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# Studies on the genus *Atheta* THOMSON and its allies

(Coleoptera, Staphylinidae)

## II: Diagnostic characters of Genera and Subgenera with description of representative Species

By

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First Author: Five years before when the second author began his works on Japanese Aleocharinae in my laboratory, I was quite astonished to know that the taxonomy of Aleocharinae and perhaps of the whole Staphylinidae is quite in a retarded state when compared with the study of Collembola, for which I have been engaging during these thirty years. From Japan many species of *Atheta* have been described, but from the description of them it is quite impossible to determine even the commonest species around us. Thereafter I have persuaded him to dissect each examples properly to trace the differential characters among them.

However, this task was not so easy as I have supposed. Specific characters to distinguish each species were relatively easy to find out as already reported in K. SAWADA, 1972, but the criterium of many genera and subgenera already established by the previous authors have to be revised one by one before the Japanese species are reviewed. The effort is still going on and what is reported in the present paper is still quite incomplete, only those names were studied, which were established during the 19th century in Europe. Besides, owing to the difficulty of obtaining the adequate materials for investigation, only one half of them were treated and those of the later authors as CASEY, BERNHAUER etc. have been quite neglected. Thus the present paper is to be regarded only a result of a trial, a kind of interim report or, better to say, a working hypothesis for the better understanding of this complicated group of Coleoptera.

All the works for identification of species have been made by the second author, but the results were discussed, systematized and compiled by the discussion and debate between us.

Second Author: At the beginning of my research of Japanese *Atheta* during 1970–1973, I have followed faithfully to the traditional system established by GANGLBAUER, 1895 etc. and linked wholly to the key given by SCHEERPELTZ, 1929 with respect to their subgeneric conception. However, the extensive studies of the Japanese species of *Atheta* have shown that the system based on the external characters of the beetle is sometimes very subjective, there being many transient forms, which may not be judged to belong to one of the dichotomous key words. Besides, the results were not always satisfactorily, sometimes the species determined to belong to one of the subgenus show no homogeneous mass of natural group and that it is quite

unworkable in extreme cases. Initiated by the works of Brundin 1942 and Lohse 1971 my attention was directed, therefore, to the establishment of a new taxonomic system of *Athetae*, which must give a new conception to many old names already existing. The effort is still continuing, but the main trunk of *Athetae* would be already studied.

Generic conception is also discussed and, in principle, it is regarded to represent a distinct genus, when a certain distinguishing and disjunctional character is present on mouth-parts and other exoskeletal portion, while those characters, which appear on genital apparatus alone are regarded as subgeneric in value.

Hearty thanks are directed to Dr. P. M. Hammond of the British Museum (Natural History) as well as to Dr. H. Dybas and Dr. M. Prokop of the Field Museum in Chicago for giving us opportunities to inspect the type series of each Japanese species preserved in the Museums. We are also grateful to Dr. L. Brundin (Riksmuseum), Dr. G. A. Lohse (Hamburg), Dr. V. Puthz (Max Planck Institute) and Dr. G. Ullrich (Lübeck) for their gifts of nice collection of European specimens. To Dr. G. Benick (Lübeck) and Dr. T. Palm (Uppsala) we must also express our indebtness for their advices to our studies.

Method: For the research of Aleocharinae usual dissecting works are indispensable and the method is already given in K. Sawada 1972 in detail. Side by side with it we had adopted other method of investigation. The specimen, which is previously placed in water, is bleached by soaking it in 10% solution of KOH for the duration of 3–10 days according to the grade of its pigmentation until the insect is brownish in colour. Afterwards the specimen is washed and placed in glycerol and observed by usual monocular microscope. The specimen becomes flexible and half transparent to permit us to inspect all the minute details of the body with great ease. Chaetal arrangement of the body, especially the chaetal pattern of the head and prothorax, for which great stress is given since Höeg, Brundin and Lohse is beautifully expressed in this way. A new taxonomic character, the chaetotaxy of the abdominal segments are to be investigated only by this bleaching method in case when the example is intensely pigmented. Body setae of *Athetae* compose of two sorts, a large, strong and heavily pigmented primany setae and many smaller, weaker secondary setae, which are easily to be separated when a bleached example is investigated. Arrangement of the first primary or macrosetae on abdominal segments furnishes a key character to divide *Atheta* (s. lat.) into some main groups, while that of the head, prothorax, erytra etc. is almost constant within *Athetae*. That the posterior margin of abdominal segments is usually smooth and straight, while that of *Acrotona* is minutely crenulate and wavy and also the intersegmental structure of *A. sordida* (Marsh.) is modified are characters visible only by this bleaching experiment. The method serves well also for the rough investigation of genital apparatus by its transparence.

In Fig. 1 all the details of the results we have to express in the present paper have been demonstrated. The large mass of Callicerini is composed of five main groups. The first group includes the large genus *Atheta* (s. lat.) and some small genera which

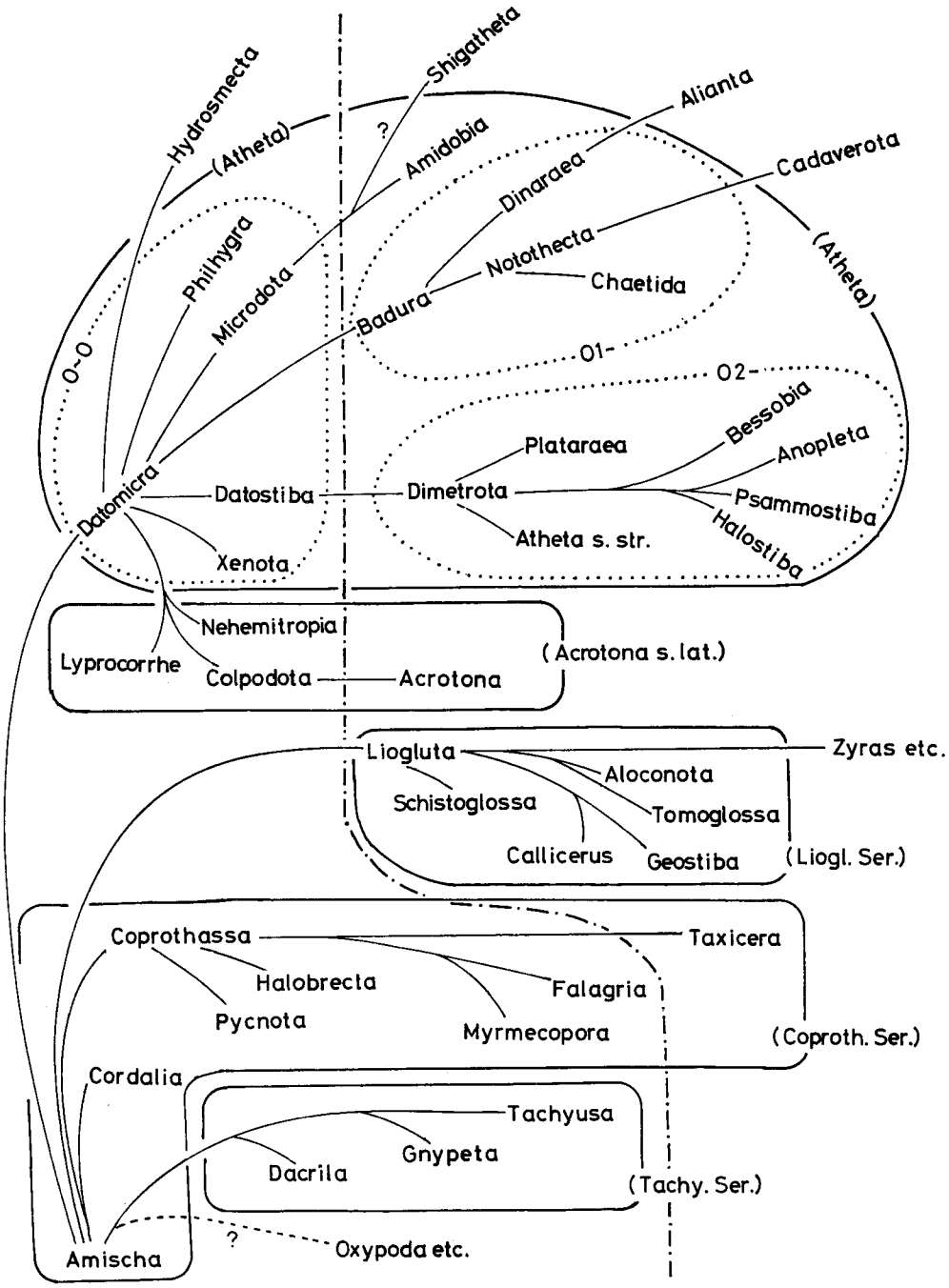


Fig. 1. Diagramatic Arrangement of *Atheta* and its allies. The longitudinal broken line indicates the boundary of 0–0 type and 01, 02-type of abdominal macrochaetotaxy. *Myrmecopora* must be read as *Xenusa*.

are derived from it and they are conforming altogether the *Atheta*-complex. The second group is represented only by one genus *Acrotona* (s. lat.) by which the posterior margin of all abdominal segments are minutely crenulated (Fig. 38, I, M, R etc.) in accordance with the marginal setulae. In reality, it may be regarded rather a derivative of the *Atheta* complex.

The third group is the *Liogluta* series beginning from *Liogluta, Aloconota* and diverging to the direction of *Zyras* and its allies. The common character among them is that the median area of prementum is very broad and, accordingly the distal seate are widely remote to each other. Besides, the lateral area of prementum is without pseudopores, there being only one setal pore and two or three real pores (Fig. 40, D, M etc.). The fourth group is the *Coprothassa* series, which includes *Coprothassa, Taxicera, Halobrecta* etc., they are arising from *Amischa* and ending in *Falagria.* All of them have a pair of well developed setulae on the glossa (Fig. 50, C etc.) as the characteristic feature of the series.

The fifth group is the *Tachyusa* series including *Tachyusa, Gnypeta* and *Dacrila* by which the macrochaetotaxy is 0–0–0–0–0, (Fig. 57, G) there being no anterior macrosetae on abd. terg. II to VI. This group is very nearly connected with the *Coprothassa* series as such genera as *Cordalia* and *Amischa* has the same type of chaetal arrangement. The most interesting is the position of *Amischa,* which posesses the characters of *Liogluta-, Coprothassa-* and *Tachyusa* series in common and the genus *Amischa* may be regarded the most archaeic form of all from which many other genera must have derived. Conveniently it is placed in the *Coprothassa* series.

In the following each of these groups will be more intensively discussed, but the key to separate them is as:

1. Glossa with a pair of setulae .....*Coprothassa* Series (p. 112)
   Glossa without setulae .....2
2. Lateral area of prementum without pseudopores.....*Liogluta* Series (p. 96)
   Lateral area of prementum with pseudopores .....3
3. Abd. terg. II–VI without anterior row of macrochaetae... *Tachyusa* Series (p. 127)
   Abd. terg. III–VI with anterior row of macrochaetae .....4
4. Segemntal margins of abdomen minutely crenulate .....*Acrotona* s. lat. (p. 89)
   Segmental margins of abdomen smooth .....*Atheta* Complex (p. 14)

## I *Atheta* Complex

The large complex of *Atheta* is to be divided into three groups after their macrochaetal arrangement, thus:

1. Abd. terg. III without anterior macrosetae .....0~0 or *Datomicra* group (p. 15)
   Abd. terg. III with anterior macrosetae .....2
2. Abd. terg. II with one pair of macrosetae.....01 or *Nototheca* group (p. 35)
   Abd. terg. II with two pairs of macrosetae.....02 or *Dimetrota* group (p. 59)

Among various forms of *Atheta* the subgenus *Datomicra* is the most primitive of all others. Beside the small body length, sober outlook and simple structure of genital apparatus of male and female its abdominal chaetotaxy is archaeic in that it may be formulated as 01–02–12–12–12–(Fig. 7, F), where the primary setae or macrosetae of one side from abd. terg. II to abd. terg. VI are calculated. Accordingly the anterior row of setae is absent both on abd. II and abd. III, and hence it is to be called as 0∼0 type. Now that *Datomicra* is the representative of this 0∼0 group and all groups of *Callicerini* located to the left of the longitudinal broken line in Fig. 1 have the abdominal chaetotaxy of 0∼0 type. In *Datostiba* nov. the chaetal arrangement is as 02–02... (Fig. 3, E), but still it would be placed within 0∼0 group as its representative species are not at all diverged from *Datomicra* except for the difference of chaetal arrangement.

*Dimetrota, Atheta* (*s. str.*), *Anopleta* etc. have the peculiar arrangement of macrosetae. It may be formulated as 02–12(3)...(Fig. 25, F) and, in constrast to *Datostiba,* terg. III is with anterior setae. The name 02 type may be given to this series. It is a rather conspicuous well defined group within the *Atheta* complex directly derived from *Datomicra* through *Datostiba.*

In *Badura,* which is very near *Datomicra* in many respects the chaetal formula is as 01–12...(Fig. 10, F) and, therefore, abd. III has a pair of anterior setae. To this type of chaetotaxy the name 01 type is to be given. All groups to the right of the broken line in Fig. 1 have the chaetal arrangement of 01 type with the exception of the aforesaid 02- or *Dimetrota* group.

It is now, rather astonishing to find that the *Atheta* complex may be divided into three groups according to the chaetal arrangement. 0–0 type is the most primitive and includes *Microdota, Philhygra* and others, 01 type is more developed and covers the whole *Badura, Notothecta, Chaetida* etc., while 02 type is the most advanced form originating from *Datostiba.* When *Atheta* (*s. lat.*) is thus divided into three groups, so we come across to the fact that 02 group is not developed beyond the genus *Atheta,* but 01 group has some forms genically separable from it (*Alianta* etc.). The most diverged group is 0–0 type which have small series of evolutionary development to *Amidobia, Philhygra* etc.

### 1. 0–0 or *Datomicra* Group

In this group there may be included such genera and subgenera by which the macrosetae of abdominal tergites are as either 01–02(3)... or 02–02(3)..., i.e. there is no anterior row of setae both on terg. II and III. The most primitive among them would be *Datomicra* from which various forms have been derived. *Datostiba, Badura* and *Lyprocorrhe* are very closely related to *Datomicra* in many respects, but still they are already diverged to the direction of *Dimetrota* gr., *Notothecta* gr. and *Acrotona* respectively.

Besides, *Datomicra* gives rise to some other groups. *Philhygra* and *Hydrosmecta* are isolated groups indirectly related to *Datomicra,* while *Microdota* and its derivatives, *Amidobia* and *Shigatheta* nov. compose a small series by which the flabellum of the

hind wing is going to disappear. Markedly the majority of these last mentioned groups are characterized by the reduction or total absence of pseudopores from the median area of the prementum (*Microdota, Amidobia,* etc.).

The diagnostic key to these forms would be as:

1. Flabellum not reduced .....2
   Flabellum reduced .....6
2. Macrochaetal arrangement as 01–02(3)... .....3
   Macrochaetal arrangement as 02–02(3)... .....*Datostiba* nov.
3. Male stern. VIII with interior row of setae. Female spermatheca reduced .....*Philhygra*
   Male stern. VIII without interior row of setae. Female spermatheca well developed .....4
4. Mandible atypical for Athetae .....*Hydrosmecta*
   Mandible typical .....5
5. Abdomen converging. Inner armature of male genitalia complicated, with a distinct ventral plate .....*Xenota*
   Abdomen not converging. Inner armature of male genitalia simple. ...*Datomicra*
6. Macrosetae as 01–02... .....*Microdota*
   Macrosetae as 01–12... .....8
7. Flabellum absent. Prosternum with a median carina .....*Shigatheta* nov.*
   Flabellum with 1–4 setae. Prosternum without median carina .....*Amidobia**

## Subgenus *Datomicra* Mulsant et Rey, 1874

Typus: *Homalota celata* Erichson, 1837

Subgenus *Datomicra* is rather strictly to be defined. Without doubt the species of *Datomicra, Badura, Lyprocorrhe* etc. are alike to each other both in outer form, in male genitalia and in buccal structure, their copulatory pieces being simply triangular, apically elongate and a pair of suspensoria is lightly or obscurely sclerotized. Besides, the median apophysis is feeble or quite absent and, in general, the lateral lobe is broader than usual and its third segment is triangular, with all four setae very short. Among them the subgenus *Datomicra* includes only such species whose macrochaetal arrangement is represented as 01–02.... Distinction to *Xenota* M.R. is not very strict, but it may be defined by the body form and complicate structure of the inner armature of male genitalia.

### *Atheta* (*Datomicra*) *celata* (Erichson, 1837) Fig. 2, A-H

Female: Labrum (Fig. 2, A) is broadly emarginate in front; seta *m*-2 is separated from the distal row, the latter is nearly as long as the medial row; 2+2 secondary setae are present. *a*-sensilla of labral margin (Fig. 2, B) is broad and short; *b* is obtuse. Right mandible has a fine molar tooth in the middle. Segm. I of labial palpus (Fig. 2, C) is fairly dilated near the base and distinctly shorter than III, which is more or

* They are derivatives of *Microdota,* but, strictly speaking, they belong to 01 group (v. Fig. 1)

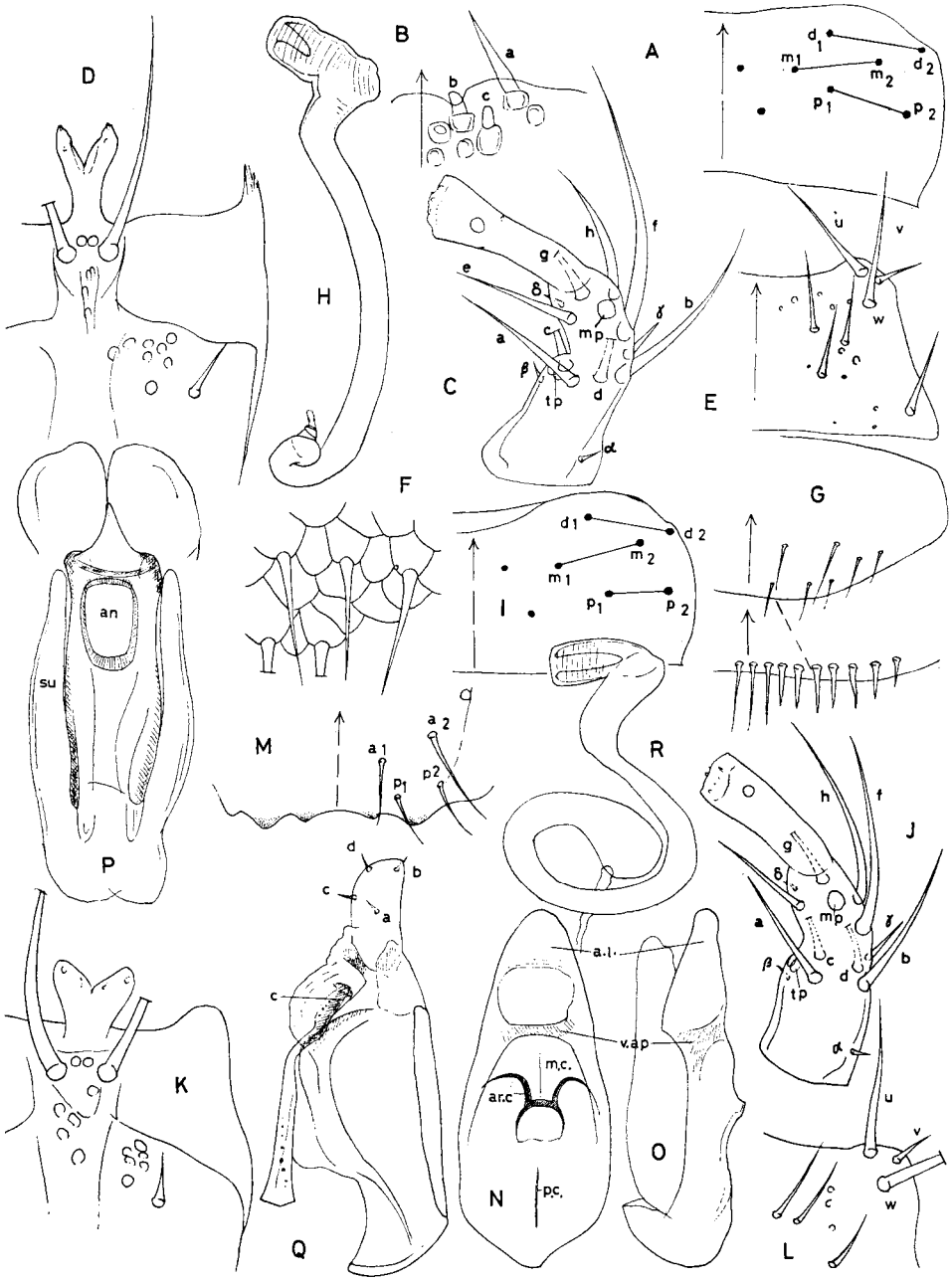


Fig. 2. *Atheta* (*Datomicra*) *celata* (ERICHSON) from Hamburg. **A**, Labral chaetotaxy; **B**, Labral margin; **C** Labial palpus; **D**, Glossa & prementum; **E**, Mentum; **F**, Microsculpture of terg. VIII; **G**, ♀ stern. VIII; **H**, Spermatheca.
*Atheta* (*Datomicra*) *nigra* (KRAATZ) from Germany (♂) & Brunoy nr. Paris. (♀). **I**, Labral chaetotaxy; **J**, Labial palpus; **K**, Glossa & prementum; **L**, Mentum; **M**, ♂ terg. VIII; **N, O**, Median lobe; **P**, Inner armature of aedeagus; **Q**, Lateral lobe; **R**, Spermatheca.

less diverging distally. $\beta$-setula is normal in position, while $\gamma$ is anterior to seta *b*; $\delta$ is nearly on the level of *g*; *a* is close to *tp*, on the same level with *b*; *f* is at the middle between *b* and *h*. Glossa (Fig. 2, D) is elongate, constricted to the base and diverging distally. Prementum (Fig. 2, D) has a few pseudopores confined to the narrow area behind the distal setae; lateral area has 2 real and 1 setal pores mingled with ca. 5 pseudopores. *v*-setula of mentum (Fig. 2, E) normal. Macrochaetal arrangement is as 01–02–13–13–13–33. Microsculpture of terg. VIII (Fig. 2, F) is imbricate, the segment has 4+4 macrosetae. Stern. VIII (Fig. 2, G) is short, not emarginate behind and with a row of short and long marginal setae along the hind margin. Spermatheca (Fig. 2, H) is mallet-shaped; bursa has an elongate umbilicus; duct is shortly reflected at the end.

Specimens examined: GERMANY: Hamburg, 1♀ (Ullrich det.)

***Atheta* (*Datomicra*) *nigra* (Kraatz, 1856)** Fig. 2, I-R

Male: On the labrum (Fig. 2, I) seta *m*-2 is separate from the distal row and with 2+2 secondary setae. Labral margin is as in *D. celata* (Er.). Segm. I of labial palpus (Fig. 2, J) is short, shorter than III; $\beta$ setula is placed close to *tp*, while $\gamma$ is anterior to the level of seta *b*, which is on the same level with *a*; *h* is posteriorly located at the level of *mp*. Glossa (Fig. 2, K) is short, broad, forked from the middle in two obtuse arms. Median area of prementum is narrow, with up to 5 large pseudopores. In lateral area 2 real and 1 setal pores are present, the anterior real pore is mingled with the large pseudopores. *v*-setula of mentum (Fig. 2, L) is normally long and at the level of seta *u*. The macrochaetal arrangement is as 01–03–23–23–23–33–. Abd. VIII (Fig. 2, M) has 4+4 macrosetae and *a*-2 is remote from the stigma; microsculpture is imbricate in pattern. Median lobe (Fig. 2, N, O) is 0.26 mm. long and nearly parallel in lateral view; apical lobe is straight in profile and with an obtuse apex. Costation is simple; *m.c.* is nearly reduced, but *ar.c.* are present, far remote to each other; *v. ap.* is fairly well sclerotized. Copulatory piece (Fig. 2, P) is narrowly elongate, with a short and suddenly acuminating apex; annellus is very large for the corpus: suspensorium is narrow and extending along the corpus to the level of the annellus. The basal segment of the lateral lobe (Fig. 2, Q) has two callosed parts near the distal end, where they are well pigmented (*c*). The distal segment is broad, ovate and all four setae are equally short and separating to one another.

Female: Spermatheca (Fig. 2, R) is transversely coiled and with dilating extremity; umbilicus is very long and narrow.

Specimens examined: GERMANY: 1♂ (28. VI 1952, Benick det.); FRANCE: Brunoy nr. Paris, 1♀ (11. X. 1974, R. Yosii leg.)

**Subgenus *Datostiba* nov.**

Typus: *Atheta lewisiana* Cameron, 1933

The subgenus is concordant with *Datomicra* M.R. in appearance and in details

of the body. But, in contrast, the macrochaetal arrangement of abdominal tergites is as 02–02(3)... Some of other Japanese species including *Atheta denticauda* BH. and a European species, *Atheta sordidula* (ER.) would also belong to *Datostiba* to judge after the chaetal arrangement of abdominal tergites.

### *Atheta* (*Datostiba*) *lewisiana* CAMERON, 1933 Fig. 3

*Atheta* (*Datomicra*) *lewisiana* CAMERON, 1933

Male: Ground colour is pitchy black and moderately shining on fore-parts. Body is nearly black, antennae are uniformly dark brown; femora are dark brown, while tibiae are slightly paler. Body length small, but robust on fore parts. Head is gently convex above, with a faint longitudinal dipression in the middle; the surface is with well defined granules excepting the median longitudinal depression. Antenna is normally long, slightly dilated towards the apex; ratio of segments as: I $7\times4$: II $6\times3.3$: III $4\times3.3$: IV $3\times3.8$: V $4\times4.5$: —: X $4\times5$: XI $10\times5$. Labrum (Fig. 3, A) is of normal form; the proximal row of setae is a littly shorter than others; seta *m*-2 is placed not on the distal row and 2+2 secondary setae are present. *a*-sensilla of labral margin (Fig. 3, B) is very short and *c* is inconspicuous. On labial palpus (Fig. 3, C) $\beta$-setula is slightly separated from *tp*; $\gamma$ is close to the level of seta *b*; $\delta$ is on the level of *g*; *a* is on the same level of *b*, while *f* is remote from *mp*. Glossa (Fig. 3, D) is long, slender and bifurcate from the middle in two more or less fusiform arms. The median area of prementum is narrow, with about 5 often fusing pseudo-pores. *v*-setula of mentum is normally developed and close to *u*. Pronotum is gently convex above and with a faint furrow along the mid-line; the surface is more densely and roughly granulated than on the head. Elytra are as long as wide, neither produced nor emarginate along the posterior margin. Abdomen is dilated to the middle and then gradually tapering. The dense granules are becomming fewer and rougher distally. Macrosetae (Fig. 3, E) are arranged as 02–03–13–13–13–33. Terg. VIII (Fig. 3, F) has four short teeth along the hind margin, they are rather variable in form, but the lateral ones are larger and more cuspidate than the medial ones. From 4+4 major setae of the segment *a*-2 is far remote from the stigma and *p*-1 is distinctly shorter than others. Microsculputre (Fig. 3, G) is a coarse reticular type. Stern. VIII (Fig. 3, H) is subtruncate at apex and densely fringed with long and short setae. Median lobe (Fig. 3, I, J) is 0.27 mm. long; with apical lobe fairly spatulate and rounded. The ventral face is nearly straight. Costation of the median lobe is simple; *v. ap.* is well sclerotized and pigmented, but other costae are nearly reduced. Copulatory piece (Fig. 3, K) is elongate and with a long, acute apical process; the suspensorium is long and spiniform. Ventral to the copulatory piece there are a pair of slender, hyaline lobes, which are narrowly sclerotized along the inner margin (*p*). Lateral lobe (Fig. 3, L) has the proximal segment narrow and strongly constricted in the middle; the middle apodeme (*m*) is nearly rectangular and there is a large callosed sclerite (*s*) situated on the level of the middle apodeme.

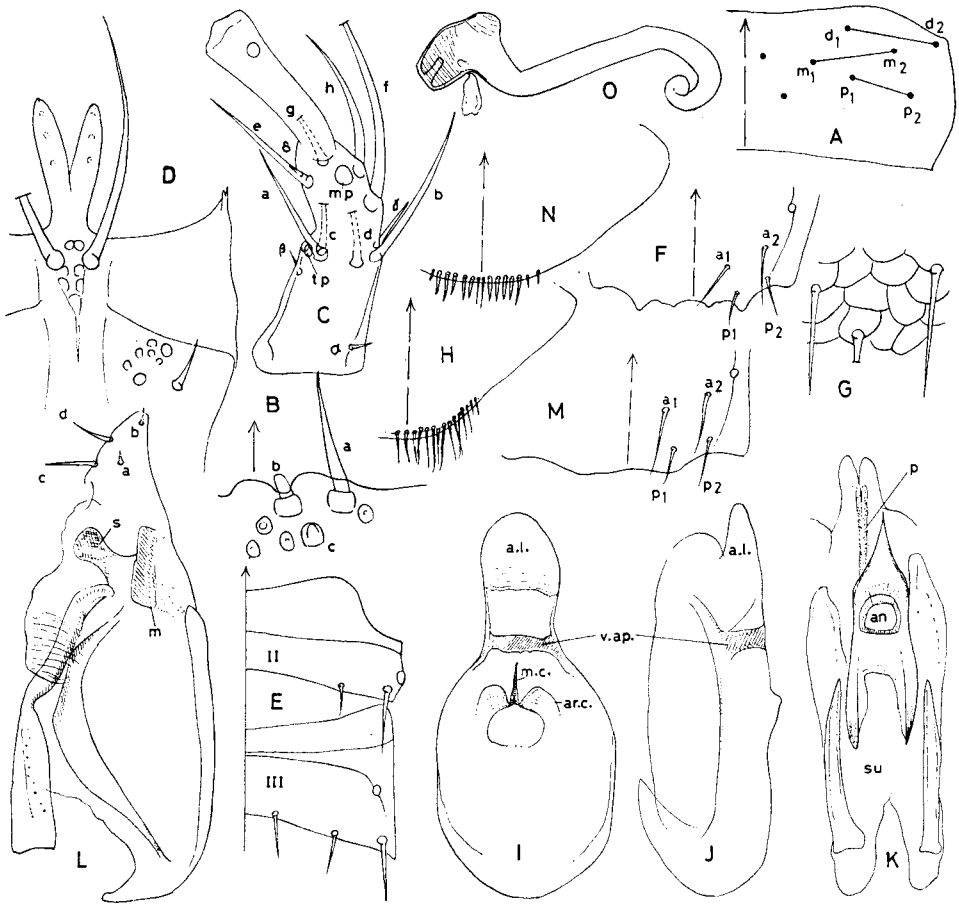


Fig. 3. *Atheta* (*Datostiba*) *lewisiana* Cameron from Daigo. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Macrochaetotaxy of terg. II-III; **F, G,** ♂ terg. VIII & its microsculpture; **H,** ♂ stern. VIII; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L,** Lateral lobe; **M,** ♀ terg. VIII; **N,** ♀ stern. VIII; **O,** Spermatheca.

Vellum is reduced to a narrow, fairly wrinkled membrane. The distal segment is short, abruptly pointed; setae *a*, *b* are strongly reduced, while *c*, *d* are longer and marginally situated.

Length: 1.80 mm (Head long 0.31 mm × wide 0.33 mm; pronotum 0.28 mm × 0.41 mm; elytra 0.33 mm × 0.52 mm).

Female: Terg. VIII (Fig. 3, M) is nearly truncate behind and slightly emarginate at the middle of the posterior margin. Stern. VIII (Fig. 3, N) is lightly acuminate behind, the apex is fringed with some marginal setae. Spermatheca (Fig. 3, O) is long, twisted axe-like and shortly coiled at the end. Umbilicus is narrow and produced.

Specimens examined: HOKKAIDO: Apoi, 1♂, 1♀ (1. VIII 1971, R. Yosii); TOKYO: Mt. Takao, 1♂ (20. III 1973, K. Sawada); KANAGAWA: Yugawara, 1♂, 3♀ (27. II 1973, R. Yosii); MIE: Kashikojima, 1♂ (31. VII 1973, R. Yosii); SHIGA: Mt. Ibuki, 6♂, 7♀ (5. VII 1973, R. Yosii); KYOTO: Kitashirakawa, 4♂, 4♀ (10. XII 1971, K. Sawada); Daigo, 30 ex. (25. VI 1973, R. Yosii); Mt. Hiei, 55 ex. (15. IX 1971, R. Yosii); Yonaki-Tooge nr. Kibune, 1♂, 3♀ (22. IX 1973, R. Yosii); OSAKA: Minoo, 25 ex. (2. V 1973, R. Yosii); Katsuoji, 52 ex. (19. VI 1973, K. Sawada); Nose, 1♂, 2♀ (22. I 1973, K. Sawada); Takatsuki, 1♂ (14. V 1971, K. Sawada); Mt. Ushitaki, 22 ex. (21. V 1971, K. Sawada); Mt. Inunaki, 20 ex. (10. X 1973, R. Yosii); Mt. Izumi-Katsuragi, 3♂, 7♀ (3. III 1973, K. Sawada), NARA: Asuka, 1♂ (1. IV 1973, K. Sawada); Mt. Kasuga, 3♂, 4♀ (29. VII 1972, K. Sawada); HYOGO: Mayasan, 20 ex. (14. X 1972, R. Yosii). OKAYAMA: Mitsuishi, 15 ex. (21. V 1973, R. Yosii et K. Sawada). KOCHI: Muroto 15 ex. (6. IV 1973, R. Yosii).

The type specimen of this species in the British Museum agrees well with our specimens examined. In the fusiform arms of glossa, in the shape of lateral lobe of aedeagus and by the dense distinct granules of the fore-parts this species is characteristic.

## Subgenus *Xenota* Mulsant et Rey, 1874

Typus: *Homalota myrmecobia* Kraatz, 1856

The *fungi*- and *laticollis* group of *Acrotona* of the previous authors must be placed here as their macrochaetal formula is as 01–02..., although in some cases the median pair of abd. terg. III is somewhat advanced in locus. Compared to *Datomicra* the body is converging posteriorly and the inner structure of the median lobe is very much complicated. There is a pair of anterior processes to the copulatory piece, whose apex is elongate and pointed. The median apophysis is well developed and extended to form a ventral plate to the copulatory piece. Besides the seta $\gamma$ of the labial pulpus is always anterior to seta *b*. The *laticollis* group may be separated from the *fungi* group by the form of the spermatheca, but not much different in other characters.

The name *Mocyta* Muls. Rey, 1874 is chosen for this group in Lohse, 1974, but apparently *Xenota* has page priority over it, while *Solenia* Muls. et Rey, 1873 must be rejected by the homonymy.

### *Atheta* (*Xenota*) *myrmecobia* (Kraatz, 1856) Fig. 4, A-I

Female: On the labrum (Fig. 4, A) *m*-2 is separate from the distal row, *a*-sensilla of labral margin (Fig. 4, B) is short; *b* is truncate at the apex, while *c* is pointed. Mandibles (Fig. 4, C) are reduced, with a brief apex. Segment III of labial palpus (Fig. 4, D) is longer than I: *a*-setula is basal, while $\beta$ is separate from *tp*; $\gamma$ is close to the level of *f*, which is posterior to the level of *mp*. Glossa (Fig. 4, E) is broad at the base, forked in two robust arms. Median area of prementum is broad, nearly parallel, with ca. 7 large, scattered pseudopores; real pore of the lateral area are close

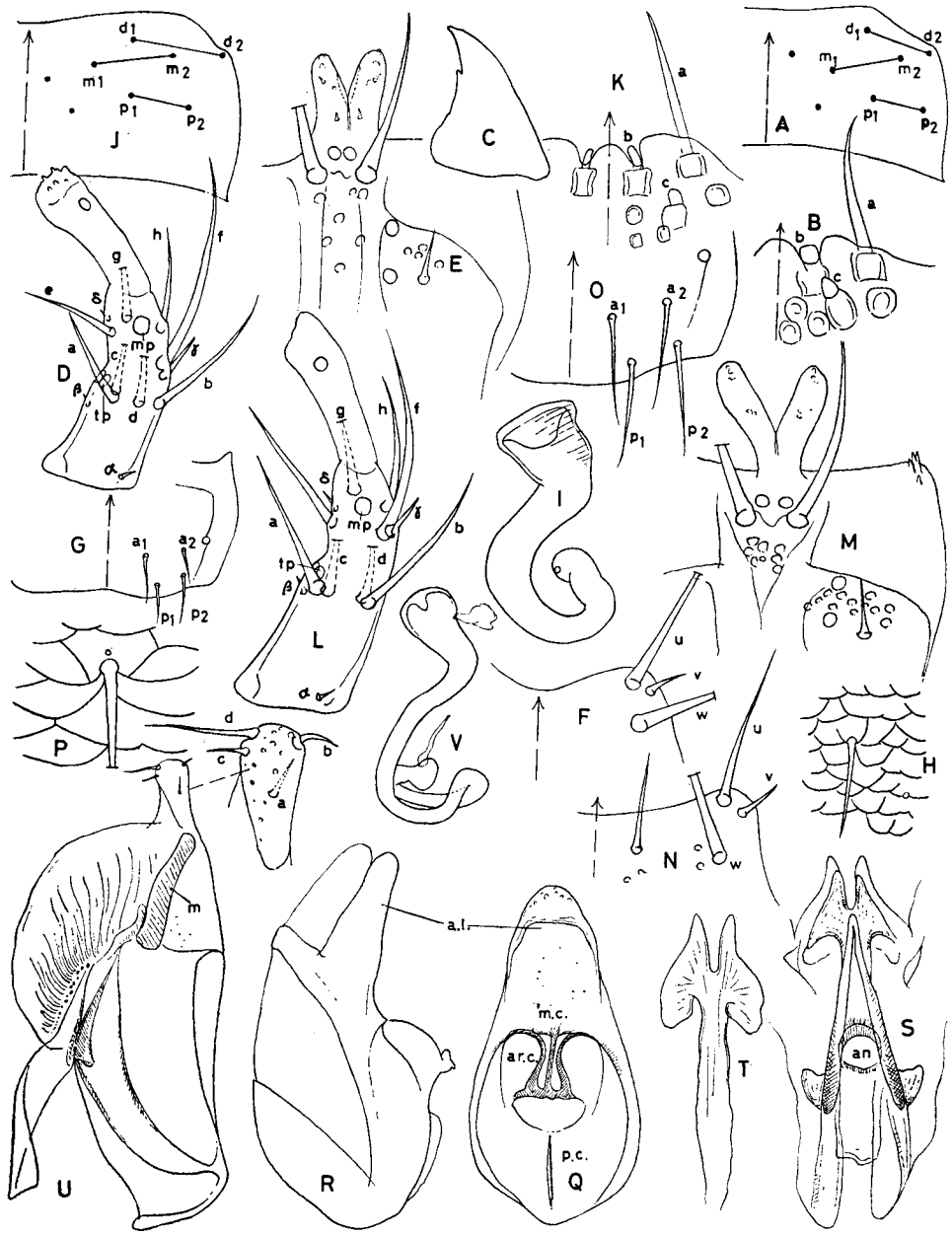


Fig. 4. *Atheta* (*Xenota*) *myrmecobia* (Kraatz) from Silesia. **A**, Labral chaetotaxy; **B**, Labral margin; **C**, Right mandible; **D**, Labial palpus; **E**, Glossa & prementum; **F**, Mentum; **G, H**, ♀ terg. VIII & its microsculpture; **I**, Spermatheca. *Atheta* (*Xenota*) *fungi* (Gravenhorst) from Salzstelle (♂) & Rheinland (♀). **J**, Labral chaetotaxy; **K**, Labral margin; **L**, Labial palpus; **M**, Glossa & prementum; **N**, Mentum; **O, P**, ♂ terg. VIII & its microsculpture; **Q, R**, Median lobe; **S, T**, Inner armature of aedeagus & its ventral plate; **U**, Lateral lobe; **V**, Spermatheca.

to the median area, with about 4 small pseudopores. Mentum (Fig. 4, F) is deeply emarginate in front; *v*- setula is small and placed close to the seta *u*. Macrochaetal arrangement as 01–02–12–12–13–33. The medial seta on terg. III and IV advanced anteriorly. Terg. VIII (Fig. 4, G) is transverse, emarginate at the middle of the posterior margin; there are 4+4 major setae and *a*-2 is close to the stigma; microsculpture (Fig. 4, H) is imbricate in pattern. Spermatheca (Fig. 4, I) is loosely contorted; the bursa is robust and with broad, obtuse umbilicus.

Specimen examined: POLAND: Silesia, 1♀ (WANKA leg., BENICK det.).

The short mandibles, broad glossa and emarginate mentum of this species is peculiar within *Xenota*.

***Atheta* (*Xenota*) *fungi* (GRAVENHORST, 1806)** Fig. 4, J-V

Male: Labrum (Fig. 4, J) is normally transverse: the proximal row of setae is clearly shorter than others; seta *m*-2 is placed very close to the distal row and there are up to 3+3 secondary setae. *a*-sensilla of labral margin (Fig. 4, K) is normally straight, whereas *b* is narrower than usual and *c* is more narrower than *b*. On labial palpus (Fig. 4, L) *γ*-setula is anteriorly situated to the level of seta *f*; *b* is close to the level of *a* and widely separating from *f*; *h* is on the same level with *mp*. In labium (Fig. 4, M) the glossa is forked from basal one third in two widely diverging, obtuse arms. The median area of prementum is broad, with about 8 pseudopores. Anterior real pore of lateral area is marginal, but the posterior one is separating from the median area and there are up to 13 pseudopores. *v*-setula of mentum (Fig. 4, N) is normally long and close to seta *u*. Number of macrosetae are as 01–02–12–13–13–34–. Terg. VIII (Fig. 4, O) is not modified; seta *a*-2 is remote from the stigma; microsculpture (Fig. 4, P) is a reticular type and each reticulum is lightly transverse. Median lobe of aedeagus (Fig. 4, Q, R) is 0.44 mm long and abruptly convex in the middle; the apical lobe is nearly straight and broadly obtuse at apex. *ar. c.* are fairly developed and approximate; *m. c.* is present in its full length; *v. ap.* is weak, but strong on each side. From the inner armature (Fig. 4, S) copulatory piece is narrowly elongate, gradually tapering toward apex and with an aciculate process behind the annellus. There is a thin ventral plate (Fig. 4, T) beneath the corpus having bilobed anterior and elongate posterior part. Lateral lobe (Fig. 4, U) has the middle apodeme (*m*) normally developed; vellum is large and the distal segment is short. It is subtruncate at apex and narrowed behind; setsa *a* is very short, and located at about the middle of the outer margin, *b* is also reduced and apical in locus while *d* is much longer than *c*.

Female: Spermatheca (Fig. 4, V) is fairly contorted, but simply folded behind the bursa and with small umbilicus.

Specimens examined: GERMANY: Salzstelle, 1♂ (15. I 1968, ULLRICH det.); Rheinland, 1♀ (29. VIII 1962, PUTHZ det.)

Chaetotaxy of labial palpus of this species is closely allied to *X. myremcobia* (KR.),

but different by narrow median area of prementum and shallow emargination of mentum.

***Atheta* (*Xenota*) *grata* Cameron, 1933** Fig. 5

*Atheta* (*Acrotona*) *grata* Cameron, 1933

Syn. nov. *Atheta* (*Acrotona*) *perbella* Brundin, 1952

Male: Ground colour reddish brown, fore-parts shining.; head blackish, pronotum usually pale reddish brown; elytra brown, abdomen reddish brown and blackish distally; antennae brown with pale basal segments; legs paler. Sometimes

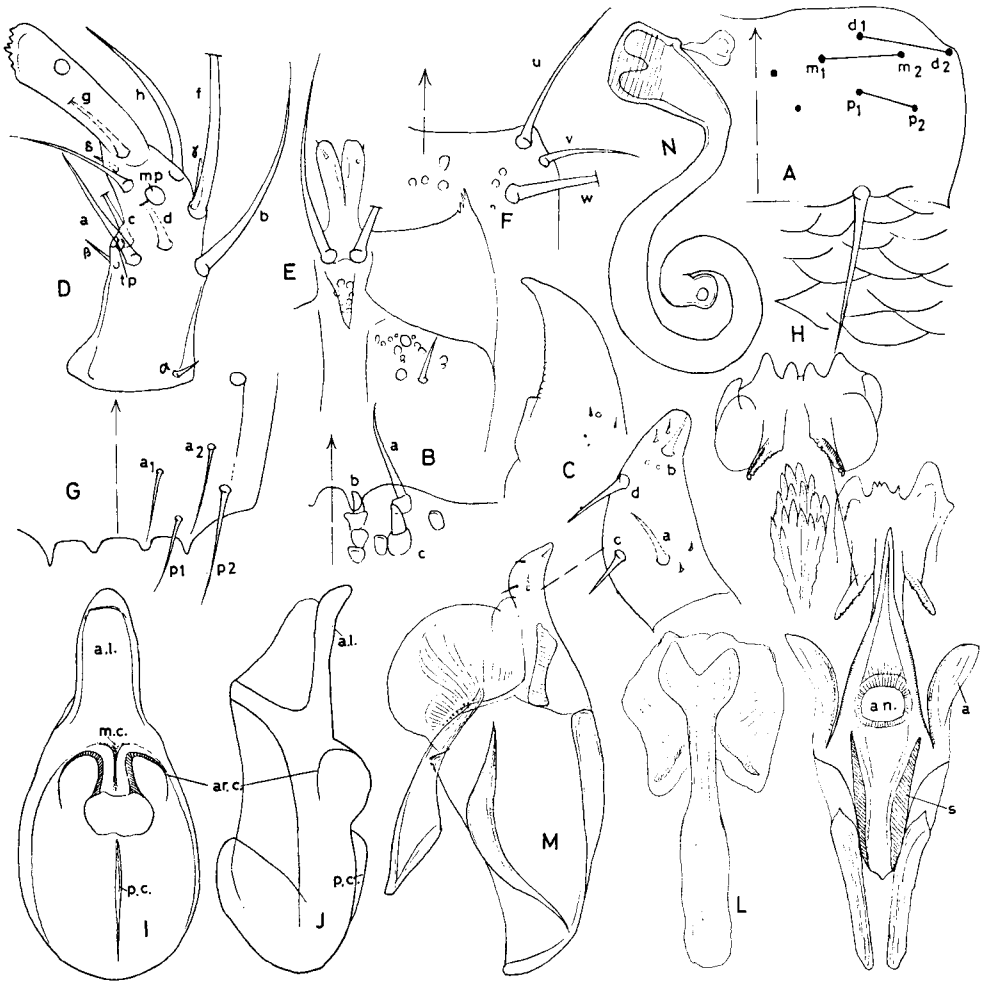


Fig. 5. *Atheta* (*Xenota*) *grata* Cameron from Kurume. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G, H,** ♂ terg. VIII & its microsculpture; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L,** Ventral plate of copulatory piece; **M,** Lateral lobe; **N,** Spermatheca.

the body is more intensely pigmented and abdomen is nearly black throughout. Body nearly parallel, with very short setae anteriorly and with many large black setae posteriorly. Head obsoletely punctured, without depression in the middle. Eyes large, longer than the post-genae in diameter. Antenna slender; ratio as I 8×4.7: II 8×3.5: III 7×3.5: IV 3.5×4: V 5×4–X 4×5.7: XI 10×6. Distal row of labral setae (Fig. 5, A) is longer than the medial row; seta *p*-2 is posteriorly displaced; 3+3 secondary setae are present. *a*-sensilla of labral margin (Fig. 5, B) is short, and converging; *b* is small, pointed and *c* is normal in size. Mandibles narrow and briefly pointed at the apex; right mandible (Fig. 5, C) has a low inner tooth. Segm. I of labial palpus (Fig. 5, D) is dilated basally and a little shorter than III; *β*-setula is rather large and close to *tp*, *γ* is normal and on the same level with *f*, which is standing at the middle between *b* and *h*; *b* is on the level of *a*; *e* is anterior to the level of *mp*. Forked glossa (Fig. 5, E) has a short setula near the apex. Median area of prementum (Fig. 5, E) is narrow and with some pseudopores anteriorly; lateral area has 2 real, 1 setal pores and up to 13 pseudopores. *v*-setula of mentum (Fig. 5, F) is long and placed nearer to *u* than to *w*. Pronotum is convex above, with a faint median sulcus ending in a shallow basal depression; the sides are evenly arcuate in their full length and with very short erecting setae along the margin; very fine but well defined granules are present over the surface; pronotal pubescence along the middle is anteriorly directed. Elytra are as long as broad, broadly emarginate postero-externally and more roughly granulated than the pronotum. Abdomen is finer granulated. Macrochaetal arrangement as 01–02–12–13–13–34–. Terg. VIII (Fig. 5, G) has 4 teeth, the median pair is blunt, the lateral is acute and longer; From 4+4 long macrosetae *a*-2 is far remote from the stigma; microsculpture (Fig. 5, H) is transversely imbricate. Apical lobe of aedeagus (Fig. 5, I, J) is nearly straight and nuch narrower than the remaining body. *ar. c.* are separating from each other; *m. c.* is entire, furcate at apex; *v. ap.* is feeble; *p. c.* has a low projection. Copulatory piece (Fig. 5, K) is narrowly elongate, rhomboidal and with a pair of auricular appendix (*a*) and another pair of narrow sclerites (*s*). Suspensorium is a narrow straight sclerite parallel to the corpus. A very thin ventral plate beneath the corpus (Fig. 5, L) is reaching behind the level of annellus and dilated apically into two lobes. Paramedian apophyses are a narrow sclerite (*l*), whose inner margin is finely serrulate. Besides a bundle of spines is present above the copulatory piece (Fig. 5, L). Proximal segment of lateral lobe (Fig. 5, M) is fairly prolonged before the articulation; vellum is broad; middle apodeme (*m*) is elongate and with another faint but long apodeme (*a*); distal segment is short, acuminate apically; *a* is basal, *b* is apical and *c*, *d* are separating.

Length. ca. 2.50 mm (Head long. 0.35 mm×wide 0.45 mm; pronotum 0.47 mm ×0.66 mm; elytra 0.42 mm×0.77 mm).

Female: Spermatheca (Fig. 5, N) is coiled and with a robust bursa having a conspicuous umbilicus in it.

Specimens examined: JAPAN: IWATE: Iwaizumi 2♀, (27. VII 1974, K. SAWADA leg.); NAGANO: Shiga Hights, 2♀, (8. VII 1972, K. SAWADA leg.); Kashima

nr. Oomachi 1♀ (21. X 1971, R. Yosii leg.); Kiso-Fukushima 10♂, 13♀ (10. VIII 1974, R. Yosii leg.); SHIGA: Yogo, 1♀ (22. X 1970, R. Yosii leg.); Wanihama, 10♂, 16♀ (21. X 1971, K. Sawada leg.), NARA: Kasuga, 1♂ (29. VII 1972, K. Sawada leg.); OSAKA: Nose, 1♀ (3. XI 1970, K. Sawada leg.); Yodogawa at Maeshima, 10♂, 16♀ (24. VI 1971, K. Sawada leg.); Ushitakiyama, 1♂, 2♀ (31. V 1971, K. Sawada leg.); Inunakiyama, 1♂, 2♀ (23. X 1973, R. Yosii leg.), TOTTORI: Yonago, 1♂, 1♀ (19. IV 1972, K. Sawada leg.); TOKUSHIMA: Tokushima city, 1♂ (25. IX 1955, M. Yoshida leg.); KOCHI: Muroto, 1♀ (6. IV 1973, R. Yosii leg.), EHIME: Omogokei, 1♂, 2♀ (18. X 1973, R. Yosii leg.), FUKUOKA: Kurume, 10♂, 12♀ (15. IV 1972, R. Yosii leg.), FORMOSA: Kuraru, 1♂ (6. VIII 1932, Y. Yano leg., Brit. Mus. coll.)

Our specimens agree well with the cotypes lent from the British Museum. The shape of terg. VIII in male and slender copulatory piece with an auricular appendix are the features peculiar to the present species. Besides antennal segm.V to VII of this species are apparently longer than broad in contrast to other related species. Description and figure of *A.* (*Acrotona*) *perbella* Brundin, 1952 from Ussurisk coincide well with the present species and it must be a synonym of *A. grata*.

Distribution: Ussuri, Japan, Formosa

## Subgenus *Microdota* Mulsant et Rey, 1873

Typus: *Homalota amicula* Stephens, 1832

In the previous paper (K. Sawada, 1974) it has been stressed that *Microdota* M.R. must be united to *Amidobia* Th. by the common character that the median area of prementum is quite smooth. However, the chaetal studies has revealed the essential difference between them. All the species of *Microdota* belong to the 0–0 group, while *A. talpa* (He.) has the chaetal arrangement of 01-type, although it is decidedly near *Microdota* in many respects. The two subgenera must be separated and all species designated as *Amidobia* in that paper must be placed in *Microdota* with the exception of *A. talpa* (He.) and *A. formicetorum* Bh., to the latter *Atheta* (*Atheta*) *settuensis* Cameron, 1933 is identical so long as afirmed by two cotypes of the British Museum.

In Aleocharinae there is an assembly of spinous setulae at the posterior basis of hind wings, which may be called *flabellum* from its appearance. The flabellum is well developed, for example, in *Aleochara* by which more than 40 setulae are radiating from the common flap (Fig. 6, A). In *Atheta* it is rather reduced, but still it is composed of more than 6 spinules (Fig. 6, B), whereas in *Microdota*-Series they are fewer (Fig. 6, C, D, E); being 4, 2, 1 or even 0. Their number and relative length are seemingly fixed for each species and this tendence of diminution is the diagnostic character of this small *Microdota*-Series. In some cases, when the median area of prementum has a few number of obscure pseudopores at the basis of the distal setae of prementum this character of flabellum is very helpful to distinguish their taxonomic status. In *Shigatheta* nov. flabellum is completely reduced.

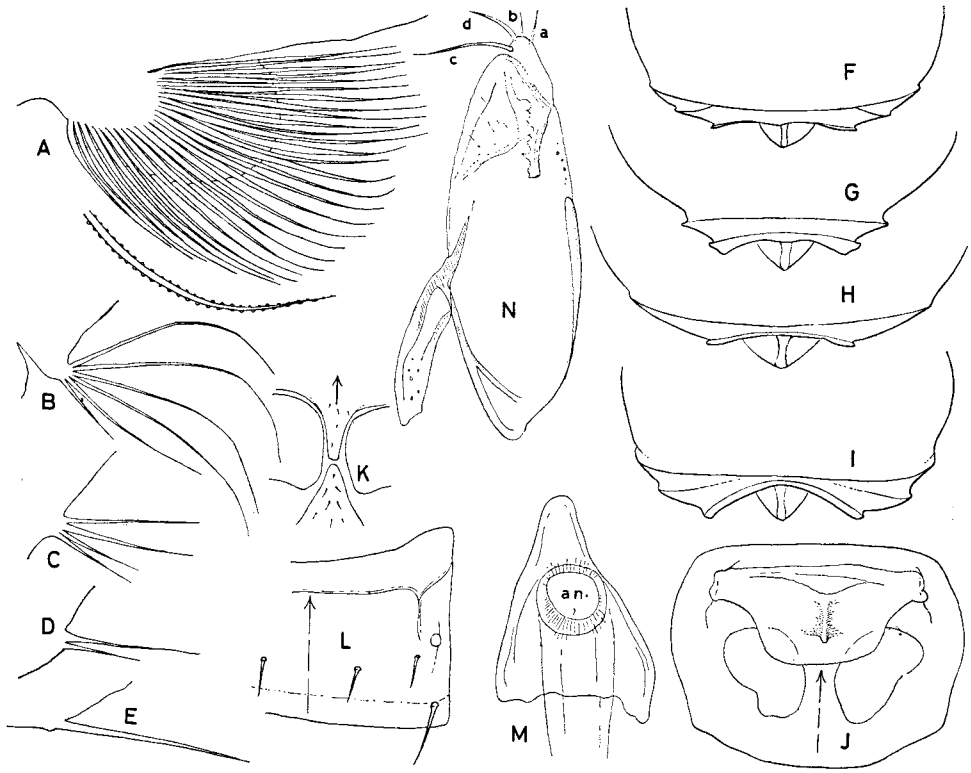


Fig. 6. Flabellum of **A,** *Aleochara* (*Emplenota*) *fucicola* (SHP.); **B,** *Atheta* (*Atheta*) *transfuga* (SHP.); **C,** *A.* (*Microdota*) *spiniventris* BH.; **D,** *A.* (*Amidobia*) *talpa* (HE.); **E,** *A.* (*Microdota*) *vulpina* K. S. Cervical carina of **F,** *A.* (*Microdota*) *vulpina* K. S.; **G,** *A.* (*Amidobia*) *talpa* (HE.); **H,** *A.* (*Amidobia*) *formicetorum* BH.
*Shigatheta tortuosa* (K. S.) type, **I,** Cervical carina; **J,** Prosternum; **K,** Mesosternal process; **L,** Terg. VIII; **M,** Copulatory piece; **N,** Lateral lobe.

## Subgenus *Amidobia* THOMSON, 1858

Typus: *Homalota talpa* HEER, 1841

As stated above *Amidobia talpa* has 01-type of macrochaetotaxy. But as the median area of prementum is quite smooth and flabellum is reduced, it must be regarded a special form derived from *Microdota*. Macrochaetal arrangement is as 01–12–12–12–13–34–.

From many Japanese species of *Microdota* described in K. SAWADA 1974 only one species, *A. formicetorum* BH. belongs to *Amidobia* having the same chaetal formula as *A. talpa*. But in this species the flabellum is composed of four setulae.

*Amidobia talpa* is notably characterized by the reduction of the genal suture. This suture, which is more properly called *cervical carina,* emerges from the dorsal side of the cephalic capsule and divergent or forked to a long anterior and a short posterior carina in almost all members of Athetae (Fig. 6, F). The former is running

along the genal margin of the capsule and called "Schläfenrandung", while the latter is surrounding the posterior cervical margin and representing the "Halsrandung" of Lohse, 1971 etc. In *A. talpa* and in *A. formicetorum* the latter is not branched from the former (Fig. 6, G, H) the carina being not diverged or not forked. There are some other species of Athetae by which the cervical carina is not diverged, but, usually, it is the character peculiar to that species and it has very little significance of generic or subgeneric value.

### *Shigatheta* gen. nov.

Typus: *Ischnopoda (Anopleta) tortuosa* K. Sawada 1970

The type species is peculiar in many respects. In facies it is alike to *Anopleta*, but chaetal arrangement is 01-type. Its glossa is deeply split up to the basis as in *Dacrila* (vide infra), flabellum is quite absent, *a*-seta of labral margin is diverging and all sensillae of labral margin are confined to the narrow median part. Prosternum has a conspicuous median carina (Fig. 6, J) and each tergites have a pair of lateral carinulae (Fig. 6, L). Besides abd. terg. VII, VIII are with warty granulate papillae at the basis of each large setae.

These characters are sufficient to establish a new genus for the species, which is placed provisionally near *Amidobia* by the reduction of flabellum. But the presence of the peculiar lateral carinulae on abdominal tergites may indicate a very special position far remote from *Atheta* (s. lat.).

### *Shigatheta tortuosa* (K. Sawada, 1970) Fig. 6, D, I-N

Syn.: *Ischnopoda (Anopleta) tortuosa* K. Sawada, 1970

Additional notes: Head is coarsely punctured. Pronotum is less so and subopaque by the microsculpture. Labrum has 1+1 secondary setae. Right mandible is finely serrulate and with a molar tooth, the left one is nearly straight on its inner margin. Cervical carina (Fig. 6, I) is forked, but obscure at the junction. Pronotal pubsecence along the middle is posteiorly directed and with conspicuous lateral erecting setae. Prosternum (Fig. 6, J) is provided with a distinct median carinula and mesosternal process (Fig. 6, K) is narrowly produced behind to a subtruncate apex. Macrochaetal arrangement is as 01–21–21–22–22–33–. Abdominal tergites (Fig. 6, L) have short lateral carinula, which is confluent to the basal transverse carina of the segment. Integument is heavily imbricate alike the scaled fish-skin and on terg. VII and VIII basis of each seta is provided with a longitudinal papillate granules. Terg. VIII of male is, as already mentioned, roundly extruded medially and thick with irregular tubercules of the marginal setae. Median lobe of aedeagus has costa *ar. c* short, separating to each other; *m. c.* is entire, while *v. ap.* is quite evanescent. Copulatory piece (Fig. 6, M) is, when closely observed, with an obtuse apical process, which has slipped notice in my previous paper. Suspensorium and distal apophyses are not sclerotized. Lateral lobe (Fig. 6, N) is narrow: the proximal segment is

short; the vellum is considerably reduced; middle apodeme is absent; the medial segment is not hooked, but blunt ending.

New examples examined: NAGANO: Shiga Heights, 1♂, 1♀ (15. VIII 1967, K. SAWADA)

## Subgenus *Philhygra* MULSANT et REY, 1873

Typus: *Homalota palustris* KIESENWETTER, 1844

Through laborious works of BRUNDIN 1942 it is already known that in this subgenus the stern. VIII of male has a special interior row of setulae along its posterior margin and female spermatheca is obliterated. These two characters suffice to separate them from others. *Pelurga, Phryogora* and *Hygroecia* have been proved to be junior synonyms of *Philhygra*.

In *A. palustris* (KIES.) etc. the median area of prementum has no pseudopores at all, but in Japanese *A. sparsa* Bh. etc. the area is with many pseudopores and they would represent a special group within *Philhygra*. All members of *Philhygra* show, so long as it is witnessed by us, the typical arrangement of 0–0 type. Therefore, it may be concluded that it is a concrete group derived from *Datomicra* by the modification of its genital area.

### *Atheta* (*Philhygra*) *palustris* (KIESENWETTER, 1844) Fig. 7

Male: Labrum (Fig. 7, A) is truncate in front; seta *m*-2 is close to the distal row and with 2+2 secondary setae. *a*-sensilla of labral margin (Fig. 7, B) is straight and normally long; *b* is truncate at apex, *c* is obtuse. $\gamma$-setula of labial palpus (Fig. 7, C) is close to seta *b*; $\delta$ is on the same level with *h*; *a* is posterior to the level of *b*; *e* is on the level of *f*; *tp* is subequal to *mp* in size; segment I is shorter than III, which is not enlarged distally. Glossa (Fig. 7, D) is forked as usual. Median area of prementum (Fig. 7, D) is fairly broad, diverging behind and devoid of pseudopores; 2 real, 1 setal and some 10 large and small psuedopores are present in the lateral area. *v*-setula of mentum (Fig. 7, E) is short. Mandibles are broad at base and abruptly tapering distally; the right mandible has a very small molar tooth behind the middle. Chaetal arrangement (Fig. 7, F) is as 01–02–12–12–12–34–. Terg. VIII is emarginate at the middle of the hind margin; seta *a*-2 is widely separating from the stigma; microsculpture (Fig. 7, G) is transversely imbricate. Marginal setae of stern. VIII are elongate (Fig. 7, H), while the interior row of setae are small and short (Fig. 7, I).

Median lobe (Fig. 7, J, K) is depressed and lightly bent downwards; costa *m. c.* is short, while *ar. c.* are long, widely separating and reflected behind; *v. ap.* is a little developed. Paramedian apophyses (Fig. 7, L) are converted into large unciform sclerites (*p*) standing side by side having a large tooth behind the middle of its inner margin. A stout thickening (*t*) is present on the dorsal side of the paramedian apophyses. Median apophysis (*m*) consists of paired long and some short spines. Besides, a bundle of long spines (*b*) is present on each side of them. Copulatory piece is short, briefly pointed, laterally thickened and with large annellus. Inner costa of the medial

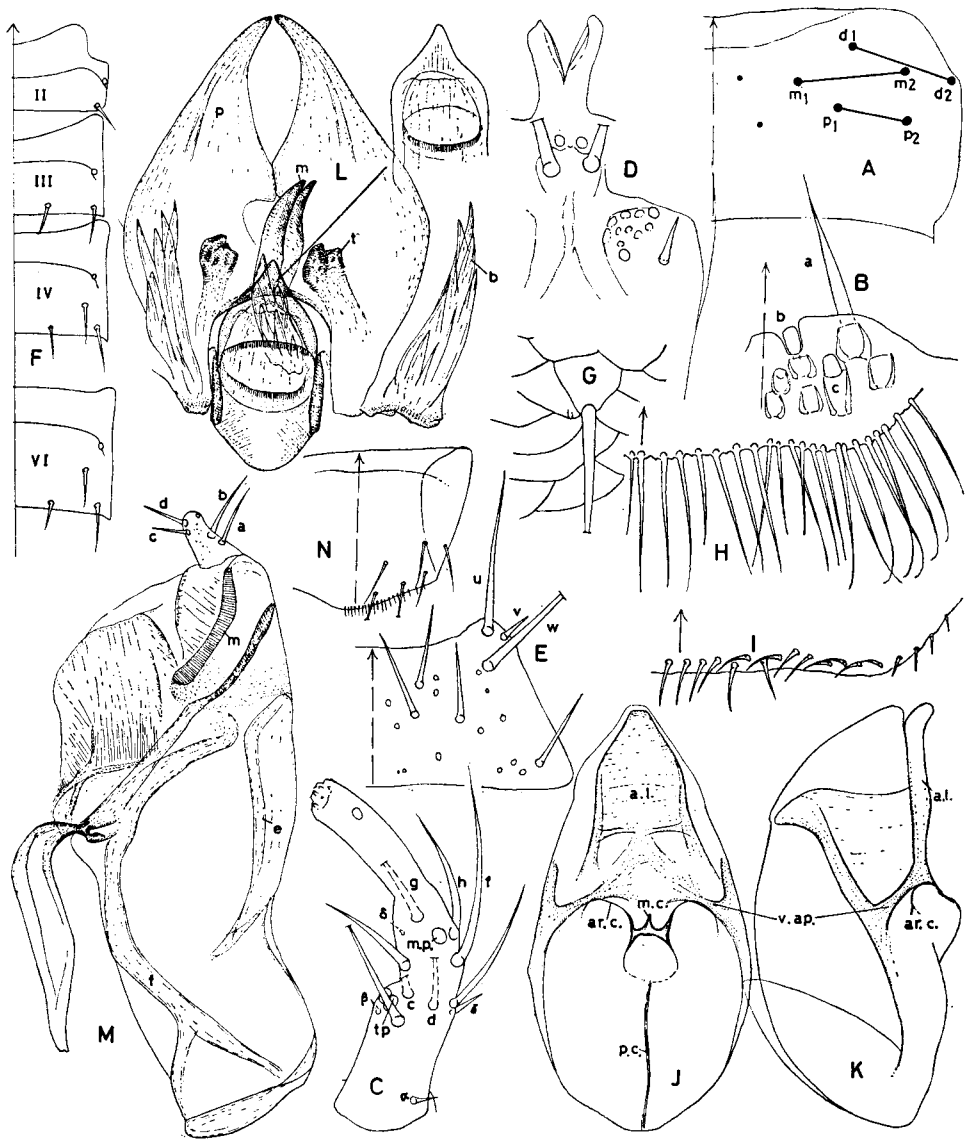


Fig. 7. *Atheta* (*Philhygra*) *palustris* (Kies.) from Austria.. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F,** Macrochaetotaxy of terg. II–IV and VI; **G,** Microsculpture of terg. VIII; **H, I,** Marginal and interior setae of ♂ stern. VIII; **J, K,** Median lobe; **L,** Inner armature of aedeagus; **M,** Lateral lobe; **N,** ♀ stern. VIII.

segment of the lateral lobe (*f* in Fig. 7, M) is bifurcate behind and separating from the margin in front; outer costa (*e*) is also separating from the margin at the end, where it is broadly emarginate to form a basal constriction of the segment; vellum is large; medial apodeme (*m*) is narrowly elongate and without additional apodeme; distal

segment is small; seta *a*, *b* are similarly long and basal in position, *c*, *d* are apically situated.

Female: Stern. VIII (Fig. 7, N) is not emarginate at the middle of the posterior margin, where there is a row of short marginal setae.

Specimens examined: AUSTRIA: Illmitz in Burgenland, 1♂, 1♀ (Puthz det).; JAPAN: KYOTO: Sagano, 1♂ (16. VI 1972, K. SAWADA leg.); WAKAYAMA: Ryumonzan, 1♂ (14. IV 1957, KAMIYAMA leg.)

Japanese specimens agree quite well with the European specimens. This is the second record of the species from Japan.

***Atheta* (*Philhygra*) *neolata* K. SAWADA, nom. nov.** Fig. 8, A-E

Syn.: *Ischnopoda* (*Brundinia*) *prolata* K. SAWADA, 1970

Additional notes: Body is nearly parallel, subopaque, with very fine, short pubescence. Head is large compared to the pronotum and with small eyes. Pronotal pubescence along the middle is directed anteriorly; the lateral erecting setae are long. Abdomen is gradually dilated toward terg. VI, where it is fairly depressed at the basis and indistinctly punctured throughout. Macrochaetal arrangement is as 01–02–12–12–13–34–. Stern VIII (Fig. 8, A) is provided with a row of marginal and interior setae. Costa (Fig. 8, B, C) *ar. c.* are completely confluent together in the middle and forming a rounded projection; *v. ap.* is broad and conspicuous; *p. c.* has a low projection. Median lobe has a paired black bundles of spines (*b* in Fig. 8, D) guarding the copulatory piece. A triangular sclerite (*s*) is lying over the bundles. The medial segment of lateral lobe (Fig. 8, E) is clearly concave along its outer margin and with a narrow middle apodeme (*m*) together with a faint additional apodeme of the well developed vellum.

New examples examined: NAGANO: Shiga Heights, 3♀ (5. VII 1972, R. YOSII et K. SAWADA)

The species would be near *P. hygrobia* (Th.) of Europe having large head and slender antennal segments, but it is different from it by the peculiar shape of the apical lobe. *A. prolata* K.S. is homonymous with *Atheta prolata* CASEY, 1910 and the new name, *A. neolata*, must be herein proposed.

## ***Hydrosmecta* THOMSON, 1858**

Typus: *Homalota thinobioides* KRAATZ, 1854

Type species was studied. Very characteristic to this genus the right mandible is with a large inner tooth, left mandible with a shallow notch at about the middle and the inner margin just anterior to the notch is faintly serrate as pointed out in LOHSE 1973 etc. The median area of prementum is provided with only a few pseudopores near the basis of distal setae. Glossa is short and two distal arms are standing side by side, they are not diverging as in others. Chaetal arrangement is as 01–02–12–12–12–34–. and it belongs to 0–0 group without doubt. Perhaps it is indirectly related

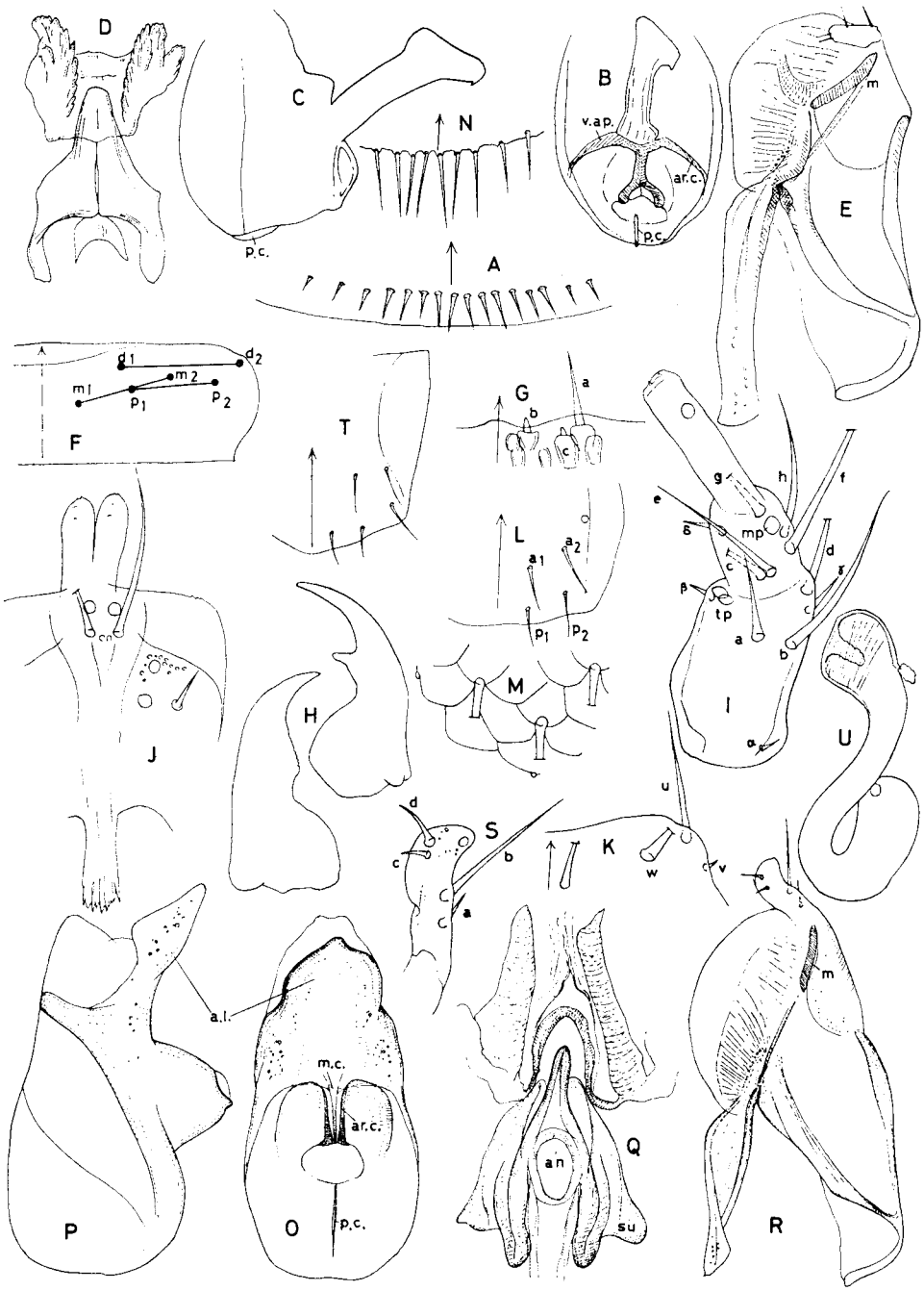


Fig. 8. *Atheta* (*Philhygra*) *neolata* nom. nov. from Shiga Heights. **A,** Interior setae of ♂ stern. VIII; **B, C,** Median lobe; **D,** Inner armature of aedeagus; **E,** Lateral lobe. *Hydrosmecta thinobioides* (Kraatz) from Holstein: **F,** Labral chaetotaxy; **G,** Labral margin; **H,** Mandibles; **I,** Labial palus; **J,** Glossa & prementum; **K,** Mentum; **L, M,** ♂ Terg. VIII & its microsculpture; **N,** Marginal setae of ♂ stern. VIII; **O, P,** Median lobe; **Q,** Inner armature of aedeagus; **R, S,** Lateral lobe & its distal segment; **T,** Stern. VIII; **U,** Spermatheca.

to *Datomicra* whose buccal apparatus is modified for amphibious life.

*Hydrosmectina* GANGLBAUER, 1895 is not separable from *Hydrosmecta* as all these characters are existent in the type species, *H. subtilissima* (KR.).

***Hydrosmecta thinobioides*** **(KRAATZ, 1854)** Fig. 8, F-U

Male: Cervical carina is not forked. Labrum (Fig. 8, F) is strongly transverse; the proximal row of setae is distinctly close to the distal row and parallel to it; seta *p*-1 is on the medial row of setae and without secondary setae. *a*-sensilla of labral margin (Fig. 8, G) is straight; *b*, *c*, are narrow, pointed. Right mandible (Fig. 8, H) with a distinct, acute tooth at the middle of the inner margin, the left mendible is deeply sinuate behind the middle and then finely serrulated. Segment I of labial palpus (Fig. 8, I) is contorted and segm. III is not dilated apically; seta *a*, *e* are far remote from the inner margin and close to *b*, *f*; $\beta$ is close to *tp*, while $\gamma$ is anteriorly separated to *b*; $\delta$ is large and nearly on the same level with *g*. Glossa (Fig. 8, J) is broad, not divergind distally and only feeble constricted basally. Median area of prementum (Fig. 8, J) is normally broad, not diverging behind and with only a few pseudopores near the distal setae. Lateral area has one setal, two real and many very small pseudopores confined to the anterior part. *v*-setula of mentum (Fig. 8, K) is reduced to a minute setula located below the lateral margin; seta *w* is slightly anterior to the level of *v*. Macrochaetal arrangement is as 01–02–12–12–12–34–. Terg. VIII (Fig. 8, L) is not emarginate, but feebly sinuate along the hind margin; both *a*-1 and the stigma are located at subequal distance from *a*-2; microsculpture (Fig. 8, M) of the tergite is reticular type. Stern. VIII (Fig. 8, N) has a papillate marginal setae, they are directed to the inside.

Median lobe of aedeagus (Fig. 8, O, P) is 0.29 mm long; apical lobe is broadly rounded, lightly bent downwards. Costa *ar. c.* are narrowly separating to each other; *v. ap.* is not developed. Inner armature of aedeagus (Fig. 8, Q) is complicated; copulatory piece is with a shortly produced, obtuse apical process; suspensoria are more or less dilated on each side near the basis; median apophysis is converted to a narrow, pigmented band guarding the apex of the copulatory piece and firmly continued to the paramedian apophyses, which are large long plates standing side by side. Lateral lobe has a small, narrow apodeme (*m* in Fig. 8, R) behind the distal segment, which is elongate and contorted and finely emarginate before the basis; seta *b* (Fig. 8, S) is enormously long when compared to small *a*; *c*, *d* are rather short.

Female: Stern. VIII (Fig. 8, T) is obtusely rounded behind and devoid of emargination and marginal papillate setae. Spermatheca as in Fig. 8, U and with a large, narrow umbilicus.

Specimens examined: GERMANY: Holstein, 1♂, 1♀ (25. VII 1950, LOHSE det.); JAPAN: SHIGA: Shore of Lake Biwa at Wanihama, 1♂, 2♀ (20. IX 1970, R. YOSII leg.); Ditto at Manohama, 1♂ (20. IX 1970, R. YOSII leg.); Ditto at Notogawa, 26 ex. (14. VIII 1973, K. SAWADA leg.); KYOTO: Kamogawa at Demachiyanagi, 23 ex. (12. IX 1970, R. YOSII leg.)

This is the first reliable record of the species from the outside of Europe.

***Hydrosmecta subtilissima*** **(KRAATZ, 1854)** Fig. 9

Female: Labrum (Fig. 9, A) is strongly transverse; proximal row of setae is close to the distal rwo and parallel to it; seta *m*-2 is situated on the distal row and no secondary setar are present. *a*-sensilla of labral margin (Fig. 9, B) is straight and rather short; *b*, *c* are markedly narrow and pointed. Right mandible (Fig. 9, C) is slender, with a molar tooth before the middle, which is relatively robust and broadly truncate at apex. The left mandible is sinuated. $\beta$-setula of labial palpus (Fig. 9, D) is posterior to *tp* and $\gamma$ is anteriorly on the same level with *e*; $\delta$ is small and on the level of *f*; *a* is apparently more separate from *b* than from *tp*; *b*, *f* are inside of the outer margin. Glossa (Fig. 9 E) is broad, lightly constricted behind and not diverging distally. Median area of prementum is broad, lightly constricted behind and nearly glabrous leaving some 4 pseudorores near the distal setae. Lateral area has one setal, 2 real and some 6 pseudopores. *v*-setula of mentum (Fig. 9, F) is very small and arising from the small depression; *w* is anterior to the level of *v*. Macrochaetal arrangement is as 01–02–12–12–12–34–. Microsculpture of terg. VIII (Fig. 9, G) is imbricate regularly. Stern. VIII (Fig. 9, H) is entire and with more than 10 long and short marginal setae. Spermatheca (Fig. 9, I) is coiled up and with a short bursa bearing a very large umbilicus.

Specimen examined: POLAND: Silesia 1♀ (WANKA leg., SCHEERPELTZ det.).

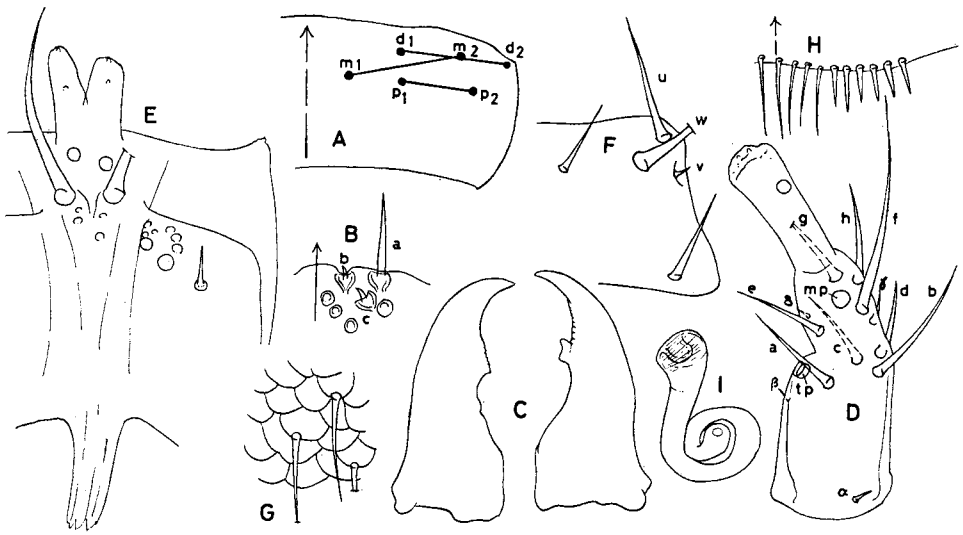


Fig. 9. *Hydrosmecta subtilissima* (KRAATZ) from Silesia. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Mandibles; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G,** Microsculpture of terg. VIII; **H,** Marginal setae of stern. VIII; **I,** Spermatheca.

## 2. Ol- or *Nototheca* Group

In this second group of *Atheta* complex those genera and subgenera are included by which the macrosetae of abd. terg. II is always 01 and that of the subsequent segment is 12 or 13, i.e. with one anterior seta laterally. Setae of abd. terg. VII is usually 34- and that of abd. terg. VIII is in 4 pairs. *Badura* represents the most primitive group of this series, which is not much different from *Datomicra* except for the abdominal chaetotaxy, while *Nototheca* is a large group, which may be subdivided into various groups in further researches. *Chaetida* would be one of such groups, whose characters are fairly well defined. *Dinaraea* is a distinct subgenus characterized by the simplification of the cervical carina and it gives rise to the genus *Alianta,* while *Cadaverota* nov. is apparently derived from *Nototheca.*

1. Distal setae of prementum pointed ..... 2
   Distal setae of prementum blunt ending ..... *Cadaverota* nov.
2. Cervical carina is normally diverged ..... 3
   Cervical carina not diverged and simplified ..... 5
3. Body setae large and elongate. Lateral area of abd. terg. IX is elongate posteriorly ..... *Chaetida*
   Body setae not especially large. Lateral area of abd. terg. IX not as above... 4
4. Small species. Inner armature of male genital organ simple, without suspensorium. Secondary setae of labrum 1+1 (always?) ..... *Badura*
   Large species. Inner armature of male genital organ complicated and with well developed suspensorium. Secondary setae of labrum more than 2+2 (always?) ..... *Nototheca*
5. Abd. terg. III and IV smooth ..... *Dinaraea*
   Abd. terg. III and IV with peculiar surface structure ..... *Alianta*

### Subgenus *Badura* MULSANT et REY, 1873

Typus: *Homalota macrocera* THOMSON, 1856

In the chaetal arrangement *Badura* is equal with *Nototheca* having 01 type of chaetotaxy. But in other details *Badura* is concordant with *Datomicra* in body form and in median lobe of male genitalia etc. Probably it is the most primitive group among 01-type and from which various subgenera of the 01 group have been originated. The provisorial distinction to *Nototheca* is that the secondary setae of labrum are 1+1 in *Badura* and more than 2+2 in *Nototheca* and that the suspensoria of the genital organ are absent in *Badura,* while they are well developed in *Nototheca.* Cervival carina is usually forked, but rarely not forked (*A. macrocera*).

***Atheta* (*Badura*) *macrocera* (THOMSON, 1856)** Fig. 10

Additional notes: Cervical carina is not forked. Labrum (Fig. 10, A) is lightly emarginate in front; all rows of setae are subequally long; seta *m*-2 is separated from the distal row, while *p*-1 is on the level of *m*-1. *a*-sensilla of labral margin (Fig. 10, B)

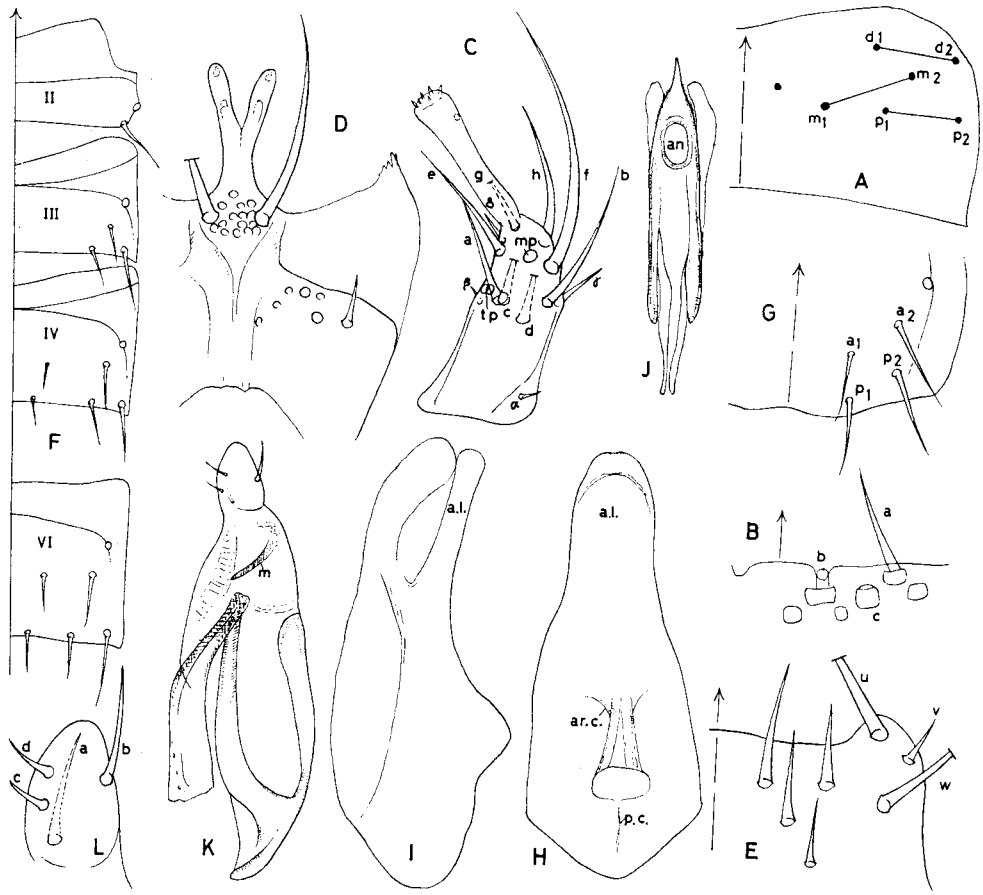


Fig. 10. *Atheta* (*Badura*) *macrocera* (Thomson) from Lübeck. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F,** Macrochaetotaxy of terg. II–IV, VI; **G,** ♂ terg. VIII; **H, I,** Median lobe; **J,** Copulatory piece; **K, L,** Lateral lobe & its distal segment.

is normally setaceous, and *b* is strongly reduced. Mandible relatively slender and gently hooked at apex; right mandible has no distinct molar tooth. Labial paplus (Fig. 10, C) has setula *γ* on the same level with *b; a* is not posterior to *b* and *mp* is on the same level with *e*. Glossa (Fig. 10, D) is fairly long, constricted basally and forked from the middle in two long arms. Median area of prementum (Fig. 10, D) is narrow, with ca. 13 pseudopores and not well separated from the lateral area. The posterior real pore of lateral area is close to the setal pore. *v*-setula of mentum (Fig. 10, E) is long and with many secondary setae. Macrochaetal arrangement (Fig. 10, F) is as 01–12–23–23–23–23–23–. Terg. VIII (Fig. 10, G) is broadly truncate behind and gently emarginate in the middle; seta *a*-2 is located at the midway between *a*-1 and stigma; microsculpture shows an imbricate pattern of reticulation.

Median lobe (Fig. 10, H, I) of aedeagus is 0.27 mm long; apical lobe is long, evenly arcuate in the whole length, having the most produced portion at about the basal one-third. In ventral view apical lobe is not narrowed, but broadly rounded at apex and emarginate in the middle. Costae are obsolete; *m. c.* and *ar. c.* are feebly present, but *v. ap.* is completely reduced. Copulatory piece (Fig. 10, J) is narrowly elongate, with a slender, acute apical process; the lateral margin is seemingly finely serrulated. Suspensoria are quite absent. Lateral lobe (Fig. 10, K) is narrow; vellum being reduced; proximal segment is touching with costa (c); only with a narrow middle apodeme (m). Distal segment (Fig. 10, L) is oblong; seta *a* is near the inner margin, *b* is on the outer margin; *c, d* are equally short and close together.

Specimens examined: GERMANY: Lübeck, 4♂ (21. VI 1974, ULLRICH det.)

***Atheta* (*Badura*) *kanagawana* BERNHAUER, 1907** Fig. 11, A-L

*Atheta* (*Datomicra*) *kanagawana* BERNHAUER, 1907

Male: Brown in ground colour, clearly shining in fore-parts and with very short erecting setae on the body. Head is a little darker than pronotum and elytra. Abdomen is slightly brighter toward the base and nearly blackish posteriorly; antennae uniformly pigmented; legs are paler excepting darker femora and coxae. Body is small, narrow and rather cylindrical in fore-parts. Head is relatively thick dorso-ventrally and narrowly flat along the middle and no depression in the middle. Post genae well developed and fluently rounded in the full length. Cervical carina is forked. Integument bears dense distinct granules, those on the frontal region are reduced and nearly disappeared. Eyes are rather small and feebly produced. Antenna is long, stout and faintly dilated distally; the last segment is markedly long, as long as three preceding ones together. Ratio of segments is as I $6\times3.2$; II $6\times2.8$; III $4\times3$; IV $3\times3$–X $4\times4.5$; XI $10\times4.2$. Labrum (Fig. 11, A) is emarginate in front, and with only 1+1 secondary setae. *a*-sensilla of labral margin (Fig. 11, B) is setaceous, but strongly reduced; *b* is inconspicuous. Right mandible with a pointed molar tooth. Labial palpus (Fig. 11, C) has *α*-setula normally developed, while *β* and *δ* are nearly completely reduced; *γ* is on the same level with *b; a* is posterior to *b; e* is on the level of *mp; g* is on the level of *δ*. Glossa (Fig. 11, D) is fairly elongate, forked before the middle in two narrow arms. Median area of prementum (Fig. 11, D) is narrow, not well defined and with about 5 pseudopores near apex. Lateral area has 3 pseudopores, and the setal pore is close to the anterior margin. *v*-setula of mentum (Fig. 11, E) is normally long and there are many secondary setae on the disc. Pronotum is clearly convex above, with no distinct depression in the middle. The lateral margin is nearly straight or feebly arcuate in the full length and with very short erecting setae. Integument is similarly granulate as on the head; the interspace is apparently smooth and shining. Elytra are short, not emarginate postero-externally and more roughly sculptured than on the pronotum. Abdomen is finely punctured. Macrochaetal arrangement is as 01–12–13–13–13–23. Terg. VIII (Fig. 11, F) is truncate in the middle of the posteror margin, where it is feebly

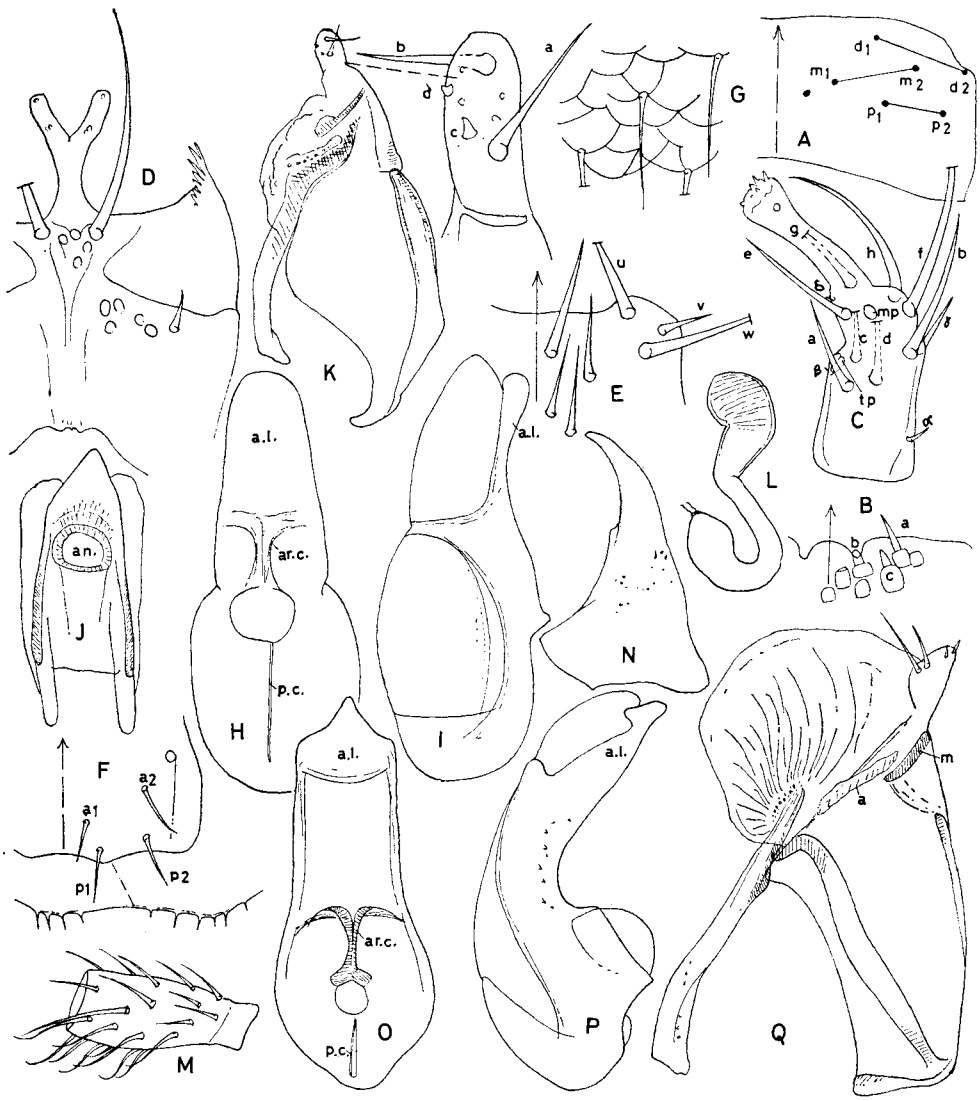


Fig. 11. *Atheta* (*Badura*) *kanagawana* Bernhauer from Kyoto. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** Terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Copulatory piece; **K,** Lateral lobe; **L,** Spermatheca. *Atheta* (*Badura*) *tokiokai* K. Sawada from Amakusa. **M,** ♂ ant. segm. III; **N,** Right mandible; **O, P,** Median lobe; **Q,** Lateral lobe.

emarginate and minutely serrulate. Microsculpture (Fig. 11, G) is of imbricate pattern. Median lobe of aedeagus (Fig. 11, H, I) is 0.23 mm long; in lateral view the apical lobe is fluently concave along the middle and gently bent at apex; in ventral view the apical lobe is long, gradually narrowed to an obtuse apex and constricted at the extreme base. Costa is rudimentary; only *m. c.* and *ar. c.* may be discernible;

*v. ap.* is reduced, while *p. c.* is more or less developed. Copulatory piece (Fig. 11, J) is feeble having a triangular apical process and with a narrow, hyaline process (*p*) posteriorly. Lateral lobe (Fig. 11, K) has the proximal segment very short, while the medial segment is long, fairly produced to have a hooked posterior process (*h*), but middle apodeme is present. vellum is strongly reduced. The elongate distal segment is very small for the corpus, setae *a, b* are subequally long, while *c, d* are converted to two minute processes discerbible only under great magnification.

Length: 1.50 mm (Head long 0.24 mm × wide 0.24 mm; pronotum 0.28 mm × 0.30 mm; elytra 0.24 mm × 0.38 mm).

Female: Stern. VIII is more broadly rounded than the male, but neither emarginate nor incised in the middle. Spermatheca (Fig. 11, L) is half coiled with fairly expanded apical portion of the duct; the bursa is large, oblong and without distinct umbilicus.

Specimens examined: SHIGA: Imazu, 1♂ (13. V 1973, R. Yosii leg.). KYOTO: Mt. Hiei 2♂ (20. VI 1971, R. Yosii et K. Sawada leg.); Takaraike, 1♂ (10. V 1971, K. Sawada leg.); Midorogaike, 1♀ (3.IX 1971, K. Sawada leg.); Imperial Palace, 2♂, 1♀ (24. VIII 1971, R. Yosii leg.). OSAKA: Takatsuki, 1♂, 1♀ (5. VII 1974, K. Sawada leg.)

As far as the external features are concerned the type specimen from Kanagawa (male) agrees well with our specimens. From the European *A. macrocera* (Th.) it is easily distinguished by broader copulatory piece and reduced *c, d* setae of the lateral lobe. Besides, $\beta$, $\delta$-setulae of labial palpus are very small.

***Atheta* (*Badura*) *tokiokai* (K. Sawada, 1971)** Fig. 11, M-Q

*Ischnopoda* (*Dinaraea*) *tokiokai* K. Sawada, 1971

Additional notes: Male: Ant. segm. II to IV have many curling and distally hooked setae (Fig. 11, M). Mandibles are fairly narrow, tapering distally to form an acute apex; right mandible (Fig. 11, N) has a low molar tooth. Cervical carina forked. Arrangement of macrosetae is as 01–13–13–13–23–33; intermediate setae *p*-2 of terg. II to IV are rather inside from the margin. Apical lobe of aedeagus (Fig. 11, O, P) has a well defined incision near the apex as characteristic to this species. Costa *ar. c.* (Fig. 11, O) are completely confluent to each other forming a high projection on its full length; *v. ap.* is narrow. Proximal segment of lateral lobe (Fig. 11, Q) has the prolongation anterior to the articulation; middle apodeme (*m*) is inconspicuous and with a narrow additonal apodeme (*a*); vellum is normal; distal segment is oblong, rather short for the corpus.

Female: No special curling setae are present on the basal segments of antennae.

New Specimens examined: HOKKAIDO: Cape Erimo, 12♂, 14♀ (2. VIII 1971, R. Yosii leg.), SHIZUOKA: Atami, 1♀ (29. V 1970, R. Yosii leg.), KYOTO: Cape Kyogamisaki, 6♂, 8♀ (9. VI 1974, R. Yosii leg.), KUMAMOTO: Amakusa, 2♂, 2♀ (23. VIII 1974, R. Yosii leg.)

This halophilous species is peculiar having the labial palpus with dilated third

segment. That the antennal setae show sexual dimorphism is noteworthy within *Badura* and its allies.

## Subgenus *Notothecta* Thomson, 1858

Typus: *Aleochara flavipes* Gravenhorst, 1806

In this subgenus the chaetal arrangement is not different from *Badura*, but a pair of suspensoria is fully developed and often apically sclerotized. Secondary setae of labrum are numerous. From four setae of the distal segment of the lateral

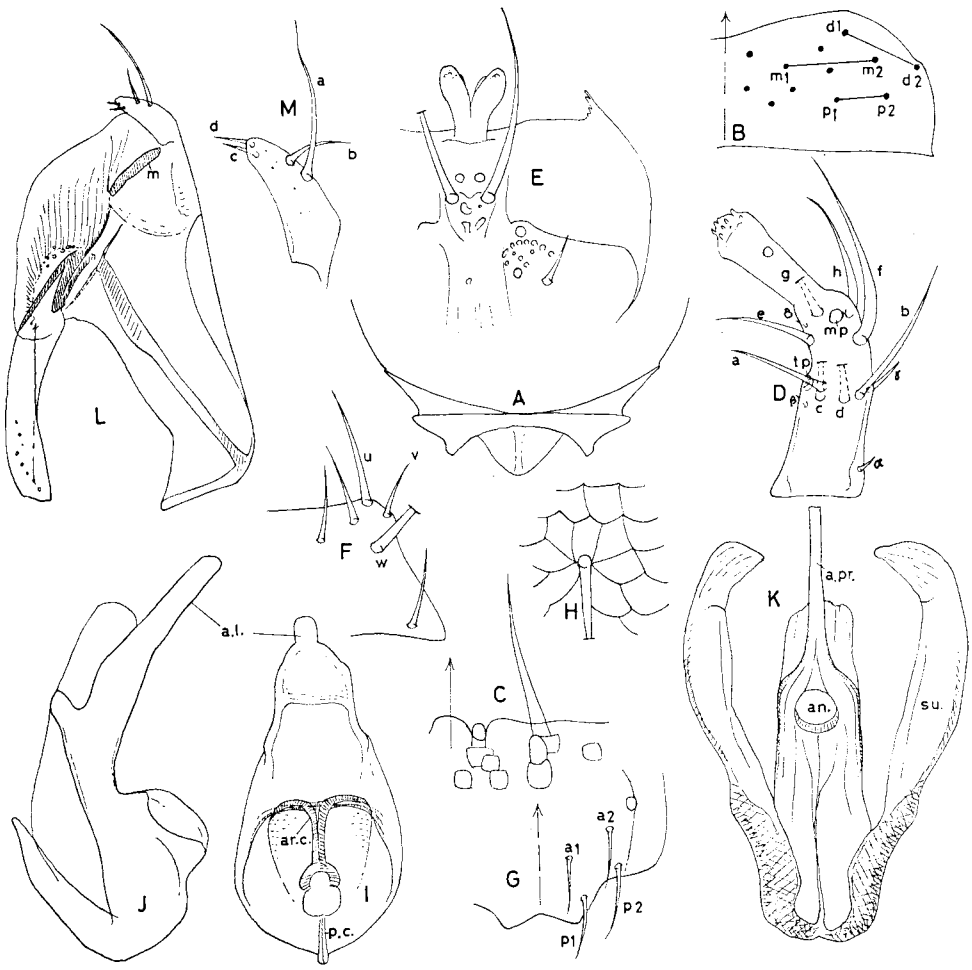


Fig. 12. *Atheta* (*Notothecta*) *flavipes* (Gravenhorst) from GERMANY. **A.** Cervical carina (dorsal view); **B,** Labral chaetotaxy; **C,** Labral margin; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G, H,** Terg. VIII & its microsculpture; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L, M,** Lateral lobe and its distal segment.

lobe the seta *a* is strongly developed, which would be the typical character of *Notothecta*. To this subgenus may be included some European species, which were hitherto placed in *Atheta* (*s. str.*) and separated from it by LOHSE 1974 to his Mixed Group II. They are *A. pallidicornis* TH., *A. gagatina* BAUDI, *A. sodalis* (ER.) etc. and *Mycota* M.R., 1873 becomes a junior synonym of *Notothecta* TH.

***Atheta* (*Notothecta*) *flavipes* (GRAVENHORST, 1806)** Fig. 12

Male: Cervical carina (Fig. 12, A) is forked. Labrum (Fig. 12, B) is strongly transverse and emarginate in front; proximal row is much shorter than others; seta *m*-2 is not on the distal row and there are 6+6 secondary setae. *a*-sensilla of labral margin (Fig. 12, C) is long, setaceous, *c* is blunt on apex and much broader than *b*. On labial palpus (Fig. 12, D) *a* is on the level of *b* and *mp* is much more anterior, to the level of *e* and *f*. Glossa (Fig. 12, E) is normal; median area of prementum has a few pseudopores distally; on lateral area the anterior real pore is close to the margin, but the posterior one is remote from the median area and there are up to 13 pseudopores. *v*-setula of mentum (Fig. 12, F) is well developed. Macrochaetal arrangement is as 01–12–12–12–23–44. Terg. VIII (Fig. 12, G) has 4+4 subequally long macrosetae; *a*-2 is close to the stigma and microsculpture (Fig. 12, H) is coarse reticular pattern. Median lobe of aedeagus (Fig. 12, I.J.) is 0.69 mm long, robust and abruptly convex basally; apical lobe is fairly long and straight, with a narrow, rounded apex; all costae are conspicuous; *m. c.* is strong and entire; *ar. c.* are completely overlapped by *m. c.* and *v. ap.* Copulatory piece (Fig. 12, K) is narrowly elongate, with a long, slender apical process, which is abruptly expanded before the annellus, the latter is small for the corpus. Suspensorium is well developed, much prolonged to form a large uncus at apex and firmly fused with the opposite pair at the basis. Lateral lobe (Fig. 12, L) has well developed vellum; in medial segment the articulation (*a*) and the junction to costa (*c*) are separete from each other; Middle apodeme is not modified. From the distal segment *a* is much longer than the length of the segment, *b* is shorter than *a* and *c, d* are small.

Specimens examined: GERMANY: 2♂ (15. XI 1969, PUTHZ det.)

***Atheta* (*Notothecta*) *pallidicornis* (THOMSON, 1856)** Fig. 13

Male: On labrum (Fig. 13, A) medial row is closer to the distal row than to the proximal row and with up to 3+3 secondary setae. *a*-sensilla of labral margin (Fig. 13, B) is long, setaceous and *b, c* are inconspicuous. Right mandible has poorly developed molar tooth. *γ*-setula of labial palpus (Fig. 13, C) is posterior to *b* and on the same level with *β*, *e* is close to *mp; f* is between *b* and *h*. Glossa (Fig. 13, D) is normally long. Median area of prementum is narrow, constricted at the middle and with some 8 irregular pseudopores anteriorly. In lateral area the anterior real pore is marginal, the posterior one is distal and they are far remote; pseudopores are up to 13. *v*-setula of mentum is normal. Macrochaetal arrangement is as 01–12–12–12–13–34–. Terg. VIII (Fig. 13, E) has 4+4 relatively short macrosetae and

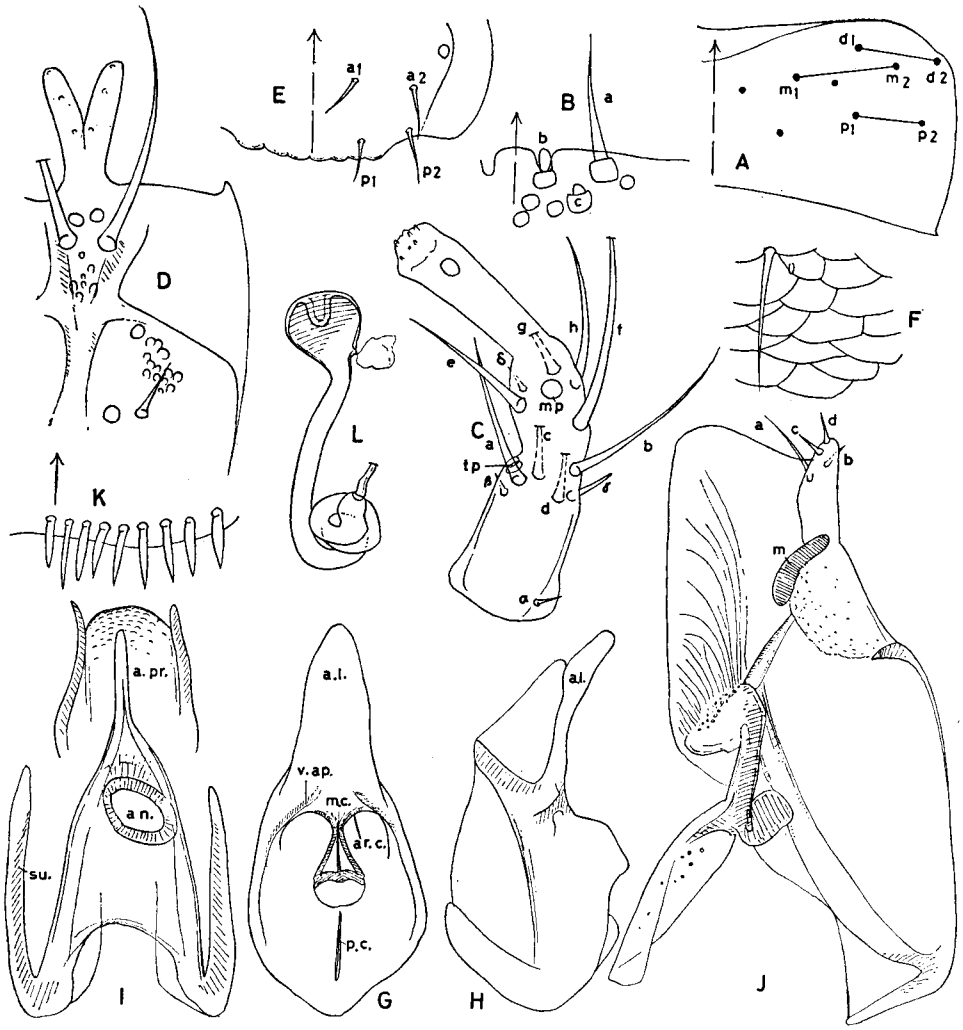


Fig. 13. *Atheta* (*Notothecta*) *pallidicornis* (Thomson) from Austria. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E, F,** ♂, terg. VIII & its microsculpture; **G, H,** Median lobe; **I,** Inner armature of aedeagus; **J,** Lateral lobe, **K,** ♂, marginal setae of stern. VIII; **L,** Spermatheca.

*a*-2 is remote from the stigma. Microsculpture of the middle (Fig. 13, F) is transverse reticular pattern. Median lobe (Fig. 13, G, H) of aedeagus is 0.42 mm. long and strongly convex in the middle; apical lobe is normally long and gradually bent downwards in lateral view. *m. c.* is entire, but fine; *ar. c.* are strongly approximate; *v. ap.* is narrow and nearly completely evanescent in the middle. Copulatory piece (Fig. 13, I) is with a long apical process, narrowly prolonged apically. Suspensorium is well pigmented and reaching the level of annellus. Under the corpus there is a broadly rounded lobe, which would be the median apophysis. Middle apodeme of

the lateral lobe (*m*) is simply narrow and proximal segment is much prolonged beyond the articulation of the medial segment; vellum is developed. Distal segment is short; seta *a* is markedly longer than others.

Female: Stern. VIII is short, with a subtruncate apical margin fairly fringed with dense, flat marginal setae (Fig. 13, K). Spermatheca (Fig. 13, L) has a small compact coil and a bulbous umbilicus.

Specimens examined: AUSTRIA: Lainzer Tiergarten, 1♂, 1♀ (20. IV 1952, MALICKY leg., PUTHZ det.)

Short notes to other species of the European *Nototthecta* are as follows:

***Atheta* (*Nototthecta*) *sodalis* (ERICHSON, 1837)** Fig. 14, A-E

Macrochaetal arrangement as 01–12–22–23–23–34–. Median lobe of aedeagus (Fig. 14, A,B) is convex behind; apical lobe is narrowly prolonged, clearly bent down

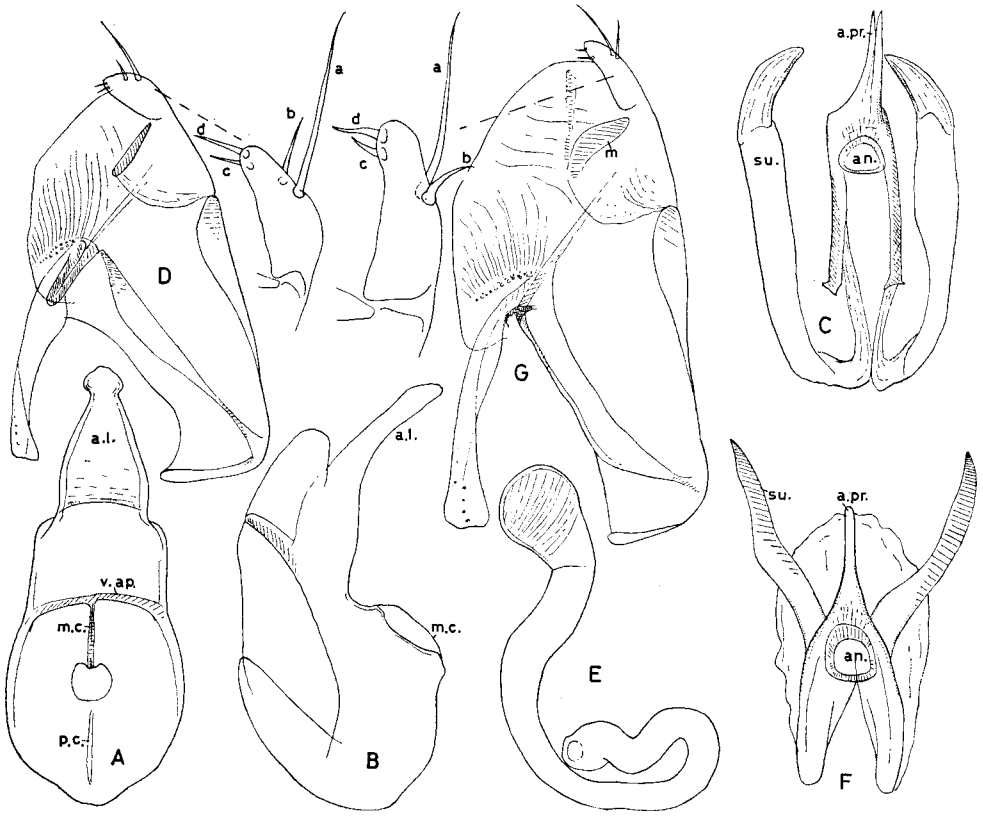


Fig. 14. *Atheta* (*Nototthecta*) *sodalis* (ERICHSON) from Lübeck. **A, B,** Median lobe; **C,** Copulatory piece; **D,** Lateral lobe, **E,** Spermatheca. *Atheta* (*Nototthecta*) *gagatina* (BAUDI) from Lübeck. **F,** Copulatory piece; **G,** Lateral lobe.

in the middle and expanded at apex. Copulatory piece (Fig. 14, C) is narrowly elongate and with a spiniform apical process. Suspensorium is long, narrow and with well chitinized apical uncus. Distal segment of lateral lobe (Fig. 14, D) has very long seta *a* and others are equally short. Spermatheca (Fig. 14, E) has no umbilicus in the bursa. GERMANY: Lübeck, 1♂, 1♀ (26. VII 1942, Benick det.)

***Atheta* (*Notothecta*) *gagatina* (Baudi, 1848)** Fig. 14, F-G

Macrochaetal arrangement is as 01–12–12–13–13–13–34–. Apical process of the copulatory piece ((Fig. 14, F)) is elongate and blunt ending; suspensorium is diverging distally, reaching far beyond the corpus and increasingly sclerotized to form an apical uncus. Distal segment of lateral lobe (Fig. 14, G) is narrowly elongate; seta *a* is longer than *b*, but on the same level; *c, d* are short and apically located. Spermatheca is without umbilicus. GERMANY: Lübeck, 1♂, 1♀ (24. IX 1942, Benick det.).

***Atheta* (*Notothecta*) *reitteriana* Bernhauer, 1938** Fig. 15

*Atheta* (*Dochmonota*) *sauteri* Berhnauer, 1907, nom. preocc.

*Atheta* (*Acrotona*) *reitteriana* Bernhauer, 1938.

Male: Ground colour dark brown, weakly shining in fore-parts and with dense but very short pubescence. Head and pronotum similarly dark brown, while elytra are brownish and with reddish tinge; abdomen is nearly black, the base is obscurely paler; antennae are brown, indistinctly bright on basal segments; legs brown. Body is robust, more or less narrowed in front and behind. Head is gently convex above, with a small faint depression of vertex. Eyes are large, much longer than the postgenae in diameter. Antenna is dilated distally, with a robust ultimate segment; ratio of them as I 9×4.3 : II 6.5×3.7 : III 6×3.5 : IV 4×3.7–X 4×5.8 : XI 10×6. Labrum (Fig. 15, A) is emarginate in front; medial row is the shortest; *m*-2 is separated from distal row; *p*-2 is anterior to the level of *p*-1 and with up to 10+10 secondary setae. *a*-sensilla of labral margin (Fig. 15, B) is setaceous, converging; *b* is inconspicuous, *c* is normally developed. Segm. I of labial palpus (Fig. 15, C) is dilated basally, much shorter than III, which is nearly parallel; *α*-setula is inside the margin; *β*, *δ* are strongly reduced to the minute setulae, but *γ* is developed and close to the level of *f; a* is on the same level with *b; e* is close to the level of *mp;* some 2 pores are present at the inner corner of segm. I. Glossa (Fig. 15, D) is long, narrow and forked. Median area of prementum (Fig. 15, D) is moderately broad, with ca. 8 scattered pseudopores. Lateral area has some 10 pseudopores. *v*-setula of mentum (Fig. 15, E) is long, posterior to the level of *u*. Pronotum is evenly convex above, with a faint depression before the base consisting of a pair of punctiform depressions. The side is arcuate in its full length and the postero-external corner is effaced and not projected. The surface is covered with dense, distinct granules and with dense microsculpture; lateral erecting setae are subequally short. Elytron is dilated behind, gently emarginate postero-externally. Macrochaetal arrangement is as

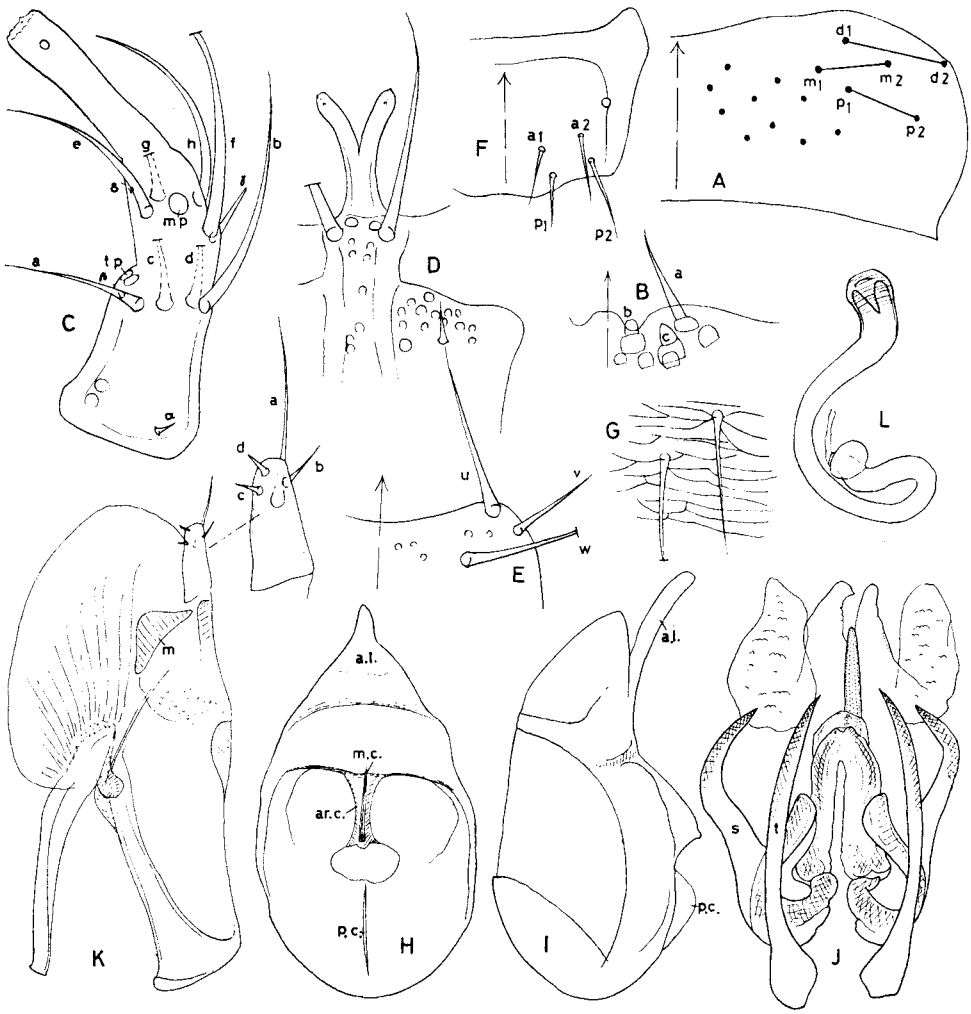


Fig. 15. *Atheta* (*Nototheca*) *reitteriana* BERNHAUER, from Izumi-Katsuragi. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K,** Lateral lobe; **L.,** spermatheca.

01–12–12–13–14–36–. Posterior margin of terg. VIII (Fig. 15, F) is shallowly emarginate in the middle; seta *a*-2 is remote from the stigma and *p*-1, *p*-2 are advanced. Microsculpture (Fig. 15, G) is transverse in pattern. Median lobe is (Fig. 15, H, I) 0.42 mm long; apical lobe is long, narrow and gradually bending downwards, *ar. c.* are approximate in the middle and then broadly recurved distally; *m. c.* is entire, while *v. ap.* is poorly differentiated; *p. c.* has a high projection. Inner armature (Fig. 15, J) is extraordianrily complicated.; copulatory piece is thick basally and narrowly prolonged distally to form a beak-like apical process, which is strongly

bent down anteroirly. Suspensorium (*s*) is strongly chitinized, curved and with an obtuse arm at about the middle. Besides, there is one another pair of supplementary suspensoria (*t*), which are narrow, styliform and located along the corpus. Proximal segment of lateral lobe (Fig. 15, K) has a sclerite covering the articulation; medial segment is constricted before the posterior end and has a triangular middle apodeme (*m*) and well developed vellum. Distal segment is narrowly elongate; seta *a* is much longer than *b*, while *c. d.* are reduced to short setulae.

Length. c. 3.3 mm (Head long 0.44 mm×wide 0.47 mm; pronotum 0.47 mm; ×0.63 mm; elytra 0.47 mm×0.82 mm).

Female: Head is without median depression. Terg. VIII is not emarginate, but truncate behind. Spermatheca (Fig. 15, M) is long, strongly contorted behind and ending in a bulbous extremity; the bursa is short and with a narrow umbilicus.

Specimens examined: IWATE: Iwaizumi, 1♀ (28. III 1969, R. Yosii leg.); Chusonji, 1♂, 1♀ (21. VI 1971, R. Yosii leg.). KANAGAWA: Yokohama, 2♂, 1♀ (10. XII 1973, R. Yosii leg.); Sagami-Ooyama, 2♂, 3♀ (20. IV 1973, K. Sawada leg.) SHIGA: Kusatsu, 48 ex. (21. IV 1972, R. Yosii leg.); Wani, 6♂, 4♀ (21. X 1971, K. Sawada leg.) KYOTO: Kyoto City, 8♂, 10♀ (31. XII 1971, R. Yosii leg); Kyoto Univ. Campus, 2♂, 4♀ (19. X 1971, K. Sawada leg.); Mt. Hiei, 3♂ (18. VI 1971, K. Sawada) etc. NARA: Kasuga, 6♂, 8♀ (10. VI 1972, K. Sawada leg.); Asuka, 4♂, 4♀ (1. IV 1973, K. Sawada leg.); Ikoma, 6♂, 8♀ (24. III 1973, K. Sawada leg.) OSAKA: Minoo, 2♂, 1♀ (20. X 1973, R. Yosii leg.); Takatsuki, 4♂, 4♀ (13. X 1970, K. Sawada leg.); Kongozan, 1♂ (14. XI 1972, K. Sawada leg.); Izumi-Katsuragi, 30 ex. (3. III 1973, K. Sawada leg.); Inunakiyama, 1♂, 3♀ (10. X 1973, R. Yosii leg.), HYOGO: Takarazuka, 1♀ (21. IV 1973, R. Yosii leg.) WAKAYAMA: Tago, 1♀ (22. VIII 1971, K. Sawada leg.) OKAYAMA: Mitsuishi, 1♀ (21. V 1971, R. Yosii leg.); Kurashiki, 6♂, 8♀ (17. IV 1972, K. Sawada leg.) KOCHI: Muroto, 1♀ (6. IV 1973, R. Yosii leg.); EHIME: Kuma, 2♂, 3♀ (18. X 1973, R. Yosii leg.). FUKUOKA: Hakata, 6♂, 4♀ (18. IV 1972, K. Sawada leg.); Dazaifu, 28 ex. (17. IV 1972, R. Yosii leg.); Kurume 6♂, 4♀ (15. IV 1972, R. Yosii leg.) KAGOSHIMA: Satamisaki, 1♂ (28. III 1971, R. Yosii leg.)

Distribution: Japan, China, Formosa (Cameron, 1949).

The species is very common in Japan and is peculiar with its complex inner armature of aedeagus. The type series of *A. reitteriana* from N.W. China and Japan is concordant with these new specimens in all these respects. The type specimen of *A. sauteri* Bh., 1907 is a male from Kanagawa, which is identical with *A. reitteriana*, but as this name is already preoccupied by *Notothecta sauteri* Seidlitz, 1874, it must not be used.

***Atheta* (*Notothecta*) *longisetosa* (K. Sawada, 1970)** Fig. 16, A, B

*Ischnopoda* (*Coproceramius*) *longisetosa* K. Sawada, 1970

Additional notes: Secondary setae of labrum were enumerated as 12+12 in

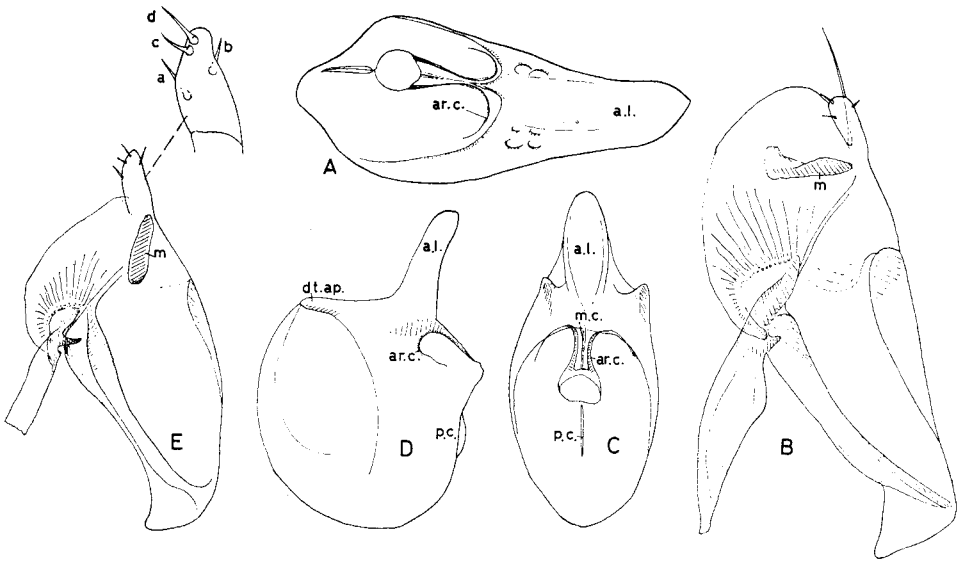


Fig. 16. *Atheta* (*Notothecta*) *longisetosa* (K. SAWADA); type: **A,** Median lobe; **B,** Lateral lobe. *Atheta* (*Notothecta?*) *punctifrons* (K. SAWADA), type: **C, D,** Median lobe; **E,** Lateral lobe.

previous paper, but they are 8+7 in reality. Lateral erecting setae of pronotum are subequally short and pubescence is postero-externally directed. Macrochaetal arrangement is as 01–12–12–13–13–34–. Medial setae of terg. III, IV are fairly advanced. On median lobe (Fig. 16, A) *ar. c.* are narrowly separating to each other and fairly approximate before the middle; *m. c.* is indistinct; *v. ap.* is entire, but not well developed; *p. c.* has a light projection; some round markings are present before the ventral apodeme. Proximal segment of lateral lobe (Fig. 16, B) is elongate and without additional apodeme; vellum is normally developed and with a pigmented prolongation (*p*) at the base; distal segment is rather short.

No other specimen than the type from Shiga-Heights, Pref. Nagano.

The species is characteristic by slender glossa, narrowly prolonged copulatroy piece and emormously long *a*-seta of the lateral lobe. It must be placed in *Notothecta* by the macrochaetal arrangement of abdominal tergites. From the structure of the inner armature etc., it must be a near relative of *A. sauteri* BH.

### ***Atheta* (*Notothecta* ?) *punctifrons* (K. SAWADA, 1970)** Fig. 16, C-E

*Ischnopoda* (*Plataraea*) *punctifrons* K. SAWADA, 1970

Additional notes: Head is roughly punctured. Antennal segments are fairly transverse and with a short terminal segment. Lacinia of maxilla is without dilation of the inner side. Cervical carina of head capsule is typically forked. Pronotum is more coarsely punctured than on the head; microsculpture is hardly visible; lateral erecting setae are normally long; median pubescence is posteriorly directed. Macro-

chaetal arrangement is as 01–22–22–23–23–343–, where the arrangement of abd. terg. VII is anormal and terg. VIII has 6+6 macrosetae. Median lobe (Fig. 16, C,D) has costa *ar. c.* lightly separating from each other and approximate in the middle; *m. c.* is entire, but weaker toward the base; *v. ap.* is broad, well developed throughout. Lateral lobe of aedeagus (Fig. 16, E) has the broad middle apodeme (*m*) and vellum is small for the corpus. Distal segment has seta *b* shorter than *a*.

Specimens examined: No further materials than the type from Shiga-Heights, Pref. Nagano.

The position of this species is somewhat puzzling. From the chaetal arrangement it belongs to *Notothecta* group without doubt. As the cervical carina is divided and forked, it would belong to subgenus *Notothecta*, but the lacinia is without dilation of the inner side as in case of *Dinaraea*. It is probably an isolated form nearly related to *Notothecta*.

## Subgenus *Chaetida* Mulsant et Rey, 1873

Typus: *Aleochara longicornis* Gravenhorst, 1802

In *A. longicornis* (Gr.) and other species hitherto included in *Chaetida* the body setae are strongly developed, but as the crucial character of the subgenus the structure of abd. terg. XI may be adopted. The lateral area of this segment is well developed, heavily beset with strong, elongate setae and prolonged posteriorly, surpassing the hind margin of the tergite (Fig. 17, H). In the inner armature of male and in chaetal arrangement it is all the same with *Notothecta* from which it is apparently derived.

### *Atheta* (*Chaetida*) *longicornis* (Gravenhorst, 1802) Fig. 17, A-N

Male: Labrum (Fig. 17, A) has the proximal row as long as the distal one and with 2+2 secondary setae. *a*-sensilla of labral margin (Fig. 17, B) is short; *b* is normal and *c* is inconspicuous. Mandibles are tapering distally to form a narrow, elongate apex; right mandible (Fig. 17, C) has a well defined molar tooth. Segm. III of labial palpus (Fig. 17, D) is as long as I and dilated apically; $\gamma$-setula is just posterior to *b*; $\delta$ is close to the level of *h*; *a* is anterior to *b*; *f* is separating from *mp*. Glossa (Fig. 17, E) is normal. Median area of prementum is moderately broad and with more than 10 pseudopores. In lateral area the posterior real pore is close to the median area. Macrochaetal arrangement is as 01–12–12–13–13–34–. From 4+4 macrosetae of terg. VIII (Fig. 17, F) *a*-2 is widely separating from stigma. Microsculpture of the tergite (Fig. 17, G) is fairly transverse. Each side of the posterior margin of terg. XI (Fig. 17, H) is clearly produced and provided with many long, black setae. Median lobe of aedeagus (Fig. 17, I, J) is 0.37 mm long; apical lobe is as long as the corpus. Costa *ar. c.* are widely remote from each other and recurved to form the well sclerotized and pigmented plates (*p*). *m. c.* is entire; *v. ap.* is normally developed. Copulatory piece (Fig. 17, K) is narrowly elongate and with a long apical process; suspensorium is membraneous and reaching the level of annellus; paramedian apophyses are pigmented paired lobes guarding the copulatory piece.

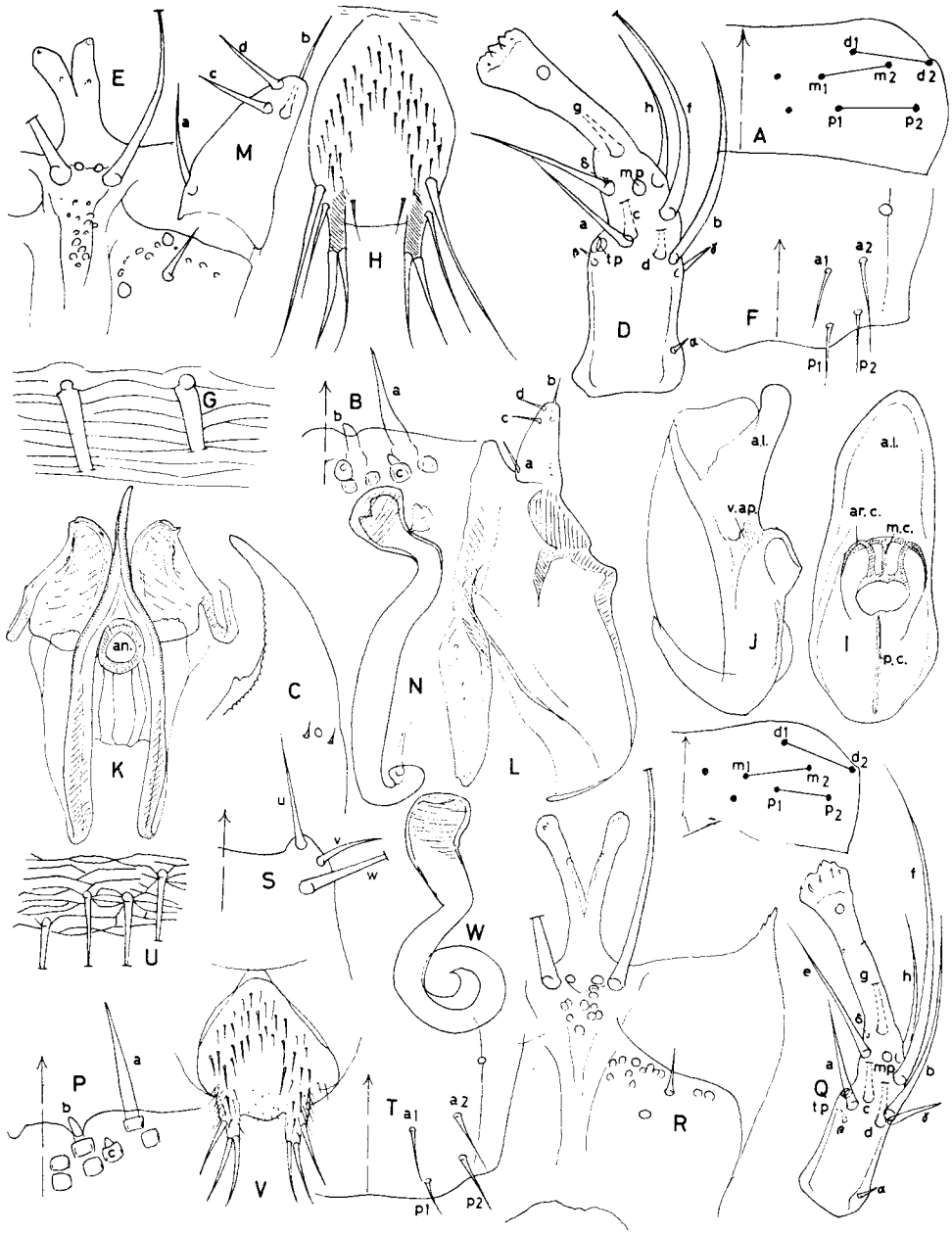


Fig. 17. *Atheta* (*Chaetida*) *longicornis* (GRAVENHORST) from Thür (♂) and Corsica (♀). **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F, G,** ♂ terg. VIII & its microsculpture; **H,** Terg. IX; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L, M,** Lateral lobe & its distal segment; **N,** Spermatheca. *Atheta* (*Chaetida*) *subasperata* BERNHAUER from Iwate. **O;** Labral chaetotaxy; **P,** Labral margin; **Q,** Labial palpus; **R,** Glossa & prementum; **S,** Mentum; **T, U,** ♀ terg. VIII D its microsculpture; **V,** Terg. IX; **W,** Spermatheca.

Lateral lobe (Fig. 17, L) is modified; the proximal segment has a narrow prolongation (*c*); vellum is not dilated and narrow; middle apodeme (*m*) is broad and well pigmented and with an additional apodeme; There is a prominent thickening (*t*) along the outer margin of the medial segment giving a peculiar appearance to the lateral lobe. Distal segment (Fig. 17, M) is narrowed distally; *a* is long and basal; *b* is preapical and subequal to *a; c, d* are standing close together near the end.

Female: Spermatheca (Fig. 17, N) is nearly straight, shortly hooked at the end; bursa is short, constricted and with a small umbilicus.

Specimens examined: SWITZERLAND: Thür, 1♂ (21. V 1961, Puthz leg., Benick det.); FRANCE: Corsica, 1♀ (24. XII 1974, R. Yosii leg.)

***Atheta* (*Chaetida*) *subasperata* Bernhauer, 1907** Fig. 17, O-W

Female: Brownish in ground colour, weakly shining on fore-parts. Head is nearly black, pronotum is brownish and elytra are more or less reddish brown. Abdomen is mostly dark brown, but the posterior one-third of each tergite is clearly rufescent. Antennae brown, with 2 paler basal segments. Legs brighter. Head is small for the corpus, evenly convex above and without depression in the middle; integument is provided with coarse granules sparcely and also with distinct microsculpture. Eyes large, a little longer than postgenae, which are acutely constricted behind and with long setae. Antenna is fairly narrow, dilated only distally, ratio of segments as : I $11\times4.5$ : II $9\times4$ : III $9.2\times4$ : IV $5\times4.5$–X $5.5\times6$ : XI $13\times5$. Labrum (Fig. 17, O) is normally transverse; medial row is subequal to distal row; seta *m*-2 is separated from the distal row. *a*-sensilla of labral margin (Fig. 17, P) is setaceous, short and straight, *b* is curved and *c* is shorter than *b*. Mandibles are narrowly produced anteriorly; right mandible has an obsolete molar tooth, fairly separated from the inner margin by a thin plate (*p* in Fig. 17, C). Segment III of labial palpus (Fig. 17, Q) is narrowly elongate; $\beta$-setula is posterior from the level of *tp*; $\gamma$ is nearly on the level of *b*; $\delta$, *e* are on the same level with *mp*; *d* is clearly posterior to *c*. Glossa (Fig. 17, R) is markedly slender and forked from the basal one third in two narrow prolonged arms. Median area of prementum is strongly constricted posteriorly, dilated anteriorly and with about 10 pseudopores. Lateral area is with ca. 11 pseudopores and setal pore is located marginally. *v*-setula of mentum (Fig. 17, S) is well developed and ca. 12 thick setae are present on the mentum., Pronotum is evenly convex above, narrowly depressed in the middle and slightly converging anteriorly; the sides bear long, black erecting setae. the pubescence along the middle is recumbent to the opposite direction in anterior one-third and directed posteriorly on other parts (Type III in Höeg, 1945). Elytra are convex above, slightly emarginate postero-externally and more coarsely sculptured than pronotum. Humeral region has a long, black seta. Abdomen is with black, stout setae laterally and macrochaetal arrangement is as 01–12–13–13–13–33–. Terg. VIII (Fig. 17, T) is not modified and from 4+4 macrosetae *a*-2 is remote from the stigma; microsculpture in the middle (Fig. 17, U) shows transverse pattern of reticulation. Terg. IX (Fig. 17, V) has a

pair of long, black posterior processes, which are protruded beyond the margin of the tegumen and beset with ca. 4 long, black setae. Spermatheca (Fig. 17, W) is normally coiled, with a short, obtuse bursa, whose umbilicus is mostly reduced.

Male: unknown

Specimens examined: IWATE: Mt. Kuromori (on 900 m. alt.), 2♀ (24. VII 1974, R. Yosii et K. Sawada leg.). NARA: Kasuga, 1♀ (15. I 1953, G. Imadate leg.)

The species is allied to *A. longicornis* (Grav.) but differs by the shape of spermatheca and medial location of the real pore of the prementum. Besides, antennae are more slender, with much longer 4th segment and microsculpture of terg. VIII is less transverse.

Bernhauer's type from Kanagawa (Female) is alike to our examples in outlook in many respects. Peculiarly all examples at hand are females.

## Subgenus *Dinaraea* Thomson, 1858

Typus: *Homalota aequata* Erichson, 1837

Chaetal arrangement is as in *Notothecta,* but the cervical carina is not diverged (Fig. 20, G). In *Dinaraea* and *Alianta* the dilation of lacinia of maxilla is going to diminish, but whether it is poorly present or quite absent is fixed after species and not genically determined. In *D. aequata* the inner armature of male genitalia is strongly modified. *Polyota* Muls. Rey, 1874 is a synonym of *Dinaraea* as *A. angustula* (Gyll.) has the same character of *Dinaraea.* From *Alianta* it is easily distinguished by the smooth integument of abd. terg. III and IV.

### *Atheta* (*Dinaraea*) *aequata* (Erichson, 1837) Fig. 18, A-N

Male: Labrum (Fig. 18, A) is lightly emarginate in front; seta *m*-2 is close to the distal row and only with 2+2 secondary setae. *a*-sensilla of labral margin (Fig. 18, B) is normally setaceous and *b* is reduced. Mandible (Fig. 18, C) is briefly hooked at apex. On labial palpus (Fig. 18, D) $\gamma$-setula is posterior to *b; h* is on the same level with *mp*. Glossa (Fig. 18, E) is long, forked from the basal fourth in two straight arms. Median area of prementum is with ca. 7 scattered pseudopores and lateral area has some 15 of it. Mentum (Fig. 18, F) is broadly rounded antero-externally; *v*-setula is short and on the level of *u*. Cervical carina (Fig. 18, G) is not divided as characteristic to the subgenus. Macrochaetal arrangement is as 01–12–12–12–13–34–. Medial setae of terg. III to V are anteriorly advanced. Terg. VIII (Fig. 18, H) has 4+4 short macrosetae; *a*-2 is separating from the stigma; microsculpture of the middle (Fig. 18, I) is imbricate. Its posterior margin is finely quadridentate. Median lobe of aedeagus (Fig. 18, J, K) is 0.26 mm long; apical lobe is feebly bent downward and strongly constricted basally. Costa *ar. c.* are fairly approximate in the middle; *m. c.* is entire, *v. ap.* is poorly developed. Copulatory piece (Fig. 18, L) is elongate; apical process is upwardly bent at apex and corpus has a paired processes

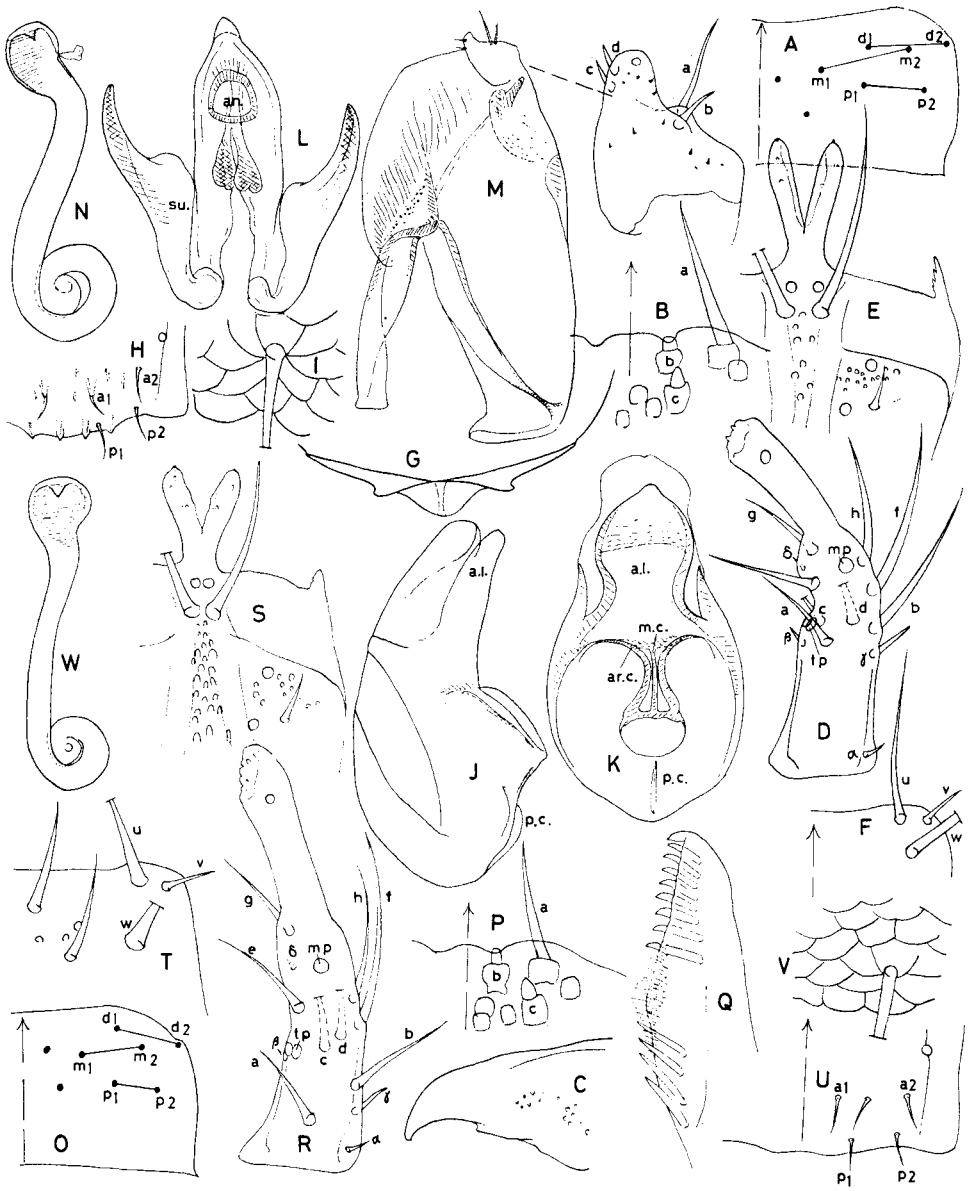


Fig. 18. *Atheta* (*Dinaraea*) *aequata* (Erichson) from Germany. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G,** Cervical carina; **H, I,** ♂ terg. VIII & its microsculpture; **J, K,** Median lobe; **L,** Inner armature of aedeagus; **M,** Lateral lobe; **N,** Spermatheca.

*Atheta* (*Dinaraea*) *angustula* (Gyllenhal) from Germany. **O,** Labral chaetotaxy; **P.** Labral margin; **Q,** Labial palpus; **R,** Glossa & prementum; **S,** Mentum; **T,** Lacinia; **U, V,** ♀ terg. VIII & its microsculpture; **W,** Spermatheca.

(*p* in Fig. 18, L) from behind the annellus; suspensorium is well pigmented, pointed, apically uncinate and reaching the level of the annellus. Proximal segment of the lateral lobe (Fig. 18, M) is well sclerotized. Middle apodeme is obscure. Vellum is normal. Distal segment is peculiarly broad and round ending; *a, b* are close together, but different in length; *c, d* are small and subapical in position. Besides, many minute setular structure of the integument are to be observed.

Female: Spermatheca (Fig. 18, N) is elongate; duct is coiled up shortly; bursa is small and with a small umbilicus.

Specimens examined: GERMANY: Bad Oldesloe, 1♂, 2♀ (15. I 1968, ULLRICH det.)

***Atheta* (*Dinaraea*) *angustula* (GYLLENHAL, 1810)** Fig. 18, O-W

*Atheta* (*Polyota*) *angustula* (GYL.): MULS. REY., 1874

Female: Labrum (Fig. 18, O) is almost truncate; all rows of setae are subequally short; *m*-2 is separated from distal row. *a*-sensilla of labral margin (Fig. 18, P) is normally long, *b* is very large and *c* is usual. Lacinia (Fig. 18, Q) of maxilla is not dilated but gradually produced and distal comb is sparcely arranged. Segm. III of labial palpus (Fig. 18, R) is longer than I; $\alpha$, $\beta$-setulae are normal in position but $\gamma$ is strikingly posterior and at the middle of the segment; *a* is far remote from *tp* and on the level of $\gamma$; *f, h* are posteriorly placed to the level of *e*. Glossa (Fig. 18, S) is forked behind the middle. Median area of prementum is broad, with many pseudopores along the middle; those of the lateral area are small and ca. 10 in number; real pores are marginally placed. *v*-setula of mentum (Fig. 18, T) is normal, close to *u*, but *w* is separated from them. Cervical carina is not forked. Abdominal macrochaetae are as 01–12–12–12–12–34–; the intermediate posterior setae of terg. III to VI are anteriorly placed. Abdominal tergites are neither punctured nor rugose. On terg. VIII (Fig. 18, U) the hind margin is subtruncate; from 5+5 macrosetae the intermediate seta is close to the level of *a*-1; microsculpture (Fig. 18, V) is imbricate. Spermatheca (Fig. 18, W) is long, shortly coiled; bursa is bulbous and possessing a small umbilicus within.

Specimen examined: GERMANY: 1♀ (15. I 1968, ULLRICH det.)

## *Alianta* THOMSON, 1858

Typus: *Homalota incana* ERICHSON, 1837

In *Alianta incana* (ER.) abd. terg. III, IV are with characteristic surface structure. There are many oblong depressions scattered all over the segment, each of which has one small seta on its anterior margin (Fig. 19, G). In the mouth parts inner margin of lacinia is without dilation and setae of its distal comb are sparcely distributed. Chaetal arrangement is 01-type, but abd. terg. VIII has 5+5 setae. Refering these peculiarities *Alianta* may be regarded a separate genus derived from *Dinaraea* as the cervical carina is not forked. Above mentioned characters are common with *Pachnida nigella* (ER.), so *Pachnida* MULS. REY, 1875 must become a junior synonym of *Alianta*.

***Alianta incana*** (ERICHSON, 1837) Fig. 19, A-J

Female: Labrum (Fig. 19, A) is not emarginate in front; distal row of setae is normally long and proximal row is very short; seta *m*-2 is on the distal row. *a*-sensilla of labral margin (Fig. 19, B) is normally long, *b* is inconspicuous. Lacinia (Fig. 19, F) of maxilla has no dilation along its inner margin and evenly produced. Distal comb is sparce. Segm. III of labial palpus (Fig. 19, C) is longer than I, the latter is abruptly produced near the level of *α*; *γ* is just behind *b; a* is apart from *tp* and at about the middle of the segment; *f* is posteriorly at the level of *tp; h* is close to the level of *e*. Median area of prementum (Fig. 19, D) is with ca. 10 pseudopores; lateral area has many pseudopores and the posterior real pore is at the border to the median area. Mentum (Fig. 19, E) is shallowly emarginate in front and with normally developed *v*-setula. Macrochaetal arrangement is as 01–12–12–12–12–34–. On anterior segments of abdomen (Fig. 19, G) there are many oblong depressions each with a recumbent seta at the anterior margin. On posterior segments they are replaced by raised punctures and coarse imbricate pattern of the microsculpture (Fig. 19, H). Posterior margin of terg. VIII (Fig. 19, I) has a strongly produced semicircular dilation with setigerous rugosity and whose apex is finely emarginate; from 5+5 major setae the intermediate one is on the same level of *p*-2 and very close to it. Spermatheca (Fig. 19, J) is hooked and half coiled; bursa is short and with a broad umbilicus.

Specimen examined: GERMANY: 1♀ (17. VI 1966, Puthz det.)

***Alianta nigella*** (ERICHSON, 1837) **comb. nov.** Fig. 19, K-S

*Pachnida nigella* (Er.): Lohse, 1974 etc.

Female: Labrum (Fig. 19, K) is nearly truncate in front; medial row is longer than proximal row; *m*-2 is on the distal row. *a*-sensilla of labral margin (Fig. 19, L) is normal and *b* is truncate on apex. Lacinia of maxilla (Fig. 19, O) is faintly produced at the middle of the inner margin. Distal comb is sparce. Segment III of labial palpus (Fig. 19, M) is as long as I; *α*-setula is normal in position; *γ* is separated from *b;* outer margin around *α* is lightly produced; *a* is posterior to the level of *γ*; *b* is on the same level with *tp; e* is within the margin and close to *mp*. Median area of prementum (Fig. 19, N) is with some pseudopores, and in lateral area the pseudopres are up to 9 and two real pores are marginal in position. Cervical carina is not divergent. Sculpture of the integument of abdominal tergites (Fig. 19, P) is much the same as in *A. incana* (Er.) and macrochaetotaxy is as 01–12–12–12–13–33. On terg. VIII (Fig. 19, Q) the presence of dense large secondary setae makes it difficult to discern the macrosetae, but probably they are 5+5. Its posterior margin is not dilated and microsculpture (Fig. 19, R) is imbricate type. Spermatheca (Fig. 19, S) is completely coiled at the end; bursa is with a slender umbilicus.

Specimens examined: GERMANY: Grönauer, 1♀ (19. XI 1969, Lohse det.), Tiefwerder, 1♀ (3. I 1961, Puthz leg., Benick det.)

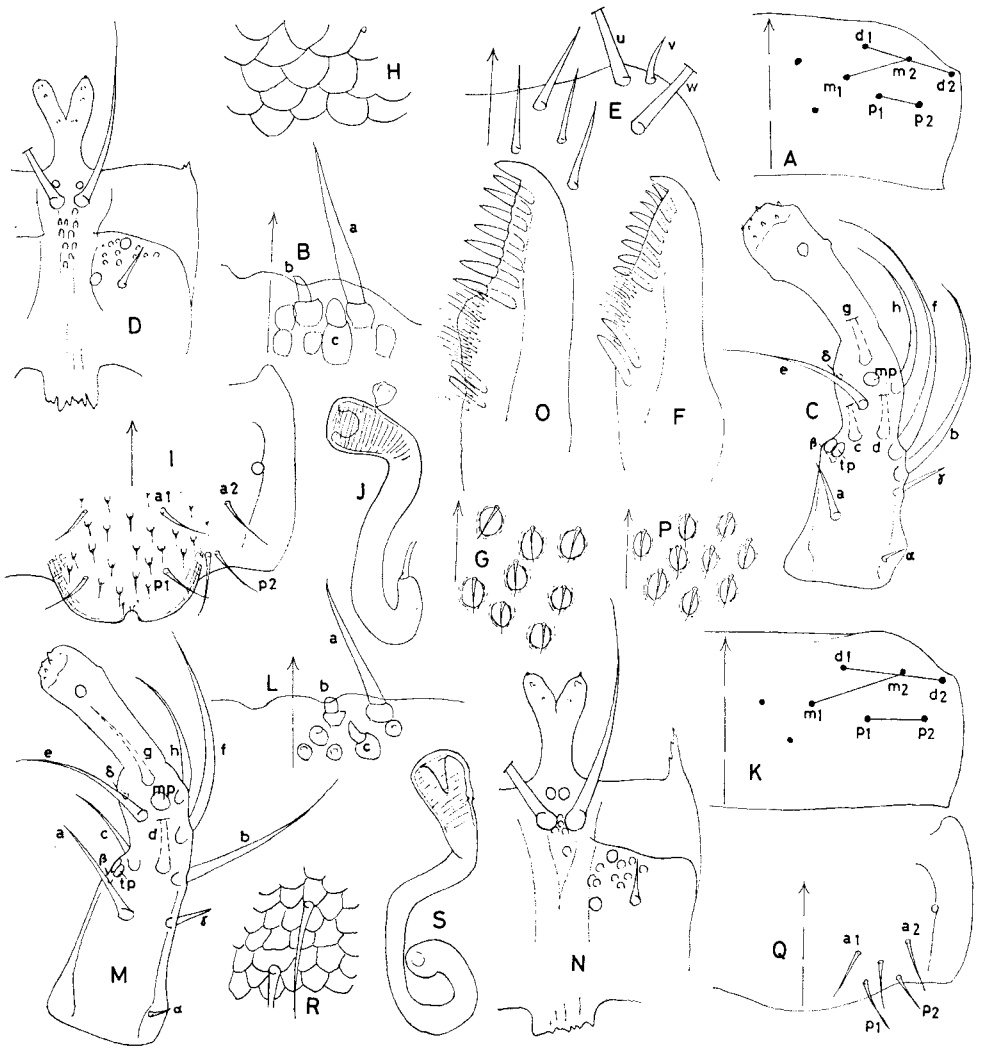


Fig. 19. *Alianta incana* (ERICHSON) from Germany. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F,** Lacinia; **G,** Setigerous depressions on terg. III; **H, I,** ♀ terg. VIII & its microsculpture; **J,** Spermatheca. *Alianta nigella* (ERICHSON) from Germany. **K,** Labral chaetotaxy; **L,** Labral margin; **M,** Labial palpus; **N,** Glossa & prementum; **O,** Lacinia; **P,** Setigerous depressions on terg. III; **Q, R,** ♀ terg. VIII & its microsculpture; **S,** Spermatheca.

Compared to *A. incana* the chaetotaxy of labial palpus and the shape of lacinia are different. Terg. VIII of female is not dilated as in *A. nigella*.

### ***Cadaverota* gen. nov.**

Typus: *Homalota cadaverina* BRISOUT, 1860

*A. cadaverina* has very peculiar mouth-parts. Its distal setae of prementum

are strong and blunt ending (Fig. 20, E), the glossa is slender, forked from the middle and each arm is slender and straight. Together with the very peculiar structure in the inner armature of male, the species is to be isolated from *Atheta* to represent a separate genus. Macrochaetal arrangement of abdominal tergites is 01-type and as cervical carina is normally divergnet, it shows a narrow relation with *Nototheca*. In Japan there is the second species of the genus which has the same type of mouthparts and inner armature.

***Cadaverota cadaverina* (Brisout, 1860) comb. nov.** Fig. 20

Male: Labrum (Fig. 20, A) is transverse; all rows subequally short; proximal row is separating; seta *m*-2 is on the distal row and with 5+5 secondary setae. *a*-sensilla of the labral margin (Fig. 20, B) is long and straight, *b* is curved to the inside; *c* is

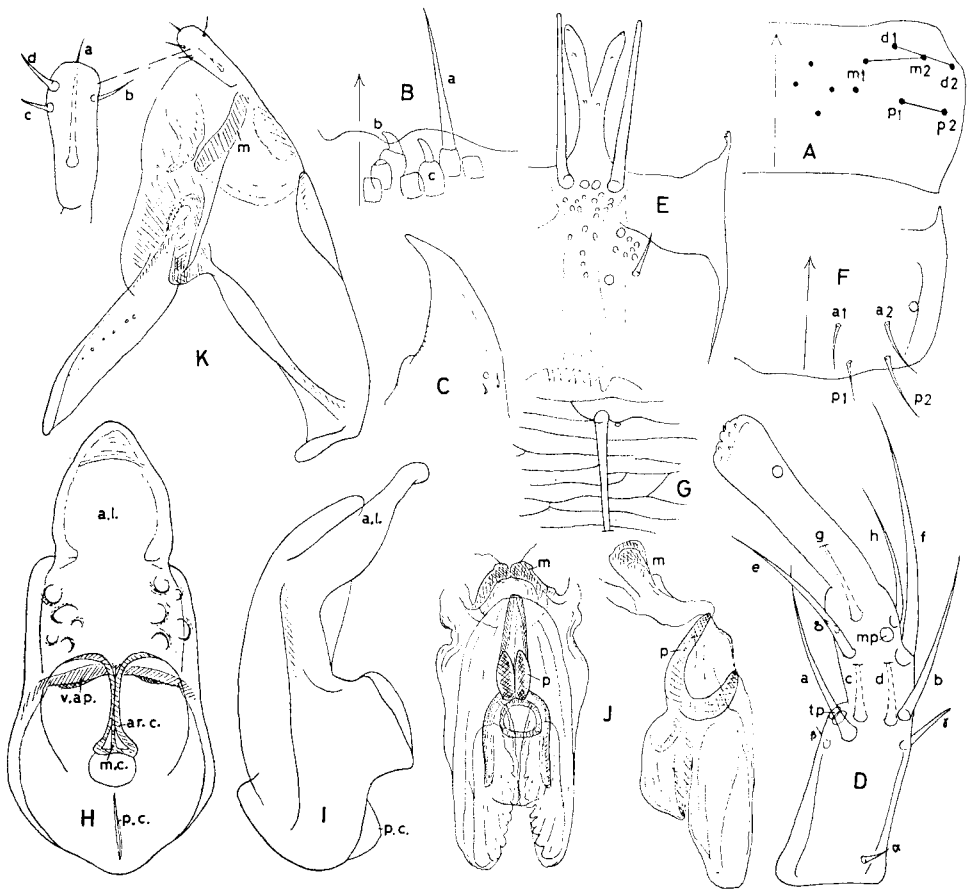


Fig. 20. *Cadaverota cadaverina* (Brisout) from Germany. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K,** Lateral lobe.

small. Mandibles normal, with briefly pointed apex and the right one (Fig. 20, C) has an obsolete intermediate notch. Labial palpus (Fig. 20, D) is long, and narrow; segm. III is longer than I; $\gamma$-setula is posterior to *b*, $\delta$ is on the same level with *h*; *e* is close to the level of *mp*. Glossa (Fig. 20, E) is very long and narrow, reaching the apex of segmf II of labial palpus and forked from the middle in two slender arms; the basal pores are standing close together. Distal setae of prementum (Fig. 20, E) are straight, not much tapering distally and their apices are subtruncate and suddenly ending. Median area of prementum is not very well defined, with about 18 scattered pseudopores, while lateral area has ca. 7 small pseudo- and real pores, the anterior real pore is located close to the median area. Macrochaetal arrangement is as 01–13–23–23–23–213–, and terg, VIII (Fig. 20, F) has 4+4 macrosetae. Microsculpture in the middle of terg. VIII (Fig. 20, G) is mostly transverse. Median lobe (Fig. 20, H, I) of aedeagus is 0.46 mm long, heavily sclerotized and pigmented; apical lobe is broadly triangular and with a notch on each side, where there is an articulation visible in lateral views. The portion behind the notch is roughly perforated with round markings. Costa *ar. c.* are completely confluent along the midlde and *m. c.* is visible only basally; *v. ap.* is well developed. Copulatory piece (Fig. 20, J) is narrowly elongate apically, but the basal part is broad, long and with large annellus close to the process. A pair of sclerotized prologation (*p*) are bending upwards. Suspensorium is almost membraneous, extending anteriorly to embrace the apical process. A chitinized median apophysis (*m*) is present. Proximal segment of lateral lobe (Fig. 20, K) is prolonged forming a looped margin to which the vellum is attached; middle apodeme (*m*) is not modified; distal segment is elongate, *a* is much longer than others and is basal in position.

Specimen examined: GERMANY: 1♂ (27. V 1959, BENICK det.)

It is peculiar that in this species the apical lobe is articulated laterally and copulatory piece is upwardly raised.

***Cadaverota shigae*** **K. SAWADA sp. n.** Fig. 21

Male: Ground colour dark brown, fore-parts are paler and shining. Antennae paler toward the base; legs paler. Body robust and parallel. Head is nearly flat above, sparcely granulated and with a minute tubercle in the middle. Eye is large, much longer than the postgena, which is arcuately constricted behind. Antennae long, reaching the posterior margin of pronotum and with ratio as : I 12×6; II 9×4.5; III 8.5×4.5; IV 6×5–X 5.5×7; XI 14×6.5. Segm. II to IV (Fig. 21, A) have fine, sinulate setae along their inner margin. On the labrum (Fig. 21, B) medial row is normally long and close to the distal row; proximal row is shorter than others; *m*-2 is very close to the distal row; 10+10 secondary setae are present. *a*-sensilla of labral margin (Fig. 21, C) is straight, *b*, *c* are curved. Segments of maxillary palpus (Fig. 21, D) is rather slender, narrow and galea has obtusely produced apex. Chaetotaxy of labial palpus (Fig. 21, E) is similar to *C. cadaverina*, but *e* in the present species is anterior to the level of *mp*, while it is posterior to *mp* in the cited species. Glossa

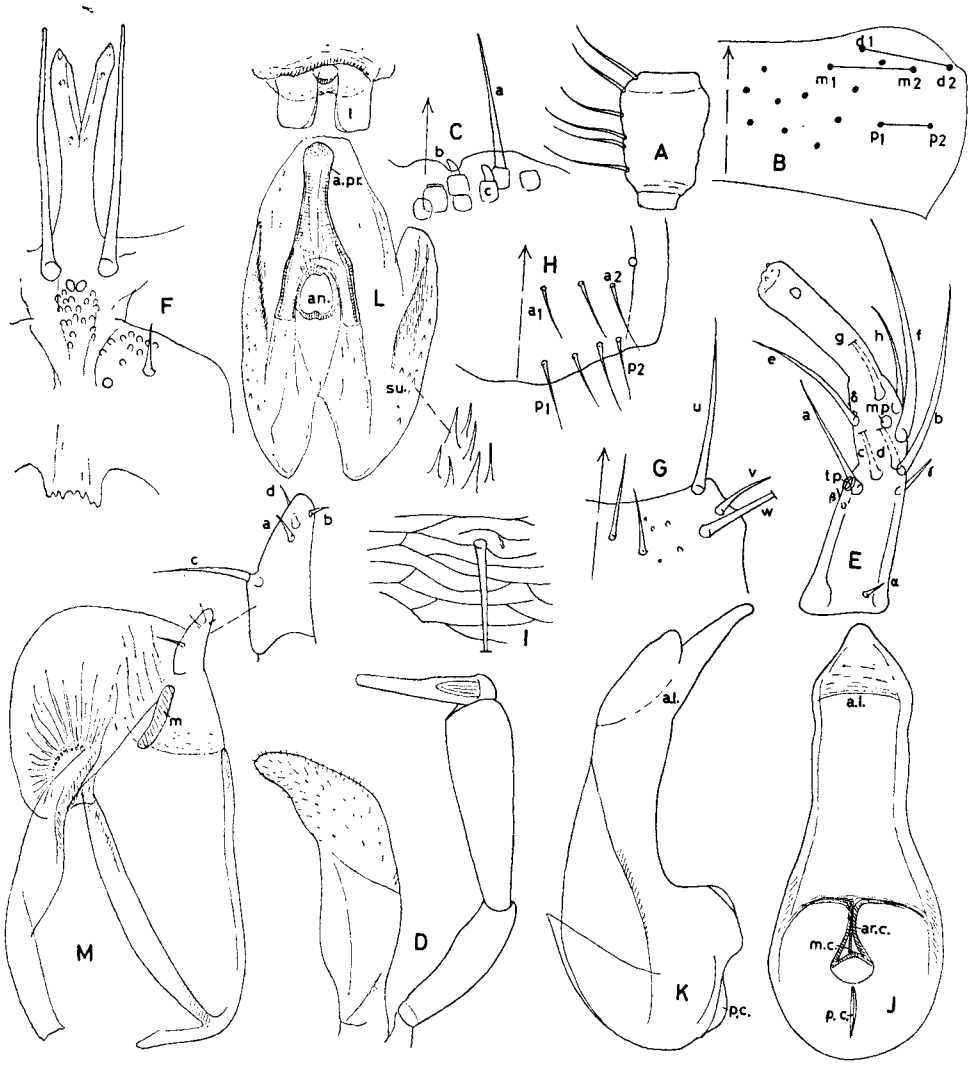


Fig. 21. *Cadaverota shigae* sp. n. **A,** ♂ ant. segm. IV; **B,** Labral chaetotaxy; **C,** Labral margin; **D,** Maxillary palpus & lacinia; **E,** Labial palpus; **F,** Glossa & prementum; **G,** Mentum; **H, I,** ♀ terg. VIII & its microsculpture; **J, K,** Median lobe; **L,** Inner armature of aedeagus; **M,** Lateral lobe.

is (Fig. 21, F) very long and narrow, with slender arms. Median area of the prementum bears ca. 20 pseudopores confined to the anterior area; Mentum (Fig. 21, G) is emarginate in front; *v*-setula is long and separating from *u*. Pronotum is gently convex above, with a faint depression along the middle and more finely and densely granulated than on the head; its sides are rounded anteriorly, but straightly retracted behind, so that the postero-external corner is well-defined; lateral erecting setae are inconspicuous except a long isolated seta at the posterior marginal corner;

pubescence is all directed posteriorly along the middle. Elytron is convex above, dilated behind, emarginate posteriorly and with dense granules. Mesosternum bears an incomplete median carina. Macrochaetal arrangement is as 01–23–23–23–23–434–. All tergites are nearly smooth, only sparcely punctured. Terg. VIII (Fig. 21, H) is not modified, with ca. 7+7 macrochaetae; microsculpture (Fig. 21, I) of the middle is transverse in pattern. Median lobe (Fig. 21, J, K) of aedeagus is 0.69 mm long; apical lobe is long, curving downwards from the basis and slightly constricted on anterior one-third. Costae are alike to *C. cadaverina,* but *ar. c.* are confluent on anterior half. Copulatory piece (Fig. 21, L) is elongate, apical process is broad and dilated on its rounded apex; posterior process is not developed beyond the annellus. Suspensorium is extending anteriorly to the side of apical process and furnished with fine ciliation all over laterally. Paired oblong lobes (*l*) separated to each other by a narrow groove represent the paramedian apophyses. Lateral lobe (Fig. 21, M) is alike to *C. cadaverina,* but the last segment is more narrowed distally and *a* is lateral, *b* is medial in position; *c, d* are small.

Female: unknown.

Holotype: NAGANO: Shiga Heights (in 1,600 m. alt.), 1♂ (6, VII 1972, R. Yosii et K. Sawada leg.)

Peculiar to this species labrum has 10+10 secondary setae, median area of prementum is well developed and apical process of the copulatory piece is broad and long. Terg. VIII is with about 7+7 macrosetae.

### 3. 02- or *Dimetrota* Group

The *Dimetrota*-group includes many subgenera by which abd. terg. II is with 02– setae and terg. III is either –12– or –13– and rarely –23–, the formula may be as 02–12(3).... They are rather large in the body length. In *Dimetrota, Plataraea* and *Atheta* (s. str.) abd. terg. VII has the normal arrangement of setae and abd. terg. VIII bears 4+4 macrosetae. In *Anopleta, Bessobia* etc., which may be regarded as satellites of *Dimetrota,* these tergites have additional number of macrosetae as may be noted in each cases. Key to the subgenera would be as:

1. Abdominal macrosetae normal on terg. II–VIII. Terg. VII is with –34– setae and terg. VIII is with 4+4 setae .....2
   Abdominal macrosetae normal on terg. II–VI, but not normal on terg. VII and VIII .....4
2. Spermatheca is complicated with glandular warts or with diverticula. Inner armature of male complicated. Copulatory piece thickly built and with V-shaped basal sclerite of suspensorium.....*Atheta* (*s. str.*)
   Spermatheca either simple or lightly complicated. Inner armature of male usually with a pair of dorsal picks, but often otherwise.....3
3. On abd. terg. III seta *p*-2 is closer to *p*-1 than to *p*-3 .....*Plataraea*
   On abd. terg. III setae *p*-1, *p*-2 and *p*-3 are in equal distances .....*Dimetrota*
4. Median area of prementum with very many pseudopores.....*Psammostiba* nov.

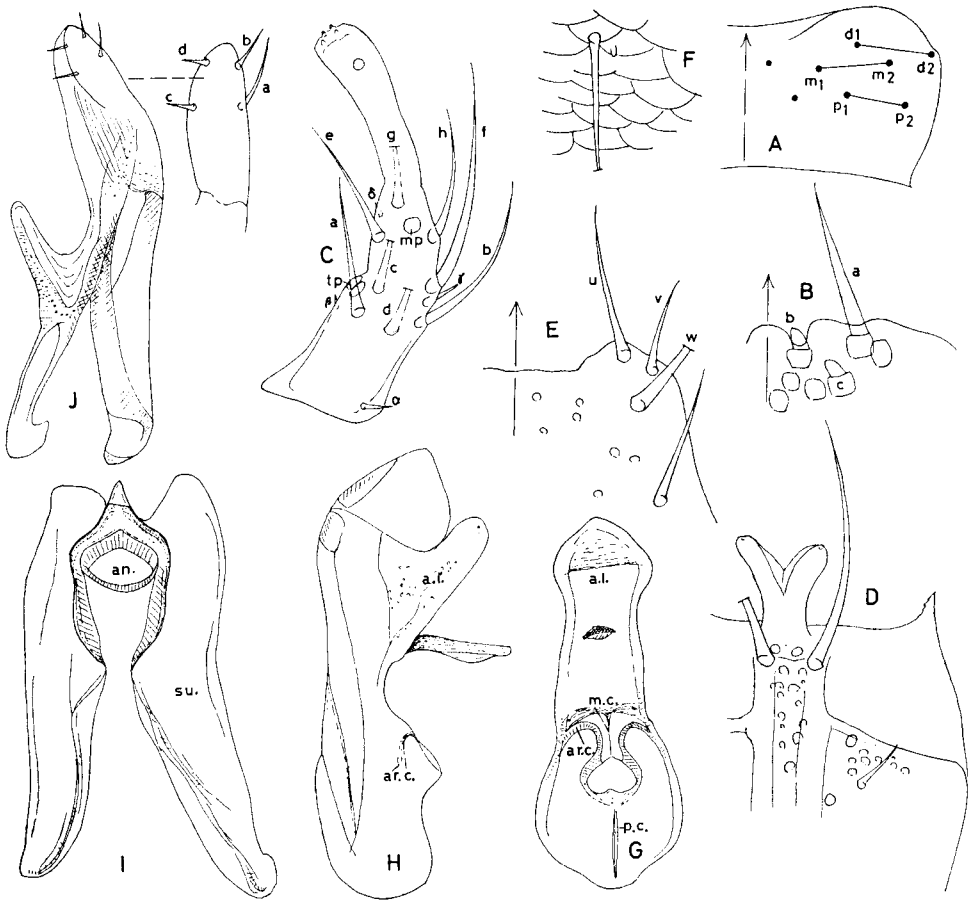


Fig. 22. *Atheta* (*Dimetrota*) *marcida* (Erichson) from Saxony. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F,** Microsculpture of terg. VIII; **G, H,** Median lobe; **I,** Copulatory piece; **J,** Lateral lobe.

Median are of prementum with some pseudopores.....5

5. Abd. stern. VIII of male with interior row of setae.....*Halostiba* nov.
   Abd. stern. VIII of male without interior row of setae.....6
6. Abd. terg. VIII with 5+5 macrosetae.....*Anopleta*
   Abd. terg. VIII with 6+6 macrosetae and lateral ridges.....*Bessobia*

## Subgenus *Dimetrota* Mulsant et Rey 1873

Typus: *Homalota marcida* Erichson, 1837

The majority of species hitherto refered to *Dimetrota* have the strongly modified copulatory piece. To the dorsal side of the well chitinized main body, there is a large dorsal pick ("Dorsale Haken" of Brundin), remarkable when viewed from

side. It is confluent with the main body and not articulated with it. Its apex is pointed when viewed from the side, but rounded in dorsal view, so that it is alike to the blade of ice-axe. The type species, *A. marcida* (ER.) is rather exceptional in this respect. Its median lobe is elongate, with a long, filiform appendix ventrally, with poorly chitinized inner armature and the characteristic dorsal pick is quite absent. Lateral lobe is also quite abnormal. The choice of the type species of *Dimetrota* is, therefore, very unfortunate, but there is no reason to separate it from others.

***Atheta* (*Dimetrota*) *marcida* (ERICHSON, 1837)** Fig. 22

Labrum (Fig. 22, A) has 2+2 secondary setae. *b*-sensilla of labral margin (Fig. 22, B) is large when compared to *c*. Labial palpal segment III (Fig. 22, C) is longer than I. $\gamma$-setula is close to *f*, which is far remote from the level of *mp*. Glossa (Fig. 22, D) is short. Pseudopores are up to 13 on median area and relatively few on lateral area. Mentum (Fig. 22, E) is deeply emarginate in front; *v*-setula is well developed. Macrochaetal arrangement is as 02–13–23–23–23–34. Microsculpture of terg. VIII (Fig. 22, F) is imbricate. Filiform ventral process of the median lobe (*p*) is just as described in Brundin 1953. Apical lobe (Fig. 22, G) is strongly dilated and constricted in frontal view. Costa *ar. c.* are approximate, but not confluent together. Copulatory piece (Fig. 22, I) is pointed and with a hyaline apex. Lateral lobe (Fig. 22, J) is peculiar having a deeply bifurcate proximal segment and the vellum is narrowly reduced. All setae of the distal segment are similarly short and terminal in position.

Specimen examined: GERMANY: Sachsen, Dübner Heide, 1♂ (7. X 1952, DORN leg., BENICK det.)

***Atheta* (*Dimetrota*) *cinnamoptera*, (THOMSON, 1856)** Fig. 23

Labral seta *m*-1 (Fig. 23, A) is strongly posterior to the level of *m*-2. *b*-sensilla of labral margin (Fig. 23, B) is well developed and much larger than *c*. Glossa (Fig. 23, C) is deeply divided near the basis. Prementum has broad median area with ca. 17 pseudopores and lateral area has only a few of them. Labial palpus (Fig. 23, D) is nearly as in *A. marcida* (ER.), but seta *a* is fairly anterior to the level of *b*. *v*-setula of mentum (Fig. 23, E) is long, close to *u*. Macrochaetal arrangement is as 02–13–13–13–13–34–. Microsculpture of terg. VIII (Fig. 23, F) is fairly transverse. Fenestrating markings of the median lobe (Fig. 23, G) are more than as figured in BRUNDIN 1953. Copulatory piece of the inner armature (Fig. 23, I) is suddenly narrowed in front of annellus and with an elongate apical process, which is ending in a hyaline, pointed apex. Dorsal pick is well developed. Lateral lobe (Fig. 23, J) is narrow as in *A. marcida*, but with no branch of the proximal segment.; middle apodeme (*m*) is oblong and with an additional apodeme on the vellum. Distal segment is elongate; *a* is near the base and much longer than *b*, which is on the same

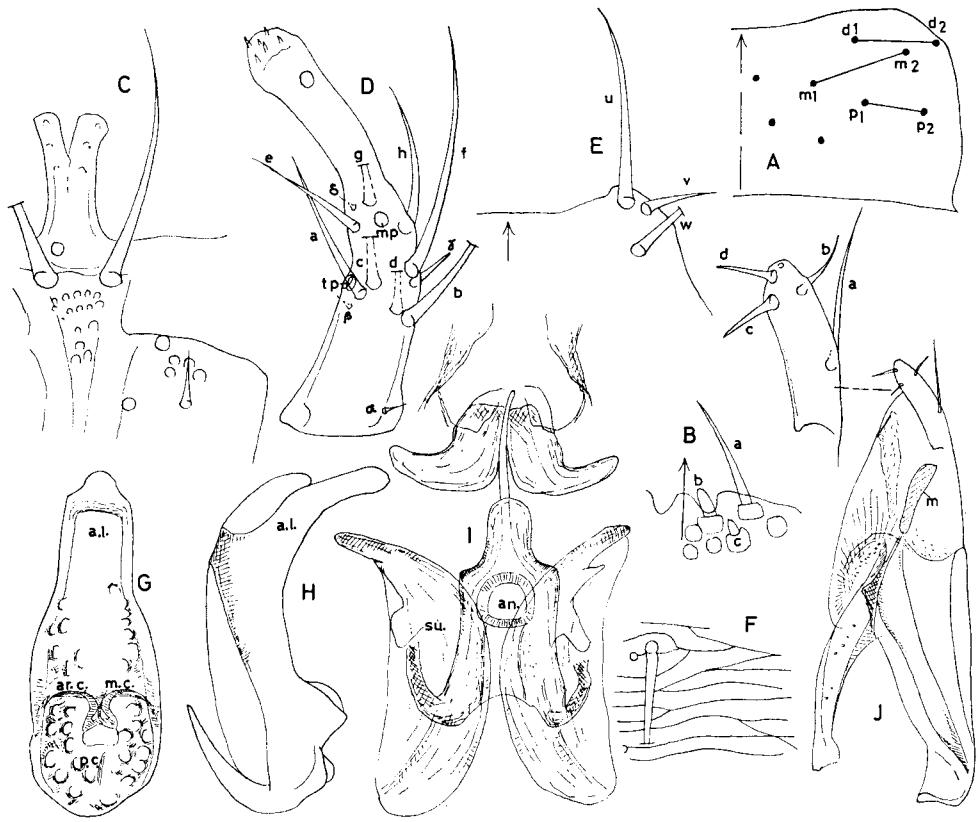


Fig. 23. *Atheta* (*Dimetrota*) *cinnamoptera* (THOMSON) from Austria. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Glossa & prementum; **D,** Labial palpus; **E,** Mentum; **F,** Microsculpture of terg. VIII; **G, H,** Median lobe; **I,** Inner armature of aedeagus; **J,** Lateral lobe.

level with *c*.

Specimen examined: AUSTRIA: Hochobir, 1♂ (24. VIII 1962, PUTHZ leg., BENICK det.)

***Atheta* (*Dimetrota*) *picipennis* (MANNERHEIM, 1843)** Fig. 24, A-F

Syn. nov.: *Ischnopoda* (*Coproceramius*) *tenuiducta* K. SAWADA, 1970

Additional notes: Macrochaetal arrangement as 02–13–13–13–13–36–. Terg. VIII (Fig. 24, A) is broadly concave behind and with well defined lateral corners; from 4+4 macrosetae *a*-2 is separating from stigma. Stern. VIII (Fig. 24, B) is produced, broadly rounded apically and with many long setae. Costa *ar. c.* (Fig. 24, C, D) are moderately separating and approximate in the middle; *m. c.* is fine; *v. ap.* is entire, but weakly sclerotized; *p. c.* has a small projection; distal apodeme (*dt. ap.*) is entire and not separating to each other. Copulatory piece of the inner

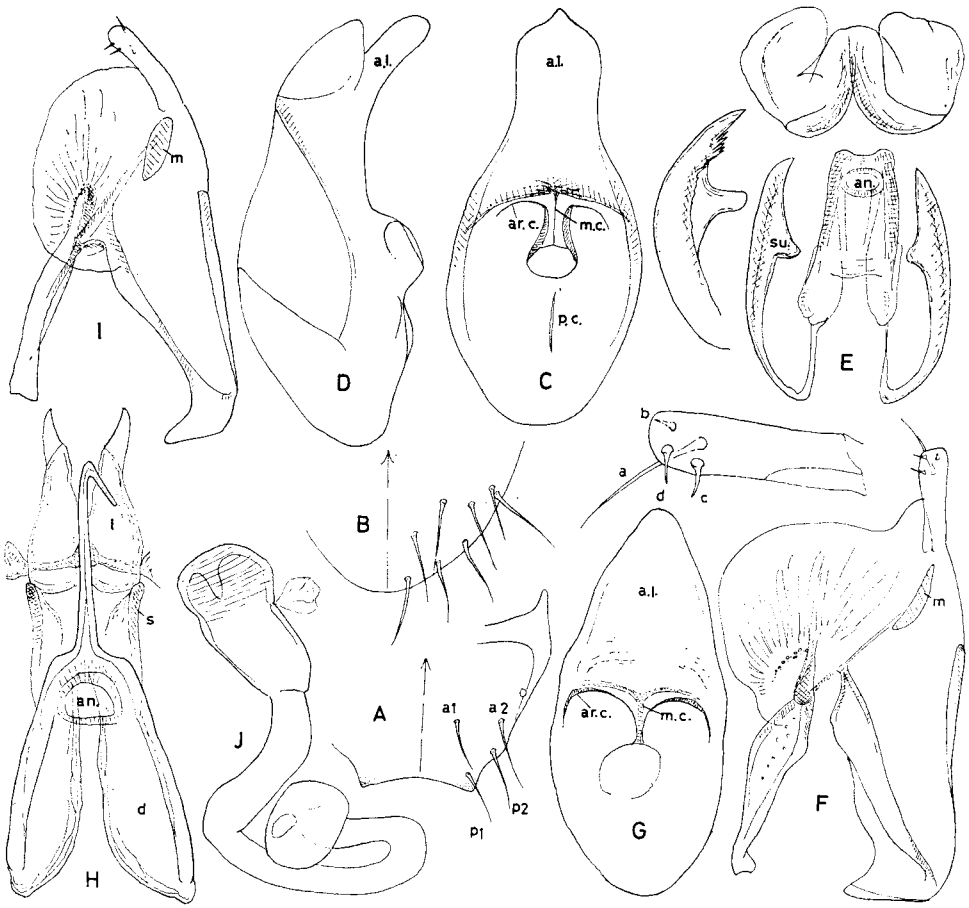


Fig. 24. *Atheta* (*Dimetrota*) *picipennis* (MANN.) from Shiga Heights. **A,** ♂ terg. VIII; **B,** ♂ stern. VIII; **C, D,** Median lobe; **E,** Inner armature of aedeagus; **F,** Lateral lobe. *Atheta* (*Dimetrota*) *weisei* BERNH. from Shiga Heights. **G,** Median lobe; **H,** Inner armature of aedeagus; **I,** Lateral lobe; **J,** Spermatheca.

armature (Fig. 24, E) is elongate, parallel and broadly truncate on apex, it is emarginate in the middle and produced on each side. Dorsal pick is strongly covering over the corpus and fused firmly with it. Median apophysis is consisting of a paired pigmented lobes and bulbous membranes lateral to it. Proximal segment of lateral lobe (Fig. 24, F) is simple, without additional ones; vellum is well developed; distal segment is elongate and parallel; *a* is on apical one-third, elongate and nearly equal to the segment. while *b* is reduced to a minute setula; *c, d* are subequally short.

Specimens examined: NAGANO: Shiga Heights, 4♂, 3♀ (5. VII 1972, R. YOSII et K. SAWADA leg.); Mt. Ontake, 4♂, 8♀ (13. VIII 1974, R. YOSII leg.); Ibid, 1♂, 3♀ (6. X 1973, K. SAWADA leg.), KYOTO: Mt. Hiei, 3♂, 4♀ (10. X 1970, K. SAWADA leg.); EHIME: Omogokei, 1♂, 3♀ (19. X 1973, R. YOSII leg.)

*I. tenuiducta* K.S. is poorly described by one female from Shiga Heights and it has 5+5 secondary setae on labrum and geniculate type of spermatheca. But it is within the range of variation of the well known *A. picipennis* by which the labral secondary setae are between 3+3 to 5+5 and spermatheca is either longitudinal or geniculate (Brundin 1953, fig. 93, 93a etc.). Besides the marginal setae of stern. VIII in female are also variable. The details of buccal structures etc. were omitted as they are just as already given in *I. tenuiducta* K.S. (K. Sawada, 1970a, 1970b).

This is the first report of the species from Japan.

***Atheta* (*Dimetrota*) *weisei* Bernhauer, 1907** Fig. 24, G-J

*Atheta* (*s. str.*) *weisei* Bernhauer, 1970

Syn. nov. *Ischnopoda* (*Coproceramius*) *multispina* K. Sawada 1970

Additional notes to the description of *I. multispina:* Antennal segments transverse with conspicuous black setae, the 4th is the smallest and fairly different from the 5th in size. Head is with coarse setae. Pronotum has long lateral erecting setae and with anteriorly directed median pubescence (Höeg's type I). Macrochaetal arrangement is as 02–13–23–23–23–34–. Median lobe (Fig. 24, G) has the costa *ar. c.* strongly approximate and diverging distally; *m. c.* exists on the distal half and bifurcate apically; *v. sp.* inconspicuous. Copulatory piece (Fig. 24, H) is more dilated behind than in Fig. of K. Sawada, 1970. Dorsal pick (*d*) is mostly membraneous and situated over the corpus. Distal apodemes are well differentiated: Median apophysis is composed of the paired anterior lobes (*l*) each with a hyaline apex and the narrow sclerite (*s*); anterior lobes are confluent together at their basis and articulated with the paramedian apophyses on each side at the basis; posterior sclerites have a narrow inner extension, which attains the level of annellus. Proximal segment of lateral lobe (Fig. 24, I) is with prolonged apical process anterior to the articulation; vellum normal and middle apodeme (*m*) is oblong; distal segment is narrowly elongate.

Female: Terg. VIII is not modified, but slightly emarginate behind. Spermatheca (Fig. 24, J) is long, fairly contorted and ending in a thick sacculus.

New Examples examined: NAGANO: In fungus at Shiga Heights, 8♂, 6♀ (3. IX 1975, R. Yosii leg.)

*A. weisei* is originally described from Nemuro in Hokkaido, but the syntypes (1♂, 1♀) of the British Museum from Chuzenji coincide well with the material from Shiga and *I. multispina* K.S. is surely a synonym of this species. With slender glossa, quadridentate abd. terg. VIII of male, spiniform copulatory piece, bright body colour and coarse pubescence of the body this species is very peculiar.

## Subgenus *Atheta* (*s. str.*)

Typus: *Aleochara graminicola* Gravenhorst, 1806

In *Atheta* (*s. str.*) the macrochaetal formula is not different from *Dimetrota,* but the inner armature of the median lobe is very complicated, having a V-shaped sclerite

at the basis of the copulatory piece and with well developed suspensoria often in two pairs. Spermatheca of the female is complicated, strongly coiled, with accessory glands or with a diverticulum and for this reason, it may be regarded a more specialized group developed from *Dimetrota*. The chaetal arrangement is as 02–13–13–13–13–34– in *A. graminicola* Th. and 02–23–23–23–23–34 in *A. castanoptera* (Mann.) so that there seems to exist a good separation between them, the latter species being the type of *Hypatheta* FENYES, 1918. However, in a Japanese species, *A. transfuga* (SH.) the formula is quite floating individually to show that such separation of subgenus is practically impossible.

When the subgenus *Atheta* (*s. str.*) is thus defined, it may include *A. atramentaria* (GYL.), *A. euryptera* (STEPH.) etc., which were placed elswhere by the previous authors.

***Atheta* (*Atheta*) *graminicola* (GRAVENHORST, 1806)** Fig, 25

Male: Labrum (Fig. 25, A) normally transverse; median row of setae is longer the distal one; *m*-2 is between *d*-1 and *d*-2; 2+2 secondary setae are present. *a*-sensilla of labral margin (Fig. 25, B) is setaceous and normally long; *b, c* are very short and quite obtuse. Labial palpus (Fig. 25, C) relatively long; segment III is feebly dilated distally and longer than I; $\gamma$ is on the same level with *b;* $\delta$ is anterior to *h; a* is close to *tp* and nearly on the same level with *b; e* is posterior to *mp*. Glossa (Fig. 25, D) is forked from the middle. Median area of prementum is broad, with some 10 pseudopores. Mentum (Fig. 25, E) is shallowly emarginate in front; *v*-setula is close to *u* on the anterior corner. Mandibles are prolonged and pointed; right one has a very small molar tooth near the basis. Macrosetae are as 02–13–13–13–34– (Fig. 25, F). Terg. VIII (Fig. 25, G) is shortly produced behind, the produced margin is truncate and finely crenulated in its full length; from 4+4 macrosetae *a*-2 is close to the stigma. microsculpture (Fig. 25, H) is imbricate. Stern. VIII (Fig. 25, I) is elongate, slightly emarginate at apex and with up to 9+9 macrosetae. Median lobe (Fig. 25, J, K) of aedeagus is 0.34 mm long, robust and heavily pigmented; apical lobe is braod, obtuse and slightly bent downwards; costa *m. c.* is long and entire; *ar. c.* are approximate in the middle; *v. ap.* is sclerotized throughout; *p. c.* has a high projection. A deep fovea (*f*) is present lateral to the base of the apical lobe. Copulatory piece (Fig. 25, L) is broad in the middle and acutely pointed to a short apical process; posterior processes are enlarged at the end. Two pairs of suspensoria (*p, s*) are situated close to the corpus and preputial part has three pairs of sclerites, the largest among them is heavily sclerotized and with finely serrulated margin (*b*). Lateral lobe (Fig. 25, M) is normal; middle apodeme (*m*) is narrowly elongate and with an indication of faint sclerosis; vellum is well developed; distal process of proximal segment is short. On the small distal segment *a, b* are long and standing close together near the basis, while *c. d* are short and apical in position; there is a bag-like incurving near the base of the segment.

Female: Stern. VIII (Fig. 25, N) is much shorter than in the male, not modified but simply rounded at apex and beset with up to 6+6 principal setae. Spermatheca


Fig. 25. *Atheta* (*Atheta*) *graminicola* (Gravenhorst) from Hamburg. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F,** Chaetotaxy of terg. II–IV, VII; **G, H,** ♂ terg. VIII & its microsculpture; **I,** ♂ stern. VIII; **J, K,** Median lobe; **L,** Inner armature of aedeagus; **M,** Lateral lobe; **N,** ♀ stern. VIII; **O,** Spermatheca.

(Fig. 25, O) is fairly complicated; bursa is elongate, with a robust umbilicus and the duct is characteristically verrucose on its anterior half.

Specimens examined: GERMANY: Hamburg, 1♂, 1♀ (V 1968, Lohse det.); Nierendorf, 1♂ (12. V 1968, Ullrich det.); Itzehoe, 1♀ (9. IV 1968, Ullrich det.)

***Atheta* (*Atheta*) *castanoptera* (MANNERHEIM, 1830)** Fig. 26

Female: Median row of labral setae (Fig. 26, A) is short, subequal to the proximal row; *m*-2 is separating from the distal row; 5+5 secondary setae are present. *a*-sensilla of labral margin (Fig. 26, B) is fairly long; *b, c* are normal. Mandibles are rather slender, apically curved and with a small molar tooth on the right one. Segm. III of labial palpus (Fig. 26, C) is nearly as long as I and slightly dilated distally; $\beta$-setula is close to *tp*; $\gamma$ is on the same level with *b*; $\delta$ is anterior to the level of *e*; *a* is close to *tp* and *d* is posterior to *c*; *f* is midway between *b* and *h*. Glossa is normal. Prementum (Fig. 26, D) is characteristic as the median area is diverging posteriorly and provided with more than 10 pseudopores. Lateral area has 13 of them. *v*-setula of mentum (Fig. 26, E) is rather long compared to *u* and *w*. Chaetal arrangement is as 02-13-23-23-23-34-. Microsculpture of terg. VIII (Fig. 26, G) is transversely reticulated. Stern. VIII is slightly emarginate in the middle behind, where there is a row of long and short marginal setae (Fig. 26, H). Spermatheca

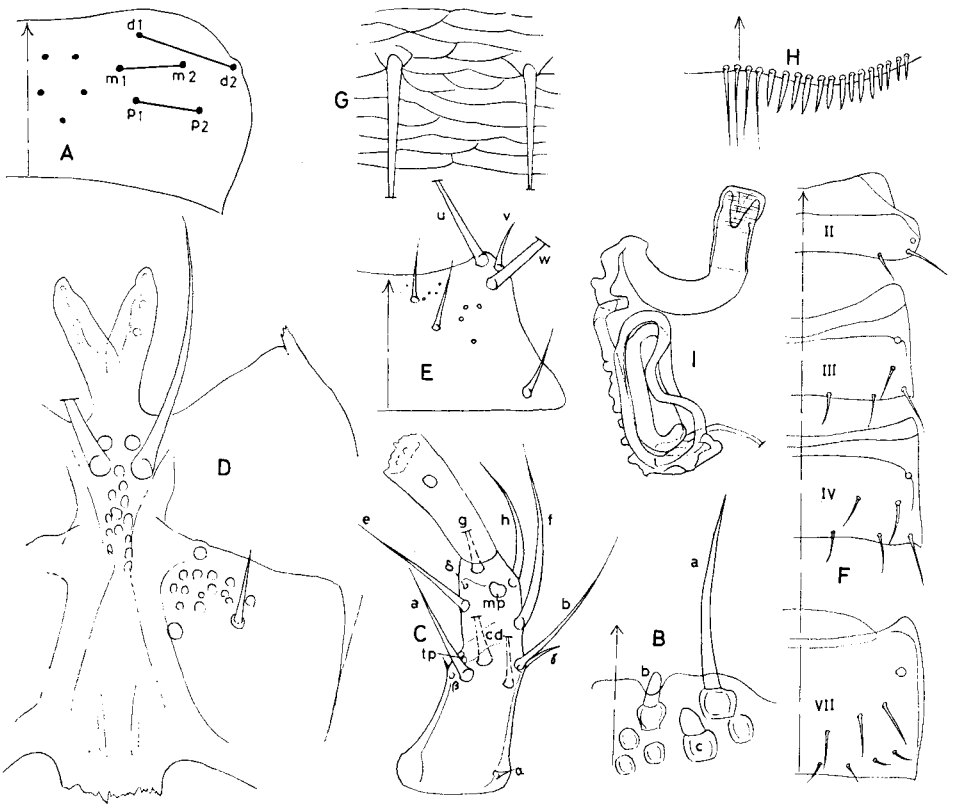


Fig. 26. *Atheta* (*Atheta*) *castanoptera* (MANNERHEIM) from Schleswig-Holstein. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus: **D,** Glossa & prementum; **E,** Mentum; **F,** Chaetotaxy of terg. II, III, IV, VII; **G;** Microsculpture of terg. VIII; **H,** Marginal setae of stern. VIII; **I,** Spermatheca.

(Fig. 26, I) is strongly coiled; bursa is elongate, with a prominent umbilicus and duct appears to be distinctly verrucose toward the end.

Specimen examined: GERMANY: Schleswig-Holstein, 1♀ (6. VIII 1968, Ullrich leg., Benick det.)

***Atheta* (*Atheta*) *atramentaria* (Gyllenhal, 1810)** Fig. 27, A, B

*Ischnopoda* (*Coproceramius*) *atramentaria* (Gyl.): K. Sawada, 1971 etc.

Additional notes: In the male arms of the glossa (Fig. 27, A) are either asymmetric or not. Median area of prementum is normally broad and very slightly produced behind beyond the posterior margin. Chaetal arrangement is somewhat variable but usually as 02–13–13–13–13–34–. Lateral lobe (Fig. 27, B) has the elongate apodeme (*m*) in the middle, slightly dilated behind and with a faint additional apodeme lying on the vellum; articulation is close to the costa (*a*); proximal segment has no long distal process anterior to the articulation.

New Specimens examined: GERMANY: Lunz, 1♀, (7. IX 1962, Puthz leg., Benick det.), JAPAN: OSAKA: Osaka port, 4♂ 10♀ (20. X 1970, K. Sawada leg.), Izumi-Katsuragi, 1♂, 1♀ (3. III 1973, K. Sawada leg.); NARA: Mt. Ikoma, 1♀, (24. III 1973, K. Sawada leg.), Asuka, 1♂ (1. IV 1973, K. Sawada leg.), FUKUOKA: Kurume, 1♂, 1♀, (15. IV 1972, R. Yosii leg.)

With its complicated spermatheca and structure of inner armature the species

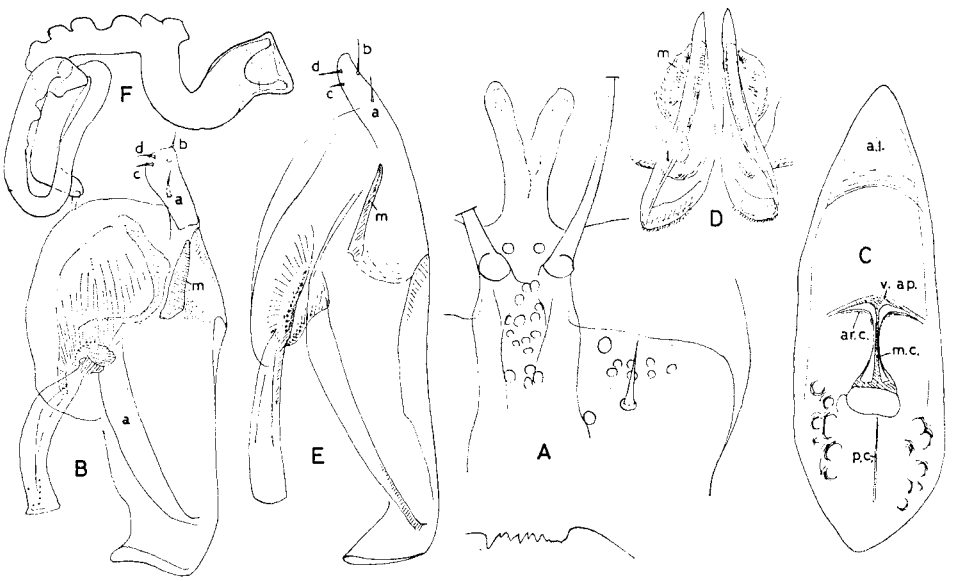


Fig. 27. *Atheta* (*Atheta*) *atramentaria* (Gyll.) from Kurume. **A,** Glossa and prementum; **B,** Lateral lobe; *Atheta* (*Atheta*) *separata* (K.S.) from Shiga Heights (♂) and Mt. Ontake (♂). **C,** Median lobe; **D,** Distal apodemes of aedeagus; **E,** Lateral lobe; **F,** Spermatheca.

would be better placed in *Atheta* (*s. str.*) than in *Dimetrota*.

***Atheta* (*Atheta*) *separata* (K. SAWADA, 1970)** Fig. 27, C-F

*Ischnopoda* (*Coproceramius*) *separata* K. SAWADA, 1970

Additional diagnosis: Male (type): Labrum has 3+3 secondary setae in the middle. Antenna stout; ant. segm. V–VII are a little longer than wide; XI is very long compared to the preceding segments. Right mandible is with a molar tooth. Pronotal pubescence of the middle is anteriorly directed. Macrochaetal arrangement is as 02–13–13–13–13–34–. On the median lobe (Fig. 27, C) costa *ar. c.* are nearly confluent; *m. c.* is entire; *v. ap.* is well developed in the middle; *p. c.* is long and it has some fenestrating markings. Median apophysis of inner armature (Fig. 27, D) is converted to large lobes guarding the apex of the copulatory piece and with a distinct thickening at about the middle. Lateral lobe (Fig. 17, E) is very narrow and without additional apodeme; vellum is well developed.

Female from Mt. Ontake: Spermatheca (Fig. 27, F) is complicated; bursa is stout and with an obtuse, large umbilicus; the duct is irregularly warty by the presence of coarse crenulation and then coiled up transversely.

Specimens examined: NAGANO: Shiga Heights, 1♂ (type): GIFU: Nigorigo Spa, Mt. Ontake, 1♀ (6. X 1972, R. YOSII et K. SAWADA leg.)

Female from Nigorigo Spa agrees well with the type (male) in almost all respect. However, the labial setula δ is more close to the level of *g*. Stout antennal segments, prementum with many pseudopores and short *a*-seta of lateral lobe are characters of the present species. In aedeagus and spermatheca it is close to *A. graminicola* (GRAV.), but terg. VIII are not crenulated behind, stern. VIII is simple and distal segment of lateral lobe is longer. Antennae are fairly broader than in *A. graminicola*.

***Atheta* (*Atheta*) *transfuga* (SHARR, 1874)** Fig. 28

*Homalota transfuga* SHARP, 1874

Syn. nov. *Atheta* (*Atheta*) *kubotai* BERNHAUER, 1943

Male: Ground colour brown, weakly shining in fore-parts. Head and pronotum nearly black; elytra are somewhat yellowish brown; abdomen is dark brown and a little paler towards base; antennae brown, slightly paler basally; legs pale reddish brown totally. Body is robust but narrow. Head is small for the body, weakly convex above, obsoletely punctured, distinctly sculptured and with a faint depression in the middle. Eyes large. Postgenae strongly bordered below. Antennae much longer than head plus pronotum and slightly dilated toward apex; ratio of segments as: I 6.5×3 : II 5×2.2 : III 5×2.8; IV 3.2×3–X 3.3×4; XI 8.2×4. Labrum (Fig. 28, A) is fairly transverse and feebly emarginate in front; all rows of seate are short; *p*-1 is anterior to *p*-2; *m*-2 is separating from distal row and there are 5+5 secondary setae. *a*-sensilla of labral margin (Fig. 28, B) is normally long, setaceous; *b* is elongate, and obtuse at apex; *c* is rounded. Setula β of labial palpus (Fig. 28, C)

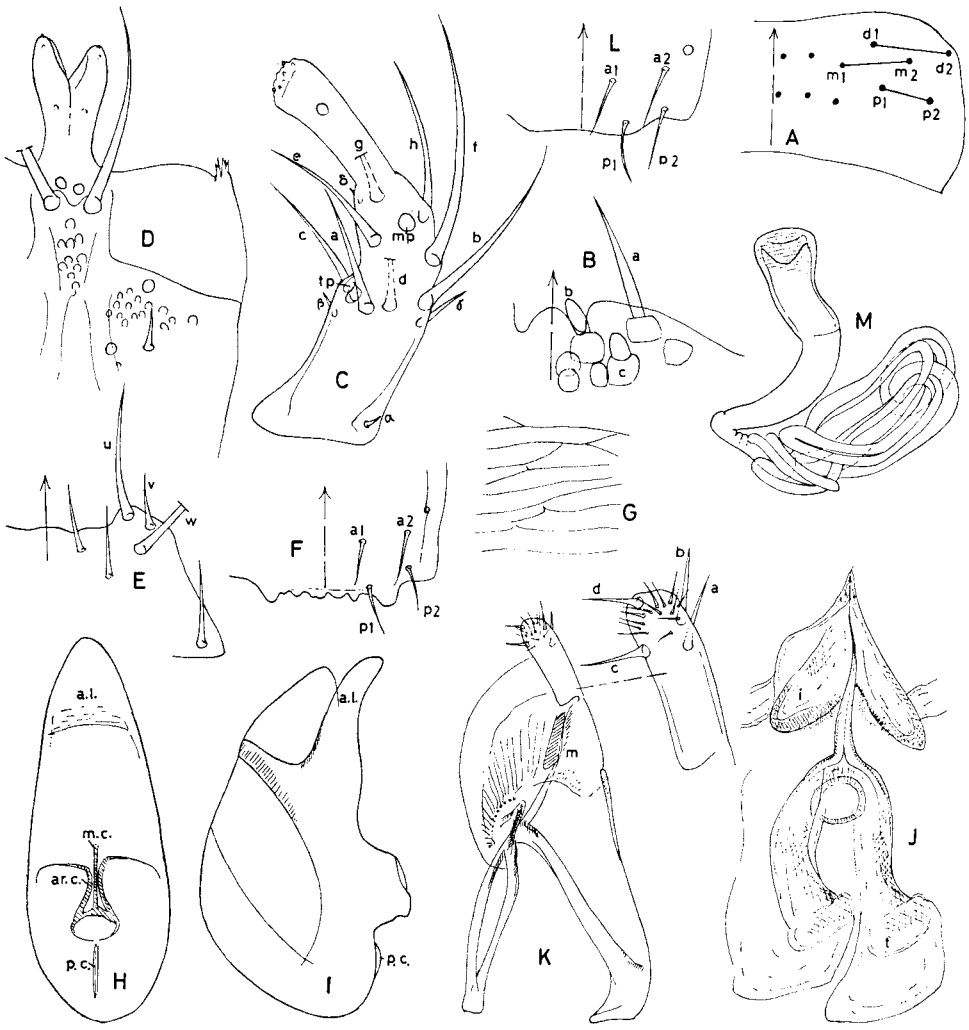


Fig. 28. *Atheta* (*Atheta*) *transfuga* (Sharp) from Kyoto. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K,** Lateral lobe; **L,** ♀ terg. VIII; **M,** Spermatheca.

is near *tp; γ* is posteriorly to *b; δ* is small, nearly on the level of *g; a* is posterior to *b* and *e* is on the same level with *f*. Glossa (Fig. 28, D) is normally forked. Median area of prementum (Fig. 28, D) is broad, slightly diverging behind and with about 10 pseudopores. *v*-setula of mentum (Fig. 28, E) is long and close to *u*. Pronotum is gently convex above, slightly narrowed posteriorly. It is finely, densely granulated and with a shallow median depression before the base; lateral erecting setae long. Elytra are faintly emarginate postero-externally and more coarsely granulated and

sculptured than in the pronotum. Abdomen is obsoletely punctured and nearly glabrous on the distal segments. Macrochaetal arragement is variable as:

♂: 02–13–13–13–$\frac{13}{23}$–33–.
♂: 02–13–13–23–23–34–
♀: 02–13–23–23–23–34–
♀: 02–13–13–13–13–34–
♀: 02–23–23–23–23–35–

Terg. VIII (Fig. 28, F) is broadly truncate behind, the margin is furnished with about 6 blunt, short teeth, the lateral pair of which are a little longer than others. The segment has 4+4 macrosetae, *a*-2 is remote from the stigma and microsculpture of the middle (Fig. 28, G) is transverse. Median lobe of aedeagus (Fig. 28, H, I) is 0.42 mm long; apical lobe is uniformly narrowed to an obtuse apex in ventral view and it is gently produced behind the middle and weakly bent in lateral view. *ar. c.* are fairly approximate in the middle and broadly recurved behind; *m. c.* is entire; *v. ap.* is absent. Copulatory piece (Fig. 28, J) is with a long, spiniform apical process like that of *A. atramentaria* (Gyll.), but the suspensoria are converted to a short thickening at the end of the corpus (*t*) and never articulated nor geniculated as in the cited species. Paramedian apophyses are lobate elements folded with each other and their inner margins (*i*) are bordered with fine serration. Lateral lobe (Fig. 28, K) is narrow and with elongate middle apodeme (*m*); vellum is ruduced in size and not pigmented. Distal segment is elongate, parallel, and, in addition to the four principal setae which are similarly short, there are 10 secondary setulae near apex.

Length 3.70 mm (Head long 0.46 mm × wide 0.52 mm; pronotum 0.50 × 0.64 mm; elytra 0.58 mm × 0.58 mm).

Female: Terg. VIII (Fig. 28, L) is not modified, but shallowly emarginate behind. Spermatheca (Fig. 28, M) is strongly coiled as in *A. atramentaria* (Gyl.), but bursa and duct are much larger.

Specimens examined: TOKYO: Mt. Takao, 3♂, 4♀ (20. III 1973, K. Sawada leg.), KANAGAWA: Yugawara, 11♂, 15♀ (19. III 1973, K. Sawada leg.), KYOTO: Mt. Hiei, 3♂, 3♀ (7. VI 1971, R. Yosii leg.); Fushimi-Inari, 5♂, 4♀ (10. VI 1973, R. Yosii leg.); Otokoyama, 20♂, 23♀ (1. II 1973, R. Yosii leg.); Ooyamazaki, 1♂, 3♀ (10. III 1973, R. Yosii leg.). OSAKA: Minoo, 16♂, 20♀ (4. VI 1973, R. Yosii leg.); Izumi-Katsuragi, 20♂, 22♀ (3. III 1973, K. Sawada leg.); Ushitaki-yama, 10♂, 13♀ (31. VI 1971, K. Sawada leg.), NARA: Kasuga, 1♂ (10. VI 1972, K. Sawada leg.); Asuka, 1♂, 3♀ (1. IV 1973, K. Sawada leg.); Ikoma, 10♂, 13♀ (24. III 1973, K. Sawada leg.). WAKAYAMA: Kimiidera, 8♂, 12♀ (16. II 1974, R. Yosii leg.), KOCHI: Muroto, 6♂, 12♀ (24. IV 1973, R. Yosii leg.), FUKUOKA: Kurume, 1♂ (15. IV 1972, R. Yosii leg.)

The type specimen (♂) from Japan (without further notes) coincides well with our specimens. As peculiar to this species the distal segment of lateral lobe is with many secondary setae. Type specimen of *Atheta* (*Atheta*) *kubotai* Bernhauer, 1943 from Koishikawa, Tokyo is a male, which coincides in every detail with the present

species and, therefore, it must be a synonym of *A. transfuga*.

***Atheta* (*Atheta*) *japonica* BERNHAUER, 1907** Fig. 29, A-M

*Atheta* (*Atheta*) *euryptera* STEPHENS var. *japonica* BERNHAUER, 1907

Male: Dark brown in ground colour and weakly shining in fore-parts; head black; pronotum somewhat brownish and elytra is brownish yellow. Abdomen is a little rufescent toward base; antennae uniformly brown; maxillary palpus is dark brown; legs are reddish brown. Body robust. Head rounded, evenly convex above, without depression in the middle, but with small punctures and distinct microsculpture throughout. Eyes fairly large. Postgenae strongly bordered below. Antennae stout; ratio of segments as: I 8×3; II 6×2.7; III 5.5×3; IV 3×3–X 4×5; XI 11×5.2. Labrum (Fig. 21, A) fairly transverse, shallowly emarginate in front; distal and medial row of labral setae are similarly long and with 4 to 5 pairs of secondary setae. *a*-sensilla of labral margin (Fig. 29, B) is long, setaceous, *b* is short, obtuse and *c* is oblong. Mandibles slender, right one (Fig. 29, C) is with a small molar tooth. Segm. III of labial palpus (Fig. 29, D) is longer than I and slightly dilated distally; $\gamma$ is just posterior to *b*; $\delta$ is near to *g*; *a* is on the level of *b*; *f* is nearly on the level of *e*; *h* is separating from *f*. Glossa (Fig. 29, E) is normally bifurcate and lightly constricted before base. Median area of prementum is fairly diverging posteriorly and with about 15 pseudopores. Lateral area has 3 regular pores and about 20 pseudopores. Mentum (Fig. 29, F) is shallowly emarginate in front; all the setae *u*, *v*, *w* are subequally long. Pronotum is gently convex above, slightly dilated toward the head with an obsolete median depression ending in subbasal fovea; pubescence on the middle is directed posteriorly (Type II) and lateral erecting setae are well developed. Integument is with dense granules and conspicuous microsculpture all over. Elytra are as long as broad and faintly emarginate postero-externally; the integument is with coarse granules mostly confined to the area around scutellum. Abdomen is shining, nearly smooth and with a few punctures on each tergite; the lateral erecting setae are short. Macrochaetal arrangement is as 02–23–23–23–23–44–. Terg. VIII (Fig. 29, G) has the hind margin more or less emarginate, with obsolete crenulations, which are more distinct on each side than in the middle. Microsculpture of the middle (Fig. 29, H) is transverse. Stern. VIII is short and quite obtuse behind. Median lobe of aedeagus (Fig. 29, I, J) is 0.55 mm long; normally elongate, with obtusely rounded apical lobe, which is fairly prolonged and sinuate in the middle. The main corpus is wide at about the basal one-third. *m. c.* is completely fused with *ar. c.* in the middle; *v. ap.* is indistinct; *p. c.* is present. Copulatory piece (Fig. 29, K) is broad in the middle, with an acute, short apical process, which is neither hooked nor bent at apex; suspensorium (*s*) is geniculate and well pigmented. Two pairs of large lobes (*m*) are more or less produced distally. Lateral lobe (Fig. 29, L) is narrow, with a long proximal segment; middle apodeme (*m*) is short; vellum (*f*) is rather reduced and pigmented in the middle; distal segment is elongate, parallel and its seta *b* is on the same level with *c*.

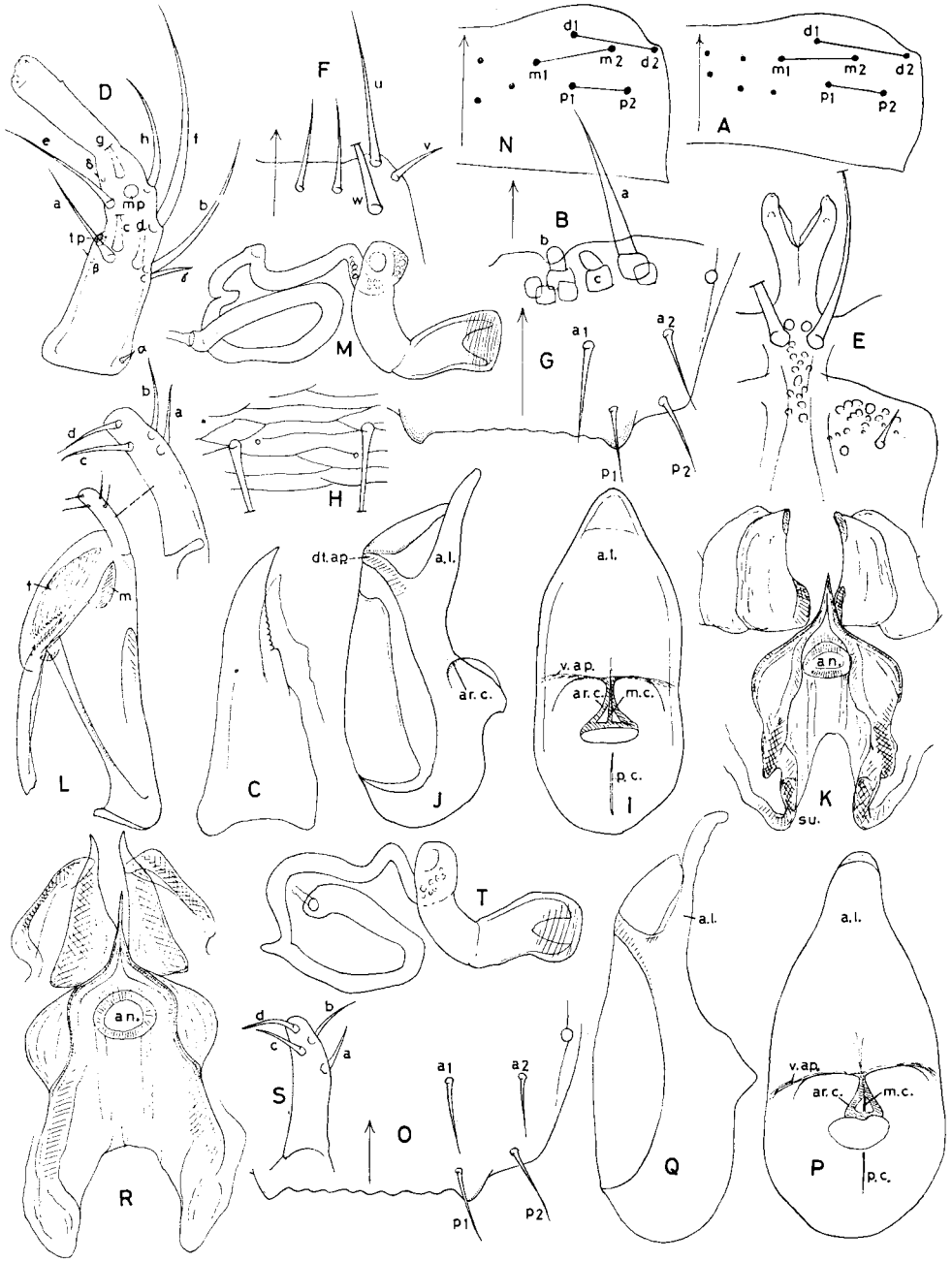


Fig. 29. *Atheta* (*Atheta*) *japonica* BERNHAUER from Ushitakiyama, Pref. Osaka. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G, H,** ♂ terg. VIII & its microsculpture; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L,** Lateral lobe; **M,** Spermatheca.

*Atheta* (*Atheta*) *euryptera* (STEPHENS) from Silesia (♀) & Paris (♂). **N,** Labral chaetotaxy; **O,** ♂ terg. VIII; **P, Q,** Median lobe; **R,** Inner armature of aedeagus; **S,** Distal segm. of lateral lobe; **T,** Spermatheca.

Length 3.60 mm (Head long 0.50 mm × wide 0.56 mm; pronotum 0.50 mm × 0.74 mm; elytra 0.69 mm × 1.15 mm).

Female: Segm. IV of antennae is more transverse than in male. Terg. VIII is not modified, but merely emarginate behind. Spermatheca (Fig. 29, M) is complicated; duct is looped; bursa is elongate, twisted and with a conspicuous umbilicus.

Specimens examined: SHIGA: Mt. Ibuki, 1♂ (19. VII 1973, R. Yosii leg.) KYOTO: Midorogaike, 1♂, 1♀ (20. V 1971, R. Yosii leg.); Sookokuji, 35 ex. (20. V 1975, R. Yosii leg.); Ooyamazaki, 1♂ (10. V 1974, R. Yosii leg.), OSAKA: Kabusanji nr. Takatsuki, 1♂ (14. V 1971, K. Sawada leg.); Ushitakiyama, 1♂, 1♀ (31. V 1971, K. Sawada leg.).

The type specimen from Okayama is a male and it agrees well with our specimens. With its strongly transverse segments V to X and very elongate XI of antennae the present species is very characteristic. Difference to *A. euryptera* (Steph.) would be enumerated as follows:

***Atheta* (*Atheta*) *euryptera* (Stephens, 1832)** Fig. 29, N-T

Compared to *A. japonica* Bh. ant. segm. III is broader, IV is more transverse and X is less broad. The labrum (Fig. 29, N) is more emarginate and *m*-2 is more close to the distal row. Macrochaetal arrangement is not different. Terg. VIII (Fig. 29, O) has the hind margin not emarginate, but straightly truncate and uniformly crenulate in its full length. Median lobe of aedeagus (Fig. 29, P. Q) is more slender, with longer apical lobe and with fairly hooked apex. Copulatory piece (Fig. 29, R) is with longer apical lobe and with much reduced suspensorium. Distal segment of lateral lobe (Fig. 29, S) is narrower and seta *b* is between *c* and *d*. Spermatheca (Fig. 29, T) bears a narrower umbilicus and broader posterior end.

Specimens examined: POLAND: Silesia, 1♀ (Wanka det.), FRANCE: Bois de Boulogne, Paris, 1♂ (29. XII 1974, R. Yosii leg.)

## Subgenus *Plataraea* Thomson, 1858

Typus: *Staphylinus brunneus* Fabricius, 1798

One female referable to *A. dubiosa* Benick is inspected. Characteristically it belongs to 02 group nearly situated to *Dimetrota*, the chaetal arrangement being quite equal to it. However, they may be separated by the arrangement of setae on abd. terg. III, where *p*-2 is closer to *p*-1 than to *p*-3, while they are of equal distance in *Dimetrota* spp. Besides, glossa of *Plataraea* is more elongate than in *Dimetrota*. These crucial characters of *Plataraea* may be observed also in *A. nigritula* (Grav.) and, therefore, *Tetropla* Muls. Rey may fall in synonym of this subgenus.

***Atheta* (*Plataraea*) *dubiosa* Benick, 1934** Fig. 30, A-H

Female: Labrum (Fig. 30, A) has 7+7 secondary setae. Labral margin (Fig. 30, B) is not emarginate in the middle; *b*-sensilla is pointed. Glossa (Fig. 30, C) is long, deeply forked from the basis. Real pores of lateral area are remote from

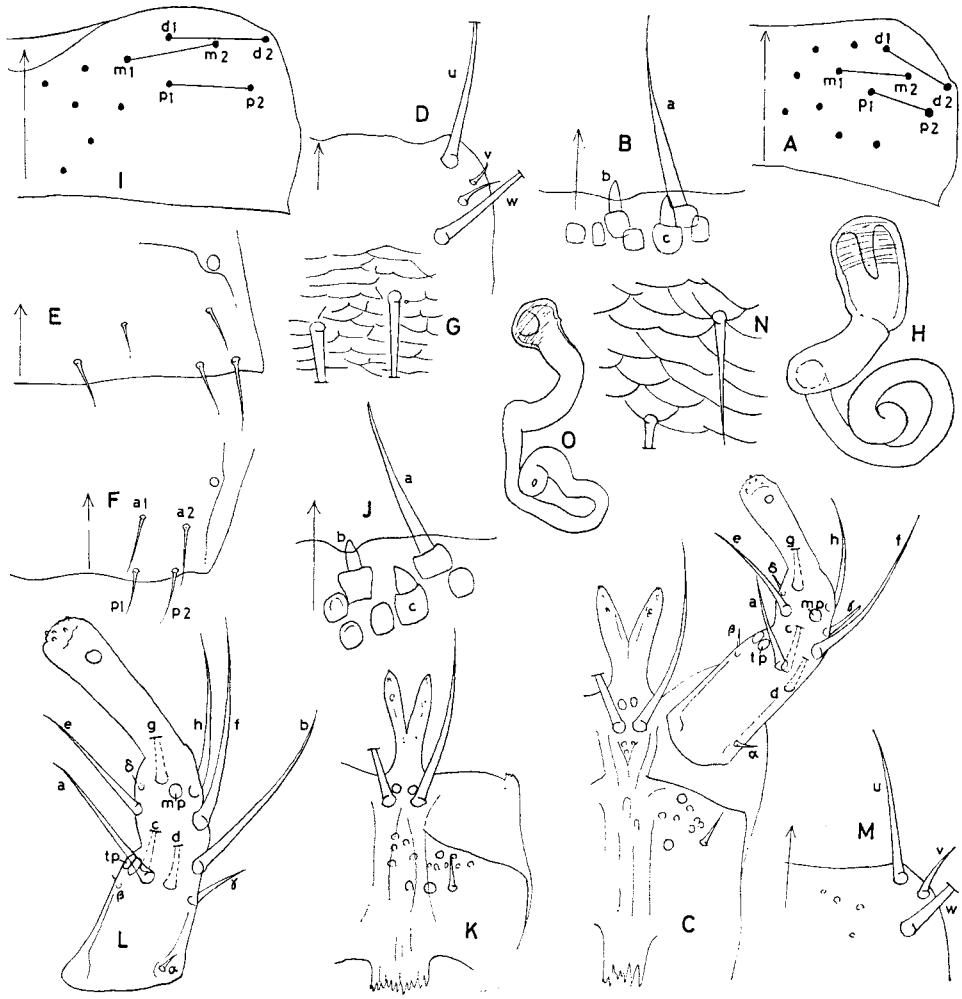


Fig. 30. *Atheta* (*Plataraea*) *dubiosa* BENICK from Germany. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labium; **D,** Mentum; **E,** Chaetotaxy of terg. III; **F, G,** ♀ terg. VIII & its microsculpture; **H,** Spermatheca. *Atheta* (*Plataraea*) *nigritula* (GRAVENHORST) from Germany. **I,** Labral chaetotaxy; **J,** Labral margin; **K,** Glossa & prementum; **L,** Labial palpus; **M,** Mentum; **N,** Microsculpture of terg. VIII; **O,** Spermatheca.

the median area. Setulae of labial palpus are all subequally long; *b* is absent. *v*-setula of mentum (Fig. 30, D) is duplicated. Macrochaetal arrangement is as 02–23–23–23–23–33–. On terg. III to VI (Fig. 30, E) *p*-2 is placed nearer to *p*-1 than to *p*-3. Terg. VIII (Fig. 30, F) is sinuate behind and with 4+4 macrosetae. Microsculpture of the middle (Fig. 30, G) is imbricate. Spermatheca (Fig. 30, H) is coiled; bursa is large and with an elongate umbilicus.

Specimen examined: GERMANY: Hundsheimer Berg, 1♀ (5. VI 1965, PUTHZ leg., BENICK det.)

***Atheta* (*Plataraea*) *nigritula* (Gravenhorst, 1802)** Fig. 30, I-O

Female: Labrum (Fig. 30, I) has 5+5 secondary setae. *b*-sensilla of labral margin (Fig. 30, J) is pointed and much smaller than *c*. Glossa (Fig. 30, K) is long; each arm is narrow and tapering at apex. Median area of prementum has 6 large pseudopores; a posterior real pore of lateral area is on the border of the median area. Segm. III of labial palpus (Fig. 30, L) is longer than I; $\beta$-setula very short, $\gamma$ is normally long and posterior to *b; a* is on the level of *b; h* is on the level of *mp; e* is anterior to the level of *f*. *v*-setula of mentum (Fig. 30, M) is normally long and not doubled. Macrochaetal arrangement is as 02–13–13–23–23–34–. On terg. III and IV the intermediate seta is close to the lateral seta.; microsculpture of terg. VIII (Fig. 30, N) is imbricate. Spermatheca (Fig. 30, O) is irregularly coiled; bursa is short and with an obtuse umbilicus.

Specimen examined: GERMANY: Ueberl., 1♀ (22. IX 1944, Horion leg., Benick det.)

Terg. VIII of male is apparently near *Plataraea* (cf. Lohse, 1974 p. 119, 154). Chaetotaxy of abdominal tergites and other inner characters also indicate the present species to be included in *Plataraea,* but pointed *b* and *c* of labral margin and glossa with tapering arms are peculiar to this species.

## Subgenus *Anopleta* Mulsant et Rey, 1874

Typus: *Atheta corvina* Thomson, 1856

In *A. corvina* (Th.) the chaetal formula is typical 02-type, but in contrast to *Dimetrota* abd. terg. VIII bears 5+5 macrosetae in both sexes. Inner armature is peculiar having a pair of sclerites articulated to the inner side of the copulatory piece at the basis. The same scheme of inner armature is present in *A. crassicornis* (Fabr.) by which, besides, a strong transverse armature derived from the paramedian apophyses may be observed. *A. picipes* (Th.) must be also included in *Anopleta* having the same type of macrochaetal arrangment although the inner armature is somewhat modified in each species. Both *Anopleta* and *Traumoecia* Mus. Rey have been described in the same year of 1874 and there is no ground to justify the priority between them. As *Anopleta* is more frequently used than the latter, it is tentatively adopted herewith.

***Atheta* (*Anopleta*) *corvina* (Thomson, 1856)** Fig. 31

Male: Seta *m*-2 of labrum (Fig. 31, A) is clearly anterior to *m*-1; proximal row is unusually short. *a*-sensilla of labral margin (Fig. 31, B) is converging; *c* is small compared to *b*. Segm. III of labial palpus (Fig. 31, C) is a little longer than I and clearly dilated distally; $\gamma$-setula is just posterior to *b; e* is close to the level of *mp*. Glossa (Fig. 31, D) is broad, forked before the middle. Median area of prementum is broad, parallel and with ca. 7 pseudopores. Lateral area has 2 real pores marginally and with up to 5 pseudopores. Mentum (Fig. 31, E) is emarginate;

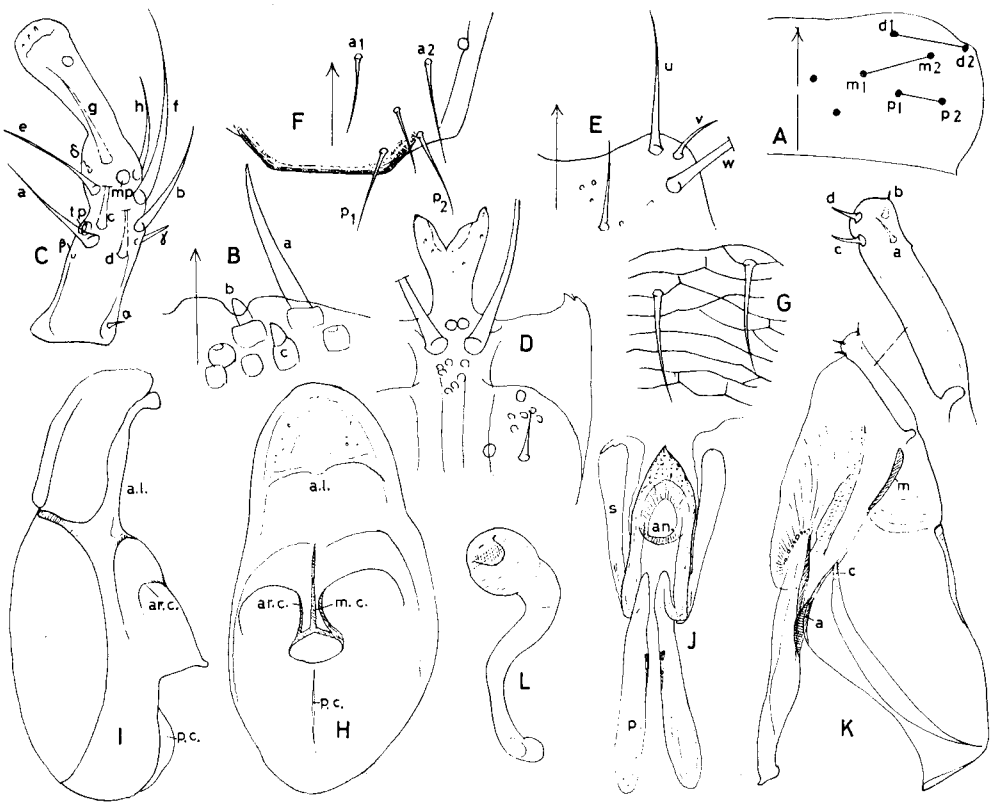


Fig. 31. *Atheta* (*Anopleta*) *corvina* (THOMSON) from Hamburg. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Copulatory piece; **K,** Lateral lobe; **L,** Spermatheca.

*v*-setula is normal. Macrochaetal arrangement is as 02–13–23–23–23–233. Terg. VIII (Fig. 31, F) has 5+5 long macrosetae and the intermediate seta is a little shorter than other; microsculpture of the middle (Fig. 31, G) is transverse in pattern. Median lobe of aedeagus (Fig. 31, H, I) is 0.29 mm long; apical lobe is very broad, rounded and shortly bent down apically. Costa *m. c.* is entire; *ar. c.* are approximate in the middle; *v. ap.* is normally developed. Copulatory piece (Fig. 31, J) is narrowly elongate; a short, pointed apical process is pointed and with minute granules all over. A pair of long posterior prolongation (*p*) are articulated with the corpus at their basis; suspensorium (*s*) is membraneous and lying along the corpus. On the lateral lobe (Fig. 31, K) the middle apodeme (*m*) is very narrowly elongate; vellum is normal; junction of costa (*c*) is very separating from the articulation (*a*). Distal segment is narrowly elongate, and with four subequally short setae subapically.

Female: Terg. VIII is gently arcuate behind, with no emargination in the middle and with 5+5 macrosetae as in the male. Spermatheca (Fig. 31, L) has

the curved duct and hooked end; bursa is bulbous and with an obtuse umbilicus.

Specimens examined: GERMANY: Hamburg. 1♂, 1♀ (LOHSE det.)

This species is characteristic with its shortly bifurcate glossa, posteriorly prolonged copulatory piece and broad apical lobe of aedeagus.

***Atheta* (*Anopleta*?) *ravilla* (ERICHSON, 1839)** Fig. 32, A-J

Male: Labrum (Fig. 32, A) is transverse; proximal row is the shortest; *m*-2 is separated from the distal row. *a*-sensilla of labral margin (Fig. 32, B) is setaceous and straight; *c* is very small compared to *b*. Segm. III of labial palpus (Fig. 32, C) is longer than I; δ-setula is on the same level with *g; mp* is anterior to the level of *e* and *a* is posterior to *b*. Glussa is short, bifurcate before the middle in two short arms. Median area of prementum (Fig. 32, C) is normally broad, parallel and with ca. 10 pseudopores; lateral area has up to 7 pseudopores and 2 real pores are marginal in position. Mentum (Fig. 32, D) is feebly emarginate in front and with very short *v*-setual. Macrosetae are as 02–13–23–23–23–233–; *p*-2 of terg. III to IV are anteriorly proceeded. Terg. VIII (Fig. 32, E) has 4+4 macrosetae and its posterior margin is not dentate, but shallowly emarginate; microsculpture in the middle (Fig. 32, F) is imbricate. Median lobe of aedeagus (Fig. 32, G, H) is nearly ovate, tapering anteriorly to form a triangular apical lobe, which is nearly parallel on basal half. Costae *ar. c.* are approximate and completely fused to each other, so that *m. c.* is hardly discernible; *v. ap.* is normally developed. Copulatory piece (Fig. 32, I) is elongate, with a short apical process and a pair of narrow posterior processes. A very long middle process (*p*) is extending far beyond the posterior end of the corpus as a very remarkable character of this species. Suspensorium is mostly membraneous and reaching the level of annellus. Median and paramedian apophyses are consisting of a pair of perpendicular median lobes (*p*) and paired rounded membranes (*m*). Proximal segment of lateral lobe (Fig. 32, J) is shortly prolonged anterior to the articulation to the next segment; middle apodeme (*m*) is simply narrow and with a long additional one; vellum is normal. Distal segment is elongate and setae *a, b* are similarly long, *c, d* are much shorter. Besides the segment has some minute secondary setulae.

Specimen examined: AUSTRIA: Mödling, 1♂ (7. VII 1955, MALICKY leg., PUTHZ det.)

The species is hitherto included in *Anopleta* and, really, labial palpus and lateral lobe are like those of *A. corvina*, but the presence of 4+4 setae on terg. VIII. and a long median process of the inner armature indicate the different character of this species. The subgeneric rank is problematic.

***Atheta* (*Anopleta*) *picipes* (THOMSON, 1856)** Fig. 32, K-R

*Traumoecia picipes* (TH.): MULSANT et REY, 1856

Female: Labrum (Fig. 32, K) normal; *a*-sensilla of labral margin (Fig. 32, L) is setaceous, diverging to each other; *b* is truncate; *c* is inconspicuous. Segm. III

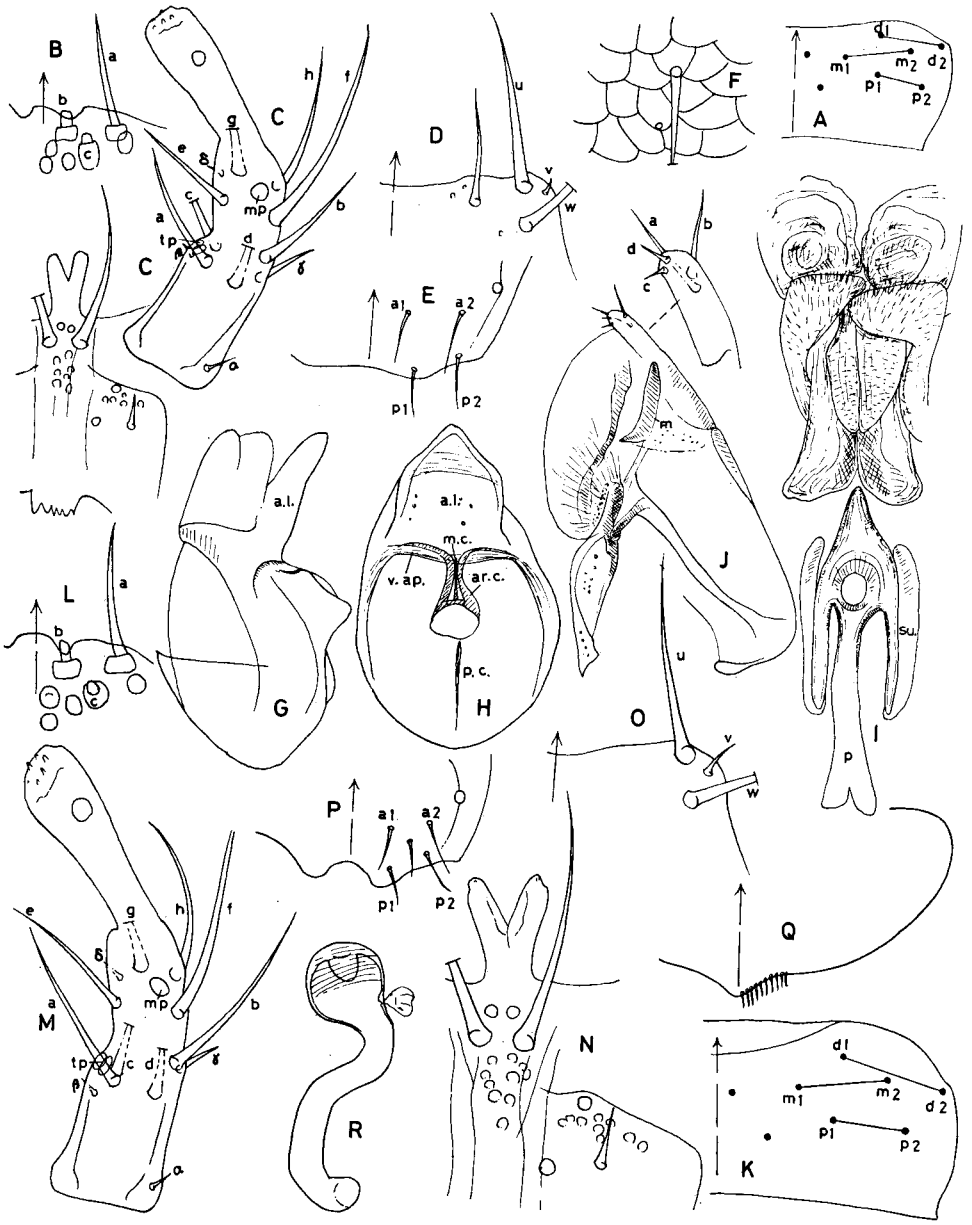


Fig. 32. *Atheta* (*Anopleta*?) *ravilla* (Erichson) from Austria. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labrium; **D,** Mentum; **E, F,** ♂ terg. VIII & its microsculpture; **G, H,** Median lobe; **I,** Inner armature of aedeagus; **J,** Lateral lobe.

*Atheta* (*Anopleta*) *picipes* (Thomson) from Germany. **K,** Labral chaetotaxy; **L,** Labral margin; **M,** Labial palpus; **N,** Glossa & prementum; **O,** Mentum; **P,** ♀ terg. VIII; **Q,** ♀ stern. VIII; **R,** Spermatheca.

of labial palpus (Fig. 32, M) is longer than I, dilated distally; $\gamma$-setula is on the same level with *b*; $\delta$ is on the level of *h*; *f* is close to the level of *e*. Glossa (Fig. 32, N) is normally long and forked from the middle. Median area is normally broad, parallel, with ca. 10 pseudopores; lateral area has 2 real pores marginal in position and with up to 8 large pseudopores. Mentum (Fig. 32, O) is shallowly emarginate in front; *v*-setula is fairly reduced; *w* is close to the level of *v*. Macrochaetal arrangement is as 02–13–23–23–23–333–. Terg. VIII (Fig. 32, P) is with 5+5 macrosetae and heavily modified as its posterior margin is deeply emarginate in the middle and fairly produced on each side of the emargination; *a*-2 is separated from the stigma; microsculpture in the middle is well defined and imbricate in pattern. Stern. VIII (Fig. 32, Q) is broadly rounded behind and shortly produced in the middle and with long and short marginal setae. Spermatheca (Fig. 32, R) is shortly coiled up; bursa in bulbous, clearly constricted basally and with an obtuse umbilicus.

Specimen examined: GERMANY: Ueberl., 1♀ (3. III 1945, Horion leg., Puthz det.)

## Subgenus *Bessobia* Thomson, 1858

Typus: *Homalota monticola* Thomson, 1852

The subgenus is already well defined by the presence of longitudial ridges along the lateral margin of terg. VIII in male. At the same time *Bessobia* is characterized by the presence of 6+6 macrosetae on terg. VIII both in male and female. It is thus the clearly cut subgenus from the rest of the *Dimetrota* groups. As the type species is not available for study, *A. occulta* (Er.) and other Japanese species have been investigated.

### *Atheta* (*Bessobia*) *occulta* (Erichson, 1837) Fig. 33

Syn. nov.: *Atheta* (*Bessobia*) *erichsoni* Bernhauer, 1907

Male: Labrum (Fig. 33, A) is transverse; medial row is much longer than others; *a*-2 is nearly on the distal row. *a*-sensilla of labral margin (Fig. 33, B) is straight, setaceous and *c* is blunt at apex. Mandibles normal. Segm III of labial palpus (Fig. 33, C) is longer than I; *a*-setula is normal in position, $\beta$ is remote from tp; $\gamma$ is posterior to *b*, which is on the same level with *a*. Glossa (Fig. 33, D) is elongate, forked from the middle; median area of prementum with up to 10 large pseudopores and lateral area has only 3 pseudopores. Mentum (Fig. 33, E) is nearly truncate in front; *u* is fairly short compared to *v*. Macrosetae are arranged as 02–13–23–23–23–333–. *p*-2 of terg. III to IV are proceeding forewards. Terg. VIII (Fig. 33, F) has 6+6 macrosetae, from which the intermediate ones are lightly shorter than others and often variable in number and loci. Seta *a*-2 is close to the stigma. Microsculpture of terg. VIII (Fig. 33, G) is imbricate. Median lobe is 0.36 mm long; it is abruptly dilated anterior to the middle in lateral view and the apical lobe is shortly pointed at apex in ventral view. Costa *m. c.* (Fig. 33, H) is fine, but entire; *ar. c.* are well developed and slightly approximate; *v. ap.* is apparently well developed; *p. c.* is very short. Copulatory piece (Fig.

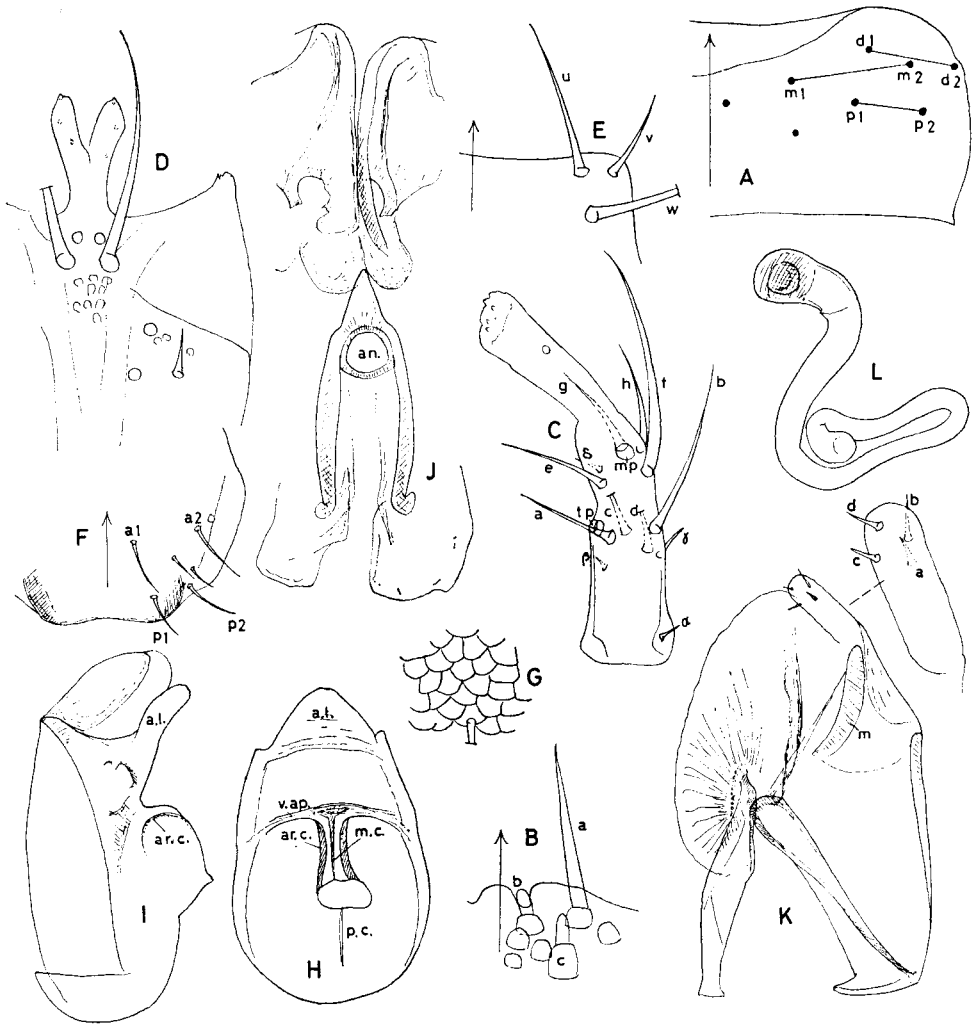


Fig. 33. *Atheta* (*Bessobia*) *occulta* (ERICHSON) from Brunoy nr. Paris. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K,** Lateral lobe; **L,** Spermatheca.

33, J) is narrowly elongate, with short, pointed apical process and beset with a basal constriction. Suspensorium is mostly membraneous and pigmented basally. Proximal segment of lateral lobe (Fig. 33, K) is very shortly prolonged anterior to the articulation; vellum is well developed, while the middle apodeme (*m*) is simple elongate and with a long additional apodeme (*a*). Distal segment is parallel and obtuse at apex; all setae are subequally short and distal in position.

Female: Terg. VIII is fairly emarginate at the middle of the hind margin and

with 6+6 macrosetae as in the male. Spermatheca (Fig. 33, L) is long; duct is transversely contorted; bursa is oblong and with an obtuse umbilicus.

Specimens examined: FRANCE: Brunoy nr. Paris, 1♂, 5♀ (31. XI 19–4, R. Yosii leg.), JAPAN: TOKYO: Takao, 6♂ 7♀ (20. III 1973, K. Sawada leg.), KANAGAWA: Yugawara, 12♂, 24♀ (19. III 1973, R. Yosii et K. Sawada leg.), KYOTO: Daimonji, 14♂, 20♀ (21. III 1973, R. Yosii leg.), Fushimi-Inari, 8♂, 12♀ (15. XII 1972, R. Yosii leg.), Otokoyama, 3♂, 2♀ (1. II 1973, R. Yosii leg.), NARA: Ikoma, 55 ex. (24. III 1973, K. Sawada leg.), OSAKA: Ibaraki, 3♂, 4♀ 8. III 1973, R. Yosii leg.), Nose, 12♂, 20♀ (12. I 1973, K. Sawada leg.), Izumi-Katsuragi, 60 ex. (3. III 1973, K. Sawada leg.), HYOGO: Takarazuka, 1♂, 1♀ 21. IV 1973, R. Yosii leg.)

Distribution: Europe, Siberia and Japan

The type specimen of *A. erichsoni* Bh. is a female from Kanagawa, which coincides quite well with these new examples. After Bernhauer the body length of *A. erichsoni* is 3.5 mm and two times larger than *A. occulta,* but according to Lohse, 1974 (p. 149) *A. occulta* is 2.5–3.5 mm. and in all other characters observed they are concordant.

## Subgenus *Psammostiba* subg. nov.

Typus: *Homalota hilleri* Weise, 1877

Glossa elongate. Prementum and mentum with numerous pseudopores. Copulatory piece is short and broad and without suspensoria. Macrochaetal arrangement is 02–23–23–23–23–23– and that of terg. VIII are 6+6, so that it is near to *Bessobia,* from which it is divided by the character of mentum and prementum. All known species are from the littoral zone of the northern Pacific Ocean.

The new subgenus was treated as *Panalota* Casey in Brundin 1943, but as the type species of *Panalota, A. setositarsis* Casey is unknown of its details the name has to be retained together with many other taxa of the Caseyan inferno.

### *Atheta* (*Psammostiba*) *hilleri* (Weise, 1877) Fig. 34, A-E

*Homalota hilleri* Weise, 1877

*Atheta* (*Panalota*) *hilleri* (Weise): Brundin 1943

Syn. nov. *Ischnopoda* (*Chaetida*) *multipunctata* K. Sawada, 1971

The species has been described in detail under the name of *A. multipunctata* in K. Sawada, 1971, which is in good accord with the description of *A. hilleri* in Brundin 1944. Details of mouth-parts and genital apparatus etc. were already given in the previous report and new characters observed are as follows: Macrochaetal arrangement of abdomen as 02–23–23–23–23–323–. Those of terg. VIII have been reported as 5+5, but, in reality, they are usually 6+6 in number and the intermediate setae are variable in number and loci so that they are 5–7 on one side. On the median lobe (Fig. 34, A, B, C) *dt. ap.* is fairly narrow, separated by a narrow interspace; *ar. c.* are widely remote from each other and nearly parallel; *v. ap.* is indistinct. Copulatory

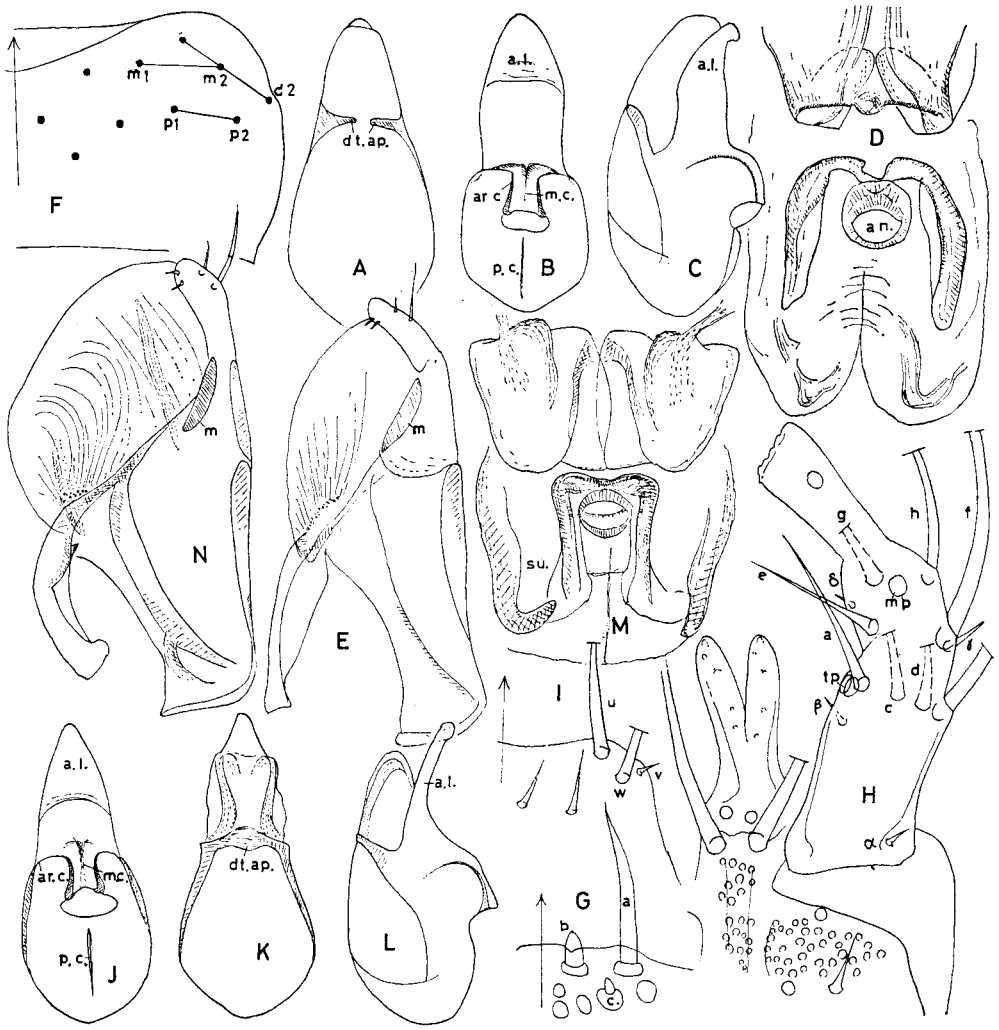


Fig. 34. *Atheta* (*Psammostiba*) *hilleri* (Weise) from Amakusa, Pref. Kumamoto. **A, B, C,** Aedeagus; **D,** Inner armature of aedeagus; **E,** Lateral lobe. *Atheta* (*Psammostiba*) *jessoensis* Brundin from Cape Erimo, Hokkaido. **F,** Labral chaetotaxy; **G,** Labral margin; **H,** Glossa & prementum; **I,** Mentum; **J, K, L,** Median lobe; **M,** Inner armature of aedeagus; **N,** Lateral lobe.

piece (Fig. 34, D) is fairly emarginate at the middle of its truncate apical end; suspensorium is widely separated from the posterior process of the corpus; distal apophyses are complicated with paired lobes. Proximal segment of lateral lobe (Fig. 34, E) is very short in front of the articulation to the medial segment and with a faint additional apodeme (*a*); vellum is normal.

New specimens examined: KUMAMOTO: Unosaki in Amakusa, 1♂, 3♀ (4. V 1970, R. Yosii leg.); Tsujijima in Amakusa, 1♂, 1♀ (5. V 1970, R. Yosii leg.)

***Atheta* (*Psammostiba*) *jessoensis* Brundin, 1943** Fig. 34, F-N

*Atheta* (*Panalota*) *jessoensis* Brundin, 1943

General feature as in Brundin 1943: Labrum (Fig. 34, F) is provided with 4+4 secondary setae. *b*-sensilla of latral margin (Fig. 34, G) is fairly pointed. $\beta$-setula of labial palpus (Fig. 34, H) is separated from *tp*, while $\gamma$ is close to the level of seta *f*. Median and lateral area of prementum is with numerous pseudopores. Mentum (Fig. 34, I) is normally transverse and with many pseudopores; *v*-setula is posteriorly displaced, close to the level of *w*. Apical lobe of aedeagus (Fig. 34, J, K, L) is tapering distally to form narrow produced apex. In lateral view it is not dilated toward the base, but narrowly parallel and lightly knobbed on apex. Costa *dt. ap.* is completely confluent together, becomming prominent laterally to give an angulate appearance in dorsal view. Copulatory piece (Fig. 34, M) is short and broad, nearly parallel and slightly constricted basally and its truncate apex is without trace of median emargination. Lateral lobe is nearly as in *A. hilleri*, but the distal segment (Fig. 34, N) is longer and more slender. Female spermatheca as in Brundin 1943 and not much different from *A. hilleri*.

Specimens examined: HOKKAIDO: Cape Erimo, 8♂, 12♀ (2. VIII 1971, R. Yosii leg.), IWATE: Miyako, 3♂, 7♀ (19, VI 1971, R. Yosii leg.)

The specimens examined agree well with Brundin's description in almost all respect. But claws of all legs are variable in length and strength both in *A. jessoensis* and *A. hilleri*. The type is collected from Nemuro, Hokkaido and it differs from *A. hilleri* most decidedly by the number of secondary setae of labrum and in the form of the narrow apical lobe.

***Atheta* (*Psammostiba*) *kamtschatica* Brundin, 1943** Fig. 35

*Atheta* (*Panalota*) *kamtschatica* Brundin, 1943

Additional notes to the description of Brundin, 1943.

Male: Labrum (Fig. 35, A) as in *A. jessoensis* and with 2+2 secondary setae. *b*-sensilla of labral margin (Fig. 35, B) is broad, more or less curved and fairly large compared to *c*. Segm. III of labial palpus (Fig. 35, C) is cylindrical and longer than I. $\beta$-setula is close to *tp*, $\gamma$ is anteriorly separated from *b*; *a* is close to *tp*. Prementum (Fig. 35, D) has characteristically numerous pseudopores both in median and lateral areas; the anterior real pore is produced from the anterior margin. *v*-setula of mentum (Fig. 35, E) is short and close to the level of *w*. Macrochaetal arrangement is as 01–23–23–23–23–44–. Terg. VIII (Fig. 35, F) is lightly sinuate in the middle behind; 4+4 macrosetae are accompanied with 4+4 additional short setae, whose number and loci are fairly constant; microsculpture (Fig. 35, G) is imbricate. Median lobe of aedeagus (Fig. 35, H, I) is thicker toward the apex to form an obtuse apical hook. Costa *m. c.* is entire; *ar. c.* are widely separating to each other; *v. ap.* is nearly reduced; *p. c.* has a large projection. Copulatory piece (Fig. 35, J) is broadly truncate at apex and narrowed behind; the truncate apical margin is sinuate and broadly sclerotized

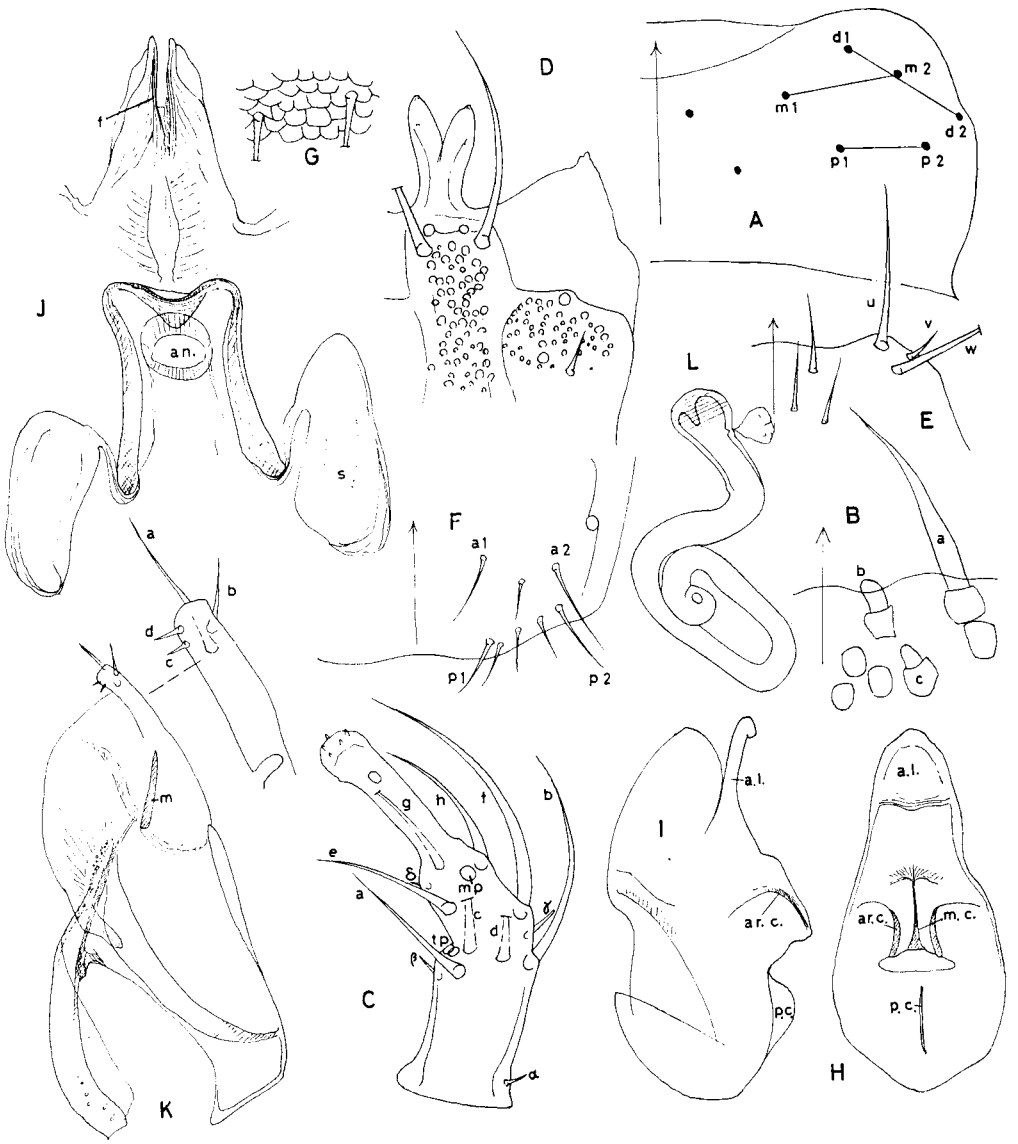


Fig. 35. *Atheta* (*Psammostiba*) *kamtschatica* BRUNDIN from Miyako, Pref. Iwate. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K,** Lateral lobe; **L,** Spermatheca.

in the middle. Suspensorium (*s*) is mostly membraneous and dorsal to the corpus. Distal apophyses are narrowly produced pair of foldings (*f*). Vellum of lateral lobe (Fig. 35, K) is developed, but middle apodeme (*m*) is very narrow. Distal segment is narrowly elongate; *a* is longer than *b* and close of it; *c*, *d* are similarly short and

standing close together.

Length: 6.50 mm (Head long 0.69 mm × wide 0.85 mm; pronotum 0.78 mm × 0.77 mm; elytra 0.81 mm × 1.25 mm).

Female: Terg. VIII is as in the male. Spermatheca (Fig. 35, L) is loosely coiled and with an elongate bursa having a slender umbilicus within.

Specimens examined: IWATE: Ragahama, among wrack of the shore, 1♂, 2♀ (14. VI 1971, R. Yosii leg.); Jodogahama nr. Miyako, 12♂, 18♀ (5. VI 1975, R. Yosii leg.).

This species is described by one female from Kamtschatka, whose spermatheca and other characters agree well with our specimens. It is the large species of *Atheta*. It is near to *A. hilleri* the labrum having 2+2 secondary setae. However, in the shape of median lobe, copulatory piece and in labial chaetotaxy it is rather similar to *A. jessoensis* and different from it by more slender distal segment of the lateral lobe and in the different setal arrangement of terg. VIII.

## Subgenus *Halostiba* subg. nov.

Typus: *Ischnopoda (Philhygra) ushio* K. Sawada, 1971

The type species is peculiar in many respects. From the macrochaetal arrangement and general feature of the body it is nearly related to *Anopleta,* but the copulatory piece is peculiar having the resemblance to *Dimetrota*. Abd. stern. VIII of male is provided with an interior row of marginal setae, and in this respect, it is as in *Philhygra,* but the spermatheca is very well represented. Referring these peculiarities a new subgenus is erected to accomodate this halophilous species. *A. magnipennis* Bh. is also to be included in it, as it has the characters above with the exception of the inner armature of genitalia.

### *Atheta* (*Halostiba*) *ushio* (K. Sawada, 1971) Fig. 36, A-E

*Ischnopoda (Philhygra) ushio* K Sawada, 1971

Additional notes: Male: Pubescence of pronotum is anteriorly directed along the middle and lateral erecting setae are short. Macrochaetal arrangement as 02–13–23–23–23–234–, medial setae of terg. III to V are anteriorly advanced. Terg. VIII (Fig. 36, A) has 5+5 macrosetae and its microsculpture (Fig. 36, B) is finely imbricate mingled with a corase reticulate structure. The segment is obsoletely crenulated behind and short marginal setulae are alternative with the crenulation. Stern. VIII (Fig. 36, C) is elongate and broadly subtruncate behind and with a median sinuation. There is a tuft of setulae to each side of it, which are composed of 4 interior and 2 exterior setulae converging together at the end. Apical lobe (Fig. 36, D) is short; costa *ar. c.* are approximate in the middle; *m. c.* is complete; *v. ap.* is conspicuous. Copulatory piece (Fig. 36, E) has a slender anterior process on each side of the annellus and a pair of large dorsal picks are confluent with the corpus by means of a narrow sclerite (*p*). Distal apodeme (*d*) is a paired lobes, whose inner margin is finely ciliate.

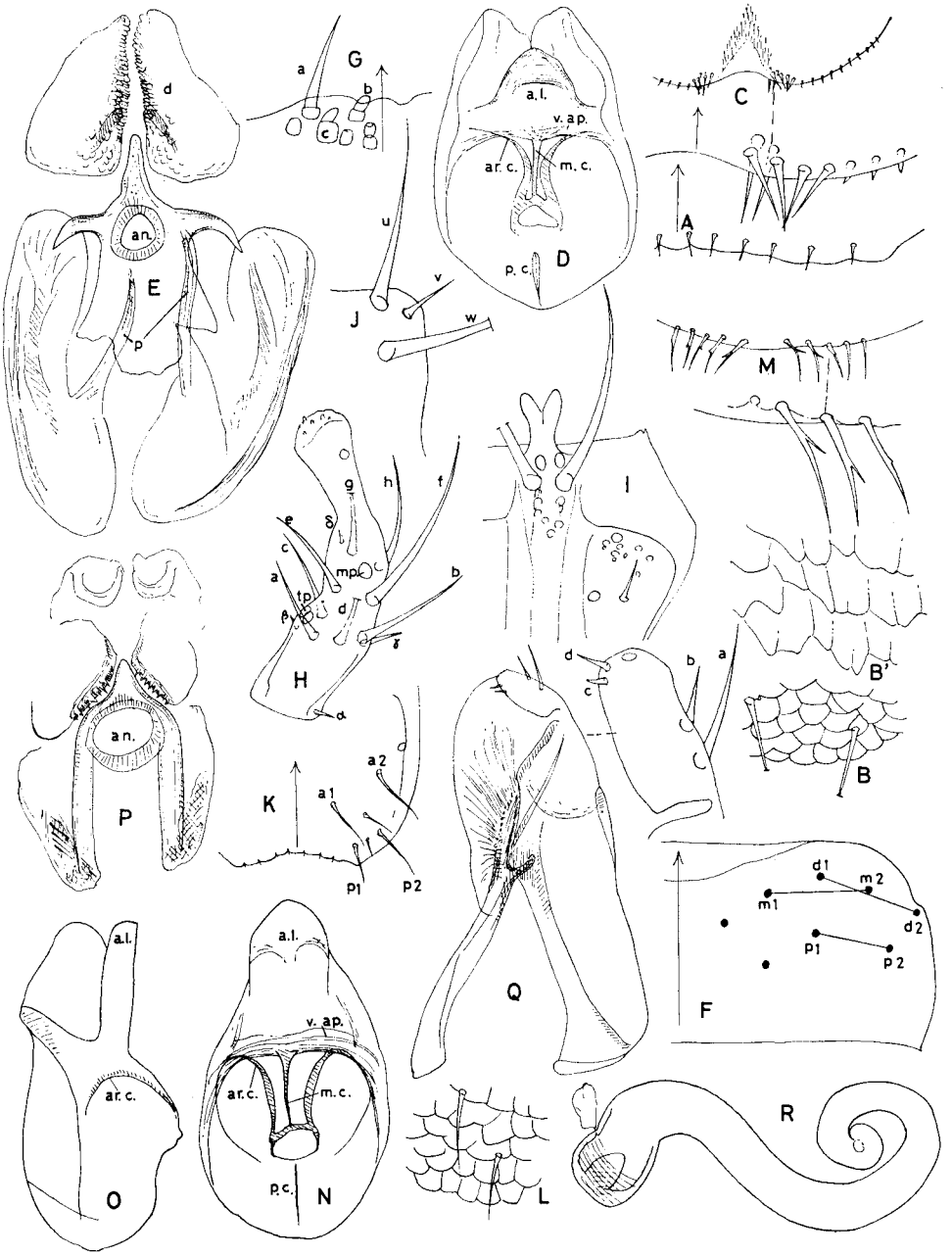


Fig. 36. *Atheta* (*Halostiba*) *ushio* (K. SAWADA) from Wakasa-Takahama, Pref. Fukui. **A,** Marginal setulae of ♂ terg. VIII; **B, B'**, Microsculpture of ♂ terg. VIII & its underside (**B'**) reticulation; **C,** ♂ stern. VIII; **D,** Median lobe; **E,** Inner armature of aedeagus. *Atheta* (*Halostiba*) *magnipennis* BERNHAUER from Wakasa-Takahama, Pref. Fukui. **F,** Labral chaetotaxy; **G,** Labral margin; **H,** Labial palpus; **I,** Glossa & prementum; **J,** Mentum; **K, L,** ♂ terg. VIII & its microsculpture; **M,** Marginal setae of ♂ stern. VIII; **N, O,** Median lobe; **P,** Inner armature of aedeagus; **Q,** Lateral lobe; **R,** Spermatheca.

Female: Terg. VIII is broadly rounded behind, not crenulate behind and double structure of the integument is not observed. Stern. VIII is produced and not sinuated behind and without marginal tuft of setulae of the male.

Specimens examined: No further materials than the previous report.

***Atheta* (*Halostiba*) *magnipennis* Bernhauer, 1943** Fig. 36, F-R

*Atheta* (*Anopleta*) *magnipennis* Bernhauer, 1943, Benick 1970

Additional notes to Benick, 1970: Male: Seta *m*-2 of labrum (Fig. 36, F) is beyond the distal row; *p*-2 is posterior to *p*-1; 2+2 secondary setae are present. *a*-sensilla of labral margin (Fig. 36, G) is short, converging; *b* is obtuse and also curved. Segm. III of labial palpus (Fig. 36, H) is dilated distally; $\gamma$ is on the level of *b*; $\delta$ is anterior to the level of *g*; *e* is on the level of *g*. Glossa (Fig. 36, I) is hort and with two obtuse arms; median area of prementum is broad and with ca. 7 pseudopores; lateral area has 2 real, 1 setal and ca. 5 small pseudopores. *v*-setula of mentum (Fig. 36, J) is normally long and on the level of *u*. Macrochaetal arrangement as 02–13–23–23–23–23–233.– Terg. VIII (Fig. 36, K) is triangularly emarginate behind and crenulate along the margin; 6+6 (4+4 large and 2+2 small) macrosetae are present; microsculpture (Fig. 36, L) is typically imbricate in pattern. Stern. VIII (Fig. 36, M) is evenly rounded behind and with a row of interior marginal setae, some 5+5 submedian ones are stronger than others and with a plica at about the middle of one side. Median lobe of aedeagus (Fig. 36, N, O) is 0.25 mm long; apical lobe is straightly prolonged and obtusely rounded apically; costa *ar. c.* are widely separating; *m. c.* is entire; *v. sp.* is conspicuous; *p. c.* has no projection. Copulatory piece (Fig. 36, P) is broad, distally produced to form a short apical process, which is basally sinuate and dilated laterally; annellus is large; suspensorium is sclerotized only at the basis and largely membraneous. Distal apodeme is a pair of sclerites (*s*), whose inner margin is finely setose. Proximal segment of lateral lobe (Fig. 36, Q) is narrow and long, with fairly prolonged apical portion anterior to the articulation; vellum is developed; middle apodeme (*m*) is narrowly sclerotized; distal segment is oblong and obtuse at apex; seta *a* is near to the basis and longer than *b*, while *c. d* are short and subequal in length.

Female: Terg. VIII is not modified, but faintly sinuate at the middle of the posterior margin. Stern. VIII is broadly rounded behind and without interior marginal setae. Spermatheca (Fig. 36, R) is coiled distally; bursa has a large umbilicus within.

Specimens examined: SHIZUOKA: Atami, 1♂, 1♀ (29. V 1970, R. Yosii leg.), FUKUI: Wakasa-Takahama, 4♂, 8♀ (5. VI 1969, K. Sawada leg.), KUMAMOTO: Amakusa, 2♂, 3♀ (20. VII 1970, R. Yosii leg.).

The Bernhauer's type is a female from Japan (without further notes), which coincides well with our specimens. Benick's description of the species is very exact and nothing is to be corrected. Compared to *A. ushio* (K. S.) the male has no spinulate setae of the head and interior setae of stern. tern. VIII of male is differently modified. Inner armature is also considerably specific.

## II *Acrotona* (*s. lat.*) THOMSON, 1861

Typus: *Aleochara aterrima* GRAVENHORST, 1802

The genus *Acrotona* is characterized by the undulating structure of the posterior margin of each tergites and sternites. Usually it is alternative to the small marginal setulae, but sometimes it is independent from it. When the genus is thus defined, it may include many subgenera showing the evolutionary trend of chaetotaxy. *Lyprocorrhe, Nehemitropia* and *Colpodota* are belonging to 0–0 group and *Acrotona* (s. str.) alone shows 01 type of chaetal arrangement. Cervical carina is not divergent (*Lyprocorrhe* etc.) or divergent according to species. In *Nehemitropia sordida* it is intermittent. Key to separate them would be as:

1. Chaetotaxy 0–0 type..... 2
   Chaetotaxy 01 type.....*Acrotona* (*s. str.*)
2. Integument with quadrangular reticulum.....*Lyprocorrhe*
   Integument not especially modified..... 3
3. Abd. stern. VII with peculiar sclerotized area.....*Nehemitropia*
   Abd. stern. VII without special structures.....*Colpodota*

### Subgenus *Lyprocorrhe* THOMSON, 1861

Typus: *Homalota anceps* ERICHSON, 1837

The type species is concordant with *Datomicra* in almost all details, the macrochaetal arrangement, the buccal structure etc. are quite the same and inner armature of genital apparatus is not much different from it. But the segmental margins of abdominal tergites and sternites are intensely crenulated, so that it is to be placed in the genus *Acrotona*. Peculiar to this species the body surface is densely covered with minute quadrangular reticulum alike to the tortoise shell and chaetotaxy of labial palpus is significantly different from other *Acrotona* spp. At present it is monospecific.

#### *Acrotona* (*Lyprocorrhe*) *anceps* (ERICHSON, 1837) Fig. 37

Male: Labrum (Fig. 37, A) is faintly emarginate in fromt; seta *p*-1 is anteriorly on the level of *m*-1; *m*-2 is remote from distal row and there are 3+3 secondary setae. *a*-sensilla of labral margin (Fig. 37, B) is setaceous, normally long; *b* is elongate, produced beyond the labral margin. Mandibles are normal, the right mandible with a fine molar tooth in the middle. Segm. I of labial palpus (Fig. 37, C) is shorter than III, the latter is parallel or scarcely dilated distally; $\alpha$-setula is normal in form, but marginal in position, $\beta$ is strongly reduced to a vestigial form, $\gamma$ is anterior to *b*; $\delta$ is much posterior to the level of *h*; *a* is remote from *tp* and close to *b*; *e* is on the level of *f* and posterior to the level of *mp*. Glossa (Fig. 37, D) is very short, broad and subtruncate on apex. Median area of prementum (Fig. 37, D) is normally broad, with 4 pseudopores near the distal setae. Setal and real pores of the lateral area are remote from the median area and accompanied by 3 pseudopores. *v*-setula of mentum (Fig. 37, E) is reduced to a fine setula placed at the corner. Cervical carina is not divergent

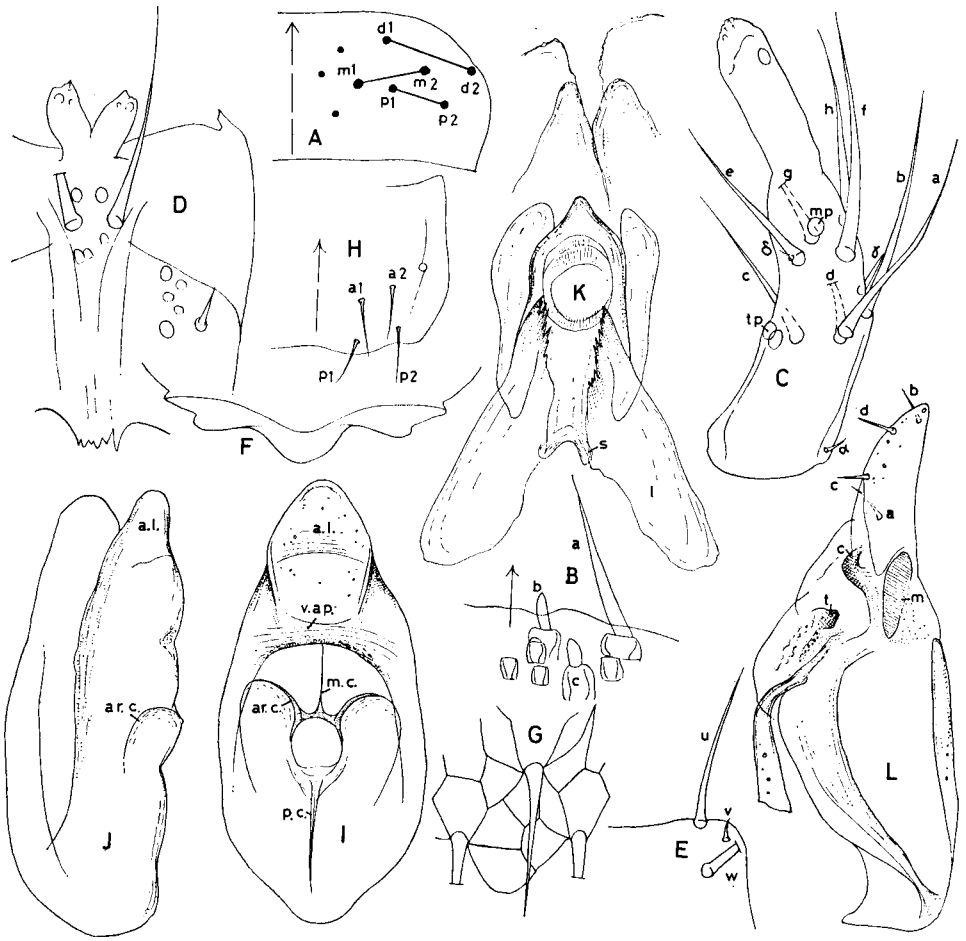


Fig. 37. *Acrotona* (*Lyprocorrhe*) *anceps* (Erichson) from Germany. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F,** Cervical carina; **G,** Microsculpture of tergiters; **H,** ♂ terg. VIII; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L,** Lateral lobe.

(Fig. 37, F). Macrochaetal arrangement is as 01-02-12-12-12-33-. Posterior margin of each tergites and sternites is fairly crenulate and the microsculpture of all tergites is as in Fig. 37, G. This reticulation tends to be denser toward terg. II. Terg. VIII (Fig. 37, H) is not modified, but faintly sinuate at the middle of the posterior margin. Median lobe of aedeagus (Fig. 37, I, J) is 0.34 mm long, fairly straight. In ventral view it is broad in the middle and gradually narrowed in front, and with a short, broad apical lobe. *m. c.* is very fine, *ar. c.* are normally developed, runnging widely apart to each other and reflected posteriorly. *v. ap.* is fairly broad and conspicuous. Copulatory piece (Fig. 37, K) is elongate, with short, obtuse apical process; annellus is large for the corpus, suspensoria are large, but mostly membraneous and

with a weakly sclerotized element (*s*) posterior to the corpus. Lateral lobe (Fig. 37, L) has, beside the middle apodeme (*m*), a distinct callose sclerite (*c*) on the level of *m*; vellum is rather reduced and with a thickening (*t*) placed at the center of it forming an extension of the proximal segment. Distal segment is elongate and triangularly pointed and all four setae are subequally short; seta *a* is near the basis, *b* is apical and *c*, *d* are marginally situated.

Specimen examined: GERMANY: Gausing, 1♂ (4. X 1964, PUTHZ det.).

## Subgenus *Nehemitropia* LOHSE, 1971

Typus: *Homalota sordida* MARSHAM, 1802

The marginal serrulation of tergites and sternites is well developed and, therefore, it must be placed within the genus *Acrotona*. Chaetal arrangement is 0–0 type, but different from *Colpodota* by the presence of the special organ on abd. stern. VII. Monospecific.

### *Acrotona* (*Nehemitropia*) *sordida* (MARSHAM, 1802) Fig. 38, A-C

The species is already described in detail in K. SAWADA 1972, but still there remain following points to be noted: Cervical carina is faintly divergent (Fig. 38, A), having a small branch of arm posteriorly. Chaetal arrangement is as 01–03–13–13–13–24–. constantly and hind margin of each tergite and sternite are finely crenulated. On abd. stern. VII there exists a peculiar structure of the integument in both sexes. The sternite is anteriorly extended as in other Athetae and along the basis of the prolonged area, directly posterior to it there is a transverse band of heavily chitinous granules, each of which are rather miliary in appearance (Fig. 38, B, C). The function of the structure is unknown, but possibly it is an organ of stridulation.

Specimens examined: AUSTRIA: Burgenland, 1♂ (20. IV 1962, PUTHZ det.), FRANCE: Brunoy nr. Paris, 3♂, 5♀ (11. X 1974, R. YOSII leg.); Calvi in Corsica, 2♂, 2♀ (22. XII 1974, R. YOSII leg.); Ajaccio, 3♂, 4♀ (24. XII 1974, R. YOSII leg.), JAPAN: Many examples from various places of Hokkaido, Honshu, Shikoku and Kyushu.

Distribution: Cosmopolitan.

That the cervical carina is faintly divergent and with short posterior branch is observed both in Japanese and European specimens.

## Subgenus *Colpodota* MULSANT et REY, 1874

Typus: *Homalota pygmaea* GRAVENHORST, 1802

The subgenus includes those species of *Acrotona* by which the macrosetae are arranged in 0–0 type and not much different from *Acrotona* (s. str.) in other features. The relation between them would be as between *Datomicra* and *Badura* of *Atheta* complex. Cervical carina is either diverged or not.

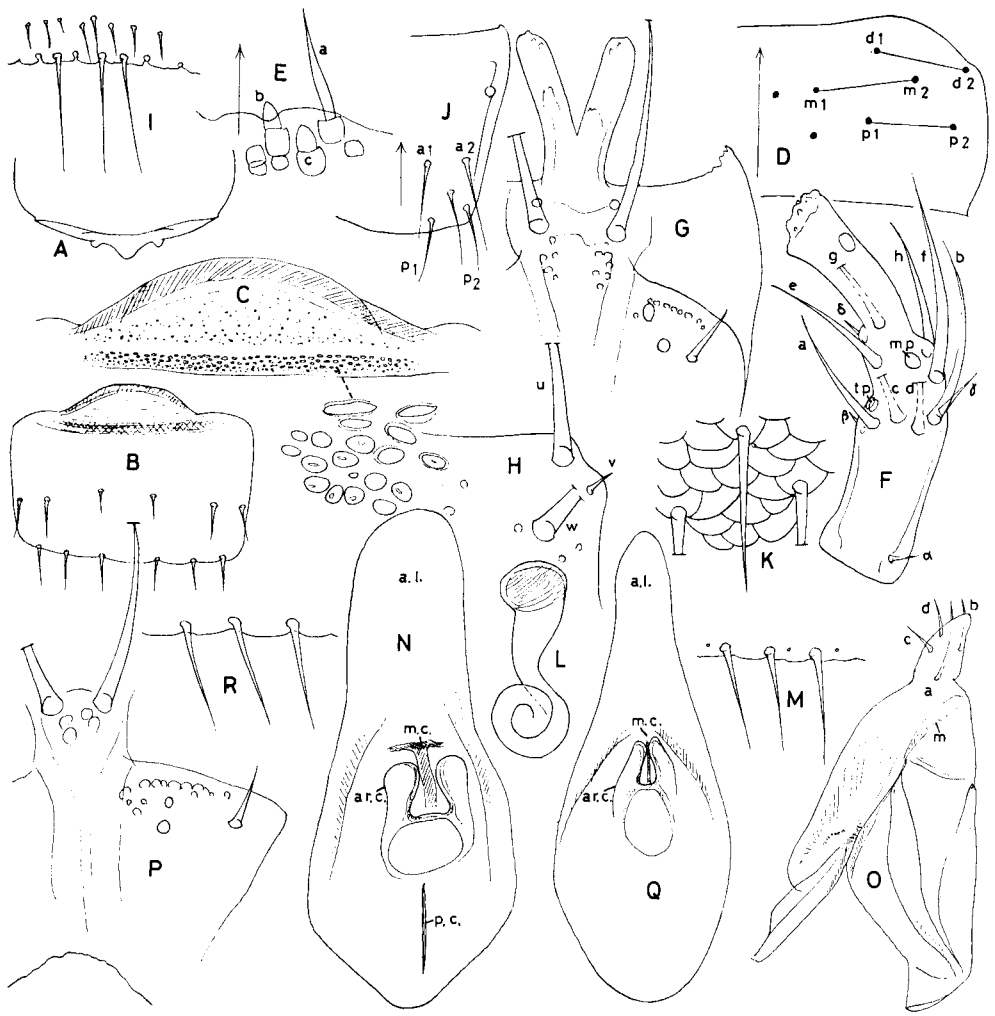


Fig. 38. *Acrotona* (*Nehemitropia*) *sordida* (Marsham) from Nara. **A,** Cervical carina; **B,** Stern. VII; **C,** Anterior part of stern. VII: *Acrotona* (*Colpodota*) *pygmaea* (Gravenhorst) from Berlin. **D,** Labral chaetotaxy; **E,** Labral margin; **F,** Labial palpus; **G,** Glossa & prementum; **H,** Mentum; **I,** Posterior margin of terg. V; **J, K,** ♀ terg. VIII & its microsculpture; **L,** Spermatheca. *Acrotona* (*Colpodota*) *pseudotenera* (Cameron) from Akiyoshi. **M,** Margin of terg. V; **N,** Median lobe; **O,** Lateral lobe. *Acrotona* (*Acrotona*) *yosii* (K. Sawada), type. **P,** Prementum; **Q,** Median lobe; **R,** Posterior margin of terg. V.

***Acrotona* (*Colpodota*) *pygmaea* (Gravenhorst, 1802)** Fig. 38, D-L

To the diagnosis of this well known species following points must be added:

Female: Labrum (Fig. 38, D) is strongly transverse; all labral setae are normally and subequally long; seta *m*-2 is separate from the distal row; 2 pairs of secondary setae

are present. *a*-scnsilla of labral margin (Fig. 38, E) is setaceous, short; *b* is conical; *c* is normal in size. From the labial paplus (Fig. 38, F) segment II is reduced; $\beta$, $\delta$-setulae are long, the latter is at the apicalmost position of II; $\gamma$ is hidden by seta *b*, which is anterior to the level of *a*; *e* is on the same level with *mp*. Glossa is deeply bifurcate (Fig. 38, G); median area of prementum is broad, converning behind and with some 7 pseudopores laterally leaving a broad interspace between them; distal setae of the prementum are widely separated. Posterior real pore of the lateral area is remote from the median area and is close to the setal pore. Small pseudopores on the lateral area tend to be arranged in a transverse row. *v*-setula of mentum (Fig. 38, H) is reduced. Cervical carina is not divergent. Posterior margin of each abdominal tergites (Fig. 38, I) is clearly crenulated in their full length. The macrochactal arrangement is as 01–02–13–13–13–33–.

Terg. VIII (Fig. 38, J) is elongate; gently produced at the middle of the hind margin and with 5+5 long setae. The microsculpture (Fig. 38, K) is imbricate in pattern. The bursa of the coiled spermatheca (Fig. 38, L) is short, bulbose and without umbilicus.

Specimen examined: GERMANY: Berlin, 1♀ (25. II 1965, PUTHZ leg., et det.).

Labial palpus of the present species is closely allied to *A. aterrima* (GRAV.), but the prementum differs by smaller size of pseudopores. Terg. VIII is beset with 5+5 major setae and tibia has many short erecting setae.

***Acrotona* (*Colpodota*) *pseudotenera* (CAMERON, 1933)** Fig. 38, M-O

*Atheta* (*Coprothassa*) *pseudotenera* CAMERON, 1933

Syn. nov.: *Ischnopoda* (s. str.) *uncinata* K. SAWADA, 1971, 1972

The present species is very prevalent in Japan and is fairly constant in form and colour. It is conspicuous with the well developed sensory setae of pronotum of male. The type specimen of *A. pseudotenera* is a female from Kobe and, therefore, the characteristic setae of pronotum is seen only in a retarded state. But as it is concordant with the female of *Is. uncinata*, two names are surely synonymous. Cotypes of *A. preudoparens* CAMERON, 1933 from Unzen is also identical with this species as it is a young female of this species, but the ultimate desicion is to be made after investigation of the type.

Additional notes to K. SAWADA 1971 on *I. uncinata* is as follows: Pubescence of pronotum is directed backwards along the middle. Posterior margin of abdominal tergites and sternites (Fig. 38, M) is obsoletely crenulate. Cervical carina is clearly divergent. Macrochaetal arrangement is as 01–03–13–13–13–33–. Terg. VIII has 4+4 macrosetae in V-form. Costa *ar. c.* (Fig. 38, N) are approximate and recurvate to form a paired plates (*p*); *m. c.* is present on distal half and apically bifurcate; Proximal segment of lateral lobe (Fig. 38, O) is produced before the articulation and vellum is reduced; middle apodeme (*m*) is fusiform and without additional apodemes.

Specimens examined: HOKKAIDO: Nopporo, 2♂, 3♀ (4. VIII 1971, R. YOSII leg.); AOMORI: Mt. Iwaki, 1♂ (8. X 1970, G. IMADATE leg.); SHIGA: Oomi-

Kido, 6♂, 6♀ (10. VI 1973, R. Yosii leg.); KYOTO: Mt. Hiei, 2♂ (9. VII 1971, K. Sawada leg.), Kurama, 30 ex. (20. VII 1972, R. Yosii leg.), Kitashirakawa, 8♂, 10♀ (20. XII 1972, K. Sawada leg.), Imperial Palace, 3♂ (30. VIII 1971, R. Yosii leg.), Fushimi-Inari, 1♂ (9. XII 1972, R. Yosii leg.). OSAKA: Takatsuki, 6♂, 8♀ (13. XI 1970, K. Sawada leg.); Kongosan, 13 ex. (14. XI 1972, K. Sawada leg.); Mt. Izumi-Katsuragi, 1♀ (18. VI 1968, K. Sawada leg.); Inunakiyama, 1♂, 2♀ (10. X 1973, R. Yosii leg.), NARA: Kasuga, 1♂, 2♀ (10. VI 1972, K. Sawada leg.), OKAYAMA: Kurashiki, 2♂ (10. IV 1972, K. Sawada leg.). KOCHI: Muroto, 2♂, 1♀ (6. IV 1973, R. Yosii leg.); FUKUOKA: Shikanoshima, 1♀ (6. IV 1970, R. Yosii leg.); Kurume, 6♂, 10♀ (15. IV 1972, R. Yosii leg.).

## Subgenus *Acrotona* (*s. str.*) Thomson, 1861

Typus: *Homalota aterrima* Gravenhorst, 1802

To the subgenus *Acrotona* belong those species by which the macrochaetal arrangement is of 01-type. *Acrotona* (s. str.) and *Colpodota* as defined here have the common character that the costae around the ventral orifice of the aedeagus is broadly sclerotized to form a kind of thin plate anterolateral to it (Fig. 38, E). Macrochaetae of abd. terg. VII are usually as –34–, and anterior row is arranged in V-form, *a*-2 being posterior to others. Cervical carina is either divergent or not.

### *Acrotona* (*Acrotona*) *aterrima* (Gravenhorst, 1802) Fig. 39

In addition to the description of Brundin, 1952 etc. following characters may be stressed:

Male: Labrum (Fig. 39, A) is transverse, broadly emarginate along the anterior margin and with two pairs of secondary setae. *b*, *c*-sensillae of labral margin (Fig. 39, B) are inconspicuous. On labial palpus (Fig. 39, C) *a* is near *tp*, *b* is on the same level of $\gamma$; *e* is anterior to *f* and close to the level of *mp*. Glossa (Fig. 39, D) is with two basal pores widely separated to each other. Median area of prementum is broad, converging posteriorly and with about 7 pseudopores. Lateral area has 2 real, 1 setal and up to 4 pseudopores. Mentum (Fig. 39, E) is broadly emarginate; *v*-setula is short and on the level of *w*. Cervical carina is divergent. The posterior margin of abdominal tergites and sternites are fully crenulated (Fig. 39, F) in their full length as characteristic to the genus *Acrotona*. Macrochaetal arrangement is as 01–13–13–13 13–13–34–. Terg. VIII (Fig. 39, G) is oblong and truncate along the posterior margin; seta *a*-1 is smaller than *a*-2 and remote from the stigma; the microsculpture (Fig. 39, H) is imbricate, each reticulum is longer than wide and close to each other. Stern. VIII (Fig. 39, I) is normally produced, with the distalmost seta much longer than others and fairly incurved. Median lobe (Fig. 39, J. K) of aedeagus is 0.28 mm. long; apical lobe is nearly horizontal, slightly constricted on anterior one-third and ending in an obtuse apex. Costa *ar. c.* is broadly developed and well sclerotized as characteristic to *Acrotona v. ap.* is weakly present. Copulatory piece (Fig. 39, L) is elongate, with a short acute apical process; annellus is large and there is a pair of lateral thickening

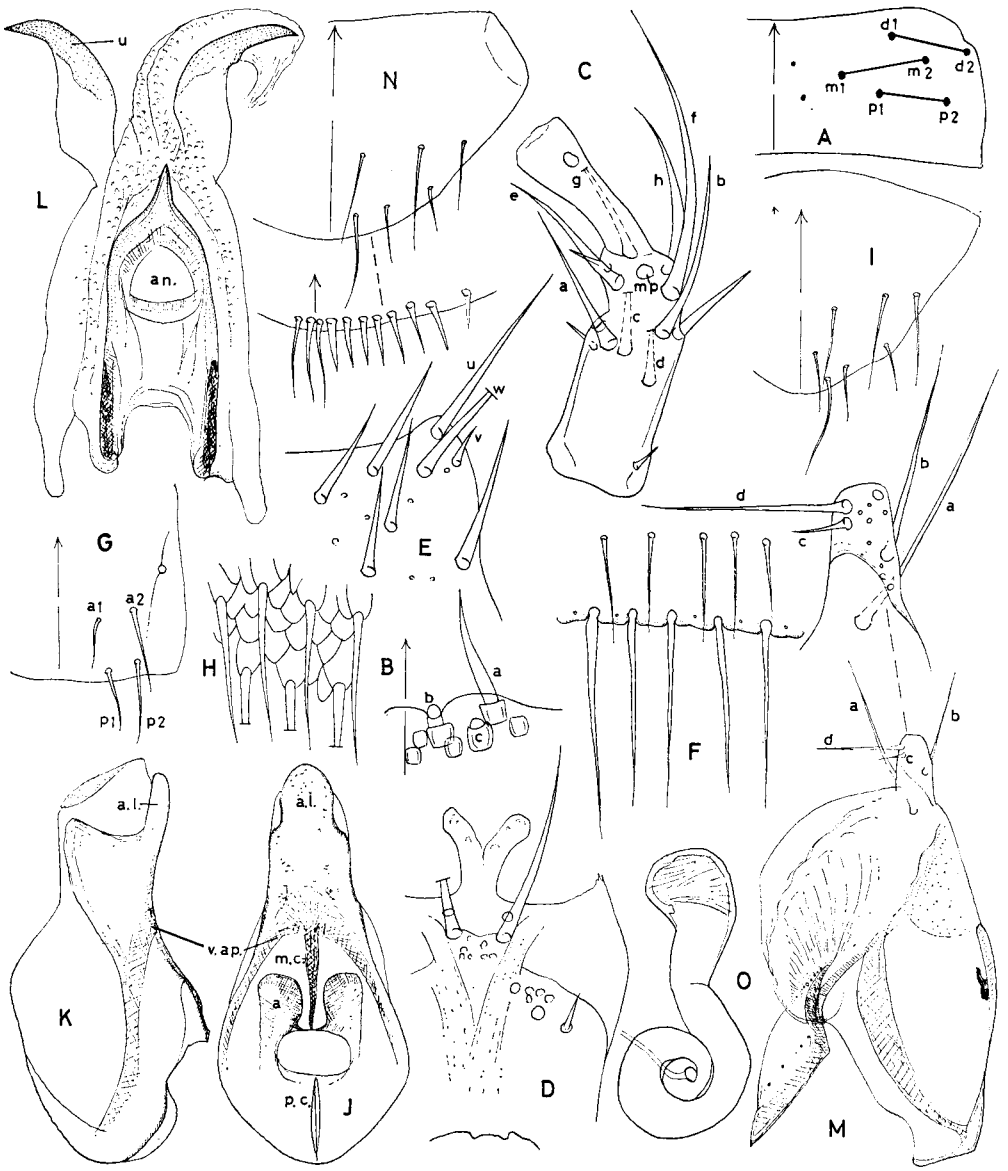


Fig. 39. *Acrotona* (*Acrotona*) *aterrima* (GRAVENHORST) from Germany. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F,** Margin of terg. V; **G, H,** ♂ terg. VIII & its microsculptures; **I,** ♂ stern. VIII; **J, K,** Median lobe; **L,** Inner armature of aedeagus; **M,** Lateral lobe; **N,** ♀ stern. VIII; **O,** Spermatheca.

posteriorly. Well developed suspensorium is prolonged beyond the apex of the corpus and ending in a large, stout uncus (*u*). Proximal segment of the lateral lobe (Fig. 39, M) has a short distal process anterior to the articulation and with a normally developed vellum; the distal segment is short; seta *c* is short, while others are long.

Female: The apicalmost seta of stern. VIII (Fig. 39, N) is longer than others like in male sex. A row of long and short marginal setae are present. Spermatheca (Fig. 39, O) is compactly coiled; bursa is oblong, corrugated and without umbilicus.

Specimens examined: GERMANY: Elansee, 1♂ (3. III 1961, Puthz leg., Benick det.), Bloekede, 1♀ (27. IV 1968, Ullrich det.).

***Acrotona* (*Acrotona*) *yosii* (K. Sawada, 1970)** Fig. 38, P-R

*Ischnopoda* (*s. str.*) *yosii* K. Sawada, 1970

Additional notes: Labrum has only 2+2 secondary setae. Anterior real pore of the lateral area of prementum (Fig. 39, P) is reduced and located close to the posterior pore; setal pore is lateral and widely remote from the real pore. Cervical carina is not forked. Posterior margin of abdomnal segments is heavily crenulate (Fig. 39, Q). Macrochaetal arrangement as 01–12–13–13–13–33–. Anterior row of terg. VII is in V-form and Terg. VIII with 4+4 setae. Median lobe of aedeagus (Fig. 39, R) has costa *ar. c.* approximate and extending laterally to form pigmented plates; *v. ap.* is indistinct. Inner armature is insufficiently observed in the type.

No further materials than the type from Shiga Heights.

*A. yosii* is near *A. aterrima* (Grav.) in labial palpus and glossa, but differs in the shape of prementum and copulatory piece. Besides the antenna is shorter and its segments are more transverse.

## III *Liogluta* Series

The *Liogluta* series includes such genera as *Liogluta, Callicerus, Aloconota, Geostiba* etc., by which the lateral area of prementum is destitute of any pseudopores, there being only a setal and 2–3 real pores. Besides, the median area of prementum is very broad and accordingly the distal setae are widely apart to each other, although this last character is present also in some species of *Acrotona*. In *Schistoglossa* the mandible is peculiarly modified and in *Callicerus* and *Geostiba* the *a*-sensilla of labral margin is not setaceous, but reduced to a small blunt bulb, while in *Aloconota* and *Tomoglossa* the twin pores of the labial palpus are minute and reduced. This last character is common with *Gnypeta* and *Tachyusa*, but it would be a mere coincidence. Most probably *Zyras* and its allies have been derived from the *Liogluta* series as they have the same character in the structure of prementum.

Key to separate them would be as:

1. Twin pores are normal in size ..... 3
   Twin pores minute ..... 2
2. Copulatory piece is acutely elongate ..... *Aloconota*
   Copulatory piece not especially aciculate ..... *Tomoglossa*
3. *a*-sensilla of labral margin setaceous ..... 5
   *a*-sensilla of labral margin reduced to companulate form ..... 4
4. Third segment of maxillary palpus broadly dilated ..... *Callicerus*

Third segment of maxillary palpus not as above.....*Geostiba*

5. Mandible apically bi- or tridentate.....*Schistoglossa*
   Mandible apically not dentate.....*Liogluta*

### *Liogluta* THOMSON, 1858

Typus: *Aleochara longiuscula* GRAVENHORST, 1802

In *Liogluta* the median area is wide and consequently a pair of distal setae are also wide apart to each other. Besides the lateral area is destitute of any pseudopores, there being only one setal pore and two real pores. Chaetal arrangement is of 01 type in all species examined. As these features are common with *A. pagana* (ER.), *A. tibialis* (HEER), and *A. vestita* (GRAV.), it may witness the synonymy of *Hypnota* M.R., *Oreostiba* GANGL. and *Thinobaena* TH. with *Liogluta*. Two Japanese species *A. constricta* (K. S.) and *A. ursi* K. S. are to be included in *Liogluta*, when the genus is defined as above.

#### *Liogluta longiuscula* (GRAVENHORST, 1802) Fig. 40, A-I

Female: Labrum (Fig. 40, A) slightly emarginate in front; distal row is clearly longer than the proximal row and with 3+3 secondary setae. *a*-sensilla of labral margin (Fig. 40, B) is short and straight; *b* is flat on apex, while *c* is normally pointed. Segm. I of labial palpus (Fig. 40, C) is as long as III; $\gamma$-setula is just behind the level of *b*; *a* is close to *tp* and on the same level with *b*; *f* is nearly on the level of *e*. Glossa (Fig. 40, D) is broad, gradually narrowed behind and with ca. 12 pseudopores; lateral area is with 2 real and 1 setal pores and without pseudopores. *v*-setula of mentum (Fig. 40, E) is very small. Macrochaetal arrangement is as 01–13–13–13–13–34–. Terg. VIII (Fig. 40, F) is gently arcuate behind and with 4+4 short macrosetae; Microsculpture (Fig. 40, G) is imbricate. Stern. VIII (Fig. 40, H) is flat at the middle of the posterior margin, where there is a row of short and long marginal setae. Spermatheca (Fig. 40, I) is reversely curve and S-shaped; bursa is short, corrugated and with a small umbilicus.

Specimen examined: ITALY: Sardinia, 1♀ (10. IV 1963, MALICKY leg., BENICK det.).

#### *Liogluta pagana* (ERICHSON, 1840) Fig. 40, J-U

*Hypnota pagana* (ER.): MULSANT et REY, 1873

Male: Medial row of labral setae (Fig. 40, J) is much shorter than the proximal row; *m*-2 is posterior to the level of *m*-1. *b*-sensilla of labral margin (Fig. 40, K) is quite obtuse, smaller than *c*. $\gamma$-setula of labial palpus (Fig. 40, L) is on the same level with *b*; *a* is lateral to *tp*; *f* is posterior to the level of *e*. Glossa (Fig. 40, M) is broad and forked. Median area of prementum is very broad, strongly narrowed behind and with some 9 pseudopores clustered near the distal setae, which are standing for remate to each other. No pseudopores in the lateral area, where the setal pore is close to the real pore. *v*-setula of mentum (Fig. 40, N) is minute. Macrochaetal arrangement

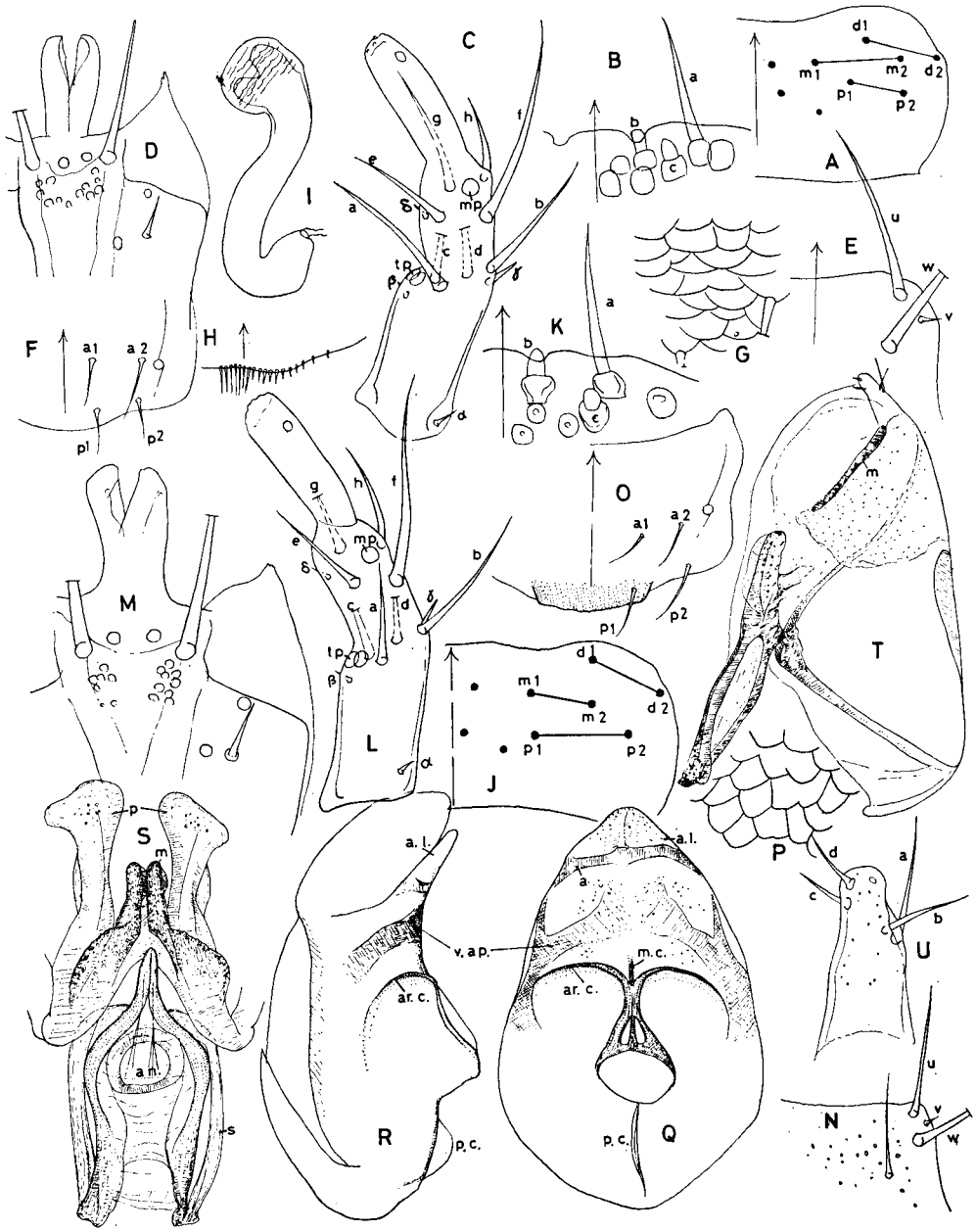


Fig. 40. *Liogluta longiuscula* (Gravenhorst) from Sardinia. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♀ terg. VIII & its microsculpture; **H,** ♀ stern. VIII; **I,** Spermatheca. *Liogluta pagana* (Erichson) from Lunz. **J,** Labral chaetotaxy; **K,** Labral margin; **L,** Labial palpus; **M,** Glossa & prementum; **N,** Mentum; **O,** ♂ terg. VIII; **P,** microsculpture; **Q, R,** Median lobe; **S,** Inner armature of aedeagus; **T,** Lateral lobe; **U,** Distal segment.

is as 01–13–23–23–23–34–. 4+4 macrosetae of terg. VIII (Fig. 40, O) are subequally short and *a*-2 is close to the level of stigma; microsculpture (Fig. 40, P) is imbricate. Median lobe of aedeagus (Fig. 40, Q, R) is extraordinarily stout; apical lobe is short, briefly pointed at apex. Costa *ar. c.* are completely confluent in the middle; *m. c.* is normal, but evanescent apically; *v. ap.* is well developed on each side; an additional apodeme (*a*) is present behind apex. Copulatory piece (Fig. 40, S) is dilated in the middle and narrowed distally to form a short apical process; suspensorium is normal, partially sclerotized along the corpus. Median apophysis (*m*) is densely rugose and divided into two basal lobes; paramedian apophyses (*p*) are fairly sclerotized, very long and ending in a hooked apex. Proximal segment of lateral lobe (Fig. 40, T) is strongly produced anterior to the articulation; vellum is normal; middle apodeme (*m*) is very narrow and long, devoid of any other apodeme; distal segment (Fig. 40, U) is small for the corpus and among 4 macrosetae *a* is close to *b* and clearly longer than that.

Specimen examined: GERMANY: Lunz, 1♂ (MALICKY leg., PUTHZ det.)

Broad median area of prementum, shape of inner armature and filiform middle apodeme of the lateral lobe are the features peculiar to the present species.

***Liogluta vestita*** **(GRAVENHORST, 1806)** Fig. 41

*Thinobaena vestita* (GRAV.): THOMSON, 1861

Male: Labrum (Fig. 41, A) is nearly truncate, shallowly emarginate in the middle in front; *a*-2 is on the same level with *m*-2; *p*-1 is close to the level of *m*-1. *a*-sensilla (Fig. 41, B) is short, straight and *b* is relatively elongate and pointed. Segm. I of labial palpus (Fig. 41, C) is longer than III; *β*-setula is longer than usual, close to *tp*; δ is also long and on the level of *h*; *a* is on thelevel of *b*; *f* is widely separating from *mp*. Glossa (Fig. 41, D) is shortly forked. Median area of prementum (Fig. 41, D) is very broad, strongly constricted behind and with many pseudopores; lateral area has 2 real and 1 setal pores and no pseudopores. *v*-setula of mentum (Fig. 41, E) is reduced to a short setula, placed posterior to *u*. Macrosetal arrangement is as 01–13–23–23–23–34–. Terg. VIII (Fig. 41, F) is not modified, but only truncate behind; among 4+4 macrosetae *a*-2 is clearly separating from stigma; microsculpture (Fig. 41, G) is imbricate. Median lobe of aedeagus (Fig. 41, H, I) is large; apical lobe is broad, gradually bent from the basis; *ar. c.* are completely confluent forming a high projection, while *p. c.* has a very small projection; *v. ap.* is developed. A thin sclerite (*s*) is running along the lateral margin of apical lobe, which is furnished with many setulae. Copulatory piece (Fig. 41, J) is broad, distally constricted to a short apical process; annellus is large and located at the middle of the corpus. A membraneous rised fold (*f*) is attached to the inner basal half and ending in an elongate thickening (*t*), to which an another large sclerite is attached; Suspensorium is mostly membraneous leaving a narrow sclerites. Paramedian apophyses are represented by a narrow transverse band (*b*). Proximal segment of lateral lobe (Fig. 41, K) is produced in front of the articulation; vellum is normal; costa of the medial segment is widely separating

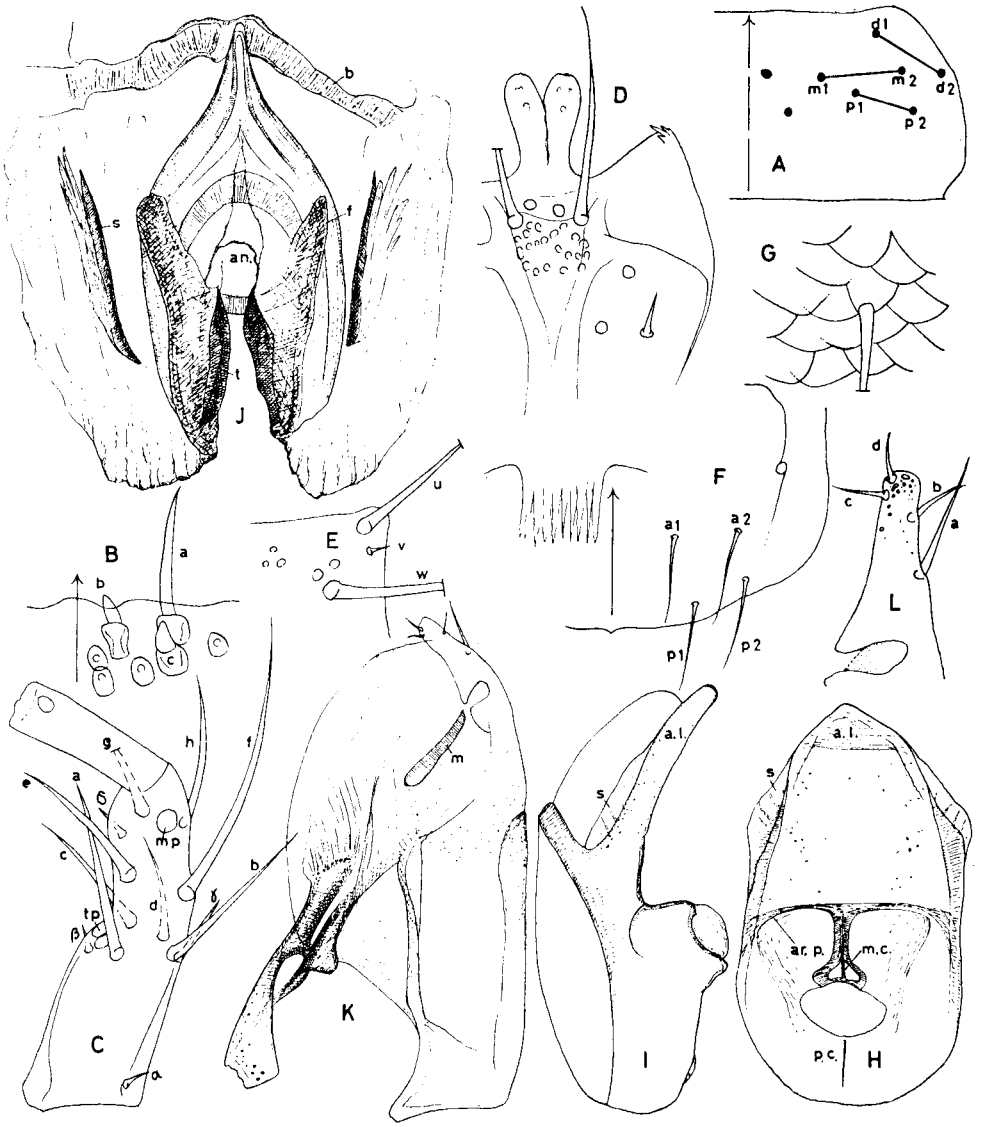


Fig. 41. *Liogluta vestita* (Gravenhorst) from Helgoland. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculputure; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K, L,** Lateral lobe.

from the articulation of the proximal segment. Distal segment is long; *a* is much longer than *b* and separating proximally from it.

Specimen examined: GERMANY: Helgoland, 1♂ (29. VII 1964, Puthz leg., Benick det.).

***Liogluta tibialis*** **(HEER, 1841)** Fig. 42, A-M

*Oreostiba tibialis* (HEER): GANGLBAUER, 1895

Male: Labrum (Fig. 42, A) has all rows of setae subequally long; *p*-1 is anterior to the level of *p*-2 and with 3+3 secondary setae. *a*-sensilla of labral margin (Fig. 42, B) is short, straight; *b* is fairly oblong, much narrower than *c*. Segm. III of labial palpus (Fig. 42, C) is nearly as long as I; $\beta$-setula is close to the level of $\gamma$; *e* is posterior to the level of *mp*. Glossa (Fig. 42, D) is normally long and forked. Median area of prementum is broad and with up to 13 pseudopores; lateral area has 2 real pores arranged in a longitudinal row and no pseudopores. *v*-setula of mentum (Fig. 42, E) is very small. Macrochaetal arrangement is as 01–13–23–23–23–34–. Terg. VIII (Fig. 42, F) is with 4+4 major setae and its microsculpture (Fig. 42, G) is transversely imbricate. Median lobe of aedeagus (Fig. 42, H, I) is elongate; apical lobe is parallel from the basis to the middle and narrowed to the pointed apex, where there is a minute bulb at its extremity. Many spinules are detected on the ventral surface of the corpus, when closely observed. Costa *ar. c.* are completely conflent with *m. c.* to form a high projection in lateral view; proximal end of *ar. c.* is shortly produced over the median foramen. Copulatory piece (Fig. 42, J) is narrowly elongate, uniformly tapering to a long apical process and with a pair of raised foldings (*s*) along the middle of the corpus, which have narrow sclerites at the middle. A large bundle of spines (*b*) are present basally on each side of the copulatory piece, which would be a suspensorium. Paramedian apophyses are a narrow transparent band (*z*) armed with a marginal row of fine irregular spinules. Lateral lobe (Fig. 42, K) is very broad; proximal segment is prolonged anterior to the articulation; vellum is considerably reduced; articulation of medial and proximal segment is quite apart from the junction of the costa and the middle apodeme (*m*) is very narrow. Distal segment is elongate; *a* is much longer than *b* and proximal in position.

Female: Stern. VIII (Fig. 42, L) is clearly emarginate in the middle, with a marginal row of long and short setae. Spermatheca (Fig. 42, M) is simply coiled; bursa is short, obsoletely corrugated and with a short umbilicus.

Specimens examined: AUSTRIA: Tirol, 1♂, 1♀ (6. VIII 1956, BENICK det.).

By the shape of labral margin, prementum and labial palpus the present species must be placed in *Liogluta,* but the widely separating articulation of lateral lobe, bundles of spines of the copulatory piece and the shape of median lobe would be peculiar to this species.

***Liogluta constricta*** **(K. SAWADA, 1970) comb. nov.** Fig. 42, N-Q

*Ischnopoda (Coproceramius) constricta* K. SAWADA, 1970

Additional notes: Along the middle of pronotum the pubescence is directed posteriorly. Lateral erecting setae are long. Macrochaetal arrangement is as 01–23–23–23–23–33–. On the median lobe (Fig. 42, N, O) costa *m. c.* is confluent with *ar. c.* and scarcely discernible.; *v. ap* is well developed on each side; *m. c.* is deeply

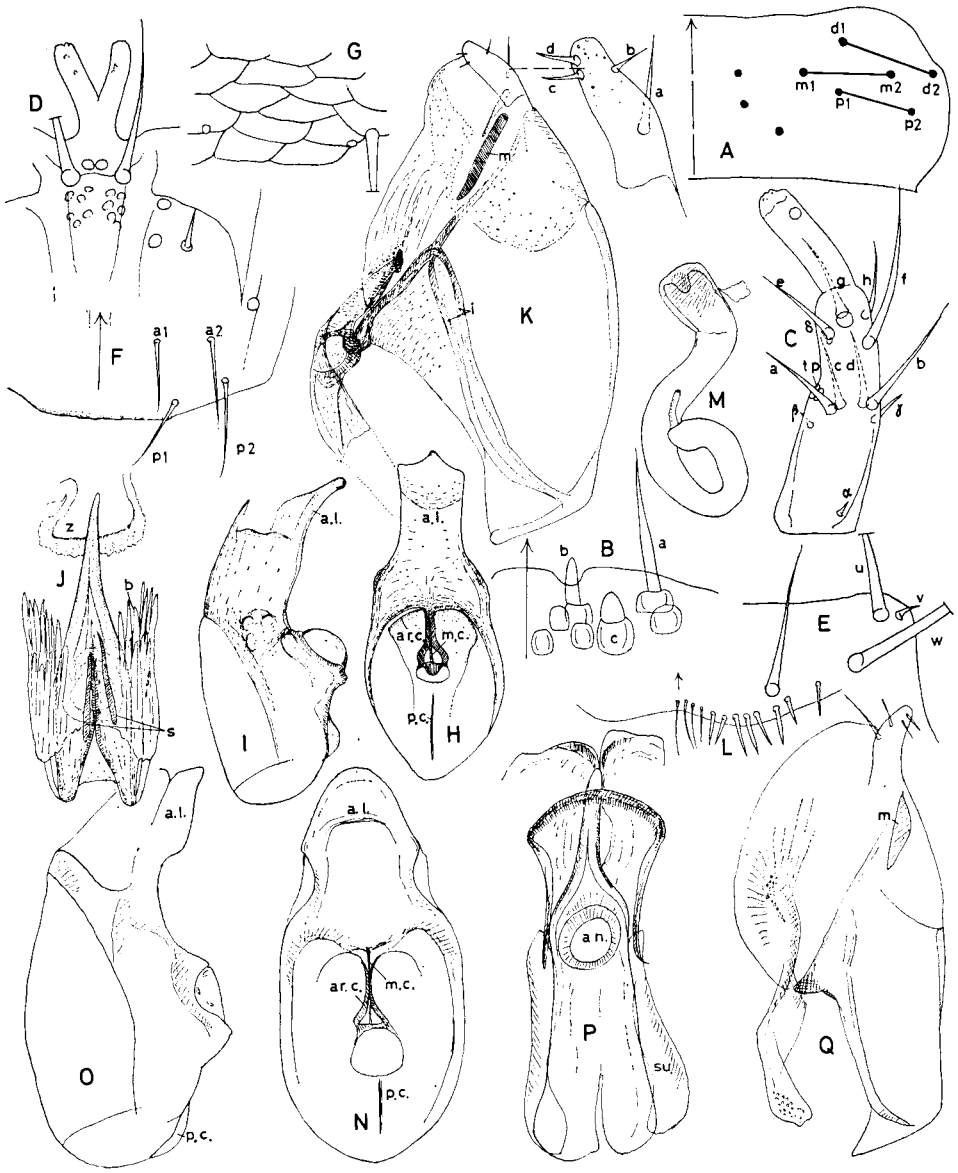


Fig. 42. *Liogluta tibialis* (Heer) from Tirol. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K,** Lateral lobe; **L,** ♂ stern. VIII; **M,** Spermatheca. *Liogluta constricta* (K. Sawada) from Shiga Heights. **N, O,** Median lobe; **P,** Inner armature of aedeagus; **Q,** Lateral lobe.

emarginate in its full length; *ar. c.* is projected high and corpus is with fenestrate margins. Copulatory piece (Fig. 42, P) is narrowly elongate and with a slender apical process; annellus is small and at the middle; suspensorium (*s*) is membraneous and extending along the corpus. Distal apodeme is an arcuated sclerite (*a*), whose inner

margin is shortly spinulate and with a narrow prolongation (*p*) on each side. Proximal segment of lateral lobe (Fig. 42, Q) is prolonged anterior to the articulation (*a*); vellum is developed; middle apodeme (*m*) is narrowly triangular.

New examples examined: NAGANO: Shiga Heights, 3♂, 4♀ (5. VII 1972, R. Yosii et K. Sawada leg.).

By the structure of prementum this species must be placed in *Liogluta*. It is allied to *L. longiuscula* (Grav.), but distinguished by broader antennae and by different shape of aedeagus.

***Liogluta ursi* (K. Sawada, 1972) comb. nov.**

*Atheta ursi* K. Sawada, 1972

The species is already described in detail in K. Sawada, 1972 and only following points may be added: The pubescence of pronotum is anteriorly directed on foreparts and posteriorly directed behind (Type III of Höeg). Its surface is covered with very fine, dense granules. Median area of prementum is wide and lateral area is without pseudopores as in other *Liogluta,* but the boundary between them is quite absent. Macrochaetal arrangement is as 01–13–13–13–13–34–.

Specimens examined: Type series from Hidaka Mts. in Hokkaido.

## *Aloconota* Thomson 1861

Typus: *Homalota gregaria* Erichson, 1840

*Aloconota* indicates very striking characters. As already indicated by Lohse 1971, the glossa is very short and not diverging, but standing side by side. Besides the median area of prementum is very wide and a pair of distal setae are locating far remote. The most striking fact is the reduced size of twin pores on the labial palpus and the reduction of *a*-sensilla of labrum, the features common with *Tomoglossa*. *Glossola* Fowler is surely a synonym of *Aloconota*, but the presumably synonymy of *Disopora* Th. has not been assured by the absence of material.

***Aloconota gregaria* (Erichson, 1840)** Fig. 43

*Glossola gregaria* (Er.): Fowler, 1888

Male: All rows of labral setae (Fig. 43, A) are subequal in length and with 2+2 secondary setae. *m*-2 is on the same level with *m*-1. *a*-sensilla of labral margin (Fig. 43, B) is completely reduced, while *c*, *d* are normally developed. Segm. III of labial palpus (Fig. 43, C) is nearly as long as I; *α*-setula is well inside from the outer margin; *β* is close to *tp*; *γ* is at the middle between *b* and base of the segment; *e* is proceeded to the level of *mp*; *b* and *f* are normal in position. Glossa (Fig. 43, D) is normally long, but paired arms are standing side by side and not divergent distally. Median area of prementum (Fig. 43, D) is very broad, narrowed behind and with several pseudopores around the distal setae; lateral area is with 3 longitudinally arranged real pores and one setal pore, but without pseudopores. *v*-setula of mentum

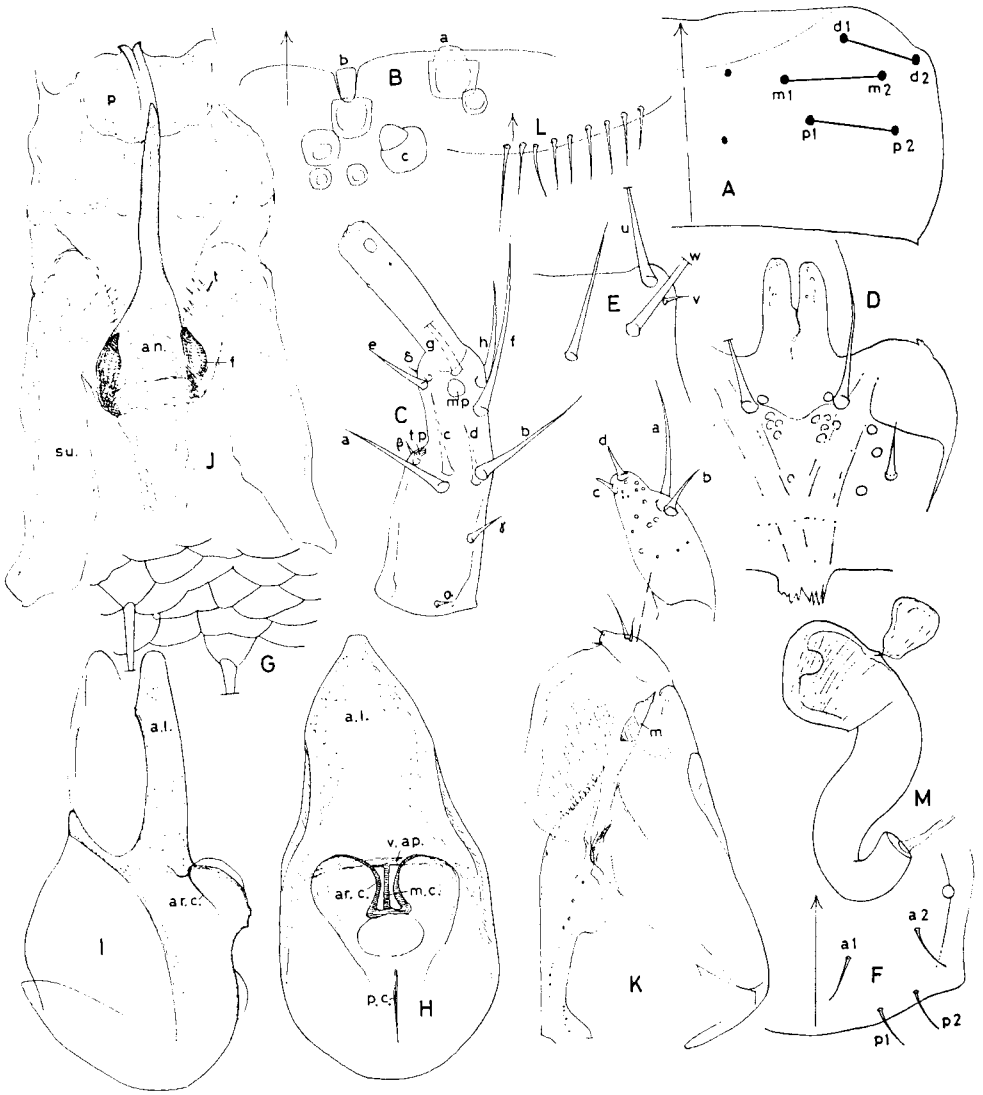


Fig. 43. *Aloconota gregaria* (ERICHSON) from Hamburg. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K,** Lateral lobe; **L,** ♀ stern. VIII; **M,** Spermatheca.

(Fig. 43, E) is very small. Macrochaetal arrangement is as 01–12–12–12–12–33–. Terg. VIII (Fig. 43, F) is not modified, but merely rounded behind; among 4+4 macrosetae of the segment the distance of *a*-1 to *a*-2 is much longer than that of *p*-1 to *p*-2. Microsculpture (Fig. 43, G) is transversely imbricate. Median lobe of aedeagus (Fig. 43, H, I) is ovate basally; apical lobe is long and straight in leteral view and lightly constricted basally in ventral view; costa *ar. c.* are short, strongly ap-

proximate and forming a low projection; *m. c.* is entire; *v. ap.* is weak; *dt. ap.* is narrow and inconspicuous. Inner armature (Fig. 43, J) is mostly membraneous and complicated; copulatory piece is narrowly elongate; apical process is very long and nearly straight, while posterior to the large annellus it is strongly reduced and short. There is a pigmented fold (*f*) on each side of the annellus; suspensorium is membraneous, with many conspicuous spiniform rugosity (*r*). Median apophysis is a broad quadrate thin plate (*p*). Proximal segment of lateral lobe (Fig. 43, K) is moderately prolonged in front of articulation; in the medial segment the articulation with the proximal segment and the junction of costa are shortly separating; middle apodeme (*m*) is simple; vellum is normal. From four setae of the distal segment *b* is close to *a*, but much shorter than that; *c*, *d* are apical in position.

Female: Stern. VIII (Fig. 43, L) with a row of short and long marginal setae. Spermatheca (Fig. 43, M) is clearly bisinuate, gradually tapering toward end; bur sa is large and with an obtuse umbilicus.

Specimens examined: GERMANY: Hamburg, 1♂, 1♀ (LOHSE det.).

***Aloconota insecta* (THOMSON, 1856)** Fig. 44

Male: Proximal row of labral setae (Fig. 44, A) is shorter than usual and 2+2 secondary setae are present. *a*-sensilla of labral margin (Fig. 44, B) is completely reduced, while *b*, *c* are normal. Segm. III of labial palpus (Fig. 44, C) is cylindrical, much longer than I; *β*-setula is close to *tp*; *γ* is widely separating from *b*; *a* is clearly posterior from the level of *b*; *e* is on the level of *mp*. Glossa (Fig. 44, D) is short, divided in two nearly parallel arms. Median area of prementum is very broad, with numerous small pseudopores; lateral area has 3 real pores in a longitudinal row and 1 setal pore, but without pseudopores. *v*-setula of mentum (Fig. 44, E) is short compared to *u*. Macrochaetal arrangement is as 01–12–12–13–13–23–. Terg. VIII (Fig. 44, F) has 4+4 macrosetae and its microsculpture (Fig. 44, G) is imbricate. Median lobe of aedeagus (Fig. 44, H, I) has a long apical lobe parallel to the basis. All costae are well developed; *ar. c.* are confluent forming a low projection; *v. ap.* is well developed. Copulatory piece (Fig. 44, J) is very peculiar, the apical process is transformed to a strikingly long, filiform prolongation, which is coiled apically and bent upwards proximally and its main corpus including the annellus is restricted to the basal portion; posterior process (*l*) behind annellus is an elongate lobe strongly reflected dorsally. A thin plate (*p*) distal to the preputial sac is probably the median apophysis. Proximal segment of lateral lobe (Fig. 44, K) is prolonged in front of the articulation; on medial segment the junction of costa and the articulation are fairly separating from each other; distal segment is gently arcuate on its inner margin and *a* is distally placed and much longer than others.

Specimen examined: POLAND: Silesia, 1♂ (WANKA leg., SCHEERPELTZ det.).

Compared to *L. gregaria* (ER.) copulatory piece is quite different, *v*-setula of mentum is larger and pubescence of pronotum is quite peculiar as cited in HÖEG, 1945, fig. 38.

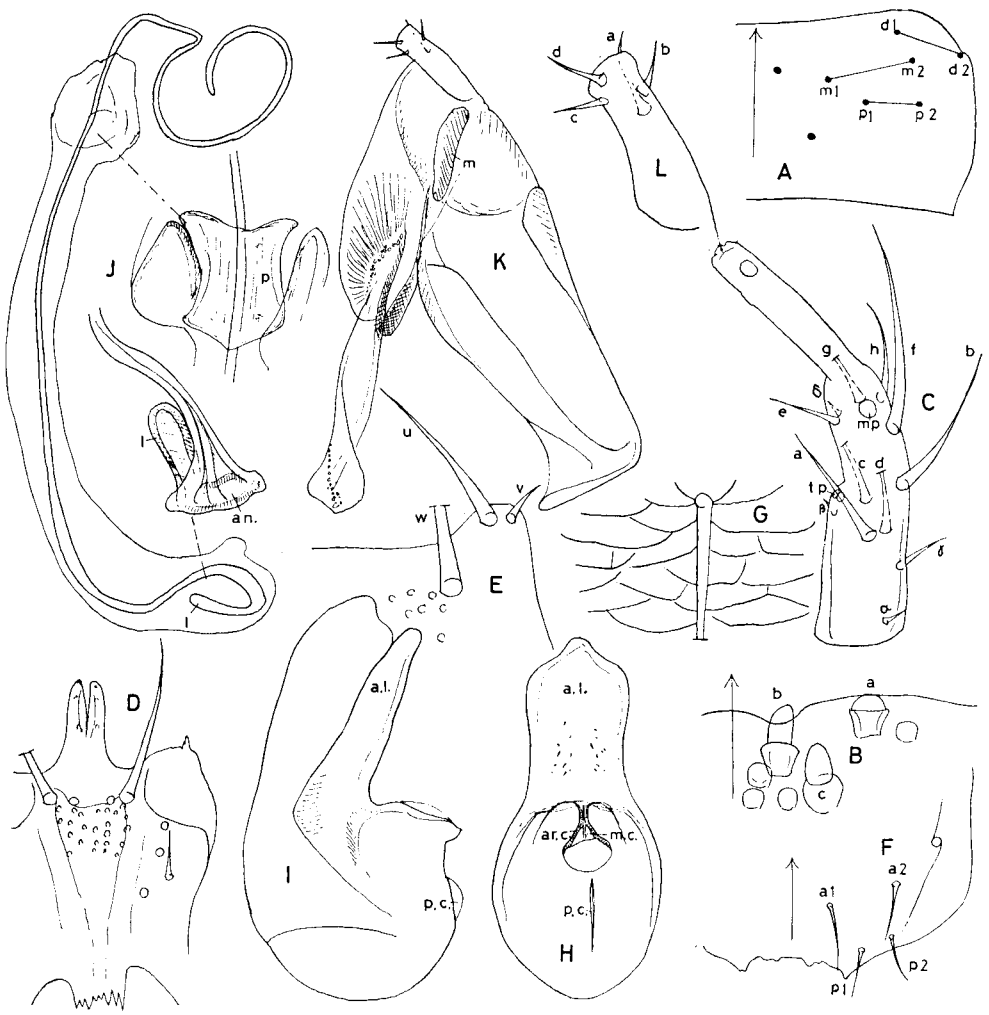


Fig. 44. *Aloconota insecta* (Thomson) from Poland. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature (lat. view) of aedeagus; **K, L,** Lateral lobe;

## *Tomoglossa* Kraatz, 1856

Typus: *Homalota luteicornis* Erichson, 1837

The type species, *T. luteicornis* (Er.) was not avialable. Two Japanese species, *T. punctifoveata* K. S., 1970 and *T. cuspidata* K. S., 1971 indicate that *a*-sensilla of labral margin is reduced, twin pores are very minute, glossa is small and median area is very wide. Provided that they are really to be included in *Tomoglossa* the difference to *Aloconota* is restricted to the form of the copulatory piece, which is acutely elongate

in *Aloconota* and normally built in *Tomoglossa*. Macrochaetal arrangement is uniformly as 01–23–23–23–23–34– in two cited species.

### *Schistoglossa* KRAATZ, 1856

Typus: *Homalota viduata* ERICHSON, 1837

The type species was not avialable, but *S. yosiiana* K. S. of Japan indicates that the median area of prementum is widely broad, lateral area with 1 setal and two real pores and *a*-sensilla of labral margin is shortly setaceous. Lacinia of maxilla is without dilation and galea is sclerotized on its apical portion. Refering these characters it may be assumed that it is also a component of *Liogluta* series and the genus is characteristic by its peculiar dentation of the mandible (cf. BRUNDIN, 1944).

### *Schistoglossa yosiiana* K. SAWADA, 1970 Fig. 45

Additional notes: Body is parallel and thick. Antennal segments are transverse. Mandibles (Fig. 45, A) are bicuspidate apically and right one has one inner tooth. Pubescence along the middle of pronotum is recumbent posteriorly and its lateral erecting setae are very short. Macrochaetal arrangement is as 01–22–22–22–22–23–. Median lobe (Fig. 45, B, C) is robust; apical lobe is constricted toward the

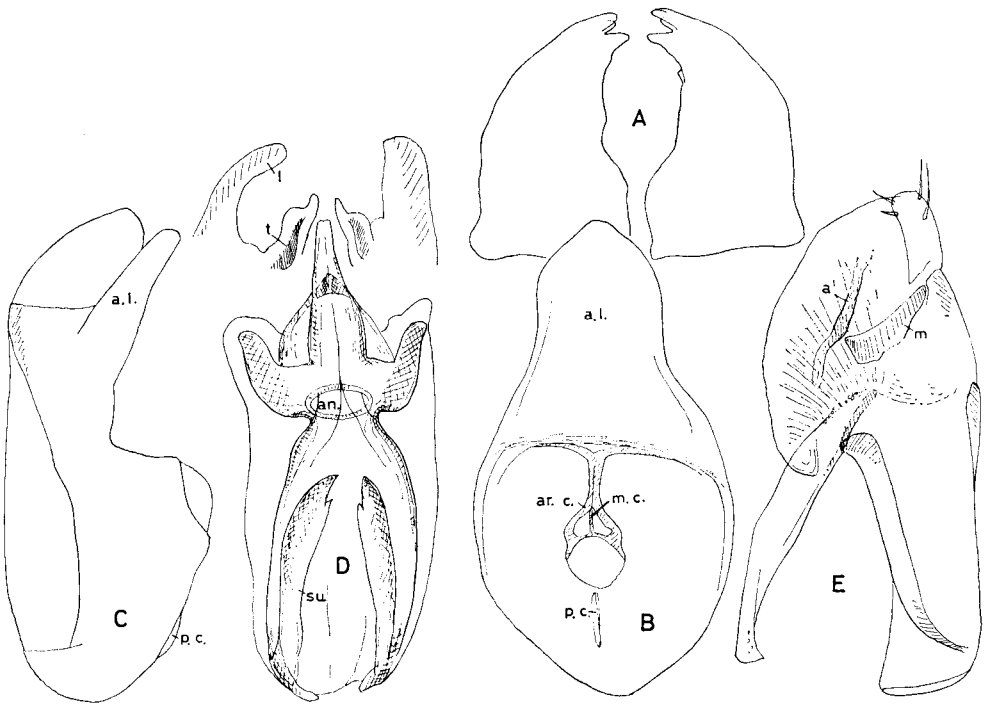


Fig. 45. *Schistoglossa yosiiana* K. SAWADA from Shiga Heights. **A,** Mandibles; **B, C,** Median lobe; **D,** Inner armature of aedeagus; **E,** Lateral lobe.

basis. Costa *ar. c.* are completely confluent together, forming a high projection along the middle; *p. c.* has very low projection. Copulatory piece (Fig. 45, D) is embedded in heavy cluster of muscles and in addition to the structure shown in K. Sawada 1970, fig. 11, there are a pair of long dorsal picks (*su*) and a small sclerite lying onto the apical process, the latter is continuous to the corpus by the membrane. Distal apodeme is a pair of short sclerites (*t*) and long lobes (*l*). Proximal segment of lateral lobe (Fig. 45, E) is shortly produced in front of the articulation; vellum is developed; middle apodeme (*m*) is large and with a well pigmented additional apodeme (*a*).

New examples examined: NAGANO: Shiga Heights, 1♂ (24. VI 1968, K. Sawada leg.).

The species is allied to *S. aubei* (Bris., 1860) in sensu Brundin, 1943, but differs in setal arrangement of labial palpus (l. c. Fig. 8). The cited species has more number of pseudopores in the median area of prementum. Median lobe is also different from the figure given in Lohse, 1974, the apical lobe being not bent down but straight in this species.

## *Callicerus* Gravenhorst, 1802

Typus: *Callicerus obscurus* Gravenhorst, 1802

As already known, the maxillary palpus (Fig. 46, A) of the type species is deformed, the third segment being broadly spherical and the fourth segment very short. The lacinia is narrow and without inner dilation. Besides the *a*-sensilla of labral margin is campanulate, the median area of prementum is broad and lateral area is without pseudopores. Notwithstanding these peculiarities, we may assume the near relationship of *Callicerus* to *Liogluta* by its broad median area of prementum.

### *Callicerus obscurus* Gravenhorst, 1802 Fig. 46

Male: All rows of labral setae (Fig. 46, B) are subequally short; *p*-2 is close to the level of *m*-1; 3+3 secondary setae are present. *a*-sensilla of labral margin (Fig. 46, C) is completely reduced; *b* is normally developed and truncate at apex; *c* is small compared to *b*. Segm. I of labial palpus (Fig. 46, D) is broader than II and longer than III. $\beta$-setula is close to *tp*; $\gamma$ is proximal and separating from *b*; $\delta$ is on the level of *g*; *a* is on the level of *tp*, but separating from it; *b* is inside and close to *a*; *f* is close to the level of *e*. Prementum (Fig. 46, E) has very broad, but not well defined median area and with ca. 5 pseudopores; lateral area has 3 real pores in a longitudinal row and one setal pore anteriorly placed. *v*-setula of mentum (Fig. 46, F) is minute and on the level of *w*. Macrochaetotaxy is as 01–22–23–23–23–34–. Terg. VIII (Fig. 46, G) is gently bisinuate along the hind margin; among 4+4 macrosetae, *a*-2 is on the level of stigma; microsculpture (Fig. 46, H) of the segment is densely imbricate. Median lobe of aedeaugs (Fig. 46, I, J) is elongate; apical lobe is long and gradually tapering to narrowly rounded apex; costa *ar. c.* are lightly approximate in the middle and each costa has a high projection; *m. c.* is entire; *v. sp.* is developed. Copulatory

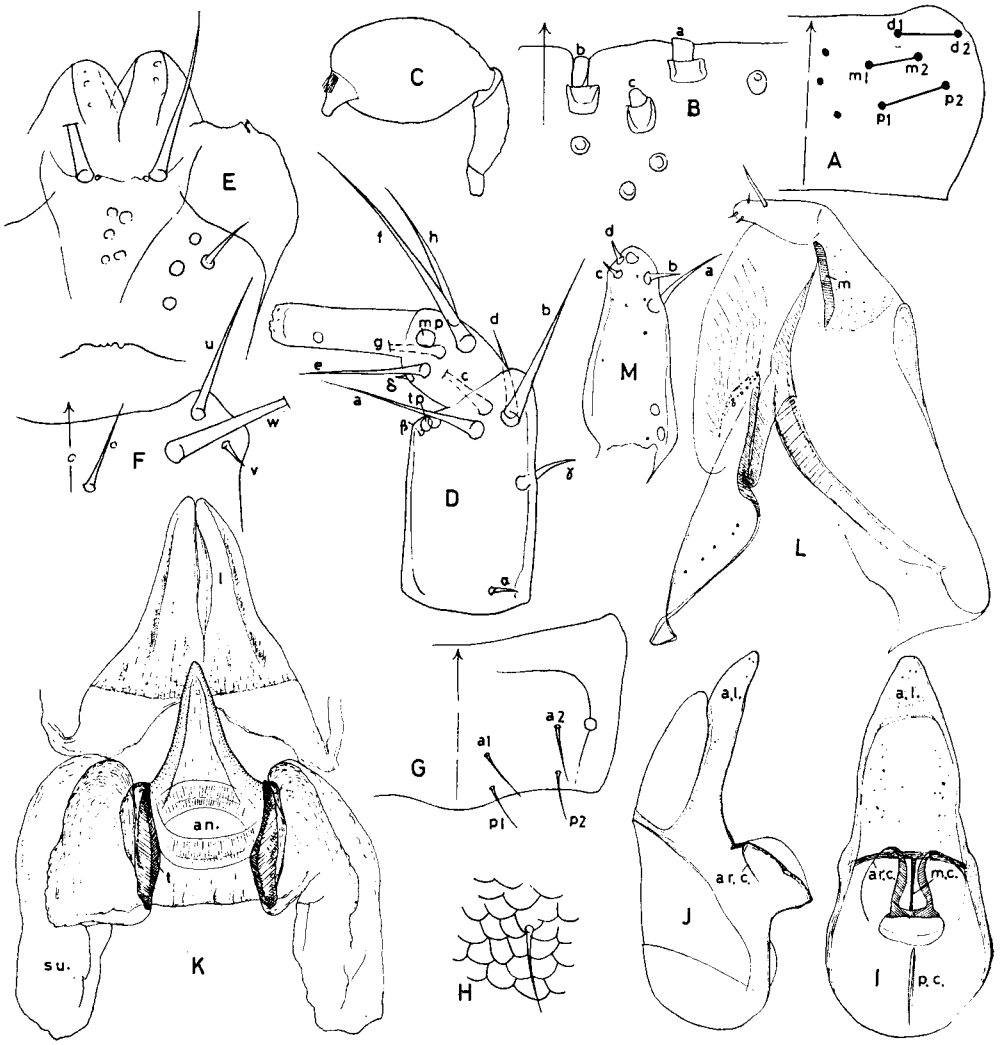


Fig. 46. *Callicerus obscurus* GRAV. from Leipzig. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Maxillary palpus; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G, H,** ♂ terg. VIII & its microsculpture; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L, M,** Lateral lobe.

piece (Fig. 46, K) is reduced in length, distinctly dilated laterally; apical lobe is large and triangularly broad; There is a raised fold on each side of the annellus, which has a narrow gradating thickening (*t*) at the end. Suspensorium is mostly hyaline and short. Distal apophyses are a membraneous triangular lobe (*l*) consisting of a paired narrow lobes fairly dilated basally. Proximal segment of lateral lobe (Fig. 46, L) is narrowed in front and behind and clearly prolonged anterior to the articulation; vellum is small; the junction of costa and the articulation with the proximal segment

is far remote from each other. All four macrosetae of the distal segment are apically placed; *a* is long, while *b*, *c*, *d* are reduced in length.

Specimen examined: GERMANY: Leipzig, 1♂ (26. III 1953, Dorn leg., Puthz det.).

## *Geostiba* Thomson, 1858

Typus: *Aleochara circellaris* Gravenhorst, 1802

*G. circellaris* (Grav.) was investigated. The median area of prementum is just so wide as in *Liogluta,* with 1 setal and 3 real pores in lateral area. *a*-sensilla of labral margin is campanulate as in *Callicerus,* but the maxillary palpus is not deformed and its lacinia is apparently delated. Thus *Geostiba* Th. must be a very near relative of the foregoing *Callicerus* and belongs to the *Liogluta* series. The name *Sipalia* Muls. Rey, 1853 has priority over *Geostiba,* but as the genus *Sipalia* may include various forms of heterogeneous origin and as the type species, *S. pandellei* Brisout was not accessible, it would be preferable to retain the name *Geostiba* at present (also cf. Lohse, 1974).

### *Geostiba circellaris* (Gravenhorst, 1802) Fig. 47

Male: Labrum (Fig. 47, A) is nearly truncate in front; distal row of setae is fairly shorter than the proximal row; *p*-1 is close to the medial row. *a*-sensilla of labral margin (Fig. 47, B) is completely reduced, but *b*, *c* are normally developed. Segm. III of labial palpus (Fig. 47, C) is shorter than I; $\gamma$-setula is long, proximally located; *a* is separated from *tp*; *f* is remote from *b* and close to the level of *mp*. Glossa (Fig. 47, D) is short, forked in two obtuse arms. Median area of prementum (Fig. 47, D) is broad and with a few pseudopores; lateral area has only 1 setal and 3 real pores. *v*-setula of mentum (Fig. 47, E) is small and close to the level of *w*. Macrochaetal arrangement is as 01–12–22–23–23–33–. Terg. VII (Fig. 47, F) has a short median carina. Terg. VIII (Fig. 47, G) has a pair of faint carinulae near the posterior margin and with 5+5 macrosetae; microsculpture (Fig. 47, H) of the segment is imbricate. Apical lobe of aedeagus (Fig. 47, I, J) is long, straight and abruptly bent downward from the basis. Costa *ar. c.* are strongly approximate and with no projection along the middle; *m. c.* is evanescent behind the apex; *v. ap.* is normally developed; *p. c.* has a low projection. Copulatory piece (Fig. 47, K) is narrow, gradually attenuating distally to form an acute apical process; annellus is at the middle of the corpus; suspensorium (*s*) is mostly membraneous. A pair of raised folds (*f*) lateral to annellus tend to be harder and more pigmented toward their ends. Distal apophyses are a pair of very long sclerites guarding the apex of the copulatory piece. Proximal segment of lateral lobe (Fig. 47, L) is prolonged in front of the articulation; vellum is developed; middle apodene (*m*) is broad; distal segment (Fig. 47, M) is short, *a* is fairly surpassing the length of the segment, and *b* is normally long.

Female: Stern. VIII (Fig. 47, N) is rounded behind and with a row of short and long marginal setae. Spermatheca (Fig. 47, O) is fairly twisted behind; bursa is long and with a pointed umbilicus.

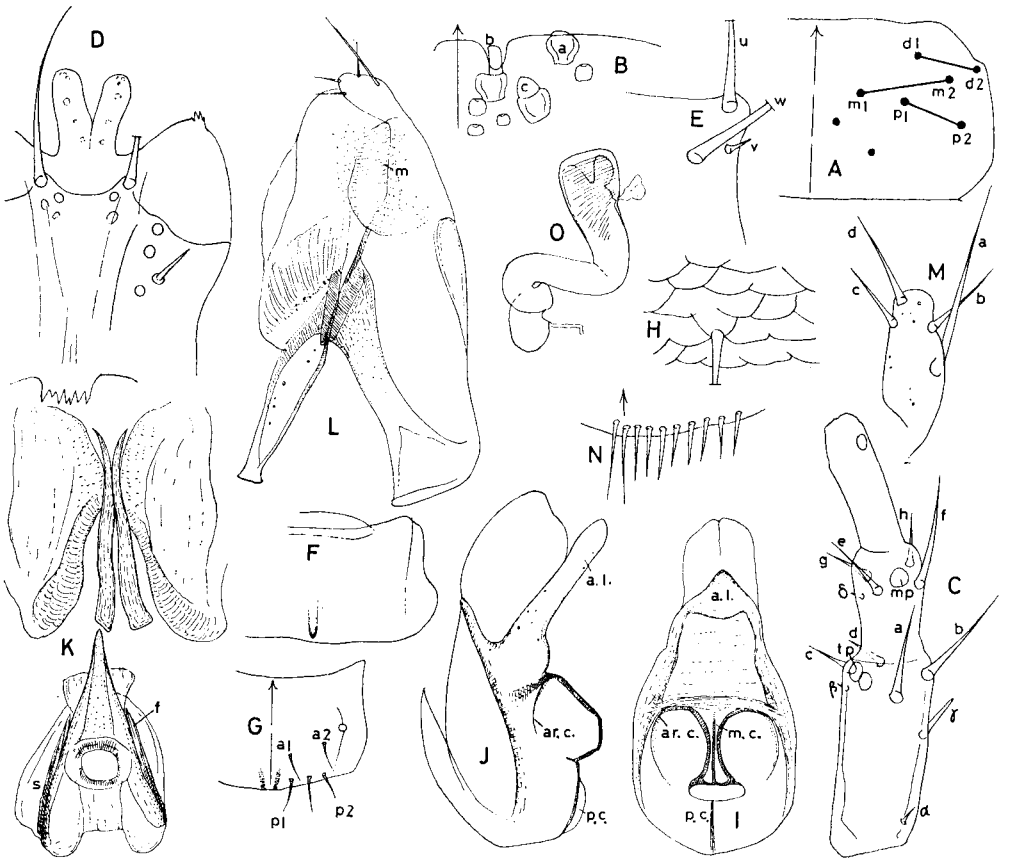


Fig. 47. *Geostiba circellaris* (GRAVENHORST) from Berlin. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F,** ♂ terg. VII; **G, H,** ♂ terg. VIII & its microsculpture; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L, M,** Lateral lobe; & its distal segment; **N,** ♂ stern. VIII; **O,** Spermatheca.

Specimens examined: GERMANY: Berlin, 1♂, 1♀ (PUTHZ det.).

### *Santhota* SHARP. 1874

Typus: *Santhota sparsa* SHARP, 1874, sensu K. SAWADA, 1971

and

### *Zyras* STEPHENS, 1832

Typus: *Zyras haworthi* STEPHENS, 1832

This is not the place to discuss the whole Zyrasini in detail for which a separate revisional work is necessary. It must be stressed, however, that these genera have the *Liogluta* type of glossa and prementum, so that they must be regarded a descendant

of *Liogluta*-series. Macrochaetal arrangement is as 01–12–22–22–22–23–. in *Santhota sparsa* Sh., and as 01–12–12–12–13–35– in *Zyras iridenscens* (K. Sawada) (=*Bolitochara iridenscens* K. Sawada, 1971).

## IV *Coprothassa* Series

Genera to be included in this fourth group of Athetae are more variegated than those of other series although they are concordant by the presence of a pair of setulae to the glossa. In *Cordalia* and *Amischa* the macrochaetal arrangement is 0–0–0–0–0 type as in case of *Dacrila*-series to which they must be nearly related. Besides *Amischa* is concordant with *Liogluta* having no pseudopores on lateral area of prementum and it would represent a connecting element of these three series. In *Coprothassa* the chaetal arrangement is 0–0–0 and in *Halobrecta* and *Pycnota* it is 0–0 type. *Falagria* and *Xenusa* are nearly related genera having many common characters as corneous plates of prosternum and acetabulum of metasternum (vide infra), Chaetotaxically they belong to 0–0 type and only *Taxicera* belongs to 01 type. The key to separate them would be as:

1. Macrochaetal arrangement 0–0–0–0–0 type.....2
   Macrochaetal arrangement is not as above .....3
2. Glossa semicircular, lateral area of prementum without pseudopores.....*Amischa*
   Glossa forked, lateral area with pseudopores.....*Cordalia*
3. Glossa forked.....4
   Glossa modified.....6
4. Macrochaetal arrangement as 0–0–0 type.....*Coprothassa*
   Macrochaetal arrangement as 0–0 type.....5
   Macrochaetal arrangement as 01 type .....*Taxicera*
5. Terg. VIII with a row of marginal blunt setulae.....*Falagria*
   Terg. VIII without them .....*Xenusa*
6. Glossa broadly foliaceous .....*Pycnota*
   Glossa narrowly elongate .....*Halobrecta*

### *Amischa* Thomson, 1858

Typus: *Aleochara analis* Gravenhorst, 1802

The type species, *A. analis* (Gr.) possesses the characters for three groups. By the glossa having a pair of setulae it is a kind of *Taxicera* group, but median area of prementum is broad and lateral area is without pseudopores as characteristic to the *Liogluta* series. Macrochaetal arrangement is, however, of 0–0–0–0–0 type and corresponds to *Dacrila* and its allied forms. Probably it is the genus derived from the very ancester of Athetae, where these characters were mingled. Provisionally it is placed at the beginning of the *Coprothassa* series regarding the resemblance of the general feature of the body to other members of the series.

***Amischa analis*** (GRAVENHORST, 1802) Fig. 48

Female: Cephalic capsule is constricted behind (Fig. 48, A) and cervical carina is not divided. Labrum (Fig. 48, B) is long; *d*-1 is remote from the anterior margin and on the level of *d*-2; *p*-2 is close to the margin; secondary setae are 2+2. *a*-sensilla of labral margin (Fig. 48, C) is short, converging; *b* is obtuse and curved; *c* is reduced. Mandibles are broad, short and abruptly pointed at apex, the right one (Fig. 48, D) has a small molar tooth. On labial palpus (Fig. 48, E) $\beta$-setula is long and close to *tp*; $\gamma$ is anterior to *b*; $\delta$ is long, cloese to the level of *h*; *f* is separated from *b*. Glossa (Fig. 48, F) is broad and low, without median furrow anteriorly and with a short seta on each side. Median area of prementum (Fig. 48, F) is broad and with some pseudopores in the anterior area. Lateral area has 2 real and 1 setal pores and devoid of pseudopores. *v*-setula of mentum (Fig. 48, G) is reduced to a minute setula on the level of *u*, which is large compared to *w*. Macrochaetal arrangement is as: 01–02–02–02–02–22–. Terg. V (Fig. 48, H) is broader than long; with 4+4 macrosetae and *a*-2 is anterior to *a*-1; microsculpture of the middle (Fig. 48, I) is imbricate. Stern. VIII is broadly rounded and obsoletely emarginate in the middle behind, and with up to 10+10 marginal setae (Fig. 48, J).

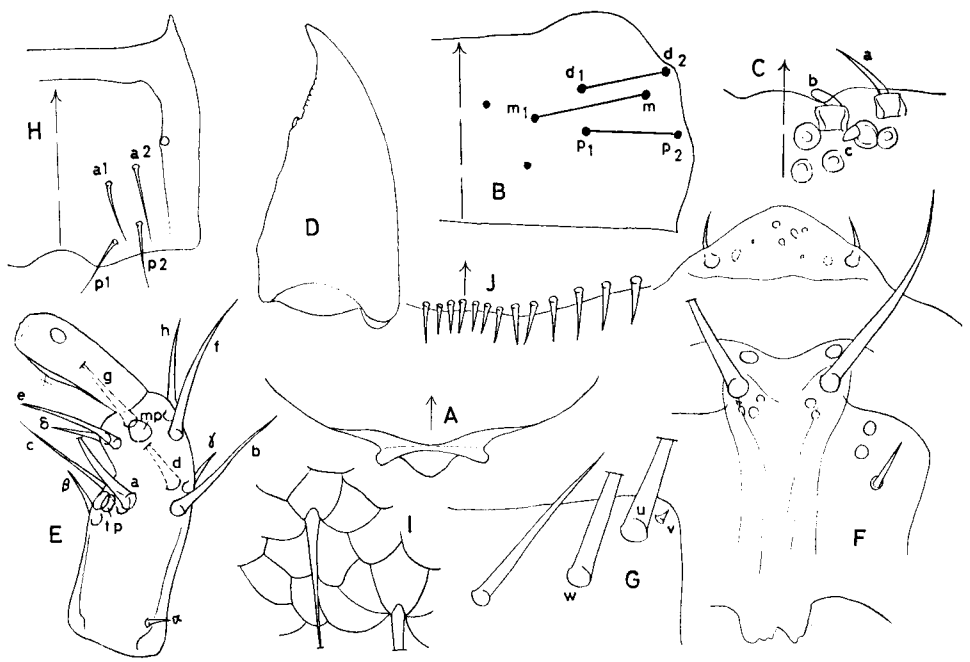


Fig. 48. *Amischa analis* (GRAVENHORST) from Poland. **A,** Cervical carina; **B,** Labral chaetotaxy; **C,** Labral margin; **D,** Right mandible; **E,** Labial palpus; **F,** Glossa & prementum; **G,** Mentum; **H, I,** ♀ terg. VIII & its microsculpture; **J,** Marginal setae of ♀ stern. VIII.

Specimen examined: POLAND: Teschen, Silesia, 1♀ (Wanka leg., Scheerpeltz det.).

## *Cordalia* Jacobs, 1925

Typus: *Aleochara obscura* Gravenhorst, 1802

In the type species the macrochaetal arrangement is 0–0–0–0–0 type, prosternum is without corneous plate and cephalic capsule is constricted behind. Thus it is near *Amischa* in these respects, but glossa is normally built and general form is quite different from it. With its primitive type of chaetotaxy the genus would be placed as the most ancient type of the *Coprothassa* group.

### *Cordalia obscura* (Gravenhorst, 1802) Fig. 49

Male: Head capsule is strongly constricted behind (Fig. 49, A) and cervical carina is quite reduced. Distal row of labral setae (Fig. 49, B) is short; *m*-2 is remote from the distal row; *p*-1 is on the medial row; 4+4 secondary setae are transversely arranged posterior to the primary setae. *a*-sensilla of labral margin (Fig. 49, C) is normal; *b*, *c* are broad and obtuse. Right mandible (Fig. 49, D) is short, abruptly pointed and with a small molar tooth. On labial palpus (Fig. 49, E) $\beta$-setula is normal in position; $\gamma$ is between *b* and *f*; *a* is separate from *tp* and near the inner margin; *f* is posterior, on the level of *tp*; *h* is posterior to *mp*. Glossa (Fig. 49, F) is thickly built and divided in anterior one-third in two broad lobes having a apir of short setae on its inner side. Median area of prementum (Fig. 49, F) is broad and with more than 10 pseudopores. Lateral area has 2 real, 1 seta and up to 13 irregular pseudopores. *v*-setula of mentum (Fig. 49, G) is small and at the corner; *u* is posterior to *v* and close to *w*. Macrochaetal arrangement is as 01–02–02–02–02–21–. Terg. VIII (Fig. 49, H) is densely fringed behind with many long setae, which are irregulary curled and fringed distally. From 4+4 macrosetae of the segment *a*-2 is separated from the stigma and posterior from the level of *a*-1. Microsculpture (Fig. 49, I) is quite diminished. Median lobe of aedeagus (Fig. 49, J, K) is ovate basally and suddenly tapering distally to form a blunt apical lobe. In lateral view the middle portion is abruptly produced. Costa *ar. c.* are confluent along the middle and reflected behind; *v. ap.* is well developed in full length; *m. c.* and *p. c.* are lightly carinate. Copulatory piece (Fig. 49, L) is narrowly elongate, apically tricuspidate and proximally having a pair of stout processes (*p*) recurved to the dorsum. Another pair of slender processes (*s*) are lying behind the corpus. Lateral lobe (Fig. 49, M) has the proximal segment narrow, jointed to the medial segment behind the middle and with a transparent corneous vellum; medial segment has a narrow vellum, whose margin is fairly pigmented and its hyaline outer area is continuous with the distal segment. The last segment is relatively short; *a*, *b* are subequally large and standing on a thick projection; *d* is apical and *c* is on the outer margin.

Female: Stern. VIII (Fig. 49, N) is posteriorly with a row of minute marginal

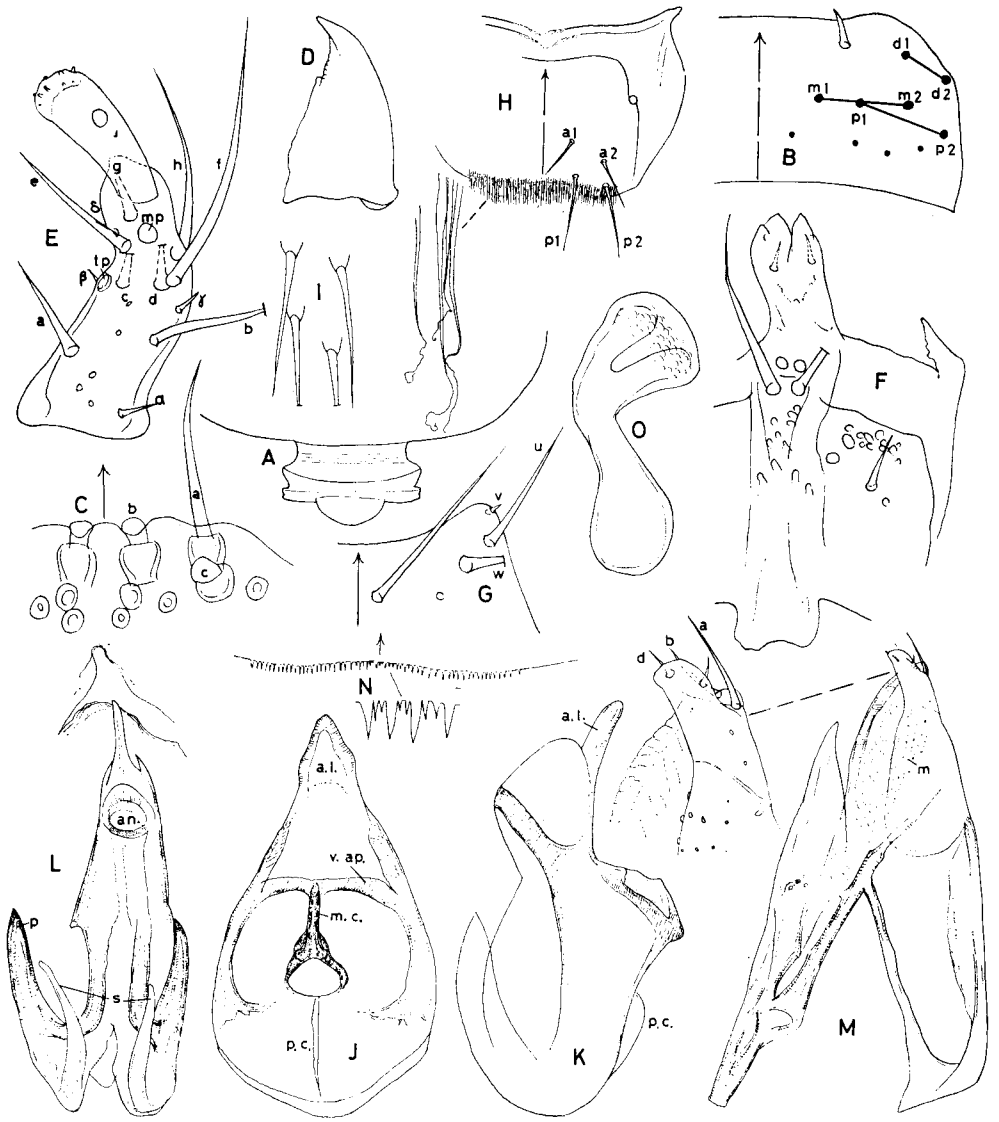


Fig. 49. *Cordalia obscura* (GRAVENHORST) from Tunisia (♂) and Rome (♀). **A,** Cervical carina; **B,** Labral chaetotaxy; **C,** Labral margin; **D,** Right mandible; **E,** Labial palpus; **F,** Glossa & prementum; **G,** Mentum; **H, I,** ♂ terg. VIII & its microsculpture; **J, K,** Median lobe; **L,** Inner armature of aedeagus; **M,** Lateral lobe; **N,** Marginal fringe of ♀ stern. VIII; **O,** Spermatheca.

fringe. Spermatheca (Fig. 49, O) is short and lightly knobbed; bursa is finely imbricate and with a long umbilicus within.

Specimens examined: ITALY: Rome, 1♀ (M. CERRUTI det.); TUNISIA: Oasis Gafsa, 1♂ (SCHEERPELTZ det.).

## *Coprothassa* Thomson, 1859

Typus: *Aleochara melanaria* Mannerheim, 1830

The position of *Coprothassa* is repeatedly discussed. In spite of its superficial resemblance to *Acrotona* and *Xenota* its internal feature is quite different from them. The forked glossa has a pair of large setulae and alike to *Taxicera* in this respect. But the chaetal arrangement is belonging to the 0–0 type and represents the more primitive form of the series. At present it is monospecific.

### *Coprothassa melanaria* (Mannerheim, 1830) Fig. 50

Male: Labrum (Fig. 50, A) is very transverse; proximal row of setae is much shorter than the distal row; *m*-2 is close to the distal row; 3+3 secondary setae are present. *a*-sensilla of labral margin (Fig. 50, B) is long, setaceous and coverging, *b* is smaller than usual and pointed. Segm. III of labial palpus (Fig. 50, C) is fairly dilated apically and longer than I; $\beta$-setula is remote from *tp*; $\gamma$ is on the same level with *f*; $\delta$ is close to the level of *g*; *a* is normal in position and *b* is posterior to the level of *a*. Glossa (Fig. 50, C) is long, lightly constricted toward the basis, forked in two pointed arms and with a pair of short setae on the interior surface. Median area of prementum is broad, parallel and with ca. 16 scattered pseudopores; lateral area has 2 real pores remote from the median area. *v*-setula of mentum (Fig. 50, D) is long, close to *u*. Macrochaetal arrangement is as 01–01–03–13–13–33. Terg. VIII (Fig. 50, E) is not modified; from 4+4 macrosetae *a*-2 is widely remote from stigma; microsculpture (Fig. 50, F) is of transverse type. Median lobe of aedeagus (Fig. 50, G, H) is narrowly elongate and weakly sclerotized; apical lobe is long, gradually narrowed to an obtuse apex, which is slightly convex in lateral view. Costa *ar. c.* are short, fairly approximate in the middle and forming a low projection; *m. c.* is entire; *v. ap.* is inconspicuous; *dt. ap.* is reduced to a short lobe. Copulatory piece (Fig. 50, I) is elongate; apical process is abruptly tapering to short, acute apex; posterior process is long; suspensorium is membraneous and prolonged behind. Distal apophysis is a pair of median narrow lobes (*m*) and there is one more pair of elongate lobes on each side. Lateral lobe (Fig. 50, J) is broad; proximal segment is broad in the middle and with narrow but sclerotized process apically (*p*); in medial segment the articulation and the junction of costa are fairly separated; middle apodeme (*m*) is broader at the end; distal segment is short; *a* is much longer than *b* and placed at the middle.

Female: Posterior margin of stern. VIII (Fig. 50, K) is emarginate in the middle and with a row of long and short marginal setae. Spermatheca (Fig. 50, L) is wounded two times and with a large, quite short bursa having a large, flattened umbilicus within.

Specimens examined: HOKKAIDO: Erimo, Meadow of horse and cow, 2♂, 2♀ (2. VIII 1971, R. Yosii leg.).

Distribution: Europe, Japan (nov.).

*C. melanaria* (Mann.) is already reported from Japan many times, but what has

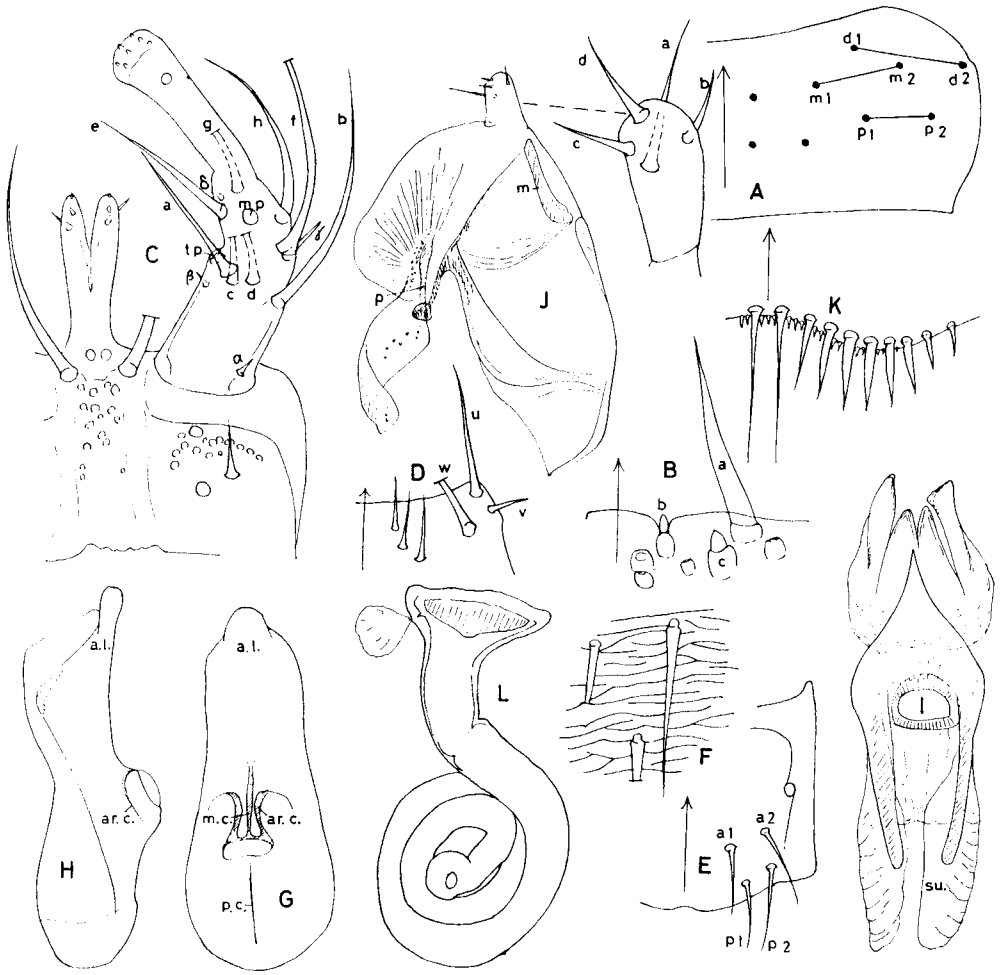


Fig. 50. *Coprothassa melanaria* (MANNERHEIM) from Erimo, Hokkaido. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labium; **D,** Mentum; **E, F,** ♂ terg. VIII & its microsculpture; **G, H,** Median lobe; **I,** Inner armature of aedeagus; **J,** Lateral lobe; **K,** Marginal setae of ♀ stern. VIII; **L,** Spermatheca.

been meant from the name is not the present species, but *A. sordida* (MARSH.), which is placed in *Acrotona* in this paper. This is the first report of true *C. melanaria* from Japan.

## *Falagria* LEACH, 1819

Typus: *Staphylinus sulcatus* PAYKULL, 1789

This well known genus belongs to *Coprothassa* group by the presence of setulae on the glossa. Its macrochaetal arrangement is 0–0 type and very near to *Xenusa* in these respects, but different by the presence of median furrow of pronotum and

by the marginal row of blunt, spinous setae of abd. terg. VIII, both of which are absent in *Xenusa*.

The presence of the corneous plates in prosternum is often cited as characteristic to *Falagriae*. In reality, however, this paired plates directly behind the coxal cavity of fore-legs are the well developed sclerites surrounding the stigma of the segment. In usual cases the sclerite is restricted to the area around the opening of trachea (Fig. 51, A) and, when it is well developed and touching to each other at the ventral midline, it may be called as "corneous plates" (Fig. 51, B). Such corneous plates are present and well developed in *Falagria, Xenusa* (differently modified after species) and in *Cordalia,* but rudimentary in other genera and it is hardly possible to regard it as the character of all *Falagriae*. Beside the corneous plates of prosternum there is an another structure, which slipped notice of previous authors. At the fore-margin of metasternum, just posterior to the median process of mesosternum there may be seen a chitinous, irregularly rounded area, which may be named as "acetabulum" (Fig. 51, C) without knowing if it is the receptor of the mesosternal process or not. Anyhow, it is present only in *Falagria* and *Xenusa* and again, it is not the key character of the whole group.

***Falagria sulcata*** **(Paykull, 1789)** Fig. 51

Male: Head capsule is strongly constricted behind (Fig. 51, D) and cervical carina is present, but not divided in two arms. Distal row of labral setae (Fig. 51, E) is oblique and shorter than the proximal row, which is close to the medial row; secondary setae are 1+1 in number. *a*-sensilla of labral margin (Fig. 51, F) is normal; *b* is short and truncate; *c* is obtuse. Mandibles are broad, curved and shortly pointed, the right one (Fig. 51, G) has a small molar tooth. On labial palpus (Fig. 51, H) $\alpha$-setula is long, $\beta$ is short; $\gamma$ is close to *f* and on the level of *tp*; $\delta$ is on the level of *g*; *a* is posterior to *tp* and on the level of *b*; *h* is posterior to *mp*. Glossa (Fig. 51, I) is constricted basally and forked in two abruptly pointed arms, each having a short seta and a very small accessory setula. Median area of prementum is converging behind and with many small pseudopores. Latral area has 2 real, 1 seta and some minute pseudopores locating close together. Mentum (Fig. 51, J) is lightly emarginate in front; *v*-setula is small and at the corner. Prosternum has a pair of corneous plates well developed. Metasternal acetabulum is well represented. Macrochaetal arrangement is as 01-02-12-12-12-33-, posterior medial setae are fairly advanced forewards. Terg. VIII (Fig. 51, K) is evenly rounded behind and with a row of minute, blunt setulae along the margin as characteristic to the genus and present in both sexes. Macrosetae of the segment is 5+5 and microsculpture (Fig. 51, L) is almost vanishing except around the socket of each setae. Median lobe of aedeagus (Fig. 51, M, N) is 0.33 mm long; apical lobe is long, straight and not hooked; in ventral view it is constricted basally and then dilated distally. Costa *v. ap.* is broad, well developed in its full length; *ar. c.* are short, wider distally; *m. c.* is absent; *p. c.* has a low carina; *dt. ap.* is well developed. Copulatory piece (Fig. 51, O) is short,

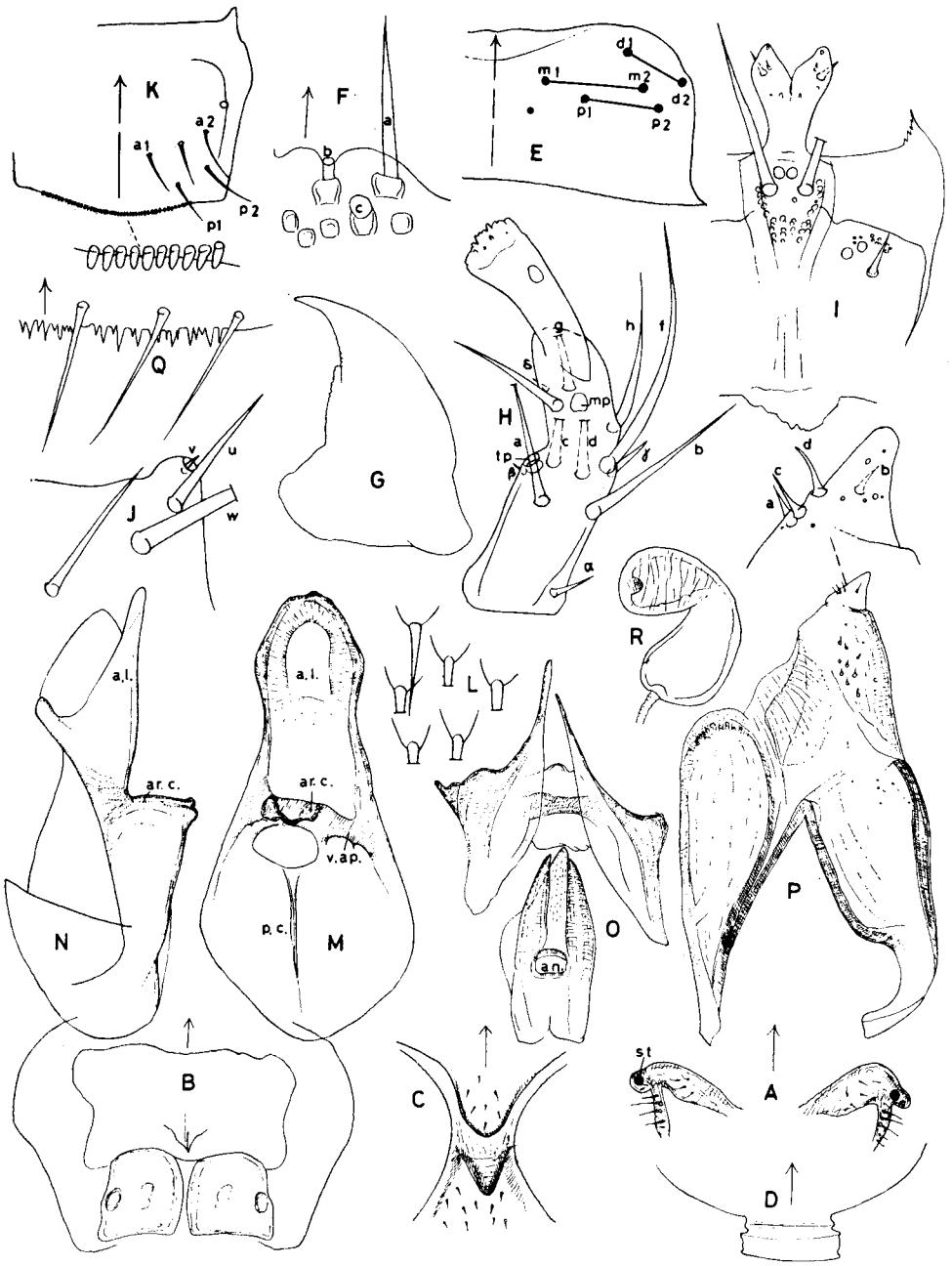


Fig. 51. *Falagria sulcata* (PAYKULL) from Poland (♂) and Praha (♀). **A,** Sclerites around the prosternal stigmata; **B,** Corneous plates of prosternum; **C,** Mesosternal process & metasternal acetabulum; **D,** Cervical carina; **E,** Labral chaetotaxy; **F,** Labral margin; **G,** Right mandible; **H,** Labial palpus; **I,** Glossa & prementum; **J,** Mentum; **K, L,** ♂ terg. VIII & its microsculpture; **M, N,** Median lobe; **O,** Inner armature of aedeagus; **P,** Lateral lobe; **Q,** ♀ stern. VIII; **R,** Spermatheca.

but elongate to a narrow apical process before the small annellus and with a pair of stout, pointed processes of the ventral side. Paramedian apophyses (*pm. ap.*) are lobate, standing side by side and elongate apically. Lateral lobe (Fig. 51, P) has the proximal segment very much prolonged distal from the articulation, without vellum and dilated distally. Medial segment has the outer area continuous with the distal segment, where there are many micropores each with a minute setula. Distal segment is small; *a* is basal, *b* is medial and *c*, *d* are close to each other near the basis.

Female: Terg. VIII is just so finely fringed behind as in the male. Stern. VIII (Fig. 51, Q) is rounded behind and truncate distally, where it is finely serrulate. Spermatheca (Fig. 51, R) is broad and short; bursa is coarsely corrugated and with a small umbilicus.

Specimens examined: POLAND: Troppau in Silesia 1♂ (Scheerpeltz det.); CZECHOSLOVAKIA: Praha, 1♀ (Scheerpeltz det.); JAPAN: HOKKAIDO: Nopporo, 2♂, 4♀ (4. VIII 1971 R. Yosii leg.), Furenai, 3♂, 7♀ (3. VIII 1971, R. Yosii leg.); IWATE: Koiwai Meadow, 3♂, 2♀ (21. VII 1974, R. Yosii leg.), Iwaizumi, 3♂, 3♀ (20. VII 1974, K. Sawada et R. Yosii leg.); NAGANO: Mt. Ontake (1,000 m.), 1♂, 2♀ (12. VIII 1974, R. Yosii leg.), Shiga Heights at Kumanoyu, 2♂ (5. VII 1972, K. Sawada leg.), Hirayutooge, 1♀ (3. IX 1973, R. Yosii leg.); KANAGAWA: Shin-Yokohama, 8♂, 12♀ (10. XII 1973, R. Yosii leg.): KYOTO: Hanase, 2♂, 4♀ (24. IV 1971, K. Sawada leg.); OSAKA: Takatsuki, 1♂ (15. VII 1971, K. Sawada leg.); HYOGO: Mayasan, 1♀ (14. X 1972, R. Yosii leg.); HONG KONG: Victoria Peak, 2♂, 2♀ (4. I 1975, R. Yosii leg.).

## *Xenusa* Mulsant et Rey, 1875

Typus: *Tachyusa wida* Erichson, 1840

The type species was not available for study and it is substituted by a Japanese species. The genus is very near *Falagria* by the presence of well developed corneous plates on prosternum and acetabulum of the metasternum. Cervical constriction and reduction of carina are also just about the same and macrochaetal arrangement is concordant between them. However, *Xenusa* has no median sulcus of pronotum and posterior margin of terg. VIII is without a row of characteristically modified blunt setae of *Falagria*. Identity of *Xenusa* with *Myrmecopora* Saulcy, 1864 deserves further researches.

### *Xenusa algarum* (Sharp, 1874) Fig. 52

*Tachyusa algarum* Sharp, 1874

*Myrmecopora algarum* (Sh.): K. Sawada, 1971

Additional notes: Cervical constriction (Fig. 52, A) is well developed and cervical carina is not divided. Corneous plates of prosternum is present and acetabulum is to be observed. Long setae of all tarsi are peculiarly curled distally (Fig. 52, B). Macrochaetal arrangement is as 01–02–12–12–12–22. Terg. VIII is as in

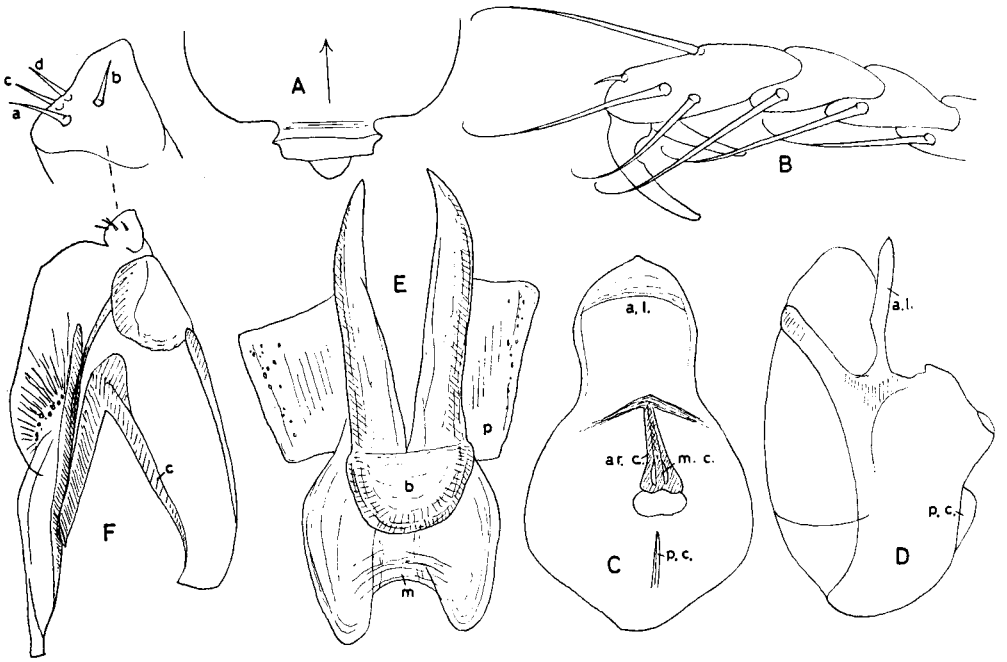


Fig. 52. *Xenusa algarum* (SHARP) from Seto. **A,** Cervical carina; **B,** End of middle tarsus; **C, D,** Median lobe; **E,** Inner armature of aedeagus; **F,** Lateral lobe.

K. SAWADA 1971 and its posterior margin has no special row of setae. Median lobe of aedeagus (Fig. 52, C, D) is ovate and with a short straight apical lobe, which is broadly rounded apically and with a fine median protrusion; *ar. c.* are confluent along the middle; *p. c.* is carinate; *v. ap.* is conspicuous along the middle. Copulatory piece (Fig. 52, E) is as in K. SAWADA and there is a pair of distal processes standing side by side and pointed at apex. Lateral to the process a broad, horizontal sclerite (*p*) and basal to the process a strong capsulate sclerite (*b*) including an annellus are present. Suspensorium is hyaline, lobate and connected by the membrane (*m*). Proximal segment of lateral lobe (Fig. 52, F) is very much prolonged anteriorly; vellum is small; articulation of the medial segment is far remote from the junction of costa (*c*); distal segment is short and obliquely truncate in front and with four short setae.

No further materials than the previous records.

### *Halobrecta* THOMSON, 1858

Typus: *Homalota puncticeps* THOMSON, 1852

With its characteristic form of glossa the genus is well represented. The revision of the second species, *H. flavipes* TH. indicates that it is a member of the *Coprothassa* series not much different from *Pycnota* in many respects. Macrochaetal ar-

rangement is 0–0 type and, therefore, it is not the specialized form of *Taxicera* derived by the fusion of two arms of the glossa, but it is a genus independently developed from it.

***Halobrecta flavipes* Thomson, 1861** Fig. 53

Male: Head capsule is constricted behind and cervial carina is not divided. Proximal row of labral setae (Fig. 53, A) is shorter than distal row and transverse;

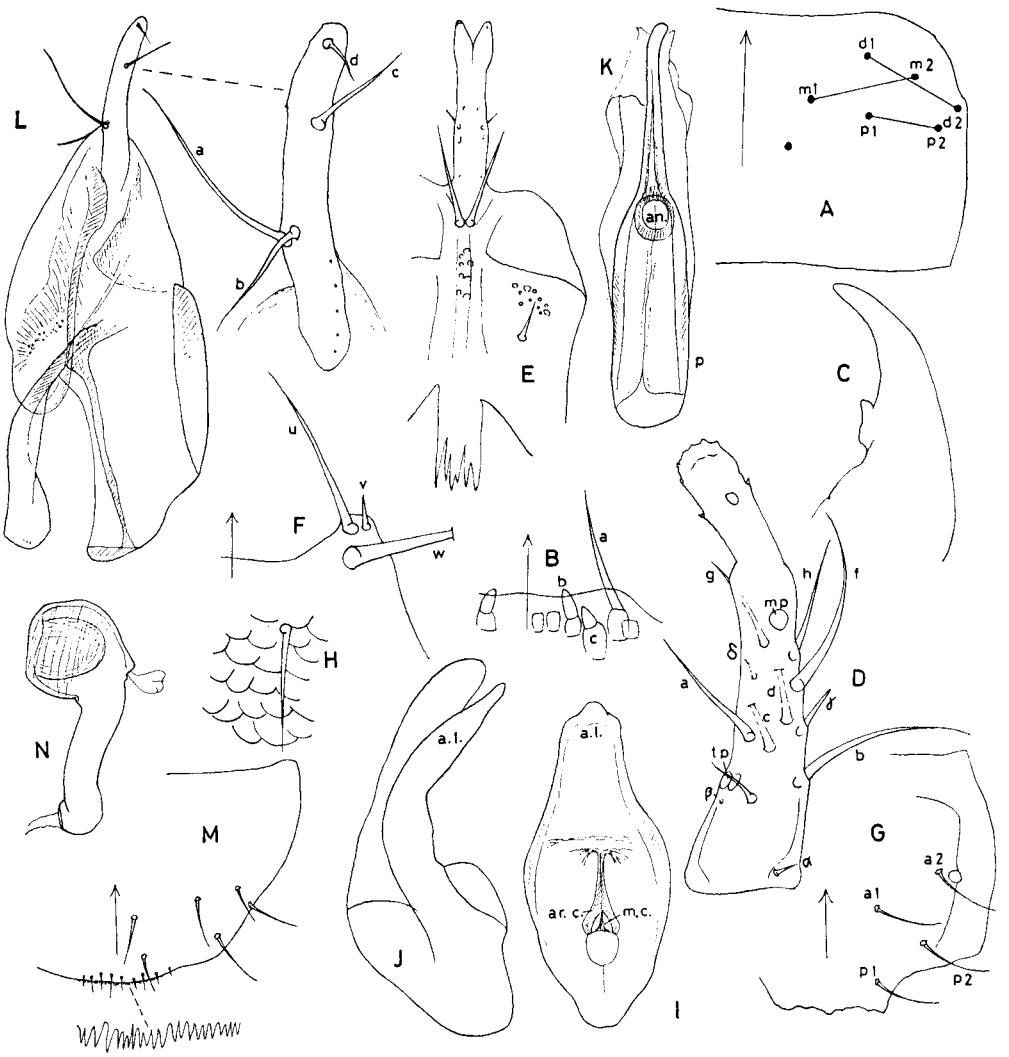


Fig. 52. *Halobrecta flavipes* Thomson from Calvi in Corsica. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G, H,** ♂ terg. VIII & its microsculpture; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L,** Lateral lobe; **M,** ♀ stern. VIII; **N,** Spermatheca.

*d*-2 is close to *m*-1; secondary setae are 1+1. *a*-sensilla of labral margin (Fig. 53, B) is short and converging; *c* is pointed and small compared to *b*. Mandibles are narrow; the right one (Fig. 53, C) has a distinct molar tooth in the middle. Segm. II of labial palpus (Fig. 53, D) is elongate, much longer than I; $\gamma$-setula is between *b* and *f*; $\delta$ is posterior to *h*; *a* is a short seta close to *tp*, which are large compared to *mp*; *e* is on the level of $\gamma$; *g* is posterior near *mp*. Glossa (Fig. 53, E) is long, fully reaching to the middle of labial segm. II and shortly forked distally in two acuminating arms and having a paired setae at the basal one-third. Distal setae are short and standing close together. In prementum the median area is narrow and with up to 9 pseudopores; lateral area has 1 setal, 2 real and some small pseudopores near the anterior margin. *v*-setula of mentum (Fig. 53, F) is reduced and close to *u*. Flabellum of the hind wing is represented by one long seta. Macrochaetal arrangement is as 01–02–13–13–13–32–. Terg. VIII (Fig. 53, G) is produced behind, the margin is obsoletely crenulated in its full length; *a*-2 is on the level of the stigma and close to it; microsculpture (Fig. 53, H) is imbricate. Median lobe of aedeagus (Fig. 53, I, J) is slender in lateral view and bent down distally; apical lobe is gradually tapering and constricted at apex; costa *ar. c.* are completely confluent along the middle and forming a high projection; *m. c.* are completely confluent along the middle and forming a high projection; *m. c.* is present at the basis; *v. ap.* is inconspicuous. Copulatory piece (Fig. 53, K) is narrowly elongate and with a long, straight and blunt-ending apical process; annellus is small and at the middle; lateral margin has a vertical plate (*p*) continuous to the apical process. Proximal segment of lateral lobe (Fig. 53, L) is short; vellum is normal, inner margin is narrowly sclerotized (*s*) and middle apodeme (*m*) is broad. Distal segment is very long and narrow; setae *a*, *b* are subequally long and close together, *c* is subapical and longer than *d*.

Female: Terg. VIII is rounded behind and not crenulated. Stern. VIII (Fig. 53, M) is broadly rounded behind and minutely serrulated at the middle. Spermatheca (Fig. 53, N) is short; bursa is large, rounded and with unusually large umbilicus.

Specimens examined: FRANCE: Calvi in Corsica, 6♂, 8♀ (18. XII 1974, R. Yosii leg.).

### *Pycnota* Mulsant et Rey, 1873

Typus: *Homalota paradoxa* Mulsant et Rey, 1861

In the type species of *Pycnota* the glossa is broadly rounded and with a narrow median fissure. But as it has a pair of small setulae, the genus would be placed in the *Coprothassa* group. Chaetal arrangement is 0–0 type and, therefore, it would not be a mere descendant of *Taxicera*, but a direct derivation from *Coprothassa*.

#### *Pycnota paradoxa* (Mulsant et Rey, 1861) Fig. 54

Male: Labrum (Fig. 54, A) is lightly broader than long; each row of setae is similarly short; *m*-2 is separate from the distal row and there are up to 4+4 secondary setae. *a*-sensilla of labral margin (Fig. 54, B) is converging; *b* is slender and curved;

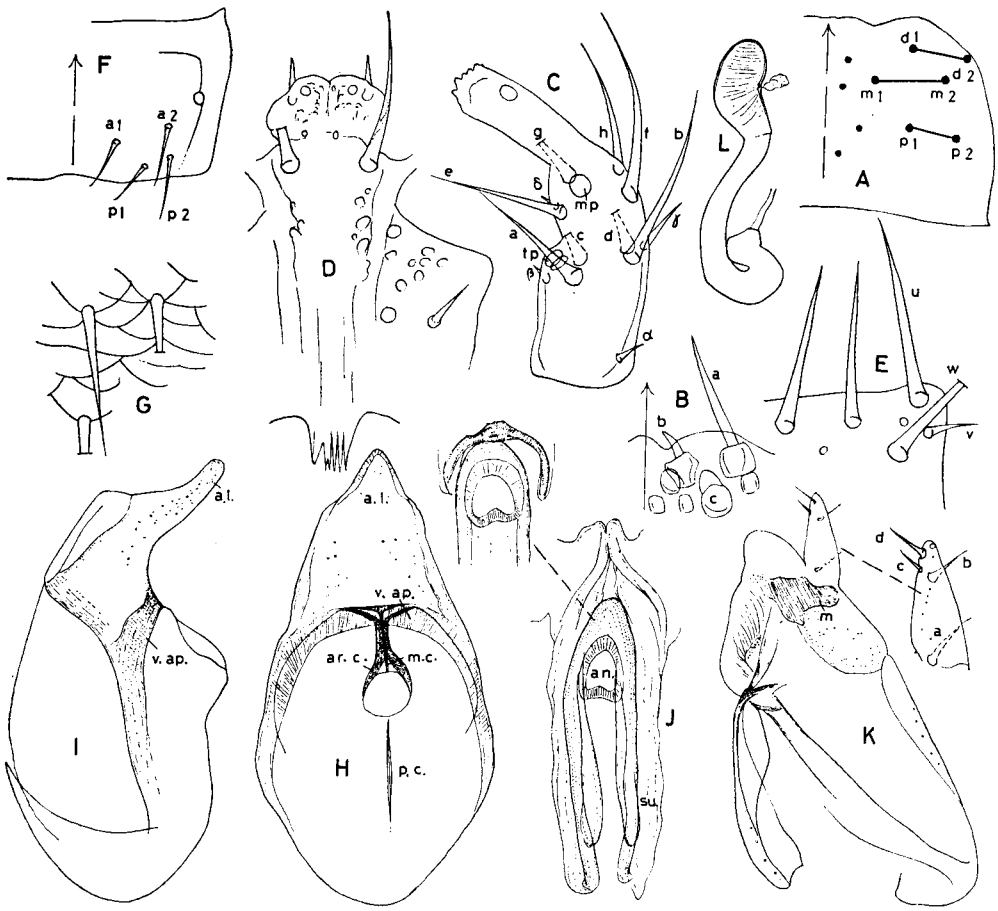


Fig. 54. *Pycnota paradoxa* (Mulsant et Rey, 1861) from Poland. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Labial palpus; **D,** Glossa & prementum; **E,** Mentum; **F, G,** ♂ terg. VIII & its microsculpture; **H, I,** Median lobe; **J,** Inner armature of aedeagus; **K,** Lateral lobe; **L,** Spermatheca.

*c* is fairly broad. Mandibles are short, abruptly pointed toward apex; the right one has a small molar tooth and prostheca is coarsely serrulated behind. Segm. III of labial palpus (Fig. 54, C) is longer than Segm. I; *β*-setula is close to *tp*, which are subequal to *mp* in size; *γ* is on the level of *b*. Glossa (Fig. 54, D) is not forked, but semicircular, with a narrow furrow anteriorly and with a short spinous setula on each side. Basal pores of glossa are reduced. Distal setae are stout, short and widely separating. Median area of prementum is very broad and with several large and small pseudopores, while lateral area has 2 real, 1 setal and up to 7 pseudopores. Mentum (Fig. 54, E) is straight anteriorly and with some large secondary setae; *v*-seta is normally long and located between *u* and *w*. Macrochaetal arrangement is as 01–02–13–13–23–23–. Terg. VIII (Fig. 54, F) is not modified, lightly emarginate in the middle of

the posterior margin; microsculpture (Fig. 54, G) is transverse and imbricate. Median lobe of aedeagus (Fig. 54, H, I) is 0.88 mm long; apical lobe is short, triangular and bent downwards; costa *ar. c.* are completely confluent; *m. c.* is entire; *p. c.* has no projection; *v. ap.* is well developed in full length. Copulatory piece (Fig. 54, J) is obtuse at apex and narrowly elongate behind the annellus and with narrow membraneous suspensoria. Distal apophysis is a narrow band guarding the corpus. Lateral lobe (Fig. 54, K) has a broad, irregular apodeme (*m*) and vellum has no sclerite on it. Distal segment is gradually tapering; *a* is short and basal in position, while *b* is near the apex together with short *c* and long *d*.

Female: Spermatheca (Fig. 54, L) is slender, not coiled but reflected at the end; bursa is elongate, finely corrugated all over and without umbilicus.

Specimens examined: POLAND: Silesia, 1♂, 1♀ (WANKA leg., SCHEERPELTZ det.).

### *Taxicera* MULSANT et REY, 1873

Typus: *Aleochara deplanata* GRAVENHORST, 1802

The type species was not avialable for study, but the genus is already well established and defined by previous authors (BRUNDIN, 1943 etc.). and there is little doubt about the generic diagnosis of it. The definition is supported by one new species from Japan and one another from Java. *Taxicera* is near *Coprothassa* in the glossa, but clearly different in macrochaetal arrangement, which shows 01-type of chaetotaxy.

***Taxicera academica* K. SAWADA sp. n.** Fig. 55

Male: Dark brown in ground colour, moderately shining in fore-parts. Head and pronotum brown, elytra reddish brown; abdomen nearly black, but slightly paler toward the base; antennae uniformly pigmented; legs paler. Head is not modified, but finely punctured throughout; post-gena is shorter than the eye in diameter. Antenna is indistinctly dilated distally; ratio of segments as I 26×11: II 13×9: III 11.5×10: IV 9×12: —: X 11×4.8: XI 25×15. Seta *m*-2 of labrum (Fig. 55, A) is on the distal row and *p*-1 is clearly separating from the medial row; 3+3 secondary setae are present. Sensillae of labral margin (Fig. 55, B) are concentrated; *a*-sensilla is long and converging; *c* is small to *b*. Mandibles are broad and abruptly tapering to shortly pointed apex; right mandible (Fig. 55, C) bears a small molar tooth in the middle. Segm. III of labial palpus (Fig. 55, D) is shorter than I; $\gamma$-setula is close to the level of *f*; $\delta$ is on the level of *h*; *a* is on the level of *b*; *c* is close to *tp*; *e* is posterior to the level of *mp*. Glossa (Fig. 55, E) is short, forked from the middle and with a pair of long setae on the lower surface. Median area of prementum (Fig. 55, E) is moderately broad and with ca. 10 pseudopores. Lateral area has 2 real and 1 setal pores mingled with up to 13 pseudopores. Mentum (Fig. 55, F) is nearly truncate in front; *v*-setula is long and close to *u*. Pronotum is flat in the middle, obsoletely depressed along the middle and with fine, dense granules throughout; lateral margin is uniformly rounded in full length and with short erecting lateral setae; pubescence


Fig. 55. *Taxicera academica* sp. n. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G, H,** ♂ terg. VIII & its microsculpture; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L,** Lateral lobe; **M,** Marginal setae of ♀ stern. VIII; **N,** Spermatheca.

along the middle is directed anteriorly. Elytra are more roughly and densely sculptured than the pronotum and faintly emarginate postero-externally. Abdomen is finely punctured. Macrochaetal arrangement is as 01–12–12–12–12–34–. Terg. VIII (Fig. 55, G) is shorter than usual; posterior margin is emarginate in the middle, indistinctly crenulated and with a short tooth on each side. From 4+4 short macrosetae *a*-2 is close to the stigma; microsculpture (Fig. 55, H) is imbricate. Median lobe of aedeagus (Fig. 55, I, J) is ovate, 0.46 mm long; apical lobe is short and lightly bent downwards; it is weakly sclerotized and obtuse at apex in ventral view. Costa *ar. c.* are approximate along the middle and forming a low projection; *m. c.* is present in anterior half; *v. ap.* is narrow; *dt. ap.* is very narrow and long. Copulatory piece (Fig. 55, K) is peculiarly modified; its apical process is simply spiniform; annellus is small; lateral to the annellus there are a pair of thick processes (*s*); a pair of very long processes (*t*) are lying outside of them and produced behind; suspensorium is lobate, with dense pubescence; distal apodemes have a band connenting them to elongate lateral processes (*p*). Lateral lobe (Fig. 55, L) is broad; proximal segment is lightly produced in front of the articulation; the junction and articulation of the medial segment are separating; distal segment is narrow; seta *a* is longer than *b* and *c*, *d* are standing close together.

Length. 2.20 mm (Head long 0.43 mm×wide 0.49 mm; pronotum 0.44×0.61 mm; elytra 0.48×0.78 mm).

Female: Stern. VIII (Fig. 55, M) is rounded behind and with a row of short and long marginal setae. Duct of spermatheca (Fig. 55, N) is not coiled, but abruptly geniculate and dilating to the large produced bursa, whose umbilicus is completely reduced. Genital pore has a pair of sclerites onto the regular narrow plate.

Holo-(♂), allo- and paratypes (3♂, 2♀): KYOTO: Campus of the Kyoto University (8. IV 1971, R. Yosii et K. Sawada leg.)

At present the new species is known only from the type locality, where it is found in the debris of wasted foods and decayed vegetables piled up in the backyard of the student's dormitory.

***Taxicera garuda* (K. Sawada, 1971) comb. nov.**

*Ischnopoda* (*Oreostiba*) *garuda* K. Sawada, 1971

In all probability the species is to be included in *Taxicera* as may be indicated by the structure of glossa. Macrochaetal arrangement is as 01–12–12–12–13–34–. In this species the labrum and labial palpus are nearly the same as in *C. academica* sp. n., but seta *b* of labial palpus is much more anterior in position. Microsculpture of terg. VIII is not transverse.

Specimens examined: No further materials than the type from Java.

## V *Tachyusa* Series

As already noted the series includes a few genera by which all the abdominal tergites II to VI are destitute of the anterior row of macrosetae. In this respect it

is near *Amischa* and *Cordalia* of the *Coprothassa* series, but glossa has no setulae, which is the key character of that series. Usually the median area of prementum is smooth and without pseudopores alike to the *Microdota* spp. of *Atheta*, but flabellum of hind wing is well developed. Three genera of the series may be divided as:

1. Glossa deeply separated. Twin pores normal.....*Dacrila*
   Glossa not deeply separated. Twin pores small.....2
2. Abdominal segments heavily constricted.....*Tachyusa*
   Abdominal segments not constricted.....*Gnypeta*

The bulk of the *Oxypoda*-Series by which the tarsal segments are 5, 5, 5, in number has the *Tachyusa*-type of macrochaetotaxy and there would be a close relationship between them.

### *Dacrila* Mulsant et Rey, 1874

Typus: *Homalota fallax* Kraatz, 1858

*D. fallax* has been inspected. The median area of prementum is without pseudopores and the chaetal arrangement is as 01–02–02–02–02–23–, so that it has no anterior row of setae on abd. terg. II to VI as characteristic to the *Tachyusa* series. From other genera of the series it is peculiar by the deeply split glossa and by the presence of a very large inner tooth of the right mandible. Possible identity of *Dacrila* with *Dilacra* Thomson and *Dralica* Muls. Rey has not been inspected by the lack of material. The majority of *Oxypoda* has this type of chaetotaxy.

#### *Dacrila fallax* (Kraatz, 1858) Fig. 56

Male: Body is subopaque by the presence of extremely dense granules throughout and no long erecting setae are present even on the lateral margin of abdomen. Labrum (Fig. 56, A) is subtruncate and slightly emarginate in front; all the rows of setae are nearly parallel and the proximal row is close to the middle one; 2+2 secondary setae are present. *a*-sensilla of labral margin (Fig. 56, B) is reduced; *b* is prolonged. Mandibles are narrowly elongate; the right mandible (Fig. 56, C) has a large molar tooth. Labial palpus (Fig. 56, D) is fairly long; segm. I has several pseudopores basally; $\beta$-setula is far remote from *tp*, much longer than usual, while $\gamma$ is normal in length; seta *a* is dislocated to the middle of the segment, *b* is on the same level with *tp*; *e* is inside of the margin and on the level of *f*, which is far separating from *b*. Glossa (Fig. 56, E) is deeply forked from the basis in two arms which are dilated toward the apices. Median area of prementum is narrow and without pseudopores, while the lateral area is broad and with up to 18 pseudopores together with 2 real and 1 setal pores. Mentum (Fig. 56, F) is transverse and subtruncate in front; *v*-setula is reduced, Setae *u*, *w* are normally developed. Pubescence of the pronotum along the middle is directed posteriorly in anterior half and directed anteriorly in the posterior half. Lateral erecting setae are inconspicuous and scarcely perceptible. Macrochaetal arrangement is as 01–02–02–02–02–23–. Terg. VIII

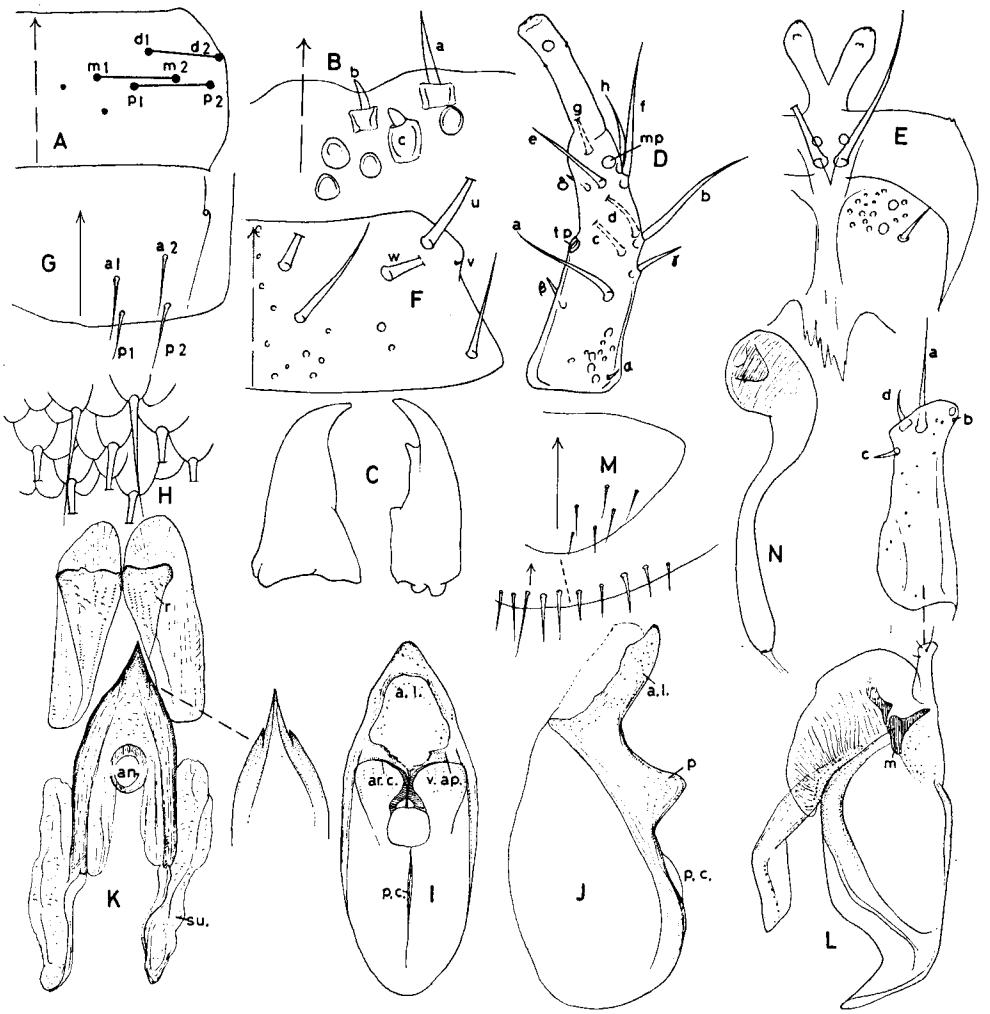


Fig. 56. *Dacrila fallax* (KRAATZ) from Burgenland. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Mandibles; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G, H,** ♂ terg. VIII & its microsculpture; **I, J,** Median lobe, **K,** Inner armature of aedeagus; **L,** Lateral lobe; **M,** ♀ stern. VIII & its marginal setae; **N,** Spermatheca.

(Fig. 56, G) has 4+4 very short macrosetae. The microsculpture (Fig. 56, H) is densely imbricate in pattern. Median lobe of aedeagus (Fig. 56, I, J) is elongate and with relatively short apical lobe; costa *ar. c.* are short and confluent in the middle; *v. ap.* is broad on each side; *p. c.* has a low projection. Copulatory piece (Fig. 56, K) has a pointed apical process finely notched near the apex; annellus is small for the corpus; suspensorium is quite membraneous; paramedian apophyses are a pair of large lobes with reflected inner margin (*r* in Fig. 56, K). Vellum is well developed (Fig. 56, L); the middle apodeme (*m*) is curved and with an additional apodeme. Distal

segment is narrowly elongate and lightly constricted subapically; seta *a* is normally long and apical in position, *b* is almost completely reduced to a minute setula placed at apical-most of the segment; *c*, *d* are subequally short as usual.

Female: Stern. VIII (Fig. 56, M) is not emarginate behind and with a row of short and long marginal setae. Spermatheca (Fig. 56, N) is simple; bursa is obtuse and with a large umbilicus; duct is straight and narrower than bursa.

Specimens examined: AUSTRIA: Illmitz in Burgenland, 1♂ (Puthz det.); GERMANY: Lübeck, 1♀ (Lohse det.).

## *Gnypeta* Thomson, 1858

Typus: *Homalota carbonaria* Mannerheim, 1830

*G. carbonaria* and other species have been investigated. The genus is well characterized by its peculiar outer form, very stout built and coarse, rough sculptures of the integument. But in the details of mouth parts etc. it is very near *Dacrila* by the chaetal arrangement of labial palpus and minute *v*-setula of mentum etc., although the glossa is not so deeply split and an inner tooth of right mandible is not enlarged. It is a member of *Tachyusa* series as chaetotaxy is 01–02–02–02–02–23–. *G. ainu* sp. n. has the same arrangement of macrosetae, but *G. aokii* K. S. is different in this respect. The taxonomic position of this species is problematic.

### *Gnypeta carbonaria* (Mannerheim, 1830) Fig. 57

Male: Labrum (Fig. 57, A) has the proximal row parallel to the distal row; seta *m*-2 is apart from the distal row and with 1+1 secondary setae. *a*-sensilla of labral margin (Fig. 57, B) is short and converging; *b* is fairly narrow and pointed, while *c* is normally broad. Mandibles are slender and pointed at apex; the right mandible (Fig. 57, C) bears a broad molar tooth. Segm. I of labial palpus (Fig. 57, D) is slender, nearly parallel and longer than III; $\beta$-setula is longer than $\alpha$ and far remote from *tp*, which are characteristically reduced in size and placed at a produced corner; $\gamma$ is small compared to $\beta$ and on the same level with *c*; $\delta$ is close to the lebel of *f*; *a* is displaced to the outer margin and posterior to the level of $\gamma$, while *b* is anterior to $\gamma$; *e* is well inside and very close to *mp*; *f* is widely separating from *b*. Median area of prementum (Fig. 57, E) is narrow and without pseudopores, the lateral area is with many small pseudopores up to 30 in number. From 1 setal and 2 real pores, the posterior real pore is finely spinulate. *v*-setula of mentum (Fig. 57, F) is small and on the level of *w*. Macrochaetal arrangement (Fig. 57, G) as 01–02–02–02–02–23–. Terg. VIII (Fig. 57, H) is not modified, broadly sinuate behind and with 4+4 major setae, *a*-2 of which is widely separated from the stigma. Microsculpture of it (Fig. 57, I) is imbricate. Median lobe (Fig. 57, J, K) is abruptly produced and fairly bent down to the apical lobe whose apex is shortly produced. Costa *ar. c.* are approximate in the middle and reflected behind; *v. ap.* is faintly present; *m. c.* is entire. Copulatory piece (Fig. 57, L) is nearly quadrate, with a short,

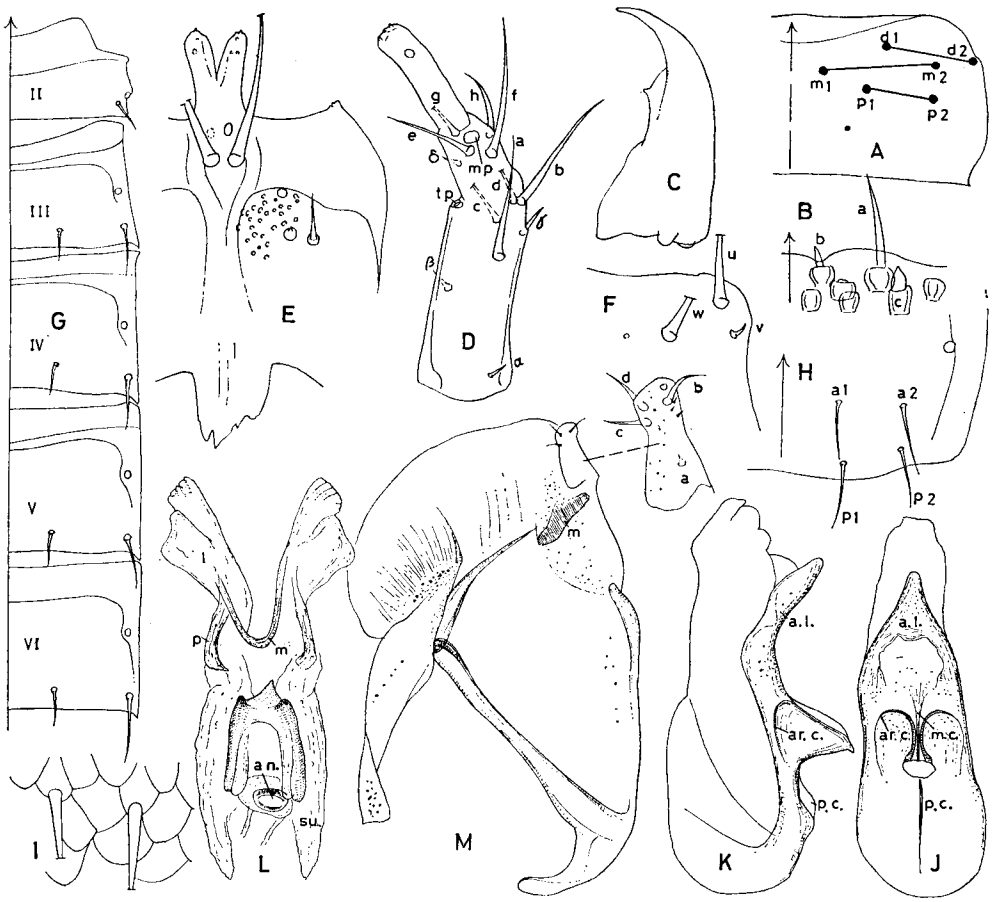


Fig. 57. *Gnypeta carbonaria* (MANNERHEIM) from Helsinki. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G,** Macrochaetotaxy of terg. II–IV; **H, I,** ♂ terg. VIII & its microsculpture; **J, K,** Median lobe; **L,** Inner armature of aedeagus; **M,** Lateral lobe.

triangularly pointed apical process; the annellus is rather near the posterior end; suspensorium is membraneous, narrowly prolonged along the corpus and dilated apically; median apophysis is a paired large lobes (*l*) and finely serrulate along the rounded apical corner; paramedian apophyses are narrow, curved sclerites separating from each other and finely spinulate apically. Lateral lobe (Fig. 57, M) is very broad; vellum is well developed; proximal segment is produced anteriorly. Distal segment is short, clearly constricsed before the middle. seta *a* is distal and reduced to a minute setula, while *b* is normally large; *c*, *d* are similarly long and close to each other.

Specimen examined: FINLAND: Helsinki, 1♂ (BENICK det.).

***Gnypeta ainu* K. SAWADA sp. n.** Fig. 58

Male: Intensely black and shining; antennae dark brown, legs blackish leaving

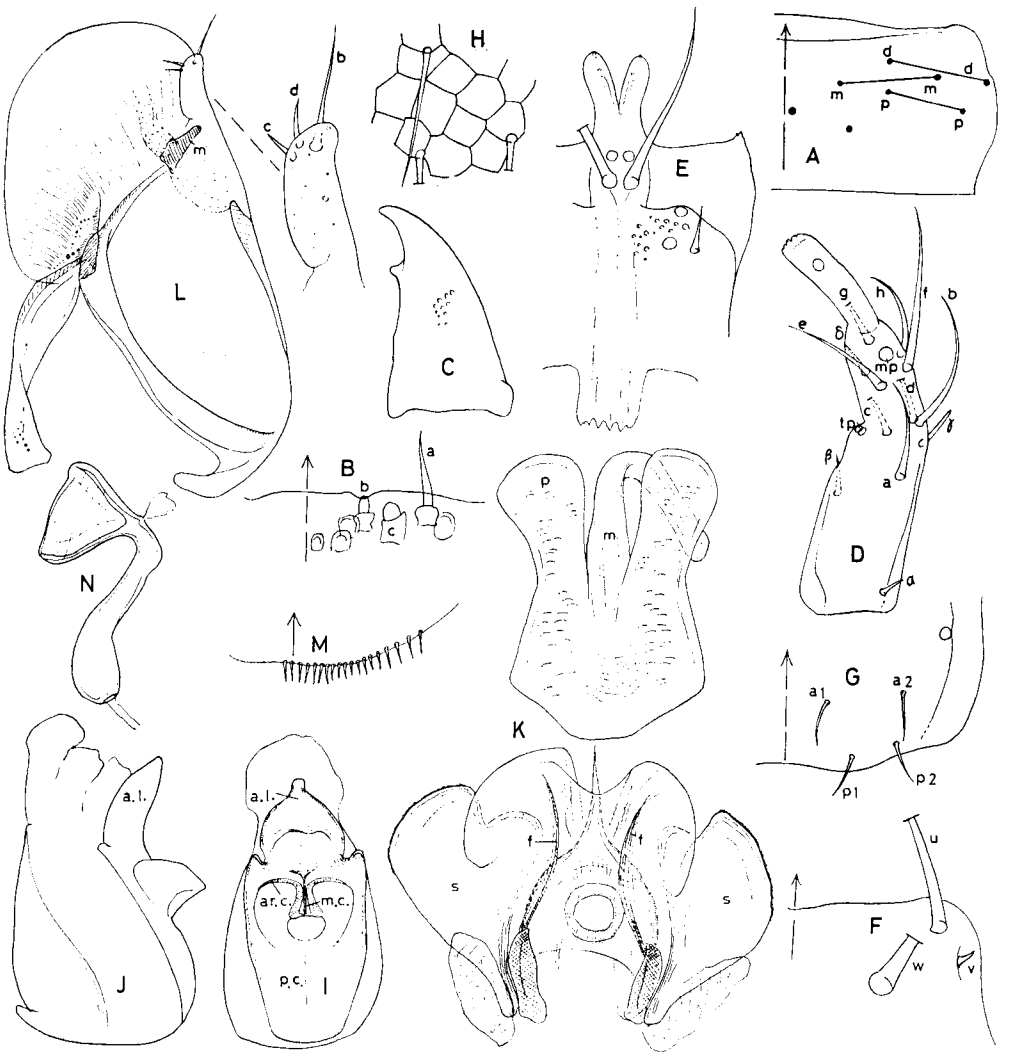


Fig. 58. *Gnypeta ainu* n. sp. **A,** Labral chaetotaxy; **B,** Labral margin; **C,** Right mandible; **D,** Labial palpus; **E,** Glossa & prementum; **F,** Mentum; **G, H,** ♂ terg. VIII & its microsculpture; **I, J,** Median lobe; **K,** Inner armature of aedeagus; **L,** Lateral lobe; **M,** ♀ stern. VIII; **N,** Spermatheca.

brownish tibiae and tarsi. Both extermities of tibiae are pale. Body nearly parallel in fore-parts and dilated behind. Head is fairly large to the pronotum, depressed along the middle and with fine, but well defined punctures. Antenna short and slightly dilated distally; ratio of segments as: I 10×5; II 9×4.3: III 7.5×4.5: IV 5×4.5—X 5×7: XI 11×7. Labrum (Fig. 58, A) strongly transverse; all rows of setae concentrated in the middle; medial row is long, a little longer than the distal row; *p*-1 is close to the medial row; *p*-2 is posterior to the level of *p*–1 and with 2+2

secondary setae. *a*-sensilla of labral margin (Fig. 58, B) is fairly short; *b* is small and *c* is normal. Right mandible (Fig. 58, C) has a distinct molar tooth in front of the inner margin. Segm. I of labial palpus (Fig. 58, D) is much longer and broader than III; $\beta$, $\delta$ are longer than usual; $\beta$ is posterior to *tp* and close to the level of seta *a*, which is close to the outer margin; *b* is on the same level of *tp*; *e* is well inside; *f* is widely separating from *b* and close to *h*. Glossa (Fig. 58, E) is deeply divided from the basal one third. Distal setae are close together. Median area of prementum is smooth and lateral area is with up to 15 small pseudopores. The posterior real pore is minutely spinulate as in *G. carbonaria* (Mann.). *v*-setula of mentum (Fig. 58, F) is strongly reduced and close to the level of *w*. Pronotum is slightly convex above, more finely punctured than on the head and with a shallow median depression, which is deeper, and broader posteriorly, where it is coarsely punctured. Lateral margins are narrowed behind and faintly sinuate in the middle. Elytron is distinctly and closely punctured and its postero-external corner is produced behind. Abdomen has also fine and dense punctures. Macrochaetal arrangement is as 01–02–02–02–02–33–. Terg. VIII (Fig. 58, G) is faintly sinuate behind and with 4+4 short macrosetae; microsculpture (Fig. 58, H) is reticular in type. Median lobe of aedeagus (Fig. 58, I, J) is 0.4 mm long; Apical lobe is short and bent downwards. In ventral view it is distinctly constricted at the basis and then dilated to form a prominent humerus. Apically it is suddenly narrowed and ending in a pointed apex. *ar. c.* are developed and approximate along the middle; *m. c.* is nearly reduced; *v. ap.* is present only in the middle. Copulatory piece (Fig. 58, K) is broad and acutely pointed distally; suspensorium (s) is broadly bilobed distally, finely wrinkled on lateral margin and articulated to the corpus. Besides, there is a paired raised foldings (*f*) lying over the corpus, which is broadly lobate on each side, they are clearly emarginate in front and strongly sclerotized at the basis. Median apophysis (*m*) is narrowly elongate with truncate apex, its basis is completely confluent to the paramedian apophyses (*p*). The latters are elongate, standing side by side, more or less spatulate with broad basis and their surface is finely imbricate. Lateral lobe (Fig. 58, L) is broad; middle apodeme (*m*) is small and with a faint additional apodeme; vellum is large. The distal segment is oblong; *a* is completely reduced; *b* is long; *c. d.* are standing side by side.

Length 2.80 mm (Head long 0.35 mm × wide 0.5 mm; pronotum 0.47 mm × 0.58 mm; elytra 0.47 mm × 0.75 mm).

Female: Head is slightly depressed on vertex; pronotum is depressed, but apparently shallower than in male. Terg. VIII is as in male, but stern. VIII (Fig. 58, M) is more obtuse. Spermatheca (Fig. 58, N) is with a large, triangular bursa having enormous large umbilicus which occupies the whole of the inner cavity; duct is short and with more or less dilated end.

Holo (♂), allo- and 15 paratypes: HOKKAIDO: North Cirque of Mt. Poroshiri, Hidaka in alt. 1,900 m. (25. VII 1971, R. Yosii leg.).

In appearance the present species resembles *G. carbonaria* (Mann.), but body is

narrower and more intensively pigmented. In detail it is different by distally located seta *e* of labial palpus, different shape of the copulatory piece and longer *a* seta of lateral lobe.

***Gnypeta* ? *aokii* K. Sawada, 1970** Fig. 59, A-D

Additional notes: Macrosetae of pronotum are reduced to minute setulae. Macrochaetal arrangement is as 01–02–12–12–12–33–. Median lobe (Fig. 59, A, B) has the costa *ar. c.* very short and fairly approximate in the middle; *m. c.* is entire and furcate at apex; *v. ap.* is inconspicuous; *p. c.* has a low projection. In the inner

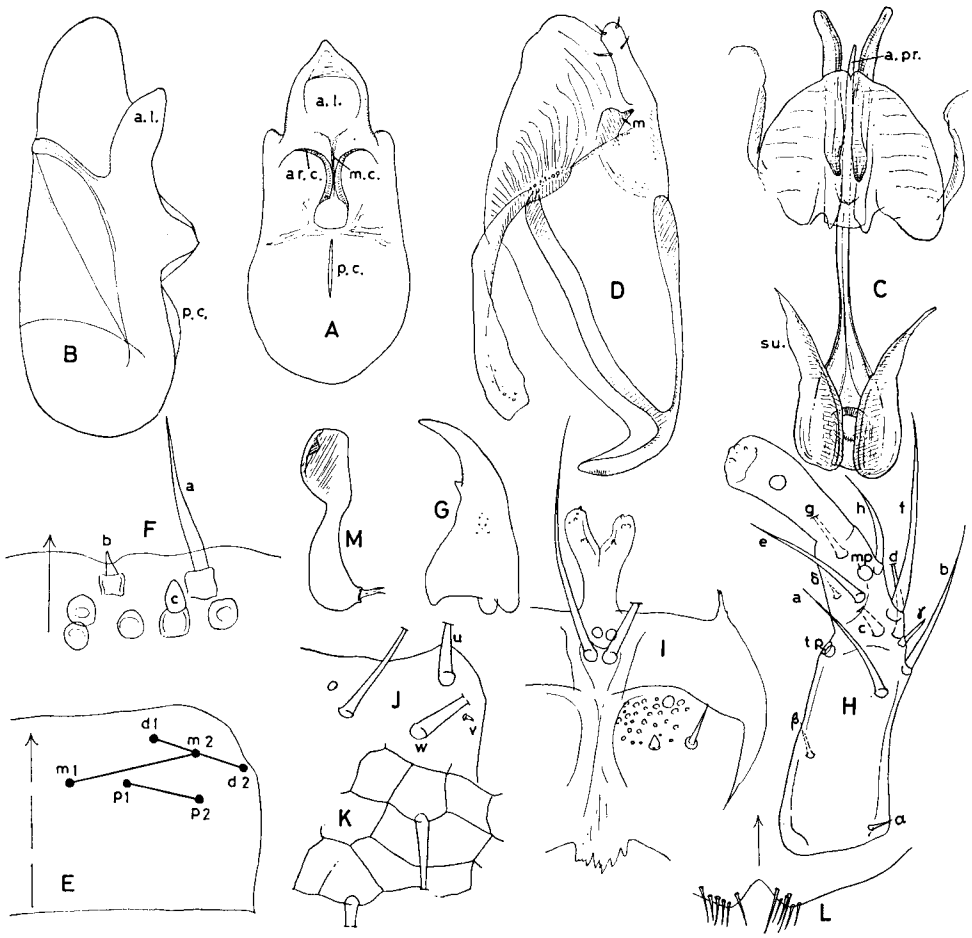


Fig. 59. *Gnypeta* (*?*) *aokii* K. Sawada from Shiga Heights. **A, B,** Median lobe; **C,** Inner armature of aedeagus; **D,** Lateral lobe. *Tachyusa constricta* Erichson from Silesia. **E,** Labral chaetotaxy; **F,** Labral margin; **G,** Right mandible; **H,** Labial palpus; **I,** Glossa & prementum; **J,** Mentum; **K,** Microsculpture of terg. VIII; **L,** Apex of ♀ stern. VIII; **M,** Spermatheca.

armature the copulatory piece (Fig. 59, C) has an enormously elongate apical process and annellus is at the basis of it; suspensorium (*su* in Fig. 59, C) is very large and on each side of the copulatory piece; median apophysis is narrowly elongate sclerites standing side by side; paramedian apophyses are a large hemispherical lobes with a short sclerite on each side. Proximal segment of lateral lobe (Fig. 59, D) is shortly prolonged near the end; vellum is well developed; middle apodeme (*m* in Fig. 59, D) is small and without additional apodeme.

Specimen examined: Type example from Nagano, Shiga Heights.

As stated above the position of this species is problematic by the different mode of its chaetal arrangement. Further materials are required.

### *Tachyusa* ERICHSON, 1837

Typus: *Tachyusa constricta* ERICHSON, 1837

The type species has been investigated. The genus *Tachyusa* is conspicuous with its elongate legs, cylindrical body etc. and may be discerned easily by the outer form from the rest of Athetae. In the inner structure, however, it is not much different from *Gnypeta* and *Dacrila* in many respects, especially in the form of cuspidate *b*-sensilla of labrum, in the structure of the lateral area of prementum, where there are many pseudopores and one of the two real pores is with a small spinous process. Chaetal arrangement is typically of *Dacrila* series. Probably *Tachyusa* is the adaptative form of the group to the amphibious habitat.

#### *Tachyusa constricta* ERICHSON, 1837 Fig. 59, E-M

Female: Labrum (Fig. 59, E) is nearly straight in front; medial row of setae is much longer than the distal row; seta *m*-2 is on the distal row; *p*-1 is on the same level with *m*-1. *a*-sensilla of labral margin (Fig. 59, F) is long and converging, while *b* is spiniform. Mandibles are narrow; the right mandible (Fig. 59, G) is with a small molar tooth. Labial palpus (Fig. 59, H) is alike to *Gnypeta carbonaria* (MANN.) in shape; segm. I is much longer than III; $\alpha$-setula is normal in position, $\beta$ is posterior to the middle of the segment; $\gamma$ is anterior to seta *b*; $\delta$ is close to the level of *h*; *a* is near *b*: *e* is at the middle of the segment and posterior to *mp*; *f* is clearly separating from *mp* and *tp* is small. Glossa (Fig. 59, I) is bifurcate on anterior half. Median area of prementum is narrow, fairly constricted in the middle and without pseudopores; lateral area has many pseudopores and one of the two real pores is faintly spinose. *v*-setula of mentum (Fig. 59, J) is reduced to a minute setula and placed posterior to the level of *u*. Macrochaetal arrangement is as 01–02–02–02–33–, where the median pair is advanced anteriorly. Terg. VIII is with coarse retuculate microsculpture (Fig. 59, K). Stern. VIII (Fig. 59, L) is deeply notched at the middle of the hind margin and with a row of up to 6+6 marginal setae. Spermatheca (Fig. 59, M) is simple and short; bursa is oblong and with a small umbilicus.

Specimen examined: POLAND: Silesia, Teschen, 1♀ (WANKA leg., SCHEERPELTZ det.).

## Resumè

The adoption of research methods proposed in K. Sawada, 1974 for the distinction of species of Aleocharinae has inevitably induced the authors to revise and to estimate the generic and subgeneric taxa of *Atheta* complex already established in Europe before going into the study of each Japanese species. The new method of bleaching of the example is added to evaluate the chaetal arrangement of abdominal tergites and the results are as summarized in Fig. 1 at the beginning of the thesis. However, there still remain many genera and subgenera, whose taxonomic status is still unknown, they are:

*Dadobia* Th., *Alaobia* Th., *Dilacra* Th., *Enalodroma* Th., *Disopora* Th., *Dochmonota* Th., *Discerota* Muls. Rey, *Sipalia* Muls. Rey, *Brundinia* Tott., *Dralica* Muls. Rey, *Aglypha* Muls. Rey, *Thrichiota* Muls. Rey, *Neohilara* Lohse (=*Hilara* Muls. Rey), *Ceritaxa* Muls. Rey, *Tetropla* Muls. Rey, *Earota* Muls. Rey, *Glaphya* Muls. Rey, *Liota* Muls. Rey, *Thinoecia* Muls. Rey, *Ousipalia* Gozis, *Kraatzia* Saulcy, *Rhopalocerina* Reitter (=*Rhopalocera* Gangl.), *Parameotica* Gangl., *Strobilocera* Gangl., *Pseudopasilia* Gangl., *Megaloscapa* Seidl., *Pseudothinoecia* Bh., *Aerostiba* Bh., and those which were established after 1900 based on European species together with the numerous taxa described from other continents.

Whether and how the system proposed here is applicable in worldwide scope is the next step in our research field of Athetae. In this paper some representative or typical species of each taxon have been reviewed, especially the *Atheta* or *Ischnopoda* species described by K. Sawada in his previous works have been checked and additional notes were given in each places. After the conception of our system, they must be renamed as follows:

K. Sawada, 1955; Tokara Is.: Publ. Seto Marine biol. Lab. **5**: 85
*Ischnopoda* (*Stethusa*) *miyamotoi* K. Sawada
*Xenusa algarum* (Sharp)

K. Sawada, 1970, Shiga Heights I: Bull. Nat. Sci. Mus. Tokyo, **13**: 21–64
*Ischnopoda* (*Anopleta*) *tortuosa* K. Sawada
*Shigatheta tortuosa* (K. Sawada)
*Ischnopoda* (*Coproceramius*) *separata* K. Sawada
*Atheta* (*Atheta*) *separata* (K. Sawada)
*Ischnopoda* (*Coproceramius*) *constricta* K. Sawada
*Liogluta constricta* (K. Sawada)
*Ischnopoda* (*Coproceramius*) *longisetosa* K. Sawada
*Atheta* (*Notothecta*) *longisetosa* (K. Sawada)
*Ischnopoda* (*Coproceramius*) *multispina* K. Sawada
*Atheta* (*Dimetrota*) *weisei* Bernhauer
*Ischnopoda* (*Coproceramius*) *tenuiducta* K. Sawada
*Atheta* (*Dimetrota*) *picipennis* (Mannerheim)
*Ischnopoda* (*s. str.*) *yosii* K. Sawada

*Acrotona* (*Acrotona*) *yosii* (K. SAWADA)
*Ischnopoda* (*Plataraea*) *punctifrons* K. SAWADA
*Atheta* (*Notothecta*?) *punctifrons* (K. SAWADA)
*Ischnopoda* (*Brundinia*) *prolata* K. SAWADA
*Atheta* (*Philhygra*) *neolata* K. SAWADA
*Ischnopoda* (*Hygroecia*) *spinula* K. SAWADA
*Atheta* (*Microdota*) *spinula* (K. SAWADA)
*Ischnopoda* (*Microdota*) *oviformis* K. SAWADA
*Atheta* (*Microdota*) *oviformis* (K. SAWADA)

K. SAWADA, 1970, Shiga Heights II: Contr. biol. Lab. Kyoto Univ. **23**: 33–60
*Ischnopoda* (*Ousipalia*) *nakanei* K. SAWADA
*Atheta* (*Microdota*) *nakanei* (K. SAWADA)

K. SAWADA, 1971 a, Seto: Publ. Seto Mar. biol. Lab. **18**: 291–315
*Ischnopoda* (*Coproceramius*) *atramentaria* (GYLLENHAL)
*Atheta* (*Atheta*) *atramentaria* (GYLLENHAL)
*Ischnopoda* (*Chaetida*) *multipunctata* K. SAWADA
*Atheta* (*Psammostiba*) *hilleri* (WEISE)
*Ischnopoda* (*Philhygra*) *ushio* K. SAWADA
*Atheta* (*Halostiba*) *ushio* (K. SAWADA)
*Ischnopoda* (*Dinaraea*) *tokiokai* K. SAWADA
*Atheta* (*Badura*) *tokiokai* (K. SAWADA)

K. SAWADA, 1971 b, Akiyoshi Distr.: Bull. Akiyoshidai Sci. Mus. no. 7, 75–91
*Ischnopoda* (*s. str.*) *uncinata* K. SAWADA
*Acrotona* (*Colpodota*) *pseudotenera* (CAMERON)
*Ischnopoda* (*Microdota*) *unidentata* K. SAWADA
*Atheta* (*Microdota*) *unidentata* (K. SAWADA)

K. SAWADA, 1971 c, Philippines and Java; Contr. biol. Lab. Kyoto Univ. **23**: 61–76
*Ischnopoda* (s. str.) *annuliventris* (KRAATZ)
*Atheta* (*Microdota*) *annuliventris* (KRAATZ)
*Ischnopoda* (*Oreostiba*) *garuda* K. SAWADA
*Taxicera garuda* (K. SAWADA)
*Ischnopoda* (*Microdota*) *bogorensis* K. SAWADA
*Atheta* (*Microdota*) *bogorensis* (K. SAWADA)

K. SAWADA 1972, Discussion; Contr. biol. Lab. Kyoto Univ. **24**: 31–59
*Atheta sordida* (MARSHAM)
*Acrotona* (*Nehemitropia*) *sordida* (MARSHAM)
*Atheta ursi* K. SAWADA
*Liogluta ursi* (K. SAWADA)

K. SAWADA 1974, *Amidobia,* Contr. biol. Lab. Kyoto Univ. **24**: 145–186
From 21 species treated here only two species, *A. talpa* (HEER) and *A. formicetorum* BH. belong to *Amidobia* and others must be placed in *Microdota,* so long as the macrochaetal arrangement checked to each

species is concerned. Furthermore, through detailed studies of the type series it has been proved that *A.* (*Mic.*) *kawachiensis* K. Swd. is a synonym of *A.* (*Mic.*) *silvatica* Bh., 1907 and *A.* (*Mic.*) *sublaevigata.* Bh., 1907 is a junior synonym of *A.* (*Mic.*) *subcrenulata* Bh., 1907.

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Postscript by R. Yosii——It is naturally too early to discuss the taxonomic relations of the whole Aleocharinae as intensive studies have not yet been done in the

majority of the genera. From the fluent survey of our collection, however, I have the personal impression as following: *Aleochara* and its allies seems to be the basic group of all others. They have the full tarsal number of 5, 5, 5 and with apical subsegment on maxillary and labial palpus. Their aedeagus is symmetrical, copulatory piece is slender and their distal segment of lateral lobe is elongate. All of them means the prototype of the whole Aleocharinae from which other groups must have derived through reductive modifications. The first step would be the absence of the subsegmentation of maxillary and/or labial palpus although the tarsal formula remains unchanged (Oxypodini). In this stage the diversity of the groups or series observed in Athetae are already realized. So, for example, *Oxypoda* is alike to *Tachyusa* in mouth parts and in abdomimal chaetal arrangement, *Homoeusa* and *Microglotta* is not very far from Zyrasini in mouth parts and *Meotica* is alike to *Liogluta* in mouth parts although the abdominal sternites have crenulating hind margin of *Acrotona*. Thus the interpretation of groups as expressed in Fig. 1 must be modified so that they have no common ancester in *Amischa,* but each series and groups have its original representative in 5,5,5 stage of Aleocharinae.

Bolitocharini with 4,4,5 tarsal formula may be a direct descendant from Aleocharini as there would be a direct connecting line between them to which *Shigatheta* would be associated. Members of the 4,4,5 group have their typical form in *Silusa,* so *Myllaena* is connected to it by *Bryothinusa* and *Halorhadinus*. *Leptusa* is a reduced, fossorial form of *Silusa* and Phytosi, including *Diaulota* and *Liparocephalus,* may be characterized by the loss of anterior setae of prementum from it. Very interesting are the groups of *Gyrophaena* and *Autalia* by which the aedeagus is strongly sclerotized, modified and asymmetrical in form.

At present I have no idea about the origin of 4,4,4 group. Some of them would be a direct descendant from 5,5,5 and others would be connected with the 4,4,5 group. The most annoying is the presence of *Deinopsis* having 3,3,3 tarsal segments. With its slender antennae, peculiar hypognathous head and peculiarly modified claw, it seems to have no relative within Aleocharinae and better be expelled from it to the direction of Tachyporinae.

If the assumption such as expressed above is adopted as possible, we have to change the taxonomic interpretation of Athetae of Fig. 1 quite to the reverse direction. Not only *Amischa* is excluded from the ancestral status of all, but also *Taxicera* in *Coprothassa* series and *Acrotona* (s. str.) in *Acrotona* (s. lat.) are to be regarded the less modified member among each of them. In the *Atheta* complex the most fundamental type is not *Datomicra,* but *Dimetrota* of the 02 group from which *Datomicra* of 0–0 group and *Notothecta* of 01 group have independently differentiated.

Postscript by K. SAWADA——In his monographic work of Aleocharinae FENYES (1921, p. 256, fig. 59) has illustrated the madible of *Tomoglossa luteicornis* ER. with a round basal notch on the left and with slender curved, apex on the right. If it is really so the position of the genus may be near *Hydrosmecta,* which has the alike form

of mandibles and two Japanese species refered to *Tomoglossa* must be transfered to the genus *Aloconota*.

The genus *Atheta* Thomson is erected in Oefv. K. Vet. Akad. Förh. 1858, p. 36 to the last of many genera of his 4 Tribus Aleocharini and it may be preoccupied by one of such names as *Dadobia, Plataraea, Notothecta, Amidobia, Dinaraea* and *Bessobia* through principle of page-priority. For the present paper, however, the classical usage of nomenclature is retained.

There is a suspicion that *Cadaverota* nov. is identical with *Trochanterella* Brundin, 1953. The type species of these two genera are nearly equal in the inner armature. The buccal structure of them must be compared.

Further studies on the types series preserved in the British Museum have revealed that *Atheta* (*Microdota*) *bulbosa* K. Sawada, 1974 is identical with *Atheta* (*Microdota*) *koreana* Bernhauer, 1922 and that *Atheta* (*s. str.*) *bowringi* Bernhauer, 1936 of Hongkong is the cosmopolitan *Atheta* (*Atheta*) *atramentaria* (Gyl.).