

STUDIES ON THE FAUNA OF CURAÇAO AND OTHER
CARIBBEAN ISLANDS: No. 159.

THE HETEROPTERA OF THE NETHERLANDS
ANTILLES - X

BERYTINIDAE (Stilt Bugs)

by

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This paper is a further contribution to the knowledge of the Heteroptera of the Netherlands Antilles continuing the series on bugs of this region (COBBEN, 1960a, b; DRAKE & COBBEN, 1960a, b; WYGODZINSKY, 1960; NIESER, 1967, 1969a, b; COBBEN & WYGODZINSKY, 1975). It is based on the material of berytinids collected by the second author while studying the bugs of these islands. The material collected contained a total number of 65 specimens of Berytinidae divided into 3 genera and 3 species:

Pronotacantha armata Štusák, from Curaçao;

Aknisus multispinus Ashmead, from Bonaire, Aruba and Curaçao;

Jalysus reductus Barber, from Saba, St. Eustatius and Curaçao.

Pronotacantha armata and *Aknisus multispinus* had not yet been recorded from the Antilles. *Jalysus reductus* is already known from the region studied; however, it is recorded here for the first time from the Lesser Antilles.

Three additional species are known from the Antilles from the literature: *Protacanthus decorus* Uhler, *Jalysus sobrinus* Štál and *Jalysus reversus* V. Duz.

Protacanthus decorus Uhler, 1893, was described from St. Vincent and subsequently recorded from Grenada (UHLER, 1894), Jamaica

(as *Metacanthus decorus*, VAN DUZEE, 1907), and Haiti (ŠTUSÁK, 1970); it also occurs in Venezuela, Costa Rica (ŠTUSÁK, 1970), Colombia, Texas (HARRIS, 1941) and South Florida (MC ATEE, 1919).

Jalysus sobrinus Stål, 1860, is distributed, as far as is known in South and Central America. It was described from Brasil (STÁL, 1860), recorded from Argentina (PENNINGTON, 1921), Colombia, Venezuela, Bolivia, Panamá (HARRIS, 1943), Perú (BLÖTE, 1945), México (ŠTUSÁK, 1970). From the Antilles region, it is hitherto known only from Trinidad (ŠTUSÁK, 1970).

Jalysus reversus van Duzee, 1907, was described from Jamaica. This species seems to be a synonym of *J. sobrinus*, but the holotype has not yet been studied.

The heteropterous fauna of the Antilles contains, as far as known, 4 genera and 6 species of the family Berytinidae.

We wish to express our sincere thanks to Dr. J. D. LATTIN (Oregon State University) for advice in bibliographic problems and for correcting the English text. The second author acknowledges the support of the WOTRO (formerly WOSUNA) Organization which made the collecting trip 1956/57 possible.

***Pronotacantha armata* Štusák, 1973**

Figs. 157–158, 172.

Pronotacantha annulata, ŠTUSÁK (nec Uhler), 1970, p. 146 (Mexico).

Pronotacantha armata ŠTUSÁK, 1973, p. 45–48 (orig. descr., type locality: Tepoztlan, Morelos, Mexico; compared with *P. annulata* Uhler).

Previously, this species was known from México only. The single specimen from Curaçao agrees well with the original description in structure and proportion; it differs, however, in the lighter colouration of the head and thorax, and the greater length of the scutellar spine.

CURAÇAO: Hofje Flip, 20.VI.1957 (1♀), swept from a damp, grassy field.

The genus *Pronotacantha* is characterized as follows: Scutellum clearly visible and armed with a single long spine. Pronotum armed with about 17 long spines. Head very convex dorsally, anterior lobe

of head with or without ovoid tubercle-like excrescences medially; postocular lobe of head with a transverse row of ovoid or spine-like excrescences. Hemielytra without spines; venation as in Fig. 2. Ostiolar process short, almost tubercle-like, not reaching the level of hemielytra.

Besides *P. armata*, there is only one other species described: *P. annulata* Uhler, 1893, known from California, Arizona, New Mexico, Texas, Utah. *P. annulata* differs from *P. armata* by the presence of tubercles on the vertex; median excrescence of the posterior head lobe ovoid; shorter ostiolar process and the dark rings on the antennae.

The spermatheca of the Curaçao specimen of *P. armata* is rather simple (Fig. 172) as compared with that of *Jalysus* and *Aknisus*, treated in this paper. The bulb consists of a rigid proximal compartment and a larger distal, thinner-walled part. Circular impressions with a central canal-pit on the distal-end of the bulb (KOH preparation) are suggestive of remnants of large secretory cells. There is a long duct leading to the spermatheca; this duct is thin, membranous, but sclerotized shortly before entering into the bulb.

***Jalysus reductus* Barber, 1939**

Figs. 159–160, 167, 169, 173.

Jalysus spinosus BARBER (nec Say), 1923, p. 12 (listed; Mona Isl., Puerto Rico).

Jalysus reductus BARBER, 1939, p. 331–333 (orig. descr., fig.; type locality: Mona Isl., Porto Rico; Mexico, Honduras, Panama, Trinidad, Haiti, Dominican Republic, Cuba).

Jalysus reductus ŠTUSÁK, 1970, p. 143–148 (Guatemala, Bahama Isl.).

Distributed in Central America (México, Honduras, Panamá, Guatemala) and in the West Indies (Cuba, Hispaniola, Puerto Rico, Bahamas, Trinidad), and now recorded from both the Windward and Leeward Groups of the Lesser Antilles.

The species seems to be the most common stilt-bug of the Caribbean Region, but in the Netherlands Antilles it was less common than the following species.

CURAÇAO: Cas Corá, Plantentuin, 28.II.1957 (1♀).
 ST. EUSTATIUS: Cultuurvlakte, 28.XII.1956 (1♂, 1♀).
 SABA: The Bottom, 18.XII.1956 (3♂, 1♀). Hellsgate, 20.XII.1956 (3♂, 3♀).
 - All specimens swept from dry, grassy vegetation.

Only a few females appeared to have ovarian eggs. The egg conforms in outline to the berytinid type. The shining chorion surface bears no hexagons and no indication of exclosure suture.

The 3 or 4 aero-micropyles (Fig. 169) have a short stem and a long (35 μ) internal canal which turns clock-wise inside the egg when viewed from the anterior direction. The internal canal is very short in *Aknisus* and is entirely lacking in *Berytinus* spp. and *Gampsocoris*. COBBEN (1968) considers the presence of an internal micropylar canal to be a plesiomorphous condition.

The parameres of the male are illustrated in Fig. 167. The tip of the processus hamatus shows a dissimilarity between the left and right parameres, but this feature has not been extensively checked.

The intima of the female internal genital organ is shown in Fig. 179a, b. The spermatheca is a rigid structure with a short canal and a complex connection with the gynatrium. One of the most interesting features is the extension of the canal along the dorsal wall of the gynatrium anteriorly towards the common oviduct. [This groove is probably homologous with the secondary fecundation canal of Amphibicorisae, and will be considered in an other context elsewhere (R.H.C.)]

***Aknisus multispinus* (Ashmead, 1887)**

Figs. 161–163, 168, 170–171.

- Hoplinus multispinus* ASHMEAD, 1887, p. 155 (orig. descr.; type locality: Florida).
Jalysus perclavatus, VAN DUZEE, 1909, p. 163–164 (descr.; Florida).
Jalysus (Hoplinus) multispinosus BARBER, 1911, p. 24 (keyed; Arizona, N. Jersey, D.C.; notes).
Jalysus perclavatus, VAN DUZEE, 1914, p. 380–381.
Hoplinus (?) *multispinus*, VAN DUZEE, 1916, p. 17 (listed).
Jalysus perclavatus, VAN DUZEE, 1917 (catalogue; Missouri) [not seen].
Aknisus multispinus, MCATEE, 1919, p. 82 (literature, synonymy, characters).
Aknisus multispinus, TORRE BUENO, 1941 (Missouri) [not seen].
Aknisus multispinus, HARRIS, 1941, p. 105 (New Jersey, Florida, Mississippi, Alabama, Louisiana, Iowa, Kansas, Texas, Arizona).
Aknisus multispinus, FROESCHNER, 1942, p. 597–598 (keyed), p. 606 (notes).

This species is new to the fauna of the Antilles. It has been recorded before from many states of the U.S.A. (Florida, New Jersey, Mississippi, Alabama, Louisiana, Iowa, Kansas, Texas, Arizona, Missouri, D.C.). According to FROESCHNER (1942) this species is uncommon in Missouri, the imagines occur there from about the third week of August to the first week of October, being taken at light and swept from weedy fields.

Though many berytinids seem to be confined to only a very restricted list of plant hosts, they may not be entirely phytophagous. ELSEY & STINNER (1971) report that animal food is required for the optimal development of *Jalysus spinosus* in the U.S.A.

ARUBA: Palmbeach, 16.IV.1957 (7♂, 3♀ + larvae); Oranjestad, Wilhelminaplantsoen, 21.IV.1957 (1♂, 1♀).
 CURAÇAO: Piscadera, 12.X.1956 (1♂, 1 fifth instar larva). St. Martha, 13.X.1956 (3♂, 6♀); Malpais, 8.II.1957 (2♂); 9.II.1957 (1♀). Klein Piscadera, Hofje van der Mark, 12.II.1957 (1♂). Hofje Blauw, 24.III.1957 (10♂, 4♀). Scherpenheuvel, 1.VI.1957 (2♂), flowering grasses between *Heliotropium curassavicum*. Hofje Gouv. van Slobbeweg, 19.VI.1957 (2♂). Jan Tiel, 15.VI.1957, 2 eggs laid by ♀ in captivity.
 BONAIRE: Slagbaai, 22.V.1957 (1♂). Rooi Huba, 24.V.1957 (5♂). – Most specimens were swept from wet and dry open areas with predominantly grasses and some herbs.

Deposited ecloded eggs (Fig. 170b) and ripe ovarian eggs have been studied (Fig. 170a). The chorionic browning starts in the ovarioles. The shell of the deposited egg is longitudinally sulcate. The aero-micropylar cup is more sessile and has only a very short internal canal in contrast to *Jalysus*.

The paramere (Fig. 168) and the ♀ internal genital system (Fig. 171) differ markedly from those structures in *Jalysus*.

Fifth Instar Nymph (Fig. 163)

General colour light ochreous. Femora, tibiae and antennae considerably annulated with dark brown.

Head longer than wide, smooth and shiny, armed with a forwardly directed, rather long and blunt process between the bases of the antennae. This process does not project beyond the anterior

margin of anteclypeus. A transverse furrow divides the head dorsally into an anterior and posterior lobe, it is shallow and marked with dark brown. Eyes reddish brown in colour, ocelli absent. Antenniferous tubercles marked laterally with dark spots; the first antennal segment densely annulated with dark brown (about 14 rings) and only gradually and slightly widened to its apex. The second segment with 7 to 8 dark rings and a dark apex. The third segment appears to be dark as the brown rings are broad and not well defined. The fourth antennal segment fusiform in shape, proximal 3/4 blackish brown, apical quarter blending to light rusty brown. Antennal segments I. to III. with very short sporadic hairs, the fourth segment covered with more dense and much longer hairs. Rostrum light ochreous brown, its tip blackish brown reaching to the anterior margin of the posterior coxae. The first rostral segment does not reach the anterior margin of the prothorax but reaches about halfway between the posterior margin of the eye and the anterior margin of the prothorax. Relation of rostral segments: 11 : 7 : 6 : 9 = 0.47 mm : 0.30 mm : 0.26 mm : 0.38 mm.

Dorsal portion of head with pestle-like hairs which are situated in a row in the median-line (from the base of frontal process to pronotum). There are odd hairs to the left and right of the median line.

Pronotum slightly wider than long, smooth and shiny, without punctures. The anterior pronotal lobe with the callosity well developed, the margins of which are darker in colour and furrow-like. The callosity does not reach the lateral margins of the pronotum. In the median-line of the posterior pronotal lobe there is a conspicuously marked median carina. Similar carinae are situated in the lateral margins of the pronotal disc. All the carinae are very light, whitish yellow. Pronotum with sporadic pestle-like hairs.

The foundation of the scutellum is conspicuous without a long erected spine but with a light median line indicating the development of the imaginal spine. Basal quarter of the abdomen covered by the hemielytral lobes having pointed apices and odd pestle-like hairs. Ostiole and ostiolar process absent.

Distal margins of trochanters marked with blackish brown. Apices of femora only slightly and gradually widened, posterior

femora do not reach the apex of the abdomen. Anterior femur with an average of 8, the middle with 9 and the posterior femur with 13 to 15 dark brown rings. Tibia longer than femur, apex of tibia enlarged and darkened. Anterior tibia with approximately 10, middle with 12 and posterior tibia with 22 to 24 dark rings. Tarsi only two-segmented, brown, the first segment is lighter and subequal to the second in length.

Majority of tergites brownish. There is a pale narrow stripe running along the median line of the abdomen. Aperture of dorsal scent gland visible as a transversal oval ring with sclerotised margins on the anterior margin of tergite 4. Aperture of the second gland absent. Stigmata situated dorso-laterally on segments 2-8, appearing as small tubercles. The whole ventral side of the body, including coxae and trochanters, unicolorously pale.

Measurements: length of body 4.65 mm, width of body (abdomen) 0.26 mm, length of head 0.60 mm, width of head 0.43 mm, distance between eyes 0.32 mm, length of pronotum 0.43 mm, width of pronotum 0.49 mm, length of antenna 4.81 mm (I : II : III : IV = 2.04 mm : 1.15 mm : 1.15 mm : 0.47 mm), length of hemelytral lobe 1.28 mm.

<i>leg</i>	<i>femur</i>	<i>tibia</i>	<i>tarsus</i>
anterior	1.28 mm	1.60 mm	0.47 mm
middle	1.28 mm	1.83 mm	0.47 mm
posterior	2.34 mm	3.23 mm	0.48 mm

The fifth instar nymph differs from the imago especially in having the legs and antennae annulated with brown-black, lack of ocelli, scutellar spine and ostiolar processes, unpunctured and shining pronotum and two-segmented tarsi. The fact that the brown-black annulation of antennae and legs disappears when the imago is reached, is remarkable. A similar case of the disappearance of dark rings on antennae and legs has been described by BERGROTH (1912) in the species *Metacanthus tenerimus* (Bergr.) occurring in Madagascar and Africa.

The habitus of the *Aknisus* larva reveals a striking resemblance

to the larva of *Metatropis* (COBBEN, 1956) which has also one abdominal gland aperture visible. The gland opening remains in the adult of *Aknisus*. We have verified that in the adult of *Jalysus reductus* there is even a distinct reservoir present. This suggests that the gland also may function during adult life.

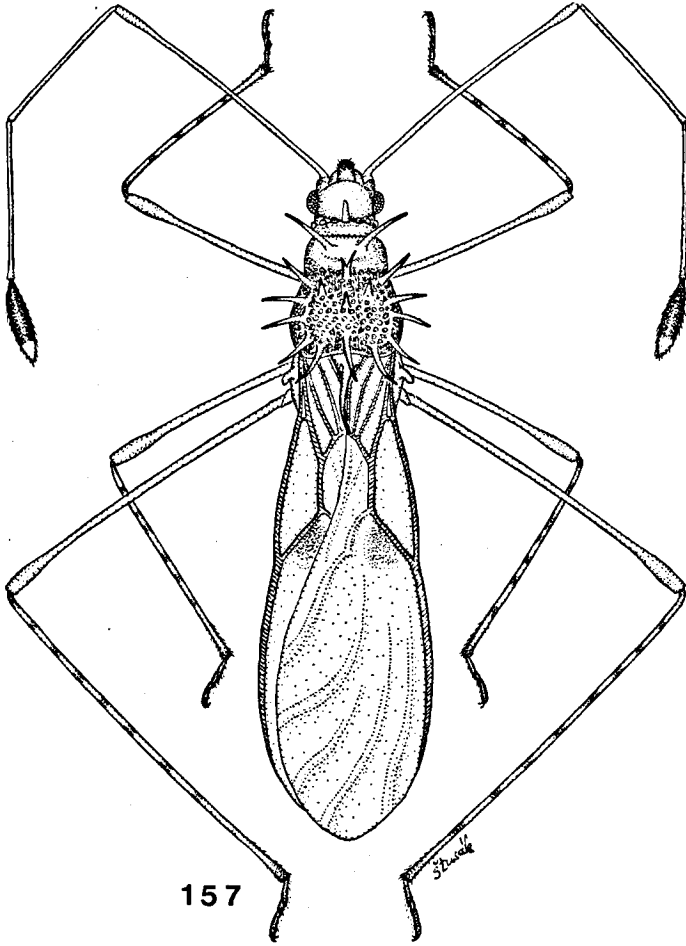
KEY TO THE BERYTINIDAE OF THE ANTILLES

- 1 (4) Pronotum armed with spiniform processes.
- 2 (3) Pronotum armed with 17 spines; postocular portion of head with six shiny, waxy yellowish white, half-ball-shaped tubercles situated in a transverse row; an erect spine is situated among these tubercles medially (Fig. 157) . . . *Protonacantha armata* Štusák
- 3 (2) Pronotum armed with only two spines situated in the antero-lateral angles of the pronotum. Head without spines or any tubercles (Fig. 164) *Protacanthus decorus* Uhler
- 4 (1) Pronotum without any spines or processes.
- 5 (8) Apex of the ostiolar process armed with a pointed spine. Second antennal segment shorter than the third (Fig. 165).
- 6 (7) Legs unicolorously ochreous without spots. Lateral sides of the postocular portion of head smooth, without punctures. Pygophore in males with conspicuous median longitudinal carina situated ventrally (Figs. 159–160) *Jalysus reductus* Barber
- 7 (6) Legs spotted considerably with dark brown or annulated with dark brown rings. Tip of the ostiolar spine piceous. Fourth antennal joint narrow, black except its apical 1/4–1/3, which is yellowish white with extreme tip blending to dark again. Posterior margin of pygophore concave with a triangular corner running out in its middle. There is a small, shiny, brown spot on each latero-ventral side of the pygophore (Fig. 166)
. *Jalysus sobrinus* Stål and *Jalysus reversus* Van Duzee
- 8 (5) Ostiolar process without apical spine, but apex rounded and obliquely turned backwards. Second antennal segment a little longer than the third. Head with a pointed conical tubercle between the bases of antennae (Figs. 161–162)
. *Aknisus multispinus* (Ashmead)

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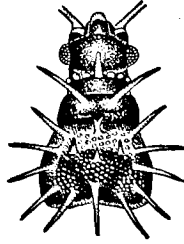
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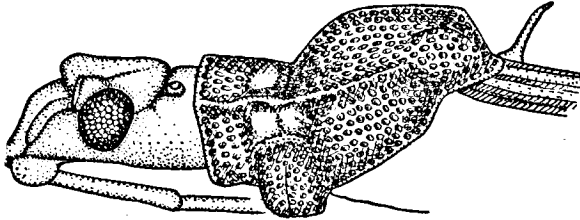


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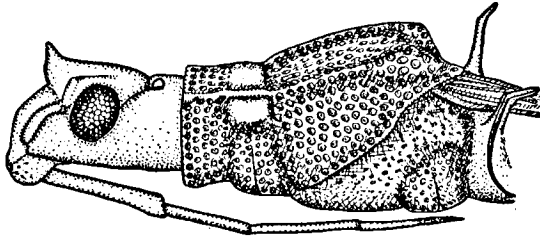
Fig. 157. *Pronotacantha armata* Štusač, from Curaçao.



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Fig. 158. *Pronotacantha armata* Štusák, head and pronotum.

Fig. 159. *Jalysus reductus* Barber, head and pronotum, lateral view.

Fig. 160. *Aknisus multispinus* (Ashmead), head and pronotum, lateral view.

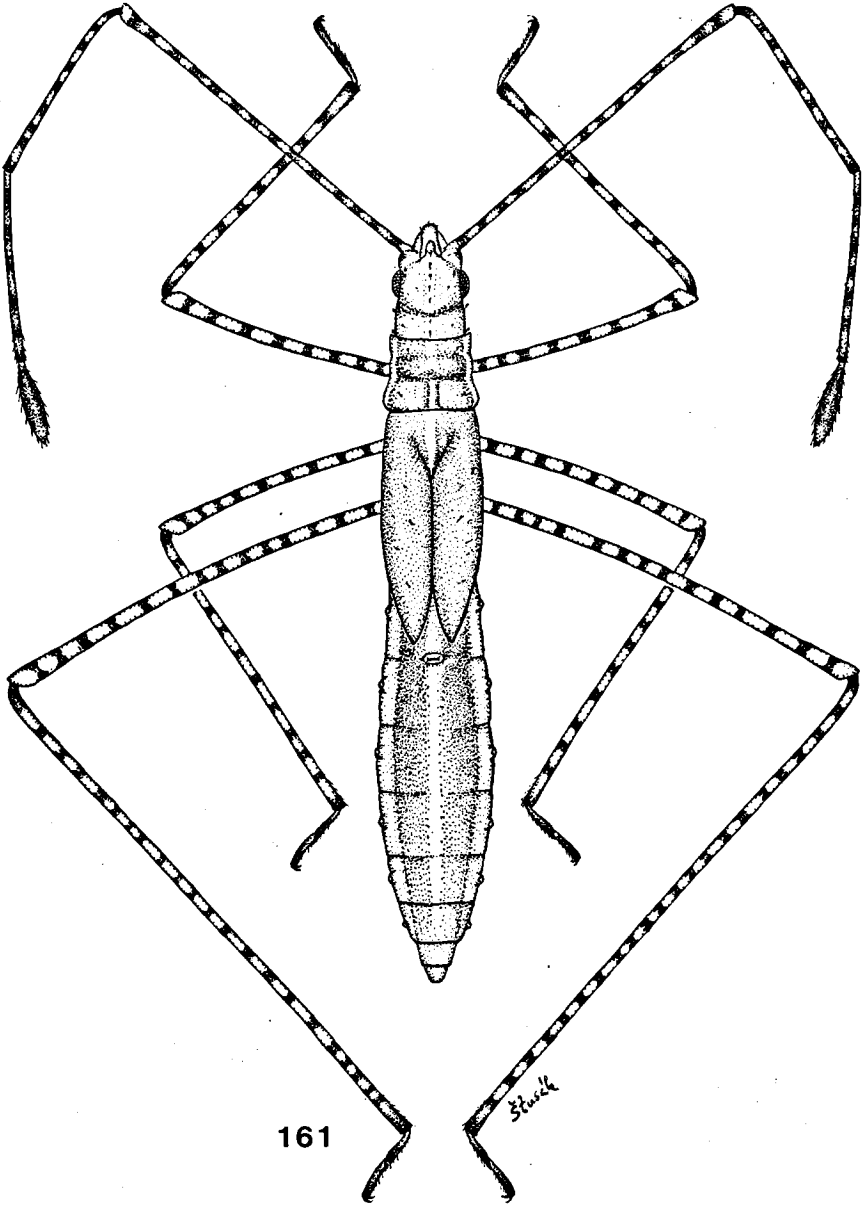
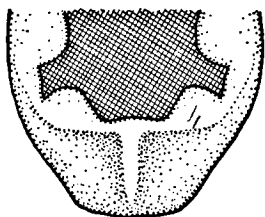
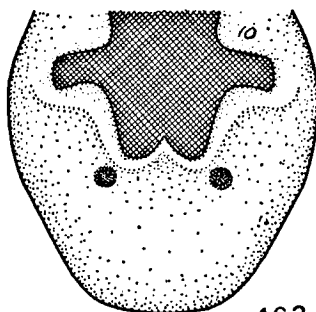


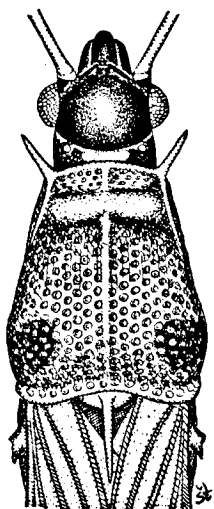
Fig. 161. *Aknisis multispinus* (Ashmead), fifth instar nymph.



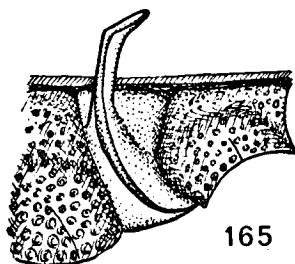
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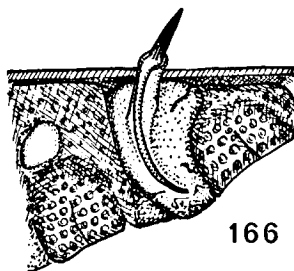
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Fig. 162. *Jalysus reductus* Barber, pygophore.

Fig. 163. *Jalysus sobrinus* Stål, pygophore.

Fig. 164. *Protacanthus decorus* Uhler, head and pronotum.

Fig. 165. *Aknisus multispinus* (Ashmead), lateral view on portion of thorax showing ostiole with ostiolar process.

Fig. 166. *Jalysus sobrinus* Stål, lateral view on portion of thorax showing ostiole with ostiolar process.

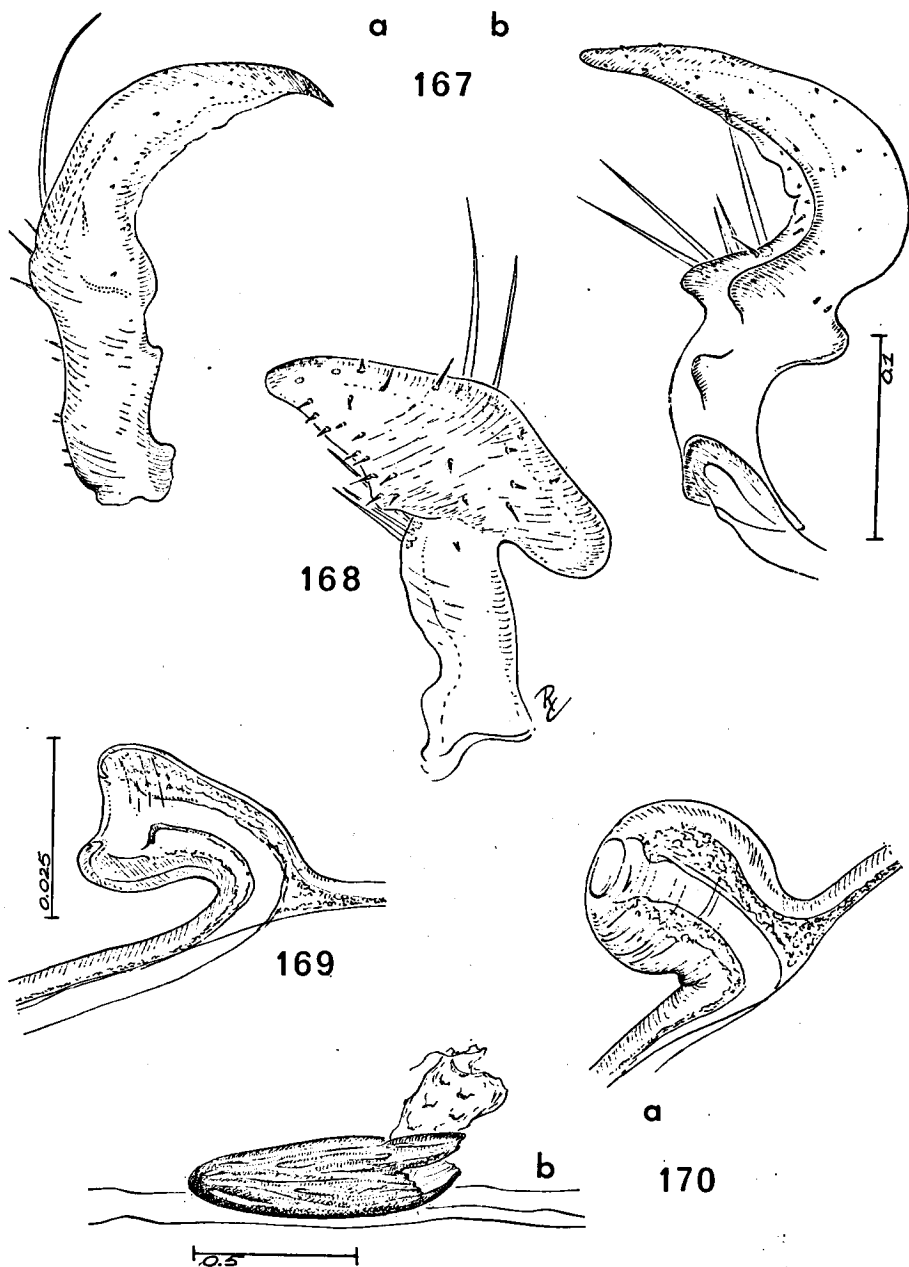
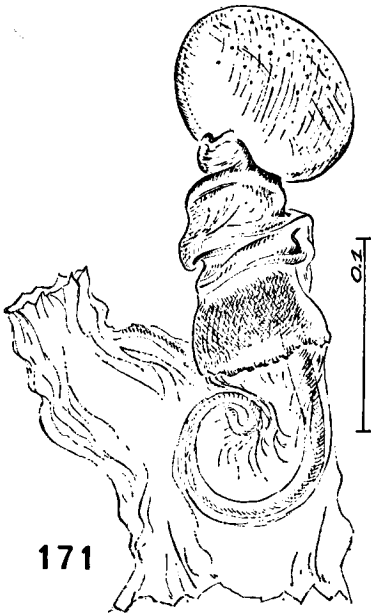


Fig. 167. *Jalysus reductus* Barber; a, left paramere, laterodorsal; b, right paramere, ventral.

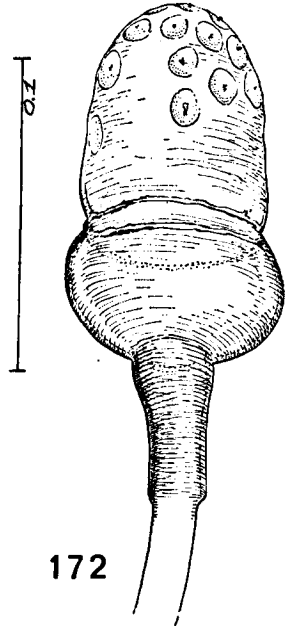
Fig. 168. *Aknisus multispinus* (Ashmead), right paramere.

Fig. 169. *Jalysus reductus* Barber; aero-micropyle, optical section.

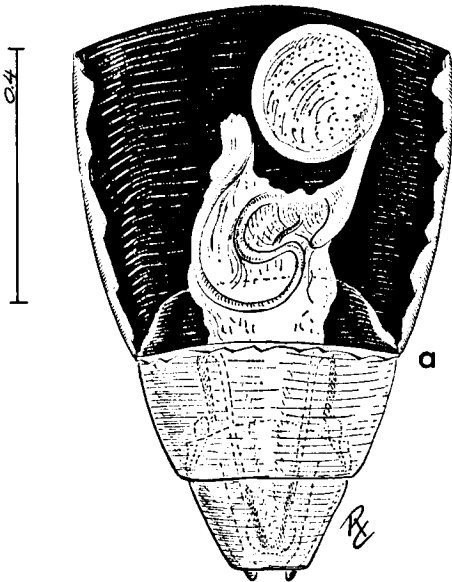
Fig. 170. *Aknisus multispinus* (Ashmead); a, aero-micropyle, optical section; b, egg in situ, ecloded egg with exuvium.



171



172



a



b

173

Fig. 171. *Aknisus multispinus* (Ashmead); gynatrium and spermatheca, dorsal.

Fig. 172. *Pronotacantha armata* Štusák from Curaçao, spermatheca.

Fig. 173. *Jalysus reductus* Barber; a, distal part of abdomen with female internal genital structures, dorsal; b, right lateral view of spermatheca.