

## The Male Genitalia of the New Zealand Thyrididae, Pyralidae, Galleriidae, and Phycitidae.

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### THYRIDIDAE.

#### **Morova subfasciata** Walk. (Fig. 1).

This is the only New Zealand representative of the family. According to Meyrick it occurs also in Fiji.

Tegumen long and rather narrow, fused with vinculum; uncus long, thin, curved, its sides strongly infolded basally and armed with a number of hairs. Gnathos absent. Aedeagus small, tubular, slightly bent near apex. Juxta consisting of a pair of finger-like processes lying beneath aedeagus. Harpes simple, broad at base, thence narrowed to apex. Vinculum very narrow with saccus hardly developed.

### PYRALIDAE.

Three species occur in New Zealand, all probably accidental introductions.

#### **Endotricha pyrosalis** Guen. (Fig. 2).

This species has been recorded once only from New Zealand and till further examples are secured it can hardly be regarded as established. It is well known in Australia.

Eighth segment normal in shape, but with long hair on upper and lower posterior margins and a pair of long hair-tufts on the anterior dorso-ventral conjunctiva. Tegumen broad, short, a pair of rounded plates at base of uncus; uncus broad, truncate, strongly constricted below apex. Gnathos absent. Aedeagus short, truncate apically, ductus ejaculatorius entering well above base. Juxta small, shield-shaped. Harpes large, broad, a well-marked saccus with curved, free apex, clothed with moderately long fine hair within, one or more long, apically truncate straight hair-scales springing from upper margin at about  $\frac{2}{3}$  (only one hair-scale was present on one harpe in the only specimen available for examination, but from their exposed situation such structures might very easily have been rubbed off). Transtilla a pair of plates, closely attached apically to harpes and connected basally by a plain band. Vinculum with a short rectangular saccus.

#### **Diploseustis perieralis** Walk. (Fig. 3).

Occurs commonly in Australia and is generally distributed throughout New Zealand.

Tegumen weak, narrow, fused with vinculum; uncus a small, weak-pointed process at right angles to tegumen. Gnathos absent. Aedeagus long, stout, tubular, ductus ejaculatorius entering at about middle, apex with a small stout thorn-like process directed ventrally and a pair of scobinate lateral structures. Harpes completely fused basally, forming a deep pouch, from the inner side of which arises a pair of chitinous plates; these plates evidently act as guides or supports to the aedeagus and are very probably really a part of the juxta, which has become fused with the harpes. Vinculum with short saccus and short lateral round-pointed arms.

***Pyralis farinalis* L. (Fig. 4).**

The meal moth appears to be distributed throughout New Zealand, but it is not often met with outside of bakeries or graneries.

Tegumen short, broad; uncus short, broad, rounded. Gnathos with arms directed backwards to near base of tegumen, thence turning abruptly downwards and fusing centrally to end in sharp hooked apex. Aedeagus short, apical third sharply bent, ductus ejaculatorius entering at  $\frac{2}{3}$  and ending in stout curved well chitinised penis. Harpes broad, ventral margin bent obliquely upwards beyond middle and running to rather narrow apex; a rather long editum present. Vinculum narrow; saccus not developed.

GALLERIIDAE.

The two well-known wax moths, *Galleria mellonella* L. and *Meliphora grisella* Fabr. have been established in New Zealand for many years. They are both common also in Australia.

***Galleria mellonella* L. (Fig. 5).**

Tegumen very broad, fused with vinculum; uncus truncate with lateral angles produced into short points. Gnathos absent. Aedeagus very short, curved, apex with very complicated structure lying within membranous sleeve (anellus?), ductus ejaculatorius entering half way along organ. Juxta a large convex more or less rounded plate. Harpes very broad, apex broadly rounded, lower margin produced into a point beyond middle, sparsely clothed with short weak hair within. Vinculum with short, pointed saccus.

***Meliphora grisella* Fabr. (Fig. 6).**

Tegumen broad, fused with vinculum; uncus divided into a pair of ventrally directed points. Gnathos absent. Aedeagus longer than in *Galleria mellonella*, straight, ductus ejaculatorius entering much

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Lettering: ae, aedeagus; at, anal tube; de, ductus ejaculatorius; e, editum; g, gnathos; h, harpe; hs, large hair-scales on harpes of *Endotricha pyrosalis*; j, juxta; p, penis; pu, processes at the base of the uncus in *Endotricha pyrosalis*; sa, saccus; sc, sacculus; ss, scobinate structures on the apex of the aedeagus in *Diplopseustis perieralis*; ta, external "thorns" of the aedeagus; teg, tegumen; tr, transtilla; u, uncus; vin, vinculum. Unless otherwise stated the figures of the genitalia (A) are from a lateral view; those of the harpe (B) represent the inner surface of the right organ).

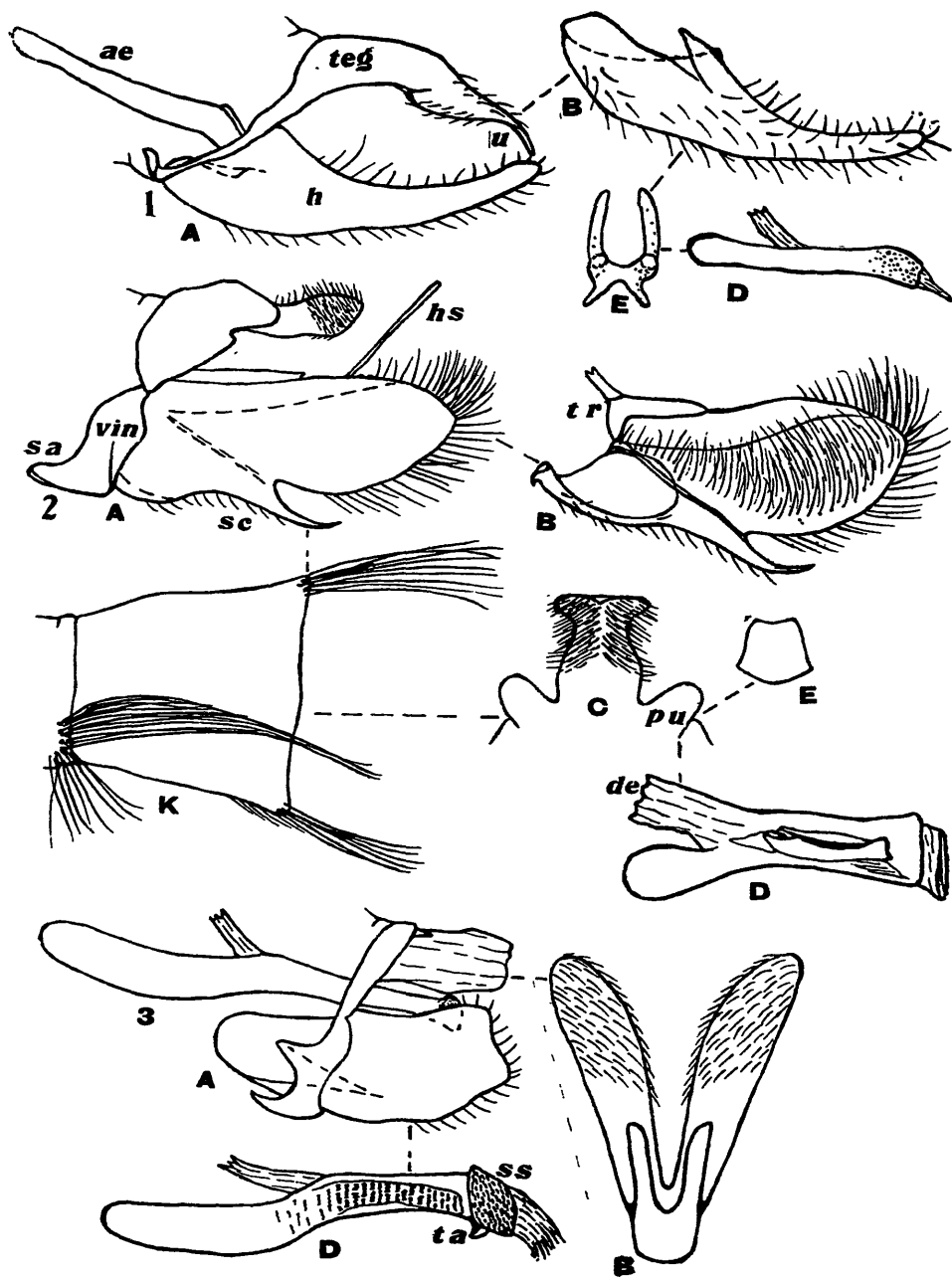


FIG. 1.—*Morova subfasciata* Walk. A, male genitalia. B, harpe, D, aedeagus. E, juxta.  
 FIG. 2.—*Endotricha pyrosalis* Guen. A, male genitalia. B, harpe. C, uncus, dorsal view. D, aedeagus. E, juxta. K, eighth segment, lateral view.  
 FIG. 3.—*Diplopeustis perieralis* Walk. A, male genitalia. B, harpes, ventral view. D, aedeagus.

nearer base, a pair of spoon-shaped structures on anellus near apex. Juxta a rounded plate with lower margin much more strongly chitinised. Harpes broad, much narrowed on apical half, incurved lower margin with small irregular process at about half, sparsely haired within. Vinculum with moderate rounded saccus.

#### PHYCITIDAE.

The Phycitids of New Zealand are all, with one exception—*Delogenes limadoxa* Meyr.—found in other countries. *D. limadoxa* occurs abundantly in subalpine regions in the middle of the South Island and is therefore probably truly indigenous. The distinctive feature of the genitalia, as compared with the three preceding families, is the presence of a well-developed gnathos.

#### **Sporophyla oenospora** Meyr. (Fig. 7).

Eighth sternite narrowed, with a pair of dorso-lateral bunches of long hair-scales. Tegumen long; uncus broad, scoop-like. Gnathos a pair of plain bands, arching caudally, fusing in the centre and projecting ventro-caudally in the form of a hooked process. Aedeagus short, simple, tubular. Juxta a rounded plate, excavated apically. Harpes simple, clothed with backwardly-directed short hair on apical  $\frac{1}{3}$ , upper margin folded in at apex. Vinculum not fused with tegumen; saccus broad and moderately long.

#### **Crocydopora cinigerella** Walk. (Fig. 8).

Eighth sternite with paired tufts of hair as in *Sporophyla oenospora*. Tegumen as in *oenospora*, but broader. Gnathos with apical hook shorter. Aedeagus swollen basally and apically, with a lateral pair of dense short pointed brushes of hair on anellus near apex. Juxta as in *oenospora*. Harpes simple, rather broad, upper margin deeply excavate on apical  $\frac{1}{3}$ . Vinculum not fused with tegumen; saccus moderately long and broad, but considerably narrowed apically.

#### **Plodia interpunctella** Hubn. (Fig. 9).

*Plodia* and the two following genera, *Ephestia* and *Delogenes*, are remarkable for the modification of the eighth segment, both tergite and sternite being affected.

Eighth tergite very weakly chitinised except for a narrow T-shaped median area; eighth sternite membranous except for a narrow band round anterior margin; on the conjunctiva is a pair of brushes of stout short hair-scales. Tegumen with lateral arms wide apart; uncus rather narrow, apex rounded. Gnathos of usual type, but not extending far caudally. Aedeagus stout at base, gradually attenuated to apex, ductus ejaculatorius entering at base; near the apex of the aedeagus and lying between it and the base of the harpes are a pair of small crescentic chitinous plates, perhaps representing the trans-tilla. Juxta a small heart-shaped plate. Harpes broad, narrowed basally, rounded apically, upper margin produced into a point near apex, densely clothed within with fine long hair. Vinculum with moderately long broad saccus slightly narrowed to apex.

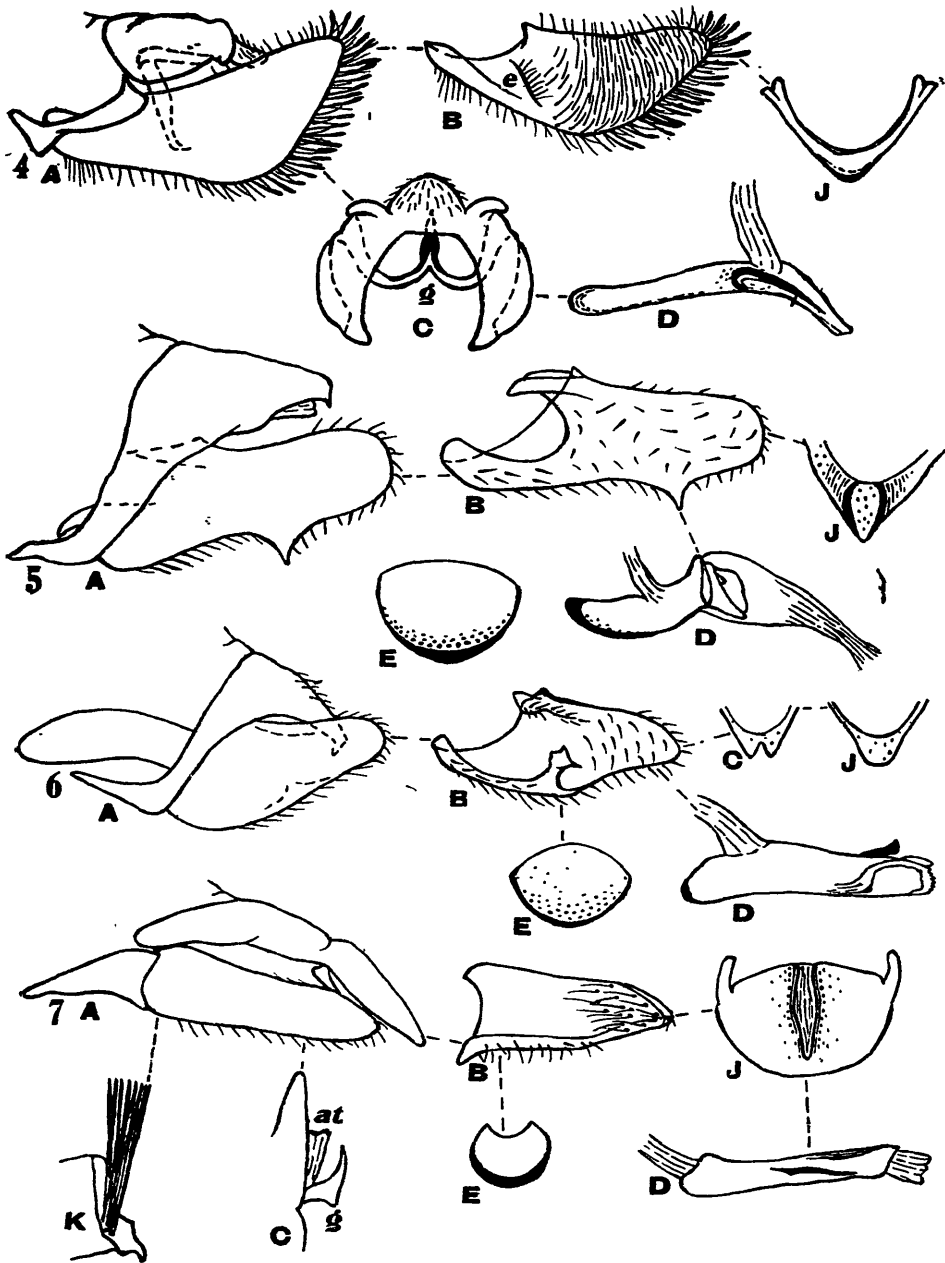


FIG. 4.—*Pyralis farinalis* L. A, male genitalia. B, harpe. C, tegumen, dorsal view. D, aedeagus. J, vinculum.  
 FIG. 5.—*Galleria mellonella* L. A, male genitalia. B, harpe. D, aedeagus. E, juxta. J, vinculum.  
 FIG. 6.—*Meliphora grisella* Fabr. A, male genitalia. B, harpe. C, uncus, caudal view. D, aedeagus. E, juxta. J, vinculum.  
 FIG. 7.—*Sporophyla oenospora* Meyr. A, male genitalia. B, harpe. C, uncus, lateral view, to show gnathos and anal tube. D, aedeagus. E, juxta. J, vinculum. K, eighth segment, lateral view.

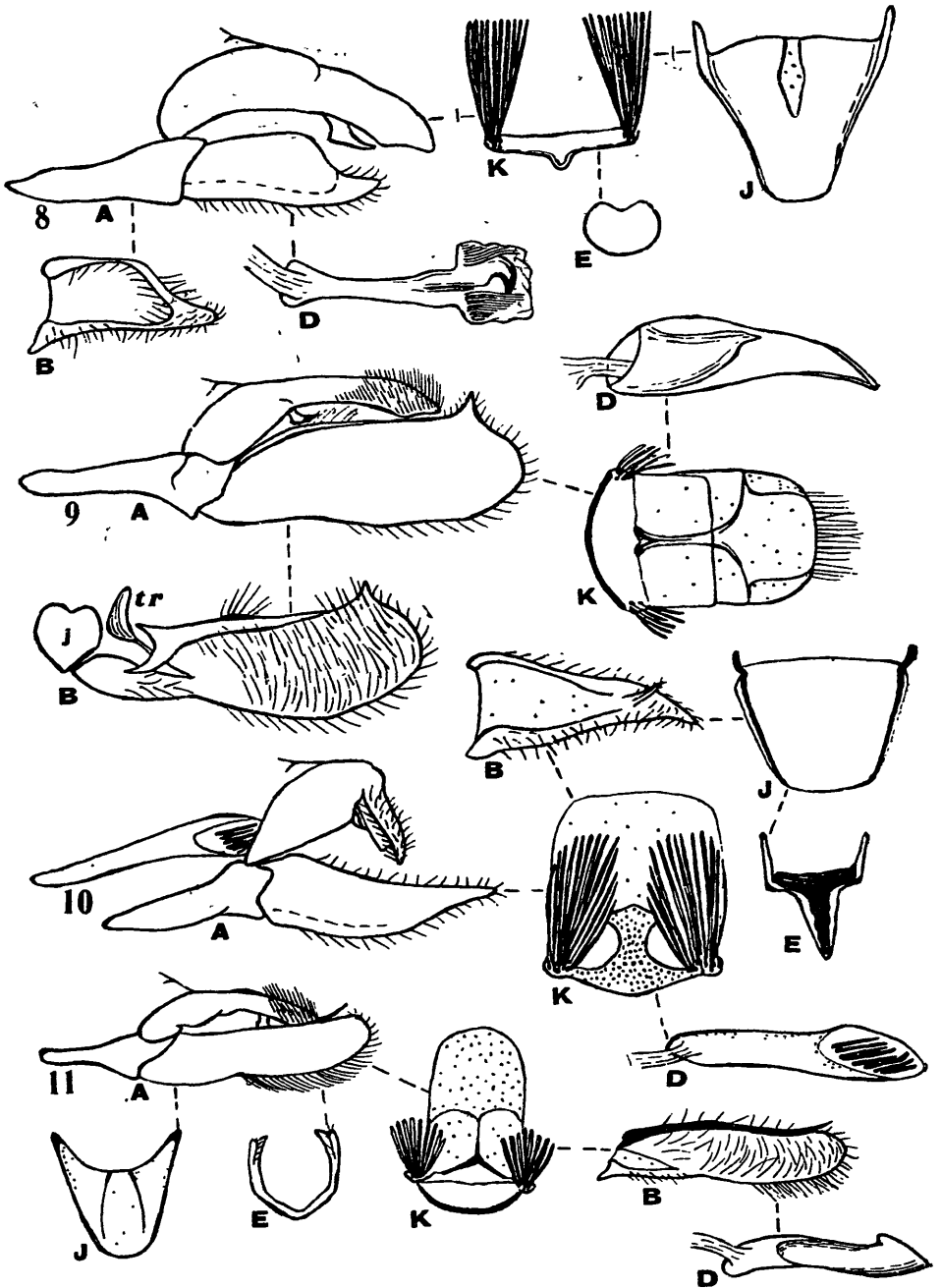


FIG. 8.—*Crocydopora cinigerella* Walk. A, male genitalia. B, harpe. D, aedeagus. E, juxta. J, vinculum. K, eighth segment, ventral view.  
 FIG. 9.—*Plodia interpunctella* Hubn. A, male genitalia. B, harpe with juxta and transtilla. D, aedeagus. K, eighth segment, ventral view.  
 FIG. 10.—*Delogenes limadoxa* Meyr. A, male genitalia. B, harpe. D, aedeagus. E, juxta. J, vinculum. K, eighth sternite.  
 FIG. 11.—*Ephestia kuehniella* Z. A, male genitalia. B, harpe. D, aedeagus. E, juxta. J, vinculum. K, eighth segment, ventral view.

**Delogenes limadoxa** Meyr. (Fig. 10).

Eighth sternite membranous with small regular chitinised area basally, from the sides of which spring a pair of dense brushes of stout long hair-scales; eighth tergite normal, but bearing an apical fringe of long hairs. Tegumen with lateral arms widely separated; uncus bent at right angles, blunt, scoop-like. Gnathos with apical hook small. Aedeagus stout, swollen apically with a dense patch of stout cornuti. Juxta a thin forked structure unlike that of any other Phycitid examined. Harpes long, triangular, a pointed process near apex projecting over upper margin. Vinculum not fused to tegumen, but closely attached, broad; saccus moderately long, slightly narrowed to truncate apex.

**Ephestia kuehniella** Z. (Fig. 11).

Eighth tergite extending posteriorly more than usual, the basal portion being membranous except for a narrow median area having the shape of an inverted Y; eighth sternite reduced to a thin chitinous basal band; between the bases of tergite and sternite are brushes of rather short stout hair-scales. Tegumen rather narrow; uncus rather narrow, apex rounded. Gnathos with arms rod-like, straight, apical hook very small. Aedeagus stout, sinuate, apex somewhat expanded. Juxta very small, U-shaped. Harpes long, narrow, upper margin folded, thickened and apically free as a short pointed projection. Vinculum not fused; saccus moderately long and broad, evenly narrowed to rounded apex.

**E. elutella** Hubn. (Fig. 12).

Eighth tergite projecting to a rounded point apically, four pairs of modified scale-patches at base, 1st (outer) a group of long hairs, 2nd a patch of short stiff scales, 3rd a single long stiff broad scale, 4th a large patch of modified long scales diminishing in length inwardly; eighth sternite reduced to a narrow chitinised basal strip. Tegumen moderately broad, lateral arms wide apart; uncus not differentiated, broadly rounded. Gnathos band-like with apical hook very small and bearing a pair of small processes directed caudally. Aedeagus very stout, tubular, apex slightly expanded, a long stout slightly curved cornutus within. Transtilla a pair of twice right-angled processes loosely connected to bases of harpes. Juxta a pair of short conical lobes with a few hairs at apex. Harpes simple, foot-shaped, clothed within with moderately long fine hair. Vinculum with long and broad saccus.

**Homoeosoma farinaria** Turn. (Fig. 13).

Tegumen broad; uncus broad, rounded apically. Gnathos of usual type, hook prominent. Aedeagus long, tubular, apex slightly dilated, truncate. Juxta a small plate fused to anellus and not definitely to be delimited. Harpes long, narrowest towards base, apex broadly rounded, clothed with fine and rather long hair within; a minute editum present. Vinculum produced into a rather long and broad saccus.

**H. vagella** Z. (Fig. 14).

Tegumen similar to *H. farinaria*, but uncus broader basally and apex devoid of hair. Gnathos with hook less prominent. Aedeagus short, stout, shortly bilobed apically. Juxta proportionately larger than *farinaria*. Harpes moderately long, apical  $\frac{1}{3}$  of ventral margin somewhat oblique, apex regularly rounded; editum larger than in *farinaria*. Vinculum moderately broad; saccus much shorter than in *farinaria*.

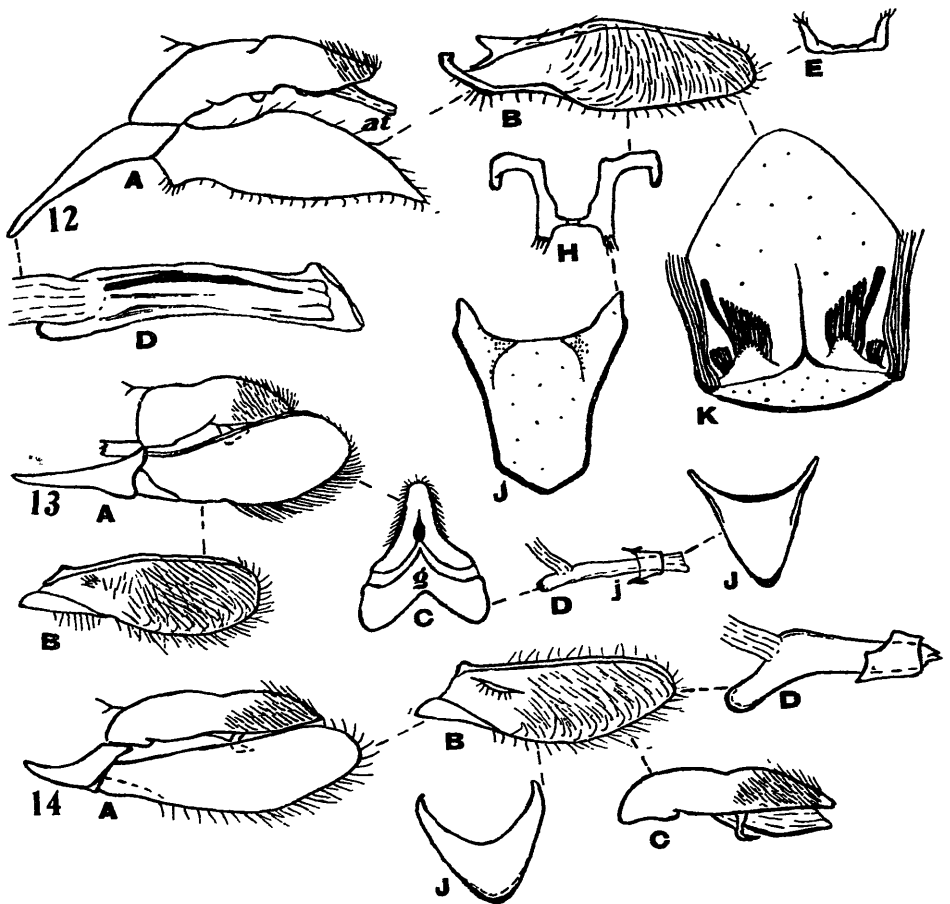


FIG. 12.—*E. elutella* Hubn. A, male genitalia. B, harpe. D, aedeagus. E, juxta. H, transtilla. J, vinculum. K, eighth segment, dorsal view.

FIG. 13.—*Homoeosoma farinaria* Turn. A, male genitalia. B, harpe. C, tegumen, ventral view. D, aedeagus. J, vinculum.

FIG. 14.—*H. vagella* Z. A, male genitalia. B, harpe. C, tegumen, lateral view. D, aedeagus. J, vinculum.