

## Systematics of the Subfamily Gelechiinae(Lep., Gelechiidae) in Korea(I) Genera *Parachronistis* Meyrick and *Neochronistis* Park gen. nov.

빨나방亞科의 分類(I)

*Parachronistis*屬과 新屬 *Neochronistis*의 記載

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**ABSTRACT** A new genus, *Neochronistis* which is closely related to *Parachronistis* Meyrick and a new species of the latter including two previously known species are described with illustrations of external characters and male or female genitalia. Also a species of the latter, *Parachronistis maritima* Omelko is reported for the first time from Korea. Newly described species are *Parachronistis geniculella* sp. nov. and *Neochronistis hodgesi* sp. nov.

**KEY WORDS** systematics, Lepidoptera Gelechiidae, *Parachronistis*, *Neochronistis*

**抄 錄** *Parachronistis*屬의 1新種 및 1未記錄種을 포함한 4種을 記載 및 再記載하고 그들의 외부형태적 특징 및 암, 수생식기를 도해하였으며 *Parachronistis*屬과 근연한 新屬 *Neochronistis*을 1新種과 함께 보고한다. 新種 *P. geniculella*는 산털주머니빨나방, 미기록종 *P. maritima*는 극동털주머니빨나방으로, 新屬의 *Neochronistis hodgesi*는 긴털주머니빨나방으로 각각 命名하였다.

**檢 索 語** 분류, 나비목, 빨나방과

The suprageneric classification of the Gelechiidae has been primarily relied on Meyrick's proposal which divided it into nine genus-groups by the wing venation. After then, his nine genus-groups were generally given subfamily rank. However, some other opinions on the suprageneric divisions of the family have been proposed by recent authors: Sattler(1973) principally accepted them as subfamily ranks with some modification in the genus-group IV and group V, viz., group IV was divided into Stomopteriginae and Anacampsinae, and group V(Hypatiminae) was proposed as a junior synonym of Chelariinae

which was his genus-group VI. Piskunov(1975) subdivided the subfamily into three tribes, viz., Gelechiini, Gnorimoschemini and Teleiodini, and he added the Metzneriini as a fourth tribe, ignoring all previous subfamily divisions. Piskunov's opinion on the division of three tribes was recongnized as a suprageneric grouping by Sattler(1979) in one hand, but the 4th tribe Metzneriini was proposed to be placed in synonymy of Aristotelinae Heslop, 1938 by the wing venation and genitalic structure. Hodges(1978) divided the family into seven subfamilies; Anomologinae, Gelechiinae, Anacampsinae, Chelariinae, Dichomeridinae, Lecithocerinae and Physoptilinae. Kuznetsov & Stekol'nikov(1984) again divided it into six subfamilies; Apterinae, Metzneriinae, Gelechiinae, Teleiodinae, Chelariinae and Dichomeridinae.

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Hower, the currently recongnized classification of the family proposed by Hodges(1986) are divided it into three subfamilies: Gelechiinae, Pexicopiinae and Dichomeridinae. They are defined by the abdominal support structures on the 2nd sternum. The subfamily Gelechiinae which principally includes Meyrick's I~VI groups are clearly defined with well-developed venulae and apodems, from other two subfamilies. Whereas Meyrick's group VIII(Lecithocerinae), group IX(Autostichinae) and Physoptilinae have been placed mainly in the Oecophoridae and in part in th Xylor-yctidae.

Genus *Parachronistis* Meyrick, 1925 had been known as monotypic until the writer(1985) described further two species from Korea. The generic name *Parachronistis* was proposed by Meyrick as an objective replacement name for *Poecilia* Heinemann, 1870 and designated *P. albiceps* Zeller as the type species of the genus. Recently Omelko(1986) reviewed the genus with description of five additional new species from Southern Maritime Territory in U.S.S.R. In his revision he divided the genus into three subgenera viz., *Cochlevalva* and *Dentivalva* including the nominate subgenera *Parachronistis*, on the basis of the structure of genitalia, especially the shape of lobes of cucullus and sacculus in male, and the shape of ostial funnel in female genitalia. However, subgeneric divisions proposed by him are hardly comparable with each other because of their similar structures of the genitalia as well as other superficial characters, and it seems not enough to accept them as subgeneric division.

The terminology of markings on forewing are followed the terms proposed by Omelko(1984). Type specimens of the newly described species here are preserved in the collection of Dept. of Agro-Biology, Kangweon National

University, Chuncheon, Korea.

### Genus *Parachronistis* Meyrick, 1925

*Parachronistis* Meyrick, 1925, Genera Insectorum, 184 : 52.

Type-species: *Poecilia albiceps* Zeller, 1939, Isis, p. 202.

*Poecilia* Heinemann, 1870, Schmett. Dtl. Schweiz(2) 2(1) : 281.

The genus *Parachronistis* is externally very close to *Stenolechia* Meyrick, *Parastenolechia* Kanazawa and *Recurvaria* Howarth, but the genus is characterized as follows: In venation, forewing with R4 and R5 stalked, R4 +5 and M1 separated at base, R5 to costa; M2 rather approximated to M3 and Cula; Culb almost vestigial. Hindwing with Sc and Rs separated, Rs to costa near apex; M1 originating from Rs; M2 rather approximated to M3, but reduced at base, M3 and Cula connate. In male genitalia, eighth sternite strongly sclerotized, divided into two broad caudal lobes, enclosing genitalia laterally; 8th tergite forms a small semiovate plates or tongue-shaped. A pair of sacs with a bundle of scales, which Omelko(1986) named it as androconial apparatus, characteristically developed in fold between tergite II and III. However, similar character as this scale-tufts is also observed in *Stenolechia notomochla* Meyrick which was classified into different group from *bathrodyas*-group in the genus *Stenolechia* by Kanazawa(1984), but the sacs of scale-tufts are differently found between tergite III and IV, and fused into one. This kind of character on the tergite seems to be very rare in the family Gelechiidae. Gnathos spoon-shaped, with strong odontoid apex; strongly developed spatulate cucullus separated from the basal process of the valva; sacculus geniculately bent, distal half digigate; te-

gumen process connected with basal process of valva; saccus strongly fused with ventro-proximal portion of aedeagus. In female genitalia, generally with a characterized shape of ostial funnel and conical or funnel-shaped antrum.

**Distribution.** The known range of distribution of the genus is restricted in Palaearctic region. Among 9 known species including a newly described species from Korea, only *albiceps* is widely distributed from central Europe and Altai Mts. to Southern Maritime Territory, but other 7 species are known from Southern Maritime territory and 3 species known from Korean peninsula to date.

**Remarks.** The character that the anterior end of saccus of the male genitalia fused with the base of aedeagus is also a specialized character in the genus, *Parachronistis* Meyrick, but this condition is also found in the genus *Stenolechia* and in most species of the tribe Teleiodini as mentioned by Sattler (1960). Kanazawa (1984) separated *notomochla* Meyrick as well as *robusta* Kanazawa from the *bathrodyas*-group in the genus *Stenolechia* due to the absence of a pair of long hair-tufts at the base of tegumen. The facts that *notomochla* Meyrick has a sac of hair-tufts in fold between tergite III and IV will also be a good separable character from the *bathrodyas*-group within the genus or from the genus itself. Unfortunately I have no chance to examine whether *S. robusta* Kanazawa which Kanazawa placed it in the same group as *notomochla* Meyrick, has the same character of hair-tufts or not. The male of *notomochla* was firstly found and examined by Kanazawa (1984) after it was described with female specimens, but he didn't mention about this peculiar character of scales on the tergite. Thus, a further study will be needed to clarify the generic position of *notomochla*

Meyrick and its related species.

### *Parachronistis sellaris* Park

털주머니뿔나방

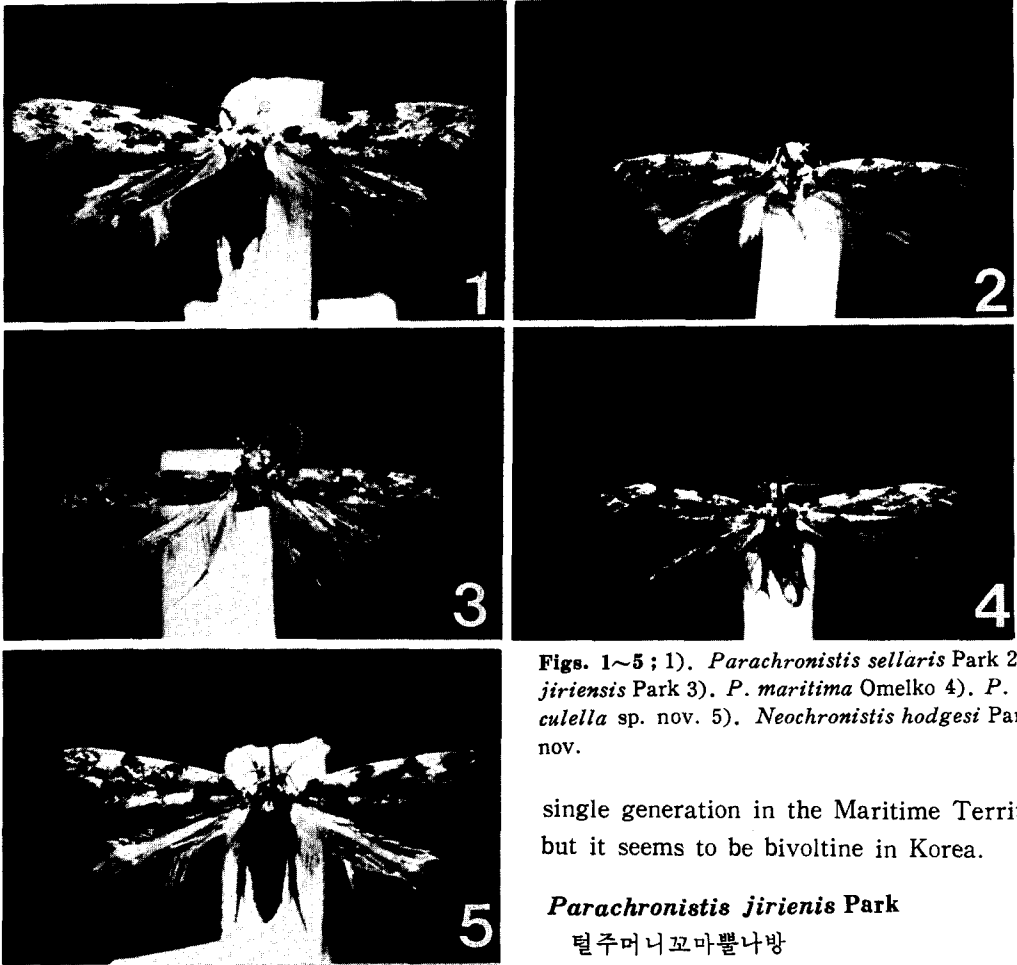
(Figs. 1, 8, 9, 15, 20, 26)

*Parachronistis sellaris* Park, 1985, Korean J. Ent. 15(1) : 75~79; Omelko, 1986, Ent. Oboz. 4 : 759, figs. 10~12.

Wing span 11~13.5 mm. Relatively larger than any other known species. Second segment of labial palpi thickened with rough scales, scale slender with less than 5 teeth along distal margin; terminal segment equal or a little shorter than 2nd. Forewing ground colour whitish, often paler, light brown with clearly defined and large distinct black spots.

Male genitalia (figs. 8, 15, 20) : Generally similar to European species, *P. albiceps* Zeller, but it can be recognized by the shape of cucullus lobe which caudal margin slightly concave, more or less rectangular, outer corner sharply pointed; sacculus digitate, narrow at middle of arms, apex pointed; saccus bifurcated at base. Aedeagus with numerous corniform particles in vesica. Base of scale-tufts in membranous fold between tergite II and III forms a semi-circular cone; scales somewhat broad and short. Eighth sternite well sclerotized, divided into two lobes at middle, distal margin forming cone-shaped; 8th tergite also well developed, in forms of a small semioval plate.

Female genitalia (fig. 9). Ostium bursae cylindrical; ventral wall extended to cuneate process at middle, with two ring-like structures on dorsal wall of funnel; antrum poorly sclerotized, broadened at anterior half and posterior half, strongly biconcave at middle. Corpus bursae semiovalate, with weakly sclerotized signum composed of numerous minute particles.



**Figs. 1~5 ; 1).** *Parachronistis sellaris* Park 2). *P. jiriensis* Park 3). *P. maritima* Omelko 4). *P. geniculella* sp. nov. 5). *Neochronistis hodgesi* Park sp. nov.

**Material examined.** Newly collected specimens after original description: Gwangrung, Kyunggi Prov., 1♀, 8. VI. 1977 ; 5♀♀, 31. V. 1986 ; Seomyun, Yangyang, Kangweon Prov., 8♀♀, 4~6. VI. 1987—slide no. 1679, 1689 & 1690 ; Chuncheon, Kangweon Prov., 1♂, 29. V. 1989 ; 1♀, 12. VIII. 1988—slide no. 1726 (male) and 1689(female) ; Temple Cheongpyung, Chuncheon, Kangweon Prov., 1♂, 1♀, 5. V. 1989—slide no. 1729(male).

**Distribution.** Korea, U.S.S.R. (Maritime Territory).

**Remarks.** Moths emerge from early of May to middle of August. Omelko(1986) suggested that all species of the genus develop a

single generation in the Maritime Territory, but it seems to be bivoltine in Korea.

#### *Parachronistis jiriensis* Park

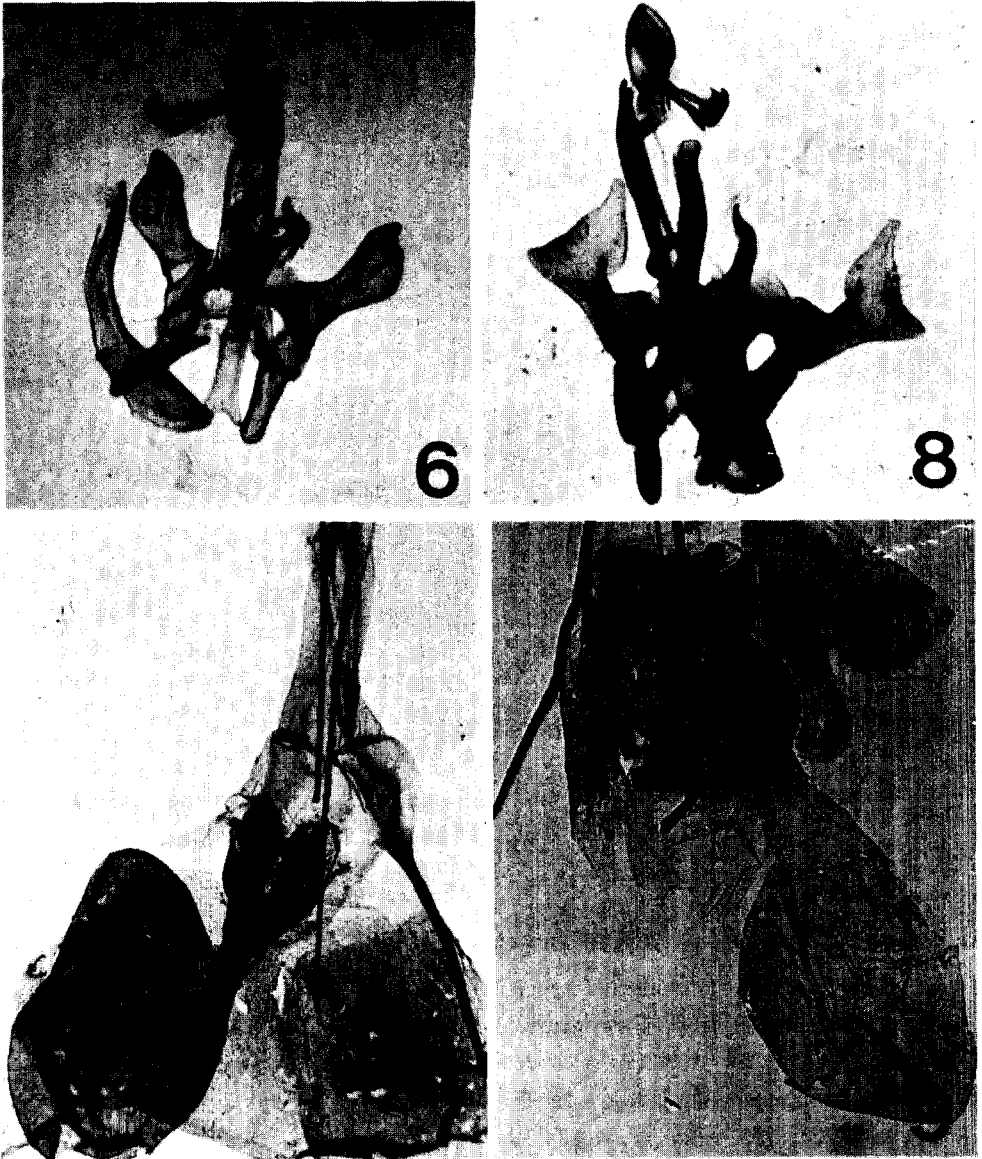
털주머니꼬마뿔나방

(Figs. 2, 6, 7, 14, 19, 27)

*Parachronistis jiriensis* Park, Korean J. Ent. 15(1) : 75~79, pl. I, 1~5 ; Omelko, 1986, Ent. Oboz. 4 : 761, figs. 16~17.

Wing span 10~13 mm. This species is very similar to *P. maritima* on the basis of the pattern of the forewing, but it can be separable from the latter by its more blackish or dark grey colour of background and its distinct genital characters. Second segment of labial palpi thickened with rough scales; scales broad distally, odontoid with 5~7 small teeth along distal margin; terminal segment shorter than 2nd.

Male genitalia (figs. 6, 14, 19). Base of sca-

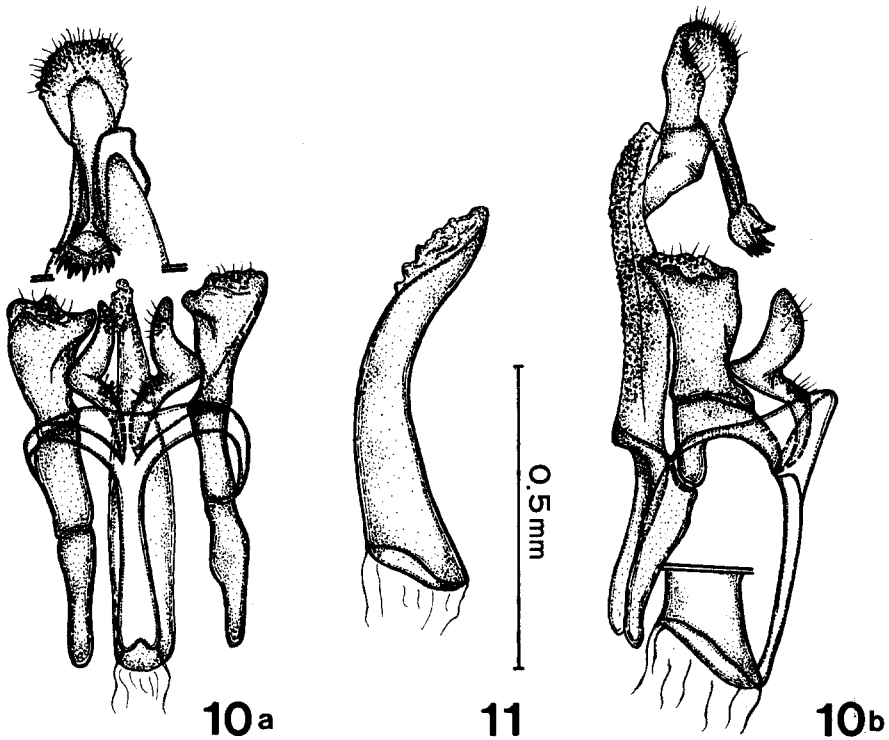


Figs. 6~9 ; 6). male genitalia of *Parachronistis jiriensis* Park 7). ditto, female genitalia, 8). male genitalia of *P. sellaris* Park 9). ditto, female genitalia.

le-tufts on distal portion of tergite II broadened; scales shorter and broader than the preceding species. Distal margin of 8th sternite broad and plate of 8th tergite short. Lobes of cucullus with rounded distal margin, apical corner somewhat protruded. Sacculus stout, broader at base, narrower toward apex.

Saccus longer than preceding species. Aedeagus simple, without cornuti.

Female genitalia(fig. 7). The female genitalia of the paratype designated and illustrated by the writer(1985) is different from the illustration by Omelko(1986). The differences in the two description will not be able to



Figs. 10~11 ; *Parachronistis maritima* Omelko; 10(a). ventral view of male genitalia, 10(b). ditto, lateral view, 11). ditto, aedeagus.

clearly clarify here without further study using materials collected by the comprehensive survey in the wide range of their distribution or a biological study rearing their larvae. Thus, the writer tentatively places the female of my given materials in this species and illustrates its genitalia as same as the original description. The fact that I collected some more specimens of females which are identical to its original type specimens during recent few years after its description, will be an evidence of it.

**Material examined.** Newly collected materials after description. Seomyun, Yangyang, Kangweon Prov., 1♂, 4. VI. 1987 ; Seomyun, Yangyang, 7♀♀, 4~6. VI. 1987-slide no. 1682, 1687 & 1691 ; Mt. Deogyu, Muju, Jeonbug Prov., 2♀, 13. VII. 1975-slide no. 1217 & 16

84 ; Gwangrung, Kyunggi Prov., 1♀, 31. V. 1986-slide no. 1688 ; Chuncheon, Kangweon, Prov., 1♀, 30. VII. 1986 ; Mt. Seolak, Kangweon Prov., 9. VII. 1989.

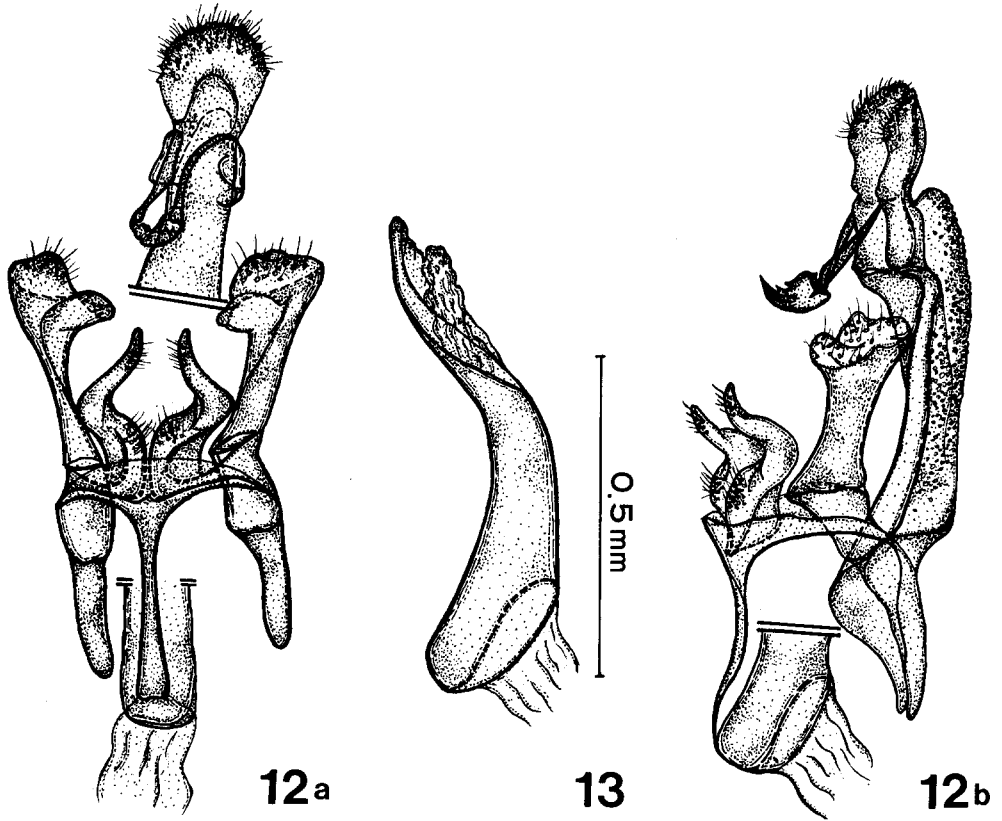
**Distribution.** Korea, U.S.S.R. (Maritime Territory).

***Parachronistis maritima* Omelko**

극동털주머니빨나방(신칭)  
(Figs. 3, 10, 11, 16, 28)

*Parachronistis(Dentivalva)maritima* Omelko, 1986, Ent. Oboz., 4 : 753.

Wing span 9.5 mm. Head white, instead of pale brown in *P. jiriensis* Park, sparsely speckled with dark brown scales. Second segment of labial palpi thickened with rough scales, especially at apex, dark brown outw-



Figs. 12~13; *Parachronistis geniculella* sp. nov., 12(a). ventral view of male genitalia, 12(b). ditto, lateral view, 13). ditto, aedeagus.

ardly, with white stripes at basal half and beyond middle on upper side, apex whitened, terminal segment with dark brown stripes at 1/4 and before apex, apex white and pointed. Forewing dark grey, very similar to *P. jiriensis*. relatively smaller than the latter. Hindwing grey.

Male genitalia (figs. 10, 16). Apex of gnatohos rounded, dentate with several similar teeth. Lobe of cucullus large, with pointed upper and lower, odontoid and rarely setose along distal margin, stalk of lobe stout and short; Sacculus geniculate with somewhat broad distal part, outer margin slightly concave, narrower toward apex; outer corner sharply angled; basal half slender. Saccus

moderate, with basal notch. Process of tegumen relatively long. Aedeagus simple, moderately bent. Lobes of eighth sternite very closed each other and plate of 8th tergite long.

Female unknown.

**Material examined.** Seomyun, Yangyang, Kangweon Prov., 2♂, 4~6. VI. 1987—slide no. 1732.

**Distribution.** Korea, U.S.S.R. (Maritime Territory).

*Parachronistis geniculella* Park, sp. nov.

산털주머니뿔나방(신칭)

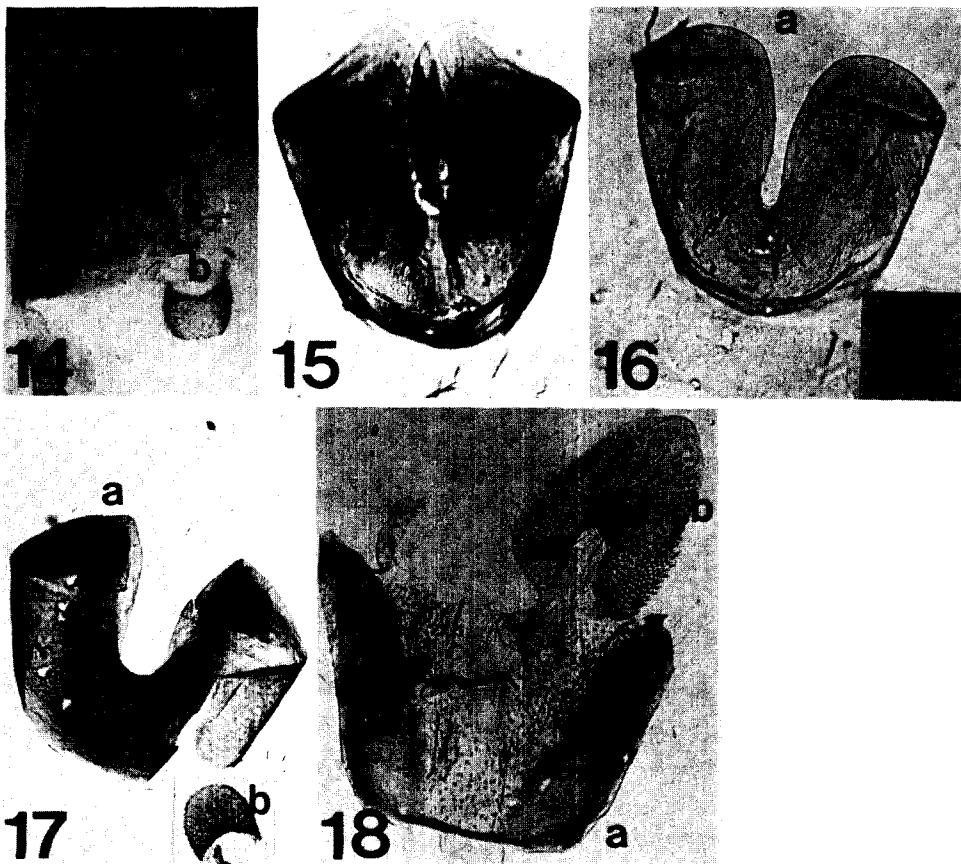
(Figs. 4, 12, 13, 17, 21, 29)

Wing span 10~11.5 mm. Head creamy wh-

ite, speckling sparsely with dark brown scales. Antenna not separable from the other species of the genus. Second segment of labial palpi thickened, whitish on upperside except preapical portion, curved with dark grey scales laterally and on lowerside; 3rd segment white with black stripes before middle and before apex. Ground colour of forewing white, scattered with brown or dark brown scales, markings of dark grey scales relatively clearer than other species, especially costal spots distinct and 3rd middle spot clearly elongated; apical dot fused with medial spot. Hindwing grey.

Male genitalia (figs. 12, 13, 17, 21). Apex of gnathos spoon-shaped, with a strong central

projection among several moderate teeth along its outer margin. Cuculus lobe voluminous, rugged along outer margin, sparsely haired around apex; stalk of lobes elongated, narrowed at middle and lower corner of lobe slightly extended outwardly. Sacculus geniculate; basal portion somewhat broad, haired inner surface; distal bend slender and narrower apex. Process of tegumen relatively short. Saccus narrow and long, slightly dilated at basal portion, with very weakly notched base. Aedeagus simple, dilated basally, narrowed at tip, some minute particles scattered in vesica. Base of scale-tufts on distal portion of tergite II somewhat flattened; scales relatively short and broad. Lobes of 8th sternite far each



Figs. 14~18; (a). eighth sternites, (b). 8th tergites, 14). *Parachronistis jiriensis* Park 15). *P. sellaris* Park 16). *P. maritima* Omelko, 17). *P. geniculella* sp. nov. 18). *Neochronistis hodgesi* sp. nov.



other and plate of 8th tergite semiovate, shorter than preceding species.

Female. Unknown.

**Remarks.** This new species is very close to the preceding species in the superficial characters and in the structures of male genitalia, but it can be separated from the latter by followings: Cucullus lobe with more slender stalk, more strongly rugged along outer margin and lower corner of lobes less extended; distal bend of sacculus more slender; tegumen process shorter; aedeagus more dilated at basal portion and longer. I have no chance to examine and compare the types of *P. juglandeti* Omelko, which looks also very similar to this species in male genitalia, but it is separated by Omelko's illustration of male genitalia and his description. Generally this species is larger than the latter.

**Material examined.** Holotype, male, Chun-

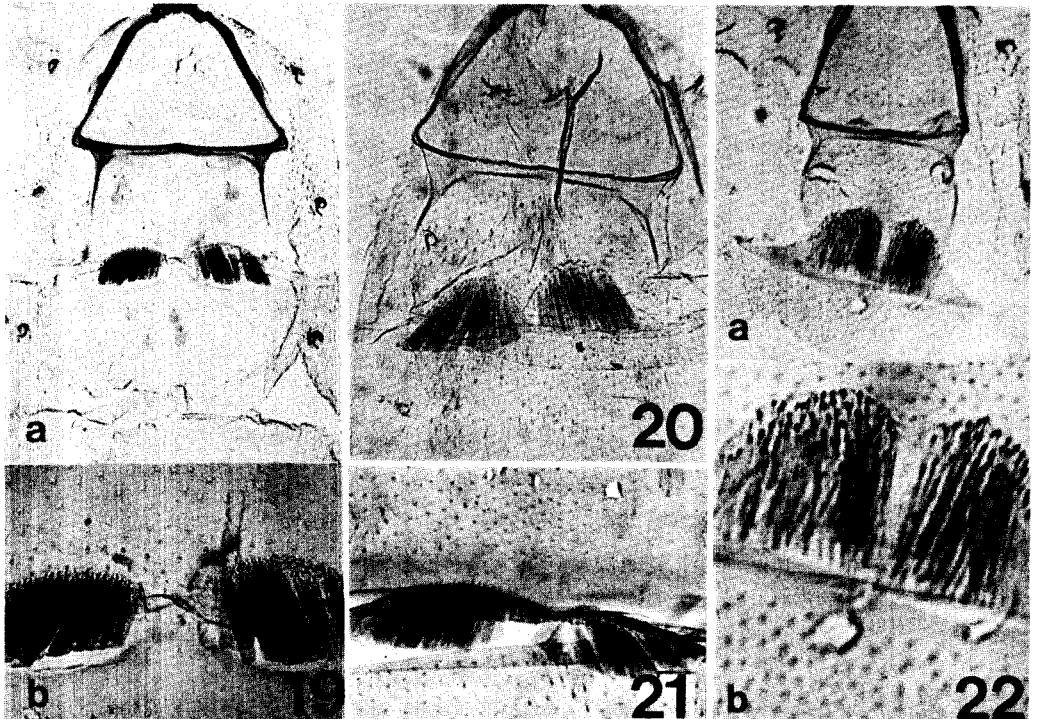
cheon, Kangweon Prov., 13. VI. 1989—slide no. 1733, Paratypes, 7♂♂, same locality and date as holotype.

**Distribution.** Korea(Central part)

***Neochronistis* Park, gen. nov.**

Type-species: *Neochronistis hodgesi* sp. nov.

This new genus is very close to *Parachronistis* Meyrick, especially in superficial characters and venation. Venation of both wings is nearly identical to the latter. In forewing, R1 from about middle, R4 and R5 on common stalk, fused to costal margin before apex; M1 originating from discal crossvein near base of R4+5, M2 rather approximated to M3 and Cula; M3 and Cula connate; Culb arising from beyond 4/5; termen very weakly sinuated. In hindwing, M1 originating from Rs; M2 curved at base and approximated to M3;



**Figs. 19~22 ;** (a). sacs of scale-tufts on distal portion of tergites II, (b). magnified scale-tufts, 19). *Parachronistis jiriensis* Park, 20). *P. sellaris* Park, 21). magnified scale-tufts of *P. geniculella* sp. nov. 22). *Neochronistis hodgesi* sp. nov.

M3 and Cula appearing to connate at low angle of discal cell; Cula and Culb remote, and nearly paralell.

However, the structures of male genitalia is quite different from the latter and rather close to *Stenolechia* Meyrick or *Parastenolechia* Kanazawa by having peculiar shape of sacculus and long, slender costal processes, whereas genitalic structures of female is similar to the genus *Parachronistis*.

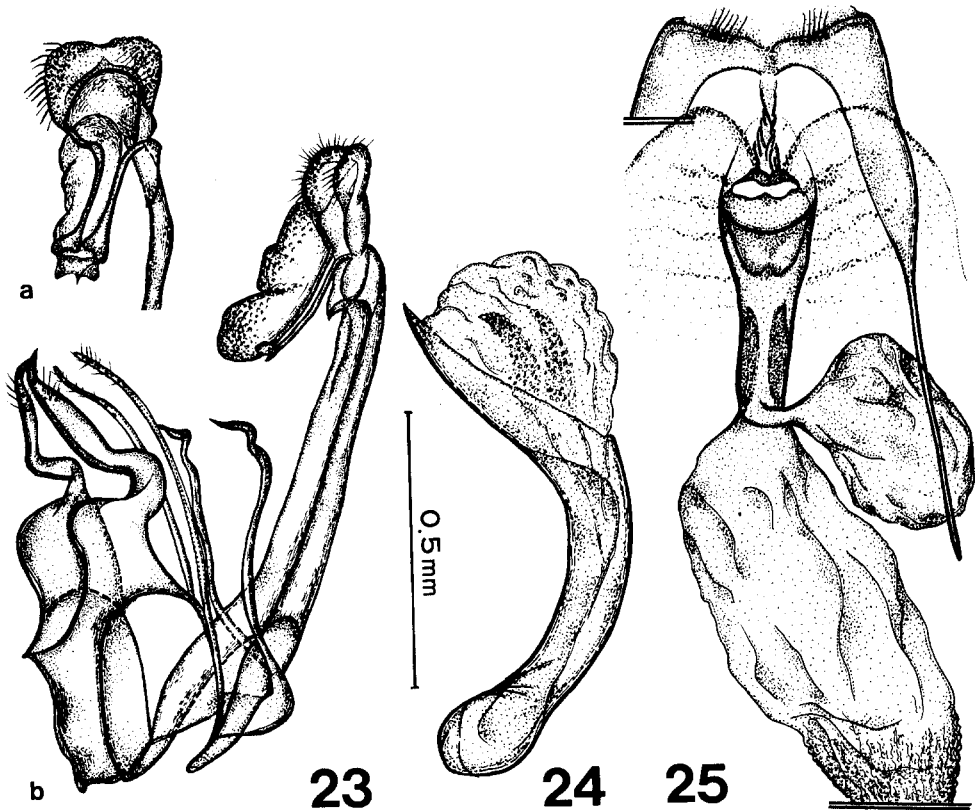
The scale tufts of the sacs in the fold between tergite II and III hair-like and longer, instead of having broad and short scales in most of the species of *Parachronistis* Meyrick. Eighth sternite sclerotized, but not so much as the latter; 8th tergite larger, deeply emarginated into the middle of anterior margin.

*Neochronistis hodgesi* Park, sp. nov.

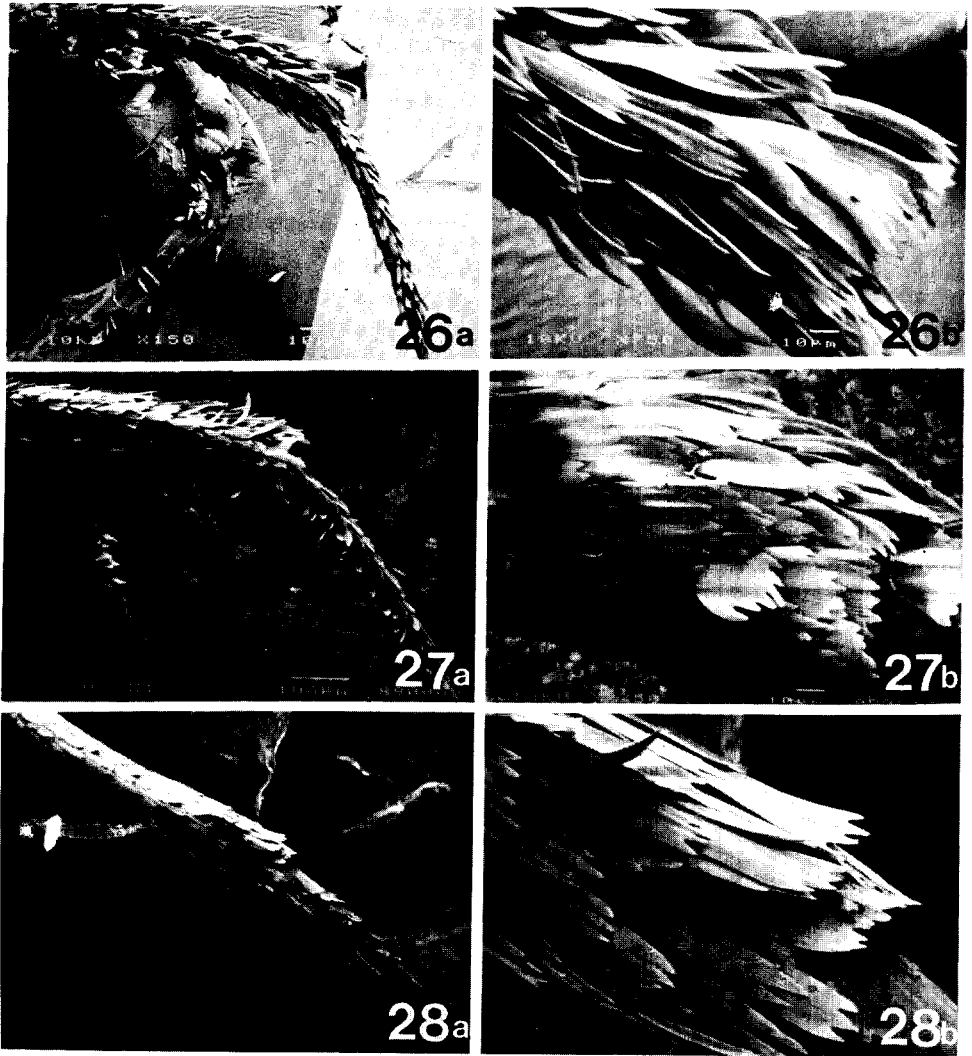
긴털주머니빨나방(신칭)

(Figs. 5, 18, 22, 23, 24, 25, 30)

Wing span 11~13.5 mm. Head creamy white with appressed scales, but dark brown raised scales along lateral sides. Basal joint of antenna white, speckled with dark fuscous scales; forming alternate dark brown and white rings on each segment of flagellum. Second segment of labial palpi somewhat smoothly covered appressed scales, instead of rough scales in the most species of the genus *Parachronistis*, dark brown outwardly with white apex, creamy white beyond basal half on upper side; terminal segment shorter



Figs. 23~25 ; 23). male genitalia of *Neochronistis hodgesi* sp. nov. (a). ventral view of uncus and gnathos, 24). ditto, aedeagus, 25). ditto, female genitalia



Figs. 26~28 ; (a). labial palpus, (b). magnified apical portion of 2nd segment 26). *parachronistis sellaris* Park, 27). *P. jiriensis* Park, 28). *P. maritima* Omelko.

than 2nd, two dark fuscous stripes at 1/3 and before apex, 2nd stripe much wider than 1st in male, whereas 1st stripe broader in female; apex white and apically pointed. Thorax dark fuscous.

Ground colour of forewing generally whitish brown, speckled with dark brown scales, often with blackish; spots generally well developed, isolated, often variable to a great extent among individuals, arrangement of

markings represented to similar pattern as all known species of the genus *Parachronistis*. Hind costal spot distinct; 2nd middle spot developed with dark grey erected scales, followed by yellowish or whitish brown scales; 3rd costal, middle and predorsal spots well represented; 4th costal spots fused into yellowish white broad fascia; 4th predorsal spot on tornus large, distinct, often speckled with brown raised scales at upper side, often

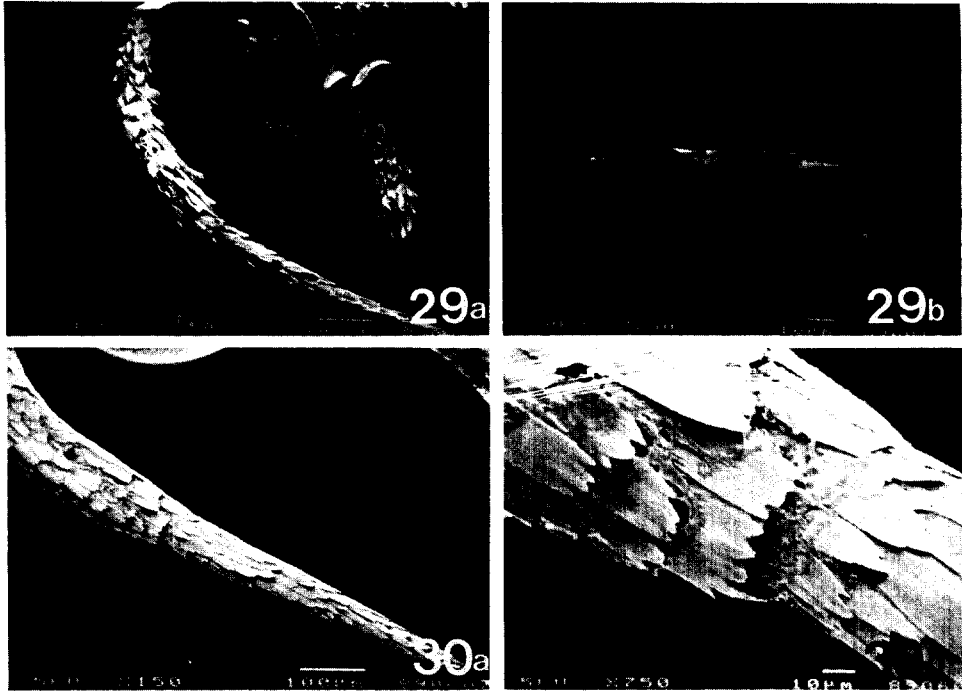


Fig. 29~30 : (a). labial palpus, (b). magnified apical portion of 2nd segment 29). *Parachronistis geniculella* sp. nov. 30) *Neochronistis hodgesi* sp. nov.

fused into oblique yellowish white band-like fascia which connected to medial spot. Hind-wing grey. Foretibia unicolorous with dark fuscous scales on anterior surface; midtibia white at base, then black to middle, creamy white speckling with black scales, hind tibia clothed with long hair-like scales above. The scale-tufts in pair of sacs developed in the membranous fold between tergite II and III (Fig. 22) consists of long and hair-like scales.

Male genitalia (figs. 18, 22, 23, 24). Eighth sternite moderately sclerotized, not distinctly divided into two broad lobes at posterior half; 8th tergite large, in form of semiovate plate, with deep emargination at middle of anterior margin, tapering at both sides. Uncus flattened, rather shorter than width, almost square in dorsal view, densely clothed with short hairs laterally, slightly indented at middle. Ganthos as long as uncus, with minute gra-

nules on ventral membranous area from anus to apex; small median projection curved ventrally. Tegumen about 5 times as long as uncus; pedunculus rather long. Valva specialized, very narrow to its basal portion, with a pair of long and slender costal process arising from dorsobasal portion of valva which relatively broad 1/5 at base, and then narrowed, articulated to pedunculus; extremely long tubular processes which fused with basal portion of costal process developed, instead of clavate processes in the genus *Parastenolechia*. Basal part of saccus broad; its process strongly tapered at middle, geniculate, bearing several short hairs beyond half ending in a pointed tip. Saccus short and broad, strongly fused with ventroproximal portion of aedeagus. Vinculum narrow. Aedeagus broadened at base, strongly curved, apically pointed, with two bundles of nume-

rous minute granules in vesica.

Female genitalia (fig. 25). Seventh abdominal sternite deeply concave at middle of caudal margin. Ostium bursae developed into cylindrical funnel, with a pair of weakly sclerotized, small semioval lobes on ventrodorsal wall; a pocket-like structure on dorsal wall of funnel moderately sclerotized. Antrum with broad, long folds along both sides beyond middle before corpus bursae. Ductus bursae very short. Corpus bursae large and semioval, without signum. Ductus seminalis originated from between ductus bursae and corpus bursae.

**Material examined.** Holotype: male, Chugok, Chunsung, Kangweon Prov., 30. VII. 1986-slide no. 1673.

Paratypes: Mt. Deogyu, Muju, Jeonbug Prov., 1♂, 1♀, 13. VIII. 1975-slide no. 1680 (male) & 1252 (female); Chunsung, 1♀, 20. VII. 1987; 4♂♂, 12. VIII. 1988, 1♀, 7. IX. 1988; Chugok, Chunsung, 2♀♀, 30. VII. 1986-slide no. 1985; Whacheon, abdomen missing, 2. VII. 1985; Seomyun, Yangyang, 1♀, 1. VII. 1987; Sogumgang, 1♀, 8. VIII. 1988; Mt. Odae, 3♀, 26. VI. 1989; Mt. Seolak, 1♀, 7. VIII. 1989. above areas in Kangweon Province; Gwangrung, Kyunggi Prov., 1♀, 4. VIII. 1988.

#### REFERENCES CITED

- Hodges, R.W. 1978. Gelechiodea: Cosmopterygidae, In Dominick, R.B. et al., The moths of America North of Mexico, Fasc. 6.1. 166pp.
- Hodges, R.W. 1986. Gelechiodea: Gelechiidae, In Dominick, R.B. et al., The moths of America North of Mexico, Fasc. 7.1. 195pp.
- Kuznetsov, V.I. & A.A. Stekol'nikov. 1984. Classification and phylogenetic associations between families and suprafamilies of the gelecoids of the lepidopteran infraorder Papilionomorpha (Lepidoptera; Corpomorphaidea, Elachistoidea, Coleophoroidea, Gelecoidea), taking into account functional morphology of ♂ genitalia. [In Russ.]. Tr. Zool. Inst. Akad. Nauk. SSSR 122 : 3~68.
- Meyrick, E. 1925. Gelechiidae, Lepidoptera Heterocera, In Wytzman P., Genera Insectorum 184.
- Omelko, M.M. 1986. Review of the genus *Parachronistis* Meyrick (Lepidoptera, Gelechiidae) with description of new species from Southern Maritime Territory. Ent. Oboz., 4 : 753~768.
- Park, K.T. 1985. Two new species of the genus *Parachronistis* from Korea (Lep.; Gelechiidae). Korean J. Ent. 15 : 75~79.
- Piskunov, V.I. 1975. New data on the fauna of Gelechiidae (Lepidoptera) from the European part of the U.S.S.R. Ent. Oboz. 54 : 857~871.
- Sattler, K. 1973. A catalogue of the family-group and genus-group names of the Gelechiidae, Heliconiidae, Lecithoceridae and Symmocidae (Lepidoptera). Brit. Mus. (Nat. Hist.), Ent. 28 : 155~222.
- Sattler, K. 1979. A taxonomic revision of the genus *Deltophora* Janse (Lepidoptera, Gelechiidae). Brit. Mus. (Nat. Hist.), Ent. 38 : 263~268.

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