

## STUDIES ON THE SPIRACLES AND CEPHALOPHARYNGEAL SCLERITES OF THE LARVAE OF THE AGROMIZID FLIES (Rept. V)

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### ***Phytomyza minuscula*** Goureau, 1851 (Fig. 1)

The first instar:— Body length about 0.5 mm. Anterior spiracle absent. Posterior spiracle papilla-like and its apical part about 0.003 mm. wide and as long as wide, with about 3 bulbs. Cephalopharyngeal sclerites about 0.12 mm. long. Mandible about 0.02 mm. long, with 2 teeth, upper tooth pale brown and other parts almost dark brown. Paraclypeal-phragma brown, but outer margin dark brown. Dorsal horn broad and almost blackish brown. Ventral horn almost pale brown and without hole.

The second instar:— Body length about 0.8 mm. Anterior spiracle mushroom-like and its apical part about 0.01 mm., wide and as long as wide, with about 6 bulbs. Posterior spiracle papilla-like and its apical part about 0.02 mm. wide and about 0.01 mm. long, with about 10 bulbs. Cephalopharyngeal sclerites about 0.18 mm. long, very different in shapes from those of the first instar. Mandible about 0.024 mm. long, with 2 teeth, brownish black, but upper tooth pale brown. Paraclypeal-phragma brownish black. Apical part and inner margin of dorsal horn slightly pale brown, inner side of ventral horn almost pale brown, with a hole. Reduced lower branch of dorsal horn remarkable.

The third instar:— Body length about 1.6 mm. Anterior spiracle mushroom-like and its apical part about 0.04 mm. wide and about 0.03 mm. long, with 8–10 bulbs. Posterior spiracle branched in dichotomy, and its apical part about 0.08 mm. wide and about 0.04 mm. long, with 14–18 bulbs. Trachea twisted. Cephalopharyngeal sclerites resembling those of the second instar but mandible wholly black, with 2 teeth. Cephalopharyngeal sclerites about 0.26 mm. long and mandible about 0.057 mm. long. Middle part of dorsal horn slightly brown. Right mandible a little longer than left one. Length of ventral horn a little shorter than half the length of dorsal horn.

Biological notes:— It makes serpentine mine on the leaf of *Thalictrum aquilegifolium* L. and other *Thalictrum* spp. in spring and autumn.

### ***Phytomyza esakii*** Sasakawa, 1955 (Fig. 2)

The first instar:— Body length about 0.7 mm. Anterior spiracle absent. Posterior spiracle papilla-like, its apical part about 0.004 mm. wide, as long as wide, with 3 bulbs. Cephalopharyngeal sclerites about 0.18 mm. long. Mandible about 0.025 mm. long, with a tooth, blackish brown, but tooth pale brown. Anterior half of paraclypeal-phragma pale brown, but its basal part and outer margin deep brown.

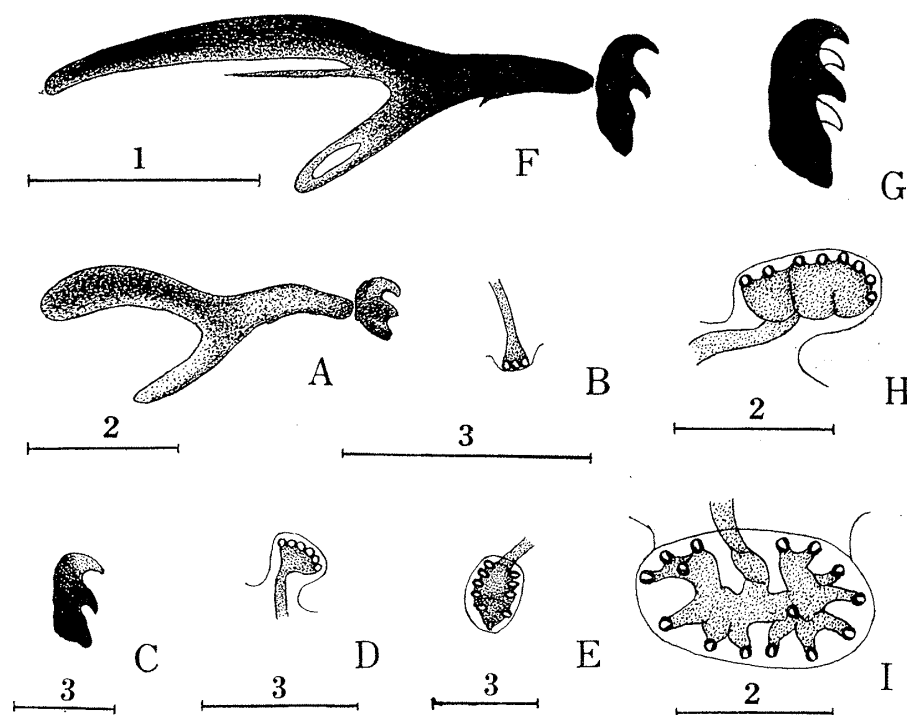


Fig. 1. *Phytomyza minuscula* Goureau.

A. Cephalopharyngeal sclerites of the first instar larva (lateral aspect). B. Right hand posterior spiracle of the same larva. C. Mandible of the second instar larva (lateral aspect). D. Right hand anterior spiracle of the same larva. E. Right hand posterior spiracle of the same larva. F. Cephalopharyngeal sclerites of the third instar larva (lateral aspect). G. Mandible of the same larva (lateral aspect). H. Right hand anterior spiracle of the same larva. I. Right hand posterior spiracle of the same larva.

1: Scale (0.1 mm.). 2: Scale (0.05 mm.). 3: Scale (0.025 mm.).

Dorsal horn very long, almost blackish brown, but its inner margin pale brown. Outer margin of ventral horn deep brown, but other part pale brown, and its inner margin almost transparent. Ventral horn without hole.

The second instar:— Body length about 1.2 mm. Anterior spiracle mushroom-like, its apical part about 0.016 mm. wide, about 0.02 mm. long, with about 6 bulbs. Posterior spiracle branched in dichotomy, and its apical part about 0.036 mm. wide, about 0.018 mm. long, with 6–7 bulbs on each branch. Cephalopharyngeal sclerites about 0.25 mm. long, different in shape from those of the first instar. Mandible black, about 0.036 mm. long, with 2 teeth, but upper tooth pale brown, lower tooth broad with 2 minute toothlets along lower margin. Paraclypeal-phragma brownish black, but apical part of dorsal horn slightly pale brown, and inner side of ventral horn pale brown. Reduced lower branch of dorsal horn distinct. Ventral horn with a hole.

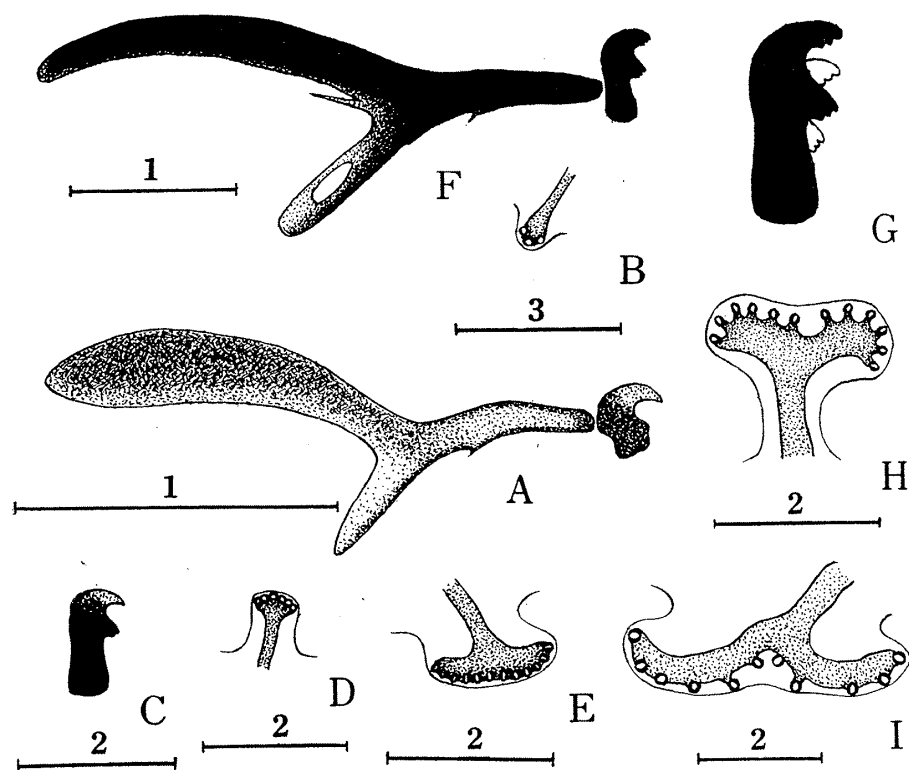


Fig. 2. *Phytomyza esakii* Sasakawa.

A. Cephalopharyngeal sclerites of the first instar larva (lateral aspect). B. Right hand posterior spiracle of the same larva. C. Mandible of the second instar larva (lateral aspect). D. Right hand anterior spiracle of the same larva. E. Right hand posterior spiracle of the same larva. F. Cephalopharyngeal sclerites of the third instar larva (lateral aspect). G. Mandible of the same larva (lateral aspect). H. Right hand anterior spiracle of the same larva. I. Right hand posterior spiracle of the same larva.

The third instar:— Body length about 2.7 mm. long. Anterior spiracle branched in dichotomy, its apical part about 0.06 mm. wide, as long as wide, with about 6 bulbs on each branch. Posterior spiracle branched in dichotomy, its apical part about 0.12 mm. wide, about 0.04 mm. long, with 11–15 bulbs. Cephalopharyngeal sclerites resembling those of the second instar, about 0.36 mm. long. Mandible wholly black, about 0.053 mm. long, with 2 broad teeth, each tooth with 3 minute toothlets along lower margin. Paraclypeal-phragma more blackish. Right mandible a little longer than left one. Length of ventral horn a little shorter than half the length of dorsal horn.

Biological notes:— It makes serpentine mines on the upper side of the leaf of *Clematis apiifolia* DC. in spring and summer.

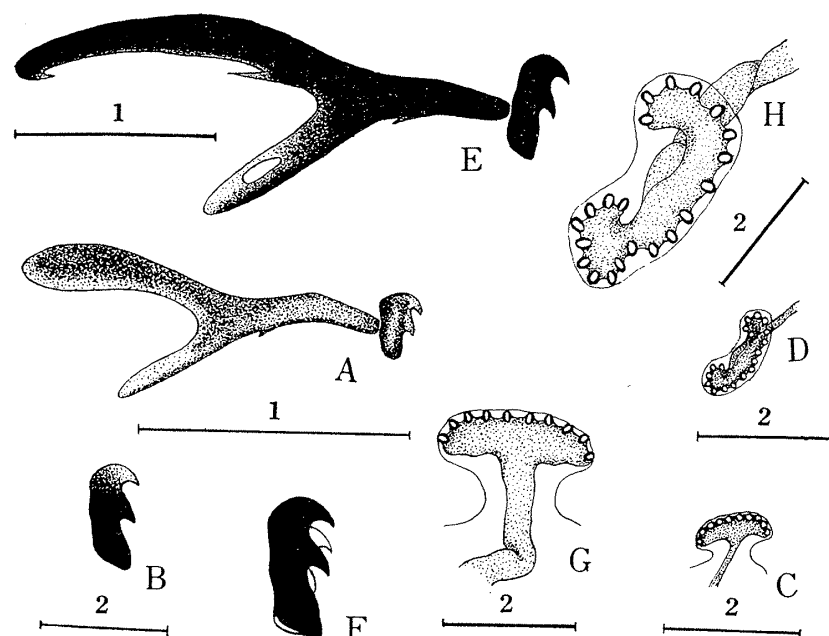


Fig. 3. *Phytomyza tordylui* Hendel.

A. Cephalopharyngeal sclerites of the first instar larva (lateral aspect). B. Mandible of the second instar larva (lateral aspect). C. Right hand anterior spiracle of the same larva. D. Right hand posterior spiracle of the same larva (lateral aspect). E. Cephalopharyngeal sclerites of the third instar larva (lateral aspect). F. Mandible of the same larva (lateral aspect). G. Right hand anterior spiracle of the same larva. H. Right hand posterior spiracle of the same larva.

***Phytomyza tordylui* Hendel, 1927 (Fig. 3)**

The first instar:—Body length about 0.6 mm. Spiracles absent. Cephalopharyngeal sclerites about 0.15 mm. long. Mandible about 0.025 mm. long, with 2 teeth. Mandible deep brown, but its central part and 2 teeth pale brown, its postero-dorsal part projected in dull angle. Paraclypeal-phragma brown, but its basal part and outer margin deep brown. Dorsal horn blackish brown, but its inner margin broadly pale brown. Inner side of ventral horn pale brown, without hole.

The second instar:—Body length about 1 mm. Anterior spiracle mushroom-like and its apical part about 0.028 mm. wide, about 0.014 mm. long, with about 10 bulbs. Posterior spiracle crescent shaped, and its apical part about 0.035 mm. wide, about 0.012 mm. long, with 18–20 bulbs. Cephalopharyngeal sclerites about 0.22 mm. long, very different in shapes from those of the first instar. Mandible about 0.04 mm. long, with 2 teeth, black but upper tooth pale brown. Paraclypeal-phragma brownish black, but inner side of ventral horn pale brown. Reduced lower branch of dorsal horn distinct. Ventral horn with a hole.

The third instar:—Body length about 2 mm. Spiracles resembling those of the second instar. Apical part of anterior spiracle about 0.06 mm. wide and about 0.03

mm. long, with 10–12 bulbs. Trachea curved almost in rectangle. Apical part of posterior spiracle about 0.085 mm. wide, about 0.03 mm. long, with 20–22 bulbs. Trachea twisted. Cephalopharyngeal sclerites resembling those of the second instar, about 0.28 mm. long. Mandible wholly black, about 0.056 mm. long. Paraclypeal-phragma more blackish. Right mandible a little longer than left one. Length of ventral horn about half the length of dorsal horn.

Biological notes:— It makes serpentine mine on the leaf of *Torilis japonica* DC. in late spring.

**Phytomyza** sp. (Fig. 4)

The first instar:— Body length about 1 mm. Anterior spiracle absent. Posterior spiracle branched in dichotomy, its apical part about 0.025 mm. wide, as long as wide, with about 4–6 bulbs on each branch. Cephalopharyngeal sclerites about 0.14 mm. long. Mandible about 0.02 mm. long, with a tooth, blackish brown but tooth

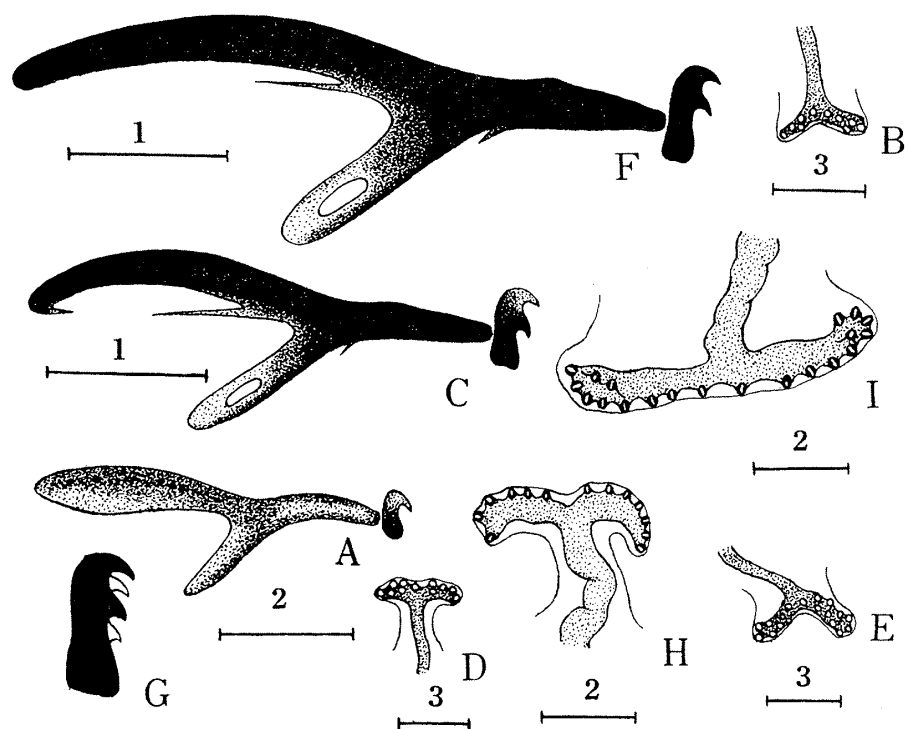


Fig. 4. *Phytomyza* sp.

A. Cephalopharyngeal sclerites of the first instar larva (lateral aspect). B. Right hand posterior spiracle of the same larva. C. Cephalopharyngeal sclerites of the second instar larva (lateral aspect). D. Right hand anterior spiracle of the same larva. E. Right hand posterior spiracle of the same larva. F. Cephalopharyngeal sclerites of the third instar larva (lateral aspect). G. Mandible of the same larva (lateral aspect). H. Right hand anterior spiracle of the same larva. I. Right hand posterior spiracle of the same larva.

pale brown. Paraclypeal-phragma brown, but inner margin and central part of its anterior part pale brown. Dorsal horn broad at its middle part and its posterior end narrow, its outer side blackish brown. Ventral horn without hole.

The second instar:— Body length about 2 mm. Anterior spiracle branched in dichotomy, its apical part about 0.028 mm. wide, as long as wide, with 5–7 bulbs on each branch. Posterior spiracle resembling that of the first instar, and its apical part about 0.04 mm. wide, as long as wide, with 9–12 bulbs on each branch. Cephalopharyngeal sclerites very different from those of the first instar in shape, about 0.3 mm. long. Mandible black, about 0.045 mm. long, with 2 teeth, but upper tooth pale brown. Paraclypeal-phragma brownish black, but inner side of ventral horn broadly pale brown. Ventral horn with a hole. Reduced lower branch of dorsal horn large and conspicuous.

The third instar:— Body length about 3 mm. Spiracles resembling those of the second instar. Apical part of anterior spiracle about 0.09 mm. wide, as long as wide, with 6–8 bulbs on each branch, and trachea twisted. Apical part of posterior spiracle about 0.18 mm. wide, 0.09 mm. long, with 10–13 bulbs on each branch. Trachea twisted. Cephalopharyngeal sclerites resembling those of the second instar, about 0.44 mm. long. Mandible wholly black, about 0.065 mm. long, with 2 teeth, Paraclypeal-phragma resembling that of the second instar but reduced lower branch of dorsal horn not so distinct as that of the second instar, and dorsal horn not so curved as that of the second instar. Right mandible a little longer than left one. Length of ventral horn about half the length of dorsal horn.

Biological notes:— It makes serpentine mine on the upper side of the leaf of *Angelica decursiva* Franch. et Savat. in spring and autumn.

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## 学 界 ニ ュ ー ス

### XVIII Congreso Internacional de Apicultura

第18回国際養蜂学会議は1961年9月25日から30日に亘つてスペインのMadridにおいて開催される。詳細は次のアドレスで同会議事務局あてに問合わせられたい。Huertas, 26-Madrid, España.

(安 松 京 三)

### The 10th Pacific Science Congress

第10回太平洋学会議は1961年8月21日から9月6日までアメリカ合衆国ハワイ州のHonoluluで開催される。昆虫学会会員の興味をひく問題としては次のシンポジアがもたれる。Cacao insects, Coffee insects, Coconut insects, Fruit flies, Biological control of plant pests, Rice insects, Sugar cane insects, Insect pathology, Pacific basin biogeography, Medical entomology.

(安 松 京 三)