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A REVISION OF THE JAPANESE SPECIES OF THE GENUS *LEUCOMA* STEPHENS

(Lepidoptera, Lymantriidae)

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In the course of the present study which is based not only on the characters of the adults, but also on those of the pupae and matured larvae, is given a revision of the Japanese species of the genus *Leucoma* STEPHENS.

Before going further, the writer wishes to express his sincere gratitude to Prof. Dr. T. UCHIDA, Prof. Dr. C. WATANABE and Mr. Y. NISHIJIMA for their kind guidance and continuous encouragement. Sincere thanks are also due to Dr. T. NAKASHIMA for his aid in preparing photographs and to Mr. H. INOUE for his kindness in offering the literature.

Genus *Leucoma* STEPHENS

Leucoma STEPHENS, Ill. Brit. Ent. Haust., 2, 64 (1829).

Stilpnotia WESTWOOD & HUMPHREYS, Brit. Moths, 1, 90 (1841); MATSUMURA, Ins. Mats., 7, 150 (1933).

Genotype: *Bombyx salicis* LINNÉ.

So far as the writer is aware, four species, *candida*, *salicis*, *doi* and *chichibense*, have been represented as members of the genus *Leucoma*. However, after careful examinations through the literature and specimens the writer has come to the conclusion that *doi* should be a synonym of *salicis* and *chichibense* should be referred to the genus *Arctornis*.

The general features of the matured larvae of this genus are as follows:—Setal plans of meso- and metathorax respectively constructed with alpha, beta, Rho = epsilon+rho, Kappa = theta+kappa+eta, Pi = nu+pi and sigma; the abdominal segments with alpha, beta, Rho+epsilon+rho, kappa=kappa+theta, eta, mu, Pi=tau+nu+pi and sigma; verrucae eta of abdominal segments larger than mu; Rho of abdominal segments fused with kappa at the dorsocaudal surface of spiracles; subversible gland¹⁾ standing on the dorsocaudal surface of alpha of first two abdominal segments.

1) This new term is used to the paired glands which stand on the dorsomeson of the first two or four abdominal segments, although they have hitherto been named as "ein Paar verwachsener Fleischspitzen" (HOFMANN, 1893) or "a pair of cone-shaped glands" (PETERSON, 1951).

Keys to the Japanese species

Adult stage

Wing scales narrow and roughly arranged; shaft of antennae white; outer margin of valva slightly convex and smooth; cornutus of aedeagus represented by a chitinized plate; ostium-cover of female genital plate trapezoidal in shape *salicis*.

Wing scales wide and densely arranged; shaft of antennae white with brownish stripes; outer margin of valva dentated by numerous micro-processes and its middle part conspicuously projected; cornuti of aedeagus represented by numerous micro-spines; the ostium-cover M-shaped *candida*.

Pupal stage

Brownish black with cleamy whitish verrucae; body surface smooth and polished *salicis*.

Brownish black in whole area; body surface with dense punctures and lines *candida*.

Matured larval stage

Body colour yellow lined with black on the subdorsal area; verrucae on dorsal area orange or brownish yellow; subeversible gland not touching alpha; sclerotic ring of labium incomplete, area around the sr. 1 alone chitinized, and palpigar connected with mentum *salicis*.

Body colour brownish black lined with two orange brown on the dorsal area; dorsal verrucae bluish black; subeversible gland touching alpha; sclerotic ring of labium completely chitinized, palpigar not connected with mentum, areas around the sr. 2 and sr. 3 not chitinized *candida*.

Leucoma salicis (LINNÉ) (Fig. 1; Pl. 1, A-C; Pl. 2, A; Pl. 3, A-B)

Bombyx salicis LINNÉ, Syst. Nat., ed. X (1), 502 (1758).

Leucoma salicis STEPHENS, Ill. Brit. Ent. Haust., 2, 64 (1829); KAZHANCHIKOV, Fauna USSR, XII, Orgyidae, 342 (1950).

Stilpnotia salicis WESTWOOD & HUMPHREYS, Brit. Moths, 1, 90 (1841); LEECH, Trans. Ent. Soc. London, 142 (1899); STRAND, Seitz, Gross-Schmett. Erde, 2, 110 (1910); NAGANO, Ins. World, Nawa, XXIII (7), 256 (1919); OKAMOTO, Hokk. Agr. Exp. Station, 21, 43 (1921); MATSUMURA, Ins. Mats., 1, 109 (1927); id., ibid., 7, 151 (1933); PETERSON, Larvae of Insects, 168 (1951).

Stilpnotia salicis var. *candida* MATSUMURA, Ôyô-Kontyûgaku, 698 (1917); NIJIMA, Sinrin-Kontyûgaku, 208 (1913).

Stilpnotia salicis f. *candida* (part) MATSUMURA, 6000 Ill. Ins. Jap., 712 (1931).

Stilpnotia candida (part) KAWADA, Iconographia Ins. Jap., suppl., 731 (1950).

Stilpnotia doii MATSUMURA, Jour. Coll. Agr. Hokkaido, 19, 38 (1927); GAEDE, Seitz, Gross-Schmett. Erde, 2, suppl. 1, 99 (1932); MATSUMURA, Ins. Mats., 7, 150 (1933). Syn. nov.

Leucoma doii MATSUMURA, 6000 Ill. Ins. Jap., 712 (1931).

Male genitalia: The whole organ strengthened; ventral margins of two valvae joining to each other; valva with a arm-shaped prossus dorsalis and a small prossus ventralis, outer margin between these two processes slightly convex and smooth; basic plate of porl-like uncus triangular; at base of wide succus opening a hole; juxta double rhombic in shape, very large; cornutus of aedogagus represented by a chitinized plate.

Female genitalia: Genital plate bearing an ostium-cover, which is conspicuously chitinized, trapezoidal in shape and the upper margin concave; ductus bursae very short; ductus seminalis opening to bursa copulatrix, of which the upper surface bears one signum.

Pupa.

Colour brownish black with creamy whitish blotches; prothoracic leg with two small whitish spots; spiracles brownish black; all setae creamy or yellowish white.

Body surface always smooth and polished; cephalic margin of the first four abdominal segments slightly punctured; dorsal surface of the first two abdominal segments conspicuously projected with one pair of small tubercular processes; verrucae on the dorsal surface projected; all verrucae covered with normal and simple setae; front with one pair of setae on the cephalic area.

Length 20-25 mm.; width 6-8 mm.

Matured larva.

Colour: Upper half of head rough grayish black; front, labrum and mandible polished brownish black; membranes of appendix and adfrontal area white; setae of head brownish white. Ground colour of body yellow; dorsal area more or less deep; subdorsal area narrowly lined with black; supra- and subspiracular area spotted with many irregular black; subeversible gland with black crossing band; eversible gland marginated with black; ventral area and all legs dusky yellow; all verrucae orange or brownish yellow with yellowish white setae and planta of abdominal leg pale black; subeversible gland black; eversible gland pinkish brown.

Structure: Head with some secondary setae; front and adfrontal area without secondary setae; cephalic margin of labrum strongly concave and occupying one-third of the length of labrum; sclerotic ring incomplete, area around the sr. 1 alone chitinized; palpigar connected with mentum; in mesal view of mandible the inner area punctured and projected forming a dome-shape. In setal plan, alpha and sigma of all segments consisting of one to three setae, but the others forming the distinct verrucae. Alpha, beta and Rho of all segments covered with simple setae, the others with slightly plumosed long setae; furthermore beta bearing a few scale-like setae. Subeversible gland standing on dorsocaudal surface of alpha; eversible glands elliptical.

Length of fully matured larva; 45-50 mm.

Egg: Green, covered with white babbie-like substance; globular, 0.8-0.9 mm. in diameter; a egg mass containing 50-200 eggs.

Host plants: *Populus nigra* LINNÉ var. *italica* MUENCHN. and *P. Maximowiczii* NEURY.

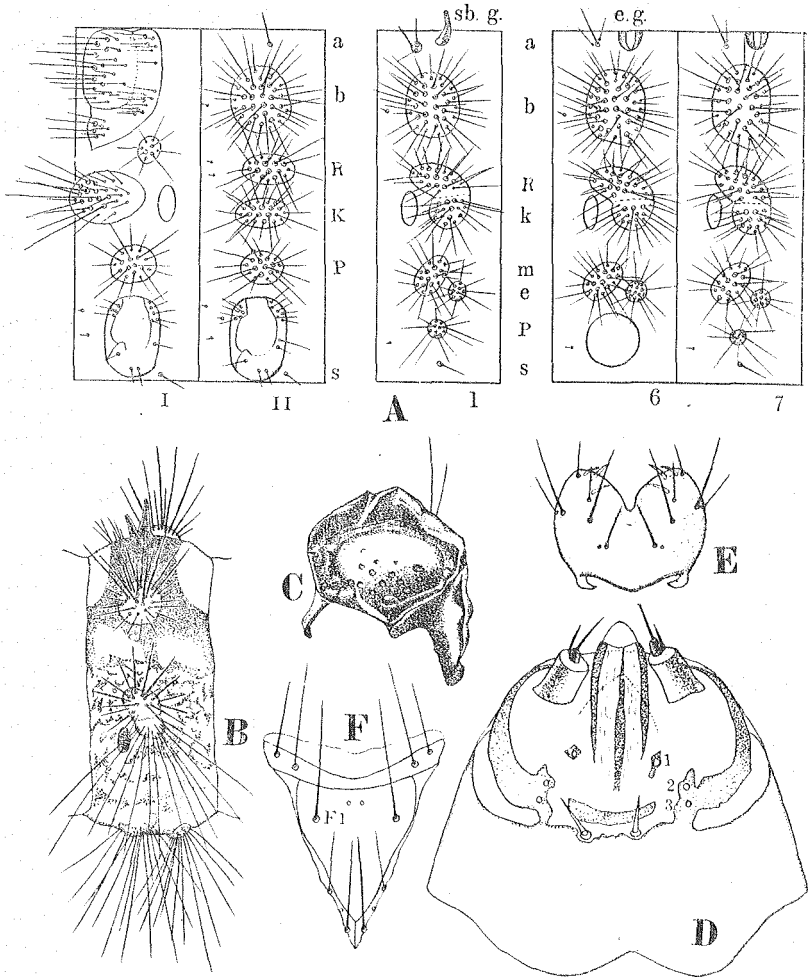


Fig. 1. Larval characters of *Leucoma salicis* (LINNÉ).

- A. Setal maps of prothorax (I), meso and metathorax (II), first (1), sixth (6) and seventh (7) abdominal segments. sb. g., subeversible gland; e. g., eversible gland; a, alpha; b, beta; R, Rho; K, Kappa; k, kappa; m, mu; e, epsilon; P, Pi; s, sigma.
- B. Lateral view of first abdominal segment.
- C. Mesal view of left mandible.
- D. Ventral view of labium. 1-3, sensory organs (sr.) 1-3.
- E. Dorsal view of labrum.
- F. Dorsal view of front and adfrontal area. Fl, frontal setae.

Specimens examined: 6 ♂, Tarandomari, 1 ♂, Kimiuchi, 1 ♂, Konuma, 1 ♀, Asi, 1 ♂, Ruige, Saghalien; 1 ♀, Rishiri island (Holotype of *Stilpnolia doii* MATSUMURA), 1 ♂, Mt. Daisetsu, 4 ♂ and 1 ♂, Sapporo, 2 ♀, Zyôzankei, Hokkaido; 1 ♂, Kamikôchi, Nagano Pref., 1 ♀, Japan Alps, Honsyu; 1 ♀, Korea.

Distribution: Europa, Siberia, Manchuria, North China, Saghalien, Korea, Japan (Hokkaido and Honsyu) and North America.

Notes: Having examined the type of *doii* the writer has come to the conclusion that *doii* should be sunken as a synonym of *salicis*: because no special difference can be detected between these species, not only in general structure but also in genitalia.

Leucoma candida (STAUDINGER) (Fig. 2; Pl. 1, D-G; Pl. 2, B; Pl. 3, C-D)

Stilpnolia salicis var. *candida* STAUDINGER, Romanoff, Mém. Lep., 6, 308 (1892); MATSUMURA, Ins. Mats., 7, 151 (1933).

Stilpnolia salicis f. *candida* STRAND, Seitz, Gross-Schmett. Erde, 2, 123 (1910); MATSUMURA, 6000 Ill. Ins. Jap., 712 (1931) (part).

Stilpnolia candida WILEMAN, Trans. Ent. Soc. London, 395 (1911); NAGANO, Ins. World, Nawa, XXIX (4), 3 (1915); id., Bull. Nawa Ent. Laboratory, 1, 46 (1916); KAWADA, Iconographia Ins. Jap., Suppl., 731 (1950) (part).

Leucoma candida KAZHANCHIKOV, Fauna URSS, XII, Orgyidae, 345 (1950).

Male genitalia: Male genitalia are very allied to those of *L. salicis*, but differ from the latter as follows; valva without prossus ventralis, the outer margin dentated with numerous micro-processes, the middle part conspicuously projected; basic plate of uncus semicircular; juxta smaller; cornuti of aedeagus represented by numerous micro-spines.

Female genitalia: Ostium-cover of genital plate chitinized and M-shaped; ductus bursae very short and ductus seminalis opening to its projection; lower surface of bursa copulatrix with one signum.

Pupa.

Colour brownish black in whole area, caudal margin of the fourth segment ringed with red or brown; all setae brownish yellow.

Whole surface roughed with dense punctures and lines, the punctures more dense on dorsal area; all verrucae salient; on the cephalic area of front with three to five pairs of setae; all setae normal and simple.

Length 20-25 mm.; width 6 mm.

Matured larva.

Colour: Head brown marked with two blackish blotches; mandible black; membranes of appendix white; setae of head brown. Ground colour of body black; dorsal area with two orange brownish stripes; each stripe with dense blackish spots and cut off with black band on the first, second, sixth and seventh abdominal segments; supra- and subspiracular area yellowish brown marked with many blackish blotches or spots; ventral area dusky brown; verrucae bluish black with brownish setae; thoracic leg brown, abdominal leg brown with blackish planta; subversible gland black; eversible gland reddish brown.

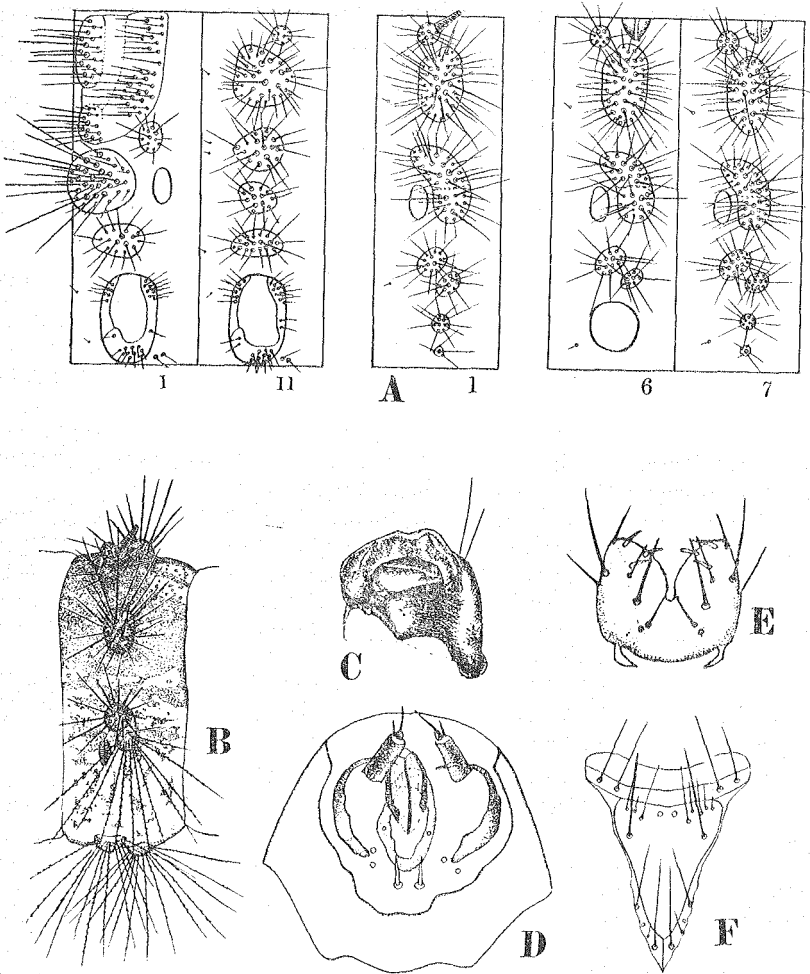
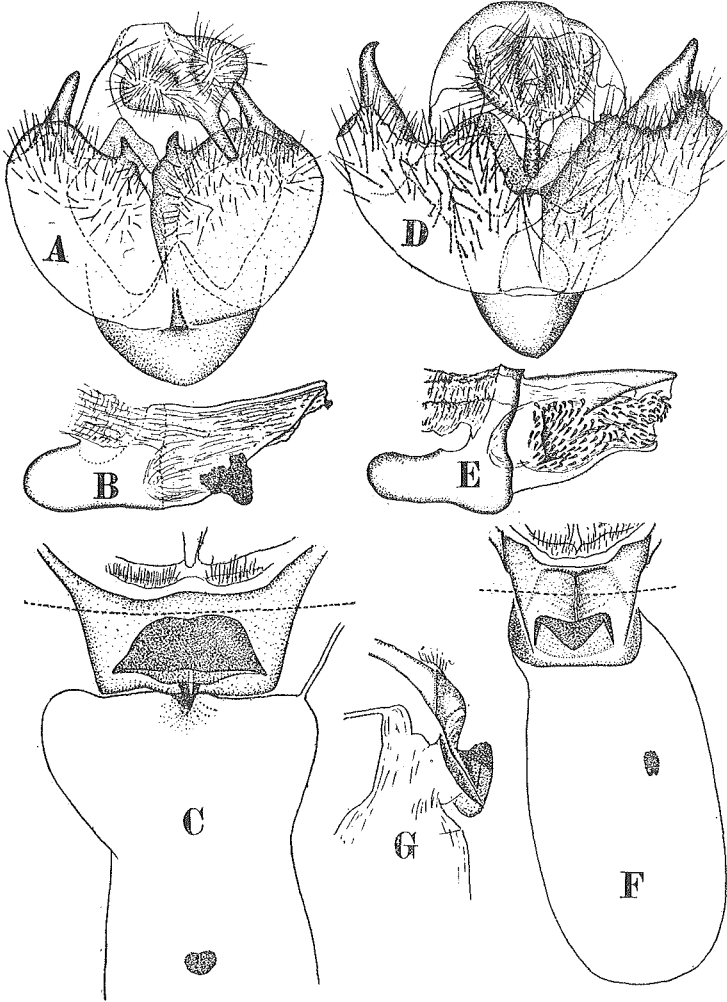
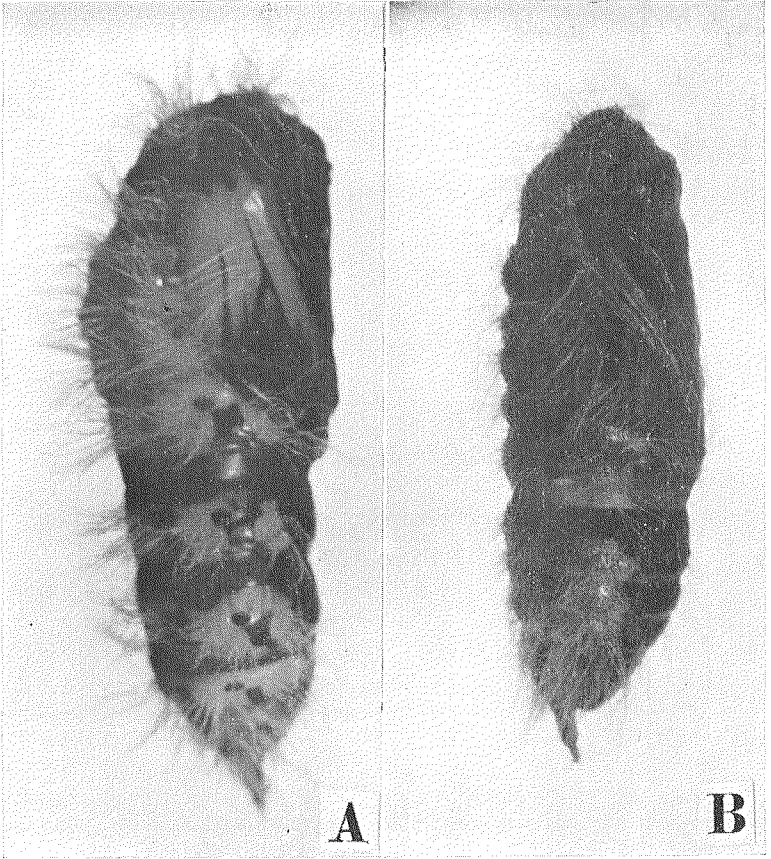
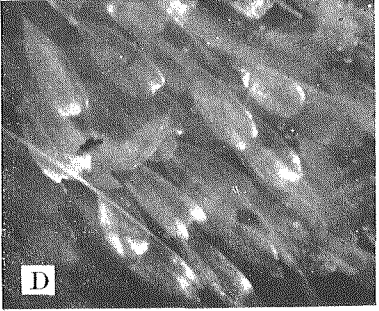
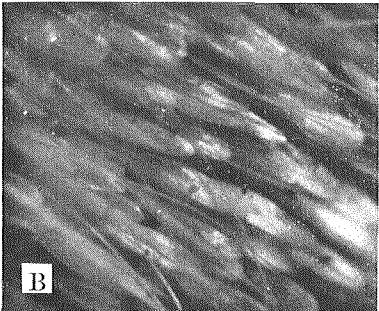
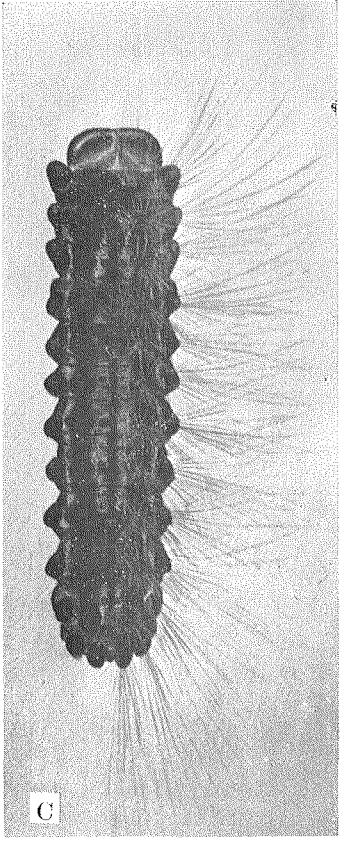
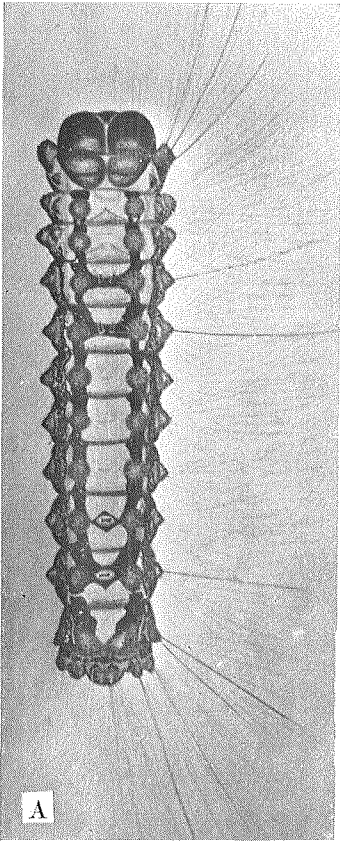


Fig. 2. Larval characters of *Leucoma candida* (STAUDINGER).

- A. Setal maps.
- B. Lateral view of first abdominal segment.
- C. Mesal view of left mandible.
- D. Ventral view of labium.
- E. Dorsal view of labrum.
- F. Dorsal view of front and adfrontal area.







Structure: Head covered with many secondary setae; secondary setae of front present in front of setae Fl alone; cephalic margin of labrum deeply concave and occupying a half of the length of labrum; sclerotic ring completely chitinized, palpiger not connected with mentum, areas around the sr. 2 and sr. 3 not chitinized; in mesal view of mandible the inner area smooth and projected forming a roof-shape. In setal plan, alpha of all segments forming conspicuous verrucae; sigma of thorax consisting of two setae; sigma of abdominal segments forming small verrucae. Alpha, beta and Rho covered with simple setae; the other verrucae with plumosed setae. Subeversible gland touching dorsocaudal margin of verruca alpha; eversible gland elliptical.

Length of fully matured larva; 40-45 mm.

Egg: Unknown.

Host plant: *Populus nigra* LINNÉ var. *italica* MUENCHN.

Specimens examined: 1♂ and 2♀, Kaigen, Manchuria; 2♀, Suigen, 1♀, Heizan, 1♀, Sainei, 1♀, Kazan, 1♀, Shakogi, Korea; 2♂ and 4♀, Sapporo, 1♀, Tomurausi, Hokkaido.

Distribution: Siberia, Manchuria, North China, Korea and Japan (Hokkaido and North Honsyu).

Explanation of plates

Plate 1. Male and female genitalia.

A-C, *Leucoma salicis* (LINNÉ).

D-G, *L. candida* (STAUDINGER).

A and D, caudal view of male genitalia.

B and E, lateral view of aedeagus.

C and F, ventral view of female genitalia.

G, lateral view of female genitalia.

Plate 2. Lateral view of pupae.

A, *Leucoma salicis* (LINNÉ).

B, *L. candida* (STAUDINGER).

Plate 3. Dorsal view of larvae and the scales on the cell of hind wing.

A and B, *Leucoma salicis* (LINNÉ).

C and D, *L. candida* (STAUDINGER).