

SOUTH AFRICAN LEPIDOPTERA, 3.

Descriptions of new Stigmellidae

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In 1955 a first series of new species of this family was described by the author. Many species have since been bred and a second series is now described. A still larger number, not yet described, remain on hand, and no doubt many more will be discovered in the near future. A great difficulty in obtaining these is due to the fact that it is usually hard to find leafmines which still contain caterpillars. In the Palaerctic region a strong concentration of occupied mines occurs during the autumn; unfortunately this does not occur in South Africa, and therefore much time must be spent in collecting and breeding these leafmining species, often with very little success. Many of the caterpillars collected die through being constantly disturbed when pupating, by being transported long distances back to the laboratory. It is thus necessary to make many field trips for collecting in order to have good results. Nevertheless this research is very much rewarding, since almost all tours result in many new discoveries. The large numbers of new species obtained, not only in Lepidoptera, but also in other groups of leafmining insects, are astonishing and one cannot but wonder how the Creator has brought all these beautiful forms of life into being.

Again short descriptions of the leafmines are given and the names of the foodplants included; botanical specimens were identified by members of the staff of the National Herbarium, Pretoria. This co-operation is much appreciated and gratefully acknowledged by the author.

The continued interest of the National Parks Board of South Africa in research in the parks under their authority is without doubt highly valuable to systematic entomology, and the author acknowledges with thanks the support given to his fieldwork in the parks. Grateful acknowledgement is made to the South African Council for Scientific and Industrial Research, Pretoria, for subsidizing the cost of printing the colour plate; to the National Parks Board for a contribution towards printing of additional copies of the plate, and to the Board of Trustees of the Transvaal Museum for facilities granted.

All types and paratypes of the species described are in the collection of the Transvaal Museum, Pretoria.

Stigmella platyzona spec. nov.

Plate 1, fig. 1; text figs. 1, 7 and 13.

♂ and ♀, 3.9 - 4.3 mm. Head and face ochreous-yellow; eyecaps, neck-plumes and palpi pale straw-yellow; antennae $\frac{1}{2}$, in male dark fuscous, in female pale straw-yellow above, underside narrowly dark fuscous. Abdomen dark fuscous above, slightly glossy; underside in male fuscous with some pale straw-yellow scales in middle, in female entirely pale straw-yellow. Legs straw-yellow; fore coxae mixed with fuscous, tibiae and tarsi dark fuscous above; hind tibiae and first tarsal segment dark fuscous above. Thorax and forewings dark fuscous with a strong bluish-violet sheen, slightly paler in apical quarter, an ochreous-yellow, transverse fascia from $\frac{1}{3}$ to $\frac{3}{4}$ of costa to inner margin, scales in apical quarter with slightly darker tips forming a more or less definite line along base of the fuscous cilia; underside dark fuscous, towards apex fuscous, transverse fascia faintly indicated. Hindwings and cilia fuscous, underside as above.

♂-Genitalia : Fig. 1; tegumen very narrow, uncus with a median incision and two lateral, bluntly pointed projections; gnathos arms widely separate, slightly sinuate and converging, median projection pointed, a pair of short lateral projections directed anteriorly; ventral arms of transtillae well developed, rectangular before pointed apex, transverse bar absent; valvae subtriangular, curved, bluntly pointed; juxta subtriangular; aedoeagus five times longer than wide, vesica with six irregularly shaped, slender cornuti; vinculum moderate, ventral projections strongly produced into rounded processes. Slide no. G 7935, holotype.

♀-Genitalia : Fig. 7; papillae anales rounded, apophyses slender, straight, antapophyses a little shorter and stouter, slightly curved; along dorsal, apical edge a sclerotized band set with some irregularly shaped teeth; ostium and ductus bursae and bursa copulatrix membranous, bursa finely granulated, no signum. Slide no. G 7277, allotype.

Remarks : So far as could be established no related forms have been described. The pattern of forewings is quite different to all known species, including those from overseas regions.

Leafmine : Fig. 13; a narrow gallery, strongly contorted and slowly widening into blotchmine which includes usually early gallery; excrements in gallery in a narrow line in middle of channel, in blotch loosely scattered; egg on upper- or underside, usually along mid-rib or near margin; caterpillar yellow, head amber, leaves mine through upper epidermis; cocoon pyriform, dull reddish-brown.

Foodplants : *Ficus burttedavyi* Hutch. and *Ficus* species, Moraceae.

Distribution : Langebos (Alexandria Distr., C.P.), 20.XII.1954, Ac. no. 1415, holotype; Umhlanga Rocks (Inanda Distr., Nat.), 10.XII.1953, Ac. no. 961, allotype; idem, 9.XII.1953, Ac. no. 961, one ♀-paratype; and Pretoria North (Tvl.), September 1949 (G. van Son), two ♀-paratypes.

Stigmella vepricola spec. nov.

Plate 1, fig. 2; text figs. 2 and 14.

♂, 3.7 mm. Head and face ochreous-yellow; eyecaps, neckplumes and palpi straw-yellow, eyecaps with a few fuscous scales; antennae broken, fuscous above, underside pale straw-yellow. Abdomen blackish fuscous above, underside greyish with straw-yellowish scales mid-ventrally. Legs pale straw-yellow; fore coxae mixed with fuscous, femora, tibiae and tarsi dark fuscous above; middle tibiae dark fuscous above; hind tibiae and first tarsal segment fuscous above. Thorax and forewings pale straw-yellow, thinly irrorated with dark fuscous scales, at base and along costa to $\frac{1}{3}$ dark fuscous, at $\frac{2}{3}$ of costa to tornus an irregularly shaped, transverse, dark fuscous fascia, a little wider in middle; cilia whitish-straw-yellow around apex, pale fuscous along inner margin; underside dark fuscous, apex pale straw-yellow. Hindwings pale greyish fuscous, cilia slightly darker; underside fuscous.

♂-Genitalia : Fig. 2; tegumen narrow, uncus tapering to a rounded apex and with two small, lateral teeth; gnathos arms moderate, merging into a median projection which is rather slender; veniral arms of transtillae slender, pointed, transverse bar absent; valvae subtriangular, tapering to a bluntly pointed apex, ventral margin set with fine bristles; aedoeagus three and a half times longer than wide, apex with two blunt teeth, vesica with one cornutus and two irregularly shaped, sclerotized plates; vinculum moderate, broadly rounded anteriorly. Slide no. G 7949, holotype.

Remarks : Related to *Stigmella combretella* Vári from which it is distinguished by less irroration in apical area of forewing, and in genitalia where vinculum is much broader and rounded anteriorly.

Leafmine : Fig. 14; a very long and narrow gallery, slightly waved and gradually widening; excrements in early part of channel inconspicuous, gradually becoming arranged in a curved zig-zag line filling up channel for about three-quarters of width, in last stretch of gallery often in an irregular thick line in middle; egg on underside of leaf, arbitrarily in disc; caterpillar green, leaves mine through upper epidermis; cocoon oval, whitish-straw-yellow.

Foodplant : *Vepris undulata* (Thbg.) Verdoorn & Smith, Rutaceae.

Distribution : Umhlanga Rocks (Inanda Distr., Nat.), 16.XII.1953, Ac. no. 939, holotype.

Stigmella pappeivora spec. nov.

Plate 1, fig. 3; text figs. 3, 8 and 15.

♂ and ♀, 4.8 - 5.3 mm. Head, face, neckplumes, eyecaps and maxillary palpi whitish-straw-yellow, lower part of face with fuscous hairs, eyecaps mixed with dark fuscous scales, labial palpi fuscous; antennae $\frac{1}{2}$ to $\frac{2}{3}$, dark fuscous above, first segment and underside creamy-white, gradually suffused

with fuscous towards apex. Abdomen fuscous above, anal segment in male pale straw-yellow, underside pale fuscous mixed with pale straw-yellow scales mid-ventrally. Legs pale straw-yellow; fore coxae mixed with fuscous, tibiae and tarsi dark fuscous above; middle tibiae and tarsi irrorated with dark fuscous scales; hind tibiae towards apex and tarsi with a few fuscous scales only. Thorax and forewings whitish-straw-yellow, densely irrorated with fuscous scales, darkest in basal third, tips of scales around apex forming a rather regular fine line; cilia whitish-straw-yellow around apex, along inner margin pale greyish; underside fuscous, apex pale straw-yellow. Hindwings and cilia pale greyish, almost white in female; underside as above.

♂-*Genitalia* : Fig. 3; tegumen moderate, pseuduncus small, tongue like, with a few hairs at apex, uncus well developed, truncate; gnathos arms moderate, merging into a median projection, bluntly pointed; ventral arms of transillae slender, curved outwardly, transverse bar present, rather wide; valvae trapezoidal, style curved, pointed, cuiller with a well developed tooth, inner-side of valvae set with fine spikes; juxta narrow, bifid at apex; aedoeagus three times longer than wide, apex with two bluntly pointed teeth, vesica with three irregularly shaped cornuti; vinculum wide, truncate anteriorly. Slide no. G 7271, holotype.

♀-*Genitalia* : Fig. 8; papillae anales rounded, apophyses slender, straight, antapophyses same length, slightly curved towards apex; ostium bursae with a subtriangular, sclerotized plate; ductus bursae and bursa copulatrix membranous, bursa with two oblong, narrow, slightly curved signa, each with an irregular honeycomb-like network (in drawing only a small part drawn). Slide no. G 7272, allotype.

Remarks : Related to *Stigmella grandinosa* (Meyr.), but differing from it by paler groundcolour of face and forewings, and face not mixed with fuscous hairs; ♂-genitalia differ in pseuduncus, uncus, valvae and aedoeagus (Janse 1948, plate 87:7); ♀-genitalia differ in having more slender apophyses and ostium plate being single.

Leafmine : Fig. 15; a short gallery, widening rapidly into a blotch-like mine; excrements in early part of gallery in a thick, broken line in middle of channel, in later part irregularly deposited in loose clusters; egg usually on upperside and along mid-rib; caterpillar wax-yellow, head brownish, on ventral side with a narrow, brownish dot on each segment, leaves mine through upper epidermis; cocoon oval, whitish.

Foodplant : *Pappea capensis* E. & Z., Sapindaceae.

Distribution : Hartbeespoort Dam (Brits Distr., Tvl.), 3.IX.1952, Ac. no. 544, holotype; idem, 31.VIII.1952, Ac. no. 544, allotype; idem, 30.VIII—6.X.1952, Ac. no. 544, five ♂- and five ♀-paratypes.

Stigmella psarodes spec. nov.

Plate 1, fig. 4; text figs. 4 and 16.

♂, 4.8 mm. Head and face ochreous-yellow, lower part of face dark fuscous; eyecaps and neckplumes straw-yellow, eyecaps mixed with fuscous scales, palpi fuscous; antennae $\frac{1}{2}$, ochreous fuscous above, underside greyish-straw-yellow. Abdomen dark fuscous above, underside greyish fuscous. Legs fuscous, glossy. Thorax and forewings fuscous, tips of scales slightly darker, mixed with some pale violet scales, cilia fuscous; underside dark fuscous. Hindwings and cilia fuscous, underside as above.

♂-Genitalia: Fig. 4; tegumen moderate, pseuduncus rounded, rather narrow, uncus small, truncate; gnathos arms moderate, merging into a median, pointed projection; ventral arms of transtillae moderate, slender, slightly curved outwardly, transverse bar absent; valvae oval, cuiller with well developed, curved tooth, ventral margin irregularly dentate; aedoeagus almost four times longer than wide, apex with five finely pointed projections, vesica with one long cornutus and one long, irregularly shaped, sclerotized plate; vinculum moderate, anterior margin slightly incurved. Slide no. G 7950, holotype.

Remarks: Allied to *Stigmella royenicola* Vári and possibly to *S. xuthomitra* (Meyr.), but forewings much darker and eyecaps mixed with fuscous scales; ♂-genitalia differ in cuiller of valvae being well produced and having a curved tooth.

Leafmine: Fig. 16; a very irregular, semi-transparent blotchmine on upperside; excrements in loose clusters throughout blotch; egg on upperside, arbitrarily in disc; caterpillar yellowish, leaves mine through upper epidermis; cocoon oval, pale straw-yellow, a little flattened along edge.

Foodplant: *Maytenus undatus* (Thbg.) Blakelock (= *Gymnosporia deflexa* Sprague), Celastraceae.

Distribution: Louis Trichardt (Souipansberg Distr., Tvl.), 20.VII.1953, Ac. no. 730, holotype.

Stigmella krugeri spec. no.

Plate 1, fig. 5; text figs. 9 and 17.

♀, 4.4 mm. Head and face ochreous-yellow, eyecaps and neckplumes straw-yellow, palpi yellowish fuscous; antennae almost $\frac{2}{3}$, fuscous above, first segment and underside straw-yellow. Abdomen fuscous above, glossy, underside fuscous mixed with yellowish scales. Legs pale straw-yellow; fore coxae mixed with fuscous; fore, middle and hind tibiae and tarsi dark fuscous above. Thorax and forewings straw-yellow, basal $\frac{2}{5}$ of forewings with a few faintly fuscous scales, at base of costa slightly darker, apical $\frac{2}{5}$ of wing dark fuscous, whole wing with faintly bluish-violet, shiny scales; cilia whitish fuscous

around apex, slightly darker along inner margin; underside fuscous, towards apex dark fuscous. Hindwings and cilia pale fuscous, underside fuscous.

♀-*Genitalia* : Fig. 9; papillae anales broadly rounded, apophyses narrow, straight, antapophyses same length, slightly thicker; ostium bursae with an almost symmetrically winged, sclerotized plate with a round hole; ductus bursae and bursa copulatrix membranous, with two oblong signa, each with a regular honeycomb-like network. Slide no. G 7936, holotype.

Remarks : Related to *Stigmella vepricola*, but apical area of forewing entirely suffused with dark fuscous scales.

Dedication : Named in honour of the late State president S. J. P. Kruger, who founded the world's finest nature reserve.

Leafmine : Fig. 17; a long, narrow gallery, slightly wound, early part very narrow, gradually widening; excrements filling up channel in early part, later in a thick, broken line in middle, in last part rather loosely deposited; egg on upperside, arbitrarily in disc; caterpillar yellowish, leaves mine through upper epidermis; cocoon oval, pale ochreous-brown.

Foodplant : *Schotia brachypetala* Sond., Leguminosae.

Distribution : Skukuza (K.N.P., Tvl.), 25.IV.1952, Ac. no. 500, holotype.

Stigmella charistis spec. nov.

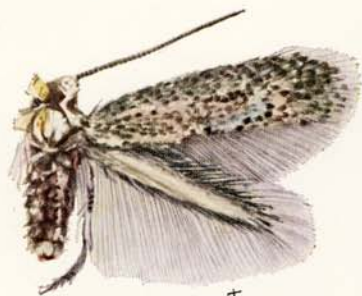
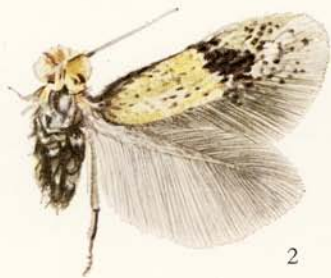
Plate 1, fig. 6; text figs. 5, 12 and 18.

♂ and ♀, 3.6 - 4 mm. Head, face, eyecaps, neckplumes and palpi pale straw-yellow; antennae $\frac{1}{2}$ to $\frac{2}{3}$, fuscous above, first segment and underside pale straw-yellow. Abdomen fuscous above, underside almost entirely pale straw-yellow, with some fuscous laterally. Legs pale straw-yellow; fore coxae mixed with fuscous, tibiae and tarsi dark fuscous above; middle tarsi with a few fuscous scales; hind tibiae fuscous above, tarsi with a few fuscous scales. Thorax and forewings smoky fuscous, wings at base and costa slightly darker, apex and cilia pale straw-yellow; cilia pale fuscous along inner margin; underside as above.

♂-*Genitalia* : Fig. 5; tegumen narrow, uncus with two lateral, bluntly pointed teeth; gnathos arms slender, widely separate, almost parallel, a pair of lateral, short projections directed anteriorly; ventral arms of transtillae rather short, curved outwardly, transverse bar present; valvae subtriangular, towards apex genily curved, truncate; aedoeagus four times longer than wide, vesica with some indefinite, irregular sclerotization, no cornuti; vinculum narrow, ventral projections tapering, pointed. Slide no. G 7273, holotype.

♀-*Genitalia* : Fig. 12; papillae anales rounded, apophyses very slender, slightly sinuate, antapophyses a little shorter, curved towards apex; ostium and ductus bursae and bursa copulatrix membranous, bursa with a very fine granulation, signum a very small, narrow tooth. Slide no. G 7274, allotype.

Remarks : Allied to *Stigmella nigrata* (Meyr.), but to be distinguished by the straw-yellow apex of forewings and the male not having the sexual



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blackish scales on hindwing; δ -genitalia with uncus and valvae slightly different (Janse 1948, plate 86:6).

Leafmine : Fig. 18; a long, slightly wound gallery, gradually widening; excrements in a fine line in middle of channel, becoming just slightly heavier towards end; egge on underside of leaf, arbitrarily in disc; caterpillar yellow, leaves mine through upper epidermis; cocoon oblong, almost white.

Foodplant : *Grewia occidentalis* L., Tiliaceae.

Distribution : Umhlanga Rocks (Inanda Distr., Nat.), 7.XII.1953, Ac. no. 899, holo- and allotype and four δ -paratypes; idem, 5.XII.1953, Ac. no. 899, one δ -paratype.

Stigmella liota spec. nov.

Plate 1, fig. 7; text figs. 11 and 19.

φ , 4 mm. Head and face ochreous-yellow; eyecaps, neckplumes and palpi pale straw-yellow; antennae $^{1/3}$, dark fuscous above, underside pale straw-yellow. Abdomen dark fuscous above, slightly glossy, underside greyish fuscous. Fore and middle legs pale straw-yellow, fore tibiae and tarsi dark fuscous above; hind legs dark fuscous, third to fifth tarsal segment straw-yellow. Thorax and forewings fuscous with a strong bluish-violet sheen to near apical quarter which is dark fuscous, at base of cilia a row of dark fuscous tipped scales; cilia fuscous; underside dark fuscous, glossy. Hindwings and cilia pale fuscous, underside as above.

φ -*Genitalia* : Fig. 11; papillae anales rounded, apophyses very slender, straight, antapophyses shorter and stouter; ostium and ductus bursae and bursa copulatrix membranous, bursa with a fine granulation, no signum. Slide no. G7948, holotype.

Remarks : Related to *Stigmella parinarella* Vári, but forewings without the silvery-white dots before apical area; φ -genitalia similar, but bursa copulatrix without a signum.

Leafmine : Fig. 19; a short, contorted, semi-transparent gallery, forming a blotch-like mine; excrements in early part filling up channel, in later part in a thick line in middle of channel; egg on underside of leaf, arbitrarily in disc; caterpillar yellow, leaves mine through lower epidermis; cocoon pyriform, dull straw-yellow.

Foodplant : *Ficus capensis* Thbg., Moraceae.

Distribution : Louis Trichardt (Soutpansberg Distr., Tvl.), 12.VI.1953, Ac. no. 800, holotype.

Stigmella craspedota spec. nov.

Plate 1, fig. 8; text figs. 6, 10 and 20.

δ and φ , 5.3 - 5.7 mm. Head and face ochreous dark fuscous; eyecaps, neckplumes and palpi pale straw-yellow, eyecaps with a few fuscous scales, palpi slightly greyish tinged; antennae $^{2/3}$ fuscous above, in female each

segment narrowly dull yellowish fuscous at base, underside dull yellowish fuscous. Abdomen fuscous above, underside greyish fuscous. Legs pale straw-yellow; fore coxae greyish fuscous, tibiae and tarsi dark fuscous above; middle legs densely irrorated with dark fuscous scales; hind tibiae mixed with a few and tarsi with some more dark fuscous scales. Thorax and forewings pale straw-yellow, densely irrorated with fuscous scales and a pale violet sheen all over the wing, in male a little more pronounced; cilia pale greyish fuscous around apex, slightly darker along inner margin; underside in male yellowish-grey fuscous, along edge of wing with blackish fuscous fine scales and hairs; in female plain yellowish-grey fuscous. Hindwings in male yellowish-grey fuscous, along edge thickly set with blackish fuscous fine scales and hairs, cilia pale greyish fuscous; hindwings and cilia in female greyish fuscous; underside in male greyish fuscous, along edge of wing broadly set with blackish fuscous scales and hairs; in female plain greyish fuscous.

♂-*Genitalia* : Fig. 6; tegumen broad, pseuduncus not produced, uncus pointed; gnathos arms moderate, merging into a stout, median projection; ventral arms of transtillae slender, curved outwardly; transverse bar very narrow; valvae trapezoidal, style pointed, with one long bristle, cuiller with a few irregular teeth; juxta narrow, apex bifid; aedoeagus very stout, two and a half times longer than wide, apex tapering, vesica with four irregularly shaped cornuti; vinculum wide, rounded anteriorly. Slide no. G 7934, holotype.

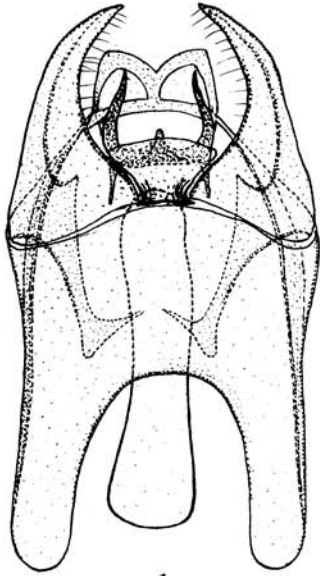
♀-*Genitalia* : Fig. 10; papillae anales broadly rounded, apophyses rather short, slender, a little curved, antapophyses slightly longer, curved towards apex; ostium bursae with two irregularly shaped, heavily sclerotized plates, ductus bursae and bursa copulatrix membranous, bursa with two oblong, narrow signa, each with an irregular honeycomb-like network. Slide no. G 7278, allotype.

Remarks : Strongly resembling *Stigmella royenicola* Vári, but easily distinguished from that species by its sexual dimorphism of male; ♀-*genitalia*, however, agree better with those of *S. oleivora* Vári, except for the ostium plates.

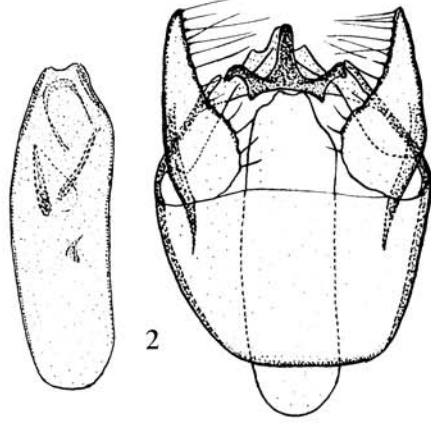
Leafmine : Fig. 20; an irregularly shaped, oblong, semi-transparent blotchmine, usually near edge of disc; excrements in early mine inconspicuous, later in two thick, almost parallel lines; egg on upperside near edge of leaf; caterpillar yellow, ventrally with a small dot on each segment, leaves mine through upper epidermis; cocoon oval, a little flattened along edge, dull greenish-straw-yellow.

Foodplant : *Maytenus undata* (Thbg.) Blakelock, Celastraceae.

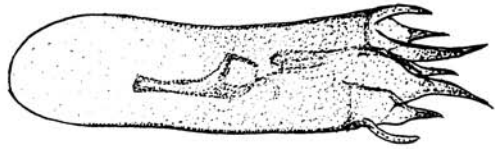
Distribution : Plettenberg Bay (Knysna Distr., C.P.), 30.IV.1954, Ac. no. 1125, holotype; idem, 21.IV.1954, Ac. no. 1125, allotype and one ♀-paratype; and idem, 22.IV.1954, Ac. no. 1125, one ♀-paratype.



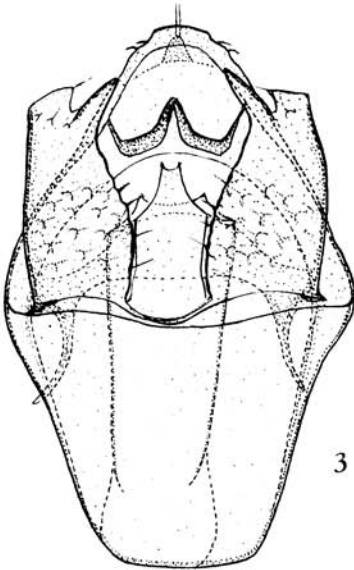
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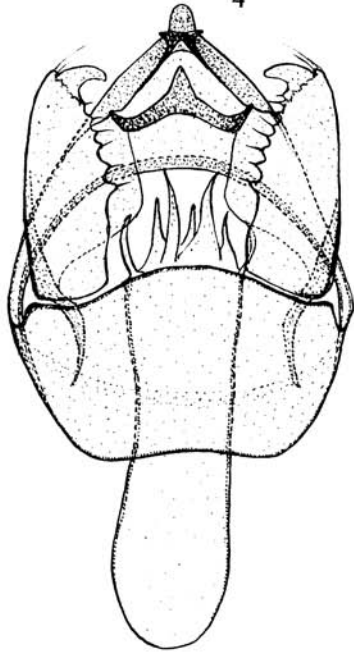
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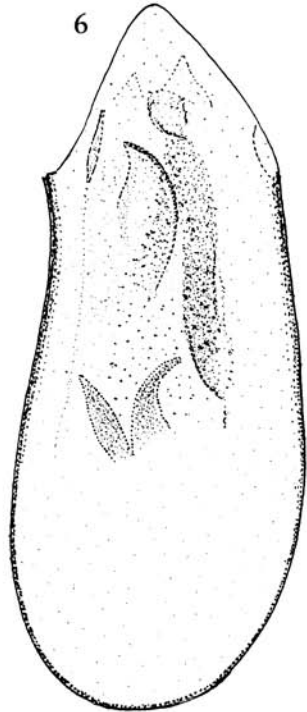
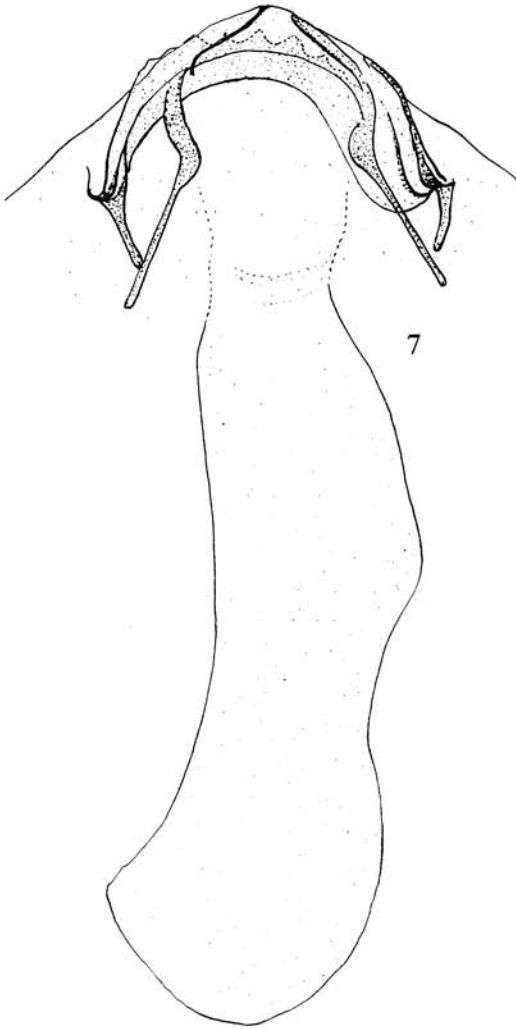
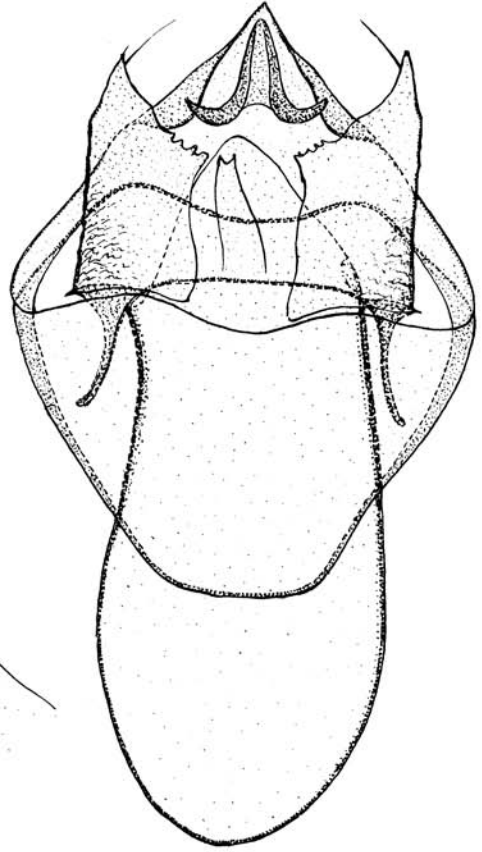
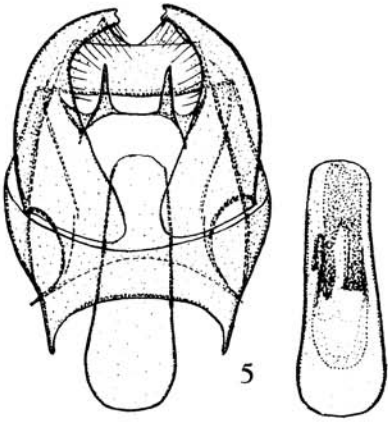


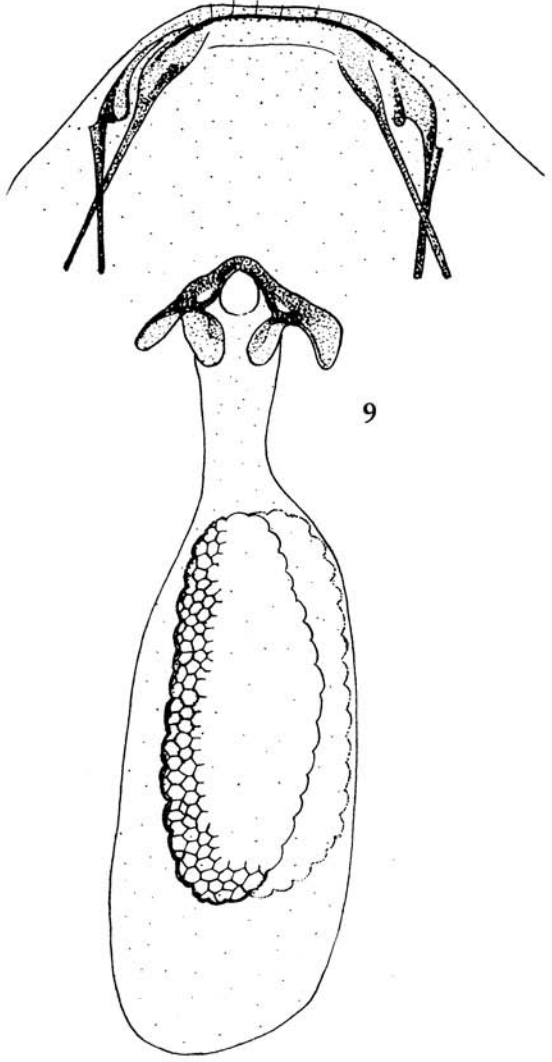
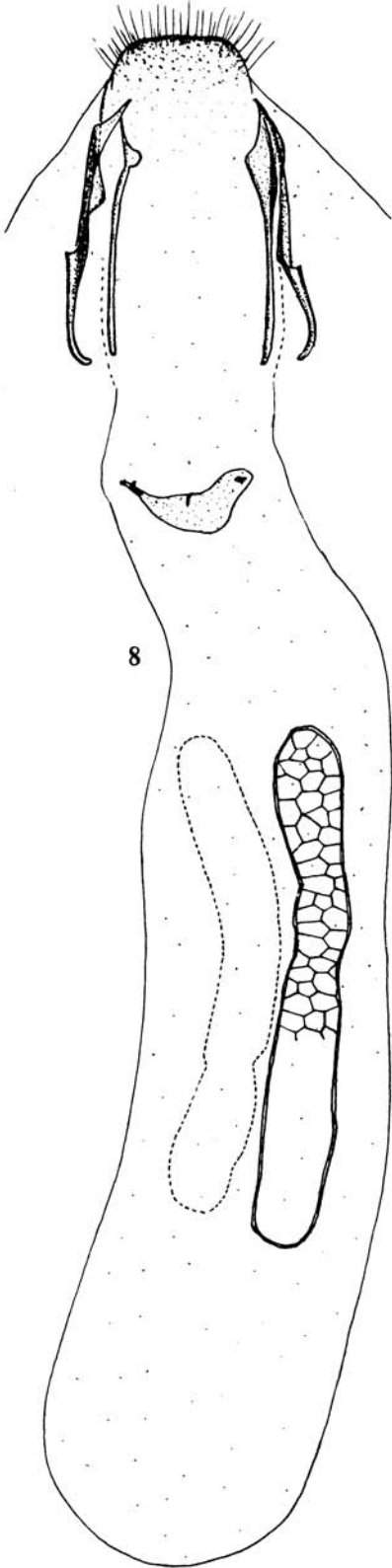
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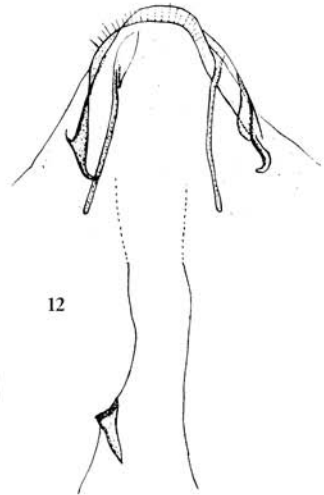
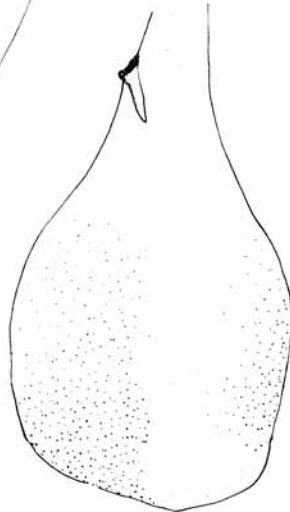
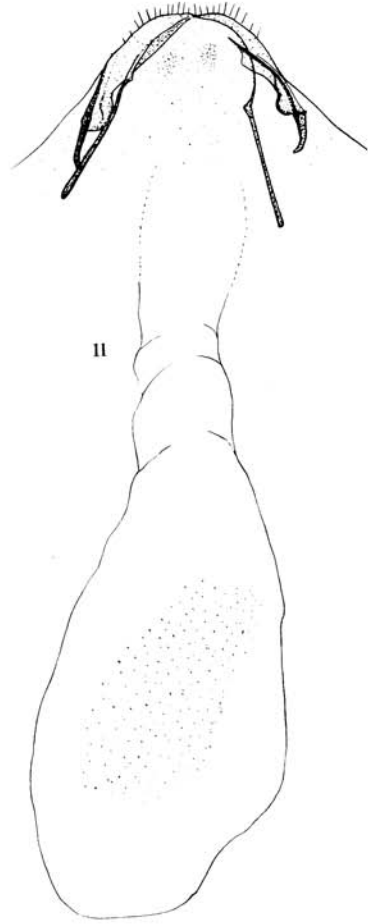
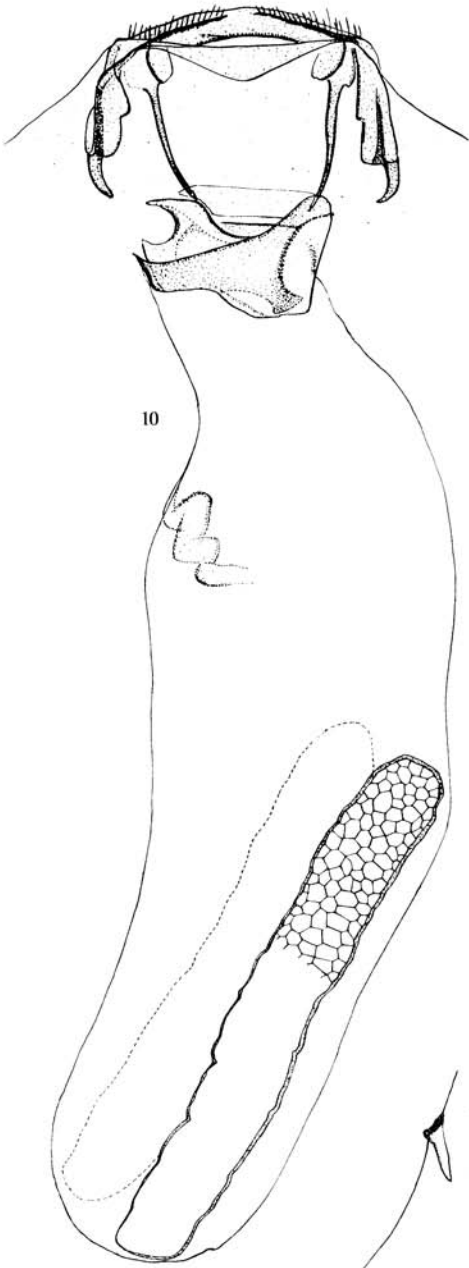


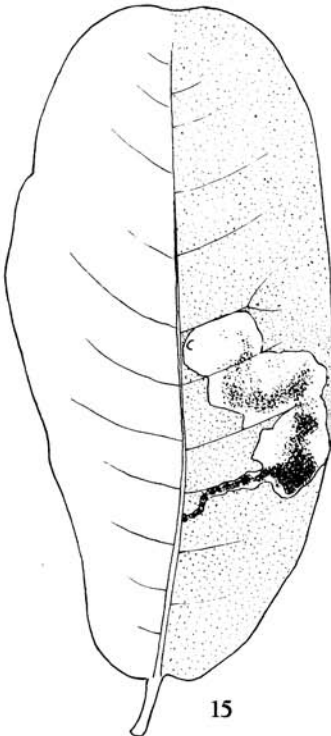
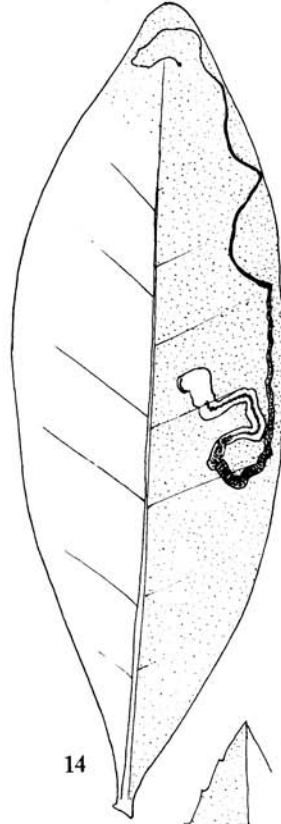
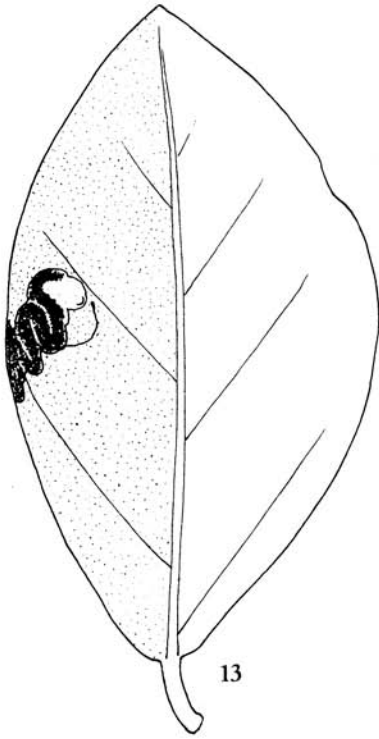


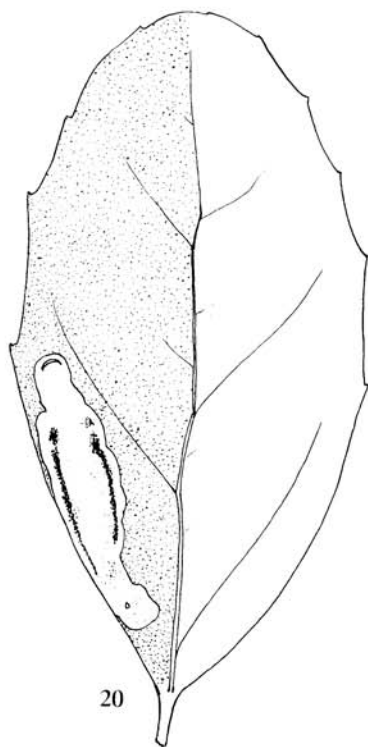
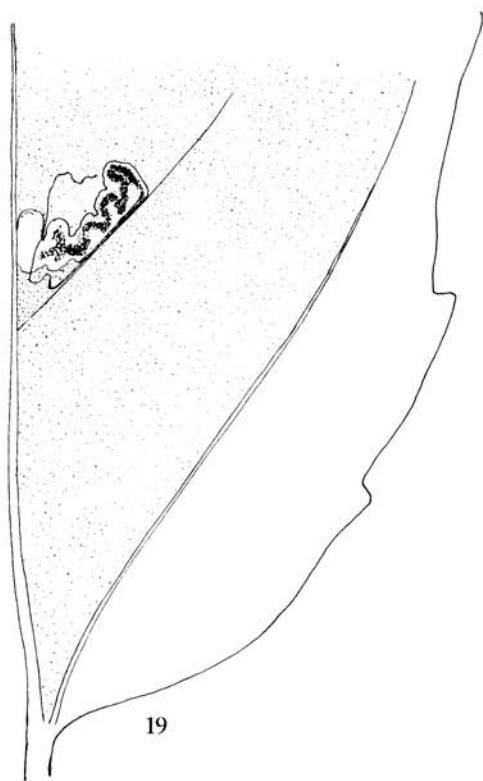
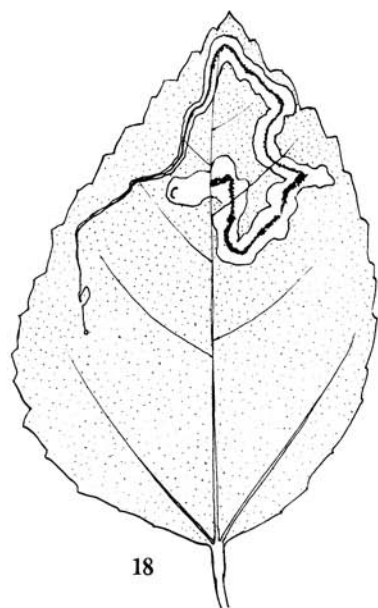
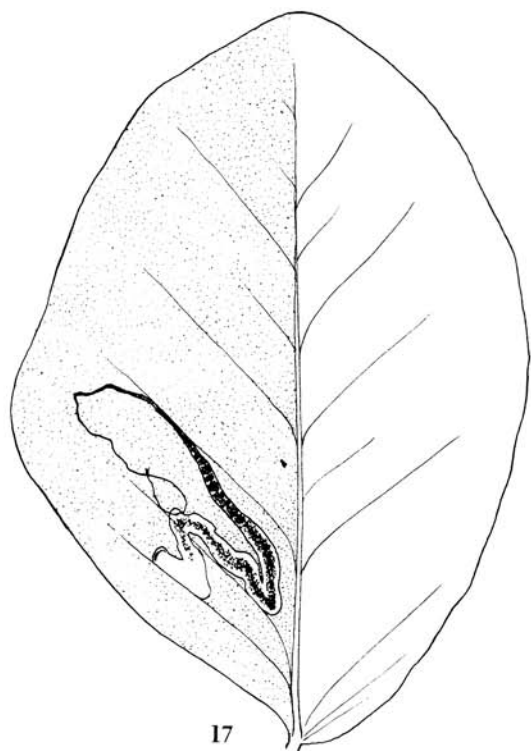


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PLATE 1.

- Fig. 1. *Stigmella platyzona* spec. nov.
Fig. 2. *S. vepricola* spec. nov.
Fig. 3. *S. pappeivora* spec. nov.
Fig. 4. *S. psarodes* spec. nov.
Fig. 5. *S. krugeri* spec. nov.
Fig. 6. *S. charistis* spec. nov.
Fig. 7. *S. liota* spec. nov.
Fig. 8. *S. craspedota* spec. nov.

TEXT FIGURES.

1. *Stigmella platyzona*; 2. *S. vepricola*; 3. *S. pappeivora*; 4. *S. psarodes*. All figures x200.
5. *Stigmella charistis*; 6. *S. craspedota*; 7. *S. platyzona*. All figures x200.
8. *Stigmella pappeivora*; 9. *S. krugeri*. All figures x200.
10. *Stigmella craspedota*; 11. *S. liota*; 12. *S. charistis*. All figures x120.
13. *Stigmella platyzona*; 14. *S. vepricola*; 15. *S. pappeivora*; 16. *S. psarodes*. Figs. 13 and 15 x2, 14 and 16 x1½.
17. *Stigmella krugeri*; 18. *S. charistis*; 19. *S. liota*; 20. *S. craspedota*. Figs. 17, 18 and 20 x2, fig. 19 x1½.