# A TAXONOMIC REVIEW OF THE COLEOPHORIDAE (LEPIDOPTERA) OF CHINA.

Contribution to the knowledge of the Coleophoridae, LIII

by

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#### ABSTRACT

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The present taxonomic knowledge of the Coleophoridae of China is reviewed. Thirty-one species are recorded here, of which fourteen species are described as new: Coleophora lucida, C. buteella, C. caradjai, C. plurispinella, C. hoeneella, C. tibetana, C. cristata, C. alecturella, C. sittella, C. falcipenella, C. yunnanica, C. denticulata, C. tuberculata and C. batangica. The genitalia of C. seminalis Meyrick and C. summivola Meyrick are illustrated for the first time. Two new synonymies are established: C. inwortalis Meyrick, 1922, a junior subjective synonym of C. seminalis Meyrick, 1921 and C. nivifera Meyrick, 1930, a junior subjective synonym of C. versurella Zeller, 1849.

Key words. - Coleophoridae; China; taxonomy; new species.

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#### INTRODUCTION

The actual knowledge of the Chinese Coleophoridae is very limited: up till now only the following eight species have been reported from this vast country: Coleophora neviusella Busck (Busck 1904), C. melanograpta Meyrick (Caradja & Meyrick 1935), C. vibicigerella Zeller (= C. mandschuriae Toll), C. hsiaolingensis Toll (Toll 1942), C. nivifera Meyrick, C. summivola Meyrick (Meyrick 1930), C. scioleuca Meyrick (Meyrick 1938) and C. sinensis Yang (Yang 1983).

Judging from the important works by Falkovitsh (1972b, 1974, 1975, 1976, 1977 and 1978), Falkovitsh & Reznik (1980) and Reznik (1974, 1976 and 1977) the Coleophoridae are well represented in Eastern Asia. They described many new species from the rich material, representing about 100 species of Coleophoridae, collected by Z. Kaszab in Mongolia. Their works on the fauna of Mongolia and the region of Primorye (Southeast USSR) form the basis of the study of Eastern Asiatic Coleophoridae. The fauna of Japan should also be taken into consideration. Currently 31 species are known from Japan (Baldizzone & Oku 1988a, 1988b) and many more new species, together with a considerable number of species known from Europe, will be added to the Japanese list (Baldizzone & Oku *in press*, in preparation). Finally, I have just completed a paper on two new species from Korea (Baldizzone 1989), whereas a list of the twelve species known from that region will be published later in collaboration with K. T. Park.

The aim of the present paper is to review the taxonomic information on Chinese Coleophoridae that is actually available. For that purpose I have examined all material - wich is, unfortunately, very little - that is kept in the museums of Europe and the United States. The greater portion of this material formed part of the well-known Höne collection; the specimens that fortunately escaped from the destructions of the second world war have found their way to the Museum of Natural History "Grigore Antipa" in Bucharest and the Zoologische Forschungsinstitut und Museum Alexander Koenig in Bonn. A small number of specimens examined are kept in the Issiki collection of the National Museum of Natural History in Washington, whereas the majority of the Meyrick types are in the British Museum (Natural History) in London. Unfortunately I have not been able to study specimens recently taken in China or material from collections within China. In the material studied, 23 species were found in addition to the eight mentioned above, making a total of 31. Of these, 14 are here described as new.

I hope that this paper may form the basis for future studies on the Coleophoridae of China, and will enlarge our knowledge of this vast and complicated family.

Concerning the systematics of the species treated: I have followed Toll's system, as expounded in his publications of 1952b and 1962. Undoubtedly this system is due for a revision, based on our present-day knowledge: according to my opinion (and here I agree with Sattler & Tremewan 1978) the system proposed by Căpuşe (1971, 1975) and Falkovitsh (1972a, 1987) is not useful and complicates, instead of simplifies, the problems in this family. Probably, instead of erecting a great number of new genera, it is necessary to rearrange the species within Coleophora into several species groups. However, before one can succeed in such an operation, the exact status of the species described by the authors of the past should be assessed, and modern methods should be employed to establish the phylogenies of and the relations among the different groups.

I have not prepared a key to the species treated in this paper, as their number is too small in relation to what can be expected to be the ultimate fauna of China. The 31 species treated here often belong to groups that are, systematically speaking, far from related, and it is to be expected that many unknown species should be placed in between these groups. In this case a comparison of the size of Italy, where more than 240 species of Coleophoridae occur, with that of China is relevant.

Locality names are spelled according to the latest edition (1986) of the "Times Atlas of the World, comprehensive edition". In this edition the Chinese names are transcribed with the now widely accepted pinyin romanization. Where the original spelling on labels is deviating, this is added between square brackets. Information on the localities visited by Höne and cooperators is provided by Niethammer (1963). A gazetteer of localities is provided here as an appendix.

Abbreviations for museums:

- BMNH British Museum (Natural History), London, U.K.
- IZPC Institute of Systematic and Experimental Zoology PAS, Cracow, Poland

- LNK Landessamlungen für Naturkunde, Karlsruhe, West Germany
- MGAB Museum für Naturkunde der Humboldt-Universität, Berlin, East Germany
- RMNH Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands
- USNM U.S. National Museum of Natural History, Smithsonian Institution, Washington, USA
- ZFMK Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, West Germany

#### Checklist of the Coleophoridae of China

Coleophora Hübner, 1822 lucida n. sp. neviusiella Busck, 1904 eurasiatica Baldizzone, in press buteella n. sp. melanograpta Meyrick, 1935 caradjai n. sp. changaica Reznik, 1975 vibicigerella Zeller, 1839 mandschuriae Toll, 1942 hoeneella n. sp. tibetana n. sp. sinensis Yang, 1983 citrarga Meyrick, 1934 seminalis Meyrick, 1921 immortalis Meyrick, 1922 n. syn. cristata n. sp. scioleuca Meyrick, 1938 alecturella n. sp. sittella n. sp. versurella Zeller, 1839 nivifera Meyrick, 1930 n. syn. hsiaolingensis Toll, 1942 vestianella (Linnaeus, 1758) summivola Meyrick, 1930 bagorella Falkovitsh, 1977 yomogiella Oku, 1974 kurokoi Oku, 1974 falcipenella n. sp. yunnanica n. sp. artemisiella Scott, 1861 denticulata n. sp. tuberculata n. sp. weymarni Toll, 1942 batangica n. sp.

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A special word of thanks is due to my Dutch friends Dr. Erik van Nieukerken (RMNH) and Hugo van der Wolf (Nuenen) for their assistance in realising this publication.

> Coleophora lucida sp. n. (figs. 1, 22, 40, 41)

Type material. — Holotype &, China: Prov. Zhejiang [Chekiang], West Tienmushan, 24.v.1932, H. Höne, genitalia slide Bldz 6892 (ZFMK).

Description. — Male (fig. 22) (Female unknown). Wingspan 10 mm. Head (fig. 1), thorax and abdomen nut-brown. Head with white scales above the eye; labial palps white on inner surface and suffused with brown scales on outer surface: the second segment approximately half the length of the third. Antenna with very thick tuft of nutbrown short hairs at the base of the first segment; flagellum ringed white and light brown. Forewing with a uniform light nut-brown colour with a nacreous lustre; a thin ochreous costal streak from base to three quarts; fringes concolorous with wing, but lighter. Hind wing dark pearl-grey; fringes light yellow-grey.

Male genitalia (fig. 40). — Gnathos very big, oval. Tegumen cylindrical, with two broad and short arms. Transtilla narrow and stretched, triangular. Valva short and thick, broader at the base than at the top which is rounded. Valvula broad, irregularly oval, covered with short bristles. Sacculus with an almost straight ventral edge, the lateral edge curved to the inside, forming an angle of nearly 45° with the ventro-caudal angle. Aedeagus slightly curved, long, dorsally more sclerotised. No cornuti.

Structure of abdominal supports (fig. 41). — No posterior lateral struts, transverse strut almost straight, with a thicker distal edge. Tergal disks (3rd tergite) oval, each with about twenty small conical spines.

Diagnosis. — This species is difficult to place in Toll's system, as it differs much from all known *Coleophora* species. It may belong to the second group because of its habitus and the form of its tegumen and aedeagus. *C. lucida* is closely related to *C. eteropennella* Baldizzone & Oku, 1988a from Japan. However, the following differences can be observed: in *C. lucida* the transtilla is narrower and longer; the valva is narrower at the apex, the sacculus forms a more acute angle than that of *eteropennella*, which is exactly 45°; the aedeagus is longer and more curved, and also the vesica is longer; *C. lucida* is without any cornuti, whereas *eteropennella* has a single big one, in the form of a nail.

Biology. — Unknown. Distribution. — Eastern China.

#### Coleophora neviusiella Busck, 1904

Coleophora neviusiella Busck, 1904: 45. Lectotype & (Selected by Baldizzone, 1986: 140) China, [Prov. Shandong], Yantai [Che-foo], 24.vi.1903, on apple, genitalia slide Bldz 7797 (USNM) [examined].

Coleophora eothina Falkovitsh 1974: 233 (Synonymized by Baldizzone, 1986: 140).

Other material examined. — Paralectotype Q, same data as lectotype, Mrs. Nevius, genitalia slide Bldz 7798 (USNM)

Diagnosis. — The species belongs to the 7th group of Toll's system. When publishing the synonymy of *C. eothina* Falkovitsh, 1974 I dealt with this species, and illustrated the female genitalia (Baldizzone 1986).

Biology. — The species lives on apple (*Malus* spp.) and Bramble (*Rubus* spp.). The case was described by Falkovitsh (1974).

Distribution. — Eastern China and USSR, Primorye.

#### Coleophora eurasiatica Baldizzone, 1989

Coleophora eurasiatica Baldizzone, 1989. Holotype, &, China, Shanghai [Schangai, Prov. Kiangsu], 28.viii.1944, H. Höne (ZFMK) [examined].

Diagnosis. — The species, of which the female is unknown, belongs to the 8th group of Toll's system and should be placed near *C. algeriensis* Toll.

Biology. - Unknown.

Distribution. - China, Korea, Hungary.

Coleophora buteella sp. n (figs. 3, 23, 44, 45)

Type material. — Holotype &, China: prov. Yunnan [Provinz Nord-Yuennan], Lijiang [Li-kiang], 6.vii.1934, H. Höne, genitalia slide Bldz 6887 (ZFMK). Paratype 1 &, data as holotype, but 30.vii.1935, genitalia slide Bldz 6884 (LNK).

Description. — Male (fig. 23) (Female unknown). Wingspan 10-11 mm. Head (fig. 3) dorsally fulvous brown, laterally white. Thorax and abdomen light brown. Labial palps white on inner surface, almost completely covered with brown scales on outer surface; the second segment is about twice the length of the third.

Antenna with a big tuft of short fulvous hairs at the base of the first segment; flagellum ringed white and dark brown. Fore wing uniformly fulvous brown, with a thin lighter costal streak; fringes of the same colour.

Male genitalia (fig. 44). — Gnathos globular. Tegumen cylindrical, narrowing at two-thirds, with two short arms. Transtilla narrow, long, rounded at the apex, where it is wider than at the base. Valvula broad, the ventral edge rounded, covered with short bristles. Sacculus heavily sclerotised, its ventral edge almost straight and its lateral edge oblique; it is rounded towards the ventrocaudal angle and ends in the dorso-caudal angle with a crooked point which reaches the middle of the valve. Aedeagus conical, long, simply formed. Number of cornuti 4-5, in the form of needles of different lengths, united at the base.

Structure of abdominal supports (fig. 45). — Posterior lateral struts about half the length of the anterior ones. Transverse strut straight and thin, with a thicker distal edge. Tergal disks (3rd tergite) about four times longer than wide.

Diagnosis. — This species belongs to the 9th group of Toll's system and should be placed in the section of *C. discordella* Zeller. *C. buteella* can easily be distinguished from *discordella* by the shape of the process in the dorso-caudal angle of the sacculus, which is shorter and stouter, and by the cornuti which are more numerous and shorter than those of *discordella*.

Biology. — Unknown.

Distribution. — Only known from Yunnan, in Southern China.

# Coleophora melanograpta Meyrick, 1935 (fig. 24)

Coleophora melanograpta Meyrick, in Caradja & Meyrick, 1935: 90. Holotype &, China, Prov. Jiangsu [Kiangsu], Longtan [Lungtan bei Nanking], 16.vi.1933, H. Höne, genitalia slide Bldz 8054 (MGAB) [examined].

Other Material examined. — 1 3, Prov. Zhejiang [Chekiang], West Tienmushan, 28.viii.1932, H. Höne, genitalia slide Bldz 6889 (ZFMK). 1 3, [USSR], Amur, genitalia slide Toll 232 (MGAB).

Diagnosis. — The species belongs to the 16th group of Toll's system and should be placed in the section of *zelleriella* Heinemann. This spe-

cies is treated by Baldizzone & Oku (in press).

Biology. — C. melanograpta lives on Oak (Quercus sp.) and the larva occupies a pistol-shaped case. Dr. Oku is studying the biology of the species, following information I have found in the Issiki collection in the USNM.

Distribution. — Eastern China, Korea and Japan.

# Coleophora caradjai sp. n. (figs. 11, 25, 48-54)

Type material. — Holotype ♂, China, Prov. Shandong [Pr. Shantung], Taishan, mountain top [Gipfelhöhe], ca 1550 m., 29.viii.1934, H. Höne, genitalia slide Bldz 8053 (MGAB). Paratype 1 ♀, data as holotype, but 12.viii.1934, genitalia slide Bldz 6873 (ZFMK).

Description. — Imago (fig. 25). Wing span 14 mm. Head (fig. 11), thorax and abdomen white. Labial palps white: the second segment about 2.5 times longer than the third. Antenna completely white, with some long hairs at the base. Fore wing with various shades of ochre towards the dorsal margin and light brown towards the costal margin. A thin white costal streak reaches the apex, where the wing is completely brown. Fringes brown near the apex and light yellow elsewhere. Hind wings brown; fringes light brown-grey.

Male genitalia (fig. 48). — Gnathos small, oval. Tegumen long, trapezoid, with two short and broad arms. Transtilla very small and short, triangular, rounded. Valva narrow and long, less curved at the base than at the apex, club-shaped. Valvula very big and sclerotised, triangular, covered with bristles. Sacculus heavily sclerotised, curved, widening from the base towards the dorso-caudal angle, where it narrows into a small and sharp point which reaches the middle of the valva. Aedeagus big, conical, dorsally more sclerotised. Numerous cornuti of different lengths, united into a long, curved tress.

Structure of the abdominal supports (fig. 49). — No posterior lateral struts. Transverse strut with a straight proximal edge and a convex distal one. Tergal disks (3rd tergite) about three times longer than wide.

Female genitalia (fig. 53). — Papillae anales small, oval. Apophyses posteriores almost twice as long as apophyses anteriores. Lamella antevaginalis trapezoid, distal margin convex. It is deeply excavated in the middle at the level of the ostium bursae, which is wide, in the form of a cup. Infundibulum long, funnel-shaped, with sclerotised median line as long as the ductus bursae. The ductus bursae is very long, about 14 times longer than the lamella antevaginalis: the upper part, which is 8 times longer than the lamella antevaginalis, is entirely covered with many very small conical spines; below that the ductus is transparent, with the exception of the median line, and ends in a wide curve, at the end of which it is partially covered with small spines towards the beginning of the ductus seminalis. Bursa very wide, bag-shaped with a leaf-shaped signum.

Diagnosis. - The species belongs to the 18th group of Toll's system and should be placed in the section of stramentella Zeller. C. caradjai n. sp. is not difficult to identify because of its habitus - its fore wings are two-colloured and because of the following characteristics of the genitalia: In the male, the gnathos is smaller and longer, the tegumen is wide and stout, the transtilla is longer, the sacculus has a wider edge and ends in a shorter point, there are fewer cornuti, united into a shorter formation. With regard to the female genitalia it can be observed that the lamella antevaginalis is shorter, which is also the case with the apophyses anteriores and posteriores. The ostium bursae is wider and the spines of the ductus bursae are smaller.

Biology. - Unknown.

Distribution. — The species has only been taken in Eastern China.

### Coleophora changaica Reznik, 1975

#### Coleophora changaica Reznik, 1975: 372.

Material examined. - 1 &, China, Prov. Shaanxi [Sued-Shensi], Taibai Shan, Qin Ling [Tapaisan im Tsinling], 28.v.1935, H. Höne, genitalia slide Bldz 8512 (MGAB).

Biology. — The species lives on different species of Artemisia.

Distribution. - China, Mongolia, Central Asia, the Crimea, Jordan, Spain and Algeria.

#### Coleophora vibicigerella Zeller

Coleophora vibicigerella Zeller, 1839: 206.

Coleophora mandschuriae Toll, 1942: 291. Holotype &, China, Zalantun, in Nei Mongol Zizhiqu [Djalantun, Manchuria, prov. Kirin], 1127', 7.vii.1938 (IZPC) [examined].

Biology. — The species lives on Achillea and Artemisia sp.

Distribution. - China, Korea, North Africa and Europe.

### Coleophora plurispinella sp. n. (figs. 2, 26, 55-57)

Type material. — Holotype &, China, Prov. Shandong [Shantung], Taishan (1550 m.), 11.ix.1934, H. Höne, genitalia slide Bldz 6888 (ZFMK).

Description. - Male (fig. 26) (Female unknown). Wing span 13 mm. Head (fig. 2), thorax and abdomen white. The second segment of the labial palps is about twice the length of the third. Antenna with a big bush of ochreous hairs at the base of the first segment, which is white. Flagellum light brown. Fore wing light ochreous, with a triangular brown part along the radial veins. There are silver lines along the costa, the medial, cubital and anal veins. Fringes brown at the apex, yellowgrey elsewhere. Hind wing light brown; fringes light brown-grey.

Male genitalia (fig. 55). — Gnathos big, oval. Subscaphium stout, narrowed at two thirds, with two short and stout arms. Transtilla triangular, pointed. Valva short, broad at the apex, narrowed at the base, much curved. Valvula large, irregularly trapezoid, the lateral edge sclerotised, covered with bristles. Sacculus very much rounded, the edge quite sclerotised, covered with bristles, on the lateral edge below the dorso-caudal angle a big triangular dent. Aedeagus short and conical, much sclerotised basically and dorsally. A great number of cornuti (more than 25), spines of different lengths united into a long formation.

Structure of abdominal supports (fig. 56). - No posterior lateral struts. Transverse strut thick, its proximal edge straight and thin, the distal edge thicker, convex. Tergal disks (3rd tergite) almost 4 times longer than wide.

Diagnosis. - The species belongs to the 18th group of Toll's system and, because of the structure of the male genitalia, should be placed in the section of C. astragalella Zeller. The most obvious differences are: in astragalella (fig. 58) the valva is longer, the lateral process of the sacculus is shorter and sharper, the number of cornuti is only 5-6, whereas plurispinella has more than 25.

Biology. - Unknown.

Distribution. — The species has only been taken in Eastern China.

# Coleophora hoeneella sp. n.

(figs. 12, 27, 59-61)

Type material. — Holotype Q, China, Tibet, Batang, Jinsha Jiang Valley [Im Tal des Yangtze] ca. 2800 m, 11.vi.1936, H. Höne, genitalia slide Bldz 8895 (MGAB).

Description. — Female (fig. 27) (Male unknown). Wing span 15 mm. Head (fig. 12), thorax and abdomen white. Labial palps entirely white: the second segment is about three times longer than the third. Antenna with a long, ochreous hairtuft at the base of the first segment; flagellum ringed white and brown. Fore wing nut-brown, a broad, white costal band, a long, white streak along the cubital vein and a shorter one along the medial vein. Fringes light grey-brown. Hind wing light brown with light grey-brown fringes.

Female genitalia (fig. 59). — Papillae anales broad and oval. Apophyses posteriores widenend to a club-shape below the papilles, they are about 2.5 times longer than the apophyses anteriores. Lamella antevaginalis trapezoid with many horizontal folds in the distal part. Lamella postvaginalis trapezoid, very simple. Ostium bursae wide, oval. Infundibulum cup-shaped. Ductus bursae massive, oval, covered with very thick conical spines, forming two bands along its first part, whereas the second part is completely transparent, with the exception of a small, curved part, which is weakly spotted with chitine. Bursa wide, bag-shaped, with a leaf-shaped signum.

Structure of abdominal supports (fig. 61). — Posterior lateral struts about half the length of the anterior ones. Transverse strut, almost straight, with a proximal edge sclerotised in the middle and a distal edge more sclerotised at the sides. Tergal disks (3rd tergite) about 3 times longer than wide.

Diagnosis. — The species belongs to the 18th group of Toll's system. Because of the structure of the female genitalia, it should be placed in the section of *ditella* Zeller. The following differences with that species can be observed: the subgenital plate of *hoeneella* is narrower and longer; the ductus bursae is covered with spines over a shorter distance than that of *ditella*; the signum bursae is smaller.

Biology. — Unknown.

Distribution. — Only known from the type locality.

# Coleophora tibetana sp. n. (figs. 13, 28, 62-65)

Type material. — Holotype &, China, Tibet, Batang, Jinsha Jiang Valley [Im Tal des Yangtze] ca. 2800 m, 28.vii.1936, H. Höne, genitalia slide Bldz 8892 (MGAB). Paratypes 2 &, data as holotype, but 1.vii.1936, genitalia slide Bldz 8894, and 12.vii.1936, genitalia slide Bldz 8896.

Description. — Male (fig. 28) (Female unknown). Wing span 18-19 mm. Head (fig. 13), thorax and abdomen white. Labial palps white, partially suffused with brown on outer surface: the second segment is about twice the length of the third. Antenna with a tuft of reddish hairs at the base. Flagellum ringed white and light brown. Fore wing ochreous in the dorsal and brown in the costal half. Pearly-white streaks on the surface of the wing: the longest along the costa from base to four-fifths; two short, triangular streaks at the apex along veins R3 and R5; a broad band along vein M1, from the centre of the wing to the margin; another broad streak along the cubital vein; the last streak in the area of veins A(1+2). Fringes light yellow-grey. Hind wing and fringes light yellow-grey.

Male genitalia (fig. 62). — Gnathos big, oval. Tegumen narrow and long, cylindrical, with two short arms. Transtilla small and short, triangular. Valva narrow and long, narrower at the base than at the apex, club-shaped. Valvula large, irregularly trapezoid, covered with bristles. Sacculus small, its ventral margin weakly curved and its lateral margin straight, in the dorso-caudal angle ending in a sharp traingular point, which reaches the base of the valva. Aedeagus short and conical, only dorsally sclerotised. The cornuti are numerous, in the form of spines of different lengths, united into a shape that resembles a brush.

Structure of abdominal supports (fig. 63). — Posterior lateral struts about half the length of the anterior ones. Transverse strut very thick, its proximal edge convex and its distal edge almost straight. Tergal disks (3rd tergite) about 4 times longer than wide.

Diagnosis. — The species belongs to the 18th group of Toll's system, but it is difficult to place it in any known section because of the very characteristic genitalia. It may be close to *C. canariipennella* Toll, a species of Iran, which can easily be distinguished from *tibetana* because of the following characteristics: in *canariipennella* the aedeagus and the valva are considerably shorter, the cornuti are fewer in number, united into a long row, whereas the lateral margin of sacculus is fully crenated.

Biology. — Unknown.

Distribution. — Only known from the type locality.

#### Coleophora sinensis Yang

Coleophora sinensis Yang, 1983: 107. Holotype Q, China, Prov. Shanxi [Shansi], 13.vi.1979. (North-Eastern College of Forestry, China). [not examined].

Diagnosis. — The species, described on the basis of 21 specimens, belongs to the 25th group of Toll's system and should be placed near *C. laricella* Hübner. Biology. — The species is recorded to live on Larix principis-rupprechtii Mayr.

Distribution. — Only reported from Shanxi and Hebei provinces.

Coleophora citrarga Meyrick (fig. 10)

Coleophora citrarga Meyrick, 1934: 460.

Material examined. — 1 Q, Taiwan, Taihoku, 27.vi.1946, leg. Issiki (USNM).

Diagnosis. — The species belongs to the 30th group of Toll's system and should be placed in the section of *glaucicolella* Wood. It is treated in a paper on some species of Japan (Baldizzone & Oku, in press).

Biology. — Unknown. Distribution. — Japan and Taiwan.

> Coleophora seminalis Meyrick (figs. 16, 29, 66-73)

- Coleophora seminalis Meyrick, 1921: 189. Holotype &, Java, Pekalongan, van Deventer, Coll. Piepers-Snellen, "M.525", genitalia slide Bldz 9247 (RMNH) [examined].
- Coleophora immortalis Meyrick, 1922: 556. Holotype &, Fiji Islands, Lautoka, 24.iv. on flower of Amaranthus paniculatus, W. Greenwood (BMNH) [examined]. Syn. n.

Material examined. — China, 2 &, Shanghai [Schangai, Prov. Kiangsu], 19.viii.1942 and 21.viii.1943, H. Höne (ZFMK).

Male genitalia (fig. 66). — Gnathos big, oval. Tegumen trapezoid, considerably narrowed towards three quarters, with two long and broad arms. Transtilla broad and flattened, irregularly oval. Valva large, very broad, its dorsal margin curved. Valvula small, heavily sclerotised, irregularly oval. Sacculus broad, characterised by two triangular points at the angles: the point at the ventro-caudal angle is longer than that at the dorsocaudal angle. Aedeagus narrow and long, consisting of two sclerotised bands, of which one is thinner and sharp at the apex, the other thicker, with a curved tooth at the apex in ventral position. Cornuti numbering 6—7, of different lengths, united into an irregular row.

Structure of abdominal supports (fig. 67). — No posterior lateral struts. Transverse strut straight, its proximal edge thicker than the distal one. Tergal disks (3rd tergite) about twice longer than broad.

Female genitalia (fig. 70). - Papilles anales narrow and long. Apophyses posteriores about twice the length of the anterior ones. Subgenital plate trapezoid, its distal margin convex with some bristles; it shows two folds, symmetrical with the sides of the ostium bursae. Ostium bursae oval, opening at three quarters of the subgenital plate. Infundibulum tube-shaped, medially expanded. Ductus bursae with a median line in its first half as far as the central curve; ductus covered with conical spines over a section about twice the length of the subgenital plate. The remainder of the ductus is almost transparent. Bursa oval, with a signum of a singular shape: a small irregularly oval plate crowned by an abrupt upper edge. This signum varies considerably and can also have numerous rounded spines.

Diagnosis. — The species belongs to the 30th group of Toll's system and might be placed in the section of *glaucicolella* Wood. I have frequently had the opportunity to observe considerable variations in the colouring of the wings, and even more in the genitalia: in the male, the valva and the valvula, the triangular processes of the sacculus, the point of the aedeagus and the cornuti; in the female the form of the signum bursae.

Biology. — Meyrick's descriptions were based on specimens reared from different species of *Amaranthus*.

Distribution. — Fiji Islands, Java, Eastern China, Australia, New Guinea, Sumatra (material recently examined by me.)

> Coleophora cristata sp. n. (figs. 5, 30, 74-77)

Type material. — Holotype &, China, Prov. Zhejiang [Chekiang], West Tianmu Shan [Tien-mu-shan], 8.ix.1932, H. Höne, genitalia slide Bldz 6888 (ZFMK).

Description. — Male (fig. 30) (Female unknown). Wing span 13 mm. Head (fig. 5), thorax and abdomen white. Labial palps white, suffused with reddish scales on outer surface: the second segment is almost half as long as the third. Antenna entirely white, with the exception of a short tuft of reddish hairs at the base of the first segment. Fore wing completely white, weakly streaked reddish along the veins, with some brown scales in the apical area. Fringes white at apex and light brown at the dorsal costa. Hind wing and fringes light brown.

Male genitalia (fig. 74). — Gnathos globular. Tegumen narrowed towards three quarters with two long, flattened arms. Transtilla broad, irregularly trapezoid, its distal margin curved and pointed. Valva large, wider at the apex than at the base. Valvula small, trapezoid, covered with bristles. Sacculus with curved ventral margin and straight lateral margin: a small rounded tooth in the ventro-caudal angle, and in the dorso-caudal angle four triangular teeth of different sizes, having the shape of a cock's comb. Aedeagus long, forming two sclerotised bands, the thin one ending in a sharp apex, the thick one in a triangular point, surmounted by a long, curved protuberance. There are five cornuti, of which four are curved, in the form of spines of different lengths, whereas the fifth is quite long, together with the others forming a kind of talon.

Structure of abdominal supports (fig. 57). — No posterior lateral struts. Transverse strut with a convex proximal edge and an almost straight distal one. Tergal disks (3rd tergite) about twice longer than broad.

Diagnosis. — The species belongs to the 30th group of Toll's system and should be placed in the section of *C. virgaureae* Stainton. The two species can easily be separated by the following characteristics of the male genitalia: in *C. cristata* n. sp. the transtilla is larger with a sharper point in the dorsal margin; the sacculus is narrower and the teeth in the dorso-caudal angle are shorter and stouter: the aedeagus is longer and the dorsal protuberance is thicker and longer than that in *virgaureae*; the cornuti are longer and have a different shape.

Biology. — Unknown. Distribution. — Eastern China.

# Coleophora scioleuca Meyrick (figs. 4, 31, 78-81)

Coleophora scioleuca Meyrick, in Caradja & Meyrick, 1938: 20. Lectotype & (here designated) China, [Prov. North Yunnan], Lijiang [Likiang], H.6-34, genitalia slide BMNH 24443 (BMNH) [examined].

Other material examined. — Paralectotype & (abdomen missing), data as lectotype but 10.vi.1934, H. Höne, (MGAB).

Male genitalia (fig. 78). — Gnathos oval. Tegumen triangular, considerably narrowed towards three quarters, with two long and flattened arms. Transtilla straight, curved at the apex, which has a point curved backwards. Valva long, slightly curved, rounded at the apex, very oblique. Valvula irregularly triangular, heavily sclerotised, covered with long setae. Sacculus narrow, with a large, triangular fold at the base; the lateral margin is curved, heavily sclerotised, and the dorso-caudal angle has two big, rounded teeth. Aedeagus long, curved, forming two bands, more sclerotised dorsally, of which the thin one ends in a narrow, sharp point, whereas the thicker one is broader at the apex, which is curved and ends in a sharp point. Only one cornutus, which is very long, curved, and fine in the form of a needle.

Structure of abdominal supports (fig. 79). — No posterior lateral struts; transverse strut thick, with a convex proximal edge and an almost straight distal edge. Tergal disks (3rd tergite) about five times longer than broad.

Diagnosis. — The species belongs to the 30th group of Toll's system and should probably be placed in the section of *therinella* Tengström. As the female is not known, it is impossible for me at the moment to give it a more precise position.

Biology. - Unknown.

Distribution. - Southern China, Nepal.

Coleophora alecturella sp. n. (figs. 15, 32, 82-85)

Type material. — Holotype &, China, Tibet, Batang, Jinsha Jiang Valley [Im Tal des Yangtze] ca. 2800 m, 3.viii.1936, H. Höne, genitalia slide Bldz 8913 (MGAB).

Description. — Male (fig. 32) (Female unknown). Wing span 11 mm. Head (fig. 15), thorax and abdomen light brown. Labial palps entirely white on inner surface and almost entirely suffused with nut-brown scales on outer surface: the second segment is about twice the length of the third. Antenna without hairtuft at the base. Flagellum ringed white and brown. Fore wing uniformly pearly light brown. Fringes brown. Hind wing and fringes uniformly pearly brown.

Male genitalia (fig. 82). — Gnathos oval. Tegumen trapezoid, with two long arms. Transtilla large, flattened, oval. Valva short and stout, oblique. Valvula small, triangular, heavily sclerotised. Sacculus small, strongly curved and thick on the ventral and lateral margin, which ends in the dorso-caudal angle in a structure covered with small, rounded teeth of different sizes. Aedeagus stout, consisting of two sclerotised bands, of which one is shorter with a triangular point, the other longer, surmounted by a triangular tooth on the dorsal half, and with a small, rounded tooth at the apex. Cornuti 7-8, of different lengths, united into a long formation, thicker at the base.

Structure of abdominal supports: (fig. 83). — No posterior lateral struts. Transverse strut slightly convex. thinner in the middle. Tergal disks (3rd tergite) about twice longer than broad.

Diagnosis. — The species belongs to the 30th group of Toll's system and should, because of the

structure of the male genitalia, be placed in the section of *sternipennella* Zetterstedt, near *monoceros* Falkovitsh. C. *alecturella* can be distinguished by the following characteristics: the aedeagus has a triangular tooth, the transtilla is oval and the cornuti are long.

Biology. — unknown.

Distribution. — Only known from the type locality.

> Coleophora sittella sp. n. (figs. 18, 33, 86-89)

Type material. — Holotype &, China, Prov. Yunnan [Nord-Yuennan], Lijiang [Li-kiang], 9.vii. 1934, H. Höne, genitalia slide Bldz 6900 (ZFMK). Paratypes 2 &, data as holotype, but 19.viii. 1934, genitalia slide Bldz 6893 and 26.vii. 1935, genitalia slide Bldz 6875; 1 &, Shanghai [Schangai, Prov. Kiangsu], 19.v.1932, H. Höne, genitalia slide Bldz 6869 (ZFMK, LNK).

Description. — Male (fig. 33) (Female unknown). Wing span 12-13 mm. Head (fig. 18), thorax and abdomen nut-brown. Labial palps white, suffused with light brown scales on outer surface: the second segment about half the length of the third. Antenna with some reddish hairs at the base of the first segment; flagellum ringed white and nut-brown. Fore wing nut-brown streaked with white along the main veins; fringes pearly light brown. Hind wing uniformly brown, with pearly light brown fringes.

Male genitalia (fig. 86). - Gnathos oval. Tegumen big, triangular, considerably narrowed towards three quarters, with two long and very broad arms. Transtilla very large, irregularly trapezoid. Valva short and stout, wider at the base than at the apex, which is rounded. Valvula oval, narrow and long, heavily sclerotised. Sacculus with curved ventral margin and straight lateral margin, with many small teeth of different sizes in the dorso-caudal angle. Aedeagus with a rather complicated structure, consisting of two sclerotised bands of widely differing shapes: the shorter one ends in a rounded apex and is surmounted by a long, curved and serrated horn in its dorsal middle, the longer one is rather thick and ends in a curved and bifurcated apex, with two rounded points. Cornuti numerous, shaped like curved needles of different lengths, united at the base into a long structure.

Structure of abdominal supports (fig. 87). — No posterior lateral struts; transverse strut wide, almost straight, its proximal edge thicker in the middle and the distal one thicker at the sides. Tergal disks (3rd tergite) about three times longer than broad. Diagnosis. — The species belongs to the 30th group of Toll's system and should be placed in the section of *sternipennella* Zetterstedt. Because of the structure of the male genitalia it is probably closely related to *C. lunensis* Falkovitsh and *C. pseudolinosyris* Kasy. *C. sittella* n. sp. can easily be distinguished by the following characteristics: the valva is shorter; the transtilla is wider; the sacculus is different, mainly because of the straight lateral margin; the aedeagus is stouter with a differently shaped tooth in the middle, and a bifurcate point which does not occur in other species; the cornuti are more numerous and longer.

Biology. — Unknown.

Distribution. — South-western and Eastern China.

#### Coleophora versurella Zeller

Coleophora versurella Zeller, 1849: 352. Lectotype ♀ (here designated) Poland, Glogów [Glogau], genitalia slide BMNH 4417 (BMNH) [examined].

Coleophora nivifera Meyrick, 1930: 625. Holotype (¿ according to original description; abdomen and hindwings missing when examined), China, Tibet Yadong [Yatung], B.10000', 6.viii (BMNH) [examined] syn.n.

Material examined. — China, Shanghai [Schanghai, Prov. Kiangsu], 4 ♂, 13 ♀, 2.vi, 30.vii and 10-28.viii.1936; 10.vii and 18-19.viii.1942, H. Höne (LNK, MGAB).

Biology. — The species lives on the seeds of *Atriplex* sp., *Amaranthus* sp. and *Chenopodium* sp.

Distribution. — Widely distributed over the entire Palaearctic region and North and South America.

# Coleophora hsiaolingensis Toll (fig. 7)

Coleophora hsiaolingensis Toll, 1942: 296. — Holotype ♂, China, Xiaoling [Manchuria, Hsiaoling, Prov. Kirin], 13.viii.1939, genitalia slide Toll 837 (IZPC) [examined]. Allotype ♀, data as holotype, but 20.viii.1939, genitalia slide Toll 838 (IZPC) [examined].

Biology. - Unknown.

Distribution. — The species is known from China and Japan. Recently I have studied a male from Siberia (MGAB).

# Coleophora vestianella (Linnaeus)

Phalaena (Tinea) vestianella Linnaeus, 1758: 536.

Material examined. — 1 Q, China, Prov. North Yunnan, Lijiang [Likiang] ca. 3000 m., 7.ix.1934, H. Höne, genitalia slide Bldz 6871 (LNK), 2 ♂, China, Prov. Shanxi [Shansi], Mian Shan [Mien-shan], upland plain [Obere Höhe], ca. 2000 m., 6.viii.1937, H. Höne, genitalia slide Bldz 8515, and 10.viii.1937 (MGAB).

Biology. — The species lives on the seeds of *Atriplex* sp. and *Chenopodium* sp.

Distribution. — Europe, Asia Minor, Iran, Afghanistan, China and Japan.

# Coleophora summivola Meyrick (figs. 14, 34, 90-96)

Coleophora summivola Meyrick, 1930: 625. — Holotype &, China, Tibet, Gyangzê [Giantse] B.14500' J. 28", genitalia slide BMNH 24442 (BMNH) [examined].

Material examined. — 3 Q, China, Prov. North Yunnan, Lijiang, 22.vi., 4.viii.1934 and 17.viii.1935, H. Höne (LNK); 1 Q, Prov. North Yunnan, Dêqên [A-tun-tse], upland plain [obere Höhe] ca. 4500 m., 10.viii.1936, H. Höne (MGAB); 3  $\mathcal{F}$ , 2 Q, Tibet, Batang, Jinsha Jiang Valley [Im Tal des Yangtze] ca. 2800 m, 6 vii, 16.vii, 4.viii, 14-15.viii.1936, H. Höne (MGAB).

Male genitalia (fig. 90). - Comparison with parenthella shows that the lateral margin of the sacculus has no big, rounded tooth, which in parenthella is present on the inner side of the dorso-caudal angle. The aedeagus of summivola is formed by two sclerotised rods of almost equal lengths, both with a triangular tooth at the apex, whereas in parenthella one of the two rods is one quarter shorter than the other, and only the longer one has a tooth at the apex. The group of cornuti in the form of a talon in summivola is longer than that of parenthella. The male genitalia of C. aequigesa Falkovitsh also resemble those of summivola. I have had the opportunity to study the holotype of aequigesa, a species from Mongolia, kept in the Museum of Natural History, Budapest, and I have observed the following differences, which are obvious in the aedeagus: the aedeagus of aequigesa is formed by two rods that are perfectly symmetrical, smaller than those of summivola, and they have no teeth at the apex. The male genitalia of aequigesa have no ductus ejaculatorius, which was probably lost during the preparation of the genitalia.

Female genitalia (fig. 94). — Compared with *parenthella* the subgenital plate of *summivola* is rather longer and more chitinous; the ostium bursae is smaller, opening closer to the distal edge of the plate; the infundibulum is longer and wider than that of *parenthella* and the section of the

ductus bursae which is covered with spines is also longer.

Diagnosis. — The species belongs to the 30th group of Toll's system, and should be placed in the section of *vestianella* (Linnaeus), near *parenthella* Toll.

Biology. - Unknown.

Distribution. — The species has only been taken in China.

#### Coleophora bagorella Falkovitsh

Coleophora bagorella Falkovitsh, 1977: 592.

Material examined. — 1 &, China, Prov. North Yunnan, Dêqên [A-tun-tse], upland plain [obere Höhe] c. 4500 m., 13.viii.1936., H. Höne, genitalia slide Bldz 8517 (MGAB).

Biology. — Unknown. Distribution. — China and Mongolia.

# Coleophora yomogiella Oku (fig. 8)

Coleophora yomogiella Oku, 1974: 254.

Material examined. — 2 &, China, Prov. North Yunnan, Lijiang [Likiang], 1.vii.1934, H. Höne, genitalia slides Bldz 6886 and 6897 (LNK).

Biology. — The species lives on Artemisia princeps and Artemisia montana.

Distribution. — Japan, Korea and China.

# Coleophora kurokoi Oku (fig. 9)

Coleophora kurokoi Oku, 1974: 256.

Material examined. -2  $\Diamond$ , 1  $\heartsuit$ , China, Prov. North Yunnan, Lijiang [Likiang], 17.vi, 7.ix.1934 and 25.vii.1935, H. Höne, genitalia slides Bldz 6898, 6870 and 6899 (LNK), 1  $\heartsuit$ , Prov. Zhejiang [Chekiang], West Tianmu Shan [Tien-mu-shan], 18.viii.1932, H. Höne, genitalia slide Bldz 6891 (LNK).

Biology. — The species lives on Chrysanthemum morifolium var. sinense and Artemisia princeps.

Distribution. — Japan and China.

# Coleophora falcipenella sp. n. (figs. 6, 35, 97-100)

Type material. — Holotype &, China, Prov. North Yunnan [Nord-Yuennan], Lijiang [Li-kiang], 10.vii.1934, H. Höne, genitalia slide Bldz 7080 (ZFMK). Description. — Male (fig. 35) (Female unknown). Wing span 15 mm. Head (fig. 6) and thorax white, suffused with reddish-brown scales on dorsal surface. Labial palps white, suffused with reddish-brown scales on outer surface: the second segment is about 2.5 times longer than the third. Antenna without hairtuft at the base; flagellum ringed white and brown. Abdomen light brown. Fore wing reddish-brown with numerous white streaks along the costa and the main veins. Fringes pearly brown-yellow. Hind wing light brown; fringes brown-yellow.

Male genitalia (fig. 97). — Gnathos oval. Tegumen narrowed towards three quarters, with two long arms. Transtilla flattened and curved, clubshaped. Valvula irregularly oval, covered with thin bristles. Valva short and stout, narrower at the base than at the apex. Sacculus with curved ventral margin, ending in the ventro-caudal angle, forming a right angle; the lateral margin is almost straight and ends in the dorso-caudal angle, which goes beyond the dorsal margin of the valva; a big, rounded tooth can be found on the inside of the lateral margin of the sacculus. Aedeagus very long, certainly one of the longest of the family of Coleophoridae; it is formed by two sclerotised bands, very asymmetrical, of which the longer has two curves and ends in a scythe-shaped apex. The shorter band is about half the length of the other. It has a triangular tooth a short distance from the apex. A single long and curved cornutus, needle-shaped.

Structure of abdominal supports (fig. 98). — No posterior lateral struts. Transverse strut thick, its proximal edge straight, the distal one convex. Tergal disks (3rd tergite) about 5 times longer than wide.

Diagnosis. — The species belongs to the 30th group of Toll's system, but because of the peculiar shape of the male genitalia it is impossible for me to place it with certainty into a section already known. For the same reason this new species cannot be mistaken for any other species already known: the structure of the sacculus and of the aedeagus allow an immediate identification.

Biology. — Unknown.

Distribution. — Only known from the type locality.

# Coleophora yunnanica sp. n. (figs. 20, 36, 101-108)

Type material. — Holotype &, China, Prov. North Yunnan [Nord-Yuennan], Lijiang [Li-kiang], 9.vii.1934, H. Höne, genitalia slide Bldz 7084 (ZFMK). Paratypes 3 Q, data as holotype, but 22.vi., 10.vii. and 17.vii.1934, genitalia slides Bldz 6894, 7083 and 7081 (ZFMK, LNK). Description. — Male and female (fig. 35). Wing span 12-13 mm. Head (fig. 20), thorax and abdomen ochreous. Labial palps white, suffused reddish-brown on outer surface: the second segment about twice the length of the third. The ochreous antenna has no hairtuft at its base. Fore wing uniformly ochreous, streaked with reddish-brown along the main veins and suffused with some scattered dark brown scales, mainly towards the apex. Fringes light pearly brown-grey. Hind wing light brown-grey; fringes concolorous with those of fore wing.

Male genitalia (fig. 101). - Gnathos oval. Tegumen considerably narrowed towards three quarters, with two very long and broad arms. Transtilla short and small, triangular. Valva short and stout, rounded at the apex. Valvula long, narrow, heavily sclerotised, covered with long bristles. Sacculus broad, heavily sclerotised, with curved ventral margin, with a long, triangular protuberance in the ventro-caudal angle and an irregular process in the dorso-caudal angle, resembling a spiral tooth. Vinculum with a conspicuous formation in its middle, resembling a conical tooth. Aedeagus long, formed by two highly symmetrical sclerotised bands: the shorter and thinner one narrowing from the base to the apex, where it ends in a point; the longer one widening from the base to the apex, where it forks into a longer and a shorter protuberance. Only one cornutus, big and long, broad at the base, talonshaped.

Structure of abdominal supports (fig. 102). — No posterior lateral struts; transverse strut weakly convex at its distal edge, which is thicker than the proximal one. Tergal disks (3rd tergite) about three times longer than wide.

Female genitalia (figs. 105, 106). - Papillae anales small and oval. Apophyses posteriores about twice the length of the anterior ones. Lamella antevaginalis trapezoid, its proximal margin convex and its distal one concave, with long bristles; it has a small, triangular tooth in each of the two corners of its distal margin, and two broad, symmetrical, transverse folds in the middle. Ostium bursae oval, narrow and long, opening at the distal margin, and reaching halfway down the subgenital plate. Infundibulum very long and sclerotised, in the form of a narrow bag, about four times longer than the subgenital plate. The ductus bursae is undoubtedly the longest so far known in the family of the Coleophoridae: about twenty times longer than the subgenital plate; in its first part it is covered with tiny conical spines in two bands, over about twice the length of the subgenital plate; the remainder of the ductus bursae is transparent and shows many coils in its middle section. The bursa is of normal size, bag-shaped, with a leaf-shaped signum.

Diagnosis. - The new species belongs to the 30th group of Toll's system, but because of the unique shape of the genitalia it is really impossible for me to place it into a known section. The male genitalia slightly resemble those of C. pandionella Baldizzone (1988), a species from Siberia and those of C. issikii Baldizonne & Oku (1988a), a species from Japan but there are rather obvious differences, mainly in the aedeagus and the protuberances of the sacculus. The genitalia of the female, however, resemble those of species in the section of galbulipennella Zeller (= otitae Zeller), such as microtitae Toll & Amsel and treskaensis Toll & Amsel, but there structure of the subgenital plate, the infundibulum and the enormous length of the ductus bursae allow an immediate determination.

Biology. — Unknown.

Distribution. — Only known from the type locality.

#### Coleophora artemisiella Scott

#### Coleophora artemisiella Scott, 1861: 409.

Material examined. — 2 &, China, Tibet, Batang, Jinsha Jiang Valley [Im Tal des Yangtze] ca. 2800 m., 22.v. and 13.vii.1936, H. Höne, genitalia slides Bldz 8903, 8904 (MGAB).

Biology. — The species lives on Artemisia sp. Distribution. — So far the species was only known from Europe. The specimens from the Jinsha Jiang Valley indicate a much wider Palaearctic distribution.

# Coleophora denticulata sp. n (figs. 19, 37, 109-112)

Type material. — Holotype &, China, Tibet, Batang, Jinsha Jiang Valley [Im Tal des Yangtze] ca. 2800 m., 1.ix.1936, H. Höne, genitalia slide Bldz 8910 (MGAB).

Description. — Male (fig. 37) (Female unknown). Wing span 14 mm. Head (fig. 19) brown dorsally and white laterally. Labial palps white, almost completely suffused with brown scales on outer surface: the second segment is about twice the length of the third. Antenna without hairtuft at the base; flagellum ringed white and brown. Fore wing uniformly pearly light brown, suffused with scattered white scales towards the apex; a broad, white band along the costa, with gradations towards dorsum. Fringes chocolate-brown. Hind wing uniformly brown-grey; fringes chocolatebrown.

Male genitalia (fig. 109). - Gnathos small, pear-shaped. Tegumen narrowed towards two thirds, with two long arms. Transtilla short, irregularly triangular. Valvula oval, with thick ventral margin, covered with long bristles. Valva small, rounded at the apex. Sacculus broad, heavily sclerotised, its almost straight ventral margin extended in the ventro-caudal angle into a triangular, serrated formation; its lateral margin almost perpendicular, serrated up to the dorso-caudal margin, which ends in a big formation, curved and serrated at the external and straight at the internal margin: the point of that formation reaches beyond the dorsal margin of the valva. Aedeagus long and curved, consisting of two sclerotised bands, of which one is narrower at the base than at the apex, where it ends in a point, and the other is broader at the base and ends at the apex in a big, triangular tooth, serrated at the proximal margin. Numerous cornuti of different lengths, united into a curved formation resembling a tress.

Structure of abdominal supports (fig. 110). — No posterior lateral struts; transverse strut convex, thicker at the sides than in the middle. Tergal disks (3rd tergite) oval, about twice as long as wide.

Diagnosis. — The species belongs to the 30th group of Toll's system and can be placed near *C. pseudociconiella* Toll and *C. hungariae* (Gozmány), because of the structure of its male genitalia. *C. denticulata* can be distinguished by the following characteristics: the rather small and short valva and the serrated process of the dorso-caudal angle of the sacculus, which is considerably bigger than that of the other species.

Biology. - Unknown.

Distribution. — Only known from the type locality.

# Coleophora tuberculata sp. n. (figs. 17, 38, 113-116)

Type material. — Holotype &, China, Tibet, Batang, Jinsha Jiang Valley [Im Tal des Yangtze] ca. 2800 m., 3.viii.1936, H. Höne, genitalia slide Bldz 8901 (MGAB).

Description. — Male (fig. 38) (Female unknown). Wing span 14 mm. Head (fig. 17) white laterally and reddish-brown dorsally. Labial palps white, partially suffused with reddish-brown scales on outer surface: the second segment is about twice the length of the third. Antenna without hairtuft at the base: the first segment is white, suffused with brown scales dorsally; flagellum ringed white and brown. Thorax and abdomen brown. Fore wing light ochreous, with brown scales scattered along the main veins. Fringes grey-brown. Hind wing grey-brown. Fringes of hind wing brown.

Male genitalia (fig. 113). - Gnathos oval. Tegumen triangular, narrowed towards two thirds with two long, flattened arms. Transtilla broad and flattened, hatchet-shaped. In the middle of the transtilla a sclerotised formation of an extremely singular shape: a stalk widening into an inverted cone, with lots of sclerotised spines of different lengths in the widest part; this structure, whose purpose is quite unknown to me, is highly remarkable and is absent in all other species of Coleophoridae so far known. Valvula tiny and long, highly sclerotised in an irregular form, covered with long bristles. Valva long, its dorsal margin undulating, the ventral one curved; wider at the base than at the apex. Sacculus straight, heavily sclerotised, its ventral margin curved, the lateral one straight: in the ventro-caudal angle a small, triangular tooth; in the dorso-caudal angle another bigger and longer tooth, rounded at the apex, curved towards the inside. Aedeagus consisting of two asymmetrical sclerotised bands, wider at the apex than at the base: they are slightly different in length, ending in sharp points. Only one long cornutus with a widened base, in the form of a spine.

Structure of abdominal supports (fig. 114). — No anterior lateral struts; transverse strut has a thin proximal edge, slightly convex, and a distal one, almost straight, laterally more sclerotised than in the middle. Tergal disks (3rd tergite) about four times longer than wide.

Diagnosis. — The species belongs to the 30th group of Toll's system and might be placed in the section of *C. adspersella* Benander. *C. tuberculata* n. sp. can easily be identified by the remarkable formation in the middle of the transtilla, by the tooth in the dorso-caudal angle of a sacculus which is considerably shorter than in *adspersella*, by the aedeagus consisting of bands without teeth at the apex, and by a cornutus which is shorter than in *adspersella*.

Biology. - Unknown.

Distribution. — Only known from the type locality.

#### Coleophora weymarni Toll

Coleophora weymarni Toll, 1942: 289. — Holotype &, China, Zalantun, in Nei Mongol Zizhiqu [Djalantun, Manchuria, prov. Kirin] 1127', 10.vi.1938, genitalia slide Toll 834 (IZPC) [examined].

Other material examined. - Paratype Q, data as ho-

lotype, but 26.vi.1939, genitalia slide Toll 835 (IZPC) [examined].

Biology. - Unknown.

Distribution. — Only known from the type locality.

# Coleophora batangica sp. n. (figs. 21, 39, 117-120)

Type material. — Holotype &, China, Tibet, Batang, Jinsha Jiang Valley [Im Tal des Yangtze] ca. 2800 m, 7.ix.1936, H. Höhe, genitalia slide Bldz 8909 (MGAB).

Description. — Male (fig. 39) (Female unknown). Wing span 13 mm. Head (fig. 21), thorax and abdomen entirely white. Labial palps ochreous, with white scales mainly on inner surface: the second segment about 1.5 times longer than the third. The first segment of the antenna is white, suffused with scattered brown scales, with a short, ochreous hairtuft; flagellum ringed white and brown. Fore wing reddish-brown, with broad costal streak, narrowed towards two thirds and a white dorsal streak, reaching the apex of the wing. The entire surface of the wing has a pearly gloss. Fringes brown. Hind wing brown-grey. Fringes brown.

Male genitalia (fig. 117). -- Gnathos very small, globular. Tegumen considerably narrowed at the base of the socii, with two very broad triangular arms. Transtilla united in the middle, broad and triangular. Valvula tiny and long, heavily sclerotised. Valva very long and curved, at the base considerably narrower than at the apex, on the dorsal margin covered with bristles. Sacculus small, heavily sclerotised, covered with long bristles, extending into a triangular form, obtuse at the lateral margin, with two spines of unequal lengths in the dorso-caudal angle. Aedeagus of medium length, conical, consisting of two sclerotised symmetrical rods, narrower at the base than at the apex, where they are rounded. Numerous cornuti of different lengths, united into a long formation resembling a curved brush.

Structure of abdominal supports (fig. 118). — No lateral posterior struts; transverse strut very tiny, convex in its central part. Tergal disks (3rd tergite) about twice as wide as long, covered with short, very sharp, conical spines.

Diagnosis. — The species belongs to the 34th group of Toll's system, and because of the structure of its male genitalia should be placed in the section of *C. unipunctella* Zeller, a species from which *C. batangica* can easily be separated by means of its habitus, or by the following obvious differences in the genitalia: the valva of *batangica* is narrower at

the base, longer and more curved; the transtilla is bigger, with a large, central triangular widening, which is not present in *unipunctella*; the sacculus of *batangica* is wider, its lateral margin longer, and the spines in the dorso-caudal angle are close to each other, whereas in *unipunctella* they are far apart; the aedeagus of *batangica* is shorter and stouter, and the cornuti are longer and more numerous.

Biology. — Unknown.

Distribution. — Only known from the type locality.

#### RÉSUMÉ

La connaissance taxonimique actuelle sur les Coleophoridae de la Chine est revue. Trente-et-un espèces sont reconnues ici. Quatorze espèces sont décrites comme nouvelles: Coleophora lucida, C. buteella, C. caradjai, C. plurispinella, C. hoeneella, C. tibetana, C. cristata, C. alecturella, C. sittella, C. falcipenella, C. yunnanica, C. denticulata, C. tuberculata et C. batangica. Les genitalia des espèces suivantes sont illustrés pour la première fois: C. seminalis Meyrick et C. summivola Meyrick. Les nouvelles synonymies suivantes sont établies: C. immortalis Meyrick, 1922 est synonyme de C. seminalis Meyrick, 1921, et C. nivifera Meyrick, 1930 est synonyme de C. versurella Zeller, 1849.

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#### Appendix

### Gazetteer of place names

Names are listed alphabetically with their pinyin romanization. Province names are given in brackets after the locality names. Sources for the spelling and coordinates were the "Times Atlas of the World, Comprehensive Edition, 7th ed., 1986" and the "Gazetteer of the People's Republic of China, 2 vols, 1979".

Pinyin transcription	Older transcriptions	Coordinates
Batang (Tibet) <sup>1</sup> )	Batang (also Pa-an)	30.02 N, 99.01 E
Dêgên (Yunnan)	A-tun-tse, Tehtsin	28.28 N, 98.48 E
Gyangzê (Tibet)	Giantse, Chiang-tzu	28.57 N, 89.38 E
Jiangsu (prov.)	Kiang-su, Chiang-su	
Jilin (prov.)	Kirin	
Jinsha Jiang (river)	Yangtze Kiang (part)	
Lijiang (Yunnan)	Li-kiang, Li-chiang	26.51 N, 100.16 E
Longtan (Jiangsu)	Lungtan	32.10 N, 119.03 E
Mian Shan (mount) (Shanxi)	Mienshan	ca 37 N, 113 E
Nanjing (Jiangsu)	Nan-ching, Nanking	32.03 N, 118.47 E
Nei Mongol Zizhiqu (prov.)	Inner Mongolia auton. region	
Qin Ling (range) (Shaanxi)	Tsinling	34.00 N, 108.00 E
Shaanxi (prov.)	Shensi	
Shandong (prov.)	Shantung	
Shanghai (Shanghai) <sup>2</sup> )	Schangai	31.13 N, 121.25 E
Shanxi (prov.)	Shansi	
Taibai Shan (mount) (Shaanxi)	Tapaisan	33.57 N, 107.40 E
Taihoku (Taiwan)		not traced
Taishan (mount) (Shandong)	Tai-shan	36.20 N, 117.10 E
Tianmu Shan (mount) (Zhejiang)	Tien-mu-shan	30.31 N, 119.36 E
Xiaoling (Jilin) <sup>3</sup> )	Hsiaoling	not traced
Xizang Zizhiqu	Tibet autonomous region	
Yadong (Tibet)	Yatung	27.29 N, 88.54 E
Yantai (Shandong)	Yen-tai, Che-fou	37.30 N, 121.22 E
Yunnan (prov.)	Yuen-nan, Yün-nan	
Zalantun (Nei Mongol Z.)	Djalantun, Cha-lan-tun	48.00 N, 122.43 E
Zhejiang (prov.)	Che-kiang, Che-chiang	and the straight deputy provide

Notes

<sup>1</sup>) Batang itself is situated in the province of Sichuan, but the nearby valley of the Jinsha Jiang forms the border with Tibet. From the labelling with "Tibet, Batang, Im Tal des Yangtze" it follows that the specimens were probably taken on the Tibet side of the river, or the border was not so distinct in those days.

<sup>2</sup>) Specimens from Shanghai are labelled as "Schangai, Prov. Kiangsu". However, Shanghai forms nowadays a province of its own.

<sup>3</sup>) There are various localities with the name Xiaoling (=Hsiaoling), but none was traced in the province of Jilin (= Kirin). There is one located in the nearby province of Heilongjiang at 45.22 N, 127.17E.



Figs. 1-7. Heads of Coleophora. 1, C. lucida; 2, C. plurispinella; 3, C. buteella; 4, C. scioleuca; 5, C. cristata; 6, C. falcipenella; 7, C. hsiaolingensis.



Figs. 8-13. Heads of Coleophora. 8, C. yomogiella; 9, C. kurokoi; 10, C. citrarga; 11, C. caradjai; 12, C. hoeneella; 13, C. tibetana.



Figs. 14-21. Heads of Coleophora. 14, C. summivola; 15, C. alecturella; 16, C. seminalis; 17, C. tuberculata; 18, C. sittella; 19, C. denticulata; 20, C. yunnanica; 21. C. bantagica.



Figs. 22-30. Coleophora spp. 22, C. lucida, &, holotype; 23, C. buteella, &, holotype; 24, C. melanograpta, &; 25, C. caradjai, &, holotype; 26, C. plurispinella, &, holotype; 27, C. hoeneella, Q, holotype; 28, C. tibetana, &, holotype; 29, C. seminalis, &; 30, C. cristata, &, holotype.



Figs. 31-39. Coleophora spp. 31, C. scioleuca, &; 32, C. alecturella, &, holotype; 33, C. sittella, &, holotype; 34, C. summivola, &; 35, C. falcipenella, &, holotype; 36, C. yunnanica, &, holotype; 37, C. denticulata, &, holotype; 38, C. tuberculata, &, holotype; 39, C. batangica, &, holotype.



Figs. 40-42. C. lucida, holotype, slide Bldz 6892. 40, male genitalia; 41, abdomen; 42, detail of genitalia at high magnification. Fig. 43. C. eteropennella, slide Bldz 8329, male genitalia, detail.



Figs. 44-47. *C. buteella*, holotype, slide Bldz 6885. 44, male genitalia; 45, abdomen; 46, detail of genitalia at high magnification; 47, cornuti at high magnification.



Figs. 48-51. C. caradjai, holotype, slide Bldz 8053. 48, male genitalia; 49, abdomen; 50, detail of genitalia at high magnification; 51, cornuti at high magnification.



Figs. 52-54. C. caradjai, paratype, slide Bldz 6873. 52-53, female genitalia; 54, subgenital plate at high magnification.



Figs. 55-57. *C. plurispinella*, holotype, slide Bldz 6872. 55, male genitalia; 56, abdomen; 57, detail of genitalia at high magnification. Fig. 58, *C. astragalella*, slide Bldz 8709, male genitalia, detail.



Figs. 59-61. *C. hoeneella*, holotype, slide Bldz 8895. 59, female genitalia; 60, subgenital plate at high magnification; 61, abdomen.



Figs. 62-65. *C. tibetana*; 62—63, 65, paratype, slide Bldz 8896; 64, holotype, slide Bldz 8892; 62, male genitalia; 63, abdomen; 64, detail of genitalia at high magnification; 65, cornuti at high magnification.



Figs. 66-69. *C. seminalis*, slide Bldz 6879. 66, male genitalia; 67, abdomen; 68, detail of genitalia at high magnification; 69, cornuti at high magnification.

68

69



Figs. 70-73. C. seminalis. 70—72, slide Bldz 7886. 70, female genitalia; 71, subgenital plate at high magnification; 72, signum at high magnification; 73, slide Bldz 7888, signum at high magnification.



Figs. 74-77. C. cristata, holotype, slide Bldz 6888. 74, male genitalia; 75, abdomen; 76, detail of genitalia at high magnification; 77, cornuti at high magnification.



Figs. 78-81. *C. scioleuca*, lectotype, slide BMNH 24443. 78, Male genitalia; 79, abdomen; 80, detail of genitalia at high magnification; 81, cornutus at high magnification.



Figs. 82-85. *C. alecturella*, holotype, slide Bldz 8913. 82, male genitalia; 83, abdomen; 84, detail of genitalia at high magnification; 85, cornuti at high magnification.



Figs. 86-89. C. sittella, paratype, slide Bldz 6893. 86, male genitalia; 87, abdomen; 88, detail of genitalia at high magnification; 89, cornuti at high magnification.



Figs. 90-93. *C. summivola*, slide Bldz 8897. 90, male genitalia; 91, abdomen; 92, detail of genitalia at high magnification; 93, cornuti at high magnification.



Figs. 94-96. C. summivola, slide Bldz 8911. 94, female genitalia; 95, subgenital plate at high magnification; 96, abdomen.



Figs. 97-100. *C. falcipenella*, holotype, slide Bldz 7080. 97, male genitalia; 98, abdomen; 99, detail of genitalia at high magnification; 100, cornutus at high magnification.



Figs. 101-104. C. yunnanica, holotype, slide Bldz 7084. 101, male genitalia; 102, abdomen; 103, detail of genitalia at high magnification.



Figs. 105-108. C. yunnanica, paratype, slide Bldz 6894. 105-106, female genitalia; 107, abdomen; 108, subgenital plate at high magnification.



Figs. 109-112. C. denticulata, holotype, slide Bldz 8910. 109, male genitalia; 110, abdomen; 111, detail of genitalia at high magnification; 112, cornuti at high magnification.



Figs. 113-116. C. tuberculata, holotype, slide Bldz 8901. 113, male genitalia; 114, abdomen; 115, detail of genitalia at high magnification; 116, cornuti at high magnification.



Figs. 117-120. C. batangica, holotype, slide Bldz 8909. 117, male genitalia; 118, abdomen; 119, detail of genitalia at high magnification; 120, cornuti at high magnification.



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