

Female Reproductive Organs of Cerambycid Beetles from Japan and the Neighbouring Areas

III. Obriini through Rosaliini

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Abstract Nineteen species of cerambycine longicorn beetles are examined for their female reproductive organs. They are distributed to 16 genera (one of which is divided into 2 subgenera) of 6 tribes (Obriini through Rosaliini). The Obriini and Stenopterini are of particular interest and require a thorough revision.

Six tribes of the subfamily Cerambycinae are taken up in the third part of this series of papers. They are the Obriini (6 spp. of 4 genn.), Stenopterini (4 spp. of 3 genn.), Molorchini (5 spp. of 5 genn.), Thraniini (1 sp. of 1 gen.), Pyrestini (1 sp. of 1 gen.) and Rosaliini (2 spp. of 2 genn.). Their female reproductive organs are described and illustrated.

As in the foregoing parts, higher classification mainly follows that given by KUSAMA and TAKAKUWA (1984), but NIISATO's opinion (1992) is adopted as regards the Stenopterini.

Results

Tribe Obriini

Stenhomalus cleroides BATES, 1873

(Figs. 71–73)

Collecting data of the material used. Mukohgaoka, Kawasaki-shi, Kanagawa Pref., 16–IV–1980, A. TAKASU leg.

Paraproct extremely short and without baculum; valvifer indistinct; coxite very short, not constricted and devoid of baculi; coxite lobes extremely short, practically absent, with rather long tactile hairs; stylus long and very narrow, hardly broadened towards the apex, sclerotized except for the apex; dorsal baculi absent; proctiger absent so as to make the anus directly open at the dorsal base of paraproct; vagina very short; vaginal plates narrow; bursa copulatrix constricted at middle and broadened in apical half; spermatheca rather narrow, strongly bent at middle, curved at base to which the gland is connected; spermathecal duct narrow and sinuate, and entering into the base of bursa copulatrix.

Longipalpus dilatipennis (GRESSITT, 1935)

(Figs. 74–76)

Collecting data of the material used. Miyako-jima Is., Okinawa Pref., V–1983 (emerged).

Paraproct, valvifer and coxite fused together into a piece, not distinguishable from one another and devoid of baculi, and hardly constricted at the posterior part; coxite lobes very short, hardly sclerotized, with rather long tactile hairs; stylus very narrow; dorsal baculum absent; proctiger absent so as to make the anus directly open at the dorsal apex of paraproct; vagina very short; vaginal plates lanceolate; bursa copulatrix short and broad; spermatheca narrow, bent at apical third and basal third, with very short gland at the outer surface of basal third; spermathecal duct rather thick, short, sinuate, and entering into the basal third of bursa copulatrix.

Pseudiphra elegans (VILLIERS et CHÔJÔ, 1971)

(Figs. 77–79)

Collecting data of the material used. Mt. Omotodake, Ishigaki Is., Okinawa Pref., 12–V–1973, T. NAKANE leg.

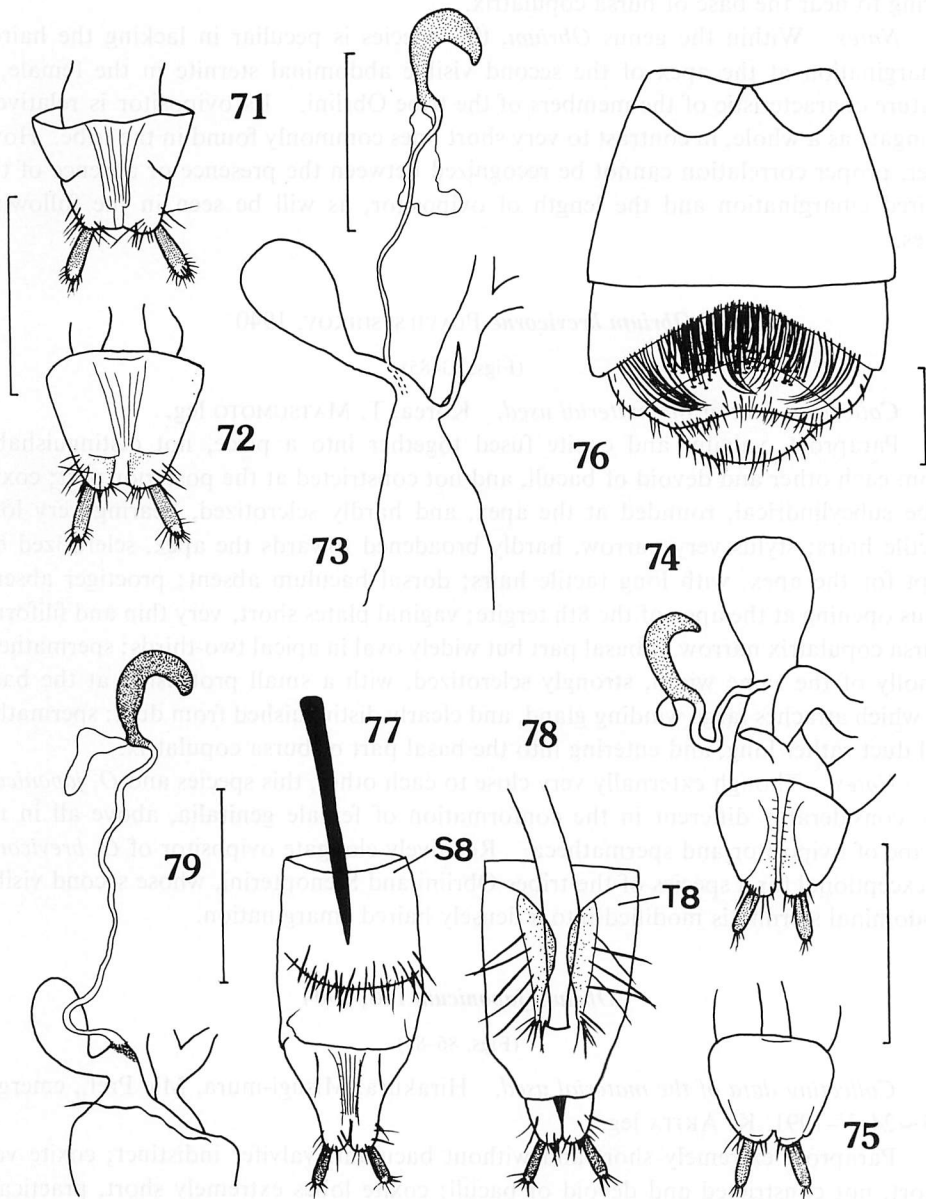
Paraproct, valvifer and coxite fused together into a piece, not distinguishable from one another, devoid of baculi, and narrowed towards the apex; coxite lobes short, with rather long tactile hairs, hardly sclerotized; stylus strongly sclerotized except for the apex, hardly broadened towards the apex; dorsal baculum absent; proctiger absent, anus open at the apex of the 8th tergite; vaginal plates long and very thin, filiform; bursa copulatrix short and oval, constricted at basal third; spermatheca strongly sclerotized, bent near the middle, weakly convex behind there, and bent again at the base, to which the gland is connected; spermathecal duct rather long and sinuate, entering into the narrowly but heavily sclerotized base of bursa copulatrix.

Obrium nakanei OHBAYASHI, 1959

(Figs. 80–82)

Collecting data of the material used. Near Kurio, Minamiaiki-mura, Nagano Pref., 19–VI–1987, R. INAGAWA leg.

Paraproct and coxite very short and devoid of baculi, valvifer indistinct; coxite lobes also very short, hardly sclerotized, and bearing many long tactile hairs; stylus very narrow, hardly broadened towards the apex, sclerotized except for the apex; dorsal baculum absent; proctiger absent so as to make the anus directly open at the dorsal base of paraproct; vagina unusually short and with many wrinkles; vaginal plates narrow and straight; bursa copulatrix narrow in basal half, well constricted at middle, and widely oval in apical half; spermatheca comma-shaped, with long and winding gland at the base; spermathecal duct rather narrow, sinuate and coiled once, en-



Figs. 71-79. — 71-73, *Stenhomalus cleroides*; 74-76, *Longipalpus dilatipennis*; 77-79, *Pseudiphra elegans*. Ovipositor, ventral view (71, 74, 77; internal reproductive organs are also shown in Fig. 74); ovipositor, dorsal view (72, 75, 78); internal reproductive organs (73, 79); abdominal sternites, showing haired emargination of the second visible abdominal segment in the female (76). S8: 8th sternite; T8: 8th tergite. (Scale: 0.5 mm.)

tering to near the base of bursa copulatrix.

Notes. Within the genus *Obrium*, this species is peculiar in lacking the haired emargination at the apex of the second visible abdominal sternite in the female, a feature characteristic of the members of the tribe Obriini. Its ovipositor is relatively elongate as a whole, in contrast to very short ones commonly found in the tribe. However, proper correlation cannot be recognized between the presence or absence of the haired emargination and the length of ovipositor, as will be seen in the following lines.

***Obrium brevicorne* PLAVILSTSHIKOV, 1940**

(Figs. 83–85)

Collecting data of the material used. Korea, T. MATSUMOTO leg.

Paraproct, valvifer and coxite fused together into a piece, not distinguishable from each other and devoid of baculi, and not constricted at the posterior part; coxite lobe subcylindrical, rounded at the apex, and hardly sclerotized, bearing very long tactile hairs; stylus very narrow, hardly broadened towards the apex, sclerotized except for the apex, with long tactile hairs; dorsal baculum absent; proctiger absent, anus opening at the apex of the 8th tergite; vaginal plates short, very thin and filiform; bursa copulatrix narrow in basal part but widely oval in apical two-thirds; spermatheca wholly of the same width, strongly sclerotized, with a small protrusion at the base, to which attaches large winding gland, and clearly distinguished from duct; spermathecal duct rather long, and entering into the basal part of bursa copulatrix.

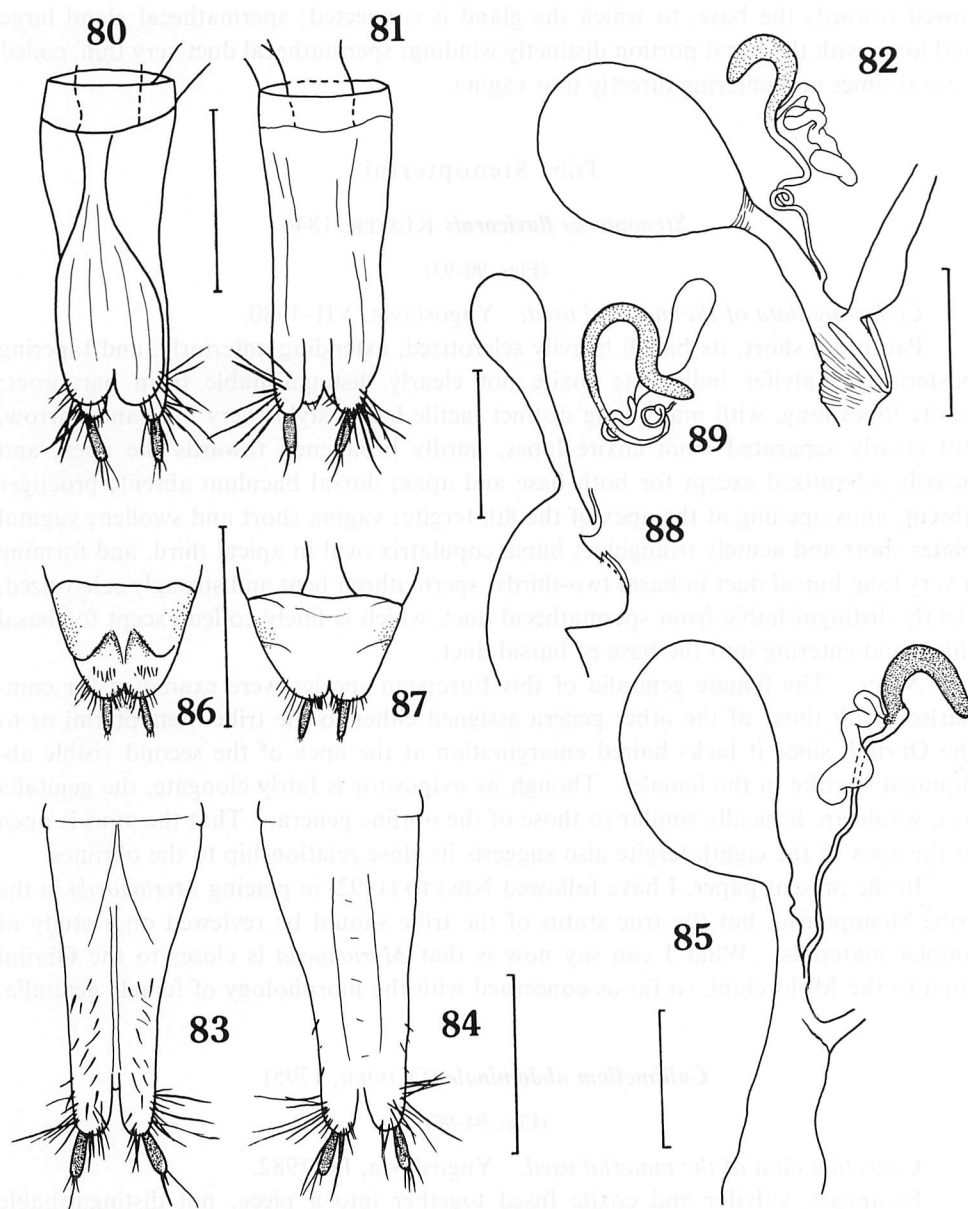
Notes. Though externally very close to each other, this species and *O. japonicum* are considerably different in the conformation of female genitalia, above all in the shape of ovipositor and spermatheca. Relatively elongate ovipositor of *O. brevicorne* is exceptional for a species of the tribes Obriini and Stenopterini, whose second visible abdominal sternite is modified into a densely haired emargination.

***Obrium japonicum* PIC, 1904**

(Figs. 86–89)

Collecting data of the material used. Hirakura, Misugi-mura, Mie Pref., emerged 19~24-V-1991, K. AKITA leg.

Paraproct extremely short and without baculum; valvifer indistinct; coxite very short, not constricted and devoid of baculi; coxite lobes extremely short, practically absent, with rather long tactile hairs; stylus short and very narrow, hardly broadened towards the apex; dorsal baculum absent; proctiger absent so as to make the anus directly open at the dorsal base of paraproct; vaginal plates very short though broad; vagina swollen at base; bursa copulatrix moderately swollen at the anterior part, gradually narrowed towards the base; spermatheca long and narrow, bent at the middle and then strongly reflexed in the apical part, not constricted, gradually nar-



Figs. 80-89. — 80-82, *Obrium nakanei*; 83-85, *O. brevicorne*; 86-89, *O. japonicum*. Ovipositor, ventral view (80, 83, 86); ovipositor, dorsal view (81, 84, 87); internal reproductive organs (82, 85, 88); spermatheca (89). (Scale: 0.5 mm.)

rowed towards the base, to which the gland is connected; spermathecal gland large and long, with the basal portion distinctly winding; spermathecal duct very thin, coiled several times and entering directly into vagina.

Tribe Stenopterini

Stenopterus flavicornis KÜSTER, 1846

(Figs. 90–93)

Collecting data of the material used. Yugoslavia, VII–1980.

Paraproct short, its baculi heavily sclerotized, extending anteriorly, and tapering posteriorly; valvifer indistinct; coxite not clearly distinguishable from paraproct; coxite lobes long, with many long distinct tactile hairs; stylus very long and narrow, not clearly separated from coxite lobes, hardly broadened towards the apex, and heavily sclerotized except for both base and apex; dorsal baculum absent; proctiger absent, anus opening at the apex of the 8th tergite; vagina short and swollen; vaginal plates short and acutely triangular; bursa copulatrix oval in apical third, and forming a very long bursal duct in basal two-thirds; spermatheca bent and strongly sclerotized, clearly distinguishable from spermathecal duct, which is finely coiled except for basal third, and entering into the base of bursal duct.

Notes. The female genitalia of this European species were examined for comparison with those of the other genera assigned either to the tribe Stenopterini or to the Oabriini, since it lacks haired emargination at the apex of the second visible abdominal sternite in the female. Though its ovipositor is fairly elongate, the genitalia as a whole are basically similar to those of the oabriine genera. That the anus is open at the apex of the eighth tergite also suggests its close relationship to the oabriines.

In the present paper, I have followed NISATO (1992) in placing *Merionoeda* in the tribe Stenopterini, but the true status of the tribe should be reviewed on a study of ampler materials. What I can say now is that *Merionoeda* is closer to the Oabriini than to the Molorchini, so far as concerned with the morphology of female genitalia.

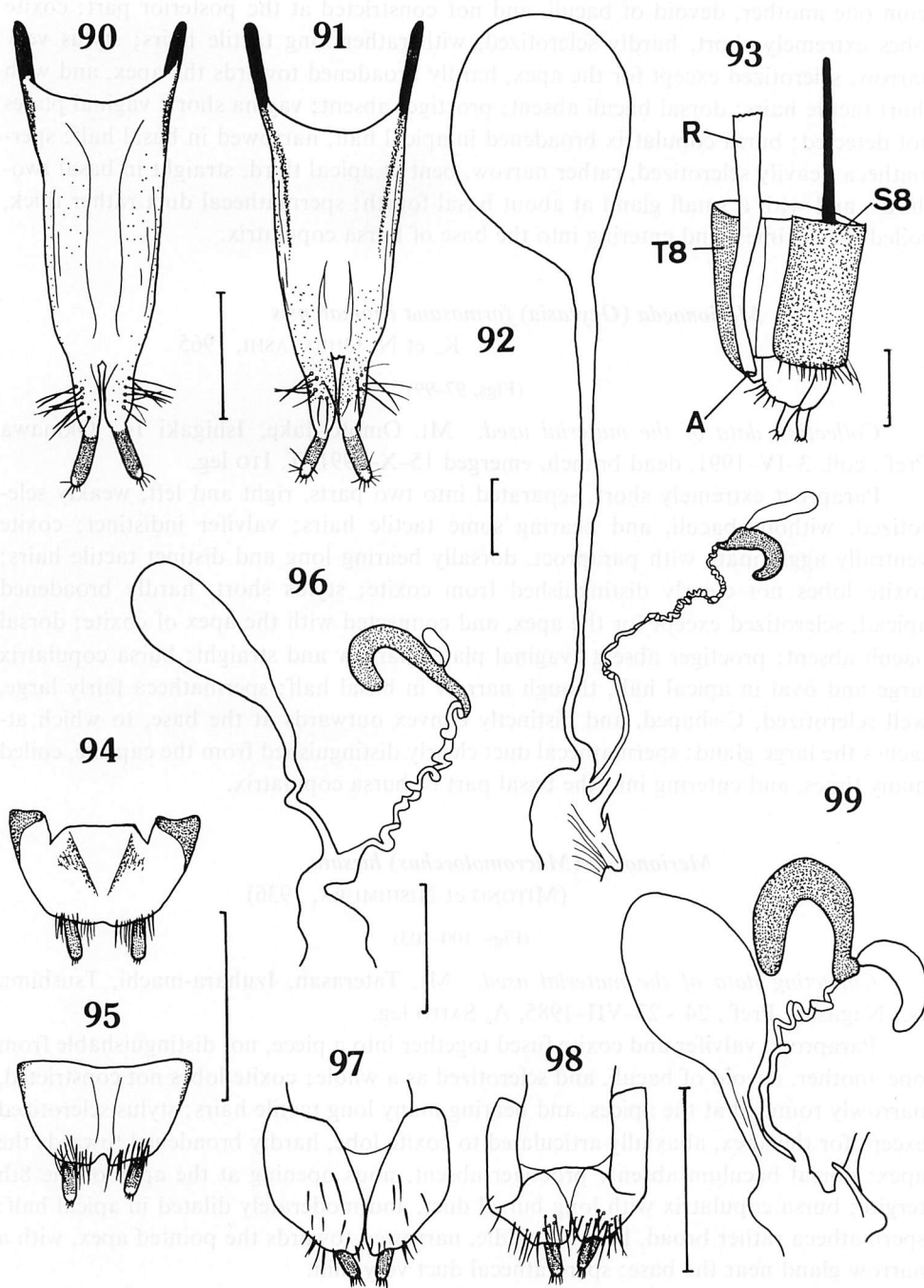
Callimellum abdominale (OLIVIER, 1795)

(Figs. 94–96)

Collecting data of the material used. Yugoslavia, IV–1982.

Paraproct, valvifer and coxite fused together into a piece, not distinguishable

Figs. 90–99. — 90–93, *Stenopterus flavicornis*; 94–96, *Callimellum abdominale*; 97–99, *Merionoeda (Ocytasia) formosana iriomotensis*. Ovipositor, ventral view (90, 94, 97); ovipositor, dorsal view (91, 95, 98); internal reproductive organs (92, 96, 99); oblique ventral view of separated 8th sternite and tergite enveloping ovipositor, the rectum extends to the apex of the 8th tergite and opens there (93). S8: 8th sternite; T8: 8th tergite; R: rectum; A: anus. (Scale: 0.5 mm.)



from one another, devoid of baculi, and not constricted at the posterior part; coxite lobes extremely short, hardly sclerotized, with rather long tactile hairs; stylus very narrow, sclerotized except for the apex, hardly broadened towards the apex, and with short tactile hairs; dorsal baculi absent; proctiger absent; vagina short; vaginal plates not detected; bursa copulatrix broadened in apical half, narrowed in basal half; spermatheca heavily sclerotized, rather narrow, bent at apical third, straight in basal two-thirds, and with a small gland at about basal fourth; spermathecal duct rather thick, coiled many times, and entering into the base of bursa copulatrix.

Merionoeda (Ocytasia) formosana iriomotensis

K. et N. OHBAYASHI, 1965

(Figs. 97–99)

Collecting data of the material used. Mt. Omoto-dake, Ishigaki Is., Okinawa Pref., coll. 3–IV–1991, dead branch, emerged 15–X–1991, T. Ito leg.

Paraproct extremely short, separated into two parts, right and left, weakly sclerotized, without baculi, and bearing some tactile hairs; valvifer indistinct; coxite ventrally agglutinate with paraproct, dorsally bearing long and distinct tactile hairs; coxite lobes not clearly distinguished from coxite; stylus short, hardly broadened apicad, sclerotized except for the apex, and connected with the apex of coxite; dorsal baculi absent; proctiger absent; vaginal plates narrow and straight; bursa copulatrix large and oval in apical half, though narrow in basal half; spermatheca fairly large, well sclerotized, C-shaped, and distinctly convex outwards at the base, to which attaches the large gland; spermathecal duct clearly distinguished from the capsule, coiled many times, and entering into the basal part of bursa copulatrix.

Merionoeda (Macromolorchus) hirsuta

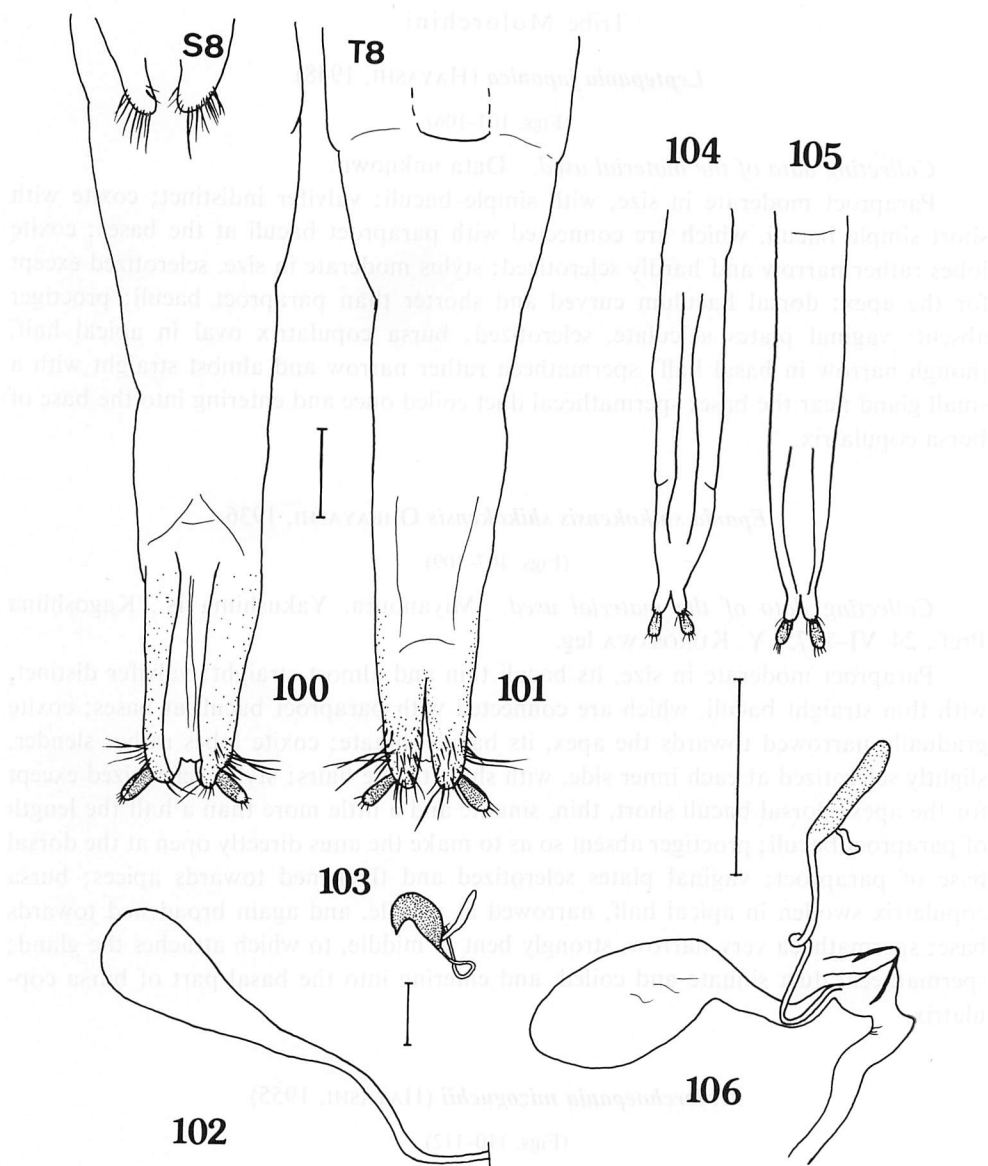
(MITONO et NISHIMURA, 1936)

(Figs. 100–103)

Collecting data of the material used. Mt. Taterasan, Izuhara-machi, Tsushima Is., Nagasaki Pref., 24–27–VII–1985, A. SAITO leg.

Paraproct, valvifer and coxite fused together into a piece, not distinguishable from one another, devoid of baculi, and sclerotized as a whole; coxite lobes not constricted, narrowly rounded at the apices, and bearing many long tactile hairs; stylus sclerotized except for the apex, abaxially articulated to coxite lobe, hardly broadened towards the apex; dorsal baculum absent; proctiger absent, anus opening at the apex of the 8th tergite; bursa copulatrix with long bursal duct, and moderately dilated in apical half; spermatheca rather broad, bent at middle, narrowed towards the pointed apex, with a narrow gland near the base; spermathecal duct very thin.

Notes. The female genitalia of *Merionoeda hirsuta* are very fragile in part, and though I have dissected three females, I was unable to observe the details of the vagina,



Figs. 100–106. — 100–103, *Merionoeda (Macromolorchus) hirsuta*; 104–106, *Leptepania japonica*. Ovipositor, ventral view (100, 104); ovipositor, dorsal view (101, 105); bursa copulatrix (102); spermatheca (103); internal reproductive organs (106). S8: 8th sternite; T8: 8th tergite. (Scale: 0.5 mm.)

vaginal plates, and the basal portions of the ducts. What is described here is, however, sufficient to illustrate the peculiarities of this species.

Tribe Molorchini

Leptepania japonica (HAYASHI, 1948)

(Figs. 104–106)

Collecting data of the material used. Data unknown.

Paraproct moderate in size, with simple baculi; valvifer indistinct; coxite with short simple baculi, which are connected with paraproct baculi at the bases; coxite lobes rather narrow and hardly sclerotized; stylus moderate in size, sclerotized except for the apex; dorsal baculum curved and shorter than paraproct baculi; proctiger absent; vaginal plates aciculate, sclerotized; bursa copulatrix oval in apical half, though narrow in basal half; spermatheca rather narrow and almost straight with a small gland near the base; spermathecal duct coiled once and entering into the base of bursa copulatrix.

Epania shikokensis shikokensis OHBAYASHI, 1936

(Figs. 107–109)

Collecting data of the material used. Miyanoura, Yakushima Is., Kagoshima Pref., 24–VI–1975, Y. KUROSAWA leg.

Paraproct moderate in size, its baculi thin and almost straight; valvifer distinct, with thin straight baculi, which are connected with paraproct baculi at bases; coxite gradually narrowed towards the apex, its baculi sinuate; coxite lobes rather slender, slightly sclerotized at each inner side, with short tactile hairs; stylus sclerotized except for the apex; dorsal baculi short, thin, sinuate and a little more than a half the length of paraproct baculi; proctiger absent so as to make the anus directly open at the dorsal base of paraproct; vaginal plates sclerotized and thickened towards apices; bursa copulatrix swollen in apical half, narrowed at middle, and again broadened towards base; spermatheca very narrow, strongly bent at middle, to which attaches the gland; spermathecal duct sinuate and coiled, and entering into the basal part of bursa copulatrix.

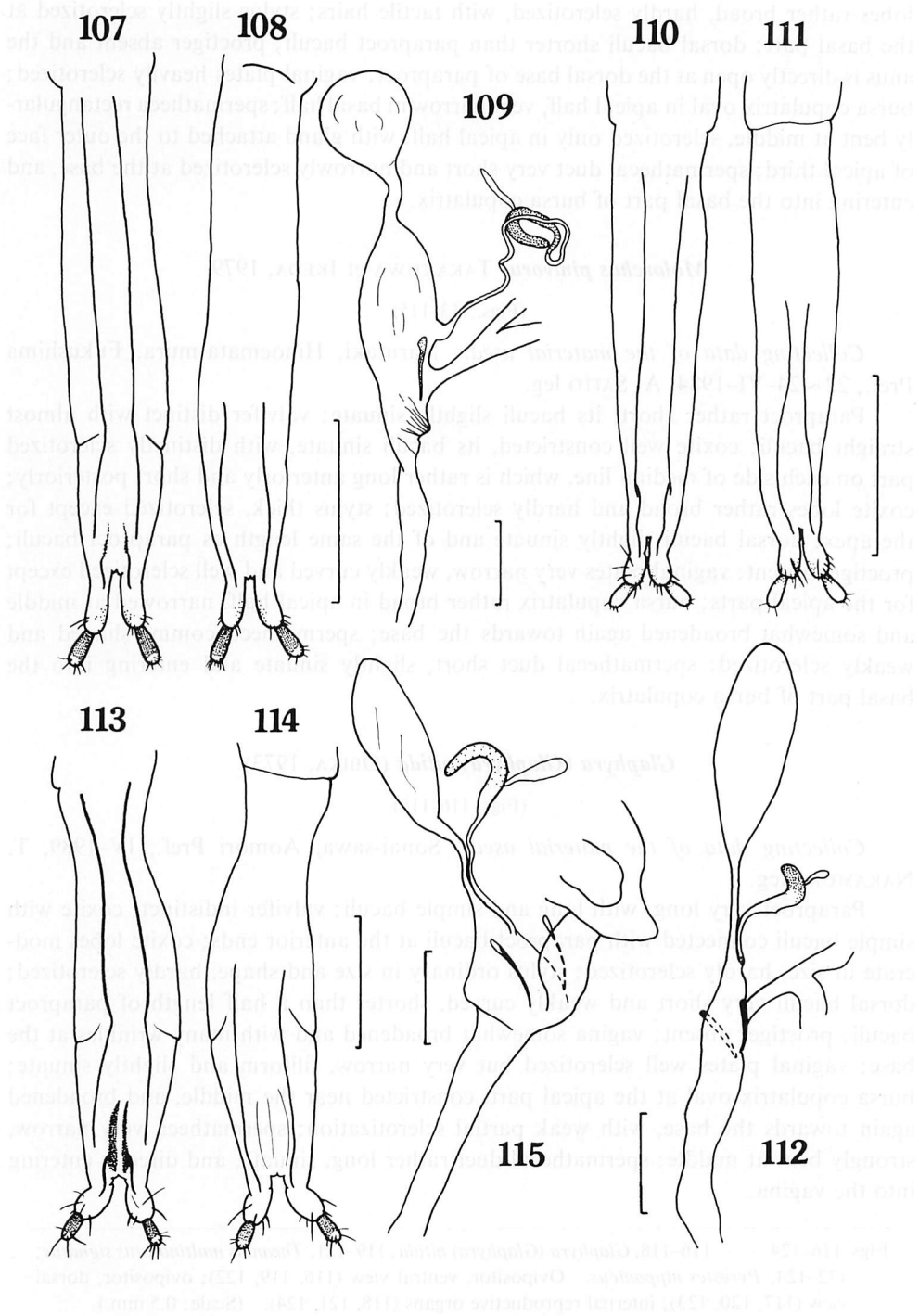
Molorchoepania mizoguchii (HAYASHI, 1955)

(Figs. 110–112)

Collecting data of the material used. Yakushima Is., Kagoshima Pref., 26–VI–1954, K. MATSUDA leg.

Paraproct moderate in size, its baculi thin and almost straight, connected with coxite baculi at the apices; valvifer indistinct; coxite slightly narrowed apicad; coxite

Figs. 107–115. — 107–109, *Epania shikokensis shikokensis*; 110–112, *Molorchoepania mizoguchii*; 113–115, *Molorchus pinivorus*. Ovipositor, ventral view (107, 110, 113); ovipositor, dorsal view (108, 111, 114); internal reproductive organs (109, 112, 115). (Scale: 0.5 mm.)



lobes rather broad, hardly sclerotized, with tactile hairs; stylus slightly sclerotized at the basal part; dorsal baculi shorter than paraproct baculi; proctiger absent and the anus is directly open at the dorsal base of paraproct; vaginal plates heavily sclerotized; bursa copulatrix oval in apical half, very narrow in basal half; spermatheca rectangularly bent at middle, sclerotized only in apical half, with gland attached to the outer face of apical third; spermathecal duct very short and narrowly sclerotized at the base, and entering into the basal part of bursa copulatrix.

Molorchus pinivorus TAKAKUWA et IKEDA, 1979

(Figs. 113–115)

Collecting data of the material used. Narutaki, Hinoemata-mura, Fukushima Pref., 22~24-VI-1984, A. SAITO leg.

Paraproct rather short, its baculi slightly sinuate; valvifer distinct with almost straight baculi; coxite well constricted, its baculi sinuate, with distinctly sclerotized part on each side of median line, which is rather long anteriorly and short posteriorly; coxite lobes rather broad and hardly sclerotized; stylus thick, sclerotized except for the apex; dorsal baculi slightly sinuate and of the same length as paraproct baculi; proctiger absent; vaginal plates very narrow, weakly curved and well sclerotized except for the apical parts; bursa copulatrix rather broad in apical half, narrowed at middle and somewhat broadened again towards the base; spermatheca comma-shaped and weakly sclerotized; spermathecal duct short, slightly sinuate and entering into the basal part of bursa copulatrix.

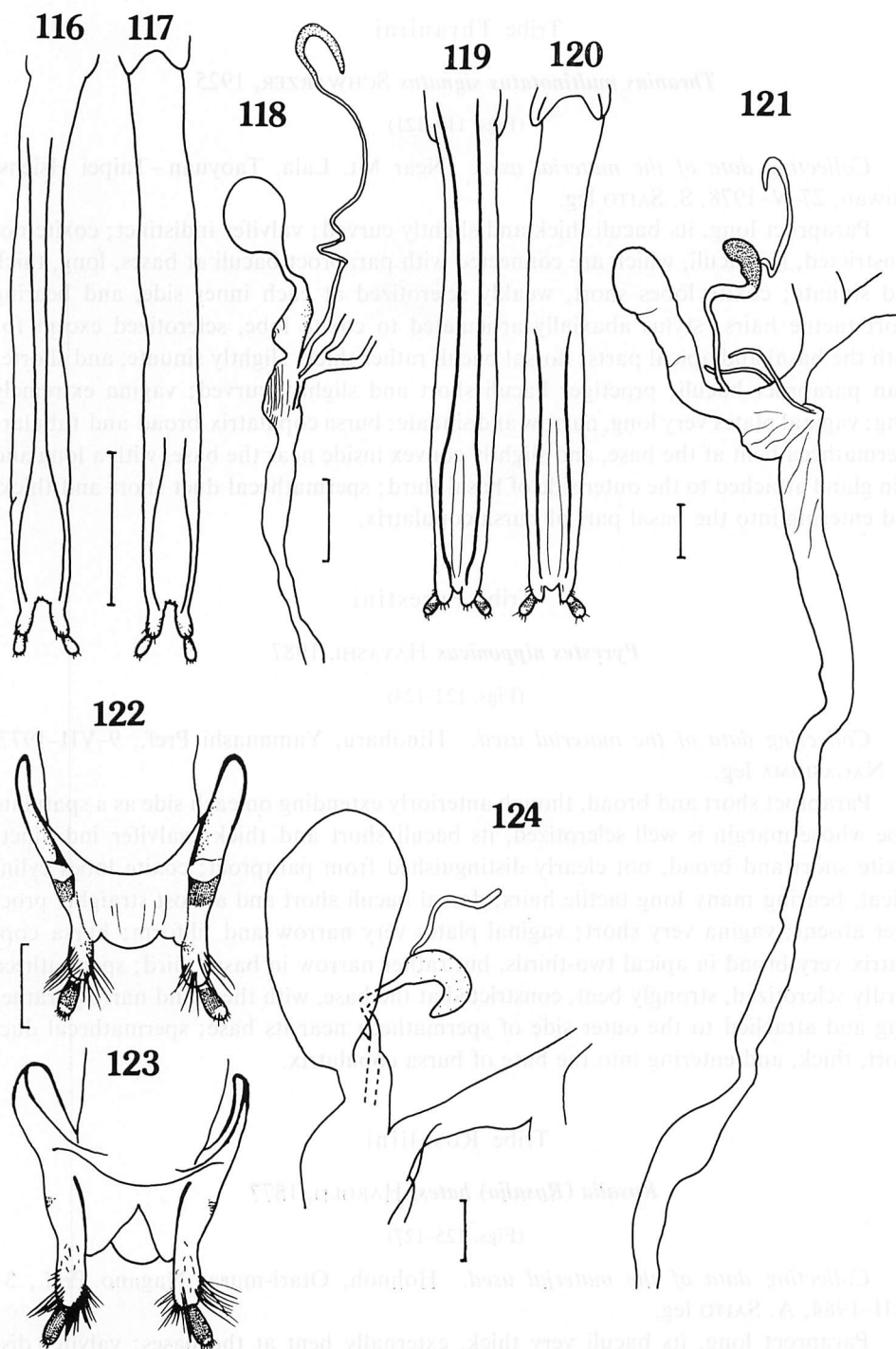
Glaphyra (Glaphyra) nitida (OBIKA, 1973)

(Figs. 116–118)

Collecting data of the material used. Sonai-sawa, Aomori Pref., IV-1989, T. NAKAMURA leg.

Paraproct very long, with long and simple baculi; valvifer indistinct; coxite with simple baculi connected with paraproct baculi at the anterior ends; coxite lobes moderate in size, hardly sclerotized; stylus ordinary in size and shape, hardly sclerotized; dorsal baculi very short and weakly curved, shorter than a half length of paraproct baculi; proctiger absent; vagina somewhat broadened and with many wrinkles at the base; vaginal plates well sclerotized but very narrow, filiform and slightly sinuate; bursa copulatrix oval at the apical part, constricted near the middle, and broadened again towards the base, with weak partial sclerotization; spermatheca very narrow, strongly bent at middle; spermathecal duct rather long, sinuate, and directly entering into the vagina.

Figs. 116–124. — 116–118, *Glaphyra (Glaphyra) nitida*; 119–121, *Thranium multinotatus signatus*; 122–124, *Pyrestes nipponicus*. Ovipositor, ventral view (116, 119, 122); ovipositor, dorsal view (117, 120, 123); internal reproductive organs (118, 121, 124). (Scale: 0.5 mm.)



Tribe Thraniini

***Thranus multinotatus signatus* SCHWARZER, 1925**

(Figs. 119–121)

Collecting data of the material used. Near Mt. Lala, Taoyuan–Taipei Hsiens, Taiwan, 27–V–1978, S. SAITO leg.

Paraproct long, its baculi thick and slightly curved; valvifer indistinct; coxite not constricted, its baculi, which are connected with paraproct baculi at bases, long, thick and sinuate; coxite lobes short, weakly sclerotized at each inner side, and bearing short tactile hairs; stylus abaxially articulated to coxite lobe, sclerotized except for both the basal and apical parts; dorsal baculi rather thick, slightly sinuate, and shorter than paraproct baculi; proctiger baculi short and slightly curved; vagina extremely long; vaginal plates very long, narrow and sinuate; bursa copulatrix broad and tubular; spermatheca bent at the base, and slightly convex inside near the base, with a long and thin gland attached to the outer side of basal third; spermathecal duct short and thick, and entering into the basal part of bursa copulatrix.

Tribe Pyrestini

***Pyrestes nipponicus* HAYASHI, 1987**

(Figs. 122–124)

Collecting data of the material used. Hinoharu, Yamanashi Pref., 9–VII–1977, Y. NAGASHIMA leg.

Paraproct short and broad, though anteriorly extending on each side as a spatulate lobe whose margin is well sclerotized, its baculi short and thick; valvifer indistinct; coxite short and broad, not clearly distinguished from paraproct; coxite lobes cylindrical, bearing many long tactile hairs; dorsal baculi short and almost straight; proctiger absent; vagina very short; vaginal plates very narrow and filiform; bursa copulatrix very broad in apical two-thirds, but rather narrow in basal third; spermatheca hardly sclerotized, strongly bent, constricted at the base, with the gland narrow, rather long and attached to the outer side of spermatheca near its base; spermathecal duct short, thick, and entering into the base of bursa copulatrix.

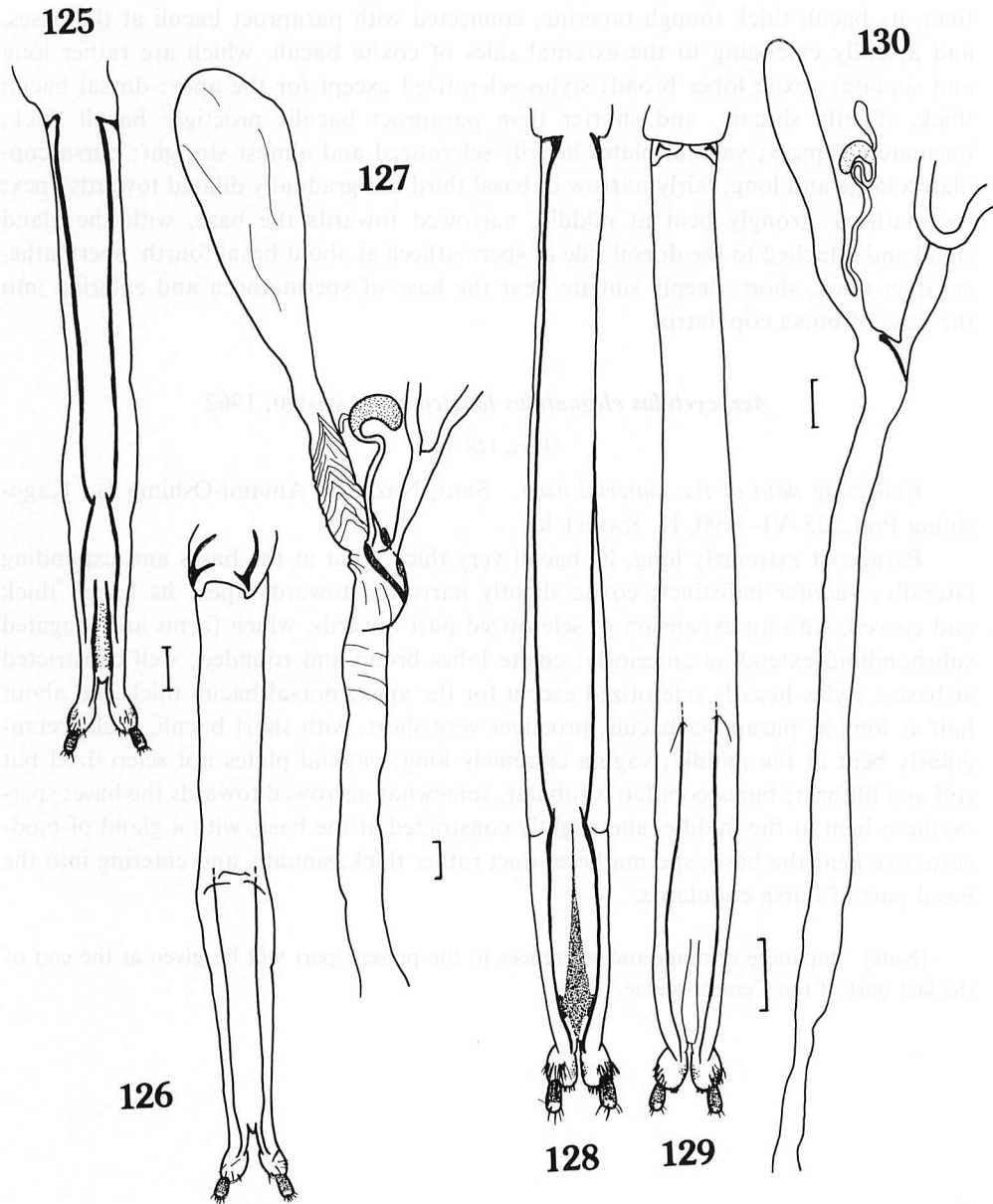
Tribe Rosaliini

***Rosalia (Rosalia) batesi* HAROLD, 1877**

(Figs. 125–127)

Collecting data of the material used. Hohnoh, Otari-mura, Nagano Pref., 3–VIII–1984, A. SAITO leg.

Paraproct long, its baculi very thick, externally bent at the bases; valvifer dis-



Figs. 125-130. — 125-127, *Rosalia (Rosalia) batesi*; 128-130, *Acrocyrtilus elegantulus longicornis*. Ovipositor, ventral view (125, 128); ovipositor, dorsal view (126, 129); internal reproductive organs (127, 130). (Scale: 0.5 mm.)

tinct, its baculi thick though tapering, connected with paraproct baculi at the bases, and apically extending to the external sides of coxite baculi, which are rather long and sinuate; coxite lobes broad; stylus sclerotized except for the apex; dorsal baculi thick, slightly sinuate, and shorter than paraproct baculi; proctiger baculi thick, uncinatate at apices; vaginal plates heavily sclerotized and almost straight; bursa copulatrix large and long, fairly narrow in basal third but gradually dilated towards apex; spermatheca strongly bent at middle, narrowed towards the base, with the gland small and attached to the dorsal side of spermatheca at about basal fourth; spermathecal duct thick, short, deeply sinuate near the base of spermatheca and entering into the base of bursa copulatrix.

Acrocyrtidus elegantulus longicornis HAYASHI, 1962

(Figs. 128–130)

Collecting data of the material used. Sato, Naze-shi, Amami-Oshima Is., Kagoshima Pref., 25–VI–1990, H. KARIBE leg.

Paraproct extremely long, its baculi very thick, bent at the bases and expanding laterally; valvifer indistinct; coxite slightly narrowed towards apex, its baculi thick and curved, with an expansion of sclerotized part inwards, which forms an elongated subrhomboid extending anteriorly; coxite lobes broad and rounded, well constricted at bases; stylus heavily sclerotized except for the apex; dorsal baculi thick and about half as long as paraproct baculi; proctiger very short, with short baculi, each rectangularly bent at the middle; vagina extremely long; vaginal plates not sclerotized but stiff and filiform; bursa copulatrix tubular, somewhat narrowed towards the base; spermatheca bent at the middle, and slightly constricted at the base, with a gland of moderate size near the base; spermathecal duct rather thick, sinuate, and entering into the basal part of bursa copulatrix.

[Note] Japanese abstract and references to the present part will be given at the end of the last part of the Cerambycinae.