

MINISTERIE VAN ONDERWIJS, KUNSTEN EN WETENSCHAPPEN

ZOOLOGISCHE MEDEDELINGEN

UITGEGEVEN DOOR HET

RIJKSMUSEUM VAN NATUURLIJKE HISTORIE TE LEIDEN

DEEL XXXVIII, No. 2

29 december 1961

FEMALE GENITALIA OF THE SPECIES OF *DEPRESSARIA* HW. S.L. (LEPIDOPTERA, OECOPHORIDAE) OCCURRING IN THE NETHERLANDS

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(with 108 figures)

It is generally understood that characters of the genitalia are indispensable for the natural classification of most groups of the Lepidoptera. The genital structures are of great value, especially in cases where difficulties may arise in distinguishing groups on external characters, like venation, colour, etc.

Following this tendency, in the present work the female genitalia of the species of *Depressaria* Hw. s.l. occurring in the Netherlands are figured and described. Moreover, an attempt to improve the possibilities for identification may be useful, as some species have economic significance.

The male genitalia of the European species of this group have been described and figured by Hannemann (1953, 1954, 1958), who divided it into several groups of generic status, based on the peculiarities of the male genital structures. Only the genera *Agonopterix* Hb., *Depressaria* Hw., and *Levipalpus* Hann. are represented in the Netherlands. Although the characters of the female genitalia are not as characteristic as those of the males, they are not without value for classification. The differences in their structures support to a certain extent the arrangement of the Dutch species of *Depressaria* Hw. s.l. into the three above-mentioned genera. Where on the following pages of the present paper the name *Depressaria* is mentioned it is used in the restricted sense.

A short description of the general appearance of the female genital apparatus may be given (fig. A).

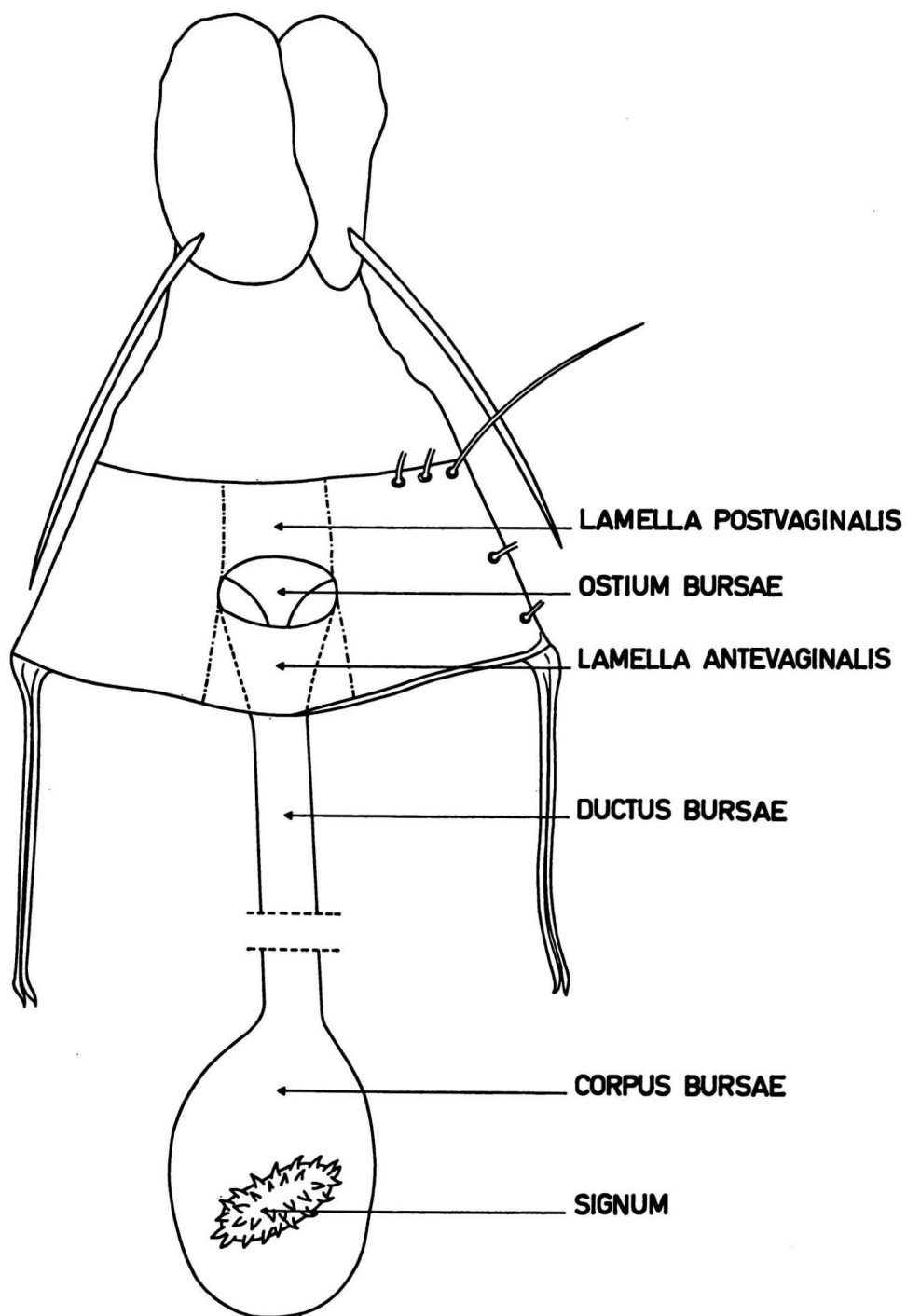


Fig. A. Diagram of the female genitalia of *Depressaria* Hw. s.l.

The ostium bursae is situated in the 8th sternite. On the caudal margin of the sternite a variable, usually limited number of hairs is present, situated on either side of the region above the ostium, the lamella postvaginalis, which itself is always devoid of hairs. In the region below the ostium, the lamella antevaginalis, often variably shaped sclerites are present. In most cases there are also some hairs on the sides of the sternite.

The beginning of the ductus bursae—when sclerotized called colliculum—generally forms two wing-like structures inside the ostium bursae, in which a slender sclerite can be present laterally. Sometimes the ductus bursae is partly sclerotized. If the ductus bursae is granulated, partly or entirely, a very short portion just behind the ostium is always smooth. This fact must be born in mind, for it is omitted from the descriptions.

The signum is situated in the corpus bursae, which may also be granulated. The signum is of varying shape and always dentate.

Three characteristic structures are generally present in the genus *Depressaria*, viz.: a slit-shaped ostium, a collar-like fold at the lower margin of the ostium, and a rhomboidal or cruciform signum, with teeth arranged in circles around the centre. Most of the species have either a slit-shaped ostium, or a collar-like fold, or both. Only *badiella* has none of these characters; moreover, in this species there are very remarkable lobe-like structures, instead of apophyses, at the lower edge of the sternite. However, the cruciform signum and the male genitalia (see Hannemann, 1953) indicating a close relationship of *badiella* to the other species of *Depressaria* justify the inclusion of this species in that genus. Still there is a possibility that *badiella* on account of its peculiar female genitalia occupies a more or less isolated position.

In addition to the main characters, a partly sclerotized ductus bursae is frequently found in *Depressaria*.

The species belonging to *Agonopterix* all have a dilated ostium, the lower margin of which is never collar-shaped. The signum is variably shaped, the teeth are generally arranged in rows. Only *zephyrella* has an ostium with a collar-like lower margin and also a partly sclerotized ductus bursae, which is exceptional in *Agonopterix*. It is therefore somewhat doubtful whether this species belongs to the genus *Agonopterix*. The shape of the ostium and the signum, however, are characteristic of this genus, as well as the male genitalia (Hannemann, 1953).

Reduction of structures is often found in evolutionary development. This principle is evident in the wing venation of the Lepidoptera, where reduction of veins is regarded as a measure for phyletic development. From

this point of view different ways of development may be traced in *Depressaria* and *Agonopterix*. It should be born in mind that remarks with regard to evolution as presented here can only be suggestions as long as the female genitalia of not all the species of these genera have been studied.

As Hannemann (1953) has observed, within *Depressaria* six groups of species can be distinguished, based on differences of the male genitalia. Not every one of these groups is represented in the Netherlands. These groups are (with the species occurring in the Netherlands in brackets): *artemisiae* group (*chaerophylli*); *heracliana* group (*ultimella*, *badiella*, *heracliana*, *pimpinellae*, and *nervosa*); *douglasella* group (*pulcherrimella*, *douglasella*, *albi-punctella*); *thomaniella-ruticola* group (not represented in the Netherlands); *eranicella-hirtipalpis* group (not represented in the Netherlands); *veneficella* group (*discipunctella*).

Only the male genitalia make it possible to establish these groups, which is impossible with the female genitalia. As far as these are concerned, within the *heracliana* group only *nervosa* and *ultimella* seem to be narrowly related, their ostia resembling each other closely and both having a reduced signum. Within the *douglasella* group *pulcherrimella* and *douglasella* may be closely related, their ostia being very similar.

Considering that a complicated signum is generally present in *Depressaria* and a more simplified signum in *Agonopterix*, the latter might be more recent. The frequent occurrence of rather complicated sclerites near the ostium in *Agonopterix* as against the rather less adorned 8th sternite in *Depressaria* can be explained either by assuming a different development of these genera from a mutual ancestor, or by regarding the sclerites of *Agonopterix* as more recently obtained structures. In the first case the *Agonopterix* species without sclerotizations on the 8th sternite would be more recent forms, in the second case they would be more ancient.

For the sake of convenience the described species are listed in the sequence of the well-known Staudinger-Rebel Catalog (1901). The mounts of the genitalia are preserved in the Rijksmuseum van Natuurlijke Historie, Leiden (M.L.), the Zoologisch Museum, Amsterdam (M.A.), the Zoologisches Museum, Berlin (M.B.), and the Muséum National d'Histoire Naturelle, Paris (M.P.).

I am greatly indebted to Dr. H. J. Hannemann (Berlin), Dr. G. Kruseman Jr. (Amsterdam), and Mr. P. Viette (Paris), who kindly provided me with part of the material for this study, and in particular to Dr. A. Diakonoff of the Leiden Museum, whose assistance and advice were of great value to me.

Key to the genera

1. 8th sternite entirely covered with minute spines *Levipalpus* Hann.
- 8th sternite not or partly covered with spines 2
2. Central teeth of signum often numerous and tiny, signum generally cruciform or rhomboidal, the teeth stellately arranged. Ostium slit-shaped or more or less dilated, often with a collar-like lower margin *Depressaria* Hw.
- Signum otherwise, ostium always dilated, never with a collar-like lower margin¹⁾.
Agonopterix Hb.

Key to the species of *Depressaria* Hw.

1. Ostium slit-shaped 2
- Ostium not slit-shaped 6
2. Ostium a straight slit 3
- Ostium not straight 4
3. On both sides of the ostium a rising fold, covered with fine spines. Lower margin of the sternite entirely sclerotized *ultimella*
- No such folds near the ostium. Lower margin of the sternite only sclerotized in the middle. *nervosa*
4. Lower margin of the ostium collar-like 5
- Lower margin of the ostium not collar-like, not sclerotized, ostium widely W-shaped.
douglasella
5. Ostium widely V-shaped. Ductus bursae with two small transverse folds near the beginning. Signum sparsely dentate *chaerophylli*
- Lower margin of the ostium widely W-shaped, the inner branches of the W bearing triangular sclerotizations. A strip with fine spines extending lateral of the ostium.
pulcherrimella
6. Lower margin of the sternite sclerotized and bracket-shaped *discipunctella*
- Lower margin of the sternite not sclerotized 7
7. Ostium with a collar-like margin 8
- Ostium not with a collar-like margin *badiella*
8. Ostium U-shaped, situated in a hammock-like fold in the sternite. At some distance from the ostium the ductus bursae is suddenly strongly sclerotized and folded.
heracliana
- No hammock-like fold, lower margin of the ostium with a broad, collar-like fold, extending laterad of the ostium *pimpinellae*

¹⁾ Ostium of *Agonopterix zephyrella* has also a collar-like margin, signum, however, sparsely dentate, teeth not stellately arranged, and ostium widely dilated.

Depressaria pimpinellae Z. (gen. no. 3378) (figs. 1-3).

8th sternite moderately broad. Posteriorly a rising ridge with 4 hairs on either side of ostium. Lamella postvaginalis somewhat wider than lamella antevaginalis.

Ostium widely cordiform or cup-shaped, at the lower edge with a broad collar-like fold, extending laterally. The wing-like structures in the colliculum sclerotized.

Ductus bursae rather short, smooth, with a swollen part in the beginning.¹⁾

Corpus bursae more or less pear-shaped, membranous, covered with fine spines.

Signum small, more or less quadrangular, margin not distinct, teeth stellately arranged, with a great number of minute teeth centrally.

Mount in M.L.

***Depressaria heracliana* (L.) (gen. no. 2477) (figs. 4-6).**

8th sternite rather broad, almost hairless; a single hair can be present near the postero-lateral edge. Lamella postvaginalis wider than lamella antevaginalis.

Ostium half-circular to U-shaped, the lower, curved edge with a rather broad, undulating, collar-like sclerotization, which is distinctly margined on both sides. The postero-lateral ends of the sclerotization make a square angle. The ostium lies in a hammock-like fold of the sternite.

Ductus bursae entirely without granulation, first part not sclerotized, next part broadened and sclerotized with longitudinally strong folds, last part narrow.

Corpus bursae narrow, without granulation.

Signum small, more or less rhomboidal, teeth stellately arranged. No teeth centrally.

Mount in M.L.

***Depressaria discipunctella* H.S. (gen. no. 3335) (figs. 7-9).**

8th sternite moderately narrow. Posterior margin slightly undulating, no hairs. Anterior margin bracket-like, at each side of the slightly sclerotized middle part strongly sclerotized. Lamella postvaginalis much narrower than lamella antevaginalis.

Ostium oval, the lower edge sclerotized and collar-like. The wing-like structures in the colliculum sclerotized.

Ductus bursae long, first part smooth and slender, next part sclerotized and undulating, with longitudinal folds and covered with fine short spines.

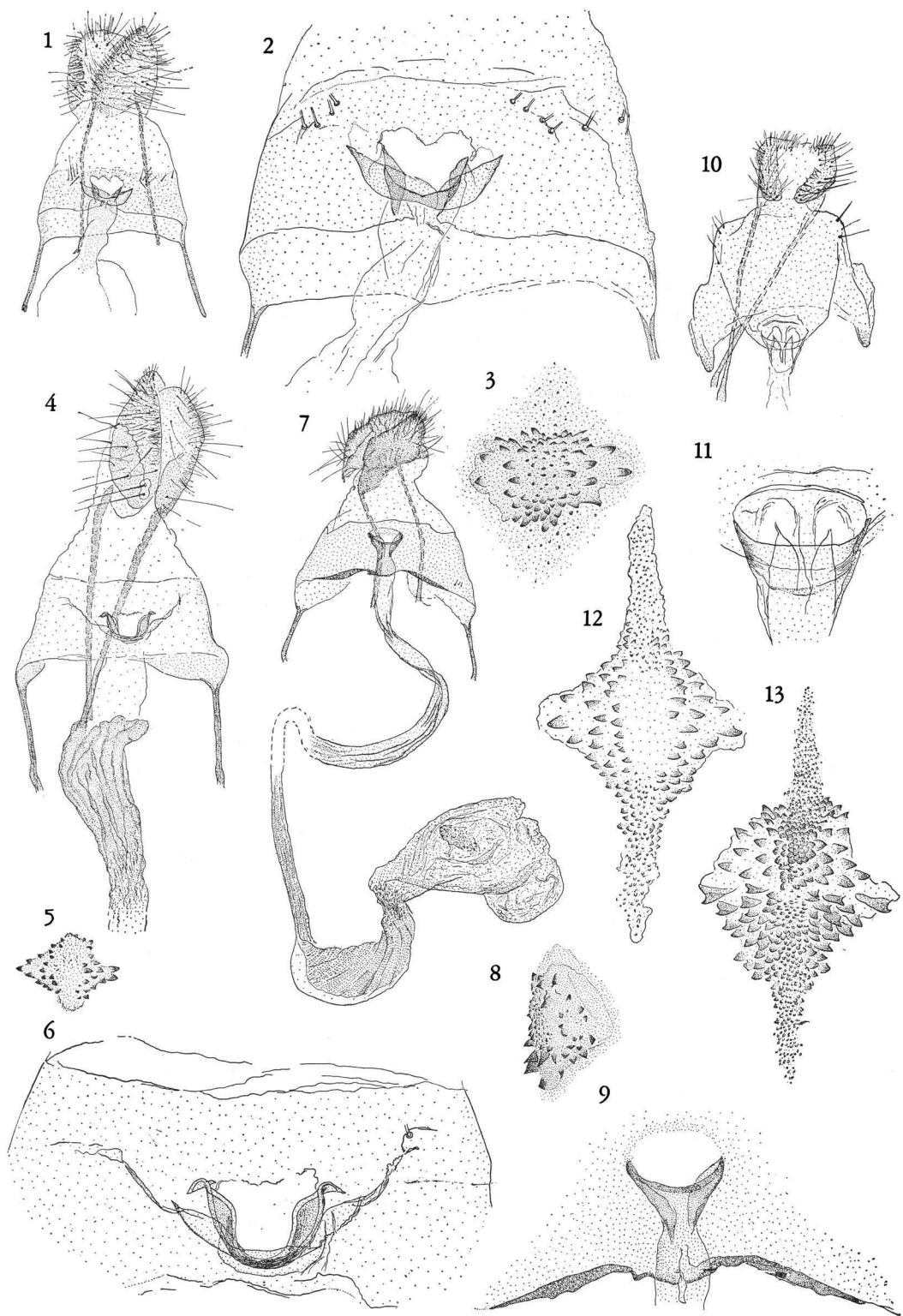
¹⁾ Perhaps an artifact.

Figs. 1-3. *Depressaria pimpinellae*: 1, sterigma with ovipositor, $\times 25$; 2, sterigma, $\times 60$; 3, signum, $\times 60$.

Figs. 4-6. *Depressaria heracliana*: 4, sterigma with ovipositor and part of ductus bursae, $\times 26$; 5, signum, $\times 60$; 6, sterigma, $\times 60$.

Figs. 7-9. *Depressaria discipunctella*: 7, general view of female genitalia, $\times 25$; 8, signum, $\times 60$; 9, sterigma, $\times 60$.

Figs. 10-13. *Depressaria badiella*: 10, sterigma with ovipositor, $\times 25$; 11, ostium, $\times 60$; 12, 13, signum, $\times 60$.



Corpus bursae sclerotized, twisted, covered with rather large short spines. Signum small, rhomboidal, teeth stellately arranged, centrally a multitude of minute teeth.

Mount in M.L.

***Depressaria albipunctella* (Hb.) (gen. no. 3385) (figs. 14-16).**

8th sternite broad. Narrow upper part divided from lower part by a fold, on which the ostium is situated. Upper part covered with a multitude of minute sharp spines. On either side of the median line two smooth wedge-like strips, diverging laterally. 3 hairs postero-laterally.

Ostium horizontally slit-shaped. Colliculum widely cup-shaped. Lower part of sternite completely bare, lower margin somewhat sclerotized.

Ductus bursae rather short, rather sparsely and finely granulated.

Corpus bursae big, pear-shaped, granulated, grains of variable size. Some folds curving around signum, which have a crenate inner margin and can be sclerotized.

Signum rhomboidal, teeth stellately arranged, in the middle a strip with minute teeth, which continues beyond the margin of the signum.

Mount in M.A.

***Depressaria pulcherrimella* Stt. (Z.M.B. 1010) (figs. 20-21).**

Ostium horizontally slit-shaped, lower margin widely W-shaped, sclerotized. Laterally a connexion with two converging, rising folds. Laterally and below ostium a fold, covered with minute spines.

Ductus bursae short, first part membranous, second part sclerotized with longitudinal folds, third part membranous again with rather sparse granulation.

Corpus bursae large, pear-shaped, covered with spines of variable size.

Signum elongate rectangular, slightly bent, dentate. Small teeth centrally, at the long sides ridges of teeth.

Mount in M.B.

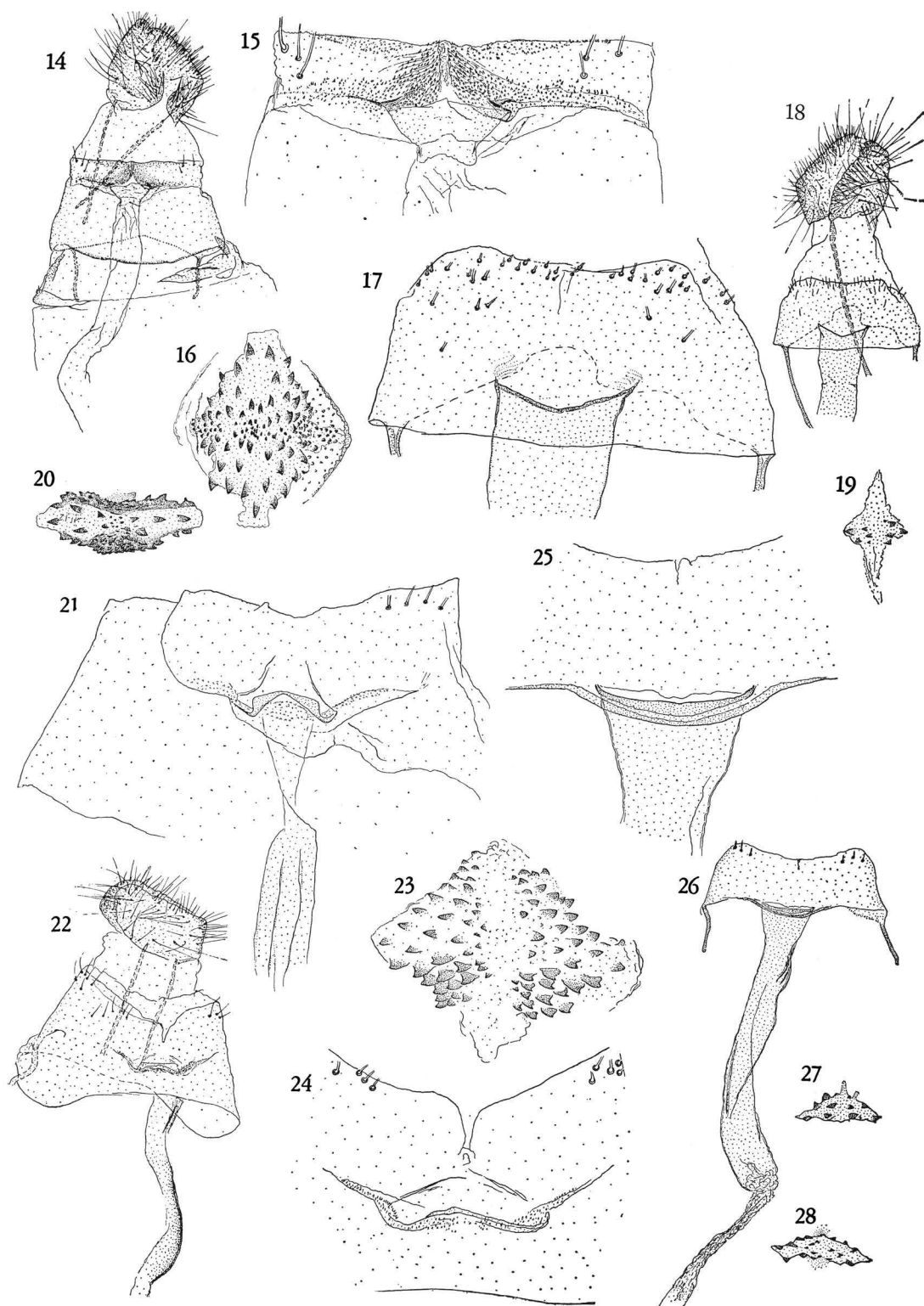
Figs. 14-16. *Depressaria albipunctella*: 14, sterigma with ovipositor, $\times 25$; 15, sterigma, $\times 60$; 16, signum, $\times 60$.

Figs. 17-19. *Depressaria chaerophylli*: 17, sterigma, $\times 60$; 18, sterigma with ovipositor and part of ductus bursae, $\times 25$; 19, signum, $\times 60$.

Figs. 20-21. *Depressaria pulcherrimella*: 20, signum, $\times 60$; 21, sterigma, $\times 60$.

Figs. 22-24. *Depressaria douglasella*: 22, sterigma with ovipositor and part of ductus bursae, $\times 25$; 23, signum, $\times 60$; 24, sterigma, $\times 60$.

Figs. 25-28. *Depressaria nervosa*: 25, sterigma, $\times 60$; 26, sterigma with part of ductus bursae, $\times 25$; 27, 28, signum, $\times 60$.



***Depressaria chaerophylli* Z. (gen. no. 3421) (figs. 17-19).**

8th sternite broad. Lamella postvaginalis much wider than lamella antevaginalis.

Ostium a widely V-shaped slit, lower margin collar-like, sclerotized.

Ductus bursae rather long, for the greater part sclerotized, first part smooth with a characteristic little transverse fold at some distance from the ostium, second part finely granulated, third part granulated and membranous.

Corpus bursae more or less conical, covered with minute spines.

Signum more or less rhomboidal to cruciform, very sparsely dentate.

Mount in M.L.

***Depressaria nervosa* Hw. (gen. no. 2554) (figs. 25-28).**

8th sternite moderately narrow, 3 hairs near the postero-lateral edge. In the middle of the posterior margin a small vertical slit. Anterior margin undulating, in the middle more strongly sclerotized than at the sides. Lamella antevaginalis extremely narrow.

Ostium horizontally slit-shaped, lower margin collar-like, slightly sclerotized.

Ductus bursae rather short, without granulation, first part slightly sclerotized, gradually changing into the second part with stronger sclerotization, margin transparent. Third part membranous.

Corpus bursae ovate, rather closely granulated.

Signum elongate lanceolate or elongate triangular, irregularly and rather sparsely dentate. In the middle of the long sides sometimes small prominences.

Mount in M.L.

***Depressaria ultimella* Stt. (gen. nos. 3327, 3339) (figs. 29-31).**

8th sternite moderately narrow, almost without hairs. In the middle of

Figs. 29-31. *Depressaria ultimella*: 29, sterigma with ovipositor, $\times 25$; 30, sterigma and part of ductus bursae, $\times 60$; 31, signum, $\times 60$.

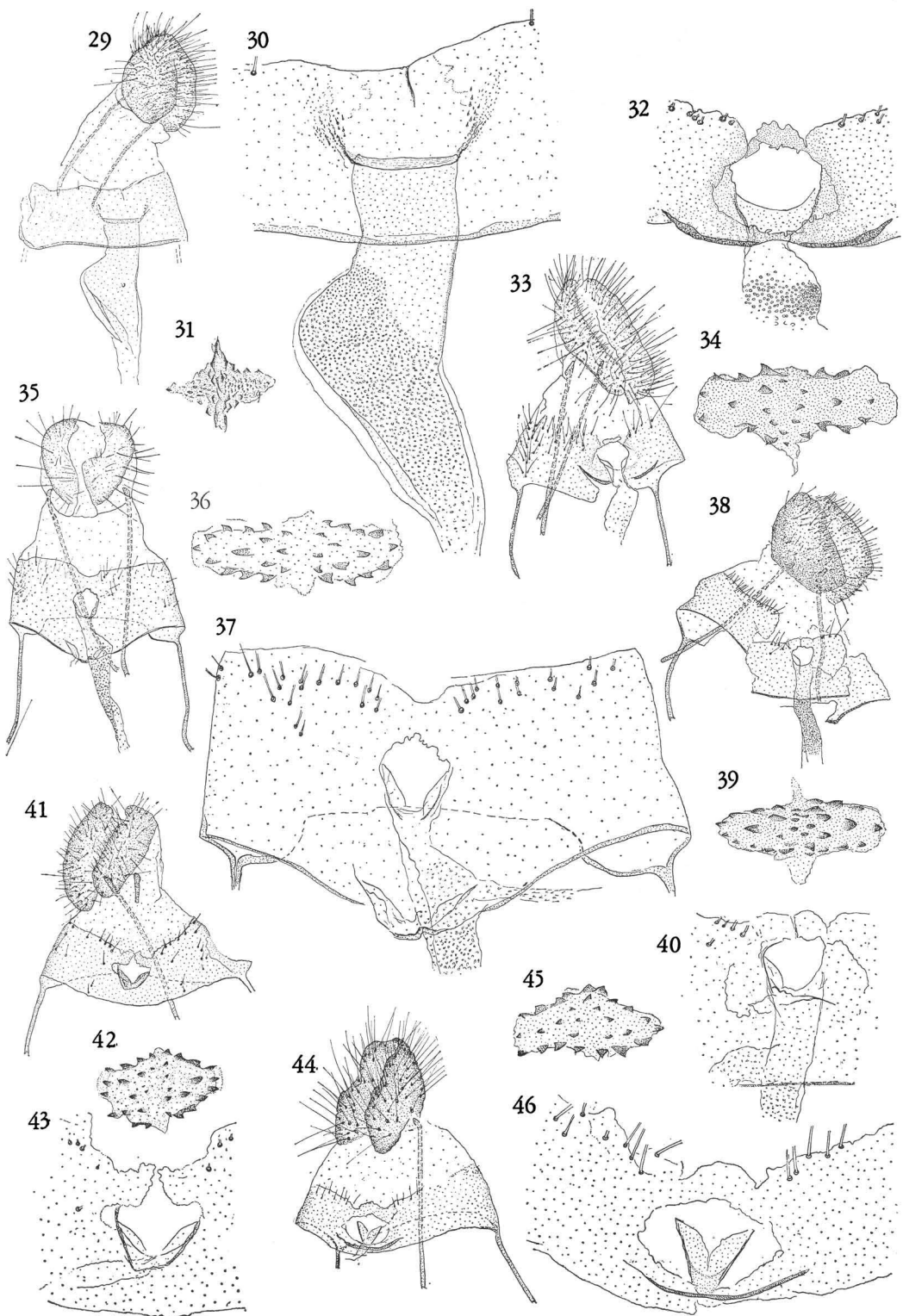
Figs. 32-34. *Agonopterix costosa*: 32, sterigma, $\times 60$; 33, sterigma with ovipositor, $\times 25$; 34, signum, $\times 60$.

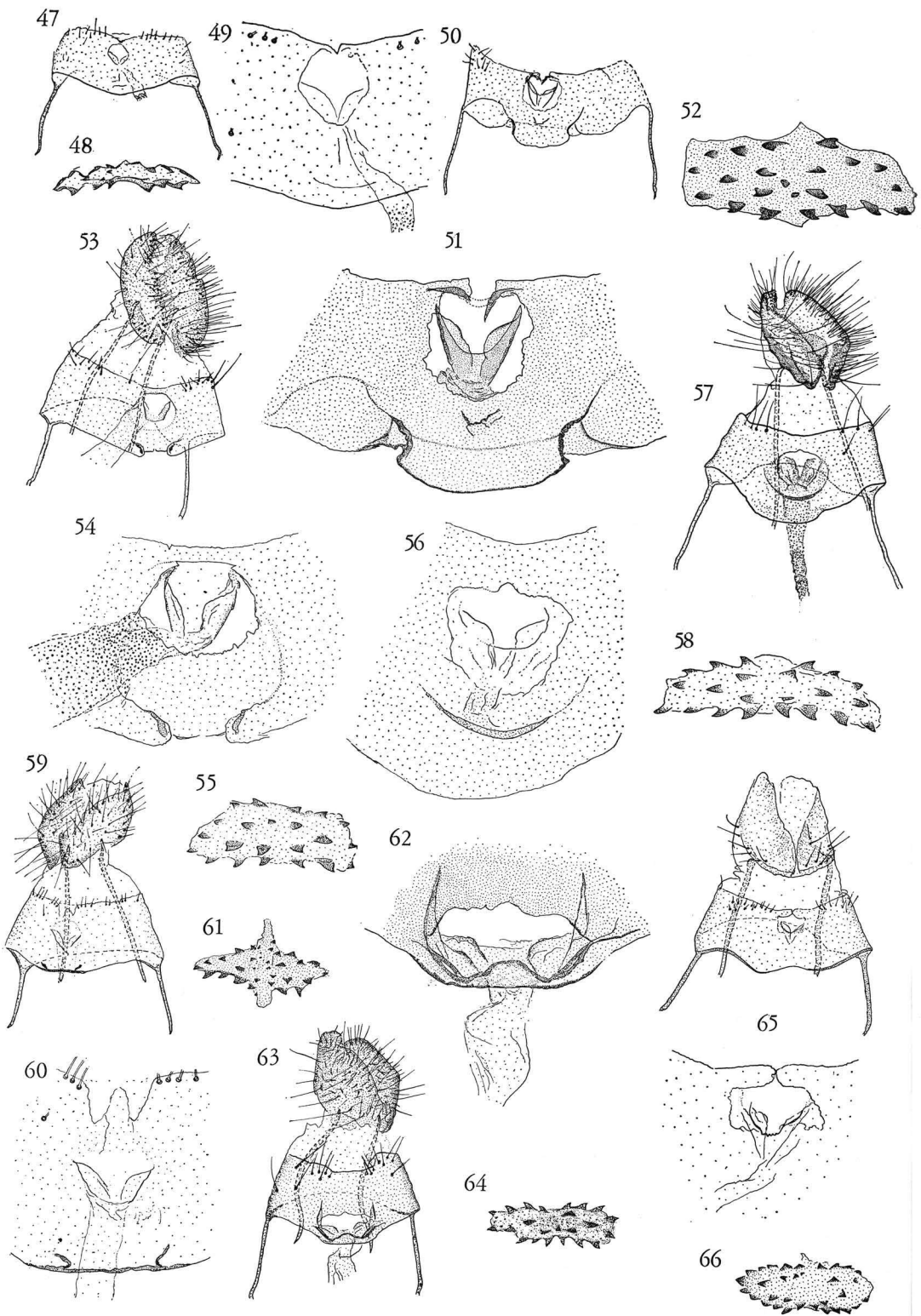
Figs. 35-37. *Agonopterix flavella*: 35, sterigma with ovipositor, $\times 25$; 36, signum, $\times 60$; 37, sterigma, $\times 60$.

Figs. 38-40. *Agonopterix pallorella*: 38, sterigma with ovipositor, $\times 25$; 39, signum, $\times 60$; 40, sterigma, $\times 60$.

Figs. 41-43. *Agonopterix assimilella*: 41, sterigma with ovipositor, $\times 25$; 42, signum, $\times 60$; 43, ostium, $\times 60$.

Figs. 44-46. *Agonopterix umbellana*: 44, sterigma with ovipositor, $\times 25$; 45, signum, $\times 60$; 46, sterigma, $\times 60$.





the posterior margin a vertical slit. Anterior margin sclerotized. Lamella postvaginalis and lamella antevaginalis equally wide.

Ostium horizontally slit-shaped, lower margin collar-like, sclerotized. Laterally a connexion with two diverging, rising folds, covered with minute, sharp spines, gradually becoming smaller upwards.

The first short part of the ductus bursae strongly sclerotized and smooth. Next part granulated, slightly sclerotized, bulbously produced to one side. The sclerotized parts of the ductus bursae have a transparent margin. Last part membranous, very finely granulated.

Corpus bursae club-shaped, finely granulated.

Signum small, more or less cruciform to rhomboidal, partly covered with large teeth, partly with a great number of minute teeth.

Mount in M.L.

***Depressaria badiella* (Hb.) (gen. nos. 3434, 3435) (figs. 10-13).**

8th sternite broad. Some hairs at the postero-lateral edge. Lamella postvaginalis very wide, lamella antevaginalis absent.

Ostium broad oval. Inside the opening two elongate triangular, pointed structures. Lower margin of the sternite semicircular, two slightly elongated lobes instead of apophyses.

Ductus bursae short, first part not granulated, second part finely granulated.

Corpus bursae large, granulated, some folds curving around signum.

Signum cruciform to elongate rhomboidal, dentate. A strip with a multitude of minute teeth along the longest diagonal; the middle of this strip can be devoid of teeth too.

Mounts in M.P.

Figs. 47-49. *Agonopterix nanatella*: 47, sterigma, $\times 25$; 48, sterigma, $\times 60$; 49, signum, $\times 60$.

Figs. 50-52. *Agonopterix scopariella*: 50, sterigma, $\times 25$; 51, sterigma, $\times 60$; 52, signum, $\times 60$.

Figs. 53-55. *Agonopterix atomella*: 53, sterigma with ovipositor, $\times 25$; 54, sterigma, $\times 60$; 55, signum, $\times 60$.

Figs. 56-58. *Agonopterix arenella*: 56, sterigma, $\times 60$; 57, sterigma with ovipositor, $\times 25$; 58, signum, $\times 60$.

Figs. 59-61. *Agonopterix propinquella*: 59, sterigma with ovipositor, $\times 25$; 60, sterigma, $\times 60$; 61, signum, $\times 60$.

Figs. 62-64. *Agonopterix subpropinquella*: 62, sterigma, $\times 60$; 63, sterigma with ovipositor, $\times 25$; 64, signum, $\times 60$.

Figs. 65-66. *Agonopterix laterella*: 65, sterigma with ovipositor, $\times 25$, and sterigma, $\times 60$; 66, signum, $\times 60$.

Depressaria douglasella Stt. (gen. no. 3431) (figs. 22-24).

8th sternite broad. A narrow, vertical incision in the middle of the lamella postvaginalis, which is slightly wider than the lamella antevaginalis.

Ostium a flat W-shaped slit, the margin covered with fine spines. Anterior margin of the sternite undulating.

Ductus bursae rather short, without granulation, first part slightly sclerotized, sclerotization gradually increasing towards the second part, which is membranous.

Corpus bursae elongate, covered with grains of variable size.

Signum rhomboidal, teeth stellately arranged, in the middle a strip without teeth.

Mounts in M.P.

Key to the species of *Agonopterix*

1. 8th sternite entirely without sclerotizations 2
- 8th sternite with sclerotizations 7
2. Lamella postvaginalis narrower than lamella antevaginalis 3
- Lamella postvaginalis wider than or as wide as lamella antevaginalis 4
3. Signum elongate lanceolate, corpus bursae smooth *nanatella*
- Signum sub-hexagonal, corpus bursae finely and sparsely granulated . *assimilella*
4. Lamella postvaginalis much wider than the very narrow lamella antevaginalis *liturella*
- Lamella postvaginalis and antevaginalis equally wide 5
5. Signum small, about the size of the ostium *purpurea*
- Signum larger 6
6. Signum widely triangular or elongate quadrangular, rather sparsely dentate, no teeth centrally *cnicella*
- Signum triangular or oval, teeth forming a crest on the long sides. Small teeth centrally *conterminella*
7. Lamella postvaginalis narrower than lamella antevaginalis 8
- Lamella postvaginalis as wide as or wider than lamella antevaginalis 15
8. 8th sternite narrow 9
- 8th sternite broad 11
9. 8th sternite very narrow, lower margin of lamella antevaginalis sclerotized *alstroemeriana*
- 8th sternite rather narrow 10
10. Lower margin of the sternite entirely sclerotized *pallorella*
- Lower margin not sclerotized in the middle *applana*
11. Lamella postvaginalis with a transverse sclerite *scopariella*
- Lamella postvaginalis without such a structure 12
12. Lamella antevaginalis without sclerotizations or folds, lower margin of the sternite undulating and sclerotized, except in the middle *laterella*
- Lamella antevaginalis with sclerotization or folds 13
13. Below the ostium a bow-shaped sclerite *arenella*
- Sclerotizations not thus 14
14. Lamella antevaginalis with a slightly curved sclerotized rod at both sides of the lower edge of the ostium. Lamella postvaginalis slightly wrinkled above ostium. *ocellana*

15. Lamella antevaginalis with two lobe-like structures. A small sclerotized rod on each lobe. Lower margin of the sternite not sclerotized *atomella*
- Lamella antevaginalis with a V-shaped fold near the lower margin. Lower margin of the sternite sclerotized *flavella*
16. 8th sternite broad 16
- 8th sternite narrow or rather narrow 18
17. Lower margin of ostium widely W-shaped and sclerotized, upper margin bracket-shaped *subpropinquella*
- Ostium without sclerotizations 17
18. Lower margin of the sternite sclerotized, except in the middle *ciliella*
- Lower margin of the sternite not sclerotized, except in the middle. The sclerotization is forked laterally *propinquella*
19. Lamella antevaginalis with a bow-like sclerite 19
- Lamella antevaginalis with otherwise shaped, or without sclerotizations 20
20. Lower margin of the sternite not produced in the middle, sclerite not on the lower margin of the sternite *umbellana*
- Lower margin of the sternite produced and rounded in the middle, sclerite on the margin *capreolella*
21. Lower margin of the sternite produced in the middle 21
- Lower margin not produced in the middle 22
22. Lower margin of the sternite widely produced and rounded, at both sides of the prominence the margin is sclerotized *angelicella*
- Lower margin of the sternite rectangularly produced, not sclerotized. Ostium with a collar-like reversed lower margin *sephyrella*
23. Ostium rhomboidal, at three sides surrounded by a crescentic sclerotization, whose transverse branch is double *yeatiana*
- Ostium widely oval. On both sides of the lower edge of the lamella antevaginalis a curved, sclerotized ridge *costosa*

***Agonopterix costosa* (Hw.) (gen. nos. 3306, 3307) (figs. 32-34).**

8th sternite narrow. Lamella postvaginalis about as narrow as lamella antevaginalis.

Ostium broadly oval. On both sides of the lower edge of the lamella antevaginalis a curved sclerotized ridge, concave caudally.

Ductus bursae rather long, first part densely granulated, granulation gradually becoming less close, a smooth part before the corpus bursae.

Corpus bursae broadly ovate, sparsely granulated.

Signum elongate quadrangular, sometimes with rounded edges, sparsely dentate. Sometimes small prominences in the middle of the long sides.

Mount in M.L.

***Agonopterix flavella* (Hb.) (gen. no. 3308) (figs. 35-37).**

8th sternite broad. Lamella postvaginalis somewhat emarginated, narrower than lamella antevaginalis.

Ostium circular-spatuloid. Lamella antevaginalis with a V-shaped fold in

the middle, like a pair of wings. Entire anterior margin of the sternite slightly sclerotized.

Ductus bursae rather long, first part densely granulated, granulation becoming less close and very fine downwards, second part smooth, granulation appearing again towards corpus bursae.

Corpus bursae elongate, only a little wider than ductus bursae, sparsely granulated.

Signum elongate ovate to elongate quadrangular, regularly dentate with small obtusely triangular prominences in the middle of the long sides.

Mount in M.L.

***Agonopterix pallorella* (Z.) (gen. no. 3403) (figs. 38-40).**

8th sternite rather narrow, a dense row of hairs posteriorly. Lamella postvaginalis much narrower than lamella antevaginalis.

Ostium more or less circular.

Ductus bursae rather long, dispersedly granulated.

Corpus bursae elongate bulbous, granulated.

Signum elongate oval to elongate quadrangular with small triangular prominences in the middle of the long sides, regularly dentate; teeth small, except laterally, where larger teeth are present.

Mount in M.L.

***Agonopterix umbellana* (Stph.) (gen. no. 3399) (figs. 44-46).**

8th sternite narrow. Lamella postvaginalis and lamella antevaginalis equally narrow.

Ostium transversely oval, upper margin somewhat flattened. Lamella antevaginalis with a thin, slightly concave strip, slightly longer than the width of the ostium.

Ductus bursae broad and short, without granulation.

Corpus bursae very large, elongate pear-shaped, very finely and sparsely granulated.

Signum irregularly pentagonal to hexagonal. Large teeth at the margin, small teeth centrally.

Mount in M.L.

***Agonopterix assimilella* (Tr.) (gen. nos. 3356, 3357) (figs. 41-43).**

8th sternite rather narrow. Lamella postvaginalis somewhat narrower than lamella antevaginalis.

Ostium sub-oval. Antero-laterally a pair of hairs.

Ductus bursae rather long, first densely granulated, granulation gradually becoming sparse and very fine, a smooth part above corpus bursae.

Corpus bursae pear-shaped, sparsely and finely granulated.

Signum rather irregularly square to oval, sometimes hexagonal. Teeth often in irregular rows. In the centre teeth smaller than at the outside.

Mount in M.L.

***Agonopterix nanatella* (Stt.) (Z.M.B. 692) (figs. 47-49).**

8th sternite rather broad. Lamella postvaginalis much narrower than lamella antevaginalis.

Ostium circular to rhomboidal.

Ductus bursae ¹⁾ very finely granulated, except a portion in the upper half of the ductus, which is smooth.

Corpus bursae membranous, elongate oval, without granulation.

Signum variably shaped, sometimes elongate lanceolate or sickle-shaped with teeth or ridges of teeth along the margin, sometimes broader, oval to rectangular, irregularly dentate.

Mount in M.B.

***Agonopterix atomella* (Hb.) (gen. no. 3383) (figs. 53-55).**

8th sternite moderately broad. Lamella postvaginalis much narrower than lamella antevaginalis.

Ostium suboval, upper edge flattened, lower edge serrate. Lamella antevaginalis near its lower margin with two lobe-shaped structures, facing each other, with a short sclerotized rod at the upper margin of the lobes.

Ductus bursae rather long, first part rather closely granulated, turning into sparse granulation, followed by a long smooth part.

Corpus bursae irregularly pear-shaped, rather densely covered with minute spines. Some slightly sclerotized folds curving around signum.

Signum trapezoidal, with longitudinal rows of teeth.

Mount in M.A.

***Agonopterix scopariella* (Hein.) (gen. no. 3363) (figs. 50-52).**

8th sternite moderately broad, with some hairs laterally at the posterior margin. Lamella postvaginalis with a small sclerotized horizontal strip ²⁾, much narrower than lamella antevaginalis.

¹⁾ In the only mount ductus broken off, so that perhaps a part has become lost.

²⁾ Broken in mount.

Ostium more or less circular, flattened at the upper edge. Lamella antevaginalis forming a broad, shallow prominence, laterally with sclerotized scalloped strips, running upwards and diverging. Just below ostium a small, wrinkled fold.

Ductus bursae rather long, first part rather closely granulated, next part smooth, last part again sparsely granulated.

Corpus bursae pear-shaped, covered with minute spines.

Signum quadrangular, sometimes elongate ovate, rather sparsely dentate. In the middle of the long sides short triangular processes.

Mount in M.L.

***Agonopterix arenella* (Schiff.) (gen. no. 2493) (figs. 56-58).**

8th sternite broad, about 4 hairs laterally at the posterior margin. Lamella postvaginalis narrower than lamella antevaginalis.

Ostium inverted subtrapezoidal with rounded edges and a bracket-shaped upper margin. Below ostium a bow-shaped sclerotization, proceeding towards the middle of the sternite. Anterior margin of the sternite produced and rounded.

Ductus bursae rather short, entirely densely granulated.

Corpus bursae elongate pear-shaped, rather closely covered with fine spines. Some sclerotized folds curve around signum.

Signum subtrapezoidal or elongate quadrangular with rounded edges, regularly dentate. In the middle of the long sides sometimes short triangular processes.

Mount in M.L.

***Agonopterix propinquella* (Tr.) (gen. no. 3359) (figs. 59-61).**

8th sternite broad. Lamella postvaginalis about as wide as lamella antevaginalis.

Ostium subcircular. A sclerotized strip, which is forked laterally, on the lower margin of the lamella antevaginalis.

Ductus bursae rather long, membranous, entirely but sparsely granulated.

Corpus bursae membranous, long and narrow, rather closely covered with minute spines.

Signum elongate rhomboidal to ovate, regularly dentate, teeth in the centre smaller than elsewhere. In the middle of the long sides triangular or subquadrangular processes.

Mount in M.L.

***Agonopterix subpropinquella* (Stt.) (gen. no. 3391) (figs. 62-64).**

8th sternite broad. Posterior margin with 6 hairs on either side of the lamella postvaginalis, which is much wider than the lamella antevaginalis.

Ostium wide, with a bracket-shaped upper margin and a flat W-shaped, sclerotized lower margin. The lateral wings of the W-shaped structure are double. Lateral of the ostium two rising acute folds. Lamella antevaginalis reversed trapezoidal with a sclerotized lower margin.

Ductus bursae ¹⁾ nearly without granulation, the end with some fine spines.

Corpus bursae elongate oval or 8-shaped, sparsely covered with minute, very slender spines.

Signum elongate quadrangular with a slight impression in the middle of the long sides, teeth in the centre very small, elsewhere large.

Mount in M.L.

***Agonopterix laterella* (Schiff.) (gen. nos. 3398, 3395) (figs. 65-66).**

8th sternite rather broad. Lamella postvaginalis much narrower than lamella antevaginalis.

Ostium subquadrate with rounded edges. Anterior margin of the sternite undulating, slightly sclerotized, except the lamella antevaginalis.

First part of ductus bursae ¹⁾ granulated, next part smooth.

Corpus bursae ovate with longitudinal folds curving around signum, very sparsely covered with minute spines.

Signum variably shaped, sometimes ovate to quadrangular, sometimes oval with an impression in the middle of the long sides. A marginal row of teeth, a variable number of teeth centrally.

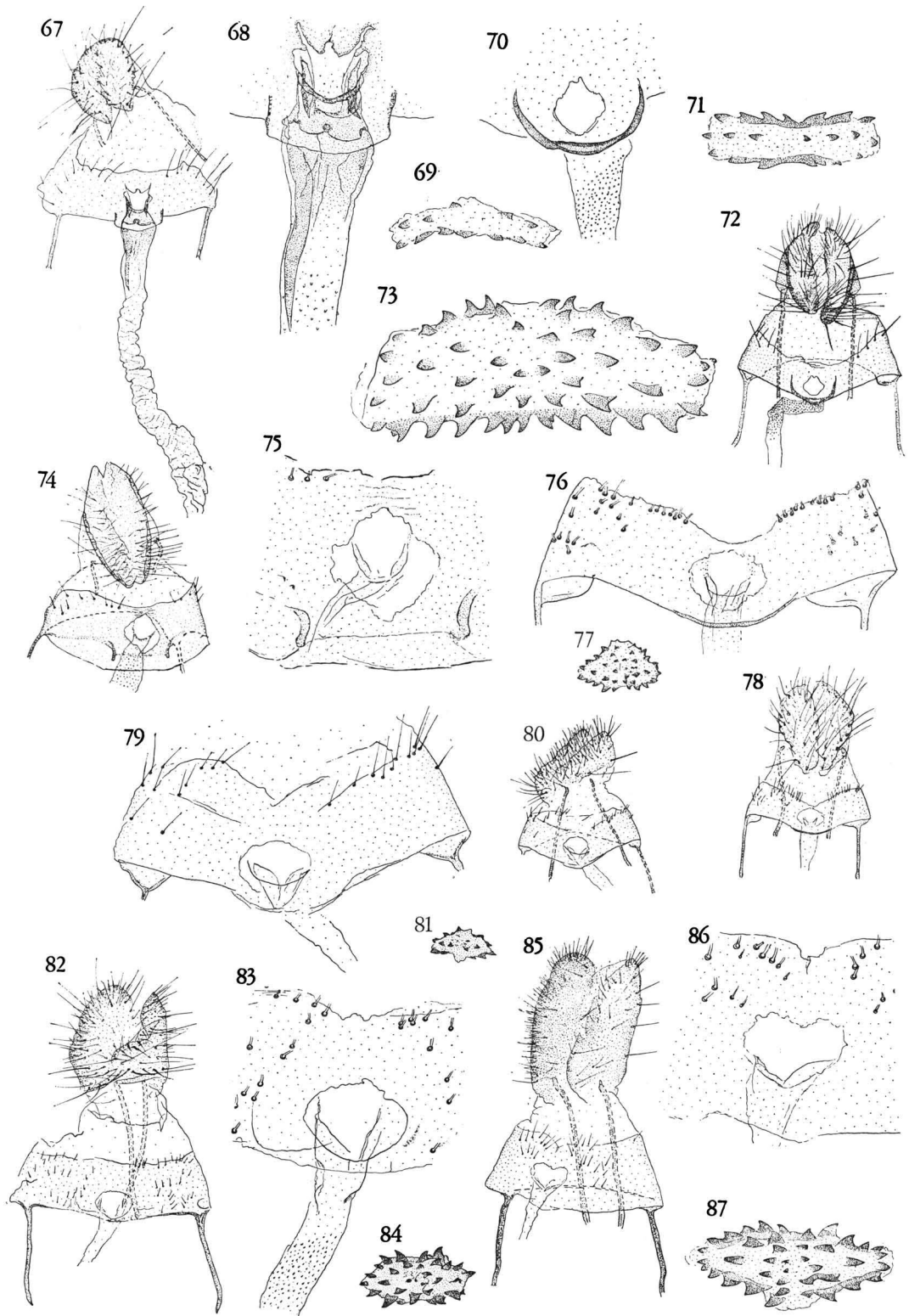
Mount in M.L.

***Agonopterix zephyrella* (Hb.) (gen. no. 3342) (figs. 67-69).**

8th sternite rather narrow, posterior margin with 4 hairs on either side of the lamella postvaginalis, which is about as wide as the lamella antevaginalis.

Ostium truncate below, gradually dilated upwards, lamella postvaginalis with a shallow median and two deep lateral incisions. Lower margin of ostium reversed collar-like. Lamella antevaginalis forming a rectangular prominence with sclerotized lateral margins and a slightly curved lower margin.

¹⁾ Broken off in mount, probably a part is missing.



Colliculum with two lanceolate sclerotizations near ostium, broadened below the lamella antevaginalis, with a garland-like sclerotization.

Ductus bursae rather long, rather densely granulated throughout, in the beginning a strongly sclerotized strip, extending downwards. First part of the ductus almost entirely transversely wrinkled, the last part smooth.

Corpus bursae triangular to pear-shaped, rather densely granulated.

Signum elongate, rather slender, with square angles. Two lateral rows of teeth.

Mount in M.L.

***Agonopterix yeatiana* (F.)** (gen. no. 2543, 2544) (figs. 70-72).

8th sternite narrow, posterior margin with 4 hairs at each side of the lamella postvaginalis, which is wider than the lamella antevaginalis.

Ostium rhomboidal to circular, at three sides surrounded by a crescentic sclerotization, the horizontal branch of which is double.

Ductus bursae rather long, first part rather closely granulated, gradually turning into second part with disperse granulation.

Corpus bursae elongate urn-shaped, rather closely covered with fine spines. Some longitudinal folds curve around the signum.

Signum elongate quadrangular, with a crest of teeth on the long sides and a more or less regular row of teeth in the middle.

Mount in M.L.

***Agonopterix ocellana* (F.)** (gen. no. 2460) (figs. 73-75).

8th sternite rather broad. Lamella postvaginalis slightly wrinkled above ostium, somewhat narrower than lamella antevaginalis.

Ostium rhomboidal. Lamella antevaginalis with a slightly curved sclero-

Figs. 67-69. *Agonopterix zephyrella*: 67, sterigma with ovipositor and part of ductus bursae, $\times 25$; 68, sterigma, $\times 60$; 69, signum, $\times 60$.

Figs. 70-72. *Agonopterix yeatiana*: 70, sterigma, $\times 60$; 71, signum, $\times 60$; 72, sterigma with ovipositor, $\times 25$.

Figs. 73-75. *Agonopterix ocellana*: 73, signum, $\times 60$; 74, sterigma with ovipositor, $\times 25$; 75, sterigma, $\times 60$.

Figs. 76-78. *Agonopterix alstroemeriana*: 76, sterigma, $\times 60$; 77, signum, $\times 60$; 78, sterigma with ovipositor, $\times 25$.

Figs. 79-81. *Agonopterix purpurea*: 79, sterigma, $\times 60$; 80, sterigma with ovipositor, $\times 25$; 81, signum, $\times 60$.

Figs. 82-84. *Agonopterix liturella*: 82, sterigma with ovipositor, $\times 25$; 83, sterigma, $\times 60$; 84, signum, $\times 60$.

Figs. 85-87. *Agonopterix conterminella*: 85, sterigma with ovipositor, $\times 25$; 86, sterigma, $\times 60$; 87, signum, $\times 60$.

tized rod at both sides of the lower edge of the ostium. Lower margin of the sternite with obtuse angles.

Ductus bursae rather long, entirely covered with sparse granulation.

Corpus bursae rather large, sparsely granulated. Some longitudinal folds curve around the signum.

Signum large, variably shaped, either irregularly quadrangular or bottle-shaped or elongate quadrangular. Strongly dentate, teeth in the centre smaller, teeth at the margin sometimes forming a crest.

Mount in M.L.

***Agonopterix alstroemeriana* (Cl.) (gen. no. 3410) (figs. 76-78).**

8th sternite narrow, widely V-shaped. A rather dense row of hairs along the posterior margin, on either side of the lamella postvaginalis, which is very narrow.

Ostium widely ovate. Lamella antevaginalis not as narrow as lamella postvaginalis, lower margin sclerotized.

Ductus bursae long, first part sparsely and finely granulated, second part smooth, followed by a granulated part again.

Corpus bursae small, club-shaped, very finely granulated.

Signum small, more or less triangular, teeth stellately arranged.

Mount in M.L.

***Agonopterix purpurea* (Hw.) (gen. no. 3362) (figs. 79-81).**

8th sternite rather narrow. Lamella postvaginalis about as wide as lamella antevaginalis, which is widely produced.

Ostium ovate.

Ductus bursae moderately long, first short part finely and sparsely granulated, second part smooth. Towards corpus bursae again very sparsely granulated.

Corpus bursae small, membranous, bulbous, not granulated.

Signum small, more or less ovate to hexagonal, sparsely dentate.

Mount in M.L.

***Agonopterix liturella* (Hb.) (gen. no. 3367) (figs. 82-84).**

8th sternite narrow, entirely covered with scattered hairs except on the lamellae. Lamella postvaginalis much wider than lamella antevaginalis, which is very narrow.

Ostium subcordiform.

Ductus bursae rather long, finely granulated.

Corpus bursae elongate pear-shaped, rather closely covered with fine short spines.

Signum elongate hexagonal, regularly dentate, teeth in the centre smaller than at the margin.

Mount in M.L.

Agonopterix conterminella (Z.) (gen. nos. 2534, 2535) (figs. 85-87).

8th sternite moderately broad. Posteriorly a bent row of 4 or 5 hairs at each side of the lamella postvaginalis, which is about as wide as the lamella antevaginalis. A variable number of hairs at both sides of ostium.

Ostium broadly cordiform or circular.

Ductus bursae varying in size, sparsely and finely granulated.

Corpus bursae club-shaped or pear-shaped, covered with fine short spines, some folds curving around signum.

Signum variably shaped, triangular or oval with a small notch in the middle. Teeth in the centre and at the ends smaller than teeth at the sides, which form a crest.

Mount in M.L.

Agonopterix applana (F.) (gen. no. 3313) (figs. 88-90).

8th sternite moderately narrow, posteriorly a row of hairs bending inward near the lamella postvaginalis, which is narrower than the lamella antevaginalis.

Ostium oval with an undulating upper margin. Anterior margin of the sternite sclerotized, except the lamella antevaginalis.

Ductus bursae rather long, entirely covered with a rather close granulation.

Corpus bursae long and narrow, rather closely granulated.

Signum elongate hexagonal or oval with an impression in the middle of the long sides, regularly dentate, in the middle with tiny teeth.

Mount in M.L.

Agonopterix ciliella (Stt.) (gen. no. 2478) (figs. 91-94).

8th sternite moderately broad. Lamella postvaginalis about as wide as lamella antevaginalis.

Ostium ovate with an indented upper margin ¹⁾.

First part of ductus bursae granulated, last part without granulation.

Corpus bursae pear-shaped, finely granulated.

¹⁾ Mount perhaps deformed.

Signum small, ovate or hexagonal, teeth tiny, in the centre teeth absent.
Mount in M.L.

***Agonopterix capreolella* (Z.)** (Z.M.B. 757, gen. no. 3417) (figs. 95-97).

8th sternite narrow. Lamella postvaginalis not traceable.¹⁾

Ostium more or less circular. Lamella antevaginalis widely produced, lower margin sclerotized.

Ductus bursae rather long, not granulated, except a short part near the top.

Corpus bursae elongate pear-shaped, dispersedly and finely granulated.

Signum slightly bent, lanceolate, dentate.

Mounts in M.B.

***Agonopterix angelicella* (Hb.)** (gen. nos. 3315, 3316) (figs. 98-101).

8th sternite narrow. Lamella postvaginalis wider than lamella antevaginalis.

Ostium subcircular. Lower margin of the sternite produced in the middle, sclerotized at either side of the prominence.

Ductus bursae long, first part rather closely granulated, granulation gradually becoming less close, last part smooth.

Corpus bursae pear-shaped, rather sparsely and finely granulated.

Signum small, triangular or oval, teeth tiny, no teeth in the centre.

Mount in M.L.

***Agonopterix cnicella* (Tr.)** (gen. nos. 3317, 3320) (figs. 102-105).

8th sternite moderately narrow. Posterior margin widely V-shaped, anterior margin with two obtuse angles. Lamellae postvaginalis and antevaginalis equally wide.

Ostium round-ovate.

¹⁾ Mount perhaps deformed.

Figs. 88-90. *Agonopterix applana*: 88, sterigma, $\times 60$; 89, sterigma with ovipositor, $\times 25$; 90, signum, $\times 60$.

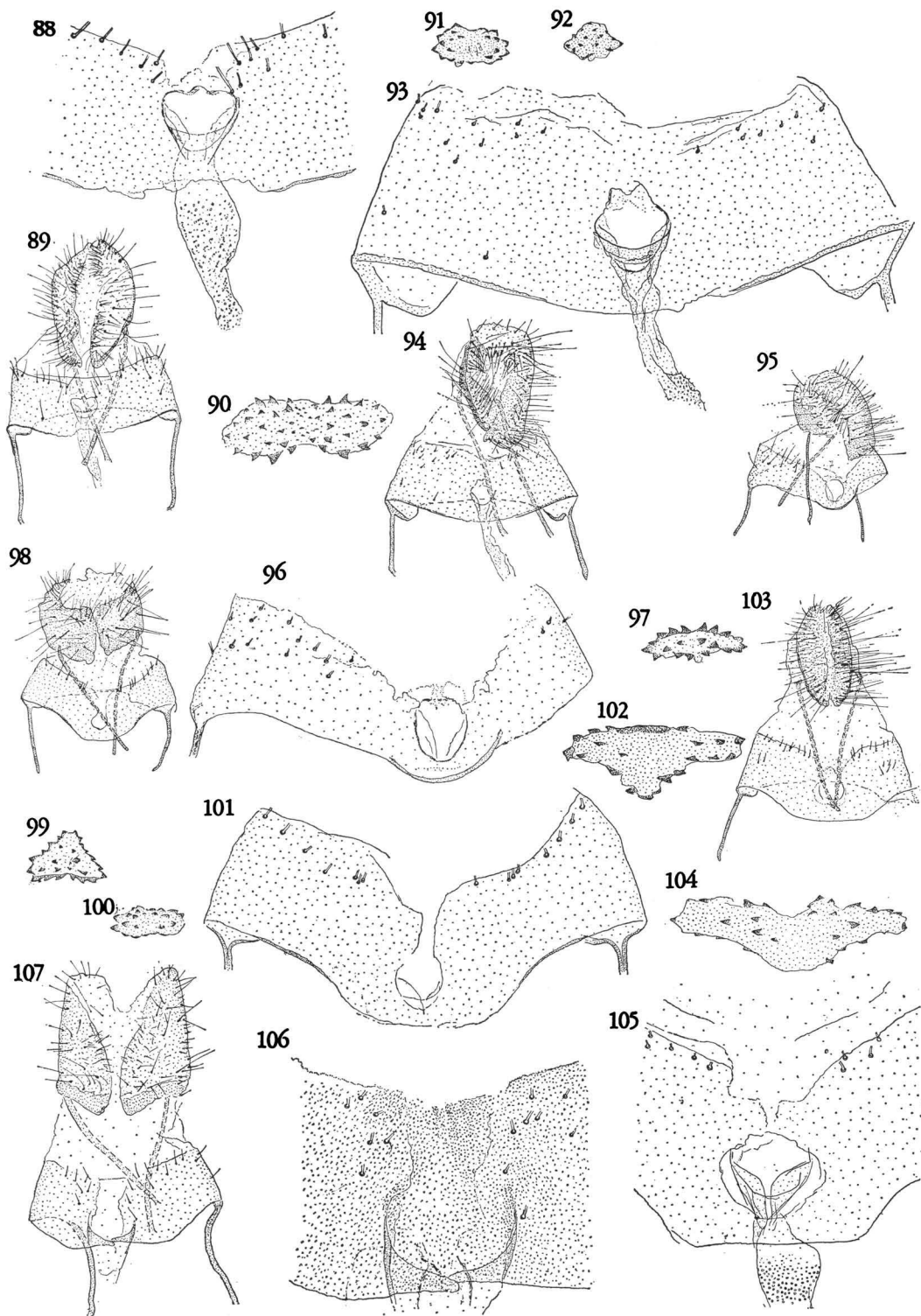
Figs. 91-94. *Agonopterix ciliella*: 91, 92, signum, $\times 60$; 93, sterigma, $\times 60$; sterigma with ovipositor, $\times 25$.

Figs. 95-97. *Agonopterix capreolella*: 95, sterigma with ovipositor, $\times 25$; 96, sterigma, $\times 60$; 97, signum, $\times 60$.

Figs. 98-101. *Agonopterix angelicella*: 98, sterigma with ovipositor, $\times 25$; 99, 100, signum, $\times 60$; 101, sterigma, $\times 60$.

Figs. 102-105. *Agonopterix cnicella*: 102, 104, signum, $\times 60$; 103, sterigma with ovipositor, $\times 26$; 105, sterigma, $\times 60$.

Figs. 106-107. *Levipalpus hepatariellus*: 106, sterigma, $\times 60$; 107, sterigma with ovipositor, $\times 25$.



Ductus bursae rather long, rather closely granulated, granulation gradually becoming less close.

Corpus bursae pear-shaped, without granulation.

Signum widely triangular or elongate quadrangular and bent, rather sparsely dentate, no teeth centrally.

Mounts in M.L.

Levipalpus hepatariellus (Z.) (gen. no. 3439) (figs. 106-107).

8th sternite rather broad, covered with extremely fine spines. A row of hairs bending inward from the posterior margin lateral of the lamella postvaginalis, which is much wider than the extremely narrow lamella antevaginalis.

Ostium semicircular, laterally a number of fine spines. Lower margin of the sternite with two obtuse angles.

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