

Notes on Icelandic and Greenlandic Chalcidoideous Hymenoptera.

By

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Icelandic Chalcids have only been treated by J. F. Ruthe (1859), who determined the material collected by O. Staudinger in 1856, and by C. H. Lindroth (1931), who registered a material collected by himself and determined by L. Bíro, Budapest.

Ruthe (1859 p. 311) mentions five species. Two of them — “Ein Pteromalide” and “Ein Entedonide” — were borrowed from the Naturhistorisches Museum in Wien, partly through the kind help of S. Novicky, who has also seen some of the Icelandic Chalcids in the Zoologisk Museum, Copenhagen, and treated some species in notes, to which I have had access (see p. 149). The material of the other three species may be considered to be lost, and because of the very short descriptions it has only been possible to identify one of the species, namely “2 Exemplare eines Miscogastriden” = *Cryptoprymna ater* Walker. As the hymenopterous fauna of Iceland is very poor, it may be supposed that the other two species will prove to belong to some of the species treated below, thus “Ein sehr kleiner Encyrtus” may belong to *Doliphoceras* sp. and “Ein Lamprotatus Walk.” may belong to *Lamprotatus parviclava* Thoms.

Lindroth (1931 p. 343—345) mentions 16 species, besides one of Ruthe's species, some of them, however, only determined to tribus. Except for the Mymarid mentioned as “Gen. sp.” (Lindroth 1931 p. 343), now undoubtedly lost and thus quite indeterminable, all the material collected by Lindroth was borrowed from the Naturhistoriska Museet in Göteborg through the courtesy

of Dr. H. Lohmander. The collection contained in all 47 specimens, which proved to belong to 13 species.

In addition to these materials, I have also had the opportunity of seeing in all 99 specimens collected in recent years by Danish collectors, especially S. L. Tuxen, and by the Icelandic collectors Geir Gígja, Reykjavík, and Hálfðán Björnsson, Kvísker. In this material 17 species were represented, 10 of them not formerly recorded from Iceland. One species was new to science.

Apart from brief notes on their biology and distribution outside Iceland the present paper will be devoted only to the identification, in part the description and figuring, of the species in the abovenamed material. All the figures except fig. 10 are drawn from dried specimens, and the chaetotaxy, especially of the antennae, is therefore shown only in a general way. The localities of the species within Iceland as well as a discussion of the zoogeographical and faunistic aspects of the species are omitted from the present paper because these subjects will be treated by Børge Petersen in The Zoology of Iceland III pt. 49—50, a paper which has been nearly finished.

The total number of Chalcidoidea at present known from Iceland is 25, as seen from the list below, which also gives the synonymic names used by Ruthe and Lindroth.

Chalcididae

Encyrtinae

1. *Doliphoceras* sp.

Miscogasterinae

2. *Halticoptera festiva* (Dalm.) Thomson.
= Gen. sp. (Pteromalini) pro parte (Lindroth 1931 p. 344).
3. *Ormocerus vernalis* Walker.
4. ?*Seladerma* sp.
5. *Lamprotatus parviclava* Thomson.
= *Lampronotus splendens* Thoms. (Lindroth 1931 p. 343).
= *Lampronotus* sp. (Lindroth 1931 p. 343).

6. *Lamprotatus* sp.
= "Ein Pteromalide" (Ruthe 1859 p. 311).

Pteromalinae

7. *Dirhicnus sublaevis* Thomson.
= Gen. sp. (Pteromalini) pro parte (Lindroth 1931 p. 344).
8. *Meraporus graminicola* Walker.
9. *Psychophagus omnivorus* Walker.
= Gen. sp. (Pteromalini) (Lindroth 1931 p. 343)
= *Psychophagus* sp. pro parte (Lindroth 1931 p. 344).
10. *Callitula bicolor* Spinola.
= *Micromelus rufomaculatus* Wlk. (Lindroth 1931 p. 344).
11. *Asaphes vulgaris* Walker.
12. *Pachyneuron* sp.
13. *Cryptoprymna ater* Walker.
= "2 Exemplare eines Miscogastriden" (Ruthe 1859 p. 311).
14. *Cyrtogaster vulgaris* Walker (sens. lat.)
= *Polycystus scapularis* Thoms. (Lindroth 1931 p. 344).
15. *Eurydinota leptomera* Förster.
= *Psychophagus* sp. pro parte (Lindroth 1931 p. 344).
16. *Pteromalinae* sp.

Eulophinae

17. *Cirrospilus vittatus* Walker var. *novickyi* n. var.
= "Ein Entedonide" (Ruthe 1859 p. 311).
18. *Diglyphus chabrias* Walker.
19. *Secodes* sp.
= *Euderus viridis* Thoms. (Lindroth 1931 p. 345).
20. *Tetrastichus dubius* n. sp.
= *Ceranisis pacuvius* Wlk. (Lindroth 1931 p. 344).
21. *Tetrastichus brachycerus* Thomson.
22. *Tetrastichus thysanotus* Förster.
= *Tetrastichus* sp. (Lindroth 1931 p. 345).
= *Geniocerus charoba* Wlk. (Lindroth 1931 p. 345).
= *Geniocerus clavicornis* Thoms. (Lindroth 1931 p. 345).
23. *Tetrastichus* sp.

Mymaridae

Mymarinae

24. *Polynema atratum* Haliday.
25. *Anaphes* sp.
= *Mymar* sp. (Lindroth 1931 p. 343).

In connection with the study of the Icelandic Chalcids it was of interest to examine also the Greenlandic

species available, and a revision of the material found in the Zoologisk Museum, Copenhagen, formerly treated by Lundbeck (1897), was therefore undertaken.

Greenlandic Chalcids are very little known; only 9 species have been recorded from the vast area of Greenland. Eight species are listed by Henriksen (1939 p. 59), and one species was described by Kryger (1942 p. 260).

The revision of Lundbeck's material showed that two of his species, *Dicyclus* sp. (Lundbeck l. c. p. 248) and *Sphegigaster* sp. (Lundbeck l. c. p. 247), actually belong to one and the same species, namely *Cryptoprymna ater* Walker, and the total number of Greenlandic Chalcids is thus reduced to the following 8 species.

Chalcididae

Encyrtinae

1. *Encyrtus interpunctus* Dalman.
2. *Encyrtus tessellatus* Dalman.

Miscogasterinae

3. *Lamprotatus pilicornis*? Thomson.

Pteromalinae

4. *Asaphes vulgaris* Walker.
5. *Habrocytus* sp.
6. *Pachyneuron groenlandicum* Holmgren.
7. *Cryptoprymna ater* Walker.

Eulophinae

8. *Tetracyclos boreios* Kryger.

It is seen from the two lists given above that Iceland and Greenland have only two species in common, namely *Asaphes vulgaris* Walker and *Cryptoprymna ater* Walker.

A comparison with the Chalcid fauna of the Faroes treated by Kryger & Schmiedeknecht (1938) shows that Greenland and the Faroes have no species in common, whereas three Icelandic species are also recorded from the Faroes, namely *Meraporus graminicola* Walker

(= *alatus* Walker), *Cyrtogaster vulgaris* Walker, and *Tetrastichus thysanotus* Förster.

Synopsis of the species.

***Encyrtus interpunctus* Dalman.**

The determination by Lundbeck (1897 p. 246) of a single female seems to be correct. The female is different from *Encyrtus tessellatus* Dalman recorded from West-Greenland by Carpenter (1938 p. 542).

Known from Greenland, Finland, Sweden, Norway, the Kola peninsula, and North America.

***Doliphoceras* sp.**

(fig. 27)

One rather much shrunk male specimen may be referred to *Doliphoceras* Mercet on account of its haired eyes and the scales on the sixth funicle joint (fig. 27), while the number of joints of the palpi was not visible. It seems to be allied to *Dol. laevis* Mercet (1921 p. 686), but the colour, though no doubt faded, is a brown yellowish, with the middle of the abdomen dark and the legs and lower part of the face yellow; in *laevis* the body is black, blueish, the legs yellow with the hind femora dark.

***Halticoptera festiva* (Dalm.) Thomson.**

One damaged female specimen may, with some doubt, be referred to this species, which was described by Thomson (1876 p. 250). The specimen was captured in the locality Barkarstaðir and mentioned as "Gen. sp. (Pteromalini)" by Lindroth (1931 p. 344). Known from Iceland and Sweden.

***Ormocerus vernalis* Walker**

(figs. 1, 15, 28).

Thirteen specimens may be referred to this species, described by Walker (1834 p. 169). In this species the

hind tibiae should have two spurs and the abdomen be flat above and a little convex below (Thomson 1876 p. 242—243 “supra planiusculum” ... “ventre subconvexo”), in *Isoplata geniculata* Förster (1856 p. 60, 62) the abdomen is described as compressed from the sides, and by later authors the genus is placed in the section with one spur. In this case I found only one spur, but the species agrees well with the description by Thomson, and I have seen some specimens in the collection of Thomson in Lund which gave me the impression that the species was conspecific with them. One specimen in Lund was labelled “*Isoplata geniculata* F. V. Delucchi det.” I am not able to judge as to this synonymy, but it is mentioned by Schmiedeknecht (1909 p. 359) that the Isoplatina have no trace of a median keel on the propodeum, as was found by me in the present species.

Known from Iceland, Sweden (Öland, rare), England.

?*Seladerma* sp.

(figs. 2, 16, 29, 30).

Seven males and one female are referred with some doubt to the genus *Seladerma* Walker (1834 p. 289). The short petiole points to the genus *Terobia* Förster (1878 p. 64) of the Tridyminae, but in this genus the scutellum has no cross line before the apex.

The body of the female is green, tinged with copper, antennae and legs blackish, knees and tarsi lighter, scape short, 2 anelli, funicle inner joints quadrate, outer joints broader, transverse, club 3-jointed, broader and short, both mandibles 3-dentate, parapsidal furrows entire, deep, scutellum with a cross-line before apex, propodeum rather polished, with a median keel, abdomen keeled beneath, hollowed or shrunk above, hind tibiae with 2 spurs. The male antennae have the funicle joints quadrate, nearly equal, club abruptly broader than funicle and apparently having a fourth very small end

joint, the petiole a little more conspicuous than in the female.

The species differs from *Sel. saurus* Walker (1844 p. 338) by the colour, which in this species is blue with the legs yellow. In the two species *Sel. mazares* Walker (1844 p. 337) and *Sel. lætum* Walker, Thomson (1876 p. 238) the males have the funicle joints long, filiform, and the legs in both sexes yellowish-brown, in *lætum* the scape of female yellow. In *Terobia dispila* Förster (1878 p. 64) the spurs on the middle tibiae are white and the fore wings with two shadings, in the present species the spurs are yellowish and the wings hyaline.

Lamprotatus parvi-clava Thomson

(figs. 3, 17, 31).

Of the five specimens referred to this species one was labelled "*Lampronotus splendens* Th." (cf. Lindroth 1931 p. 343); it does not seem to belong to this species, which according to Thomson (1876 p. 222) has the club of the radial vein 3-dentate, while in the present species it is rounded, oblong. The species is determined after Thomson as *parvi-clava*, though it is rather small, ♀, 2.5 mm, ♂, about 1.5 mm. *Lampronotus* sp. mentioned by Lindroth (1931 p. 343) is also referred to *parvi-clava* Th.; it is a smaller specimen, and the club of the radial vein seems to be a little smaller. Only one spur (and a short hair) on the hind tibiae was seen, but the two spurs on the hind tibiae of Miscogasterinae are not easy to observe, and moreover it does not seem to be a stable character (cf. Schmiedeknecht 1930 p. 406). A specimen labelled "*parvi-clava*" was examined for comparison in the collection of Thomson in Lund.

Known from Iceland and Sweden (rare).

Lamprotatus pilicornis? Thomson.

Ten Greenlandic specimens examined differ from the description of *pilicornis* (Thomson 1876 p. 229) in

being dark green all over the body instead of green with a golden petiole, and in having the petiole punctate instead of smooth.

Known from Greenland and Sweden.

Lamprotatus sp.

The female mentioned as "ein Pteromalide" by Ruthe (1859 p. 311) together with seven other Icelandic specimens seem to represent another species of *Lamprotatus*, or possibly more than one species. The joints of the funicle of the antennae are shorter than in *parviclava* Thomson.

Dirhicnus sublaevis Thomson

(figs. 4, 18, 32).

Two specimens may be referred to this species proposed by Thomson (1878 p. 172). One of the specimens is mentioned by Lindroth (1931 p. 344) as "Gen. sp. Pteromalini"; it is the specimen found in the locality Slúttnes, Mývatn. Some differences from the description were found, as the radial vein and the middle tibiae were nearly straight, and the femora almost totally dark. In the collection of Thomson in Lund I have seen a specimen labelled "Bl." and "sublaevis Ths." which agrees in the beautiful blue colour and the thickened legs.

Known from Iceland and Sweden.

Meraporus graminicola Walker.

Two brachypterous males of *graminicola* Walker (1834 p. 299) (= *alatus* Walker l. c. p. 300), of which the male bears a lyre-shaped polished line on the face, were already referred to this species by Lindroth (1931 p. 343). This common species was also described by Förster (1856 p. 65) as *Peridesmia* sp. The species has been confused with *Lariophagus distinguendus* Förster, a parasite of *Calandra oryzae* (cf. Kurdjumov 1913 p. 18).

Known from Iceland, the Faroes, Norway, Sweden, Denmark, England.

***Psychophagus omnivorus* Walker**

(figs. 5, 19, 33).

Eleven female specimens are referred to this species, which was proposed (as *Pteromalus*) by Walker 1835 (p. 204); synonyms are *Pter. processione* and *rotundatus* Ratzeburg 1844 (p. 194) and *saltans* Ratz. 1852 (p. 232). The genus *Psychophagus* was proposed by Mayr 1904 (p. 598); synonymic with it is also *Diglochis omnivorus* Thomson (1878 p. 156) nec Förster (1856 p. 65); and the descriptions of *Diglochis omnivorus* Schmiedeknecht (1909 p. 357 and 1930 p. 435) may have reference to this species. The species is mentioned by Lindroth (1931 p. 344, specimens from Akureyri only) as *Psychophagus* sp. and (p. 343) as "Gen. sp. (Pteromalini)".

In the collection of Thomson in Lund I have seen a lectotype labelled "*Diglochis omnivorus* Th. det. A. Jansson". I found but small deviations, the second segment of the abdomen reaching about $\frac{1}{3}$ the length of the abdomen, in the present specimens it is shorter, 9:34, and the hind border of the segment with a very slight incision in the middle, while in the present specimens it is evenly rounded.

Known from Iceland, Sweden, Germany, England, Belgium (Crèvecoeur & Maréchal 1933 p. 382), "Europa bor. et centr." (Schmiedeknecht 1909 p. 357).

In Europe bred from lepidopterous pupae.

***Callitula bicolor* Spinola.**

Two females of this common species are mentioned by Lindroth (1931 p. 344) as "*Micromelus rufomaculatus* Walker" (1833 p. 371, 464), a synonym of *Callitula bicolor*, which is proposed by Spinola (1811 p. 151); another synonym is *Bæotomus* Förster (1856 p. 145) with the species *Bæotomus plagiatus* Thomson (1878 p. 61).

Known from Iceland, Sweden, Denmark, Germany, England, Belgium (Crèvecoeur & Maréchal 1933 p. 382), "Europa bor. et centr." (Schmiedeknecht 1909 p. 363).

An allied species, *Callitula pyrrhogaster* Walker, was bred by me from a cecidomyid puparium in a stem of Gramineae, and another species closely related to *Callitula elongata* Thomson, but with only the base of the female scape light, I have likewise bred from an undetermined host in a grass stem, both from Denmark.

Asaphes vulgaris Walker.

Ten Icelandic females and 4 Greenlandic specimens may be referred to this common species proposed by Walker (1834 p. 151) and synonymous with *Isocratus* Förster (1856 p. 53, 58). Synonyms are also *Eurytoma aenea* Nees (1834 p. 42), *Chrysolampus suspensus* and *altiventris* Nees (1834 p. 127), *Chrys. aphidiphagus* Ratzeburg (1844 p. 181), *Chrys. aeneus* Ratzeburg (1848 p. 185), and *Pteromalus concolor* Förster (1841 p. 28). The species was mentioned as *Asaphes vulgaris* by Lindroth (1931 p. 344) and as *Isocratus vulgaris* by Lundbeck (1897 p. 246).

In one specimen collected by Fristrup the legs are whitish, faded, which seems to be due to a special killing medium.

Known from Iceland, Greenland (Lundbeck 1897 p. 246), Sweden, Finland (Forsius 1925 p. 69), Denmark, Germany, England, Italy (Europe, Asia, America, Schmiedeknecht 1909 p. 371).

Bred as hyperparasite of the *Aphididae*, irrespective of species (Hincks 1946 p. 7).

Pachyneuron groenlandicum Holmgren.

Three female specimens from Igaliko 30. 8. 1889, bred from a syrphid puparium. The species seems to be related to *formosum* Walker, but the colour is nearly black,

tinged with blue, and the ocelli are placed in a curved line or flat triangle; in *formosum*, as described by Thomson (1878, p. 28), the colour is metallic greenish and the ocelli are placed in a triangle. To the description of Holmgren (1872 p. 100) I may add the following details. Scape and pedicel slender, 1st joint of funicle quadrate, following joints lengthened, no large punctures on mesonotum, scutellum convex, propodeum punctate, spiracles large, ovate, the neck of propodeum rather large with the base of petiole hidden, 2nd segment reaching half the length of abdomen, marginal vein broadened towards apex, as long as radial vein; in *grande* Thomson the 2nd segment short, reaching only one-third the length of the abdomen; in *gibbiscuta* Thomson with large punctures on mesonotum, propodeum nearly plain, spiracles small, roundish, funicle joints transverse; in *planiscuta* Thomson scutellum flat, scape short, flagellar joints transverse; in *aphidis* Bouché first funicle joint small, flagellar joints transverse; in *coccorum* L., *picea* Ratzeburg and *solitarius* (Hartig) Ratz. the marginal vein of equal width along the whole length; in *flavipes* Förster (= *syrphi* Ratz. acc. to Kurdjumov 1913 p. 24) the 2nd segment reaches only one-third the length of the abdomen and the marginal vein is longer than the radial vein.

Known from Greenland.

Pachyneuron sp.

(figs. 6, 20, 34).

The only specimen is a male about 2 mm in length, bright green, metallic, tinged with blue, the vertex is narrow, with the ocelli placed in a curved line, the funicle joints are oblong, thrice their breadth and a little shorter towards apex, the scape is linear, second segment of abdomen longer than broad. The species does not seem to be identical with any of the 5 species described by Thomson (1878 p. 27), but allied to *formo-*

sum Walk., which species differs by the ocelli being placed in a triangle. The female of *grande* Th. is larger, 4 mm, and *gibbiscuta* Th., *planiscuta* Th. and *aphidis* Bouché have the funicle joints broad or subquadrate. In *syrphi* Ratz. (cf. Kurdjumov 1912 p. 233) the second segment of the abdomen is short and the scape dilated. It has been compared with 3 specimens of *groenlandicum* Holmgr. from Zool. Mus., Copenhagen (cf. Lundbeck 1897 p. 248), but this species is smaller, almost black, tinged with blue.

The species of *Pachyneuron* Walk. were bred from Aphids and from puparia of Syrphids, probably as hyperparasites.

***Cryptoprymna ater* Walker**

(figs. 7, 21, 35).

One Icelandic male and two Greenlandic males, mentioned as *Sphegigaster* sp. and *Dicyclus* sp. by Lundbeck (1897 p. 247, 248), are here referred to *Cryptoprymna ater* Walk. Of the type species *Prosodes ater* Walker (1833 p. 371) I have only seen the figures of the female in Walker (1842, Plate C, Figs. 3, 3a). In the present specimens the ocelli are placed in a rather flat triangle, though not quite as flat as figured, and the petiole has a row of 3-4 anteriorly directed bristles on the sides, but I think that these deviating characters are only of minor importance.

The specimen of the *Dicyclus* sp. mentioned by Lundbeck now lacks the abdomen, but fortunately it is stated by Lundbeck that the specimen agreed with the description of a "Miscogastride" from Iceland (Ruthe 1859 p. 311) and here it is stated that the petiole is moderately long and segment 2 cup-shaped and longer than the following segments together; on account of this appearance of the abdomen and the characteristic shell-formed cave at the mouth as well as characters of

the thorax and the wings, the Greenlandic "*Dicyclus* sp." is, no doubt, referable to *Cryptoprymna ater* Walk.

The "2 Exemplare eines Miscogastriden" mentioned from Iceland by Ruthe (1859 p. 311) may also be referred to *ater* Walk., though Ruthe's description is very brief; but I am not aware of any other Chalcid with "der Stiel mässig verlängert, das zweite Segment länger als die folgenden zusammen, fast becherförmig", and with common characters as described.

Known from Greenland, Iceland and Sweden.

***Cyrtogaster vulgaris* Walker (sens. lat.)**

(figs. 8, 42, (43)).

In a manuscript key by Förster mentioned by S. Novicky (*in litt.*) two species are distinguished for the male as follows: Antennae brown, middle tibiae entirely black = *vulgaris* Wlk.; antennae reddish-yellow, middle tibiae black at the tip = *rufipes* Wlk. The present material, 29 ♂♂, 11 ♀♀ from different localities, may not be referred strictly to any of these groups, partly because the tibiae are black with more or less of the base light, partly because some of the specimens are faded, the legs and antennae being whitish, only with slight shadings left, and the abdomen and the large penultimate joint of the maxillary palpi with a brown ground colour tinged with green metallic. The colour of the body unchanged. Further, from Denmark I have taken specimens with both dark and light legs together, and I am inclined to regard them merely as variations, of which the Icelandic material comes nearest to the *rufipes* group. Lindroth's material (1931 p. 344) was determined to be "*Polyctus scapularis* Th.", but in this species the last joint of the maxillary palpi in ♂ is large (fig. 43, Danish material), not small and petiolated as the last joint in *vulgaris* (fig. 42). The species was proposed by Walker (1833 p. 382).

Known from Iceland, the Faroes, Sweden, Denmark, Germany, England, Italy, U. S. A., St. Vincent.

In Denmark bred from dipterous puparia in flood-refuse, one specimen from each puparium (Henriksen 1918 p. 164).

Eurydinota leptomera Förster

(figs. 9, 22, 36).

Two females from the locality Kollafjörður mentioned as *Psychophagus* sp. by Lindroth (1931 p. 344) may be referred to this species proposed by Förster (1878 p. 42). In one of the hind tibiae only one spur was found, and previously Schmiedeknecht (1909 p. 381 and 1930 p. 439) transferred the genus to the Pteromalinae, tribe Sphegigasterini. The median keel on the propodeum in one of the specimens is concealed among the rough punctuation of this sclerite. On the abdomen no coppery spots were found, but some red reflexes were shining through. Characteristic is the slightly projecting corners of the propectus, and I may add that the second (foremost) joint of the abdomen bears, on each side, a protuberance ending in a circular ring, as seen in some petiolate species, probably formed as a consequence of the diminution of the first segment, the petiole, which is somewhat hidden in the neck of the propodeum and seems to bear a pair of side lobes. In one of the specimens the uncus is punctiform as originally described, and shorter than in the specimen figured.

Known from Iceland and Germany.

Pteromalinae sp.

A specimen which lacks the antennae, the abdomen, and most of the legs could not be determined at present; it has the clypeus 2-dentate, left mandible 4-dentate, eyes bare, parapsidal furrows only distinct anteriorly, scutellum with a cross line before the apex, propodeum

polished, with a median keel and lateral folds, grooves at base, spiracles small, roundish; it may just as well belong to the genus *Trichomalus* Thomson as to *Halticoptera* Spinola of the Miscogasterinae, but it is not conspecific with *H. festiva* (Dalm.) Thoms. mentioned above, differing by having more robust wing veins and a more golden-green colour.

***Cirrospilus vittatus* Walker var. *novickyi* nov. var.**
(figs. 10—11).

A single female specimen collected by the late Dr. Otto Staudinger has been handed over to me from the Museum of Natural History in Vienna, and a preliminary manuscript on this new variety has been written by Mr. S. Novicky, to whom its name is gratefully dedicated by the present author. The specimen is mentioned by Ruthe (1859 p. 311) as "Ein Entedonide". According to his manuscript, Novicky has seen more variations of the species; it concerns mainly the breadth of the metallic green longitudinal stripes occupying more or less of the fundamental lemon-colour of the head and thorax. In a variety known by Förster and bred from *Elachista argentella* in Aachen, the central green stripe of the prescutum does not continue across the scutellum; in another variety from Turuń (Thorn), Poland, Aug. 1931 the green stripes are nearly wanting. In contrast to the two last-named varieties, the female from Iceland represents the extreme development of the coloration, i. e. the abdomen is entirely green, except some yellowish markings laterally in the basal half. The thoracic dorsum is metallic green, pronotum with diverging narrow triangular marks along the margins, which are continued by curved converging yellow lines following the parapsidal furrows on the prescutum, and continued on the scutellum by 2 narrowing lines following the scutella grooves. Extreme apex of parapsides with the tegulae

yellow. Axillae green with a narrow yellow margin posteriorly. Postscutellum green, margined with yellowish on each side. Propodeum entirely green. Upper face and occiput green, ocelli on the yellow vertex connected by a green transverse line. All coxae green, femora and tibiae brownish. One dusky apical joint on the fore and middle, and two joints on the hind tarsi. Figures of the colour design of the thorax of the nominate form from a Danish specimen mounted in balsam and the same of the dried specimen are given in figs. 10—11.

The nominate form of the species was proposed by Walker (1838 p. 308). Synonyms are *Eulophus lineatus* Förster (1841 p. 41) and *Entedon lineatus* Ratzeburg (1852 p. 209).

The nominate form is known from Sweden, Denmark, Germany, Switzerland, England, "Europa bor. et centr." (Schmiedeknecht 1909 p. 399).

The nominate form has been bred from foliage with *Lyonetia clerckella* L. (cf. Kemner 1926 p. 35) from different mining insects, *Orchestes*, *Nepticula*, and *Agromyza* spp. In addition I may mention a case of breeding as larval ectoparasite on *Nepticula obliquella* (det. A. G. Carolsfeld-Krausé) on *Salix* from Denmark.

Diglyphus chabrias Walker

(figs. 12, 23, 37).

Two males and 2 females from Iceland have been determined by S. Novicky, who had examined a female in the Vienna Museum of Natural History identified by Walker himself. The differences between the species from Iceland and this co-type were only slight. Novicky gives an account of the synonymy of the group, based on an unpublished manuscript by Arn. Förster, which ought to be published separately. The species was proposed as *Cirrospilus* by Walker (1838 p. 451) and later altered to *Diglyphus* by the same author

(1848 p. 236). By Förster (1856 p. 144) it is proposed as a synonym of *Asecodes* Förster; this view is followed by Dalla Torre (1898 p. 46), who is cited by Gahan and Fagan (1923 p. 45); however, this is inadmissible, because 1) *Diglyphus* has a priority of 8 years and 2) *Asecodes* belongs to another subfamily, i. e. *Entedonidae* (Förster 1856 p. 79), if the placing of *Diglyphus* in the *Eulophinae* by Erdős (1951 p. 196) is correct. Novicky (*in litt.*) remarks that Förster himself seems to have changed his mind after 1856 as to the independence of *Asecodes* and *Diglyphus*. He described (1861 p. 37, 38) species of both genera independently, with *Diglyphus* included in the *Entedonidae*, too.

In the collection of Thomson in Lund I have seen a specimen of *Solenotus viridis* Thomson (1878 p. 237) not *Sol. vir.* Förster (1856 p. 74, 76) labelled "Lund". This species is transferred by Erdős (l. c.) to *Diglyphus*. I found it to agree with the specimens of *Diglyphus chabrias* from Iceland in the colour designs, the knees being broadly yellowish, and with the characteristic rounding of the inner limit of the discal hairs in the fore wings. The parapsidal furrows were observed to be short, reaching almost to the middle, though Thomson (l. c. p. 237) states, "mesonoto sulcis nullis". In the description of *Diglyphus chabrias* Walker (l. c.) says "parapsides bene determinatæ". In the specimens from Iceland the mesonotum is very much shrunk and the furrows difficult to observe, but the shrinking causes a deep cleft at the place of the furrows, which may explain the above-mentioned disagreements. Five other specimens in the collection of Thomson were likewise very much shrunk, as also the face of the specimens from Iceland, as indicated in the present figure 12. Thomson remarks that the tibiae are sometimes 3-annulated, i. e. with a light band on the middle; only this form is cited by Erdős (l. c.).

Known from Iceland, Sweden, Norway (Alten, Finmark), England.

The species are parasites of the leaf-mining Diptera of the family Agromyzidae, in temperate Europe particularly inhabiting Gramineae (Novicky *in litt.*).

Secodes sp.

(figs. 24, 38).

One female specimen may be allied to *Secodes coactus* (Ratz.) Thomson (1878 p. 270); it differs from this species by its rather long 2-jointed funicle, the following antennal joint is connected with the two terminal joints to form a slender 3-jointed club, as in *Secodes clypealis* Thomson, of which I have a specimen from Denmark; in this last species the clypeus is yellow and the radial cell not indicated by a row of hairs, as in the present specimen. In the collection of Thomson I have seen two female specimens of *coactus* labelled "Astorp", which agreed in the subsessile radial knob and with the radial cell indicated by a hair line. The present specimen labelled "*Euderus viridis* Th." is mentioned as such by Lindroth (1931 p. 345). The type species *coactus* was bred from *Mikiola fagi* Hartig.

Tetrastichus dubius n. sp.

(figs. 13, 25, 39).

One male specimen labelled "*Ceraninus pacuvius* Walker" is mentioned by Lindroth (1931 p. 344), but may not be referred to this species, having only 2 joints in the funicle of the male (cf. Walker 1840, pl. N, fig. 2). In the description of the genus *Ceraninus* Walk. by Schmiedeknecht (1909 p. 469) it is erroneously mentioned that the funicles are 4-jointed. The present specimen may belong to the genus *Tetrastichus* Haliday, probably a new species, of which the description follows below.

Male: Length 1 mm, wing expanse 2.25 mm. Head light yellow, eyes and ocelli brownish, stemmatum dark brown; thorax black tinged with blue, metallic, tegulae and a mesopleural spot below the fore wings yellow, under side not visible; abdomen blackish with more than the basal third yellowish and a dark groove at base, petiole and legs light yellow, hind coxae blackish, except the apex, last joint of tarsi brownish, antennae light brown, scape and pedicel slightly darker, wing veins nearly colourless.

Head collapsed, antennae seem to be inserted rather close together at the middle of the face, composed of scape, pedicel, 3 anelli, 4 funicle joints, and a 3-jointed club; scape large, collapsed, without sense organs, but possibly a sensory area at inner apex, which is slightly darker, pedicel subconical, anelli small, funicle joints oblong, rounded, the second longest, club a little broader with an apical tap, flagellum sparingly haired with long hairs. Prothorax large, conical, slightly incurved behind, parapsidal furrows entire, scutellum with 2 parallel lines and 2 side lines hardly visible from above, metathorax large, propodeum with a slight, dark, median keel, divided posteriorly, spiracles oblong, petiole subtransverse, second segment of abdomen with the groove has a pointed margin or collapsing fold behind, the middle segments indistinctly margined, ratio of fore wing, 74:25, of longest cilia :6, subcosta with 2 distinct bristles on left wing, one bristle on right wing, which is broken, 8-9 long hairs along marginal vein, continuing in a fringe of lighter and rather long cilia along the broad rounding, shortening along the hind border; ratio of subcosta, marginal vein, postmarginal vein and radius: 17:26:1:6, subcosta overlapping marginal vein :2, disc of wing evenly haired, with about 20 lines across, an oblique line of 4-5 hairs at base of prestigma and from this a line along the anal margin,

with a naked line between this and the submarginal line; hind wings pointed, evenly haired with 4-5 lines across, costal fringe short, anal fringe of long cilia, as long as the wing at its broadest.

Female unknown.

Holotype: a male mounted flat on a piece of card, the pin bearing a label with the locality number, 175, for Slútnes in Mývatn, North Iceland, Aug. 20th, and another label, green, with the former determination, *Ceranisus pacuvius* Wlk. The specimen belongs to the Iceland collection of Lindroth in Naturhistoriska Museet, Göteborg, Sweden.

Further a slide with a male from Denmark, Fortunens Indelukke, Sjælland, May 20th, in my own collection. From this specimen it is stated that the anelli are 3-jointed; the inner joints of the funicle are a little longer than figured, and I found here only one bristle dorsally on the subcosta of both fore wings; I am therefore in doubt as to the normal number of bristles, which determine the subfamily.

The species may be distinguished from other male *Tetrastichus* by its colour design, the large scape without conspicuous sense organs, and by its long marginal cilia.

Known from Iceland and Denmark.

Of the species mentioned above, *Ceranisus pacuvius* Walker, I have 2 slides in my collection, a male from Ryget Forest 6. 6. 1926 and a female 23. 5. 1926, same locality, Sjælland, Denmark.¹⁾

***Tetrastichus brachycerus* Thomson.**

One dark olivaceous female with the antennae somewhat thickened, præclava hardly $1\frac{1}{2}$ times as long as

¹⁾ During the printing I have got some new material, showing that *dubius* may vary with small, slender wings, and that *Ceranisus pacuvius* has only vestigial mandibles. These finds will be treated in a later publication.

broad, hind and middle tibiae fuscous in the middle, the median line of mesonotum only visible in oblique light from the front. Proposed by Thomson (1878 p. 296).

Known from Iceland and Sweden.

***Tetrastichus thysanotus* Förster**

(figs. 14, 26, 40, 44).

Twenty-seven females varying in length from 2 to 1.25 mm are referred with some doubt to this species. In the key of Kurdjumov (1913 p. 247) subg. *Geniocerus*, the only difference between this species and *inunctus* Nees is that in the former, as in the present material, the body has a darker copper tint, while in *inunctus* it is entirely black, without any metallic tint. The original description of *thysanotus* Förster (1861 p. 38) is not accessible here. The description of *inunctus* by Thomson (1878 p. 295) is arranged in a section i, with no median line on the mesonotum; in the present material this line may be wanting, but in most of the specimens a slight line can be seen in a certain oblique light from the front; in the collection of Thomson in Lund I have seen a specimen of *inunctus* labelled "Ld.", which had the same yellow colour of the trochanters, knees and tibiae as in the present species; probably the two species are synonyms, but I have no further notes about the specimen in Lund. In the present material the tegulae are yellow or sometimes a little fuscous, the lines on scutellum parallel, nearer each other than the parapsidal furrows, contrary to *populi* Kurdjumov (1913 p. 251), and subcosta with 4-5 bristles or, in small specimens, only 3. The species is mentioned by Lindroth (1931 p. 345) as *Tetrastichus* sp., *Geniocerus charoba* Walker, and *Geniocerus clavicornis* Thomson, but in *charoba* (= *punctiscula* Thoms.) the body is green and in *clavicornis* olivaceous according to Kurdjumov and Thomson.

Known from Iceland, the Faroes and Switzerland.

Tetrastichus sp.

One undeterminable male is of a faded, but rather dark colour, the thorax broader than in *thysanotus* Förster, the fore wings resembling this species, but broader and with the fringe longer at the anal rounding, subcosta with 2 bristles in right, 3 in left wing, possibly some bristles broken off, scape somewhat dilated, funicle 4-jointed with long hairs, more than twice as long as their joints, inner joint short, as long as pedicel.

Polynema atratum Haliday.

One female specimen was compared with a Danish specimen of *Polynema ovulorum* Bakkendorf (1934 p. 81) (nec Haliday), which according to Hincks (1950 p. 199) is synonymous with *atratum*; it had the fore wings a little smaller and more parallel-sided, thus resembling *Polynema microptera* Bkdf., which was considered by Hincks as merely a short-winged form of *atratum*. The ratio of body, wing length, and wing breadth is 30:26:5, in the Danish specimen 31:30:8. The colour had faded, thus the legs were light and the body brownish, though with the darker parts marked. The species was proposed by Haliday (1833 p. 348), but no lectotype could be fixed by Hincks (l. c.); it may be regarded as synonymous with *Polynema ovulorum* (L.) (Hal.) Debauche (1948 p. 212), but the difficult synonymy will not be discussed on the basis of this aberrant specimen.

The nominate form of the species seems to be very common all over Europe. It is known as a parasite of Jassid eggs (*Acocephalus* sp.) in *Juncus effusus* and *conglomeratus* (Bakkendorf l. c.).

Anaphes sp.

(fig. 41).

One female specimen, though it lacks the club of both antennae, may be referred with a certain probability to the subgenus *Anaphes* Haliday on account of its general

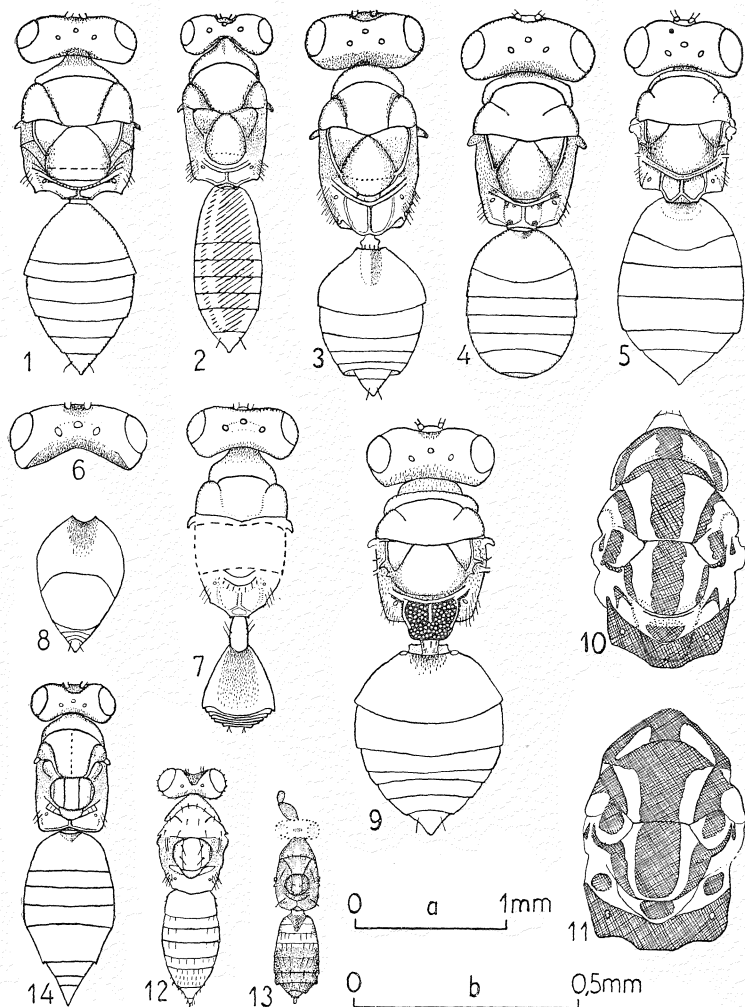


Fig. 1. *Ormocerus vernalis* Wlk. ♀, body. — 2. *Seladerma* sp. ♀, body. — 3. *Lamprotatus parviclava* Th. ♀, body. — 4. *Dirhienus sublaevis* Th., body. — 5. *Psychophagus omnivorus* Wlk. ♀, body. — 6. *Pachyneuron* sp. ♂, head. — 7. *Cryptoprymna ater* Walk. ♂, body. — 8. *Cyrtogaster vulgaris* Wlk. ♀, abdomen. — 9. *Eurydinota leptomera* Först. ♀, body. — 10. *Cirrospilus vittatus* Wlk. ♀, colour design of thorax. — 11. *Cirrospilus vittatus* Wlk. var. *novickyi* nov. var., do. — 12. *Diglyphus chabrias* Wlk. ♀, body. — 13. *Tetrastichus dubius* n. sp. ♂, body. — 14. *Tetrastichus thysanotus* Först. ♀, body. a, scale of figs. 1—9, 12—14. b, scale of figs. 10—11.

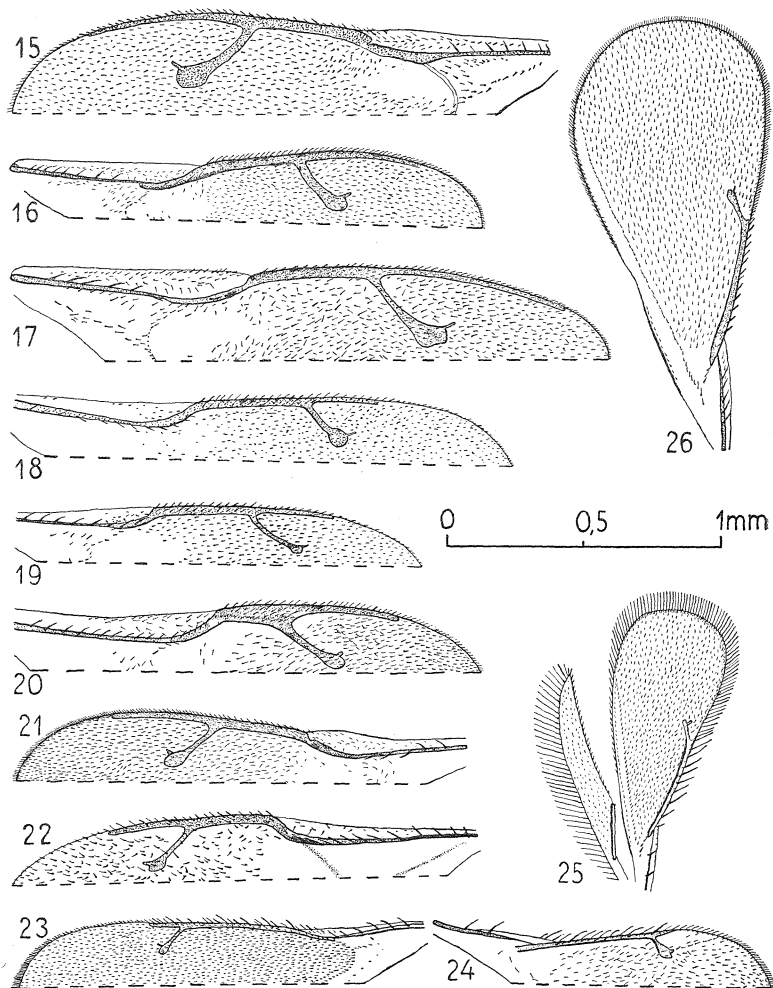


Fig. 15. *Ormocerus vernalis* Wlk. ♀, venation. — 16. *Seladerma* sp. ♀, venation. — 17. *Lamprotatus parviclava* Th. ♀, venation. — 18. *Dirhichnus sublaevis* Th., venation. — 19. *Psychophagus omnivorus* Wlk. ♀, venation. — 20. *Pachyneuron* sp. ♂, venation. — 21. *Cryptoprymna ater* Walk. ♂, venation. — 22. *Eurydinota leptomera* Först. ♀, venation. — 23. *Diglyphus chabrias* Wlk. ♀, venation. — 24. *Secodes* sp. ♀, venation. — 25. *Tetrastichus dubius* n. sp. ♂, wings. — 26. *Tetrastichus thysanotus* Först. ♀, fore wing.

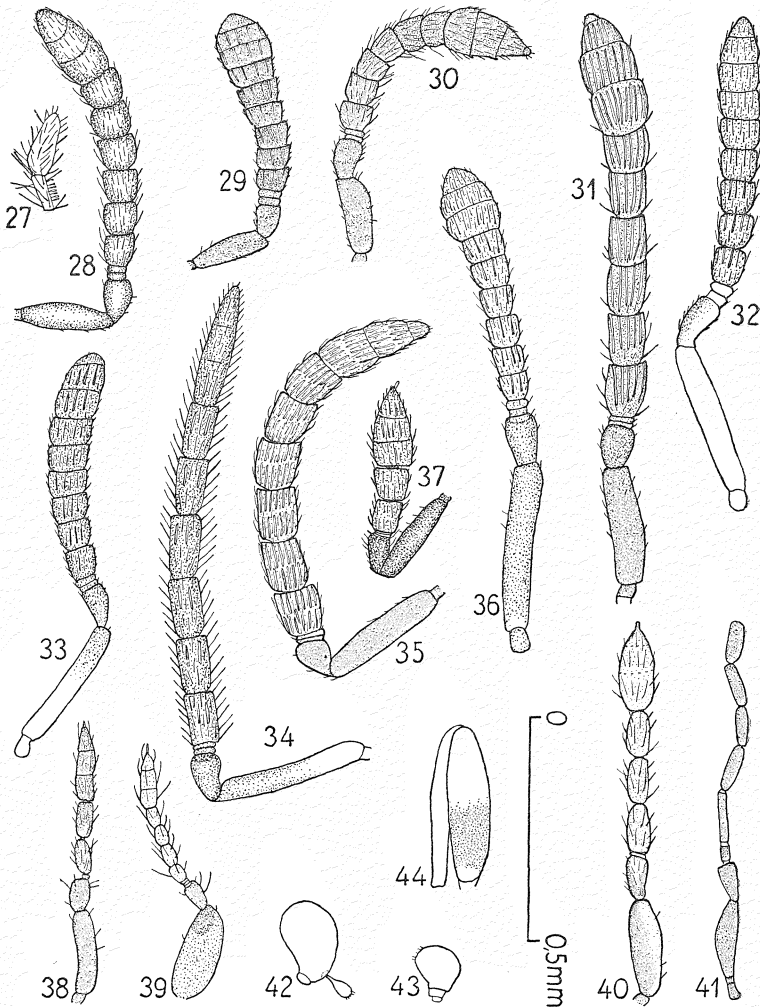


Fig. 27. *Doliphoceras* sp. ♂, 2 last antennal joints. — 28. *Ormoceris vernalis* Wlk. ♀, antenna. — 29. *Seladerma* sp. ♀, antenna. — 30. do. ♂, antenna. — 31. *Lamprotatus parviclava* Th. ♀, antenna. — 32. *Dirhienus sublaevis* Th., antenna. — 33. *Psychophagus omnivorus* Wlk. ♀, antenna. — 34. *Pachyneuron* sp. ♂, antenna. — 35. *Cryptoprymna ater* Walk. ♂, antenna. — 36. *Eurydinota leptomera* Först. ♀, antenna. — 37. *Diglyphus chabrias* Wlk. ♀, antenna. — 38. *Secodes* sp. ♀, antenna. — 39. *Tetrastichus dubius* n. sp. ♂, antenna. — 40. *Tetrastichus thysanotus* Först. ♀, antenna. — 41. *Anaphes* sp. ♀, antenna, club wanting. — 42. *Cyrtogaster vulgaris* Wlk. ♂, last joints of maxillary palp. — 43. *Polycystus scapularis* Th. ♂, do. — 44. *Tetrastichus thysanotus* Först. ♀, colour design of femur and tibia.

characters, 1 mm long, with rather long tarsal joints, fore wing long, fumated, broadened in distal third, slightly pointed, evenly haired with about 12 rows across, ratio of wing length and breadth 72:14, longest fringe more than half of wing breadth, but broken off at apex of wing. Mentioned by Lindroth (1931 p. 343) as "Mymar sp.".

The species known as egg-parasites, for instance in coleopterous eggs.

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Anmeldelser.

Heqvist, K.-J., Lekander, B. og Palm, T.: "Skogsinsekter", Lärokurs för Statens Skogsskolor. 78 s., shirt. 1954. Pris sv. kr. 5.00.

Denne lille forstentomologi er beregnet som lærebog ved den lavere skovbrugsundervisning i Sverige. Uden at forudsætte forudskaber af nogen art præsenterer den de vigtigste af skovens insekter og skitserer ganske kort deres biologi. Gennemgangen af insekterne er delt i 3 kapitler: skadelige, nyttige og indifferente arter, og hovedvægten er lagt på de første. Ialt omtales ca. 90 af de vigtigere arter. Resten af bogen behandler kortfattet insekternes betydning for skoven, forudsætningerne for insektangrebets opståen og mulighederne for dets forebyggelse og bekæmpelse. Bogen indeholder en nøgle til bestemmelse af de omtalte arter efter skadens udseende, og den er rigt og til dels udmærket illustreret; den yder derfor en god hjælp til bestemmelsen af disse ganske almindelige skovinsekter.

De snævre rammer for bogen har naturligvis medført, at mange almindelige arter har måttet udelades; dette gælder f. eks. *Hylurgops palliatus* så vel som de andre indifferente barkbiller. Alligevel er det de almene afsnit, der forekommer mest beskåret, men disse kan jo også lettere gives i forelæsningsform.

For den, der ønsker et elementært kendskab til forstentomologien uden at ville binde an med de større skandinaviske bøger over emnet (Boas: "Dansk Forstzoologi" og Trägårdh: "Sveriges Skogsinsekter"), kan denne lille og billige bog absolut anbefales.

B. Beier Petersen.
