwi) is located in the District of Stanleyville about 160 miles south of the boundary of French Equatorial Africa. The Kenya localities are situated about halfway between Nairobi and the port city of Mombasa. Rehn described (Proc. Acad. Nat. Sci. Philadelphia, vol. 88, p. 9, 1936) the country near Kibwezi, Kenya as “dense thorn-bush country, with scattered taller boabab, euphorbia, and acacia trees.” The northern part of the Belgian Congo including Djamba is largely covered by tall grass savanna.

I take pleasure in naming this species for John C. Lutz. The first examples of this species to be encountered were found in his extensive private collection of Heteroptera.

MECIDEA MAJOR, new species

FIGURE 89; PLATE 47, FIGURES 10–12; PLATE 48, FIGURES 33, 34, 52, 59

Mecidea longula [not Stål] UHLER, List of Hemiptera of region west of the Mississippi River, including those collected during the Hayden Explorations of 1873. Bull. U. S. Geol. Geogr. Surv. Terr., vol. 1, No. 5, pp. 269–361, 1876 (see p. 17 of extract under above title); Check list of the Hemiptera Heterop-

tera of North America, p. 5, 1886.—VAN DUZEE, Trans. Amer. Ent. Soc., vol. 30, pt. 1, p. 26, 1904 [erroneously reports *longula* as described from Texas material].—BARBER, Sci. Bull. Mus. Brooklyn Inst. Arts Sci., vol. 1, pt. 9, p. 257, 1906 (Texas record).—KIRKALDY, A catalogue of the Hemiptera (Heteroptera), vol. 1, Cimicidae, p. 202, 1909 [Texas record].—BANKS, Catalogue of the Nearctic Hemiptera-Heteroptera, p. 86, 1910.—VAN DUZEE, Check list of the Hemiptera . . . of America, north of Mexico, p. 4, 1916; Catalogue of the Hemiptera of North America, p. 29, 1917.—TORREBUENO, Ent. Amer., new ser., vol. 19, pt. 3, p. 201, 1939.—FROESCHNER, Amer. Midl. Nat., vol. 25, pt. 1, pp. 128, 132, 1941.—RUCKES, Bull. Brooklyn Ent. Soc., vol. 41, pt. 3, pp. 86-87, 1946.

Very closely related to *Mecidea pallida*, in fact so closely related that separation of females on the basis of structure may be uncertain, if not impossible. However, the single male example of *pallida* available for study shows characters which, if sufficiently constant, should serve to distinguish the species. These characters are the relative length of the antennal segments and shape of structures pertaining to the internal genitalia. The male specimen of *pallida* has the third segment of the antennae 52 percent as long as the second, while the third antennal segment of male *major* was in no instance found to be less than 62 percent as long as the second. The average for 50 specimens was 75 percent. Among these specimens were four that had the third segment subequal to the second. The male genitalia of both species present a very similar appearance; however, the penial plates of *pallida* are significantly broader and the concave areas on their dorsal surfaces more pronounced. The black spots below the abdominal setigerous punctures are smaller on the three specimens of *pallida* examined than is characteristic for *major*.

Head, pronotum, and scutellum straw yellow. Eyes, punctures on dorsum, and pleurites of pronotum just behind eyes, on anterior lobe of pronotum each side midline, on antenniferous tubercles and side of head before eye, and on apices of jugae, rufescent to black. Sockets of bristlelike hairs on antennae dark. Hemelytra pale vitreous, corium with numerous rufescent punctures, exocorial vein pale, membrane vitreous. Connexivum pale impunctate. Venter pale yellow with reddish tint, impunctate except on lateral line along first five segments, these punctures usually darkened; black spot just below setigerous punctures with greatest diameter equal to one-eighth length of supporting segment. Spiracles often darkened.

Dorsal aspect as shown in figure 89. Rather elongate. Humeral angles obtusely angulate, elevated. Lateral margins of pronotum with edges calloused, almost carinate.

Length: Males, 9.5-10.4; females, 10.0-12.7 mm.

Width at humeral angles: Males, 2.6-3.1; females, 2.8-3.7 mm.

Antennae of male: Relative length of segments (holotype specimen) 40:100:75:80:65. First three segments as shown on plate 48, figure 33.

Antennae of female (allotype specimen), 40:120:55:75:65. First three segments as shown on plate 48, figure 34.

Male genitalia: Hypopygium, clasper, penial plates, and penial vesiculae as shown on plate 48, figures 52, 59, and plate 47, figures 12, 10, and 11.

Variation.—*Mecidea major* shows considerable variation in size and structure. The second antennal segment of both sexes varies considerably and in the case of females often renders this structure of little value in separating *major* from *minor*. The jugs show such a degree of variation as to make them of little diagnostic value. In the specimens examined the greater number show the jugs to be barely contiguous in front of tylus, with the inner margins divergent toward apices and usually tipped slightly inwardly and downward along apical half; however, many specimens present the almost continuously contiguous, acuminate form characteristic of *minor* as well as the other extreme in which the jugs are not contiguous but continue parallel with each other for some distance before the tylus. The genital plates of the female also show considerable variation, making them difficult to use for diagnostic purposes; characteristically all plates tend to be shorter in relation to their length than is typical for *minor*.

Types.—Holotype, male, Bexar County, Tex., October 8, 1937, William F. Turner, U.S.N.M. No. 58421. Allotype, same data.

Paratypes: (43 ♂♂, 57 ♀♀) TEXAS: Arlington, 1 ♀, September 24, 1907 (U.S.N.M.). Austin, 1 ♂, November 16, 1928, J. O. Martin; 1 ♀, December 7, 1928, J. O. Martin (C.A.S.). Banks, 1 ♀, August 15, 1938; 1 ♀, July 31, 1940, L. S. Jones. Bexar County, 1 ♀, November 8, 1937, William F. Turner; 2 ♂, 1 ♀, November 23, 1938, William F. Turner, on "grass"; 1 ♀, August 24, 1938, William F. Turner; 1 ♂, 2 ♀, September 28, 1939, William F. Turner. Brownsville, Esperanza Ranch, 1 ♂, 1 ♀, July 24, 1904; 1 ♂, 1 ♀, August 17, 1904. Brownsville, 1 ♀, April 1903; 1 ♂, May 29, 1933, P. W. Oman. Clarendon, 1 ♂, 1 ♀, September 19, 1905, C. R. Jones (U.S.N.M.). College Station, 1 ♂, October 14, 1927, H. G. Johnston; 1 ♂, October 17, 1929, H. G. Johnston (H. M. Harris collection). Crystal City, 5 ♀, January 14, 1950, J. B. Duncan, on spinach. Dallas, 1 ♂, 3 ♀, October 16, 1911, H. Pinkus, at light. Dennison, 1 ♂, 2 ♀, October 16, 1938, L. S. Jones. Fort Worth, 1 ♂, September 10; 1 ♀, October 15. Gainesville, 1 ♂, 2 ♀, October 10, 1923, E. E. Russell, on Johnson grass. Houston, 1 ♀, September 23, 1944. BEPQ Special Survey No. 20865 (U.S.N.M.). George West, 1 ♂, June 28, 1938, R. I. Sailer. Hidalgo County, 2 ♀, July 28, 1928, J. G. Shaw; 2 ♂, August 2, 1928, L. D. Beamer; 1 ♂, August 14, 1928, R. H. Beamer. Jim Wells County, 2 ♂, 1 ♀, July 24, 1928, R. H. Beamer. Karnes County, 2 ♂, 1 ♀, July 23, 1928, A. M. James. Kendall County, 5 ♂, 3 ♀, July 22, 1928, L. D. Beamer (U.K.S.M.).

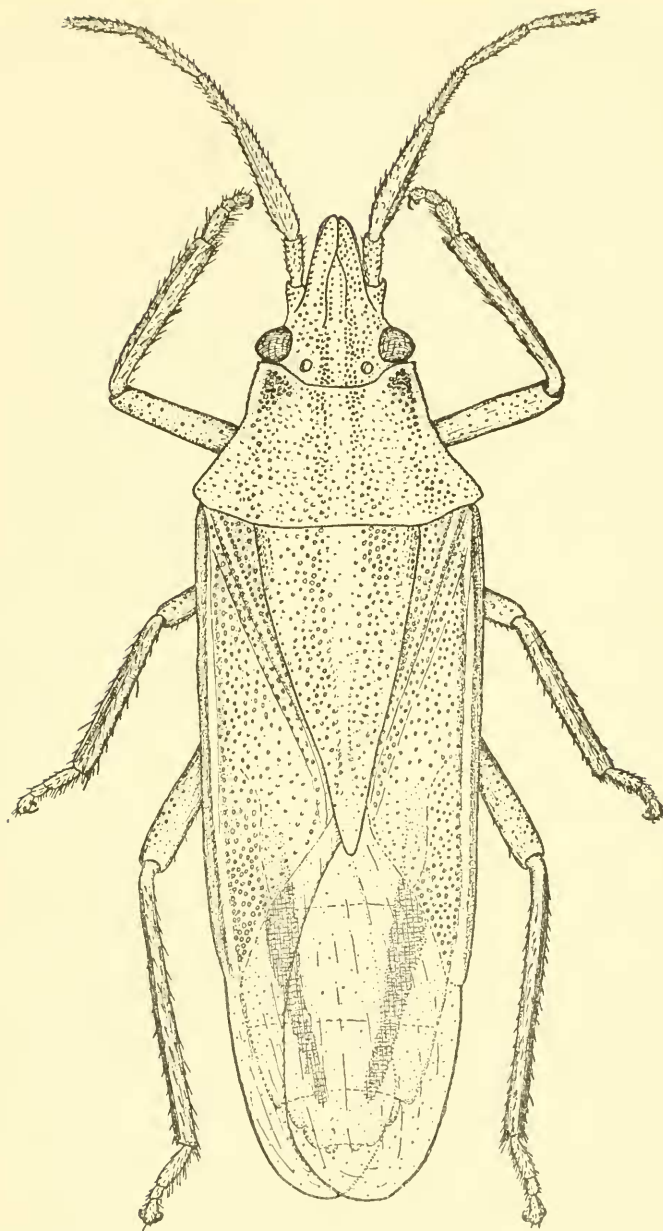


FIGURE 89.—Dorsal view of *Mecidia major*, new species, female (allotype).

Laredo, 1 ♀, June 3, 1933, P. W. Oman (U.S.N.M.). Plainview, 1 ♂, November 9, 1930, S. E. Jones (H. M. Harris collection). Ranger, 3 ♂, November 2, 1940, D. W. Craik (U.K.S.M.). Reinhardt, 1 ♀, September 19, 1907. San Antonio, 1 ♀, Harper and Dean; 4 ♂, 5 ♀, "fall" 1939, H. A. Gunning, on seed heads of *Bouteloua curtipendula* (Michaux) (U.S.N.M.). Sanderson, 3 ♂, 3 ♀, October 22, 1938, S. E. Jones (H. M. Harris collection). Tyler, 1 ♀, October 17, 1938, L. S. Jones. Victoria, 1 ♀, April 19, 1905, W. E. Hinds; 1 ♀, November 9, 1906, J. D. Mitchell. Waco, 3 ♀, October 9, 1939, P. A. Glick, on cotton (U.S.N.M.); 1 ♂, October 1, 1938. Wellborn, 1 ♀, October 4, 1927, H. G. Johnston. Weslaco, 1 ♂, July 17, 1927, M. McPhial (H. M. Harris collection). Wichita Falls, 1 ♂, 2 ♀, November 5, 1904; Texas, with no other data, 2 ♂, 3 ♀ (U.S.N.M.). ARIZONA: Atascosa Mountain, 1 ♀, November 2, 1935, E. D. Ball (U.S.N.M.). ARKANSAS: Howard County, 1 ♂, 1 ♀, December 8, 1938, William F. Turner; Pike County, 1 ♀, October 4, 1939, William F. Turner (U.S.N.M.). OKLAHOMA: Elmer, 1 ♂, July 6, 1937, Standish-Kaiser. Millerton, 1 ♂, August 20, 1934, C. A. Sooter (H. M. Harris collection). Oklahoma City, 2 ♂, August 3, 1917, on cotton (U.S.N.M.). Wichita National Forest, 1 ♀, June 27, 1936, M. B. Jackson (U.K.S.M.). KANSAS: Manhattan, 2 ♂, 7 ♀, June 21, 1937 (H. Ruckes collection). Meade County, 1 ♀, September 13, 1944, R. H. Beamer (U.K.S.M.). MISSOURI: Columbia, 1 ♀, October 5, 1937, R. Froeschner (R. Froeschner collection).

Distribution.—From Sanderson and Brownsville, Tex., north to Manhattan, Kans., and Columbia, Mo. A majority of the records are from south and central Texas.

Dates of collection.—Collected every month except February and March. Three-fourths of all collections were made during the months of July through October. Records from Oklahoma, Kansas, and Missouri range from June 21 through October 5.

Host plants.—*Bouteloua curtipendula* (Michaux) Torrey, *Sorghum halapense* (Linnaeus) Persoon, "grasses," wheat, spinach, *Senecio*, and cotton. *Mecidea major* is probably associated primarily with members of the grass family. There are no records showing that *major* has caused injury of economic importance to any host plant.

MECIDEA MINOR Ruckes

PLATE 47, FIGURES 13-15; PLATE 48, FIGURES 37, 38, 53, 57

Mecidea minor RUCKES, Bull. Brooklyn Ent. Soc., vol. 41, pt. 3, pp. 87-88, 1946.

Mecidea longula, STÅL, Enum. Hemip., vol. 2, p. 17, 1872 [Texas record].—UHLER List of Hemiptera of region west of the Mississippi River, including those collected during the Hayden Explorations of 1873. Bull. U. S. Geol. Geogr. Sur. Terr., vol. 1, No. 5, pp. 269-361, 1876 (see p. 17 of extract under above title; New Mexico record).—OSBORN, Proc. Iowa Acad. Sci., vol. 5, p. 232, 1898.—HOWARD, The insect book, pl. 29, fig. 18, 1903.—VAN DUZEE, Trans.

Amer. Ent. Soc., vol. 30, pt. 1, p. 26, 1904 [Colorado record].—SNOW, Trans. Kansas Acad. Sci., vol. 20, pt. 1, p. 177, 1906.—VAN DUZEE, Catalogue of the Hemiptera of North America, p. 29, 1917 [in part].—RUCKES, Bull. Brooklyn Ent. Soc., vol. 33, pt. 1, p. 10, 1938.

Related to *Mecidea kristenseni* and *M. pampeana*; however, the males are easily separated since both these species lack the tubercule found near the ventral posterior margin of the genital segment of *M. minor*. The dorsally flattened and usually grooved third antennal segment of *minor* serves to distinguish the females from *kristenseni*, in which the third antennal segment is cylindrical. The presence of black markings on the midventral line of the abdomen is sufficient to distinguish most specimens of either sex from *pampeana*.

Color quite similar to *M. major* except on venter of abdomen. Midventral line of abdomen marked with fuscus or black, varying from a continuous line on fourth, fifth, and sixth visible segments and a lineate spot on the third, through a short lineate spot on each segment to complete obsolescence. Spiracles always pale. Black spots just below abdominal setigerous puncture with their greatest diameter seldom more than one-twelfth length of supporting segment at the same level.

Form more elongate than *M. major* or *M. longula*. Lateral margin of pronotum almost regularly concave; edges carinate anterior to calli but not more than calloused posteriorly. Calloused line along middle of pronotum and scutellum more prominent than in other American species. Pronotum with tendency toward a carina on each side behind calli. Juga usually converging to an acute apex and not deflected along apical half.

Length: Males, 9.1–10 mm.; females, 9.2–11 mm.

Width at humeral angles: Males, 2.1–2.4 mm.; females, 2.2–2.8 mm.

Antennae of male: Relative length of segments, 32:76:87:75:65. First three segments as shown on plate 48, figure 37.

Antennae of female: Relative length of segments, 40:115:65:70:64. First three segments as shown on plate 48, figure 38.

Male genitalia: Hypopygium, clasper, penial plates and penial vesiculae as shown on plate 48, figures 53, 57; plate 47, figures 15, 13, and 14.

Female genitalia: In most instances sufficiently different from *Mecidea major* to be of diagnostic value. Terminal segment not more than twice as wide as long, usually less. Genital plates proportionately narrower than those of *major*. Subgenital plates with a width-length ratio of 18:45.

Variation.—Characteristically more uniform than *Mecidea major*. The second antennal segment of the female varies considerably in length and in the degree to which the dorsal ridge is expanded. The juga show less variation than is characteristic of *major*; however, there is a range from overlapping before the tylus to failure to converge.

Types.—Holotype and allotype in the American Museum of Natural History, New York.

Paratypes: In the H. Rukes collection; 1♂ and 1♀ paratype in U.S.N.M. collection, No. 609825.

Type locality.—Las Cruces, Dona Ana County, N. Mex.

Distribution.—Originally recorded from two localities in New Mexico, one in Colorado (Fort Collins), and one in Arizona (Babquivari Mountains).

Additional material examined.—MEXICO: DURANGO: Durango, November 26; Tlahualilo, September 4, 1928. NUEVO LEON: 10 miles south of Linares, December 24, 1940. SONORA: San Bernardino, Río Mayo, July 15 and August 18, 1935. BAJA CALIFORNIA: Canipole [about 25.5° lat.], October 2, 1941. UNITED STATES: CALIFORNIA: Escondido, July 15, 1941; Visalia, June 11, 1909. ARIZONA: Babquivari Mountains, March 12, 1932 and October 18, 1935; Badger, Santa Cruz County, July 31, 1924; Cochise County, August 24, 1935; Douglas, San Bernadino Ranch, 3,750 feet elevation; Fort Grant, July 20; Herford, October 20, 1937; Patagonia, on Sonorita Creek, October 14, 1927; Patagonia, August 23, 1937; Springerville, June 6, 1930; Wilcox, August 24, 1937. NEW MEXICO: Dep, August 1938; Las Cruces, August 18, 1937; Organ, July 3, 1940; Virden, August 8, 1929, on *Chen. oblongi*. TEXAS: Alpine, September 1939; Amarillo, August 10 and September 28, 1930; Bangs, November 16; Bexar County, August 24, 1938; Brownsville, March 31, 1933 and May 31, 1933; Crystal City, January 14, 1950; Dallas, October 16, 1917; El Paso, August 22, 1908; El Paso County, August 24, 1938; Fort Davis, October 22, 1938; Fort Stockton, October 23, 1938; Hidalgo County, July 28, 1928; Laredo, June 31, 1933; Marathon, October 22, 1938; Menard County, July 19, 1928; Presidio County, July 15, 1917; Río Frio, May 10, 1910; San Antonio, July 4, 1936; Sanderson, October 22, 1938; Sutton County, July 20, 1928; Taylor County, July 11, 1928; Terlingua, May 3, 1927; Three Rivers, June 27, 1938; Wades, May 21; Zavalla County, July 3, 1910. OKLAHOMA: Lawton, August 2, 1918; Wichita National Forest, June 27, 1936. KANSAS: Clark County, 1,950 feet elevation, August 23, 1911; Hamilton County; Meade County, September 13, 1944; Morton County, July 27, 1924; Saint John County, July 1885; Scott County, August 23, 1927; Seward County, July 23, 1944; Stevens County, 2,700 feet elevation. MISSOURI: Kansas City. COLORADO: Holly, September 8, 1898. UTAH: Salt Lake City, June 25, 1922. SOUTH DAKOTA: Capa, August 15, 1922. IOWA: Sioux City, July 7, 1897 (reported by Osborn, 1898). His specimen has not been examined and his record is placed under *M. minor* only because this species appears to have a more northern range of distribution than *M. major*.

Distribution summarized.—From latitude 24° N. to central California, northern Utah, and central South Dakota; the eastern boundary near the eastern borders of Kansas, Oklahoma, and Texas.

Collection dates summarized.—Collected every month except February and April. More than half the collections were made during July and August and 90 percent between May 1 and November 1. Records north of latitude 33° N., middle of June through September.

Host plants.—*Bouteloua curtipendula* (Michaux) Torrey; also taken on *Chenopodium pratericola* subsp. *desiccatum* (A. Nelson) Aellen and *Spinacia oleracea* Linnaeus (spinach).

MECIDEA PALLIDA STÅL

PLATE 47, FIGURES 4–6; PLATE 48, FIGURES 29, 30

Mecidea pallida STÅL, Öfv. Vet. Akad. Förhandl., vol. 11, pt. 8, p. 233, 1854; Öfv. Vet. Akad. Förhandl., vol. 13, pt. 3, pp. 56–57, 1856; Hemiptera Africana descripsit Carolus Stål, vol. 1, p. 132, 1865; Enum. Hemip., vol. 5, p. 38, 1876.—LETHIERRY and PUTON, Ann. Soc. France, ser. 5, vol. 6, p. 15, 1876.—LETHIERRY and SEVERIN, Catalogue général des Hémiptères, vol. 1, Hétéroptères, Pentatomidae, p. 92, 1893.—SCHOUTEDEN, Ann. Soc. Ent. Belgique, vol. 49, p. 7, 1905.—OSHANIN, Berz. Palaerkt. Hemip., vol. 1, p. 85, 1906.—KIRKALDY, A catalogue of the Hemiptera (Heteroptera), vol. 1, Cimicidae, p. 202, 1909.—HORVATH, Ann. Mus. Nat. Hungarici, vol. 7, p. 290, 1909.—BERGEVIN and THÉRY, Bull. Soc. Hist. Nat. l'Afrique Nord, ser. 2, vol. 9, p. 142, 1910.—JENSEN-HAARUP, Ent. Meddel., vol. 14, pt. 1, pp. 7–9, 1922.—CHINA, Ann. Mag. Nat. Hist., ser. 10, vol. 17, pp. 96, 97, fig. b, 1936.—LINDBERG, Comm. Biol. Soc. Sci. Fennica, vol. 6, pt. 7, pp. 7, 20, 1936; Not. Ent., vol. 18, pp. 85, 86, fig. 1, b, 1938.—RUCKES, Bull. Brooklyn Ent. Soc., vol. 41, pt. 3, pp. 86, 87, 1946.—VIDAL, Mem. Soc. Sci. Nat. Maroc, vol. 48, pp. 117–118, 1949.—WAGNER, Eos, vol. 25, pts. 3–4, pp. 190–191, 1949 [fig. of type].

Mecidea pallida var. *virens*, VIDAL, 1949, Mem. Soc. Sci. Nat. Maroc, vol. 48, p. 118, 1949 (new synonymy).

So closely related to *Mecidea major* and *M. indica* that it is doubtful if the females can be distinguished in all instances. Perhaps best characterized by the small degree of secondary sexual dimorphism exhibited by the antennae. Also bears a superficial resemblance to *M. lutzi* but is easily distinguished from that species by the more concave, less carinate lateral margins of the pronotum and the smaller size of the black spots just below the abdominal setigerous puncture.

Habitus does not differ significantly from *M. major*; however, the pronotum is slightly less constricted at middle than in *M. indica*. Black spots just below abdominal setigerous punctures about twice the diameter of a spiracle.

Length: Male, 11.8 mm.; females, 11.8–12.4 mm.

Width at humeral angles: Male, 3.3 mm.; females, 3.0–3.3 mm.

Antennae of male: Relative length of segments, 45:125:70:95: missing. First three segments as shown on plate 48, figure 29.

Antennae of female: Relative length of segments, 45:130:50:missing: missing. First three segments as shown on plate 48, figure 30.

Male genitalia: Penial plates and penial vesiculae as shown on plate 47, figures 6, 4, and 5.

Variation.—Among the five specimens examined the shape of the juga varies from overlapping at their apices to divergent at their apices. Vidal's descriptions of *Mecidea pallida* and of the form of that species that he called *virens* suggest a range of variation very similar to that observed for *major* in North America.

Type.—Not seen; should be in the Naturhistoriska Riksmuseum, Stockholm. The specimen was said to have been collected in "Nubia superior." This would place the type locality somewhere in Anglo-Egyptian Sudan.

Distribution.—Specimens have been examined from the following localities: Gafsa, Tunisia; Minna, northern Nigeria; Al Huseini (near Lahej), Aden Protectorate and Baghdad, Iraq. The literature records *pallida* from the Canary Islands east across North Africa and through the Near East to Iran. It is also recorded from Greece.

Neither the literature nor available specimen data provides any information concerning host plants or dates of collection.

MECIDEA PALLIDISSIMA Jensen-Haarup

PLATE 47, FIGURES 23-25; PLATE 48, FIGURES 41, 42

Mecidea pallidissima JENSEN-HAARUP, Ent. Meddel., vol. 14, pt. 1, pp. 8, 9, fig. 8, a, 1922.—LINDBERG, Not. Ent., vol. 18, pt. 3, pp. 85, 87, 1938.

Mecidea ingransi CHINA, Ann. Mag. Nat. Hist., ser. 10, vol. 17, pp. 96-97, fig. a, 1936 (new synonymy).

A very pale species which, judging from the characteristics of the male genitalia, is most closely related to *kristenseni*. The sexual dimorphism of the antennae common to all *Mecidea* is more extreme in *pallidissima* than in any of the other known species of the genus.

Punctuation of the body not darkened except on juga, pronotum just behind the eyes and inner basal angle of the clavus of some specimens. The setigerous punctures on the first three segments of the antennae usually dark. Without dark markings along median line of abdominal venter and usually without evidence of a dark spot below each of the setigerous punctures.

Pronotum moderately constricted near middle, with lateral margin calloused but without evidence of a carina.

Length: Male, 8.0-9.5 mm.; width across humeral angles: 1.9-2.2 mm. Female, 9.6-11.0 mm.; width across humeral angles, 2.2-2.7 mm.

Antennae of male: Relative length of segments 35:55:135:95:80. First three segments as shown on plate 48, figure 41.

Antennae of female: Relative length of segments, 40:115:80:missing: missing (compared with type specimen) or as taken from China's

description of *ingramsi* "11:32:23:25:21." First three segments as shown on plate 48, figure 42.

Male genitalia: Penial plates and penial vesiculae as shown by plate 47, figures 24, 23, and 25.

Variation: Specimens from Kenya, Arabia, and southern India are quite uniform in size and color; however, two male specimens from French Somaliland are noticeably smaller and tend to be darker. China, in his description of *Mecidea ingramsi*, noted that a female specimen from Wadi Maseila, Hadhramaut, was much smaller than the specimen that he made the type of the species. The single specimen from India has the antennal segments generally shorter than the females from Arabia; however, the ratio of their lengths does not vary significantly and the other characteristics of the antennae are quite similar.

Types.—Of *pallidissima*, presumed to be in the Zoological Museum at Copenhagen; of *ingramsi*, in the British Museum.

Distribution.—ERITREA: Recorded by Jensen-Haarup. HADHRA-MAUT: Recorded as *M. ingramsi* by China from specimens collected in November and December.

Material examined: KENYA: Kula, July 7, 1935. FRENCH SOMALI-LAND: Djibouti, August 31, 1926. ARABIA: Jidda, March 14 and 17, 1936; Buriam, May 20, 1936. INDIA: "South India."

From these records it appears that *M. pallidissima* ranges from the mountainous region of northern Kenya, across the Arabian peninsula, and as far east as southern India. With so few records available it is not possible to construct a clear picture of distribution for the species and additional specimens from India are needed in order to confirm the presence of *pallidissima* in that country.

MECIDEA PAMPEANA, new species

PLATE 47, FIGURES 16-18; PLATE 48, FIGURES 43-46, 55, 56

Mecidea longula, BERG, Hemiptera Argentina enumeravit speciesque novas descripsit C. Berg, p. 37, 1879.—PENNINGTON, Lista de la Hemipteros Heteropteros Republica de la Argentina, Primera Parte, Pentatomoideo-Coroidea, p. 7, 1921 (a privately published work).—PIRAN, Acta Zool. Lilloana, vol. 5, p. 12, 1948.

Most closely allied to *Mecidea minor* of North America and *M. kristenseni* of Africa, but readily distinguished from the former by the absence of the tubercle on the median line of the ventroposterior surface of the male genital segment and from the latter by the absence of black markings along the median ventral line of the abdomen of both sexes.

Color variable; in darkest specimens the pronotum shows from obscure longitudinal dark bands. Calloused median line of pronotum and scutellum continuous. Exocorial vein noticeably paler than

exocorium. Small black spots below abdominal setigerous punctures with greatest diameter not more than one-twelfth length of supporting segment.

Form narrowly elongate. Jugae loosely contiguous along entire inner margin before tylus, slightly deflected inwardly. Protonum with transverse constriction hardly noticeable; lateral margins slightly concave before the humeral angles, edge almost carinate.

Length: Males, 9–10 mm.; females, 8.6–11.8 mm.

Width of humeral angles: Males, 2.25–2.45 mm.; females, 2.3–2.8 mm.

Antennae of male (holotype specimen): Relative length of segments, 40:85:90:80:63. First three segments as shown on plate 48, figure 43.

Antennae of female (allotype specimen): Relative length of segments, 40:115:55:70:60. First three segments as shown on plate 48, figure 44.

Male genitalia: Hypopygium, clasper, penial vesiculae, and penial plates as shown on plate 48, figures 55, 56, and plate 47, figures 16, 17, and 18.

Variation.—If this species is properly interpreted it exhibits a remarkable degree of variation. This variation involves size, color, and relative lengths of the antennal segments. Among the specimens studied those from Chaco and Córdoba are largest and darkest, and the males generally have the third segment of the antennae longer than the second. A series of 18 specimens from Conhella, La Pampa, are consistently smaller, paler, and several males have the third antennal segment shorter than the second. Variation in relative length of the antennal segments is even more pronounced among female specimens. (See plate 48, figures 43 and 44.) The ratio of lengths of the second to the third segments of the allotype from Agua de Oro, Córdoba, is 115:50, of a female from Mendoza, 110:75, and another from La Rioja is 100:60. The black spots below the abdominal setigerous punctures are reduced in many specimens and often absent.

These differences are as great as those existing between certain species of *Mecidea*; however, the degree of intergradation found among the specimens studied, together with the relative stability of the male genital structures, are accepted as an indication that only one species is involved.

Types.—Holotype, male, Tucumán, Argentina, February 26, 1946, P. A. Berry (U.S.N.M. No. 58422). Allotype, Agua de Oro, Córdoba, Argentina (M.A.C.N.).

Paratypes: ARGENTINA: TUCUMÁN: Tucumán, 1 ♂, February 26, 1946, P. A. Berry (U.S.N.M.); 1 ♀, April 1932; 4 ♂, 2 ♀, November and December 1944, R. Golback; 1 ♂, December 1946, T. Araoz; 1 ♀, October and November 1949, R. Golback. Los Puestos, 1 ♂, April 20, 1948, R. Golback. Parque Aconguija, 1 ♂, April 7, 1947,

Sr. Ares. Aconguija, 1 ♀, November 1946; Guardamonte, 1 ♂, April 2, 1948, R. Golback (E.F.M.L.). El Cadillal, 1 ♂, March 14, 1949, N. Kormilev (M.A.C.N.). SANTIAGO DEL ESTERO: Sumampa, 1 ♂, 1 ♀, November 16, 1944. Chilea, 1 ♂, April 7, 1945, R. Maldonado (I.M.U.L.P.). Río Salado, 1 ♂, 1 ♀, M. Gomez (M.A.C.N.); 1 ♀, no other data (C. J. Drake collection). CHACO: Colonia, 1 ♂, May 16, 1936, P. Denier. Colonia Castelli, 1 ♂, May 15, 1936, P. Denier. RESISTENCIA: 1 ♀, November 1935, P. Denier (I.M.U.L.P.). Fontana, 5 ♀, May 12, 1938, A. Meyer (M.A.C.N.). FORMOSA: "Alm. Brown," 1 ♂, 2 ♀, May 19, 1936, P. Denier. Zona 9a, 1 ♂, 1 ♀, June 6, 1939, P. Denier (I.M.U.L.P.). SALTA: Salta Ciudad, March 17, 1949, N. Kormilev (M.A.C.N.). LA RIOJA: La Rioja, 2 ♀ (C. J. Drake collection). MENDOZA: Mendoza, 1 ♂, 1 ♀ (C. J. Drake collection); CÓRDOBA: Córdoba, 1 ♀, identified by Berg as *M. longula*. Bajo Grande, 1 ♀, August 15, 1939, R. Maldonado. Rayo Cortado, 2 ♂, December 15, 1939 (I.M.U.L.P.). Argüello, 2 ♂, 2 ♀, February 1948, De Carlo; El Sauce, 8 ♀, December 1938, M. Viana; Agua de Oro, 8 ♂, 13 ♀, December–January 1949, De Carlo (M.A.C.N.). LA PAMPA: Conhello, 6 ♂, 13 ♀, January 1943, H. Hepper; 1 ♀, January 1939, M. Ibanez (M.A.C.N.). Pico, 1 ♂, 1 ♀, April 1936, P. Denier (I.M.U.L.P.). BUENOS AIRES: Buenos Aires, 1 ♀, determined as *M. longula* by Berg (B. M.). Saavedra, 1 ♀, January 2, 1922 (I.M.U.L.P.). La Colina, 1 ♂, 1 ♀, December 9, 1938, C. J. Drake (C. J. Drake collection).

Distribution.—Argentina, north of the Río Colorado, east of the Andes, and west of the Río Paraná.

MECIDEA PROLIXA Stål

PLATE 47, FIGURES 20–22; PLATE 48, FIGURES 47–49

Mecidea proliza Stål, Öfv. Vet. Akad. Förhandl., vol. 14, p. 312, 1858; Hemiptera Africana descripsit Carolus Stål, vol. 1, p. 133, 1865; Enum. Hemip., vol 5, p. 38, 1876.—LETHIERRY and SEVERIN, Catalogue général des Hémiptères, vol. 1, Hétéroptères, Pentatomidae, p. 92, 1893.—SCHOUTEDEN, Ann. Soc. Ent. Belgique, vol. 49, p. 7, 1905.—KIRKALDY, A catalogue of the Hemiptera (Heteroptera), vol. 1, Cimicidae, p. 202, 1909.—JENSEN-HAARUP, Ent. Meddel., vol. 14, pt. 1, p. 9, 1922.—LINDBERG, Not. Ent., vol. 18, pt. 3, p. 86, 1938.

Mecidea linearis, HESSE, Ann. Transvaal Mus., vol. 16, pt. 4, p. 585, 1935.

Most closely related to *Mecidea kristenseni* but easily distinguished by details of the male genitalia, the proportionately broader second antennal segment of both sexes, and the less convex posterior lobe of the pronotum. Judging from material at hand *proliza* is, on an average, the smallest species of *Mecidea* and with the possible exception of *kristenseni* it is the darkest in color. This dark color is not characteristic of all specimens but there is a decided tendency for all punctures and all points where hair attach to be fuscus.

Calloused median line of pronotum and scutellum prominent and continuous. Exocorial vein and exocorium quite pale and noticeably contrasting with the darker corium. Black spots below abdominal setigerous punctures very small, seldom larger than a spiracle. Mid-ventral line of abdomen with a dark linear spot on sixth visible segment and frequently on fifth, fourth, and third segments.

Length: Males, 7.3–8.2 mm.; females, 9.1–9.8 mm.

Width at humeral angles: Males, 1.8–2.2 mm.; females, 2.2–2.5 mm.

Antennae of male: Relative length of segments; 30:45:90:75:65. First three segments as shown on plate 48, figure 47.

Antennae of female: Relative length of segments, 35:80:70:75:65. First three segments usually as on plate 48, figure 48.

Male genitalia: Penial plates and penial vesiculae as shown on plate 47, figures 21, 20, and 22.

Variation.—The specimens examined show a wide range of variation in several important characters. The most pronounced variation is found in the relative lengths of the second and third antennal segments of the female. Most specimens examined have the third segment shorter than the second (see pl. 48, fig. 48); however, several have the segments subequal and one specimen that is not otherwise different has the third segment noticeably longer, the ratio of length of the segments being 65:80 (see pl. 48, fig. 49). The black spots on the median line of the venter range from barely perceptible on the sixth visible segment to well marked on the third, fourth, fifth, and sixth. The black spots below the setigerous punctures range from entirely absent to a spot having a diameter equal to one-twelfth the length of the supporting segment.

Type.—Not seen. Located in the Naturhistoriska Riksmuseum, Stockholm.

Distribution.—Literature records and locality data on the specimens studied indicate that *M. proluxa* is restricted to the desert or semiarid regions of Africa south of the Zambezi River. The following localities were represented among the 16 specimens studied. SOUTHWEST AFRICA: Okahandja. UNION OF SOUTH AFRICA: CAPE PROVINCE: Ceres, 1,500 feet; Somerset East; Swellendam. EAST CAPE PROVINCE: Katberg, 4,000 feet. NATAL: Van Reenen, Drakensberg, 5,500–6,500 feet. Dates of collection range from September through March.

MECIDEA QUADRIVITTATA (Signoret)

Cerataulax quadri-vittatus SIGNORET, Ann. Soc. Ent. France, ser. 2, vol. 9, p. 336, pl. 10, figs. 9, 9, a, 1851.

Mecidea vittata [lapsus calami] SIGNORET, Ann. Soc. Ent. France, ser. 2, vol. 9, p. cviii, 1851.

Mecidea linearis, SIGNORET, Ann. Soc. Ent. France, ser. 2, vol. 9, p. cviii, 1851.—WALKER, Catalogue of the specimens of heteropterous Hemiptera (Hemip-

tera-Heteroptera) in the collection of the British Museum, pt. 3, p. 539, 1868. *Mecidea quadrivittata*, STÅL, Öfv. Vet. Akad. Förhandl., vol. 13, pt. 3, p. 57, 1856; Hemiptera Africana descriptis Carolus Stål, vol. 1, p. 133, 1865; Enum. Hemip., vol. 5, p. 38, 1876.—LETHIERRY and SEVERIN, Catalogue général des Hémiptères, vol. 1, Hétiéroptères, Pentatomidae, p. 92, 1893.—KIRKALDY, A catalogue of the Hemiptera (Heteroptera), vol. 1, Cimicidae, p. 202, 1909.—JENSEN-HAARUP, Ent. Meddel., vol. 14, pt. 1, pp. 7-9, 1922.

This species is thought to be known only from Signoret's type specimen, which was collected on the Island of Mauritius. Beyond being 11 mm. long and a female specimen with a color pattern suggestive of the darker specimens of *Mecidea prolixa*, Signoret's description reveals little that will serve to identify the species. Jensen-Haarup appears to have reexamined the type specimen, for in his key to the Ethiopian species of *Mecidea* he includes *quadrivittata*, and remarks, "2nd joint of antennae much longer than 3rd." Unfortunately this is not distinctive, since it is true of the female of most species of *Mecidea*.

The possibility that *quadrivittata* may be a synonym of *M. linearis* is examined in the discussion under the latter species.

Type.—Not seen. Believed to be in the Naturhistorische Museum, Wien.

MECIDEA RUNGSI Vidal

Mecidea rungsi VIDAL, Mem. Soc. Sci. Nat. Maroc, vol. 48, p. 118, 1949.

Described by Vidal as being near *Mecidea quadrivittatus*. This, together with his description of shape, color, and length of the second and third segments of the antennae would indicate a close resemblance between the two species; however, the body length shown for *rungsii* is nearer that recorded for *M. prolixa*.

The following salient characters are extracted from Vidal's description:

Smaller than *Mecidea pallida* but of the same shape. Punctures on scutellum and hemelytra much more noticeable than in *M. straminea* and *M. lepinyei* (Vidal not Lindberg). Pronotum with sides feebly sinuate, dorsum bearing four longitudinal bands of brown punctures, the two median bands being scarcely visible.

Antennae of the same shape as *pallida*. Comparative lengths of segments 2, 3, 4, and 5 are 95:40:52:45. The first three, covered with spines, the base of each forming a rather large brown puncture.

Scutellum with concolorous punctation and bearing a smooth median longitudinal carina; the pronotum bears traces of this carina. Clavus bordered with a brown line at the base along margin of scutellum. A band of brown punctures on each side underneath body, leaving the head, passing along the thorax and along the line of the abdominal spiracles.

Length: 9.7 mm.

Described from a female specimen collected at Mader Bergat, Morocco, October 1941, by Ch. Rungs.

Type.—In l'Institut Scientifique Cherifien, Rabat, Morocco.

MECIDEA SAHARIANA Wagner

Mecidea sahariana WAGNER, Eos, vol. 25, pts. 3-4, pp. 190-191, 2 figs., 1949.

This species is said by Wagner to be very closely related to *Mecidea pallida*, but it is easily separated from that species by the longer, narrower head, the relatively smaller eyes and shorter second antennal segment. The species is also described as considerably smaller than *pallida*. Wagner's illustration shows the male to have a remarkably wide second antennal segment.

The antennae are described as follows: First segment very short, not attaining apex of head; second segment, male 0.8 or female 0.84 times as long as the head and noticeably flattened; in the male this flattening is most striking and the flattened portion is wider than the segment itself. The third segment of the male is somewhat more than half as long as the second, but in the female it is only 0.3 times as long.

The abdominal segments with a small black spot near the stigmata.

Length: Male, 9.9 mm.; female, 10.0-10.3 mm.

Described from one male and two females from Spanish Sahara (U.-Bomba, March 6, 1943, and Sebka Um Seikira, April 8, 1945, Matéu collector).

Type.—In the Museo de Ciencias Naturales, Barcelona.

As evidenced by his description of *M. sahariana*, Wagner is the first author to note the sexual dimorphism of the antennae that appears to be characteristic of all *Mecidea*. He also speculates on the distribution of *M. sahariana* and *M. pallida* and concludes that since the latter was described from "Nubia Superior" it is unlikely that the two species have the same range of distribution. In consequence he states that it is probable that the records for *pallida* from Algeria, Tunis, and Morocco pertain to *sahariana*.

This conclusion seems highly improbable. Certainly typical *M. pallida* occurs in Tunisia, for I have examined a male specimen collected at Gafsa. Other specimens have been seen from northern Nigeria and from the Aden Protectorate. These facts, combined with the close relation of *pallida* to *M. indica* and to *M. longula* and *M. major*, suggest a wide range of distribution for *pallida*. Furthermore, the wide range of variation exhibited by the New World species makes it seem likely that several of the species now listed from the North African region will prove to be only variants of *pallida*.

MECIDEA STRAMINEA Vidal

Mecidea straminea VIDAL, Mem. Soc. Sci. Nat. Maroc, vol. 48, pp. 118-119, 1949.

Described by Vidal as being near *Mecidea lepineyi* (Vidal not Lindberg) but darker in color and with different comparative lengths of the second and third antennal segments.

According to Vidal the comparative lengths of antennal segments 2, 3, 4 and 5 are as 77 : 39 : 50 : 45.

Length: 10 mm.

Described from a female specimen collected at Fort Trinquet, Mauritania, French West Africa, November 1942, by Ch. Rungs.

Type.—In l'Institut Scientifique Cherifien, Rabat, Morocco.

MECIDEA TELLINII Schouteden

Mecidea tellinii SCHOUTEDEN, Ann. Soc. Ent. Belgique, vol. 49, p. 7, 1905.—BERGROTH, Mem. Soc. Ent. Belgique, vol. 15, p. 152, 1908.

This species was described from two male specimens collected in Eritrea. Schouteden characterized the species as more robust than *Mecidea pallida* and *M. proluxa*. This comparison is unfortunate since *proluxa* is the smallest and least robust of the genus, while of the species known to me *pallida* is the largest and most robust. The antennae (male) are described as having the second and third segments subequal in length. This agrees with Dallas' description of *linearis* and suggests that *M. tellinii* might be a synonym of that species. Characters of size and color, however, seem to indicate that the species are different. Schouteden states that his specimens were 10.25 mm. long and 3.75 mm. wide across the pronotum. This would make *tellinii* the least elongate species in the genus.

Types.—The type specimens are believed to be in Schouteden's private collection.

MECIDEA VIDALI, new name

Mecidea lepineyi VIDAL, Mem. Soc. Sci. Nat. Maroc, vol. 48, p. 119, 1949 (pre-occupied by *M. lepineyi* Lindberg, Not. Ent., vol. 18, ser. 3, pp. 85, 87, fig. 1c, 1938).

Described by Vidal as paler but of the same shape as *rungsii*, the punctation of the head, scutellum, and hemelytra as concolorous and hardly visible, and the antennae as bearing brown punctures.

The comparative lengths of antennal segments 2, 3, 4, and 5 were described as 40 : 70 : 56 : 49.

Length: 9 mm.

Described from a male collected August 30, 1941, by Lepiney, Sauvage, and Rungs.

Type.—In l'Institut Scientifique, Cherifien, Rabat, Morocco.

Comments.—In his last descriptive sentence concerning *Mecidea lepineyi* (Vidal not Lindberg) Vidal states that the comparative lengths of the second and third antennal segments are sufficient to identify this species. Unfortunately, this is not true since the males of *M. kristenseni* Jensen-Haarup have almost the same comparative lengths for the second and third antennal segments. This fact suggests that *vidali* may prove to be only a very pale form of *kristenseni*.

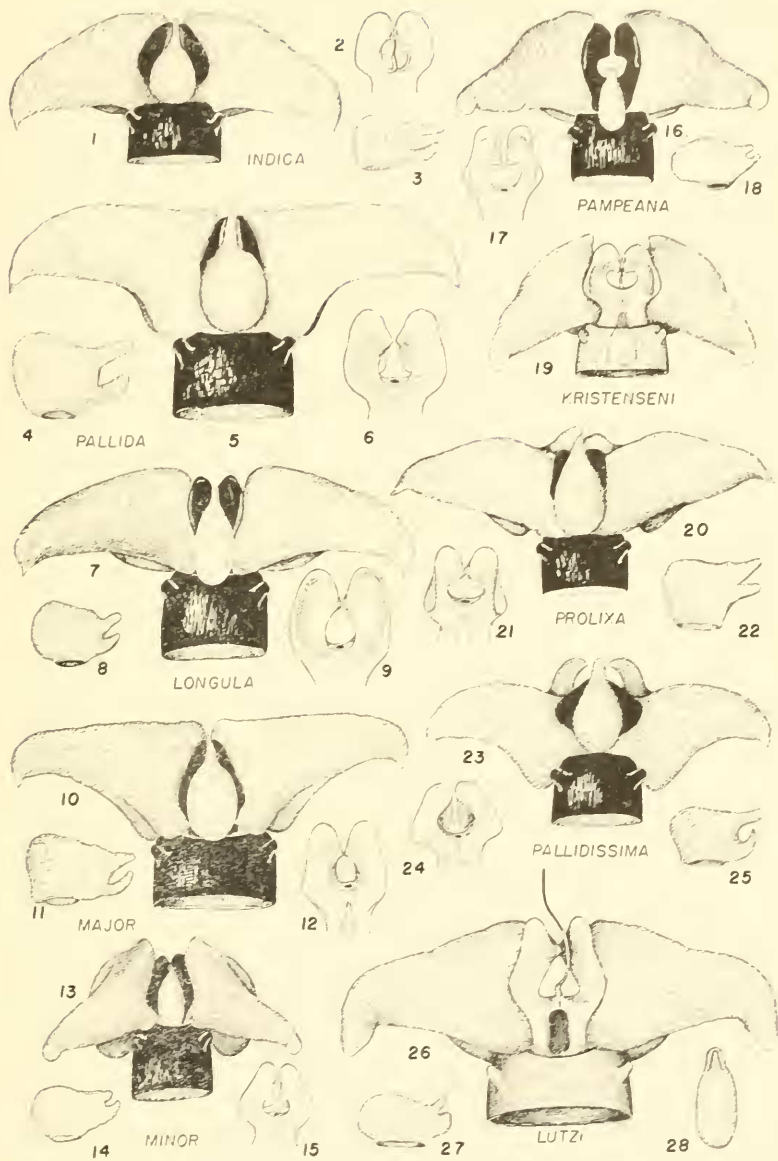
REFERENCES TO LITERATURE CONCERNED WITH DISTRIBUTION

- BALL, E. D., and HARTZELL, A.
1922. A review of the desert leafhoppers of the Orgeriini (Rhynchota: Fulgoridae). *Ann. Ent. Soc. Amer.*, vol. 25, pp. 137-152, 1 pl.
- CAIN, S. A.
1944. *Foundations of plant geography*, 556 pp.
- CARTER, H. F.
1921. A revision of the genus *Leptoconops* Skuse. *Bull. Ent. Res.*, vol. 12, pp. 1-28.
- CAZIER, M. A.
1941. A generic review of the family Apioceratidae with a revision of the North American species (Diptera-Brachycera). *Amer. Midl. Nat.*, vol. 25, pp. 589-631.
- CHOPARD, L.
1938. *La biologie de Orthoptères*, 564 pp., 453 figs. *Encyclopedie Entomologique, serie A, XX*.
- COCKERELL, T. D. A.
1932. Discontinuous distribution in bees. *Nature*, vol. 130, pp. 58-59.
- HILL, G. F.
1942. Termites (Isoptera) from the Australian region, 480 pp., 24 pls.
- JOHNSTON, I. M.
1940. The floristic significance of shrubs common to North and South American deserts. *Journ. Arnold Arboretum*, vol. 21, pp. 356-363.
- METCALF, Z. P.
1946. The center of origin theory. *Journ. Elisha Mitchell Sci. Soc.*, vol. 62, pp. 149-175, 41 pls.
- OMAN, P. W.
1948. Notes on the beet leafhopper, *Circulifer tenellus* (Baker) and its relatives (Homoptera: Cicadellidae). *Journ. Kansas Ent. Soc.*, vol. 21, pp. 10-14.
- STEYERMARK, J. A.
1932. A revision of the genus *Menodora*. *Missouri Botanical Garden Ann.*, vol. 19, pp. 87-176.
- UVAROV, B. P.
1937. A representative of an Old World subfamily of Acrididae in southwestern North America. *Pan-Pacific Ent.*, vol. 13, pp. 97-100.
1938. Ecological and biogeographical relations of Eremian Acrididae. *Société de Biogéographie VI. La vie region desertique nord-tropicale de l'ancien monde*, pp. 231-273.
- WYGODZINSKY, P.
1950. Notas y descripciones de Algunas "Machilidae" Americanas (Thysanura, Insecta). *Acta Zool. Inst. Miguel Lillo*, vol. 7, pp. 593-622.

PLATE 47

Illustrations of characters on the aedeagus of species of *Mecidea*:

- 1-3, *Mecidea indica* Dallas, from Hoshangabad, Central Provinces, India: 1, Lateral vesiculae, dorsal view; 2, penial plates, showing penisfilum; 3, median vesicula, lateral view.
- 4-6, *M. pallida* Stål, from Gafsa, Tunisia: 4, Median vesicula, lateral view; 5, lateral vesiculae, dorsal view; 6, penial plates.
- 7-9, *M. longula* Stål, from Antigua, British West Indies: 7, Lateral vesiculae, dorsal view; 8, median vesicula, lateral view; 9, penial plates.
- 10-12, *M. major*, new species, from Bexar County, Tex.: 10, Lateral vesiculae, dorsal view; 11, median vesicula, lateral view; 12, penial plates.
- 13-15, *M. minor* Ruckes, from Zavallo County, Tex.: 13, Lateral vesiculae, dorsal view; 14, median vesicula, lateral view; 15, penial plates.
- 16-18, *M. pampeana*, new species, from Tucumán, Argentina: 16, Lateral vesiculae, dorsal view; 17, penial plates; 18, median vesicula, lateral view.
- 19, *M. kristenseni* Jensen-Haarup, from plains northwest of Lake Zwai, Abyssinia: Dorsal view, showing lateral vesiculae, penial plates, and penisfilum. Median vesicula not evaginated.
- 20-22, *M. proluxa* Stål, from Cape Province, South Africa: 20, Lateral vesiculae, dorsal view; 21, penial plates; 22, median vesicula, lateral view.
- 23-25, *M. pallidissima* Jensen-Haarup, from Djibouti, French Somaliland: 23, Lateral vesiculae, dorsal view; 24, penial plates; 25, median vesicula, lateral view.
- 26-28, *M. luzzi*, new species, from Djamba, Belgian Congo: 26, Dorsal view of lateral vesiculae and penial plates, showing penisfilum; 27, median vesicula, lateral view; 28, median vesicula, dorsal view.



(For explanation see page 504.)