



HOKKAIDO UNIVERSITY

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**THE GENUS ACANTHOCNEMA IN ASIA AND EUROPE,
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(DIPTERA : SCATHOPHAGIDAE)**

By MASAAKI SUWA

Abstract

SUWA, M. 1986. The genus *Acanthocnema* in Asia and Europe, with descriptions of three new species from Japan and Nepal (Diptera : Scathophagidae). *Ins. matsum. n. s.* 34 : 1-33, 109 figs.

The genus *Acanthocnema* Becker is recorded from Asia for the first time on the basis of three species, which are described as new to science, namely *A. himalaica* from Nepal and *A. longispina* and *A. sternalis* from Japan. The species of the genus known from Europe, *A. nigrimana* and *A. glaucescens*, are also redescribed. Distinction between *Acanthocnema* and *Clinoceroides* is discussed, and the latter is not accepted as a good taxon at any level.

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* Results of Kyushu University Scientific Expedition to the Nepal Himalaya. Diptera 7.

INTRODUCTION

The genus *Acanthocnema* is a small group and has been represented by only 5 species, of which two are known from Europe, namely *A. nigrimana* (Zetterstedt, 1846) and *A. glaucescens* (Loew, 1864), and three from North America, namely *A. albibarba* (Loew, 1869), *A. capillata* (Loew, 1872) and *A. ruficauda* Curran, 1929. In my recent study I have recognized 2 species occurring in Japan and another one in Nepal. Further, by courtesy of Dr. Pont I have been able to examine a pair of specimens of each European species. Compared with these specimens the 3 Asian species are quite distinct from the European species. As to the North American species of *Acanthocnema* only limited information is available in the literature and no specimens have been examined by myself. Nevertheless, the Asian species at hand differ from the N. American species except *capillata* in the mostly darkened or blackish antennae: *A. albibarba* and *A. ruficauda* have the antennae mostly reddish (after Curran, 1929). *A. capillata* has blackish antennae as in the Asian species. According to the original description based on the female, *capillata* may be characterized as follows: —Antennae short and entirely blackish, with 3rd segment rounded and ovoid; vibrissal angles with setae slender; mesonotum nearly bare except for ordinary setae. Further, Curran (1934) states that in *Acanthocnema* "Anterior tibiae with a short, stout, rectangular spine at apex of ventral surface": this may be true in all the North American species including *capillata*. The combination of all these characters may well separate *capillata* from the Asian species, which, therefore, will be described as new to science. On this occasion redescriptions of the European *A. nigrimana* and *A. glaucescens* are also given.

So far as I observed on a Japanese species (*sternalis* sp. nov.), the adult flies are found on rocks wet with the spray of swift mountainous streams, and probably feed on soft-bodied small insects. I collected 1 female of the species preying on a small ephemeropterid subimago. According to Vockeroth (1967), the species of *Acanthocnema* undoubtedly live as larvae in swift streams.

Before going further I wish to express my sincere thanks to Dr. A.C. Pont, British Museum, for his help in offering me valuable material of the European *Acanthocnema* for the present use. My appreciation is also extended to Dr. H. Shima, Kyūshū University, for his kind allowance to study the Nepalese material obtained by the university expedition.

GENUS ACANTHOCNEMA BECKER

Acanthocnema Becker, 1894, Berl. ent. Ztschr. 39: 136. Type-species: *Cordilura nigrimana* Zetterstedt, 1846, original designation.

Clinoceroides Hendel, 1917, Deut. ent. Ztschr., p. 36. Type-species: *Cordilura glaucescens* Loew, 1864, original designation.

This genus is easily distinguished from other genera of the Scathophagidae by the fore tibiae with a stout and spine-like apical *v.* The name "*Acanthocnema*" is based on these 'spined' tibiae. On the basis of the European and Asian species studied by myself the genus is described as follows: —

Head higher than long even if only a little; frons wide, nearly parallel-sided or

slightly narrowing ventrad, at level of anterior ocellus about half as wide as head, and even near lunule distinctly wider than 0.4 times head-width; parafrontals with 2-3 (rarely 1 or 4) *ori* and 3 (rarely 2 or 4) *ors*, and with at least some and usually more than 10 associated setulae, the anteriormost *ors* being proclinate (in *nigrimana*) or usually laterocline though more or less directed anteriorly, and the remaining *ors* always laterocline; arista only pubescent, and not plumose; vibrissal angles usually with 1 or a few strong setae apart from the ordinary vibrissa; ground setulae* pale-coloured on haustellar mentum, lower half of occiput and postgena.

Mesonotum with some pairs of weak *pre-acr*, the rows closer to each other than to *dc*-rows; *dc* usually 2+3; 1 *ph* present or absent; *hm* (humeral setae) 0+1 or 1+1, the anterior, if present, being weaker than the posterior; notopleura with no accessory setulae; propleura covered with pale-coloured setulae at least anteriorly, and with 1 or rarely 2 *prpl*; mesopleura setulose towards upper and posterior margins, with 1 strong and a few or some additional (weak to rather distinct) *mpl*, and with or without 1 *pstg*; pteropleura bare; sternopleura setulose on posterior half, with setulae usually pale-coloured, those on lower to ventral side being somewhat stronger than the uppers; *stpl* always 1 in number and usually blackish in colour; scutellum bare on dorsal centre and setulose towards lateral margins, always with 2 (i.e. apical and lateral) pairs of strong setae, setae of the lateral pair being variable in position from basal to median, and sometimes with 1 or a few additional pairs of weaker setae discernible.

Abdomen with ground setulae on sternites and on 1st tergite wholly or mostly pale-coloured. Male: - 1st spiracles always placed on membrane; 2nd spiracles on lateral margins of tergite or on membrane in touch with the margins; 3rd to 5th ones on corresponding tergites laterally, or in *nigrimana* on membrane in touch with lateral margins of the tergites; left 6th spiracle on membrane near anterolateral corner of 6th tergite, and right one on the tergite at or near anterolateral corner; left 7th spiracle on 7th sternite area posteriorly in pregenital sclerite, right one on the sclerite or shifted to 6th tergite; 5th sternite simply bi-lobed, with no projections along inner margin; hypopygium with surstyli simple, and not incised or furcate. Female: - 2nd to 5th spiracles placed on tergites at or near lateral margins; 6th spiracles on tergite laterally or anteriorly; 7th ones on 6th tergite near or contiguous to its posterior margin, or on membrane between 6th and 7th segments; 7th tergite partially or completely divided medianly, and partially or largely fused with 7th sternite laterally; 8th tergite divided medianly or entire; 8th sternite represented by 2 sclerites, which are elliptical or compressed and triangular.

Legs slender, with f_1 rather stout; coxae and trochanters with ground setulae all pale-coloured, or in *nigrimana* partly blackish; femora with ground setulae on ventral to posterior surface wholly or mostly pale-coloured, though almost entirely blackish in *nigrimana*; f_1 with no *av*, 0-1 (rarely 2 or 3) *ad* near apex, some *pd*, and at least 3 *pv* in basal half, the basal *pv* being practically *v*; f_2 with 0 or at most 1-2 weak *av*, a row of *a*, and 1-2 fine or at most 4-5 weak or rather distinct *pv*, and near apex with 1 or a few strong setae on anterodorsal to posterior surface; f_3 with or without a few or some weak to rather distinct *av*, with a row of *a* (all or most *a* on apical half of the femur being indiscernible in certain species), some *ad* on apical

* After the term "Grundbehaarung" found in Hennig's articles on Diptera.

half or a little more length, and a few or some (0-1 in certain species) *pv*, and near apex with or without 1-2 strong setae on dorsal to posterodorsal surface; t_1 with many short spinules on ventral surface in 1 or a few rows, with 1 *ad* and 1-2 *pv*, and with no *av* nor *pd*; apical *av* weak though usually distinguishable from adjacent setulae, apical *ad* and *pd* indiscernible, apical *pv* weak, distinguishable from adjacent setulae or not, apical *d* indiscernible in certain species, yet distinct to strong in others, and apical *v* always stout and directed ventrad at a right or obtuse angle to the tibia; t_2 usually with 1 *ad* and 1 *pd*, and usually with no *av* nor *pv*; t_3 with 1-3 (rarely 4) *ad*, 1-3 *pd* and no *av* nor *pv*, and with 2 (*av* and *d*) or 3 (*ad* added) distinct apical setae, apical *d* longest; apical *pd* weak and hardly distinguishable from adjacent setulae, and apical *pv* absent. Wings narrow and often a little longer than thrice the width, or rather broad (about 2.7 times as long as wide in the case of the present female specimen of *glaucescens*), and comparatively long and often a little longer than twice the length of head and thorax combined, or rather short (about 1.6-1.7 times as long as head and thorax combined in the case of the specimens examined of *nigrimana*); no emargination in outline; no additional cross-veins; R_{4+5} and M_1 nearly parallel to each other beyond *dm-cu*, the latter cross-vein being right- or obtuse-angled to the penultimate section of M_1 ; anal vein reaching to wing-margin.

Remarks. The members of the genus treated in this paper are as follows: -

1. *Acanthocnema nigrimana* (Zetterstedt), Europe.
2. *A. glaucescens* (Loew), Europe.
3. *A. himalaica* sp. nov., Nepal.
4. *A. longispina* sp. nov., Japan.
5. *A. sternalis* sp. nov., Japan.

The genus was sometimes divided into *Acanthocnema* (s. str.) and *Clinoceroides*, at the generic or subgeneric level, on the basis of the anteriormost *ors*, which is proclinate in *nigrimana* (type-species of *Acanthocnema*), whereas lateroclininate in *glaucescens* (type-species of *Clinoceroides*). In this respect all the newly found Asian species should belong to *Clinoceroides*. However, when other characters are taken into consideration, the separation of *Clinoceroides* seems unjustifiable. For example, the posterior arms of hypandrium of the male genitalia are fused with each other in *glaucescens*, *himalaica* and *longispina*, whereas free in *nigrimana* and *sternalis*, and the female 8th sternite is represented by elliptical plates in *sternalis*, whereas by triangular ones in the others. At present it may be appropriate to put all the species into 1 genus and to recognize no subgenera. No analysis of relationship among the species is attempted in this paper, because it needs evaluation of characters based on other groups of the family.

KEY TO THE SPECIES OF ACANTHOCNEMA FROM EUROPE AND ASIA

1. Frons on lower half, antennae, haustellar mentum and legs wholly or largely yellowish; t_1 with 1 *pv*, and with apical *d* longer than 1.5 times t_1 -height; mesonotum without *ph*. Europe. 1. *nigrimana* (Zetterstedt)
- Frons, antennae, haustellar mentum and legs blackish or dark brown, at most partly paler; t_1 with 1-2 *pv*, and with apical *d* shorter than 1.5 times t_1 -height or indiscernible; mesonotum with or without 1 *ph*. 2
2. Fore tibia with apical *v* longer than 1.5 times t_1 -height; arista pubescent on whole length;

- mesonotum with *ph* absent. Japan. 4. *longispina* sp. nov.
- Fore tibia with apical *v* shorter than 1.5 times t_1 -height ; arista pubescent at most on basal two-thirds and bare apically ; mesonotum with *ph* present or absent. 3
3. Fore tibia with 1 *pv*, and with apical *d* indiscernible ; mesonotum with *ph* absent. Nepal. 3. *himalaica* sp. nov.
- Fore tibia with 2 *pv*, and with apical *d* easily discernible ; mesonotum with *ph* present and usually well developed. 4
4. First sternite nearly bare, at most with a few setulae near each lateral margin. Male : 2nd to 4th sternites as long as or only a little longer than wide ; 5th sternite with processes tapering apicad ; 6th tergite free from pregenital sclerite. Female : 2nd to 6th sternites very broad, as wide as or wider than long ; 8th sternite represented by elliptical sclerites. Japan. 5. *sternalis* sp. nov.
- First sternite rather densely setulose, with more than 10 setulae towards each lateral margin. Male : 2nd to 4th sternites distinctly longer than wide ; 5th sternite with processes little tapering apicad and rounded at apices ; 6th tergite fused with pregenital sclerite though the suture discernible in part. Female : 2nd to 6th sternites not so broad, and distinctly longer than wide ; 8th sternite represented by triangular sclerites. Europe. 2. *glaucescens* (Loew)

DESCRIPTIONS

1. *Acanthocnema nigrimana* (Zetterstedt, 1846)

Acanthocnema nigrimanum : Sack, 1937 : 77.

Acanthocnema nigrimana : Collin, 1958 : 48 ; Vockeroth, 1967 : 422 ; Šifner, 1974 : 98.

Acanthocnema (Acanthocnema) nigrimana : Pont, 1976 : 108.

Material examined. *Jugoslavia*. Slovenia : - Bohinj, Dom Savica, 600 m, 1 ♂, 30. vii. 1973 (A.E. Stubbs) ; Bohinj, Bukovska Dolina, to 1400 m, 1 ♀, 1. viii. 1973 (A. E. Stubbs).

Distribution. Europe.

The present specimens have the following characters : -

♂. Body-length 7.2 mm ; wing-length 5.8 mm. Body in ground colour largely yellow on head and mainly blackish on thorax and abdomen. Legs yellow. Head in ground colour blackish on upper half of parafrontals, ocellar triangle, and upper half of occiput, and yellowish on the remaining parts ; interfrontalia brownish near ocellar triangle ; antennae yellow ; arista yellow, with apical half darkened ; palpi pale yellow in ground colour and densely whitish pollinose or tomentose, with marginal setulae mostly pale-coloured, some in apical half being dark brown or blackish ; haustellar mentum yellowish. Thorax in ground colour partly yellow or brownish yellow, especially on prosternum, sternopleura near mid coxae, and metathoracic basisternum in part, and mostly blackish on the remaining regions, and in pollinosity pale grey ; mesonotum pale yellowish grey and slightly brownish in pollinosity, paler and denser on peripheral regions and between rows of *acr*, with opaque dark paramedian vittae visible between rows of *dc* and *acr* in some lights. Abdomen mostly blackish in ground colour and thinly pale greyish pollinose, with brownish yellow setulae on cercal plate, surstyli and inner bases of 5th sternite processes ; 6th tergite and hypopygium brownish yellow in part ; 1st to 4th sternites blackish or dark brown ; 5th sternite brownish on processes apically and on basal plate posteriorly, and shining on apices of processes. Legs yellow ; mid and hind coxae partly darkened. Wings tinged with brownish yellow along veins, strongly

and broadly so towards base and costa ; veins brownish yellow, partly dark brownish ; calyptrae orange yellow marginally, with fringe paler ; halteres yellowish.

Head somewhat wider than mesonotum, about 1.1 times as wide as the latter (mesonotum-width represented by the distance between anterolateral edges of notopleura in dorsal view) ; frons, measured at level of anterior ocellus (same in succeeding species), 0.47 times as wide as head, and very slightly narrowing ventrad ; parafrontals with 3 *ori* (middle one on the left parafrontal much weakened) and 1 proclinate and 2 lateroconclinate *ors* (uppermost one missing), and with some (about 7 in this specimen) minute setulae scattered especially outside *ori* ; vibrissal angles with a few strong setae and some short setulae apart from ordinary vibrissa ; A₃ (3rd antennal segment) probably about twice as long as wide (shrunk in the specimen) ; arista short pubescent on basal third and bare apically ; palpi blade-like, about 3 times as long as wide, and wider than t₁-height, with marginal setulae less than half as long as palpi ; haustellar mentum much narrower than f₁-height, and rather densely covered with very long and hair-like setulae ; postgenal setulae very long.

Mesonotum with some pairs of *pre-acr* (5 setulae on the left row and 4 on the right in this specimen), and no setulae present between the rows ; *dc* 2+3 ; anterior *hm* slightly developed on the right body-side, yet hardly distinguishable from accessory setulae on the left ; *ph* absent ; *ia* 3, the anteriormost much weakened ; 1 blackish *prpl* and no associated setulae ; mesopleura with a few weak additional *mpl* discernible, and with a blackish *pstg* and no associated setulae ; sternopleura with setulae on posterodorsal region short and pale-coloured and those on ventral side longer and blackish, and with some rather strong and blackish setae at posteroventral corner ; scutellum rather broadly bare on dorsal centre, and with no additional pairs of setae.

Abdomen slender, about 4 times as long as wide ; tergites with marginal setae weakly developed, only a little stronger than ground setulae ; 1st sternite scarcely setulose, with only a few pale-coloured setulae discernible laterally ; 2nd spiracles placed on lateral margins of tergite ; 3rd to 5th spiracles on membrane in touch with lateral margins of corresponding tergites ; right 7th spiracle on pregenital sclerite anterolaterally (Fig. 1) ; epandrium densely setose on posteroventral corners (Fig. 19) ; surstyli broadly maintained throughout and truncated apically, armed with many long setae around apex and densely pilose on ventral side near apex (Figs. 17-18) ; hypandrium with posterior arms free from each other (Fig. 33) ; distiphallus (Figs. 38, 43, & 47) with no folds on posterior paraphalli ; acrophallus short and thick, carinated on ventral side medianly and concave on each side of the carina, the concavity being surrounded by a narrow brim on dorsal to distal margin ; ejaculatory apodeme (Fig. 69) with median blade narrow (probably owing to youthfulness of the specimen examined).

Fore coxa with ground setulae pale yellowish and long, and with some rather strong black setae ; mid coxa with ground setulae black and with a few strong black setae ; hind coxa with ground setulae mostly black and with a few rather strong black setae ; trochanters with setulae mostly pale-coloured ; femora and tibiae with setulae and setae mostly blackish ; f₁ densely setulose ventrally, with 1 short *d* near apex, about 7 *pd*, and 3 *pv* in basal half, the basal *pv* being rather fine and more or less pale-coloured and distal one also rather fine, and with a few short and fine *pv*

discernible in apical half ; f_2 with no av , a row of 7-8 a , 1 pd near apex, 3 pv in basal half, and 1-2 fine pv discernible in apical half ; f_3 with 4-5 av on apical two-thirds, a row of 8-9 $a-ad$ (4-5 a on basal half rather anterodorsally and 4 ad on apical half), and 5-7 pv (a few of them in apical third being fine), and with no d nor pd ; t_1 with ground setulae on apical two-thirds of anterior to anteroventral surface brownish to yellowish, and ventral spinules quite distinct, distributed on whole length of tibia except near base and arranged in a few rows, with 1 strong ad , which is about twice as long as t_1 -height (in the present specimen 1 additional ad also visible at basal third of tibia in left leg), and with 1 strong pv near apex, which is a little shorter than the primary ad ; apical d strong and slightly longer than 1.5 times t_1 -height, apical pv as weak as adjacent setulae, and apical v as long as or slightly shorter than t_1 -height ; t_2 with 1 ad and 1 pd ; t_3 with 2 ad and 2 pd , and with apical ad (missing in the specimen) probably distinct (so far as suggested by the setal socket). Wings about 3 times as long as wide, and about 1.7 times as long as head and thorax combined.

♀. Body-length 6.5 mm ; wing-length 5.8 mm. Antennae infuscated on dorsal side of A_2 and on apical half of A_3 ; palpi less densely tomentose than in male, with marginal setulae on apical half mostly darkened. Abdomen in ground colour brownish yellow on 1st tergite basally and on 6th and 7th tergites ; 2nd to 5th tergites brownish along lateral margins ; 1st to 6th sternites dark brownish or blackish, paler marginally ; 7th sternite yellowish. Fore femur darkened on dorsal to posterior surface except near base and apex ; hind femur also darkened on middle third of dorsal surface. Wings more evenly tinged with brownish yellow than in male.

Frons 0.45 times as wide as head ; parafrontals with 3-4 ori and 3 ors , and with about 14 minute setulae scattered ; A_3 about twice as long as wide ; haustellar mentum with setulae short and rather sparse ; postgenal setulae much shorter than in male. Thorax with anterior hm slightly (on the left body-side) or hardly developed ; 2 ia discernible on the left body-side (missing on the right), very fine. Abdomen a little longer than twice the width ; 1st sternite with some setulae laterally (3 on the right and 5 on the left in this specimen) ; 2nd to 5th spiracles placed on the corresponding tergites near lateral margins ; 6th spiracles on 6th tergite in touch with anterior margin (Fig. 84) ; 7th spiracles on 6th tergite near posterior margin ; 7th tergite divided medianly (Fig. 94), and fused with 7th sternite on anterior part narrowly (Figs. 100 & 105) ; 8th tergite incompletely divided medianly, with some setulae laterally ; 8th sternite represented by 2 triangular sclerites, each having minute fine setulae only.

Fore coxa with ground setulae comprising pale-coloured ones and blackish ones, and shorter than in male ; f_1 (right one missing) with a row of about 10 pv , of which 3 setae are situated in basal half and others in apical half, the latter becoming shorter towards apex of femur and a few of them near apex much weakened, and with 6 pd and no d ; f_2 with about 10 a , 1 p or pd near apex, 3 pv in basal half, and a few short and fine pv in apical half ; f_3 (left one missing) with 6 av on apical two-thirds (2 of them near apical third rather strong), 9 $a-ad$ (practically all ad) and 6 pv ; t_3 with 2 ad and 1 pd , and with apical ad distinct. Wings about 1.6 times as long as head and thorax combined.

Remarks. This species is quite different from the other species treated in this paper in having the much paler colouration on the head and appendages, less bluish

grey pollinosity, proclinate anteriormost *ors*, and characteristic surstyli with truncated apex and much denser pilosity. In other characters, however, it is not always isolated. It is similar to *sternalis* in the male pregenital sclerite free from 6th tergite and with right 7th spiracle anterolaterally and in the hypandrium with posterior arms free from each other; to *glaucescens* in the female 6th tergite with 6th spiracles on anterior margin and with 7th spiracles near posterior margin; to *himalaica*, *longispina* and *sternalis* rather than to *glaucescens* in the wholly wrinkled spermathecae; and to *glaucescens*, *himalaica* and *longispina* rather than to *sternalis* in the female 8th sternite represented by triangular sclerites. There seems to be no reliable basis to separate *nigrimana* at the generic or subgeneric level from the other species, which, therefore, all should be referred to *Acanthocnema*.

2. *Acanthocnema glaucescens* (Loew, 1864)

Acanthocnema glaucescens: Becker, 1894: 138; Sack, 1937: 76; Hackman, 1956: 58; Vockeroth, 1967: 422; Šifner, 1974: 98.

Acanthocnema latipennis Becker, 1894: 138; Vockeroth, 1967: 422. Syn. after Šifner (1974).

Clinoceroides glaucescens: Hendel, 1917: 36; Collin, 1958: 49.

Acanthocnema nigripes Ringdahl, 1936: 175. Syn. after Hackman (1956).

Acanthocnema latipenne: Sack, 1937: 77

Acanthocnema (Clinoceroides) glaucescens: Pont, 1976: 108

Material examined. *Britain*. Wales: - Llanwddyn, Montgomeryshire, 1♂, 1♀, 23. vi. 1951 (J. Cowley).

Distribution. Europe.

♂. Body-length 4.8 mm; wing-length 4.6 mm. Body in ground colour mostly dark brownish or blackish and in pollinosity greyish and partly brownish. Parafacials and cheeks brownish in ground colour, with vibrissal angles pale brownish yellow; frons and vertex brownish pollinose; antennae dark brownish, paler on A₁, A₂ apically and A₃ basally; palpi yellowish in ground colour, rather thinly whitish tomentose, and with setulae yellowish; haustellar mentum fuscous. Thorax in pollinosity bluish grey and slightly brownish on pleural regions, humeral calli and scutellum, and brownish on mesonotum. Abdomen in ground colour mostly blackish, with 5th sternite and cercal plate brownish or dark brown, and in pollinosity bluish grey and faintly brownish, with 5th sternite shining on processes apically and on basal plate posteriorly. Legs blackish; coxae dark brownish on posterior side; trochanters brownish; femora dark brownish at base and apex; tibiae dark brownish at base and apex ventrally; tarsi dark brownish. Wings with veins dark brownish; membrane with a brownish suffusion especially along veins; calyptrae pale brown, with margins dark brown; halteres tawny yellow.

Head about as wide as mesonotum; frons 0.54 times as wide as head, slightly narrowing ventrad; parafrontals with 1-2 *ori* and 3 *ors*, and with many (ca. 20) short associated setulae; vibrissal angles with 1 strong seta and some short setulae apart from ordinary vibrissa; A₃ about 1.5 times as long as wide; arista pubescent on basal half and bare apically; palpi blade-like, a little longer than 3 times the width and narrower than t₁-height, with longest setula a little shorter than palpus-length; haustellar mentum enlarged, about as wide as f₁-height, and with some rather short setulae near centre.

Mesonotum with some (4 in this specimen) pairs of *pre-acr*, 1 setula visible between the rows in the present specimen; *dc* 2+3; anterior *hm* slightly developed; 1 well developed *ph*; *ia* 2; 1 pale-coloured *prpl* and no associated setulae; mesopleura with upper ground setulae short and lowers slender, with additional *mpl* hardly distinguishable from adjacent setulae, and with 1 pale-coloured *pstg* and no associated setulae; scutellum with discal pair of slightly developed setulae discernible in addition to ordinary pairs.

Abdomen nearly parallel-sided, and about 2.8 times as long as wide; tergites with marginal setae rather developed except on middle, longest ones nearly as long as their corresponding tergites; 1st sternite with about 12 setulae on each lateral side; 2nd spiracles placed on lateral margins of tergite; pregenital sclerite (Figs. 2 & 6) broadly fused with 6th tergite, right 7th spiracle being placed near anterolateral corner of the area correspondent to the sclerite; 5th sternite with processes little tapering caudad and rounded apically, and with basal plate nearly straight on posterior margin; surstyli narrowing apicad, with many long setae dorsolaterally; hypandrium with posterior arms fused with each other; distiphallus with fine folds on posterior paraphalli, the folds being intermittent and file-like (Figs. 39 & 48); acrophallus long, membranous on basal half ventrally and compressed there; ejaculatory apodeme with median blade enlarged and broadly brimmed marginally (Fig. 70).

Coxae and trochanters with setulae or setae all pale-yellowish and with no blackish ones; femora with ground setulae on posterior to ventral surface pale-coloured; f_1 with 1 *ad* near apex, about 8 *pd*, and 3 *pv* on basal third, the basal *pv* being pale yellow and other *pv* brownish; f_2 with 1 weak *av* near apical third, 5-6 *a*, 1 *pd* and 2 *p* near apex, and 3 fine *pv* in basal half, the basal *pv* pale yellow; f_3 with 1 *av* near apical third, a row of *a* except near apex (only a few *a* in basal half being rather strong and the rest fine), 7-8 *ad* on apical three-fifths, and 1 pale-coloured slender *pv* near base; t_1 with ventral spinules distributed on apical two-thirds of tibia, arranged in 2 rows; with 1 rather weak *ad*, which is about as long as t_1 -height, and with 2 long *pv*, the proximal one being as long as or slightly longer than twice the t_1 -height and situated near apical third or somewhat more distantly from apex of tibia, and the distal one a little longer than the proximal and situated near apex of tibia; apical *d* rather weak, about as long as t_1 -height, apical *pv* discernible on left t_1 , yet indiscernible on the right in the specimen, and apical *v* as long as or slightly shorter than t_1 -height; t_2 with 1 *ad* and 1 *pd*; t_3 with 1-2 *ad* and 1 *pd*, and with apical *ad* hardly or slightly developed. Wings about 3 times as long as wide and about 1.9 times as long as head and thorax combined.

♀ (the specimen examined is teneral). Wing-length 5.4 mm. Palpi dark brownish yellow. Parafrontals with 2 *ori* and 3 *ors*, and with associated setulae longer than in male. Mesonotum with 5 (right body-side) or 6 (left) *pre-acr* and 3 setulae between the rows in this specimen; anterior *hm* rather well developed though much shorter than the posterior; *ia* 3 (right) or 4 (left); *prpl* and *pstg* blackish; mesopleura with a few additional *mpl* discernible, a little stronger than adjacent setulae; sternopleura with some of setulae on upper middle blackish. Abdomen with 1st sternite more densely setulose than in male; 2nd to 5th spiracles placed on tergites near lateral margins; 6th spiracles on anterior margin of 6th tergite, and 7th spiracles also on 6th tergite near posterior margin; 6th tergite

membranous along median line except anteriorly (Fig. 95); 7th tergite widely divided medianly, and fused with 7th sternite on anterior half; 8th tergite completely divided medianly, with a few setulae laterally; 8th sternite represented by 2 triangular sclerites, each having a spine-like short seta at apex; spermathecae differentiated into round and smooth apical part and rod-like and wrinkled basal part (Fig. 90).

Fore femur with 1 (in left leg) or 3 (right) *ad* near apex, about 8 *pd* and 3 blackish *pv*, in right leg with 1 weak *av* discernible (probably absent in usual cases); f_2 with 1-2 *av*, a row of about 10 (some weak and some strong) *a*, 1-2 *pd* and 1 *p* near apex, and 4-5 *pv* in basal half or two-thirds; f_3 with 2-3 distinct and 1-2 fine *av* in apical half, a row of *a-ad* in basal two-thirds (3-4 in basal half rather strong), 6-8 *ad* in apical three-fifths, 1 *pd* near apex and 1 *pv* near base; t_2 with 1 *ad*, 0-1 *pd* and 0-1 *pv*; t_3 with 2 *ad* and 1 *pd*, and with apical *ad* more or less developed. Wings about 2.7 times as long as wide, and about twice as long as head and thorax combined.

Remarks. In having the enlarged haustellar mentum, 2 *pv* on t_1 , and wedge-shaped surstyli, this species resembles *sternalis*, from which it is, however, quite different in the hypandrium with posterior arms fused with each other, distiphallus with lengthened acrophallus, characteristic spermathecae, and the characters mentioned in the key. *A. glaucescens* might be more closely related to *longispina* by having the fused posterior arms of hypandrium, long acrophallus of distiphallus, similar shape of praegonites, and 5th sternite with processes set apart from each other, though it is easily distinguishable from the latter species by the arista pubescent on basal half only, t_1 with shorter apical *v*, 5th sternite with processes little tapering, and other characters.

3. *Acanthocnema himalaica* sp. nov.

Material examined. *Nepal*. East Nepal: - Thudam, 3500 m, 27°45'N 87°32'E, 1♂ (holotype), 24. vi. 1972 (Y. Nishida); Thudam - Tanga La, 3500-4700 m, 1♀, 5. vii. 1972 (H. Shima). The specimens are deposited in the Biological Laboratory, College of General Education, Kyūshū University.

Distribution. *Nepal*.

♂. Body-length 5.4 mm; wing-length 6.3 mm. Body mainly blackish in ground colour and bluish grey in pollinosity. Interfrontalia slightly brownish near lunule in ground colour and pale brownish grey in pollinosity; parafrontals in pollinosity pale brownish grey along inner margins and bluish grey along eye-margins; ocellar triangle and adjacent areas pale brownish grey pollinose; occiput bluish grey pollinose; parafacials and cheeks in ground colour yellowish brown, darkened along eye-margins, and in pollinosity whitish grey; vibrissal angles yellowish brown; antennae blackish, with A_2 a little brownish dorsoapically; arista blackish; palpi dark brown, and rather thinly whitish tomentose, with setulae near apex short and blackish, other setulae pale yellowish. Mesonotum brownish pollinose except on peripheral area; scutellum more or less brownish in ground colour on basal centre to apex. Abdomen with ground setulae on ventral side pale yellowish, those on 5th sternite brownish yellow; cercal plate brownish; 5th sternite blackish or dark brown, with processes shining on apical margin. Legs dark, partly

brownish (owing to rather teneral condition of the specimen?); coxae blackish and partly brownish, with setae yellowish or brownish and with no blackish ones; trochanters brownish, darkened on hind one; femora blackish, more or less brownish on ventral side apically; tibiae dark brown; tarsi brownish. Wings tinged with brownish yellow; veins brownish; calyptrae brownish; halteres brownish, darkened apically.

Head slightly narrower than mesonotum; frons nearly parallel-sided, and 0.47 times as wide as head; *parafrontals* with 2 *ori* and 3 *ors*, and more than 10 (13 in this specimen) short associated setulae; vibrissal angles with 1 strong and some weaker setae apart from ordinary vibrissa; A_3 1.6 times as long as wide; arista very minutely pubescent on basal third; palpi about 4 times as long as wide and narrower than t_1 -height, with longest setula slightly shorter than palpus-length; haustellar mentum much narrower than f_1 -height, and scarcely setulose, only with a pair of rather long setulae near base and a few scattered short ones.

Mesonotum rather densely setulose along and outside rows of *ia* and between rows of *dc* and *acr* around 2nd and 3rd *post-dc*; 6 (right row) or 7 *pre-acr*, between the rows with 3 setulae; *dc* 2+3; anterior *hm* well developed, though slightly shorter than the posterior; *ph* indiscernible; *ia* 2, strong; 1 dark brownish *prpl* and no associated setulae; mesopleura with a few weak additional *mpl* discernible, and with no *pslg*; scutellum rather densely setulose towards lateral margins, with a few additional pairs of slightly developed setulae.

Abdomen 2.5 times as long as wide; tergites with developed marginal and discal setae except on middle, longest ones distinctly longer than corresponding tergites; 1st sternite with 3-4 setulae near each lateral margin; 2nd spiracles placed on tergite laterally; pregenital sclerite narrowly fused with 6th tergite on right side, thereon with right 7th spiracle (Fig. 3); 5th sternite with inner margins of processes forming an acute emagination (Fig. 11); surstyli wedge-shaped, with setae rather short (Figs. 21 & 23); hypandrium with posterior arms fused with each other (Fig. 35); distiphallus (Figs. 40, 44, & 49) with fine folds on posterior paraphalli, and with long acrophallus; ejaculatory apodeme (Fig. 71) with median blade broad and narrowly brimmed marginally.

Fore coxa with a few dark brownish setae near apex; f_1 with 1 *ad* near apex (1 weak additional *ad* discernible in left f_1), 7 *pd*, and a row of about 8 fine and yellowish *pv*, of which a few proximal *pv* are long and others becoming shorter towards apex of femur; f_2 with 1 or a few *av* discernible though fine, an irregular row of 9-10 *a* (some of them situated rather anterodorsally), 1-2 *pd* near apex, 3-4 *p* in apical half, and some fine *pv* scattered; f_3 with 4 *av*, a row of about 10 *a* except near apex, 5 *ad* on apical half, 1-2 *pd* near apex, and about 6 fine *pv* scattered; t_1 with ventral spinules distributed on apical half and arranged in 1 row, with 1 rather strong *ad* about 1.5 times as long as t_1 -height, and near apical fourth with 1 strong *pv* slightly longer than t_1 -height, 1 fine *p* being discernible on left t_1 ; apical *av* small though distinguishable from adjacent setulae, apical *d* indiscernible, apical *pv* somewhat developed, and apical *v* as long as t_1 -height; t_2 with 1 *ad* and 1 *pd*; t_3 with 2 *ad* and 2 *pd*, and with apical *ad* distinct. Wings about 3 times as long as wide and about 2.1 times as long as head and thorax combined.

♀ (the specimen examined appears rather teneral). Head and thorax about 3.4 mm in combined length; wings (somewhat crumpled in the specimen) about 7.4

mm. Palpi darker than in male. Parafrontals with associated setulae more numerous than in male, about 20 in this specimen. Mesonotum with 8 pairs of *pre-acr*, 1 setula visible between the rows; anterior *hm* weaker than in male though distinct.

Abdomen with marginal and discal setae less developed than in male; 1st sternite with some (5-7) setulae near each lateral margin; 2nd to 6th sternites much longer than wide; 6th spiracles placed on 6th tergite laterally and 7th ones also on this tergite in touch with posterior margin (Fig. 86); 7th tergite widely divided medianly and fused with 7th sternite on anterior third; 8th tergite undivided medianly, only with an incision there (Fig. 96), and with no setulae visible (Fig. 102); 8th sternite represented by 2 triangular sclerites, each having 2 small spine-like setae apically.

Fore tibia with apical *v* a little longer than t_1 -height; t_3 with 3-4 *ad* and 2 *pd*.

Remarks. *A. himalaica* may be closely related to the succeeding *A. longispina* in having the distiphallus with a long acrophallus, the hypandrium with fused posterior arms, and the female 6th and 7th spiracles placed on 6th tergite near lateral margins and on posterior margin respectively, though it is readily distinguished from that species and also from other known Palaearctic species of the genus by the characters given in the key and details in the genital structures of both sexes. The present species may also be separated from the N. American *A. capillata* by having more numerous ground setulae on the mesonotum. In *capillata* "Thoracis dorsum praeter setas ordinarias fere nudum" (Loew, 1872).

4. *Acanthocnema longispina* sp. nov.

Material examined. *Japan*. Hokkaidô: - Mt. Soranuma, 3 ♂ (one the holotype), 2 ♀, 27. vii. 1965 (K. Kusigemati); Ashiribetsu, Sapporo, 1 ♂, 21. viii. 1961 (S. Takagi); Mt. Shokambetsu, 1 ♂, 2 ♀, 21. vii. 1964 (I. Miyagi); Mt. Daisetsu, 1 ♂, 30. vii. 1967 (K. Kusigemati); Toikambetsu, 1 ♀, 12. viii. 1965 (T. Kumata & K. Kusigemati). Honshû: - Mt. Hayachine, 1 ♂, 1 ♀, 4. viii. 1964 (S. Takagi). One pair of paratype-specimens from Mt. Soranuma are deposited in the British Museum (Nat. Hist.) and others in the Entomological Institute, Hokkaidô University.

Distribution. Japan (Hokkaidô and Honshû).

♂. Body-length 4.5-5.7 mm; wing-length 5.1-6 mm. Body blackish in ground colour and bluish grey in pollinosity. Frons and ocellar triangle brownish or brownish grey pollinose; interfrontalia scarcely or slightly brownish near lunule in ground colour; parafrontals more or less brownish in ground colour; cheeks brown to dark brownish in ground colour, with vibrissal angles brownish yellow to brown; antennae blackish, faintly or slightly brownish on A_2 dorsoapically; arista blackish; palpi variable in colour from slightly darkened yellow to dark brownish yellow, and with setulae mostly yellow or brownish yellow, some short ones on dorsal to apical part being blackish; haustellar mentum dark brown. Mesonotum rather thinly brownish pollinose in main part, shining black there in some lights, and bluish grey pollinose on median area along rows of *acr* especially around both ends, on peripheral region, along each section of medially interrupted transverse suture, and on scutellum. Abdomen blackish in ground colour, at most partly brownish on 5th sternite, and rather thinly pale bluish grey pollinose, shining black in some lights, with ground setulae on ventral side mostly yellowish. Legs blackish; trochanters

blackish or dark brown; femora and tibiae hardly or slightly brownish apically; tarsi slightly brownish especially on ventral side. Wings tinged with brown; veins dark brownish; calyptrae brownish, much darkened marginally; halteres yellow at knob and brown at base.

Head about as wide as mesonotum; frons 0.45-0.5 times as wide as head and a little narrowing ventrad; parafrontals with 2 or sometimes 3 *ori* and 3 (rarely 2 or 4 on one side) *ors*, and with about 20 or more (rarely 30) short associated setulae; vibrissal angles with 1 strong (rarely none or 2) and some weak setae besides ordinary vibrissa; A_3 1.5-1.6 times as long as wide; arista distinctly pubescent on whole length; palpi about 5 times as long as wide (4 times in 1 specimen from Mt. Hayachine), with longest setula slightly shorter to a little longer than half length of palpi; haustellar mentum much narrower than f_1 -height, and with a pair of rather long setulae near base and some scattered short ones.

Mesonotum with 5-7 pairs of *pre-acr* (only 4 setulae on right row in 1 specimen), and with or without 1 setula between the rows; *dc* 2+3, or sometimes 2+2; anterior *hm* indiscernible or sometimes slightly developed; *ph* indiscernible; *ia* 1, if 2 ones discernible, the anterior being very weak; 1 blackish *prpl*, usually associated with 1 or a few fine setulae; mesopleura with a few additional *mpl* discernible, a seta below the primary strong one often well developed, and with 1 pale-coloured *pstg* and sometimes 1 fine associated setula; scutellum sometimes with 1 or 2 additional pairs of slightly developed setulae.

Abdomen not depressed although its sternites deeply sunken to stick to the tergites in dried condition, 2.3-2.8 times as long as wide; tergites with marginal setae fine and only a little stronger than ground setulae; 1st sternite with a few or some setulae near each lateral margin; 2nd spiracles placed on lateral margins of tergite or on membrane in touch with the margins; pregenital sclerite free from 6th tergite; right 7th spiracle shifted to posterolateral corner of 6th tergite (Fig. 4); 5th sternite with inner margins of processes forming a rotund emargination (Fig. 12); surstyli rod-like, and rather sparsely setose (Figs. 24 & 26); hypandrium with posterior arms fused with each other; distiphallus with a few distinct folds on posterior paraphalli, and with long acrophallus; ejaculatory apodeme (Fig. 72) with basal disk well developed and bulbous, and with median blade broadly brimmed marginally.

Fore coxa with a few black setae near apex; f_1 with 1 *ad* near apex, a row of 1 or 2 (rarely 3) strong and some rather weak *pd* (the strong setae situated distally), and 3 or rarely 4 *pv* on basal fourth or third, the distal *pv* long and strong, and more or less brownish, other *pv* becoming paler and finer towards base of femur; f_2 with 2 (*d* and *pd*) or 3 (*ad* added) strong setae near apex, and with no *av*, a row of about 10 *a-ad*, 0-5 rather weak *d* or *d-pd* in apical third or half, and no *pv*; f_3 with no *av*, 1 *d* or *pd* near apex (sometimes 1 additional *pd* present near apical fourth) and no *pv*, and with many (ca. 15-20) *a-ad* arranged in 1 row (*a*-row) on basal half and in 2 rows (*a*- and *ad*-rows) on apical half, the lower of the last-mentioned rows being complete or partly broken and composed of setae weaker than those of the upper row; t_1 with ventral spinules distributed on apical half or two-thirds, arranged in about 2 rows; with 1 rather weak *ad* (absent in 1 specimen), which is as long as or a little longer than t_1 -height; with 1 strong *pv* near apical fourth, and 0-1 fine to strong *pv* near middle, the distal *pv* being 1.3-1.9 times as long as t_1 -height, and the

proximal *pv*, if present, at most as long as and usually shorter than the distal one; apical *av* rather distinct though shorter than t_1 -height, apical *d* and apical *pv* indiscernible, and apical *v* well developed and 1.7-2 times as long as t_1 -height; t_2 with 1 *ad* and 1 *pd* (both indiscernible in 1 specimen); t_3 with 2-4 *ad* and 1 strong and sometimes 1-2 weak *pd*, and with apical *ad* only a little stronger than adjacent setulae. Wings 3.1-3.4 times as long as wide and 2-2.2 times as long as head and thorax combined.

♀. Wing-length 4.9-6.1 mm. Palpi usually darker than in male, dark yellow to blackish brown; vibrissal angles brown to dark brown. Head slightly narrower than mesonotum, 0.89-0.98 times of the latter in width; parafrontals with 2 (rarely 1 or 3 on one side) *ori* and 3 (2 in 1 specimen) *ors*, and with 14-22 associated setulae; A_3 1.6-1.8 times as long as wide. Mesonotum with 4-7 pairs of *pre-acr*; 2 (rarely 1 or 3) *ia* present; *psg* usually 1, yet rarely 0 or 2 in number.

Abdomen with 6th spiracles placed on 6th tergite near lateral margins; 7th spiracles on posterior margin of 6th tergite or on membrane in touch with the margin; 7th tergite not divided medianly though partly membranous there (Fig. 97), and broadly fused with 7th sternite (Figs. 103 & 108); 8th tergite not divided medianly, and with no setulae discernible; 8th sternite represented by 2 triangular sclerites, each having a short spine-like seta apically.

Fore tibia always with 2 *pv*, and with apical *d* sometimes developed and rather strong; t_2 with 1 *ad* and 0 (in 4 specimens) or 1 (in 2 specimens) *pd*. Wings 3-3.2 times as long as wide.

Remarks. This species is quite distinct from the others treated in this paper in having the arista pubescent on whole length, the fore tibia with a long apical *v*, and the right 7th male spiracle shifted to 6th tergite. The long apical *v* on fore tibia may be useful to separate the species from the N. American *A. capillata*.

5. *Acanthocnema sternalis* sp. nov.

Material examined. *Japan*. Hokkaidō: - Mt. Daisetsu, 1♂, 30. vii. 1967 (K. Kusigemati); Mt. Shokambetsu, 1♀, 21. vii. 1964 (I. Miyagi); Mt. Soranuma, 4♂, 9♀, 23. ix. 1966 (K. Kusigemati); Mt. Soranuma, 300-500 m, 1♀, 30. vi. 1984 (M. Suwa), 4♂ (one the holotype), 5♀, 20. ix. 1985 (M. Suwa), 5♂, 7♀, 25. ix. 1985 (M. Suwa), 1♂, 27. ix. 1985 (M. Suwa), and 1♀, 3. x. 1985 (M. Suwa). One pair of paratype-specimens from Mt. Soranuma are deposited in the British Museum (Nat. Hist.) and others in the Entomological Institute, Hokkaidō University.

Distribution. Japan (Hokkaidō).

♂. Wing-length 5.3-6.4 mm; body-length usually a little shorter than wing-length, 5.1-6.2 mm. Body mainly blackish in ground colour, and rather densely bluish grey pollinose, faintly tinged with purplish colour in the pollinosity especially on abdomen. Frons and ocellar triangle brown or brownish grey pollinose, pale grey along eye-margins, and in ground colour sometimes brownish near lunule; parafacials and cheeks brown to dark brown in ground colour, and whitish in pollinosity; vibrissal angles pale yellow to brown; face in ground colour pale yellow to pale brown, slightly with a dark suffusion, and in pollinosity whitish; antennae blackish, sometimes slightly brownish on A_2 dorsoapically and on A_3 basally; palpi yellowish, scarcely or faintly tawny, and rarely with dark suffusion,

and with setulae yellowish; haustellar mentum dark brownish or blackish. Mesonotum broadly brownish pollinose except on peripheral region, on anterior part of median area along rows of *pre-acr*, along each section of medially interrupted transverse suture, and on scutellum, these areas being all bluish grey pollinose; brownish pollinosity on mesonotum rather thin, the area presenting a blackish appearance in some lights; prescutellar greyish area rather broad and intruding wedgewise between rows of *post-dc*; sternopleura with 1-2 ground setulae near upper margin sometimes blackish. Abdomen with 5th sternite sometimes brownish on processes. Legs blackish, sometimes partly brownish especially on trochanters. Wings with a faint (in rather teneral specimens) or distinct dark suffusion; veins blackish or dark brown; calyptrae blackish or dark brown marginally; halteres yellowish at knob and brownish at base; in older specimens the wing-colouration faded and turned more brownish.

Head about as wide as mesonotum; frons 0.48-0.54 times as wide as head and very slightly narrowing ventrad; parafrontals with 2 or rarely 3 *ori* and 3 or sometimes 2 *ors*, and with many (ca. 15-20) associated setulae, which are mostly stronger than in other species and 1 or a few of them are often rather well developed; vibrissal angles with 0-2 (usually 1) strong and some (3-8) fine to rather strong setae in addition to ordinary vibrissa; A_3 1.5-1.7 times as long as wide; arista pubescent on basal half or slightly more, and bare apically; palpi more or less blade-like, 3.1-3.8 times as long as wide and narrower than t_1 -height, with longest setula 0.7-0.9 times as long as palpi; haustellar mentum enlarged though variable in width according to its condition in dried specimens and usually rather distinctly narrower than f_1 -height, and with some setulae scattered especially around centre, a pair towards base being rather long and others rather short.

Mesonotum with some (usually 6-7) pairs of *pre-acr*, and with no or sometimes 1 setula between the rows; *dc* 2+3, sometimes with 1 additional *pre-* or *post-dc* or both; anterior *hm* almost always easily discernible though variable in strength from fine to rather strong; 1 distinct or strong *ph* present; *ia* 2, strong, the anterior rarely weakened; 1 strong and sometimes 1 weaker pale-coloured *prpl*, usually associated with 1 or a few setulae; no or sometimes 1 blackish *pstg*; mesopleura with a few or some additional *mpl* discernible and more or less developed; scutellum, in addition to ordinary pairs of strong setae, with basal and discal pairs of setulae discernible and weakly to rather distinctly developed.

Abdomen depressed except on hypopygium in dried condition, and 2.5-3 times as long as wide; tergites with developed marginal setae except on middle, the setae mostly as long as or a little longer than corresponding tergites; 1st sternite with 1 or a few setulae near each lateral margin; 2nd to 4th sternites as long as or only a little longer than wide; 2nd spiracles placed on lateral margins of tergite or on membrane in touch with the margins; pregenital sclerite free from 6th tergite, with right 7th spiracle anteriorly (Fig. 5); 5th sternite with inner margins of processes forming an obtuse emargination (Fig. 13); surstyli wedge-shaped, with setae rather short; hypandrium with posterior arms not fused with each other; distiphallus with some folds on posterior paraphalli; acrophallus thick, with many minute spicules (Figs. 42, 46, & 51); ejaculatory apodeme (Fig. 73) with median blade narrowly brimmed marginally.

Fore coxa with some pale-coloured setae and usually no blackish ones; f_1 with

1 (sometimes 0 or rarely 2) *ad* near apex, some (6-10) *pd*, and 3 (rarely 4) *pv* in basal third, all or at least basal one of the *pv* being pale-coloured, and sometimes with a few fine *pv* discernible in apical half or two-thirds; f_2 with no *av*, a row of some (4-7) strong and a few or some weaker *a*, 1 *pd* and 1 *p* near apex, and 2-4 fine, slender and pale-coloured *pv* in basal half; f_3 with a few or some fine or rather distinct *av* discernible in apical half, with some (5-8) *a*, of which one is usually situated near apex of the femur and all or most of the rest are in basal half, with some (3-6) *ad* in apical half or sometimes in a little more length, and with a few fine, slender and pale-coloured *pv* in basal half or more; t_1 with ventral spinules distributed on apical two-thirds, arranged in about 2 rows; with 1 (rarely 0) distinct or strong *ad* (1 additional visible on right leg in 1 specimen), the seta a little, or often much, longer than height of the tibia; in apical half with 2 *pv*, the distal *pv* being always strong and more than twice, sometimes thrice or more, as long as t_1 -height, usually situated near apical eighth of the tibia, and the proximal *pv* variable in strength from fine to strong, almost always much weaker than the distal though usually much longer than t_1 -height (sometimes longer than twice the tibial height), and usually situated near apical third of the tibia; apical *d* distinct or rather strong, as long as t_1 -height or nearly so; apical *pv* not differentiated from adjacent setulae; apical *v* as long as or slightly shorter than t_1 -height; t_2 with 1 *ad* (1 additional present on right leg in 1 specimen) and 1 *pd* (sometimes invisible on one leg); t_3 with 1-3 *ad* and 1-3 *pd*, and with apical *ad* distinct. Wings 2.9-3.3 times as long as wide and 1.9-2 times as long as head and thorax combined.

♀. Wing-length 5.9-7.2 mm. Face dark brownish to blackish in ground colour; palpi much darker than in male, brown to blackish, and rarely pale as in male. Mesonotum with *dc* basically 2+3, yet often with 1 additional *pre-* or *post-dc* or both.

Abdomen with 2nd to 6th sternites much widened; 2nd sternite about as wide as long, and 3rd to 6th ones wider than long, the 3rd largest and widest (Fig. 83); 6th spiracles placed on 6th tergite near lateral margins; 7th spiracles on membrane between 6th and 7th tergites (Fig. 88); 7th tergite becoming slender mediad and completely divided there; 7th sternite almost entirely fused with 7th tergite; 8th tergite undivided medianly, and with no setulae visible (2 specimens dissected); 8th sternite represented by 2 elliptical sclerites, each having a few spine-like setae posteriorly; spermathecae (Fig. 93) encircled by folds and divided into a large apical and a small basal parts by a distinct constriction.

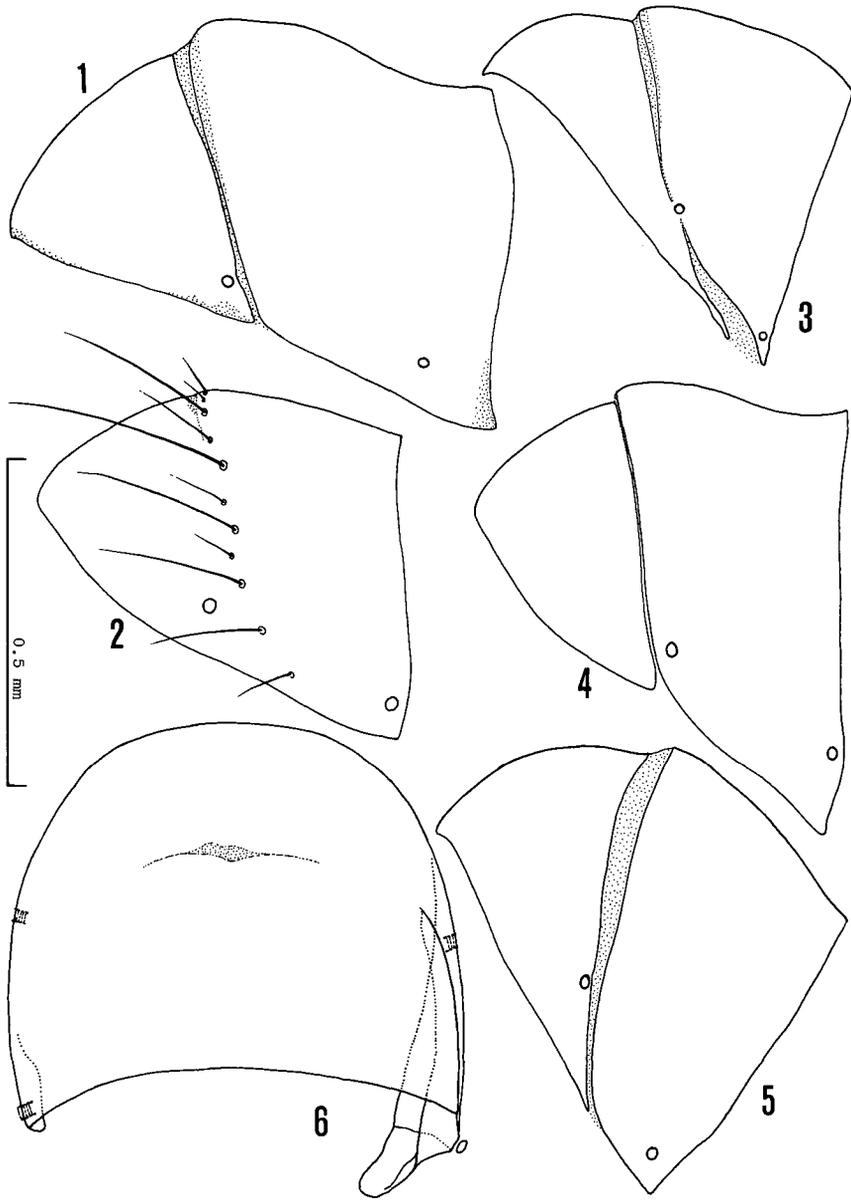
Fore coxa with a few setae near apex often blackish; f_1 with 3 long *pv* in basal third as in male (basal one pale-coloured and others blackish), and in addition with 1-2 (sometimes 0) *pv* in middle third, 1 of them usually distinct or strong and the other, if 2 present, usually much weaker; f_1 with *ad* often absent; t_1 with proximal *pv* much stronger than in male, usually longer than twice t_1 -height and often about as long as the distal *pv*, and with apical *v* slightly shorter to slightly longer than t_1 -height.

Remarks. The broadened sternites especially of the female and the elliptical sclerites of the femalae 8th sternite are characteristic of *A. sternalis* at least among the species known from the Old World. As to the corresponding features in the N. American *A. capillata* no information is available in the literature. Nevertheless, *A. sternalis* may be separable from *capillata* by the antennae less ovoid and the vibrissal angles with stronger setae. The original description of the latter species says

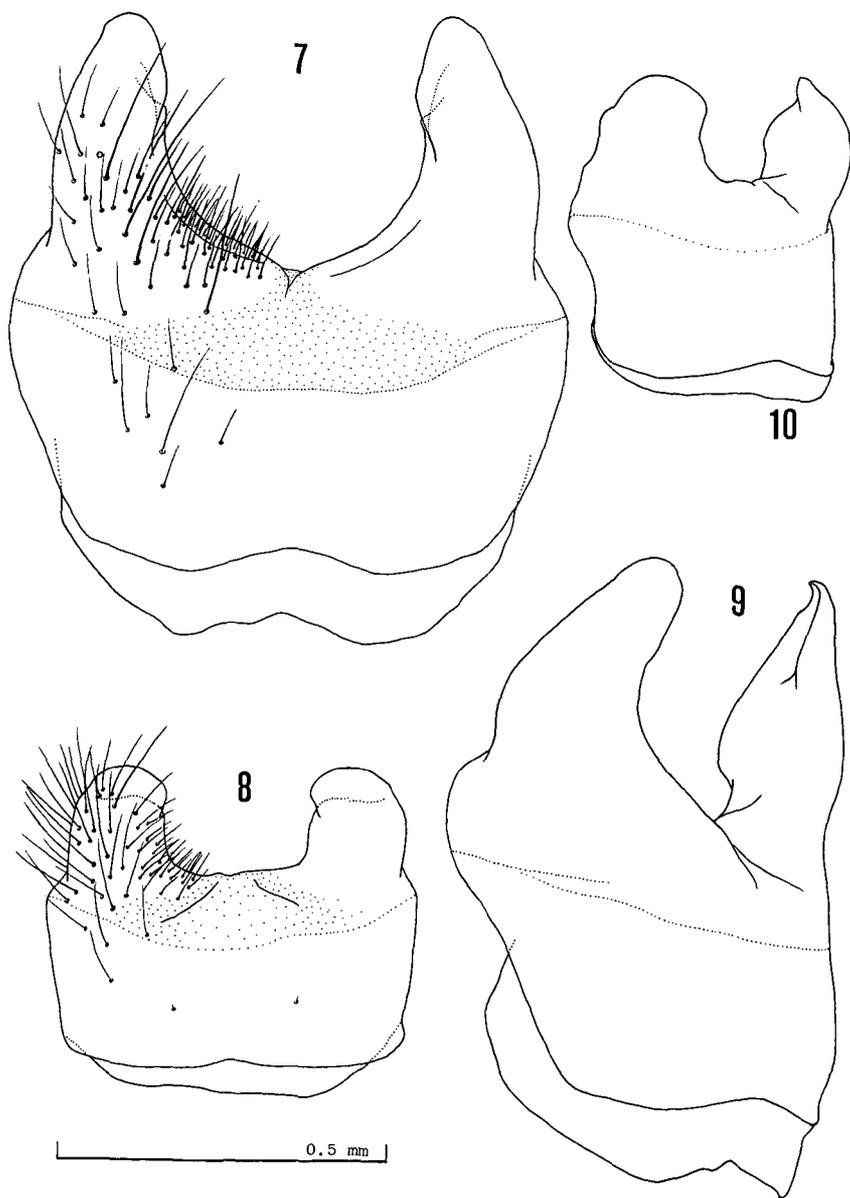
“Antennae breviusculae,, articulo terminali rotundato ovato, Setae mystacinae tenues.”

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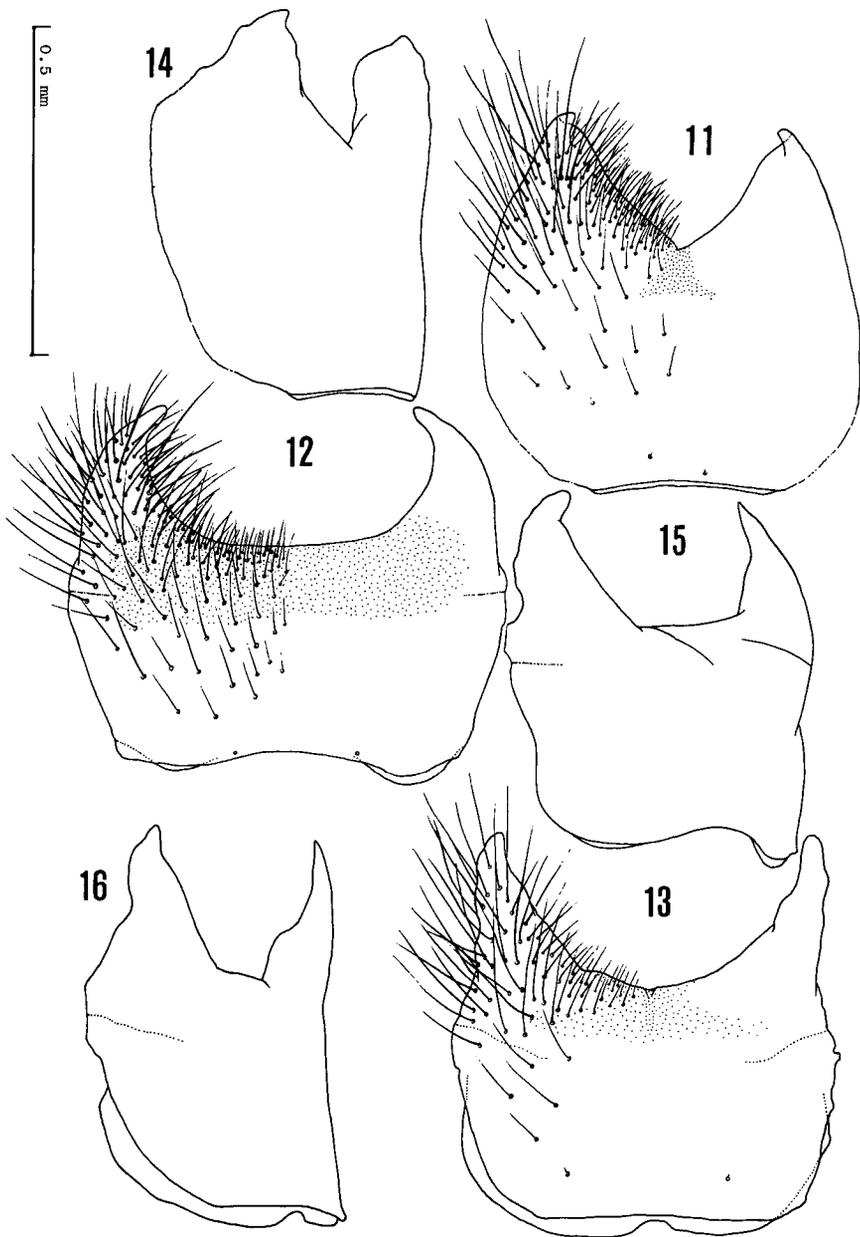
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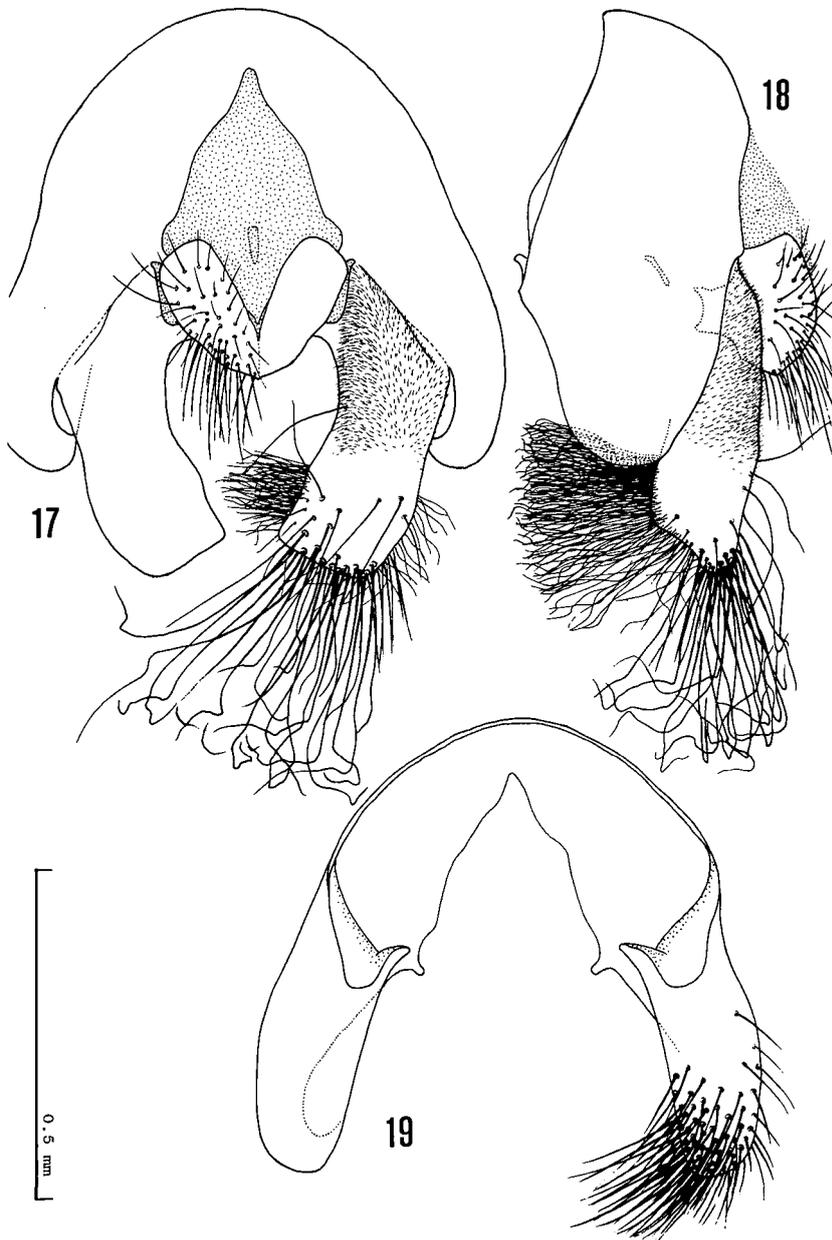
Figs. 1-6. *Acanthocnema* spp., ♂, pregenital sclerite (left in Figs. 1-5, and upper in Fig. 6) and 6th tergite in right lateral view (1-5) and in dorsal view (6), setae omitted except for marginal ones on 6th tergite in Fig. 2. 1, *nigrimana*, from Slovenia, dissection no. 8530; 2 & 6, *glaucescens*, from Wales, no. 8528; 3, *himalaica*, holotype from Thudam, Nepal, no. 8532; 4, *longispina*, paratype from Mt. Soranuma, Hokkaidō, Japan, no. 8171; 5, *sternalis*, paratype from Mt. Soranuma, no. 8168. Succeeding figures are based on the same individuals unless otherwise mentioned.



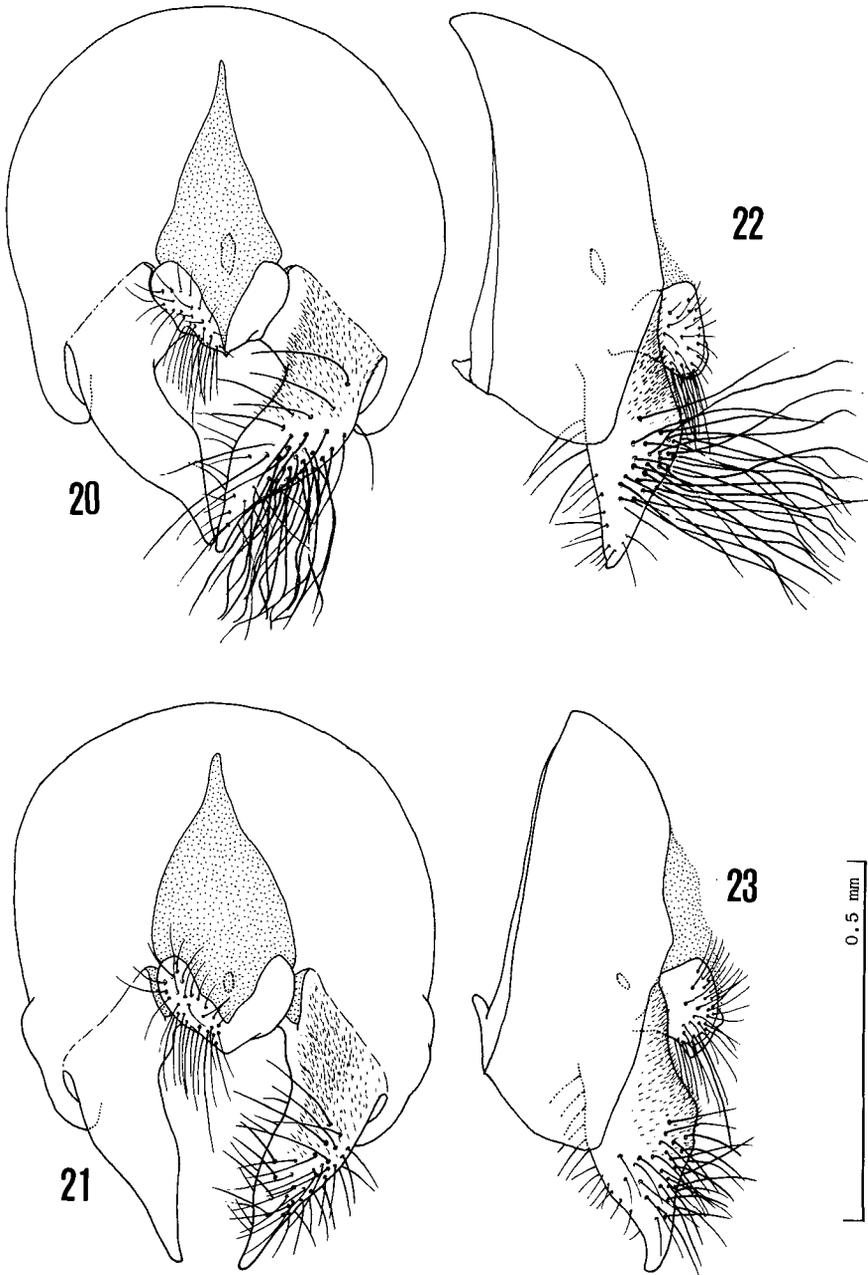
Figs. 7-10. *Acanthocnema* spp., ♂, 5th sternite in ventral view (7-8) and in ventrolateral view (9-10). 7 & 9, *nigrimana*; 8 & 10, *glaucescens*.



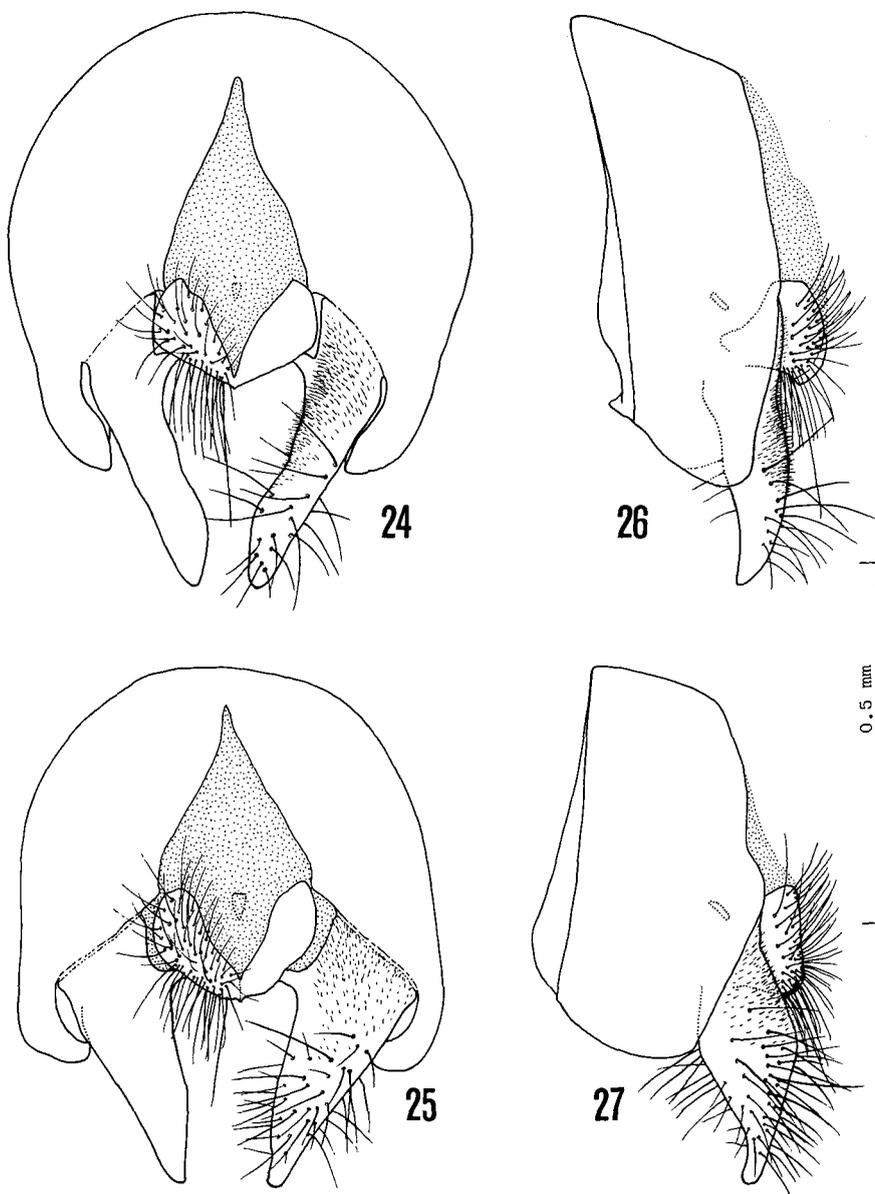
Figs. 11-16. *Acanthocnema* spp., ♂, 5th sternite in ventral view (11-13) and in ventrolateral view (14-16). 11 & 14, *himalaica*; 12 & 15, *longispina*; 13 & 16, *sternalis*.



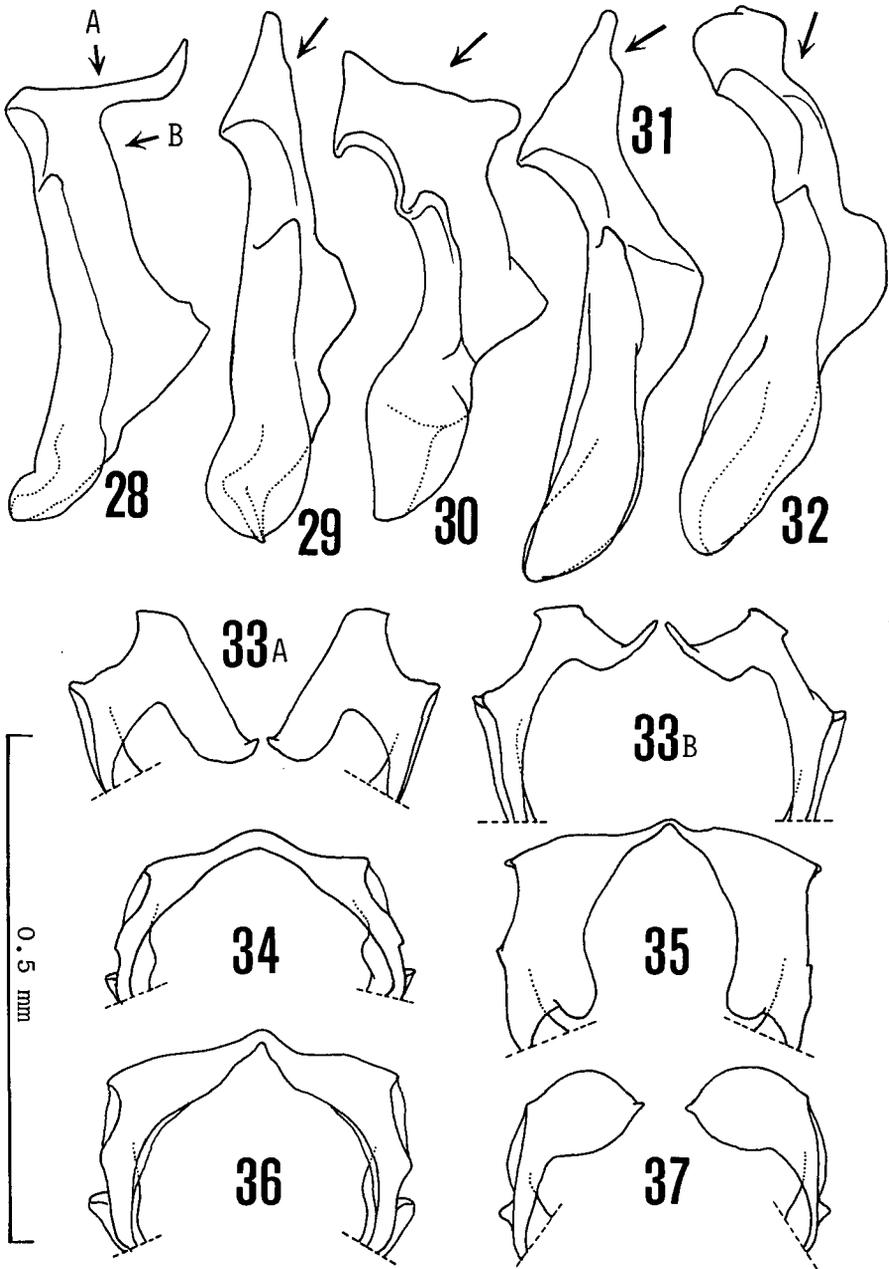
Figs. 17-19. *Acanthocnema nigrimana*, ♂, hypopygium. 17, dorsal view ; 18, lateral view ; 19, ventral view, epandrium only.



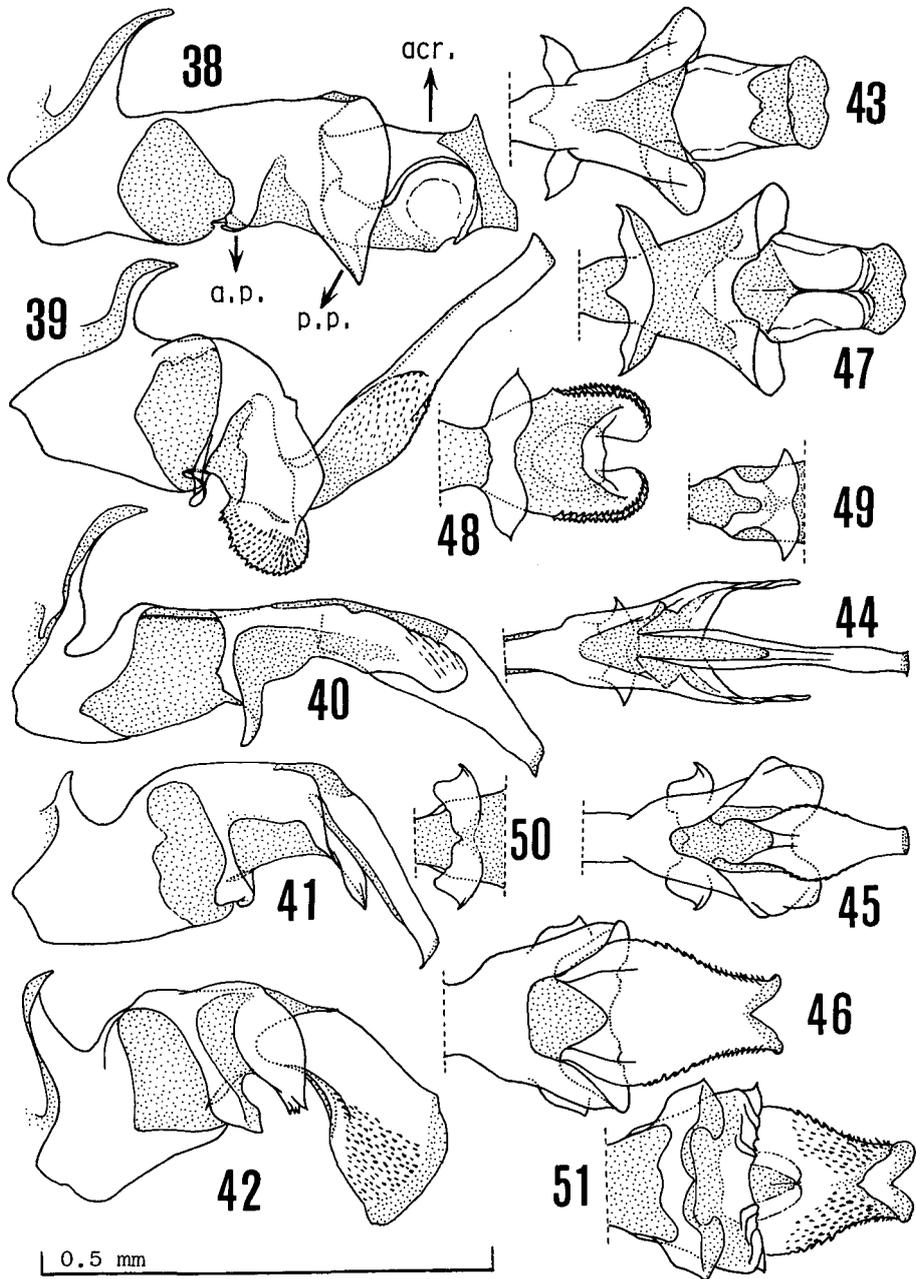
Figs. 20-23. *Acanthocnema* spp., ♂, hypopygium in dorsal view (20-21) and in lateral view (22-23). 20 & 22, *glaucescens*; 21 & 23, *himalaica*.



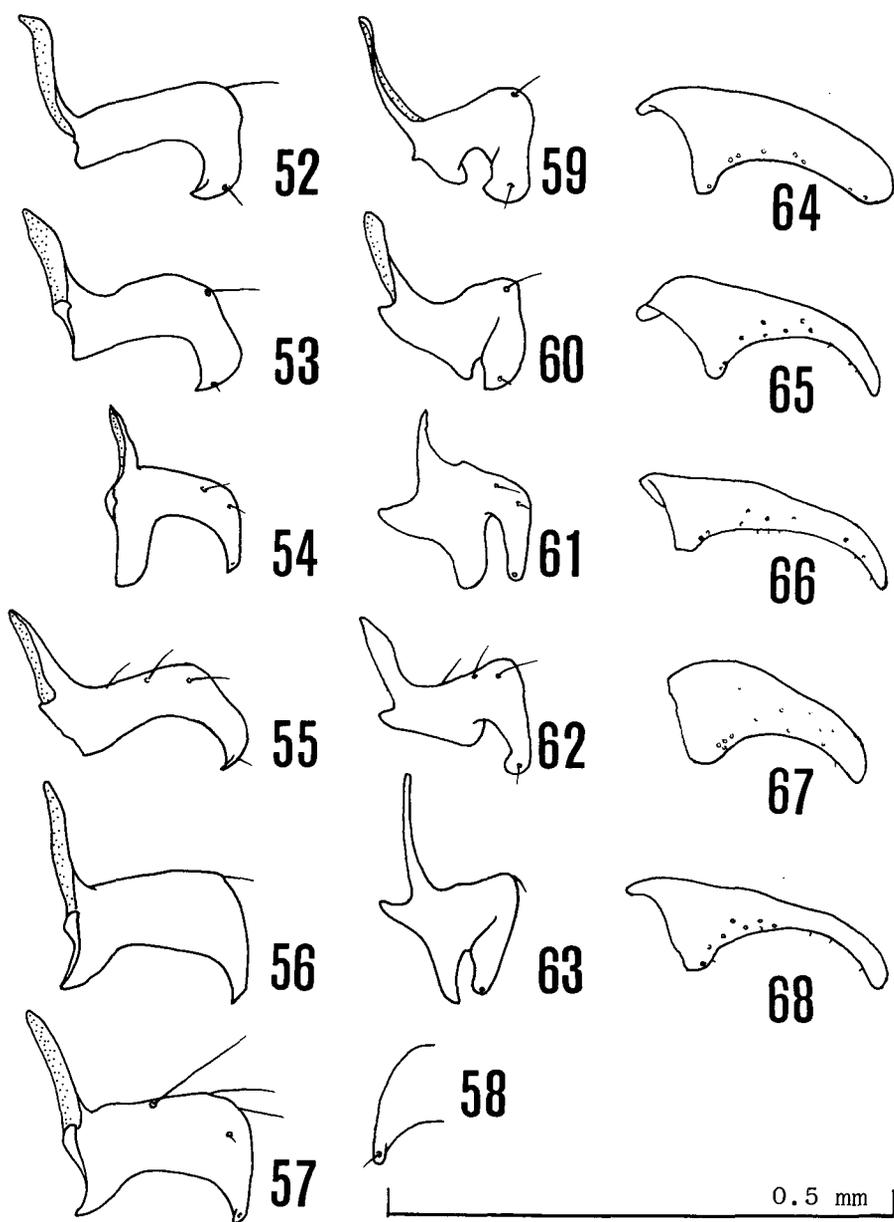
Figs. 24-27. *Acanthocnema* spp., ♂, hypopygium in dorsal view (24-25) and in lateral view (26-27). 24 & 26, *longispina*; 25 & 27, *sternalis*.



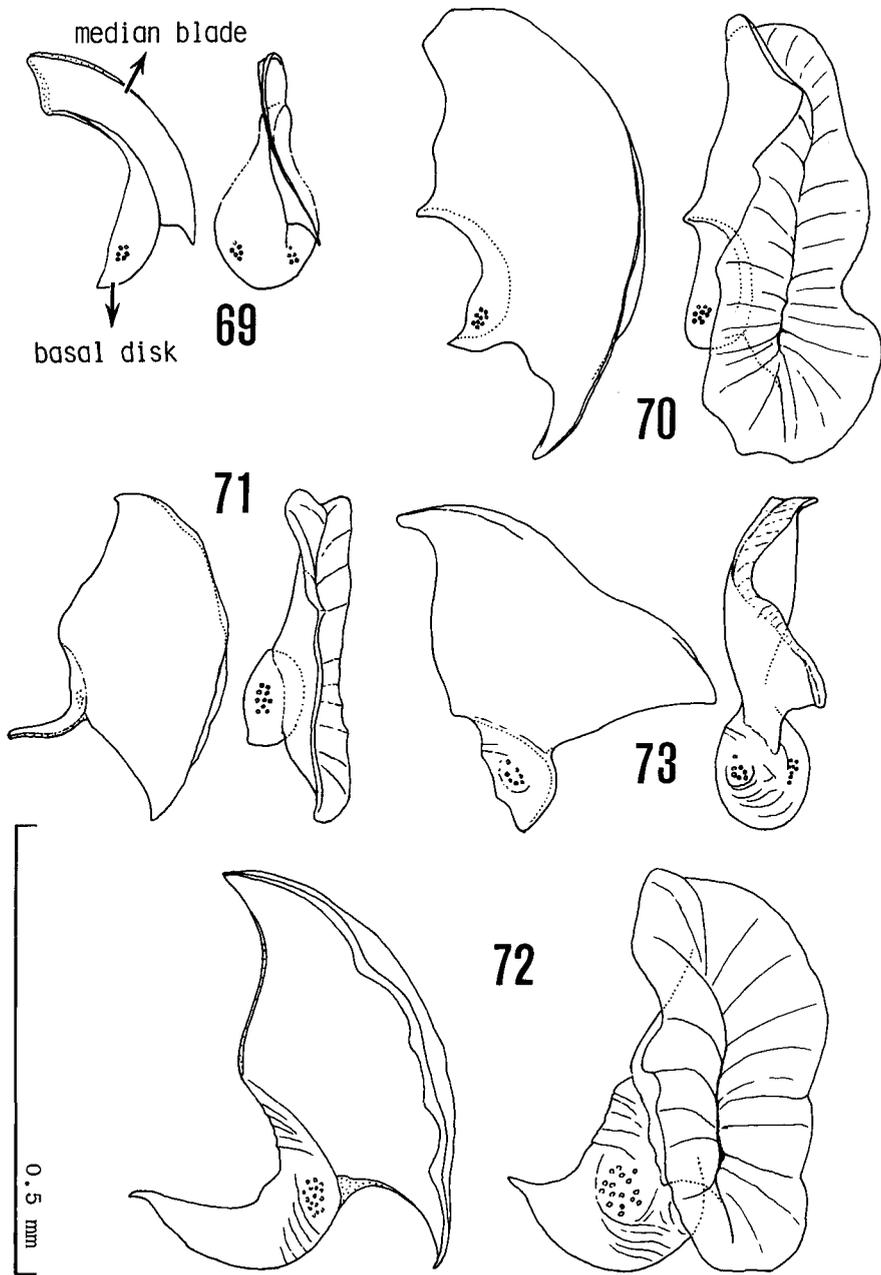
Figs. 28-37. *Acanthocnema* spp., ♂, hypandrium in lateral view (28-32) and in ventral to caudal view (33-37, anterior part omitted, the angle of view shown by the arrow in corresponding lateral view). 28 & 33, *nigrimana*; 29 & 34, *glaucescens*; 30 & 35, *himalaica*; 31 & 36, *longispina*; 32 & 37, *sternalis*.



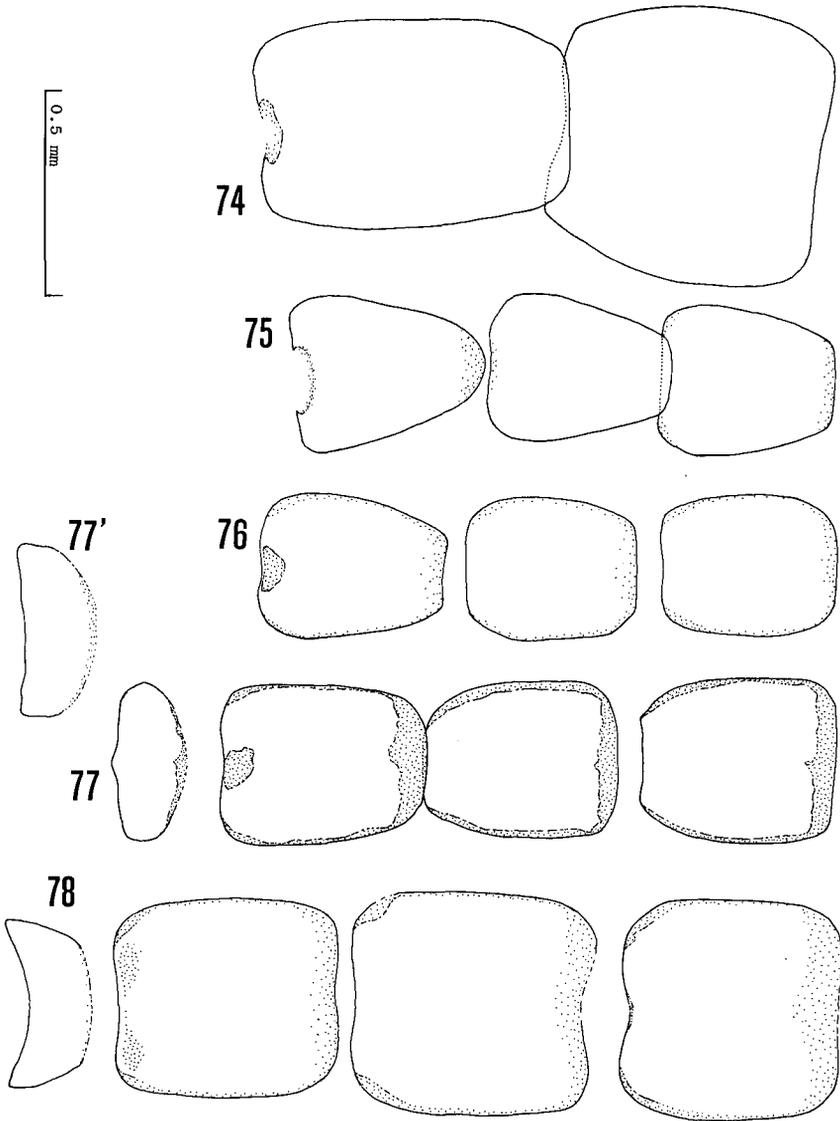
Figs. 38-51. *Acanthocnema* spp., ♂, basiphallus and distiphallus in lateral view (38-42), and distiphallus in dorsal view (43-46) and in ventral view (47-51, acrophallus omitted in Fig. 48; showing only basal part around anterior paraphalli in Figs. 49-50). 38, 43, & 47, *nigrimana*, acr., acrophallus, a.p., anterior paraphallus, p.p., posterior paraphallus; 39 & 48, *glaucescens*; 40, 44, & 49, *himalaica*; 41, 45, & 50, *longispina*; 42, 46, & 51, *sternalis*.



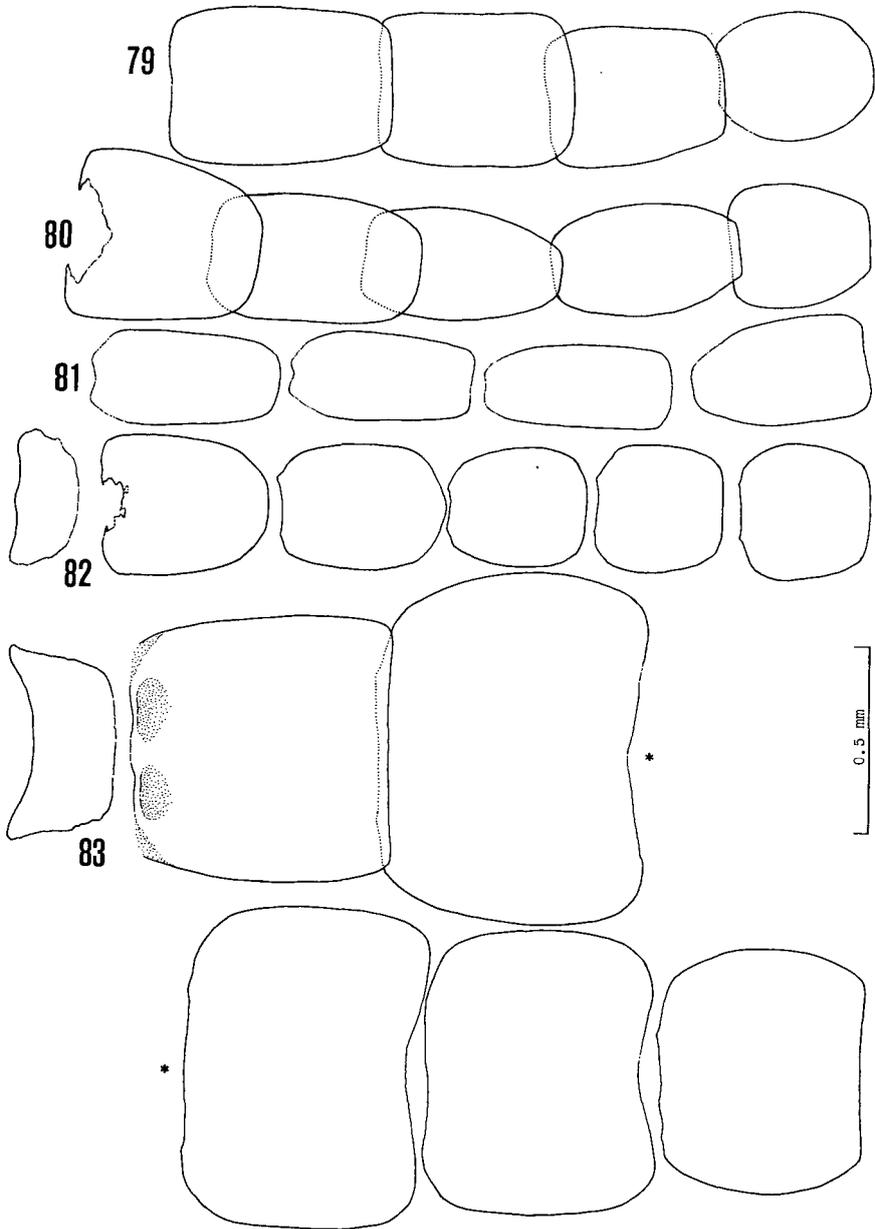
Figs. 52-68. *Acanthocnema* spp., ♂, praegonite in lateral view (52-58) and in caudolateral view (59-63), and postgonite (64-68). 52, 59, & 64, *nigrimana*; 53, 60, & 65, *glaucescens*; 54, 61, & 66, *himalaica*; 55, 62, & 67, *longispina*; 56, 63, & 68, *sternalis*; 57 & 58, ditto, paratype from Mt. Soranuma, no. 8516, showing apical part of right praegonite in Fig. 58.



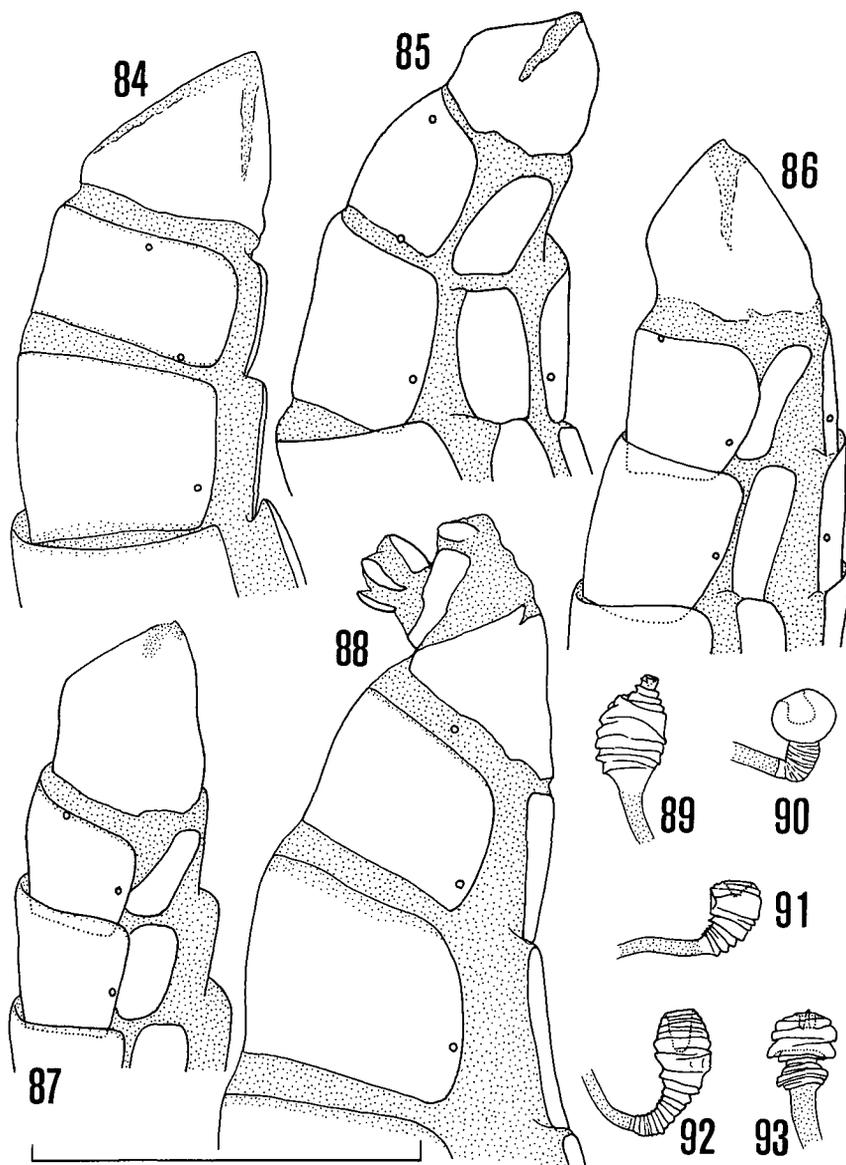
Figs. 69-73. *Acanthocnema* spp., ♂, ejaculatory apodeme in lateral view (left) and in distal view (right). 69, *nigrimana*; 70, *glaucescens*; 71, *himalaica*; 72, *longispina*; 73, *sternalis*.



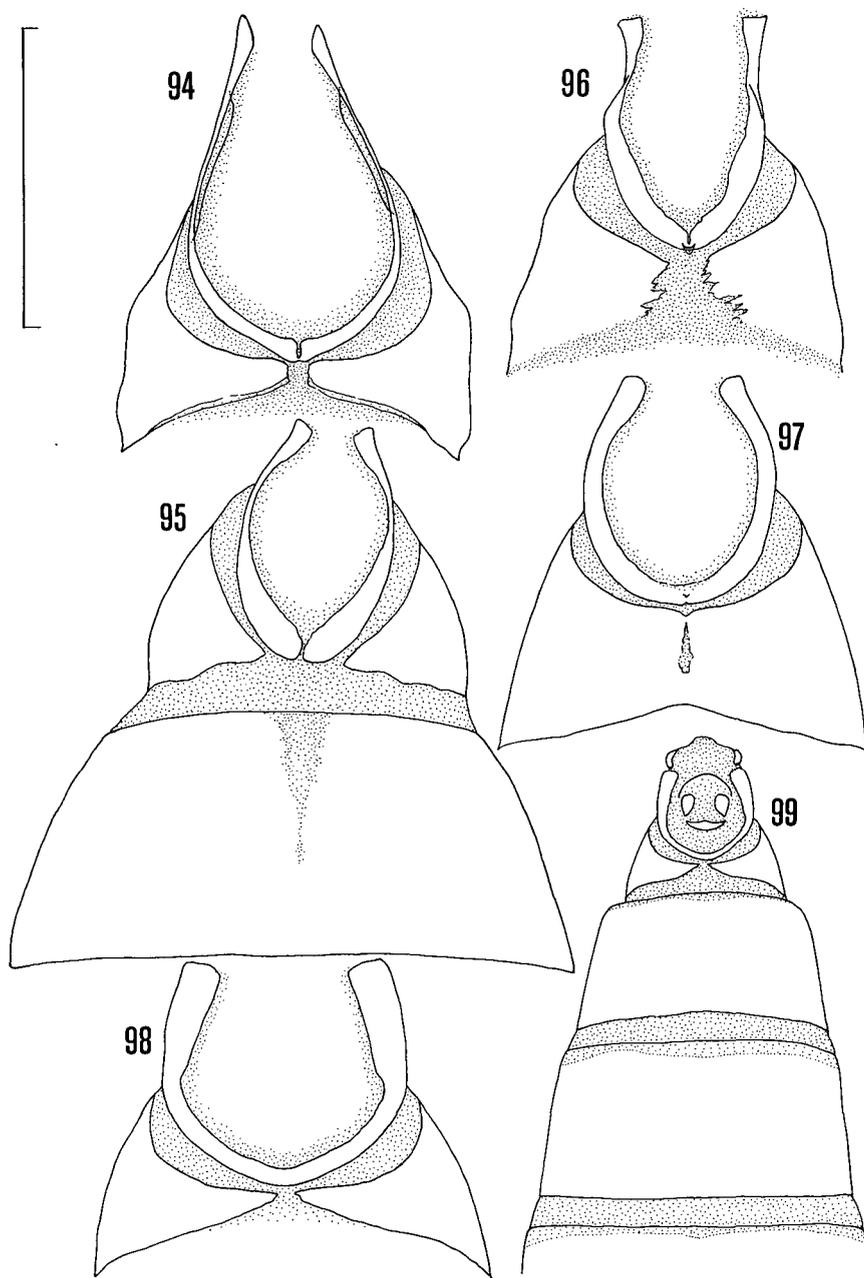
Figs. 74-78. *Acanthocnema* spp., ♂, 1st, 2nd or 3rd to 4th (rightmost) sternites. 74, *nigrimana*; 75, *glaucescens*; 76, *himalaica*; 77, *longispina*; 77', ditto, paratype from Mt. Shokambetsu, Hokkaidō, no. 8172, 1st sternite; 78, *sternalis*.



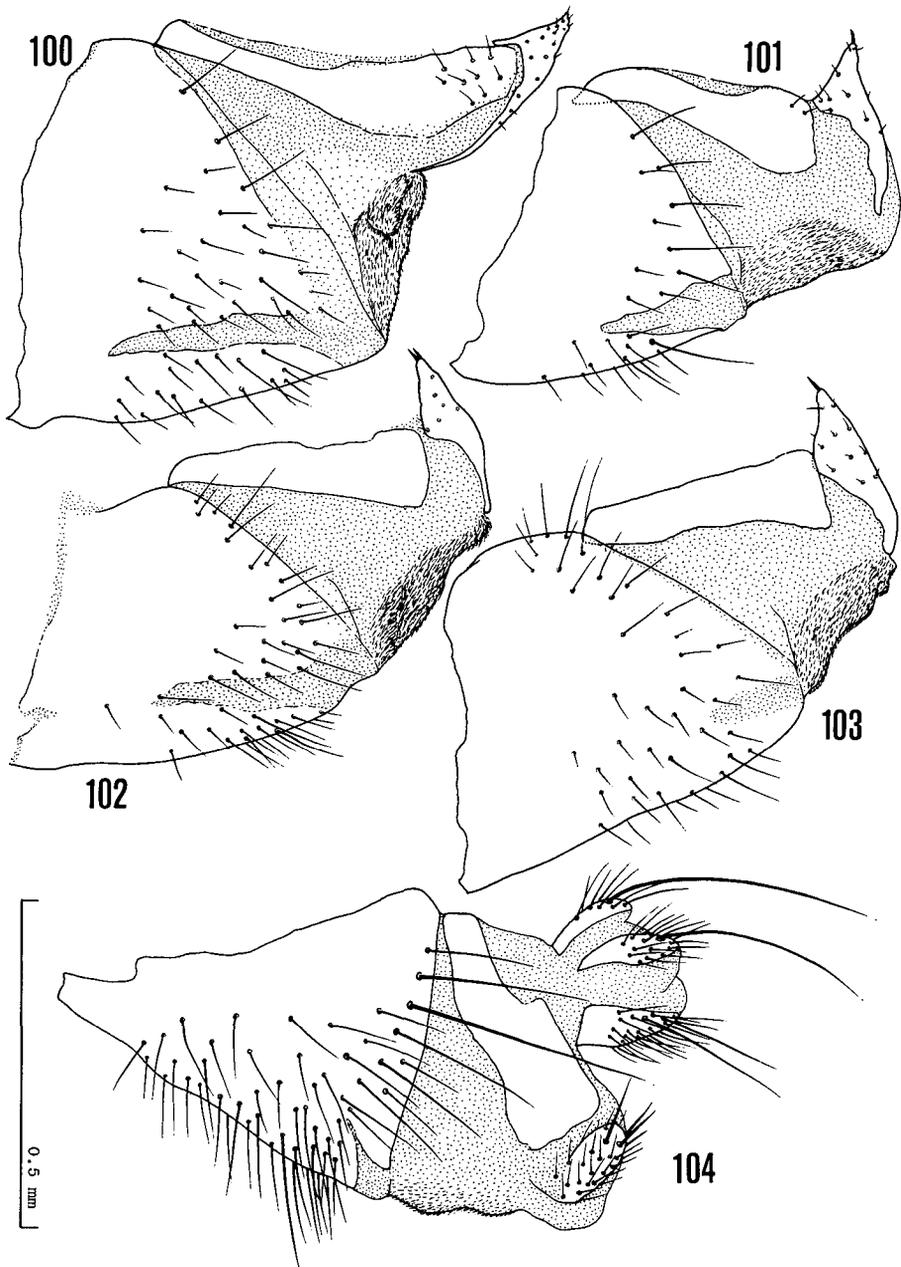
Figs. 79-83. *Acanthocnema* spp., ♀, 1st, 2nd or 3rd to 6th (rightmost) sternites. 79, *nigrimana*, from Slovenia, dissection no. 8531; 80, *glaucescens*, from Wales, no. 8529; 81, *himalaica*, paratype from Thudam - Tanga La, Nepal, no. 8533; 82, *longispina*, paratype from Mt. Shokambetsu, Hokkaidō, Japan, no. 8174; 83, *sternalis*, paratype from Mt. Soranuma, Hokkaidō, Japan, no. 8169. Succeeding figures are based on the same individuals.



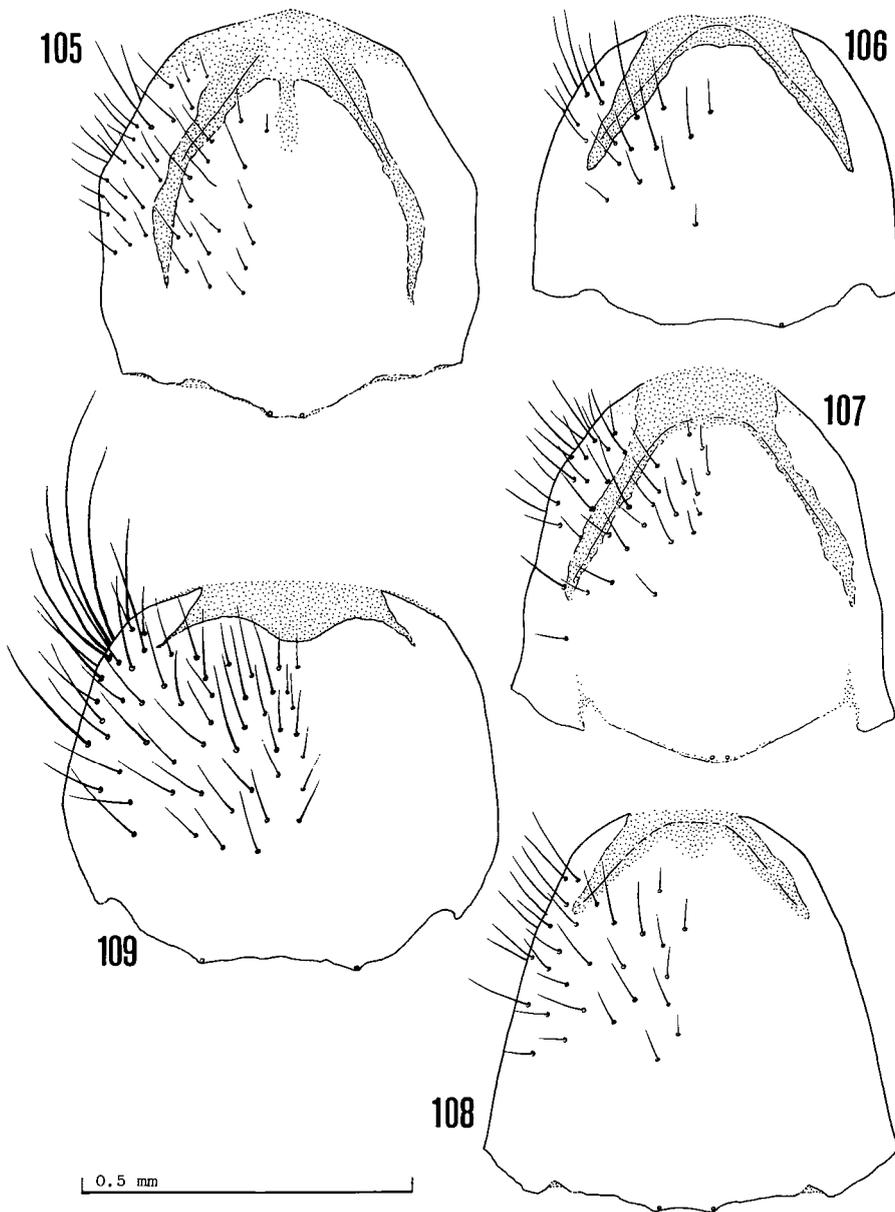
Figs. 84-93. *Acanthocnema* spp., ♀, posterior abdominal segments in lateral or ventrolateral view (84-88, 8th and anal segments omitted except in Fig. 88), and spermatheca (89-93). 84 & 89, *nigrimana*; 85 & 90, *glaucescens*; 86 & 91, *himalaica*; 87 & 92, *longispina*; 88 & 93, *sternalis*. Scale 1.25 mm for Figs. 84-88, and 0.5 mm for Figs. 89-93.



Figs. 94-99. *Acanthocnema* spp., ♀, 7th and 8th tergites in dorsal view (94-98, 6th also shown in Fig. 95), and posterior abdominal segments in dorsal view (99). 94, *nigrimana*; 95, *glaucescens*; 96, *himalaica*; 97, *longispina*; 98-99, *sternalis*. Scale 0.5 mm for Figs. 94-98, and 1.25 mm for Fig. 99.



Figs. 100-104. *Acanthocnema* spp., ♀, 7th and 8th abdominal segments in lateral view, anal segment also shown in Fig. 104. 100, *nigrimana*; 101, *glaucescens*; 102, *himalaica*; 103, *longispina*; 104, *sternalis*.



Figs. 105-109. *Acanthocnema* spp., ♀, 7th abdominal segment in ventral view, showing a degree of fusion of its sternite and tergite. 105, *nigrimana*; 106, *glaucescens*; 107, *himalaica*; 108, *longispina*; 109, *sternalis*.