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PART 7

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TRANSACTIONS OF THE SOCIETY FOR BRITISH ENTOMOLOGY

VOL. 12

9TH SEPTEMBER, 1957

PART 7

SYSTEMATIC NOTES ON BRITISH AND SWEDISH CLEONYMIDAE, WITH DESCRIPTION OF A NEW GENUS (HYM., CHALCIDOIDEA).

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Introduction

The family Cleonymidae, as we here treat it, comprises, so far as the British and Swedish faunas are concerned, the "Subtribus Cleonymides" of C. G. Thomson (1875, pp. 216-8, 1878, pp. 3-16), together with the genera

Cea (Haliday mss.) Walker and *Caudonia* Walker, which were unknown to Thomson. The genus *Cea* has been discovered in Sweden and treated by Jansson (1945); but the type of *Caudonia agylla* Walker has remained unique, and is redescribed for the first time in the present paper. Ashmead (1904) raised the group to family rank, and included the north-western European genera *Cheiopachys* Westwood and *Acrocormus* Förster; but Ferrière (1948) grouped those genera together with others as a subfamily Cheiopachinae of the Pteromalidae. The family as now constituted is certainly closely related to the Pteromalidae (Gahan and Ferrière, 1947) but, as Ferrière has pointed out (*in litt.*), it is not entirely homogeneous. We think of it as consisting of several diverse elements, some or all of which may have to be included in the Pteromalidae; but we keep it as it is at present until such time as a more radical view of the classification can be propounded and supported, and in order to set a limit to the task we jointly undertook. Bouček (1952) has made mention of a "large family Pteromalidae (Cleonymidae and Miscogasteridae included)." Peck (1951), following the unpublished system of A. B. Gahan, has included the Cleonymids in the Pteromalidae, placing the genera *Cleonymus* and *Trigonoderus* in quite different parts of that family; but this classification has still to be supported by redefining the subfamily and tribal groups concerned. Most recently Richards (1956) has not recognized them as a separate family.

The genus *Heydenia* Förster, now known in Sweden but not in Britain, has been treated by Hequist (1957).

One of us (G.J.K.) is preparing, jointly with Ch. Ferrière, the first fascicle of a handbook on British Chalcidoidea for inclusion in the Royal Entomological Society's series, and has been in possession of Ferrière's manuscript key to the European species of Cleonymids: the other (M. de V.G.) is especially interested in Pteromalidae, has studied the Cleonymids as a natural extension of this, and has found that some species described by Walker among the Pteromalids belong to this group. In March, 1954, at the kind invitation of Professor G. C. Varley, Kerrich paid a visit to Oxford, principally to study the Cleonymids in the Hope Department. It became clear that more preliminary systematic work needed to be published, than would be acceptable for inclusion in the handbook, and that this work was developing in close collaboration with Graham. Thus was the present joint authorship proposed.

The sections of this paper not attributed, in the table of contents, to either one author, are to be attributed jointly to both: for these sections the collaboration has been very close, as the two authors have worked side by side, examined many of the specimens one after the other, and discussed the points at issue. Even in the sections attributed to only one of us, the work has been examined and criticized by the other with reference to the principal specimens. This we regard as especially important in the case of the new genus and species described.

Many of the Walker species had already been identified with later described Thomson species by Ch. Ferrière, and in some cases types had been marked: such synonymy is in every case acknowledged, and the type markings are validated by publication. Professor C. H. Lindroth was so good as to

bring the whole of the arranged Cleonymids of the C. G. Thomson collection to London, so that the joint authors could study them there, confirm the synonymy by direct comparison, and select lectotypes. Dr. Anton Jansson kindly sent on loan the numerous Cleonymidae from his collection, and thus broadened not only the range of Swedish localities from which we could study material, but also the basis of the taxonomic study.

During the later stages of the work, we have been in correspondence with Dr. S. Novitzky, and it transpired that, unknown to us, he had been studying the Cleonymidae actively for some years. We are most grateful to him for making available to us the manuscript of one paper, and for other information.

This paper should be read in conjunction with Thomson's work, for, though most of the names used in it now fall into synonymy, it is mainly from that work that the species have been identifiable. New keys to species of some genera are not included here, since they are reserved for the forthcoming British handbook.

We adopt the antennal formula devised by Ch. Ferrière, e.g. 11263 indicating scape, pedicellus, 2 anelli, 6 funicle and 3 club segments.

The two beautiful plate figures were drawn by Mr. Arthur Smith.

After prolonged study the authors have reached the conclusion that, at least in the *Trigonoderus* group of genera, the species must be interpreted very broadly. Thus in *Trigonoderus*, *sensu* Thomson, we now recognize one species less than did Thomson, and in the monobasic *Platygerrius* Thomson only one species more. Attempts to separate other forms as good species, on the basis of combinations of minor characters, have been frustrated by the finding of intermediates, or of further forms in which the minor characters are differently combined.

Revision of *Cleonymus* Latreille

Genus *Cleonymus* Latreille 1809

Body form stout. Head with eyes strongly hairy, in facial view strongly divergent and distinctly emarginate; toruli well separated (fig. 2); clypeus apically edentate; labrum free (fig. 3); mandibles bidentate. Antennae with scape slightly dilated in female, more strongly so in male; with one annellus, which in female is large; with 7-segmented funicle and with club solid: in female the last funicle segment bears a strong finger-like process: flagellum in female normally densely short-hairy, in male with a dense covering of longer, greyish hairs loosely adpressed (suggesting a coating of mould). Thorax with pronotal collar not margined: prosternum having median furrow incomplete anteriorly; notaulices distinct in about anterior half but not sharply impressed: scutellum without frenal furrow. Mid tibia with spur long, about three-quarters length of corresponding metatarsus. Petiolar segment in female decidedly short but in male very distinct, more than half as long as broad.

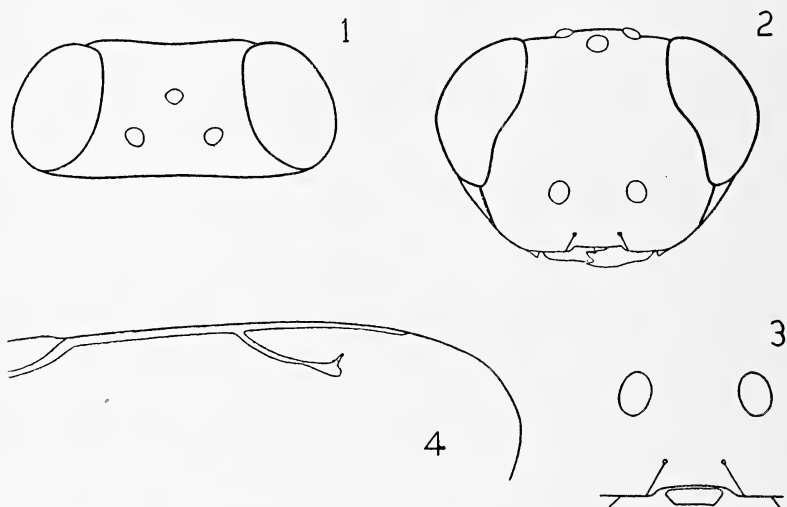
The free labrum, which was observed by Thomson (1878), is found by dissection of a cleared preparation to be movably articulated with the clypeus.

Cleonymus depressus (Fabricius)

1798 *Ichneumon depressus* Fabricius, *Entomologiae Systematicae Supplementum*: 231. Hafniae.

1837 *Cleonymus laticornis* (Haliday mss.) Walker, *Ent. Mag.*, 4: 351, **syn.n.**

Head, seen from above (fig. 1), about two and a half times breadth of its median length; very sharply narrowed behind eyes which, in same view, are much more sharply divergent from before level of lateral ocelli, and in side view are hardly emarginate behind: ocelli in about a right-angled triangle, the median and lateral separated by a little more than their own diameters: cheeks almost straight or sometimes weakly emarginate below level of eyes and thereafter weakly rounded: malar space about equal to greatest width of eye, with a keel that reaches lower corner of eye. Sculpture of head, including fronto-vertex, more or less finely reticulate, more coarsely so on hinder head.



Figs. 1-4. *Cleonymus depressus* Fabr. (1) Head of ♀, viewed from above (2) the same, in facial view (3) lower face, clypeus and labrum (4) part of right fore wing.

Antennae with annellus of female and first funicle segment of both sexes about quadrate: finger-like projection of last funicle segment of female about three-quarters length of club.

Thorax, including scutellum, rather flattened above, and having no defined pronotal collar; in greater part, including axillae, moderately reticulate, but with mesepisternum and metascutellum shining and very weakly sculptured. Propodeum with rows of very coarse punctures along fore and lateral margins, and much less coarse ones contiguous with the median keel; elsewhere generally shining, with more or less very fine reticulation visible: sub-apical keel evenly rounded, not distinctly angled where met by median keel.

Gaster of female depressed, elongate and pointed, having fifth large tergite a little longer than its apical breadth: having fourth and fifth large tergites rather coarsely reticulate, second and third more weakly and transversely, and hinder tergites much more weakly so; with first tergite wholly above, and others at apex shining. Apical margins of tergites as follows: second and third broadly sinuate, first and fourth emarginate along whole breadth, fifth very weakly sinuate, and sixth rounded. Gaster of male elongate-obovate, having fourth large tergite little more than half the length of fifth, and with sculpture intermediate between that of fifth and third: sculpture otherwise much as in female.

Fore wing hairy almost throughout, except for a strip above submarginal; having costal cell broad: having postmarginal vein not much shorter than marginal, and radial, which is very much longer than the stigma and arises at a very acute angle, distinctly curved (fig. 4): having more or less strong infumate bands below postmarginal and apex of submarginal, which are joined in the middle of the wing, leaving a hyaline patch below marginal vein.

Head dull metallic green, having bronzy reflections more or less extensively, especially on lower face. Female antennae rufo-testaceous, to a greater or lesser extent darkened, especially on scape and pedicellus: club blackish with metallic reflections: male antennae mainly blackish with metallic reflections, having basal segments paler in part. Palpi and mandibles rufo-testaceous, the latter broadly darkened at apex. Thorax dull metallic green, with conspicuous bronzy to brassy reflections: gaster and propodeum metallic blue-green to steely blue, with the bronzy to brassy reflections developed especially on the shining apices of the tergites. Legs having hind coxae in greater part concolorous with thorax; otherwise mainly rufo-testaceous; with mid and hind tarsi often dark-marked, stramineous at base, often in about basal half.

Material studied—ENGLAND, near London, 5 ♀♀, 2 ♂♂, F. Walker coll.; Devon, Barnstable, 1 ♂, Wilts., Nunton, 1 ♂, Hants, Isle of Wight, 1 ♂, T. A. Marshall coll.; unlocalized, 2 ♀♀, Kent, Bexley, 1 ♂ (type of *laticornis* (Hal. mss.) Walk.), A. H. Haliday coll.; Glamorgan, Penarth, ♀ vi.1930, H. M. Hallett; Hants, Isle of Wight, Brightstone, ♀ 30.viii.1950, Bucks., Slough, ♀ on old willow 16.vi.1934, ♀ on hawthorn 28.vi.1939, Bucks., Iver, 3 ♀♀, 4 ♂♂ 7.v-2.vi, 1929-31, some on old quince, O. W. Richards; Surrey, Effingham, 2 ♀♀, ex *Molorchus minor* L., em. 22.v.1947, E. A. J. Duffy; Cambridge, 2 ♀♀, 23-25.v.1905, F. Jenkinson; Cambridge, Ent. Field Lab., 1 ♀, 2 ♂♂ v-vi, 1934-36, G. C. Varley; Suffolk, mostly Monks Soham, numerous ♀♀ ♂♂, v-1.vii, C. Morley. The following are doubtfully referred to this species: SWEDEN, Gotland, Öja, 2 ♂♂ 17.vii.1952, T. Nyholm.

Cleonymus obscurus Walker

1837 *Cleonymus obscurus* Walker, *Ent. Mag.*, 4: 352.

1878 *Cleonymus depressus* Thomson, *Hymenoptera Scandinaviae*, 5: 5-6 (non Fabricius 1798).

Head, seen from above, almost as described for *depressus* Fabr. but not quite so relatively broad, and ocelli similar: cheeks a little more rounded.

Antennae with annellus and first funicle segment much broader than long in both sexes: finger-like projection of last funicle segment of female about three-quarters length of club.

Thorax and propodeum as described for *depressus* Fabr., but sub-apical keel of propodeum distinctly angled where met by median keel.

Gaster of female less elongate than in *depressus* Fabr., with fifth large tergite much shorter than its apical breadth: apical margins of tergites as described for *depressus* Fabr., but fourth very weakly bisinuate, broadly almost straight in middle. Gaster of male with fourth large tergite not much less strongly sculptured than fifth.

Fore wing as described for *depressus* Fabr., but infumate markings much smaller and weaker and not joined, or completely absent.

Head dull metallic blue-green, sometimes with faint brassy reflections, which become bronzy only in mouth region. Coloration of antennae and mouth-parts as described for *depressus* Fabr. Thorax, propodeum and gaster dull metallic blue-green, with brighter reflections not present on thorax. Legs with fore coxae at least above, and mid and hind coxae in greater part, concolorous with thorax; otherwise much as described for *depressus* Fabr. or considerably darker.

Material studied—ENGLAND, London, on *Corylus*, 1 ♂ (type), F. Walker: SWEDEN, Gotland, Fardhem, 1 ♀ (hereby designated allotype), 3.vii.1841, J. W. Zetterstedt, C. G. Thomson coll.; Gotska Sandön, ♀ 17.viii.1955, K.-J. Hequist: FRANCE, Vienne, Isère, ex *Scolytus scolytus* Fabr., 3 ♂♂. L. Falcoz, Ch. Ferrière coll.

Key to species

- Species with conspicuous bronzy to brassy reflections on head and thorax: annellus of female and first funicle segment of both sexes about quadrate: petiolar segment of male about two-thirds length of its greatest breadth: female gaster with fifth large tergite a little longer than its apical breadth
..... *depressus* Fabricius
- Species without conspicuous bronzy to brassy reflections on head and thorax: annellus and first funicle segment much broader than long: petiolar segment of male about half length of its greatest breadth: female gaster with fifth large tergite much shorter than its apical breadth.....
..... *obscurus* Walker

Revision of *Micradelus* Walker, Thomson

Genus *Micradelus* Walker 1834

The first author to recognize this genus after its original publication was Förster, who included it in a key to the genera of his family Hormoceroidae (1856: 60) and mentioned (p. 61) certain details of venation which suggest that he had before him the species which is here accepted as being *Micradelus rotundus* Walk. The genus was not, however, adequately described until Thomson did so (1878: 6). The single specimen standing under the name of *Micradelus rotundus* Walker in the British Museum collection was accepted by A. B. Gahan in 1927 as the type, but was not validly selected by publication; the specimen in question is a female Eurytomid. In the Hope-Westwood collection in Oxford there is a male specimen labelled in Walker's handwriting "Micradelus rotundatus" [*sic!*]; this agrees generically with Thomson's interpretation.

The balance of evidence from the original description favours Thomson's interpretation rather than that based on the supposed type in the British Museum. The latter specimen does not agree with Walker's description of *rotundus* in having the wings hyaline instead of fuscous, the head obviously wider than the thorax, and the uncus of the stigma very short. Moreover it disagrees with the character given for *Micradelus* in Walker's generic key, which states (1834: 168): "abdomen non compressum," and with the diagnosis (*loc. cit.*: 167) of his family Ormoceridae, which states: "pro et metathorax parvi." This specimen appears to have been remounted and labelled by a preparator, so that there is no certainty that it originally stood under the name of *Micradelus rotundus* in Walker's collection. It may easily have become misplaced; similar errors have been detected in other parts of the collection (cf. Kerrich, 1956).

The male specimen in Oxford stood amongst a number of Pteromalidae which are certainly Walker specimens. It is known that Walker presented much material of Chalcidoidea to Westwood, and as the Oxford male agrees well with the original description and is, moreover, the only known specimen labelled as *Micradelus* in Walker's own handwriting, I designate it as lectotype of *rotundus* Walker. This course has the advantage not only of interpreting correctly, in my belief, the original intentions of Walker, but also of maintaining the usage which has been customary since the time of Thomson.

The position of the genus is problematic. It resembles *Cleonymus* in the form of the mandibles, shape of clypeus and free labrum, hairy eyes and wings, but differs in the short, very transverse and more steeply declived pronotum, complete notaulices, forewing venation, compact form and non-metallic colour. Thomson (1878) placed it next to *Cleonymus* on account of its hairy eyes and free labrum, at the same time pointing out that it is so distinct that it might well form a separate subtribe; he also remarks that it comes near the Tridymina but differs in its more strongly developed pronotum.

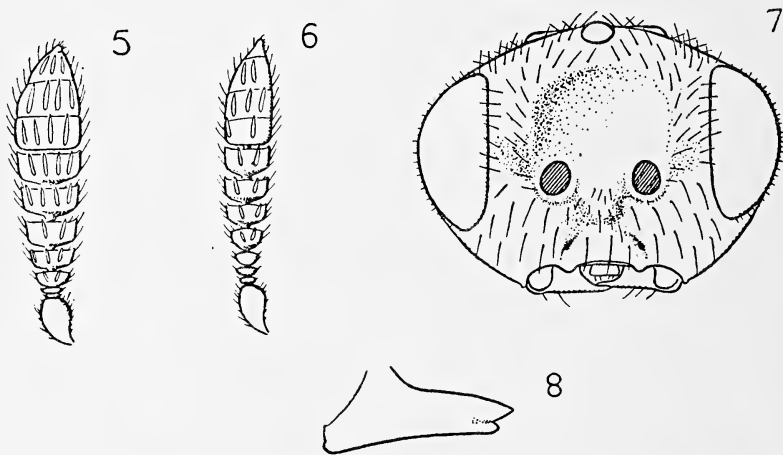
I am not convinced that the resemblance of *Micradelus* to *Cleonymus* in the characters mentioned indicates a close phylogenetic relationship. In other respects *Micradelus* is very unlike *Cleonymus* and indeed any of the other

genera included in Cleonymidae (Cleonymini and Chalcodectini) known to me. I believe that a closer relationship with Tridyminae may exist, as Thomson suggests, but would prefer to regard *Micradelus* as forming a distinct subfamily, next to Tridyminae, within the family Pteromalidae.

Redescription of the genus (see Pl. I and figs. 5-8).

Small black species of compact form, with thorax only a little longer than broad.

Head with eyes conspicuously hairy; genal sulcus subobsolete, clypeus with anterior margin very shallowly emarginate throughout its breadth, anterior tentorial pits distinct, mandibles curved, strongly narrowed distally, bidentate (fig. 8), when closed leaving between their inner edges and the anterior margin of the clypeus a semicircular space in which the free labrum is situated. Antennae 12-segmented, with formula 11253 (female) or 11343 (male), inserted below middle of face but above level of lower edge of eyes; scape slightly compressed, not reaching median ocellus, flagellum clavate, short, its length less than the breadth of head.



Figs. 5-8. *Micradelus rotundus* Walk. (5) Pedicellus and flagellum of ♀ (6) the same, of ♂ (7) head of ♂ in facial view (8) right mandible.

Pronotum in dorsal view strongly transverse, fairly steeply declived anteriorly; collar not margined. Mesoscutum with notaulices complete, deep, not strongly convergent, meeting hind margin of mesoscutum just outside the lateral scutellar sutures. Scutellum nearly round, nearly as long as mesoscutum, without a frenal groove. Propodeum short, rather steeply declived; median carina more or less distinct; plicae and nucha absent; spiracles very small, almost round, touching hind margin of metanotum; spiracular sulci nearly obsolete. Prepectus (praesternum) rather large, not much narrowed medioventrally, so that it forms a strip of more uniform breadth than usual. Legs short, not slender; hind tibia with one spur.

Fore- and hind-wings rather densely hairy throughout (including costal and basal cells and specular area); costal cell of hind-wing with a complete row of hairs along its anterior edge; marginal vein hardly more than one-third as long as submarginal, postmarginal nearly twice as long as marginal, stigmal subequal in length to marginal, stigma small, uncus long.

Abdomen shorter than thorax, the petiole very small, somewhat broader than long, smooth.

Redescription of *Micradelus rotundus* Walker

1834 *Micradelus rotundus* Walker, *Ent. Mag.*, 2: 170.

Female.—Head in dorsal view about 2.2 times as broad as long, with temples rounded off behind eyes and hardly more than one-third length of eyes; ocelli in a triangle of 110° , POL:OOL as 1.5:1; in anterior view (fig. 7) transverse, with eyes rather prominent, vertex not very convex, and cheeks narrowed towards mouth; clypeus rather flat, moderately transverse, discreted laterally, but not dorsally where the lateral bounding impressions pass upwards into feebler ones delimiting the epistoma, anterior margin of clypeus broadly but weakly emarginate; genal sulcus nearly obsolete, gena almost half as long as eye; mandibles broad basally but very strongly curved, bidentate with the upper tooth slightly longer than the lower one; head finely reticulate, clothed with fuscous pubescence which is longer on orbits and around ocelli but short elsewhere; face striate-reticulate, the striations transverse except at the sides, where they run parallel to the orbits of the eyes, clypeus and genae more finely sculptured than rest of head. Antennae short, inserted slightly above lower edge of eyes, with toruli about equidistant from each other and from eyes; scape short, not nearly extending to median ocellus, fusiform, slightly compressed laterally; pedicel stout, about half as long as scape and about 1.5 times as long as broad; flagellum (fig. 5) clavate, with two annelli of which the second is slightly longer and broader than the first, and 5-segmented funicle having the segments increasing slightly in length and breadth and all strongly transverse, fifth about 2.5 times broader than long; clava as broad as fifth funicle segment, almost as long as segments 3-5 of funicle taken together, distinctly 3-segmented; funicle segments each with a single row of sensillae which are about as long as the segments themselves, rather sparse but more numerous on segment 5; claval segments with similar rows of sensillae, third segment of clava with a minute apiculus which bears a tuft of micropilosity beneath.

Thorax about as broad as head, rather less than 1.5 times as long as broad, slightly depressed; pronotum crescentic, about five times broader than its median length and about one-third length of mesoscutum, very finely reticulate, slightly more strongly so laterally; mesoscutum about twice as broad as its median length, sculptured as pronotum; notaulices meeting hind margin of mesoscutum just outside lateral scutellar sutures, hind margin of mesoscutum slightly sinuate laterally in front of axillae; scutellum slightly shorter than mesoscutum, about as long as broad, feebly convex, slightly margined posteriorly, sculptured like mesoscutum; metascutellum about a quarter length of scutellum, about five times broader than long, more densely and strongly sculptured than rest of thorax, matt; metanotum laterally finely

reticulate; propodeum about 1.5 times as long as metascutellum, its dorsal surface slightly curved in profile, very finely reticulate, usually more densely so medially where it is dull; callus with about seven to nine hairs; mesopleuron and mesosternum mainly smooth and shiny, in places weakly alutaceous; prepectus rather coarsely reticulate, dull. Pronotum, mesoscutum, scutellum and axillae rather densely clothed with short fuscous pubescence.

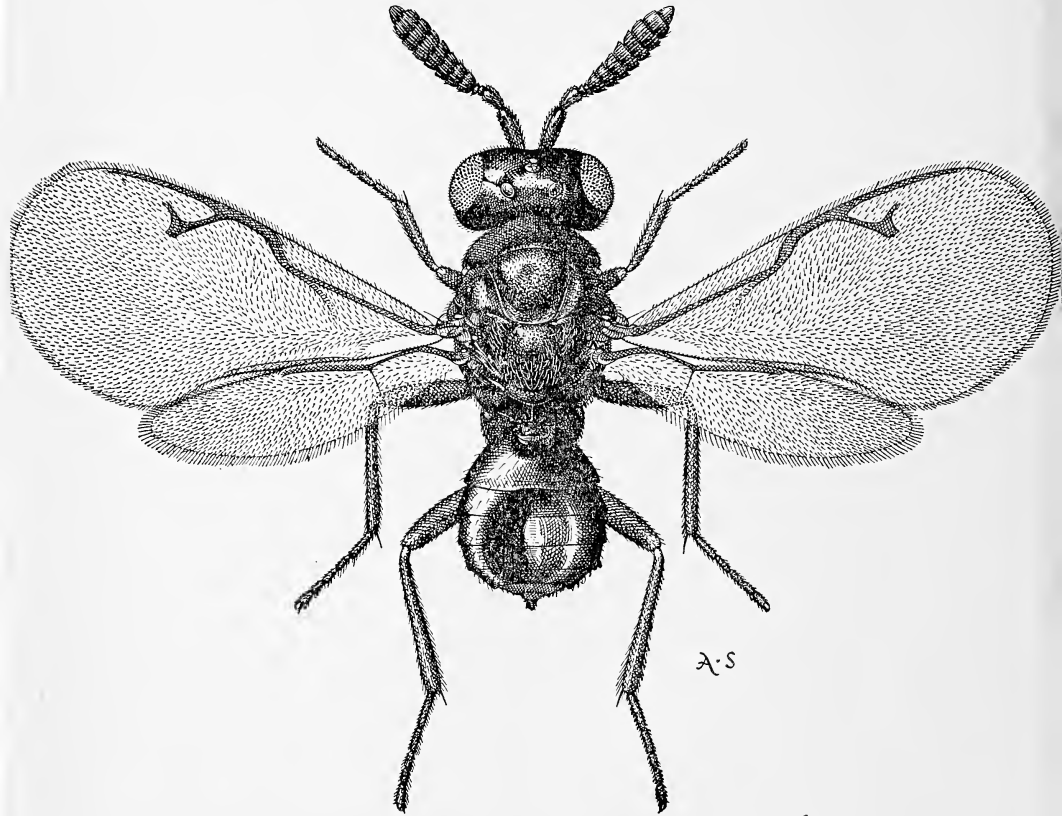


Plate I. *Micradelus rotundus* Walker, female.

Legs with coxae finely reticulate; hind tarsi slightly shorter than their tibiae.

Forewing broad and rather large, reaching much beyond apex of abdomen when laid back; prestigma about as long as stigmal vein; upper part of basal vein where it joins prestigma slightly coloured; ratio of lengths of marginal, stigmal and postmarginal veins as 21:17.5:33; postmarginal slightly thickened proximally at its junction with stigmal, the latter straight; stigma small, uncus long, extending half way to postmarginal. Hindwing obtuse at apex, its marginal cilia where longest about a quarter maximum breadth of wing.

Abdomen ovate, slightly shorter and slightly narrower than thorax, about 1.5 times as long as broad, depressed dorsally after tergite 2, feebly convex ventrally; tergite 2 occupying about one-third of total length of abdomen, 3-6 subequal in length and about half length of 2, 7-8 very short. Valvula ventralis reaching to slightly beyond middle of abdomen. Petiole very small, almost hidden, conic, about 1.5 times broader than long. Surface of abdomen weakly alutaceous but more or less shiny.

Length 1.2 mm.

Black, mandibles paler medially; knees narrowly testaceous, trochanterelli and articulations of tarsi often obscurely testaceous; wings infumate, venation fuscous.

Male.—Resembles female in structure and colour, but antennae (fig. 6) with flagellum less stout, with three annelli of which the third is not much larger than the second, and four funicle segments of which the first is about 1.7 times, the fourth about 2.5 times, as broad as long; clava with the differentiated distal portion (apiculus) of its terminal segment large, so that the clava appears 4-segmented; abdomen oblong-oval, slightly shorter and slightly narrower than thorax, with a strong ventral plica. Length, 0.8 to 1.1 mm.

Type locality: ENGLAND, Isle of Wight.

Micradelus obscurus Thomson

1878 *Micradelus obscurus* Thomson, *Hym. Scand.*, 5: 6.

Male.—Resembles the male of *rotundus* Walker, but is larger (length 1.8 mm.), with the pronotum in dorsal view appearing more square at the shoulders, and longer, there being a horizontal posterior portion (corresponding to the collar) which is nearly half as long as the mesoscutum; the abdomen is broader and more nearly circular, with denser pubescence; the stigmal vein is as long as the marginal, and the uncus of the stigma is very long (on the left forewing of the type specimen it extends nearly to the postmarginal vein); the sides of the thorax have stronger sculpture, especially the mesepimeron and metapleuron.

Female: unknown.

Type locality: SWEDEN, Luleå Lappmark.

Three specimens stand in Thomson's collection under the name *Micradelus obscurus*: two others were mounted on slides by J. P. Kryger and, of these, one female specimen survives. The only one which bears the appropriate locality data is a male labelled "Lpl"; it agrees very well with Thomson's description and is here designated as lectotype. The remaining specimens belong to the species *rotundus* Walk.

It should be noted that Thomson (1878) referred to the description of Walker but, seemingly through a curious *lapsus*, used a different species name. Walker's original description of the genus *Micradelus* (1835: 170) refers in a footnote to the derivation of the generic name as follows: "μικρος parvus, αδηλος obscurus." Possibly Thomson had this in mind with regard to the species name *obscurus*. However this may be, his name is valid and I have used it for his male which appears to differ from that of *rotundus* Walker.

**Discussion of *Cea* (Haliday mss.) Walker 1837 and
Spalangiopelta Masi (1922)**

Jansson (1945) studied the genus *Cea* (Haliday mss.) Walker in Sweden. He resolved the confusion caused by the inaccurate figure of *C. pulicaris* Walk. given by Schmiedeknecht (1909), and showed that *C. irene* Walker 1851 is the alate form of the brachypterous *pulicaris*.

Dr. Jansson was so kind as to send me specimens he studied, and from my examination of them I find myself in full agreement with the conclusions he expressed. His brachypterous female specimen agrees well with the type of *pulicaris* from Holywood, near Belfast. His macropterous female specimen agrees well with the original description of *irene* from Portmarnock, near Dublin, and with the legs and wings, which are all that remain of the type specimen. Both types are in the Haliday collection.

Bouček (1952) studied the genus *Cea* in Czechoslovakia, and related it closely to *Spalangiopelta* Masi, which will be included in the key to British genera to aid its recognition should it later be found with us. *S. alata* Bčk. can now be recorded as a Swedish insect on the basis of a specimen kindly sent me by Dr. Jansson, with the following data: Värmland, Lundsberg, 1 ♀, E. Wiren: this agrees well with Bouček's description. Another Swedish specimen belongs to a presumably new species of *Spalangiopelta*: this is a fully macropterous form, with wings extending beyond apex of gaster, and with ovipositor exerted by about one-third length of gaster. I can place a male specimen (Gottska Sandön, A. Jansson) as a *Spalangiopelta*, but am undecided with which of the above two females it should be associated. The male has funicle segments much longer than those of the female, and each with a basal node bearing a whorl of about six long hairs. Dr. Jansson has suggested that this is the male erroneously associated with the female of *Cea* by Kryger (1934, p. 11).

The two genera have very similar mandibles: long, slender and bidentate.

Redescription of *Caudonia agylla* Walker

Genus *Caudonia* Walker 1850

1846 *Panstenon* Walker, List of the specimens of hymenopterous insects in the collection of the British Museum. Part 1—Chalcidites: 29.

1850 *Caudonia* Walker, *Ann. Mag. nat. Hist.* (2), 5: 125-6, **syn.n.**

Walker described *Caudonia* without definitely placing it in any of the recognized subfamilies, although he remarked, at the end of the generic diagnosis: "This genus is allied to *Trigonoderus*, *Heteroxys* and *Notamisis*."

Förster (1856: 47) included it in a key to the genera of his family Cleonymidae, although he expressly stated (*loc. cit.*: 51) that the genus was unknown to him. Later Walker (1872, Notes on Chalcididae, part 5: 80) gave a translation of the above generic key of Förster, retaining *Caudonia* in the family Cleonymidae without any further comment. Since that time it has retained the same position.

There is no evidence that the holotype of the type species *agylla* Walker has been examined since its original description, so that the characters attributed to it must have been drawn from Walker's description. The only subsequent record of the species appears to be that of Cameron (1935), who recorded it as reared from puparia of *Melanagromyza* (= *Agromyza*) *aeneiventris* Flin. found in stems of ragwort (*Senecio jacobaea* L.) in several localities to the west of London. Unfortunately the specimen or specimens were among material at Farnham Royal which was lost owing to conditions prevailing in 1940, and Dr. Cameron informs us that he did not retain any himself. It therefore seems desirable to redescribe the type species from Walker's holotype female of *agylla*.

Some remarks upon the affinities of *agylla* may be made here.

When critically examining the holotype for redescription, I was struck by its marked resemblance to *Panstenon*, a genus hitherto placed in the subfamily Diparinae of Pteromalidae. Direct comparison of specimens of *Panstenon oxylus* Walker, the type species of that genus, with the holotype of *Caudonia agylla*, led me to conclude that the two are congeneric (**syn.n.**).

The question as to which subfamily the genus should be referred is a difficult one which is, moreover, complicated by a problem of the synonymy of some subfamily names. I am of opinion, however, that *Panstenon* is not closely allied to *Cleonymus*, but it does appear to have many characters in common with the group of genera including *Trigonoderus*, *Platygerrhus*, etc. This group of genera I consider to be perhaps more nearly allied to the Lamprotatinae, so that is where the affinities of this section of the Cleonymidae may lie. One cannot make a more definite statement than this, as research shows that the problem of defining subfamilies of Pteromalidae is becoming increasingly difficult as intermediate forms are discovered.

It has been pointed out above that *Panstenon* was included with *Dipara* Walker in the subfamily Diparinae. The association of these two genera is apparently attributable to Thomson (1878, *Hym. Scand.*, 5: 175). In reality they do not seem to be at all closely allied. This fact is mentioned because it has recently been shown that *Dipara* is the male sex of *Tricoryphus fasciatus* Thomson female (Lelapinae) and hence the subfamily names Diparinae and Lelapinae becomes synonymous (see Bouček, 1955: 54).

The type locality of *agylla* is given by Walker as "England." Hoping to locate the place of capture more precisely, I consulted several of Dale's volumes of MSS. diary notes and lists. In volume 66 I found the following entry, written in C. W. Dale's handwriting: "*Caudonia Argylla* [sic!] J. C. Dale. Duddingston Loch Perthshire June 30th 1825." The name "J. C. Dale" is entered in the column reserved for the captors of species mentioned, and refers to C. W. Dale's father, who was in constant touch with Walker. As I was aware of no Duddingston Loch in Perthshire but knew the one of that name near Edinburgh, I made extensive enquiries which indicated that no such loch exists in Perthshire. Not being satisfied, however, I consulted J. C. Dale's account of his Scottish tour in 1825, and other Dale MSS.; in volume 18 I came across a reference to his having collected "near Duddingston Loch near Edinburgh, June 27-30, 1825." The entry by C. W. Dale under *C. agylla* was almost certainly made at a date much later than 1825,

probably from information supplied by his father, so that the location "Perthshire" could well have been a *lapsus*, especially as J. C. Dale did in fact visit Perthshire shortly after his stay in Edinburgh.

I have come to regard the habitat of the related *Panstenon oxylus* as being rather marshy localities, so possibly *agylla* may be expected to favour such situations.

Redescription of *Panstenon agylla* (Walker), **comb.n.**

1850 *Caudonia agylla* Walker, *Ann. Mag. nat. Hist.* (2), 5: 125.

Female.—Head obviously broader than thorax (1.3:1), in dorsal view about twice as broad as long, with temples strongly roundly narrowed behind the prominent eyes, ocelli in a triangle of 120° , POL:OOL as 2:1; eye length:breadth as 1.2:1. Head in front view trapeziform, slightly narrowed ventrad; genae slightly buccate with sulcus sharply impressed, their length about three-quarters that of eye. Clypeus weakly discreted, slightly broader than high, its anterior margin produced and subtruncate medially. Mandibles not falcate, with external margin nearly straight; the left mandible appears to have three teeth of which the outer one is small and acute, the middle one more obtuse, and the inner one broadly truncate. Epistoma slightly convex below toruli: antennal scrobes shallow and ill-defined. Antennae inserted just above mid point between median ocellus and apical margin of clypeus; distance between centres of toruli distinctly less than that between centre of one torulus and orbit of eye (11:8); scape almost linear and practically straight, extending by almost half its length beyond median ocellus; pedicellus conic, in profile about twice as long as broad; annelli taken together nearly half length of pedicellus, the first slightly transverse, second slightly longer than first and subquadrate; funicle filiform, slender (hardly stouter than pedicel), with first segment about as long as pedicellus and 1.7 times as long as broad, sixth about 1.5 times as long as broad; clava ovate, slightly broader than funicle, equal in length to the two preceding funicle segments.

Head including clypeus and scrobes very finely reticulate (a little more coarsely so on frons above antennae) with a tendency towards strigosity on vertex and temples; genae with a more shiny strip immediately behind the sulcus, like that of *Trigonoderus*, but narrower.

Thorax in dorsal view about 2.5 times as long as broad. Pronotum barely half as broad as head, its anterior declived portion conic, about three times as long as median length of collar, finely transversely strigose-reticulate; collar finely reticulate, with anterior edge straight, posterior edge nearly semicircularly emarginate, so that median length of collar is about one-third that of its sides, which are parallel; lateral portions of pronotum more coarsely reticulate. Mesoscutum convex, about as broad as long, moderately finely reticulate, with posterior margin feebly sinuate laterally; notaulices straight, strongly crenate. Scutellum shorter than mesoscutum (25:31), hardly longer than broad, weakly convex, its anterior portion with sculpture like that of mesoscutum; frenum with coarser reticulation, frenal groove strong. Axillae alutaceous. Metascutellum divided into two portions of which the anterior one is sunken and crossed by six longitudinal costae, the

posterior one forming a raised transverse reticulate strip. Propodeum rugulose-reticulate, its median length equal to that of scutellum and meta-scutellum combined, with sides slightly converging caudad; plicae complete but rather irregular, gently curved; median area enclosed by plicae about 1.5 times as long as broad, nearly horizontal in its proximal two-thirds, after this point declived towards the nucha; median carina strong, extending the whole length of the horizontal portion of the propodeum, then forking to form an irregular transverse costula; declived portion of propodeum between costula, and nucha with four or five irregular longitudinal ridges; spiracular sulci moderately deep; at base of propodeum are four circular pits, one on either side of each plica lateralis; nucha with two similar pits situated laterally; spiracles small, suboval, separated by quite twice their own diameter from anterior margin of propodeum. Lateral panels of prepectus broadly triangular, without an oblique carina, their reticulation like that of mesoscutum. Mesopleuron with reticulation like that of mesoscutum, except mesepisternum which is discreted strongly from mesepimeron and is alutaceous; metapleuron coarsely reticulate. Mesosternum finely reticulate; with mesolcus complete, deeply impressed, and ending posteriorly in a subtriangular pit.

Legs rather long and slender; hind tibia apparently with one spur only.

Forewing long, rather narrow, extending much beyond apex of abdomen; costal cell broader than in *oxylus* (length about 12 times its maximum breadth, as against nearly 20 times in *oxylus*), its upper surface apparently glabrous but its lower surface with hairs extending from base to about half length of cell as a single row, which then becomes double and finally triple towards the apex of the cell. Basal cell hairy, more densely so distad in the region of basal vein; just beyond basal vein the hairs are sparser, forming an incipient speculum; distal to this the wing is densely hairy. Ratio of lengths of subcostal (including prestigma), marginal, postmarginal and stigmal veins as 62:40:30:11; veins thin, stigmal nearly straight, with small, more or less rhomboidal stigma, uncus very short.

Hind wing: length of longest marginal cilia equal to at most one-sixth of maximum breadth of wing; costal cell glabrous.

Abdomen about as long as, but slightly broader than, thorax, about twice as long as broad, elliptic, acute at apex; tergite 2 convex and slightly shorter than its apical breadth, tergites 3-6 strongly transverse, and slightly depressed medially, 7 moderately so, 8 about as long as its basal breadth, triangular; ovipositor sheaths slightly projecting; venter strongly convex; valvula ventralis not clearly visible but probably extending to about two-fifths of total length of abdomen.

Green; inner orbits, frons, vertex and temples coppery; occipital surface of head more blackish; pronotum (except anterior to the collar where it is blackish), mesoscutum, scutellum, axillae and upper part of mesopleuron coppery to golden tinged; petiole brown; abdomen red with a large fuscous patch occupying nearly the whole disc of tergite 2 and with segments 6-8 fuscous, 7 and 8 with a strong greenish tinge; antennal scape reddish except at apex, pedicellus fuscous, flagellum black; mandibles and palpi mainly reddish-testaceous; legs including all coxae pale red with the claw segment of

all tarsi darkened at apex; wings subhyaline with venation and radix testaceous; tegulae testaceous.

Length 3.3 mm.

Holotype female, Dale collection, Oxford University Museum, gummed on an octagonal card and bearing a printed label "Dale."

Key to the British species of *Panstenon*: females

1. Pronotal collar weakly margined anteriorly; mesoscutum with notaulices fine, not consute; scutellum with frenal groove weak; malar space about half length of an eye; costal cell of forewing about 20 times as long as its greatest breadth, its lower surface with a row of hairs which is single except towards apex of the cell; abdomen metallic, or at most indistinctly pale medially; length 1.7 to 2.6 mm.....*oxylus* (Walk.)

Pronotal collar sharply margined; mesoscutum with notaulices strong, consute; scutellum with frenal groove strong; malar space about three-quarters length of an eye; costal cell of forewing about 12 times as long as its greatest breadth, with a row of hairs which becomes double in distal half of the cell; abdomen broadly red medially; length 3.3 mm.
.....*agylla* (Walk.)

Genus *Gastracanthus* Westwood 1833

- 1833 *Gastracanthus* Westwood, *Mag. nat. Hist.*, 6: 121.
 1833 *Hetroxys* Westwood, *Ibid.*, 6: 495.
 1878 *Photismus* Thomson, *Hymenoptera Scandinaviae*, 5: 4, 15, **syn.n.**

Gastracanthus pulcherrimus Westwood

- 1833 *Gastracanthus pulcherrimus* Westwood, *Mag. nat. Hist.*, 6: 121.
 1836 *Pteromalus pulcherrimus* Walker, *Ent. Mag.*, 4: 9-10.
 1836 *Pteromalus macromerus* Walker, *Ibid.*, 4: 11, **syn.n.**
 1836 *Trigonoderus elegans* Walker, *Ibid.*, 4: 21, **syn.n.**
 1841 *Cleonymus transversus* Förster, *Beiträge zur Monographie der Pteromalinen* Nees: 33, **syn.n.**
 1878 *Photismus nubilosus* Thomson, *Hymenoptera Scandinaviae*, 5:15-16, **syn.n.**

The genus *Gastracanthus*, with species *pulcherrimus* Wstw., was proposed in 1833. Later in the same volume, the author proposed the name *Hetroxys* in substitution, for he supposed *Gastracanthus* to be a homonym of *Gasteracanthus* Latreille 1831 [Arachnida]. Later authors, e.g. Thomson (1878, pp. 87-8, 100-2) have used the name *Hetroxys* (or *Etroxys*) for a certain genus of Pteromalinae. Unfortunately the type must be reckoned as lost; but that interpretation cannot be correct, for no British species of *Hetroxys* auctt. (now identified as *Holcaeus* Thomson, see Graham 1956b) has maculate wings, nor can the pronotal collar in that genus be described as triangular.

We interpret Westwood's description and figures as applying to a Cleonymid and, in particular, *Photismus nubilosus* Thomson. Thomson (1878, p. 15) gave "*pulcherrimus* Walk." as possibly identical with *nubilosus*. Although we cannot trace any undoubted female specimen of Walker standing as *pulcherrimus*, there seems no doubt that his description (1836, pp. 9-10) refers to this species, and this can be held to constitute the first revision. There is one male specimen labelled in Walker's writing in the Hope-Westwood collection. All nine female specimens in the Dale collection standing as *pulcherrimus* belong here, and it was known that J. C. Dale was in close touch with Westwood and Walker on questions of identification of Chalcidoidea.

We are very pleased to discover, from correspondence with Dr. S. Novitzky, that he had come independently to the same conclusion about the identity of this species.

A single Walker specimen of this species, a male, stands in the British Museum collection as *Hetroxys macromerus* Walker. It agrees well with the original description, and we regard it as the type.

Two Walker specimens of this species, both males, stand in the British Museum collection as *elegans* Walker. The first of these agrees well with the description and we select it as lectotype. The second is a smaller specimen

with the characters less well developed and, incidentally, with the head missing. We find no specimen to correspond with Walker's var. β .

In the Thomson collection there stand three male and then three female specimens: the seventh specimen was mounted on a slide by J. P. Kryger and has since been lost. Two males and a female bear labels of localities in Skåne, and one of each sex a green Zetterstedt label. The female specimen standing sixth was taken by C. Boheman near Stockholm: it is a fine specimen agreeing excellently with the description, and indeed, is the only remaining specimen with the wing markings described in the diagnosis. Therefore we select it as lectotype despite that the locality indication is southern Sweden. It is, of course, possible that the seventh specimen might have been selected had it remained in the collection.

The three male specimens and the Zetterstedt female belong to this species, but the small female specimen standing fifth belongs to a different species and genus (see below, p. 304).

The identity of *Cleonymus transversus* Förster as this species was discovered by S. Novitzky, who kindly wishes us to publish the synonymy. We have examined the single male specimen marked as type and confirm his finding. We attribute Förster's description of wing marking to the iridescence, for the characteristic infuscation is barely discernible.

The species is illustrated in the present work on Pl. II, and the head in facial view in fig. 23, p. 308.

Material studied—ENGLAND, F. Walker coll., near London, 3 ♂♂ (including types of *macromerus* Walk. and *elegans* Walk.): J. C. Dale coll., unlocalized, 6 ♀♀, Dorset, Glanville's Wotton, ♀ 12.viii.1874, ♀ 2.ix.1876, ♀ viii.1880 (all 9 standing as *Hetroxys pulcherrimus*); unlocalized, 3 ♂♂ (standing as *Trigonoderus elegans*); unlocalized, 2 ♂♂, Glanville's Wotton, 3 ♂♂ (all 5 standing as *Trigonoderus obscurus*): Hope-Westwood coll., unlocalized, 2 ♂♂ (one, with conspicuous wing-markings, labelled *pulcherrimus* in Walker's writing, and one standing as *scenicus*): T. A. Marshall coll., unlocalized, 1 ♀, Wilts., Nunton, 3 ♂♂, Herts., St. Albans, 1 ♀, Leicester, 1 ♀ (all standing as *Hetroxys pulcherrimus* Wstw.): Hants, New Forest, ♀ viii.1908, C. G. Lamb.; ? Berks., Longworth, ♀ 24.viii.1913, F. Jenkinson; Berks., Wytham Wood, ♀ 29.v.1951, ♂ 9.vi, ♀ 12.vi.1952, M.W.R. de V.G.; Surrey, ? Shere, 1 ♀, E. Capron; Herts., Boxmoor, ♀ 5.vi.1936, Bricket Wood, ♂ 10.vi.1938, R. B. Benson; Fownhope, Capler Wood, ♀♂ 31.v.1936, E. B. Britton and J. F. Perkins; Warwicks., Rugby, Cosford, ♀ 29.vii.1955, M. F. Claridge: SWEDEN, C. G. Thomson coll., Skåne, Ringsjö, 1 ♂, Yddinge, 2 ♂♂ (one standing as *apicalis* Thoms.), C. G. Thomson; ♀♂ (green locality label), J. W. Zetterstedt; Stockholm, 1 ♀, C. Boheman: Skåne, Ringsjö, Fjellfota sjö and Röstånga, 9 ♂♂ 1 ♀ 6.vi-14.viii.1938, D. M. S. and J. F. Perkins; Kullaberg, ♀ 1.vi.1950, E. Wirén; Södermanland, Tockenön, ♂ 27.vii.1950, A. Jansson; Närke, Örebro, 1 ♂ undated, 1 ♂ 1938, Örebro, Oset, 1 ♂ 2 ♀♀ 5.vi, ♀ 1.ix.1939, ♂ 5.viii.1949, A. Jansson: FINLAND, Geta, 1 ♂, Jomala, 1 ♂, Parikkala, 1 ♂, W. Hellén: GERMANY, near Berlin, Oderberg-Liepe, ♀ 19.viii.1938, G.J.K.: CZECHOSLOVAKIA Bohemia E., Velky Vřeštov, ♂ viii.1954, ♂♀ vi.1955, Z. Bouček.

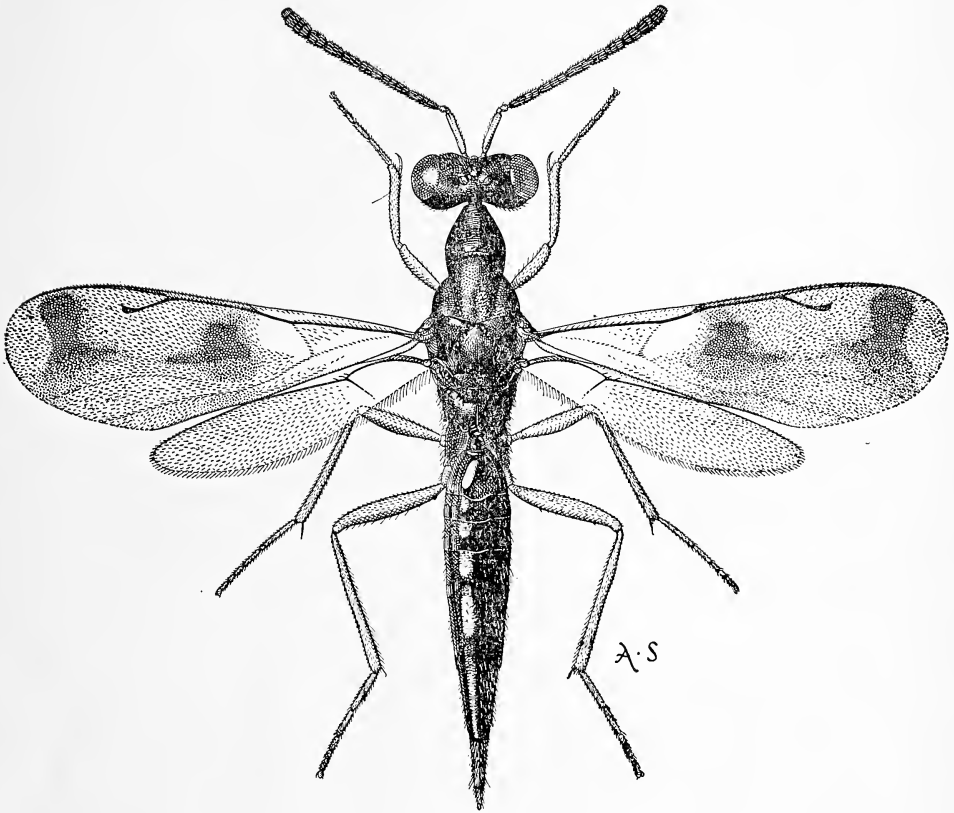


Plate II. *Gastracanthus pulcherrimus* Westwood, female.

Gastracanthus conicus (Girault), **comb.n.**

1917 *Trigonoderus conicus* Girault, *Ent. News*, 28: 396.

The recognition of *Trigonoderus conicus* Girault, from determined specimens in the U.S. National Museum and Canadian National Collection, as a species of this genus, enabled us to see which characters that had been adduced to separate *pulcherrimus* Wstw. were truly generic on a holarctic basis, and which were merely specific. *G. conicus* (Grlt.) shares with *pulcherrimus* Wstw. the median shield of the prepectus behind the fore coxae, the apically sinuate first to third large tergites of the female, and the long outstanding hairs of the male flagellum, but not the sharply narrowed cheeks, the decidedly elongate petiole, or the characteristic wing markings.

Material studied 8 ♀♀, 1 ♂—U.S.A., States of Maryland and New York, CANADA, Provinces of Quebec and Ontario.

Key to species

Cheeks sharply narrowed to mouth (fig. 23): petiolar segment of female about one and a third times as broad as long, of male much longer than broad: fore wings with characteristic cloud (Pl. II) except in smaller males and occasional small females: female with hind coxae broadly and conspicuously metallic coloured at base, the male usually with fore and mid coxae in about basal half, and hind coxae except at apex, metallic coloured.....
 *pulcherrimus* Westwood

Cheeks rounded, about as much as in *Cleonymus depressus* Fabr. (fig. 2): petiolar segment of female more than twice as broad as long, of male distinctly broader than long: fore wings hyaline or almost so, with (in obviously well-developed specimens) no definitive wing-cloud: female with hind coxae narrowly and inconspicuously metallic coloured at extreme base, the male (in the one specimen seen) with fore and hind coxae metallic coloured in about basal half, the mid coxae hardly darkened.....
 *conicus* (Girault)

**The genera *Trigonoderus* Westwood 1832, *Plutothrix* Förster 1856
 and *Anoglyphis* Förster 1878**

The genus *Trigonoderus* was validly proposed in 1832 with the single species *princeps* Wstw., which is clarified below. It was mentioned three years earlier, as a Westwood manuscript genus, by Stephens (1829, p. 396), who quoted *obscurus* Westwood mss. and stated that there were thirteen other species to be examined. It was taken up by Walker (1836), who described fifteen species in it: he attributed the genus name to Westwood, but not the species name *obscurus*, nor did he mention *princeps*. The modern conception has been that of C. G. Thomson (1878), who separated off as new genera *Photismus*, synonymized above with *Gastracanthus* Westwood, and *Platy-gerrhus* which stands.

Thomson divided *Trigonoderus* into two major species groups, which we separate more sharply in the following manner:

Fore wings with speculum outside basal vein undeveloped or very incomplete: costal cell of hind wing in basal half with a band of hairs that is complete or almost so: prosternum with median sulcus absent or weak: mesepisternum divided by a diagonal furrow (i.e. this furrow goes across the sculptured part of the mesopleuron: pronotal collar usually not sharply margined: male with antennal flagellum short-hairy.....Section A

Fore wings with speculum outside basal vein fully developed: costal cell of hind wing in basal half almost bare, or with a row of hairs decidedly incomplete: prosternum with median sulcus strong: mesepisternum not thus divided (i.e. the mesopleuron may have a furrow just below the smooth part but not across the sculptured part): pronotal collar usually sharply margined: male with antennal flagellum long-hairy....Section B

Dr. V. Delucchi has urged that these two species-groups of Thomson be considered as separate genera, and this position we accept. Further, he informed us that *Anoglyphis nubilosa* Förster 1878 belonged in the aggregate of *Trigonoderus acuminatus* Thomson, so that the name *Anoglyphis* was available for the second section. The identity of *A. nubilosa* was also known to Dr. S. Novitzky who, through Dr. Max Beier, very kindly sent a pair of specimens he had compared with the type from Berlin, and which had previously been seen by Dr. Delucchi. We agree with both these authorities that the specimens agree well with some standing under *acuminatus* in Thomson's collection. As pointed out by Dr. Novitzky, however, the male of *trifasciatus* Thomson 1878 was described as *Plutothrix foersteri* Mayr 1904, and *Plutothrix* Förster 1856 has priority over *Anoglyphis* Förster 1878.

The species of *Trigonoderus* and *Plutothrix*

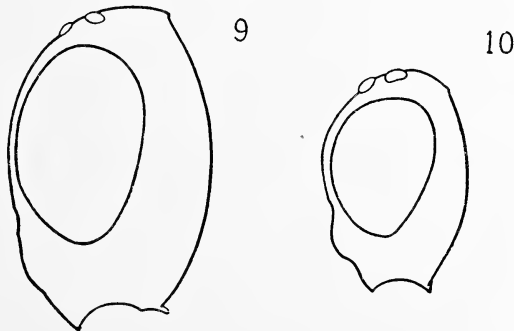
Trigonoderus cyanescens (Förster)

1841 *Cleonimus cyanescens* Förster, *Beiträge zur Monographie der Pteromalinen* Nees: 31.

1878 *Trigonoderus pedicellaris* Thomson, *Hymenoptera Scandinaviae*, 5: 8-9, syn. by S. Novitzky 1956.

This species has been well characterized by Thomson (1878, pp. 8-9). The Försterian type was studied by S. Novitzky, who has reviewed the historical evidence in detail and has identified it with *pedicellaris* Thomson (Novitzky, 1956). Dr. Max Beier very kindly sent it to London so that we could study it together with Thomson's specimens, and from this comparative study we can confirm Dr. Novitzky's finding.

The first specimen that stood as *pedicellaris* in the Thomson collection was mounted on a slide by J. P. Kryger, and has since been lost. From among the three remaining female specimens we choose, on not very strong grounds, that one which stood second in the collection as agreeing best with the original description, and we select it as lectotype: it was from the Zetterstedt collection, from Östergötland.



Figs. 9-10. Head of ♀ in sinistral view of (9) *Trigonoderus cyanescens* (Först.) and (10) *T. filatus* Walk.

The Försterian type is a fine, large female specimen. The head and thorax are partly of a beautiful cyaneous colour, as is implied by the species name, and the head is violet coloured above. Mounted on the same card is a male specimen which was not described, though a label in Förster's writing applies to both specimens.

In this species the head in side view is relatively short, with eyes perhaps one and a half times as long as broad (fig. 9, cf. fig. 10). In normal specimens the radius is emitted at a very acute angle, but in one small male seen this is not so.

Material studied—ENGLAND, Hants, New Forest, Lyndhurst, ♀ 18.vi.1903, F. Jenkinson; EUROPE unlocalized, 1♀ (type of *cyanescens* Först.), 1♂, A. Förster; SWEDEN, C. G. Thomson coll., Östergötland, 1♀, J. W. Zetterstedt (lectotype of *pedicellaris* Thoms.); Skåne, Bökeberg, ♂ 6.vi, C.G.T.; Småland, 1♀, Stockholm, 1♀, Dalarne, 1♂, C. Boheman; Skåne, Höör district, ♂ 5.vi.1938, D. M. S. and J. F. Perkins; Småland, Sandbackshutt, ♂ 26.vi.1942, A. Jansson; Närke, Örebro, Oset, ♂ 30.viii.1938, Ö. Mark, ♂ 24.vii.1942, ♂ 24.vii.1954, Hjälmarsberg, ♂ 9.vi.1940, ♂ 20.vii.1951, ♂ 23.vi.1953, Adolfsberg, 2♂♂ 8-12.vii, ♂ 9.viii.1955, A. Jansson; Dalarne, Sundborn (on Lake Toxen), ♀ 20.viii.1944, A. Jansson; Hälsingland, Näsviken, ♂ 8.viii.1940, A. Jansson; CZECHOSLOVAKIA, Bohemia, Koda u Berouna, ♂ 28.v.1954, Litomeřice, ♀ 3.vi.1954, Z. Bouček.

Trigonoderus filatus Walker

1836 *Trigonoderus filatus* Walker, *Ent. Mag.*, 4: 17.

1844 *Pteromalus Brandtii* Ratzeburg, *Die Ichneumoniden der Forstinsecten*, 1: 188, syn. by S. Novitzky 1956.

1878 *Trigonoderus Brandti* Thomson, *Hymenoptera Scandinaviae*, 5:9-10

This species seems constant in having, in the female, the head broad, sharply narrowed behind eyes; antennal scape a little shorter than in *princeps* Wstw. (see below), ochreous in basal half; fore femora beneath with hairs not very long or dense; fore wing definitely without speculum, and with uncus long (fig. 11); legs except coxae rufous to testaceous. The head in side view is shown in fig. 10 and in facial view in fig. 24 (p. 308).

In the British Museum there is a single female specimen from the Walker collection standing as *filatus*. It has been marked as type by Ch. Ferrière, and this selection we now validate. *Filatus* var. β Walker is represented by a single female specimen in the Dale collection (Oxford University Museum), labelled *filatus* by Walker.

Three female specimens standing as *brandti* Ratz. in the Thomson collection belong to this species. We select that one from Äsperöd in Skåne as type to the description. One specimen in the series was mounted on a slide by J. P. Kryger and has since been lost. We feel doubtful of the identity of the single male.

Ratzeburg, in a footnote, explains what he means by "Torymus-ähnlichen Radialnerven," which expression would otherwise be misleading. His description of the long, hooked postmarginal (fig. 11) may be the main

character on which Thomson's interpretation was based. Dr. S. Novitzky saw Ratzeburg's material of this species at Eberswalde in 1936.

Material studied—ENGLAND, near London, ♀ type, F. Walker coll.; ♀ (under *pulcher* Walk.), T. A. Marshall coll.; unlocalized, 1 ♂, 8 ♀♀ (under *pulcher* Westw.), 1 ♀ (under *obscurus* Walk.), 1 ♀ (under *filatus* Walk.), J. C. Dale coll.; unlocalized, ♀ (under *pulcher* Walk.), Hope-Westwood coll.; Kent, Goudhurst, ♀ 8.vii.1937, O. W. Richards; Hants, Lyndhurst, ♀ 4.vii.1904, F. Jenkinson; Cambridge, ♀ 23.vii.1936, G. C. Varley; Suffolk, Monks Soham, ♀ 25.vii.1944, C. Morley: FRANCE, Brittany, Morlaix, ♀ 10.vi.1954, J. F. Perkins: SWEDEN, unlocalized, 1 ♀, Skåne, Åsperöd, 1 ♀, Västergötland, 2 ♀♀ (one Kinnekulle), C. Boheman, C. G. Thomson coll.; Skåne, Kivik, 2 ♀♀ 18.vii.1938, D. M. S. and J. F. Perkins; Bohuslän, Ljung, Lyckorna, ♀ 18.vi.1946, Bo Tjeder; Öland, Glömminge, ♀ 1.viii.1938, ex *Pogonocherus hispidus* L. (Col., Lamiidae), K.-J. Hequist, ♀ reared 28.viii.1939, A. Jansson; Gotska Sandön, ♀ 23-30.vi.1947, E. Wirén; Södermanland, 2 ♀♀ 22-25.vi.1949, Väsbyön, ♀ 20.vii.1950, A. Jansson.

Trigonoderus princeps Westwood

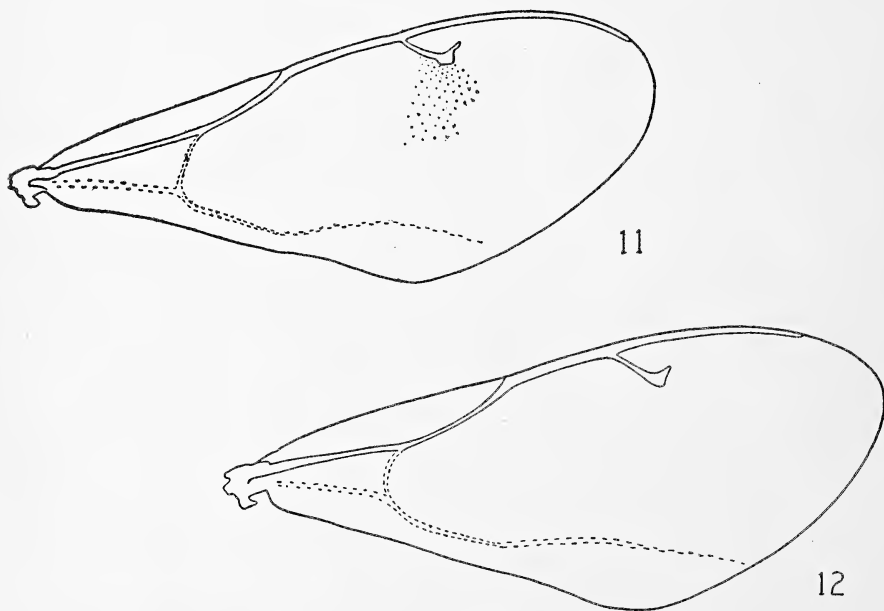
- 1829 *Trigonoderus obscurus* (Westwood mss.) Stephens, A systematic catalogue of British Insects. Insecta Mandibulata: 396, **nom. nud.**
- 1829-31 *Leptoma obscura* (Walker mss.) Curtis, A guide to an arrangement of British Insects, ed. 1: 118, **nom. nud.**
- 1832 *Trigonoderus princeps* Westwood, *Phil. Mag.*, 1: 127.
- 1836 *Pteromalus invenustus* var. β Walker, *Ent. Mag.*, 4: 11.
- 1836 *Trigonoderus pulcher* Walker, *Ibid.*, 4: 16-17 (synonym by Schmiedeknecht 1909 confirmed).
- 1836 *Trigonoderus tristis* Walker, *Ibid.*, 4: 17, **syn.n.**
- 1836 *Trigonoderus obscurus* Walker, *Ibid.*, 4: 21-2, **syn.n.**
- 1836 *Trigonoderus contemptus* Walker, *Ibid.*, 4: 22, **syn.n.**
- 1836 *Trigonoderus atrovirens* Walker, *Ibid.*, 4: 22, **syn.n.**
- 1840 *Pteromalus hirtipes* Zetterstedt, *Insecta Lapponica*: 422, **syn.n.**
- 1844 *Pteromalus Lichtensteinii* Ratzeburg, Die Ichneumoniden der Forstinsecten, 1: 188-9.
- 1878 *Trigonoderus Lichtensteini* (Ratz.) Thomson, *Hymenoptera Scandinaviae*, 5: 10-11, **syn.n.**
- 1878 *Trigonoderus Lichtensteini* (var. b=*pilipes* Zett.) Thomson, *Ibid.*, 5: 10-11.
- 1936 *Trigonoderus Sokanowskii* (Novitzky mss.) Sokanowsky, *Anz. Schädlingssk.*, 12 (6): 74, **nom.nud.**
- 1956 *Trigonoderus sokanowskii* Novitzky, *Ent. Nachr. Bl., Wien*, 7 (2): 31, **syn.n.**
- 1956 *Trigonoderus sokanowskii* ssp. *pseudoprinceps* Novitzky, *Ibid.*, 7 (2): 31, **syn.n.**

T. princeps Wstw. is an extremely variable species. The head is not quite so broad as in *filatus* Walk., nor usually so sharply narrowed; the antennal scape is a little longer, sometimes wholly metallic but often pale except at apex; the fore femora beneath (as first observed by Ch. Ferrière) have the hairs usually denser and about as long as the femora are thick; the fore wing has a relatively broad costal cell, sometimes an incipient speculum, and usually the uncus shorter (fig. 12); the legs have femora, except at apex, and fore tibiae usually darkened, but sometimes not so. The gaster varies greatly in proportion: the sixth large tergite is sometimes much shorter than its basal breadth, but in any case is not so much longer as in *filatus* Walk.

The species has most usually been identified from the work of Thomson (1878) and known as *lichtensteini* Ratz.

Thomson (1878, pp. 10-11) describes the male as having a distinct speculum. We find from examination of the two in his collection, and of two other Swedish specimens and a British, that hairs are present on the larger part of it.

T. princeps Wstw. is the type species of the genus. In Schmiedeknecht (1909) it is identified only with *pulcher* Walk. 1836, a species that also has been little understood (see below). The type is not to be found in the Oxford University Museum and must be reckoned as lost. We interpret it as a form of this species with the wing cloud distinctly developed, the legs darkened,



Figs. 11-12. Right fore wing of ♀ of (11) *Trigonoderus filatus* Walk. and (12) *T. princeps* Wstw.

and the antennal scape darkened but paler at base. As additional evidence we adduce that the pedicellus is small, the annelli are so small that they could have been overlooked, and the first two club segments sometimes appear to be divided: the description of the wing cloud fits this species better than it does *apicalis* Thoms. in which, if developed, it is round and sub-apical, and the pronotum is more apparently triangular than in that species; the thorax and propodeum are sometimes golden coloured and the gaster sometimes steely.

The opinion that *princeps* Wstw. is identical with *lichtensteini* Ratz. Thoms. was held independently by S. Novitzky, who had studied two female specimens in the Vienna museum determined by A. Förster. Dr. Novitzky sent to London, for comparison with the type or other determined British material, a female specimen from Sotchi, W. Caucasus, reared from *Parmena balteus* L. (Col., Lamiidae): further reference is made to this specimen below. He also sent a specimen he had determined as a form resembling *lichtensteini* Ratz., subsequent to his examination of Ratzeburg's type: this confirms Thomson's interpretation of Ratzeburg's species, which we had thought to be doubtfully correct (cf. Novitzky, 1956): though the form of the species with darkened antennae and legs agrees with Ratzeburg's description.

Ch. Ferrière has recognized *Pteromalus hirtipes* Zetterstedt, of which the type is female, not male, as a *Trigonoderus*, and has suggested that *lichtensteini* Ratz. var. *pilipes* Zett. Thoms. is a *lapsus* for *hirtipes*. We have examined the type, which is labelled with name and locality in Zetterstedt's handwriting: in it the femora are slightly dark-marked.

The specimens in the Thomson collection all fall within the limits of variation of the species as we understand it (one specimen mounted on a slide by J. P. Kryger has since been lost). We select as type to the description of var. a. a Boheman specimen from Gotland, and of var. b. a Boheman specimen from Stockholm.

Ch. Ferrière recognized the species as *obscurus* Walker 1836, and has habitually determined it as such. He has marked a specimen in the British Museum collection as type, and this type selection we now validate by publication. It is of a form with the legs darkened and the antennal scape wholly darkened, but the wing cloud undeveloped or barely discernible. In the Hope-Westwood collection is a specimen labelled *obscurus* by Walker: it is small, and has the thorax green-blue, and the wing-cloud hardly discernible. We know no Walker specimens corresponding with his varieties.

In the Dale collection is a specimen labelled *obscurus* Westwood. It seems likely that Westwood gave the manuscript name *obscurus* to Stephens, but changed it to *princeps* before validating the genus and species names in 1832. In the British Museum collection is a specimen numbered 1008 which, as shown by the museum register, was sent by Curtis as *Leptoma obscura* Walker (see Curtis, 1829-31, p. 118), which name was changed to *Trigonoderus obscurus* in the second edition of Curtis' Guide (1837).

T. atrovirens Walk. we consider, as recognized by Ch. Ferrière, as a form of the same species. The unique type is in the British Museum collection. It is a very small, dark specimen, with the funicle segments relatively shorter than in well-developed specimens.

Trigonoderus tristis Walker is a small form, of length 3 mm., with the gaster relatively short; with the fore femora relatively thick, and having the hairs not so long or so dense as in typical *princeps*; and with mesoscutum having the reticulations very wide-meshed. The unique female type from near London is in the British Museum collection. Walker's *Pteromalus invenustus* var. β is a similarly characterized male, and we have two male and two female specimens from Sweden to correspond.

We sought to maintain this form *tristis* as a distinct species but, at the finish of our study of this group, taking into account the kind of variation encountered in other species, have come to the conclusion that the differences observed are to be attributed to the small size of the specimens.

The single specimen standing in the British Museum collection as *contemptus* Walk. is labelled "Scotland" and is clearly the type. It has a wing speculum traversed by a broad band of hairs, relatively short antennal segments, and no wing cloud developed. An unlocalized female specimen in the Hope-Westwood collection, and several Swedish specimens, were found to correspond; so we inclined to regard *contemptus* as a good, though very closely related, species. The Caucasian specimen sent by Dr. Novitzky, however, has the wing speculum of this form, but the antennal segments relatively long, and the wing cloud fully developed; so we are obliged to regard *contemptus* as another synonym of *princeps* Wstw.

Two Walker specimens, female and male, have stood in the British Museum collection labelled (by an assistant of C. Waterhouse) as "*Trigonoderus pulcher* Westw." The male specimen, which may be Walker's var. β , had been determined as *Dinotiscus bidentulus* Thoms., and both had been moved to that position in the collection, where they escaped our notice until a late stage in the preparation of this paper. The female specimen agrees with the original description and we regard it as Walker's type. Since, moreover, Walker had redescribed "*Pteromalus pulcherrimus*" Westwood a few pages earlier in the same volume, we regard the attribution to Westwood merely as a mistake in labelling.

The type has the fore wing with a strongly-marked cloud below the stigma, limited in extent, and even resembles *filatus* Walk. in having a long post-marginal vein, and short hairs on the fore femora: we attribute it, however, to *princeps* Wstw. on the broad costal cell and incipient speculum of the fore wing, the more flattened scutellum, and the gaster which is relatively short, and hardly red at base beneath. Thus the synonymy noted by Schmiedeknecht is confirmed. A closely similar specimen from western Slovakia has been received from Dr. Z. Bouček. Apart from the presence of a wing cloud, this form is nearest to *f. contemptus* Walk.

Novitzky (1956) has recognized two species and one subspecies within this aggregate species. First he observed that in *cyanescens* (Först.) and *filatus* Walk. the prestigma is distinctly shorter than the marginal vein: this we confirm on the basis of the limited amount of material before us, examining female specimens only, though we find some variation in the proportions. Next, using the same character, he separated his material of the *lichtensteini* Thoms. aggregate into two species, one having the prestigma more than one and a quarter times as long as the marginal, and the other having, as in the

species previously mentioned, the marginal more than one and a quarter times as long as the prestigma.

The form with the long prestigma he placed as the true *lichtensteini* Ratz., for he had examined the material in the Ratzburg collection. Accepting our interpretation, communicated by letter, that *princeps* Wstw. was *lichtensteini*

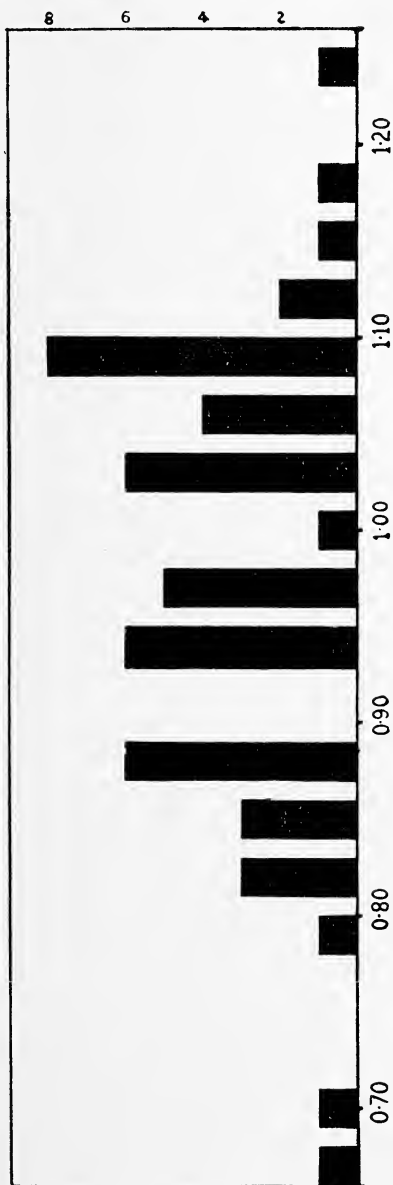


Fig. 13. Histogram illustrating numbers of specimens having different proportions of prestigma to marginal vein in the *Trigonoderus princeps* species aggregate. Measurements were made on 50 female specimens, and proportions are given to the nearest 0.03 which is the approximate accuracy of the measurements.

sec Thomson, he was left with the form having the shorter prestigma, which he had known as *princeps* Först. in coll. To this he applied his manuscript name *sokanowskii* as a species name, making his reared Caucasian specimens (of which he had very kindly sent one to Kerrich) the cotypes. For what he regarded as the normal middle-European form of the species (*princeps* Först. in coll.), stated to have the wing cloud attached to the stigma and not with a streak projecting towards the base of the wing, he proposed the sub-species name *pseudoprinceps*.

We think, however, that Novitzky has paid disproportionate attention to extreme forms. We measured the proportions of the prestigma and marginal in 50 female specimens of the aggregate available to us, and have plotted them graphically. Though the extreme forms are present in our sample, we found the ratio to be within 12 per cent. of unity in by far the greater number of specimens measured, including both the specimens of *sokanowskii* and the one determined as *lichtensteini* Ratz., which Dr. Novitzky so kindly sent us. The sample should undoubtedly have been much larger to attain statistical significance: however, the graph at least shows that, even if it could be interpreted as a bimodal curve, there is considerable overlap, and not a sharp separation as implied by Novitzky (see fig. 13).

It seems to us that larger specimens may tend to have a relatively short prestigma, but we do not believe there is any absolute correlation. As regards the wing marking, we find all gradation between a fully developed wing cloud of the type described, and the complete absence of this cloud; and we believe this variation to cut across other differences that have been adduced. Consequently, we add Novitzky's names to the synonymic list.

Material studied—ENGLAND, near London, 3 ♀♀, F. Walker coll. (including types of *obscurus* Walk. and *atrovirens* Walk.); unlocalized, 1 ♀ (labelled *obscurus* in Walker's writing), Hope-Westwood coll.; unlocalized, 7 ♀♀ (one under "*obscurus* Westwood," six under a manuscript Curtis name), J. C. Dale coll.; Dorset, South Haven Peninsula, 12-acre Wood, ♀ 22.vi.1934, G.J.K.; Hants, New Forest, 3 ♀♀ vi, ix and undated, D. Sharp; Berks., Bagley Wood, ♀ 24.v.1927, O. W. Richards; Bucks., Slough, *ex* plum wood, ♀ em. 8.v.1935, O. W. Richards; Herts., Fownhope, Capler Wood, 3 ♀♀ 31.v.1936, E. B. Britton and J. F. Perkins; Suffolk?, Frostenden, ♀ on oak 21.ix.1931, C. Morley; Staffs., Chartley Moss, ♀ 13.vi.1932, H. Britten; Cheshire, Abbot's Moss, ♀ 3.v.1941, H. Britten; Yorks., Forge Valley, ♀ 8.ix.1952, W. D. Hincks; SWEDEN, Skåne, Dalby, Höör district, Ringsjö and Fjellfota sjö, 7 ♀♀ 23.v-31.vii.1938, D. M. S. and J. F. Perkins; Skåne unlocalized 1 ♀, Lund, 1 ♀, C. Boheman; Småland, ♂ 13.vii.1944, A. Jansson; Gotland, ♀, C. Boheman; Gotska Sandön, ♀ 7.vii.1952; Västergötland, Kinnekulle, ♀ 29.vi.1939, A. Jansson; Stockholm, 3 ♀♀, C. Boheman; Närke unlocalized, ♀ 7.ix.1939, ♀ 19.ix.1952, Örebro, ♂ 21.vi.1955; Västerbotten, Pajala, on *Scolytus ratzeburgi* Jans., ♀ 13., ♀ 17.vii.1938, A. Jansson; Lapland, 1 ♂, C. Boheman; NORWAY, "Nv. alp.," 1 ♀, C. Boheman; CZECHOSLOVAKIA, Bohemia E., Velký Vřeštov, ♂ 20.vii.1952, ♀ 7.vi.1955, Z. Bouček; U.S.S.R., Caucasus W., Sotchi, 1 ♀ *ex* *Parmena balteus* L. (Lamiidae), *per* S. Novitzky.

The following are regarded as belonging to *f. tristus* Walker: ENGLAND, near London, 1 ♀, F. Walker (type): SWEDEN, Skåne, Höör district, ♂ 11.vi.,

♀ 22.vi.1938, Ringsjö, ♀ 21.vi.1938, D. M. S. and J. F. Perkins; Västergötland, Kinnekulle, 1 ♀, C. Boheman.

The following are regarded as belonging to *f. contemptus* Walker: SCOTLAND unlocalized, 1♀, F. Walker (type): ENGLAND unlocalized, 1 ♀ (labelled *Trigonoderus Ductilis* in Walker's writing), Hope-Westwood coll.: SWEDEN, Skåne, Höör district, ♀ 16.v., Ringsjö, ♀ 21.vi.1938, D. M. S. and J. F. Perkins; Närke, ♀ vii.1939, ♀ 1.ix.1952, A. Jansson.

The following are regarded as belonging to *f. pulcher* Walker: ENGLAND, near London, 1 ♀ vi., F. Walker (type): CZECHOSLOVAKIA, Slovakia W., M. Karpaty, ♀ 2.vii.1953, Z. Bouček.

Plutothrix trifasciatus (Thomson), **comb.n.**

1878 *Trigonoderus trifasciatus* Thomson, *Hymenoptera Scandinaviae*, 5: 11-12.

1904 *Plutothrix Försteri* Mayr, *Verh. k.-k. zool.-bot. Ges. Wien*, 54: 586-8.

This species is very distinct in the female sex in having the fore wings trifasciate, with the middle fascia arising from the stigma and joining the inner fascia below, and in having the first large tergite of gaster very deeply incised at mid apex. The male is distinct in having the antennal flagellum rather sparsely and very coarsely hairy, with the first club segment free.

Of the specimens that stood in the Thomson collection, the third was mounted on a slide by J. P. Kryger and has since been lost; it was perhaps on this specimen that Thomson recorded the species from southern Sweden. The first, fourth and sixth specimens are female, and of these we consider the fourth to agree best with the original description, and we select it as lectotype: it bears the label "Fardhem 3 Jli 41."

Material studied—? ENGLAND, 1 ♂, J. F. Stephens coll. (labelled as *Dipara petiolata*): ? DENMARK, 1 ♀ 6.viii.1933, Schlick, J. P. Kryger prep., B. N. Blood coll.: SWEDEN, Skåne, Höör, 1 ♂ 9.vi, Ringsjö, 2 ♂♂ 19.vi, 1 ♂ 27.vi.1938, D. M. S. and J. F. Perkins; Kullaberg, Kockenus, ♂ 4.vii.1952, Bo Tjeder; Blekinge, Torhamn, ♂ 14.vii.1950, A. Sundholm; Östergötland, Vadstena, ♂ viii.1833, Gotland, Fardhem, ♀ 3.vii (type), Gothem, ♀ 17.vii.1841, J. W. Zetterstedt, Gotland unlocalized, 1 ♂, Öland, 1 ♂, C. Boheman, C. G. Thomson coll.; Öland, Halltorp, 2 ♂♂ 8 and 16.vi.1950, A. Jansson; Närke, Göksholm, ♀ 25.vi.1937, A. Jansson: CZECHOSLOVAKIA, Slovakia, Senec-Cierna, ♂ 8.ix.1953, Slanek, ♂ 5.viii.1954, Z. Bouček; Trnávka Údolí, 1 ♀, J. Sedivy.

Plutothrix scenicus (Walker), **comb.n.**

1808 ?? *Diplolepis bicolorata* Spinola, *Insectorum Liguriaie . . .*, 2: 221-2.

1836 *Pteromalus scenicus* Walker, *Ent. Mag.*, 4: 10-11.

1836 *Pteromalus invenustus* Walker, *Ibid.*, 4: 11, **syn.n.** (*non var.* β).

1836 *Pteromalus praeepilius* Walker, *Ibid.*, 4: 12, **syn.n.**

1878 *Trigonoderus vittiger* Thomson, *Hymenoptera Scandinaviae*, 5: 12, **syn.n.**

1878 *Trigonoderus apicalis* Thomson, *Ibid.*, 5: 12-13, **syn.n.**

This species has been fairly well characterized by Thomson as *apicalis* Thoms., and is most readily recognized in the typical form by the more or less strongly developed sub-apical cloud on the fore wing of the female, which does not have a discal cloud also.

Two female and two male specimens stood in the British Museum collection as *Etroxys bicoloratus* Spin. and are labelled *Hetroxys scenicus* Walker. For the selection of a type the two males are to be excluded, since they have the wings not clearly nebulose. Of the two females we select the smaller as type, since the scape is rather darker and the red ovipositor clearly exposed: also it has no locality label whereas the larger specimen is labelled "June, Cambs." The first of the two male specimens we identify as Walker's var. δ : as pointed out to us by Mr. J. F. Perkins the other, numbered 1139, was undoubtedly part of the original series. In the Dale collection are six female specimens standing as *Hetroxys scenicus* Walk., one of them labelled *Scenicus* in Walker's writing. There is now no material under *scenicus* in the Haliday collection.

Two male specimens are labelled *Hetroxys invenustus* Walker. The first, which belongs to this species, agrees better with the original description, and we select it as type. The second, which we consider to be Walker's var. β , we identify as *Trigonoderus princeps* f. *tristis* Walk.

Standing first as *apicalis* in the Thomson collection are two good female specimens from Hälsingborg. The first has the hind coxae strongly metallic coloured in about basal half while in the second they are hardly tinted: the first also has the sub-apical wing cloud much more sharply marked, and we select it as lectotype. The three remaining specimens standing under this name are as follows—third, a small male from Hälsingborg, probably this species; fourth, a small male of *Gastracanthus pulcherrimus* Wstw. from Yddinge in Skåne; and fifth, a specimen mounted on a slide by J. P. Kryger and since lost. A further male from Hälsingborg was placed in the series of *acuminatus* Thoms.

Professor E. Tortonese writes that the type material of *Diplolepis bicolorata* Spinola, recorded as *Cleonymus bicoloratus* by Nees ab Esenbeck, is not to be found in the Spinola collection in the Turin University museum. The original description is insufficient to justify the adoption of the name *bicoloratus* for this species.

Three specimens in the Thomson collection have stood as *Trigonoderus vittiger*, a male from Äsperöd in Skåne, a specimen mounted on a slide by J. P. Kryger and since lost, and a good female specimen, bearing a locality label we cannot decipher, which agrees well with the description and which we select as lectotype.

Thomson's female specimens standing as *apicalis* are typical of the species *scenicus* as we understand it. He distinguished *vittiger* from *apicalis* on the presence of a discal as well as a sub-apical cloud on the fore wing of the female. We sought to maintain this form as a distinct species also on its having a relatively short postannellus, and on the few specimens before us showing comparatively great general variation, whereas the vast majority of specimens of the normal form are rather uniformly constructed. We entertained serious doubts of this, however, particularly as many normal specimens

show a trace of a discal wing cloud. Finally we were driven to the conclusion that *vittiger* must be placed in synonymy by examining a specimen kindly sent by W. Hellén (Finland, Tvärminne, viii.1932, Nordman) having a distinct discal cloud but being typical of *scenicus* in other respects. Indeed, the lectotype of *vittiger* is not so very different from typical *scenicus*, except for the relatively short postannellus.

Thomson separated the males on the form of the antennae. However, of his two males that have stood as *apicalis*, one is a runt and the other mis-determined. We find nothing to support the association of the single male that has stood as *vittiger* with the form of the female having a discal wing cloud.

Amongst some material sent to us by Drs. A. Jansson and W. Hellén were several female specimens closely resembling each other in colour and structure, but differing to a small degree in certain characters from the rest of our material of *scenicus*. They have the general colour of the head and thorax dark blue; the proximal half of the gaster is red, with only a dark blotch covering the dorsum of the second and third large tergites; the lateral portions of the mesoscutum, and the mesoscutellum, are more finely sculptured than in typical *scenicus* and therefore appear more shiny; the propodeum is almost smooth; and the basal cell of the fore wing is only very sparsely hairy. All the female specimens have the discal wing cloud of *f. vittiger* Thoms. Five male specimens from Dr. Jansson's Swedish material resemble the above females in the colour of the head and thorax, and the sculpture of the latter; they appear to have the antennal funicle segments shorter than those of typical *scenicus* males, with shorter, less outstanding hairs. We consider it desirable to mention this form, although we are not convinced that it represents more than perhaps a northern race of *scenicus f. vittiger*.

We regard the single female specimen from the Walker collection in the British Museum collection, standing as *Hetroxys praeepilius* Walker, as the type. It is evidently a runt of this species. We sought to keep it specifically distinct as a smaller form, of length 3 mm., having no sub-apical wing cloud, the fore femora very slender, and the propodeum with plica lateralis weak but complete. However, a male to correspond was found mixed with normal individuals in the series from the Isles of Scilly reared by O. W. Richards (see below).

Material studied—IRELAND, Co. Meath, Ratoath, ♀ 13.vii.1937, A. W. and G. M. Stelfox: ENGLAND, F. Walker coll., ? near London, 2 ♀♀ (one the type of *scenicus* Walker), 2 ♂♂ (one var. δ), near London, 1 ♀ (type of *praeepilius* Walker), 1 ♂ (type of *invenustus* Walker): J. C. Dale coll., 6 ♀♀ standing as *Hetroxys scenicus* Walk. (of which one labelled *scenicus* in Walker's writing, sent in 1847, two Dorset, Glanville's Wotton, one 13.vii.1871 and one undated), 2 ♀♀ standing as *Trigonoderus obscurus* Wstw. (of which one Glanville's Wotton), 2 ♀♀ under a manuscript Curtis name, Glanville's Wotton: T. A. Marshall coll., Cornwall, Botusfleming, 1 ♀, 1 ♂, Devon, Bishops Teignton, 2 ♀♀, Cornworthy, 2 ♀♀, Wilts., Nunton, 1 ♀, Monmouth, Govilon, 1 ♀, Herts., St. Albans, 1 ♀: Isles of Scilly, St. Martins, *ex gorse* stems, reared with *Anobium punctatum* Deg., 5 ♀♀, 3 ♂♂, em. v.1930, O. W. Richards; Hants, New Forest, 2 ♀♀, 2 ♂♂ vi.1903, C. G. Lamb; Ashurst

Wood, on oak, ♀ 28.vi.1919, C. Morley; Surrey, Horsley, ♂ 11.vi.1952, D. M. S. Perkins; Claygate, ♂ 6.vi.1937, J. F. Perkins; Herts., Felden, ♀ 6.vii.1903, C. Morley coll.; Fownhope, Capler Wood, ♂ 31.v.1936, E. B. Britton and J. F. Perkins; Cambridge, ♀ 9.vi.1906, F. Jenkinson; Suffolk, Monks Soham, ♀ under leaf of *Tilia*, 21.vi.1919, ♀ 10.vii.1921, ♀ 6.vii.1923, C. Morley; Cumberland, Crummock Water, ♀ 16.vii.1931, W. D. Hincks: SWEDEN, Skåne, Hälsingborg, 2 ♀♀, 2 ♂♂ (including 1 ♂ under *acuminatus* Thoms.), C. G. Thomson; Degaberga, ♂ 12.vii.1938, D. M. S. and J. F. Perkins; Gotska Sandön, ♀♂ undated, 2 ♀♀ 7, 12, ♂ 13.vi.1946, ♀ 6.viii. 1952, A. Jansson, ♀ 14.viii.1951, T. Nyholm, ♀ 17.viii.1955, K.-J. Hequist: CZECHOSLOVAKIA, Bohemia C., Koda u Berouna, ♂ 28.v.1954, Z. Bouček; Slovakia E., Slanek, ♂ 4.viii.1954, Z. Bouček; Pukanec, ♀ 31.vii.1955, Diabola.

The following are regarded as belonging to *f. vittiger* Thomson—ENGLAND, Cambridge, ♀ 5.v.1891, ? D. Sharp: SWEDEN, ? locality, 1 ♀ (type), C. G. Thomson coll.: FINLAND, Tvärminne, ♀ viii.1932, Nordman; Nystad, 1 ♀, Borgå, 1 ♀, W. Hellén: CZECHOSLOVAKIA, Moravia, Brno, ♀ 28.v.1947, A. Malac; Slovakia E., Kral Chlumeck, ♀ 8.viii.1948, Z. Bouček.

The following are regarded as belonging to the northern race of *scenicus f. vittiger*—SWEDEN, Småland, Hornsö, ♀ 23.vi.1942, Överum, ♀ 20.vii.1943, A. Jansson; Gotska Sandön, ♀ undated, ♂ 3.viii.1952, A. Jansson; Närke, Örebro, Bondsätervägen, ♂ 29.v.1939, Adolfsberg, ♂ 20.vii.1953, ♂ 9.vi.1954, ♂ 22.vi.1955, A. Jansson: FINLAND, Föglö, 1 ♀, W. Hellén.

Plutothrix coelius (Walker), **comb.n.**

1839 *Pteromalus Coelius* Walker, *Monographia Chalciditum*, 1: 272-3.

1848 *Pteromalus eleuthera* Walker, *List of the specimens of hymenopterous insects in the collection of the British Museum. Part II.—Chalcidites. Additional Species: 193-4, syn.n.*

1848 *Pteromalus Coelius* Walker, *Ibid.*: 211.

1878 *Trigonoderus acuminatus* Thomson, *Hymenoptera Scandinaviae*, 5: 11-13, **syn.n.**

1878 *Anoglyphis nubilosa* Förster, *Verh. nat. Ver. preuss. Rheinl.*, 35: 49, **syn.n.**

1910 *Pteromalus britannicus* Morley, *Catalogue of British Hymenoptera of the family Chalcididae: 47 (n.n. pro Coelius Walker 1848 non 1839)*, **syn.n.**

To the characters given by Thomson for separating this species from *scenicus* (Walk.) (= *apicalis*) we can add that the median carina of the propodeum is relatively short, and that the radius is emitted at a less acute angle (see figs. 14-17), though there is a certain amount of variation in both these respects. The shape of the hind coxae and of the male antennal scape seem inconstant.

Thomson cites the species as not rare, giving no locality record to guide one in the selection of a lectotype. There stand in his collection a series of fifteen pins, of which the seventh transfixes three male specimens. The specimen standing fifth was mounted on a slide by J. P. Kryger and has since been lost. That standing thirteenth is a small one that might be

specifically distinct: Thomson labelled it "Cleonym. 1-calc.," so presumably considered it as probably distinct. As mentioned above, we have determined the specimen standing fourteenth as a male *scenicus* (Walk.).

Of the remaining female specimens, all but one come within the normal range of the species as we understand it; but we have to attribute them to Thomson's varietal diagnosis "Alis macula sub radii clava fusca, femoribus interdum medio fusco-aeneis." There remains the female specimen standing tenth in the collection, from Norrland (northern Sweden), which has clear wings and the femora hardly darkened in middle: thus it best fits the type rather than the varietal description, and we select it as lectotype. Compared with typical specimens, it has the genae longer and more buccate, the frenum more finely reticulate, and the first large tergite more deeply incised; but in the other material before us we find variation in these respects that does not appear to be correlated, so we believe the type specimen to come within the range of variation of the species under consideration.

Drs. S. Novitzky and V. Delucchi discovered that *Anoglyphis nubilosa* Först. was a species agreeing with some specimens of *Trigonoderus acuminatus* Thoms. Dr. Max Beier very kindly sent a pair of specimens that had been compared by Novitzky with Förster's type, which he had received from the Berlin University Museum. We find them to be the usual form of this species, with wing cloud.

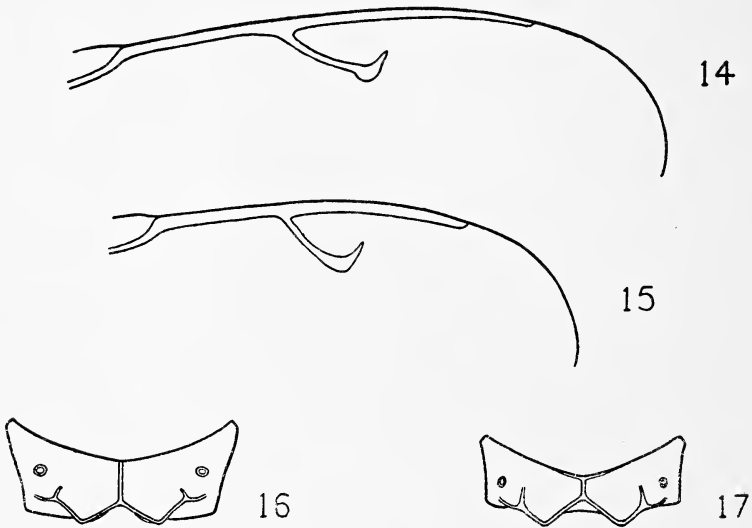
A female specimen standing in the British Museum collection as *Pteromalus coelius* Walker was recognized as belonging to this species. Walker described *Pt. coelius* in 1839 and in 1848. Pronotum very short and parapsidal sutures hardly, or tolerably, conspicuous, are defects in both descriptions, but might have become habitual to Walker. There is mention of a transverse furrow near apex of scutellum in the 1848 description, but this feature might have been overlooked in 1839. The specimen fits both descriptions sufficiently well in other respects. It is neatly mounted upon an octagonal card and bears a small, green ticket: these two features clearly indicate that it is an Irish specimen from the collection of A. H. Haliday, and we regard it as the type.

Schmiedeknecht (1909, pp. 339-40) listed *coelius* Walker 1839 and *coelius* Walker 1848 as separate species, probably on account of the slight discrepancy between the two descriptions and the differing localities. Morley (1910) proposed the name *britannicus* for *coelius* Walker 1848 *non* 1839. As indicated above, however, we regard the two descriptions as applying to the same species.

Two specimens have stood as *eleuthera* Walker in an odd cabinet drawer in the British Museum collection. The second of these bears the label "cercides": it is a Cheiropachine that appears to have become displaced from the series of specimens of the species standing immediately above.

We had previously examined a specimen of this species from the Dale collection, labelled as *Pteromalus eleuthera* Walk., and had decided that Walker's description, taken in conjunction with his two descriptions of *coelius*, should apply to this species, particularly noteworthy being his mention of the "forked ridge along the middle" of the propodeum. The first specimen standing as *eleuthera* in the British Museum collection is this

species, it agrees sufficiently well with the description, and we regard it as the type.



Figs. 14-17. Part of right fore wing of female of (14) *Plutothrix scenicus* (Walk.) and (15) *P. coelius* (Walk.). Propodeum of female of (16) *P. scenicus* (Walk.) and (17) *P. coelius* (Walk.).

The female specimen placed thirteenth in Thomson's series is a small, slender form, with the frenum not coarsely reticulate, not nearly so coarsely so as the mesoscutum and little more so than the fore part of the scutellum, and the propodeum broadly smooth or almost so; and there is a similar southern Swedish specimen in the British Museum collection. This form might be specifically distinct; but again, we find variation in the features noted among more typical specimens, so we think it more likely to represent a small form of the same species.

Material studied—IRELAND, Co. Down, Holywood, 1 ♀, A. H. Haliday (Brit. Mus. coll., type of *coelius* Walker 1839): ENGLAND, unlocalized, 1 ♀ (type of *eleuthera* Walker), 1 ♀ det. as *eleuthera* Walker (Dale coll., Oxford Univ. Mus.); Bucks., Slough, ♀♂ em. 31.v.1941, ex *Anobium punctatum* Deg., 1 ♀ 13.vi.1941, on window, O. W. Richards; Surrey, Old Coulsdon, 2 ♀♀ 24.v.1953, H. Britten: GERMANY, Westphalia, Teutoburger Wald, ♀♂, Lamprecht (compared by S. Novitzky with type of *Anoglyphis nubilosa* Först.): SWEDEN, unlocalized, 3 ♂♂, "in foliis putridis," ♀ 1. vii.1820, Skåne, Åsperöd, 1 ♂, J. W. Zetterstedt, Räfteu, 1 ♂, Ilsetorp, ♀♂ 30.vi, ♀ 10.vii, ♂ 29.vii, Hälsingborg, 1 ♂, C. G. Thomson, Småland, 2 ♀♀, C. Boheman, Norrland, lectotype ♀, C. G. Thomson coll.; Blekinge, Gagnekulla, ♀ 20.vi.1954, A. Sundholm; Östergötland, Brickeberg, 2 ♀♀ vii.1955, Nilén, Simonstorp, Mögstorp, ♀ 3.vii.1956, K.-J. Hequist; Gotska Sandön, 3 ♀♀, A. Jansson, ♀ 2.vii.1952,

K.-J. Hequist; Södermanland, Viss Vass, ♀ 16.viii.1953, T. E. Leiler; Västerbotten, Bodarna, ♀ 18.vii.1940, Hällnäs, 2 ♀♀ 11.vii.1945, K. J. Hequist: NORWAY, Lövik, ♂♂ 1952, reared with *Anobium punctatum* Deg., R. Lyngnes.

Small, slender form: SWEDEN, Skåne, ♀ 3.vii.1938, D. M. S. and J. F. Perkins; Småland, 1 ♀, C. Boheman, C. G. Thomson coll.

**Doubtful and misplaced species attributed to
Trigonoderus Westwood.**

Trigonoderus hirticornis Walker, **sp.dub.**

1836 *Trigonoderus hirticornis* Walker, *Ent. Mag.*, 4: 23.

Two mounts stand as this species in the British Museum collection. The specimen has been knocked off the first mount and has been lost, leaving attached to the card only one hind wing, two fore wings and one tarsus. The second mount bears the label "*hirticornis?* Moncreaff" in Walker's writing; but this male Eupelmid specimen cannot be the type.

Trigonoderus tarrha Walker, **sp.dub.**

1848 *Trigonoderus Tarrha* Walker, *List of the specimens of hymenopterous insects in the collection of the British Museum. Part II.—Chalcidites. Additional Species: 217.*

The specimen that was marked as type of this species was knocked off its card mount and has been lost, leaving only the antennae, wings, and parts of legs.

Trigonoderus alebion Walker

1848 *Trigonoderus Alebion* Walker, *List of the specimens . . . Chalcidites . . . : 217-8.*

A single male specimen has stood in the British Museum collection, labelled "*Pteromalus alebion*": it agrees very well with the original description, and we identify it as being the type. It belongs in the Lamprotatinae.

Trigonoderus polichna Walker

1848 *Trigonoderus Polichna* Walker, *List of the specimens . . . Chalcidites . . . : 218.*

The single male specimen standing as *T. polichna* in the British Museum collection may be the type. It belongs in the sub-family Pteromalinae.

Trigonoderus contractus Walker, **sp.dub.**

1872 *Trigonoderus contractus* Walker, *Notes on Chalcidiae, Part V: 85-6.*

The type specimen has not been found among Dr. Chapman's material in the British Museum. A female specimen of *scenicus* (Walk.) from the Marshall collection has stood under this name, but the evidence of the original description of *contractus* seems inconclusive.

The species of *Platygerrhus* Thomson

Genus *Platygerrhus* Thomson 1878

We recognize two European species within this genus, and separate them as follows:

Scutellum very finely reticulate, the reticulations arranged in a more or less distinctly longitudinal pattern, much finer than on pronotum: head, at least of female, in side view short or rather short: funicle of female antennae having first segment about $1\frac{1}{2}$ times as long as broad, and sixth about quadrate: a single row of hairs on wing cell just below submarginal.
 *dolosus* (Walker)

Scutellum normally finely reticulate, the sculpture about as on pronotum: head in side view longer: funicle of female antennae usually having first segment about twice as long as broad, and sixth distinctly longer than broad: a double row of hairs on wing cell just below submarginal.
 *ductilis* (Walker)

The reticulations of the scutellum are less distinctly longitudinal in arrangement in the male of *dolosus* than in the female.

Platygerrhus ductilis (Walker), **comb.n.**

1836 *Trigonoderus ductilis* Walker, *Ent. Mag.*, 4: 17-18.

1836 *Trigonoderus affinis* Walker, *Ibid.*, 4: 19, **syn.n.**

1836 *Trigonoderus linearis* Walker, *Ibid.*, 4: 19, **syn.n.**

1836 *Trigonoderus amabilis* Walker, *Ibid.*, 4: 20, **syn.n.**

1836 *Trigonoderus figuratus* Walker, *Ibid.*, 4: 20, **syn.n.**

1836 *Trigonoderus deductor* Walker, *Ibid.*, 4: 20-1, **syn.n.**

1878 *Platygerrhus gracilis* Thomson, *Hymenoptera Scandinaviae*, 5: 14, **syn.n.**

1955 *Platygerrhus gracilis* Bouček, *Acta ent. Mus. Nat. Pragae*, 29: 67-70.

One of us (G.J.K.) has spent much time studying the available material in order to see whether more than one species could be represented in this aggregate. The result has been negative for, though differences could be noted between different forms, they were found to occur in other combinations in other forms. It seems advisable to give a brief description of the forms examined, in order to indicate the known range of variation, and also the names available to a future worker who might succeed in splitting the aggregate in a satisfactory manner. The different forms are being arranged separately in the British Museum collection.

Forma typica, based on the holotype and allotype, is an elongate form, i.e. having gaster of female much longer than combined length of head, thorax and propodeum: propodeum evenly sculptured above, having transverse basal furrow at side broad and distinctly broken: first funicle segment about twice as long as broad in both sexes: femora of female not much darkened. Walker records the species as occurring "on posts and beams of wood

perforated by *Anobium*, etc." Further material—Hants, New Forest, 2 ♀♀ at dead beech, 1934, C. Morley; Bucks., Iver, 2 ♀♀, 2 ♂♂ on old quince, 1929, O. W. Richards.

Forma 2 has been found to differ from the above only in the propodeum having the transverse basal furrow at side narrower and not so distinctly broken, and the female hind femora usually much more darkened. Material—England, unlocalized, 3 ♀♀ in Brit. Mus. coll. under *ductilis* Walk., T. A. Marshall; Suffolk, Monks Soham House garden, ♀ 12.vi.1931, C. Morley; Herts., Boxmoor, ♀ 24.v.1936, R. B. Benson; Glamorgan, Sully, ♀ 1920, H. M. Hallett; Skåne, ♀ ♂♂ v-vii.1938, D. M. S. and J. F. Perkins.

Forma affinis Walk. is a much stouter form, i.e. having the female gaster only about equal in length to the head, thorax and propodeum: propodeum having basal transverse furrow at side narrow. Material—England or Wales, 1 ♀ (lectotype), F. Walker coll.; Bucks., Slough, ♀ 24.viii.1938, Princes Risborough, ♂ 31.v.1941, *ex Anobium punctatum* Deg., O. W. Richards; Skåne, Ringsjö, ♀ 19.vi.1938, D. M. S. and J. F. Perkins; Ringsjö, 1 ♂, C. G. Thomson; mountains of Dalarne, 1 ♀, C. Boheman. To this form we attribute the two male specimens from the Walker collection which stood in the British Museum under *figuratus* Walk., which was recorded from near London: the femora are hardly darkened except beneath, but the first specimen is bronzy, rather than blue-green with brassy reflections.

Forma amabilis Walk. is altogether decidedly darker than typical *affinis*: it is structurally very similar, but the propodeum is distinctly smoother in middle. Material—England, near London, ♀ October (type); England or Wales, 1 ♀, F. Walker coll. (under *affinis* in coll.); England, Berks., Wytham Wood, 2 ♀♀ 16-19.xi.1953, M. de V. Graham; Sweden unlocalized (? *ex Zetterstedt* coll.), 1 ♀ (lectotype of *gracilis* Thoms.), C. G. Thomson coll.: Czechoslovakia, Bohemia E., Holovously, ♂ v.1954, Hostounsky, *per* Z. Bouček.

Forma linearis Walk. has the gaster elongate, but the propodeum relatively short, and rather smoother in middle. The femora are quite strongly darkened in the first specimen. As in the following form, the funicle segments are relatively shorter, and there is a tendency towards the arrangement of the sensillae in one irregular row rather than in two rows. Material—England, near London, 2 ♀♀, F. Walker coll.

Forma deductor Walk. Four male specimens from the Walker collection stood under this name in the British Museum: specimens 1 and 3 are of the colour of *amabilis*, but have the propodeum not smoother in middle, and they differ from *affinis* in having the first funicle segment much less than twice as long as broad. England, near London. We attribute the following additional material to this form—Berks., Windsor Forest, ♀ 19.iv.1933, from burrows of *Ips* (= *Tomicus*) *suturalis* Gyll. in spruce bark, H. St. J. K. Donisthorpe; Skåne, Hälsingborg, 1 ♀, Lapland, 1 ♀, C. G. Thomson coll.

In the British Museum there are a single female and single male specimen from the Walker collection standing as *ductilis*. These agree well in nearly all particulars with Walker's description of the typical form: in the male, notably, the genitalia are partially exposed and could be described as flavous. We

select the female specimen as lectotype and the male as allotype. The only other specimens that stood under this name are those three mentioned from the Marshall collection, and there are none that correspond with Walker's numerous varieties.

Two female specimens from the Walker collection stand as *affinis*. In neither can the antennal flagellum really be described as obscurely fulvous, though that could possibly have been a *lapsus* for fuscous. In other respects the second specimen agrees well with the description, and we select it as lectotype. We cannot reconcile the first specimen with either of the varieties, and we have attributed it to *forma amabilis*.

The single female specimen standing as *amabilis* agrees excellently with Walker's description and we have no hesitation in regarding it as the type.

Two female specimens from the Walker collection stand as *linearis*. On the basis of leg and abdominal colouring we select the first as type. Neither has the cyaneous-purple colour on the pronotum described for the three varieties.

Of the four male specimens from the Walker collection standing as *deductor*, we regard the third as agreeing best with the description and select it as type. We cannot attribute any specimen to any of the ten varietal descriptions with any conviction.

Of the two male specimens from the Walker collection standing as *figuratus*, we find the first to agree very well with the description, and we select it as lectotype. The second we attribute to var. γ .

In the Thomson collection, specimens 2 to 5 are female. On the basis of the description of the propodeum, we select as lectotype specimen 2, which agrees closely with *forma amabilis* Walker.

Since this study of the old material was completed, we have received two series of specimens from alder logs, one reared in May and one in July. The May series we determine as *ductilis* Walk. and within that species we find it tends towards *amabilis* and *linearis*.

The July series seems distinct from the May series in the following characters: sculpture before ocelli trans-striate; cheeks seemingly more rounded; metascutellum less strongly raised, the reticulate sculpture quite distinct, at least in front (obsolete in the May form); propodeum with dorsal sculpture strong (i.e. stronger than in any form of *ductilis* just described); costal cell almost bare on basal half; no row of hairs on wing cell just below submarginal, but only about two in upper outer corner; male antennae with hairs stronger and more outstanding. A specimen agreeing well with these has the following data: Sweden, Närke, Örebro, Hjälmarsberg, ♀ 11.viii.1950, A. Jansson.

In these characters it does not seem to overlap the forms of *ductilis* studied; and we should have considered it as a probably distinct species but for the presence of a June emergent, with the body sculpture of the July form and the wing hairs as in the May form.

Platygerrihus dolosus (Walker), **comb.n.**

1836 *Trigonoderus dolosus* Walker, *Ent. Mag.*, 4: 23.

1848 *Trigonoderus lappa* Walker, *List of the Specimens of Hymenopterous insects in the collection of the British Museum. Part II.—Chalcidites, Additional species: 216, syn.n.*

In the British Museum are a single female and a single male specimen from the Walker collection standing as *dolosus*. The female is the more characteristic and we select it as the lectotype. We find no specimens corresponding with the varieties.

Three male specimens from the Walker collection stand as *lappa*. We consider the first specimen in the series as agreeing best with the description, and we select it as lectotype: we place it with confidence as *dolosus*. The ill-developed little specimen which has stood third may represent Walker's var. β : we feel that some doubt attaches to its identity, but we regard it as belonging to this species. We are doubtful of the identity of the remaining two males which stood, one each, under *dolosus* and *lappa*; but we have been able to study modern specimens with the following data—ENGLAND, Berks., Wytham Wood, ♂ 10.v.1953, M. de V. Graham: SWEDEN, Närke, Ekeberg, ♀ 11.ix.1935, A. Jansson: CZECHOSLOVAKIA, Praha-Ruzyne, ♀ 20.v.1953, Z. Bouček.

Ch. Ferrière had, in manuscript, placed *lappa* Walk. as a probable synonym of *dolosus* Walk.

Platygerrihus algonquinia (Girault), **comb.n.**

1917 *Trigonoderus algonquinia* Girault, *Ent. News*, 28: 396-7.

A single female specimen in the U.S. National Museum, determined as *Trigonoderus algonquinia* Girault by A. B. Gahan, belongs in the genus *Platygerrihus*. It has a wing cloud attached to the stigma, much as in *Plutothrix coelius* (Walker), a feature not seen by us in any European specimen of *Platygerrihus*.

Material seen—U.S.A., Connecticut, So. Windham, 1 ♀ reared from *Ulmus*, B. J. Kaston.

Description of a new genus

Janssoniella gen. n. [Kerrich]

Head from above (figs. 18, 21) very strongly narrowed behind eyes, as in *Gastracanthus pulcherrimus* Wstw.: cheeks strongly buccate: clypeus apically edentate, with tentorial pits conspicuous: antennae with scape not rather broadened in female, as in *Gastracanthus*, but distinctly broadened in apical half in male; with club not markedly swollen, 3- or apparently 4-segmented (i.e. the basal segment may be divided; with male flagellum bearing short, scarcely outstanding hairs (about as in *Platygerrihus* Thomson): pronotum much less elongate than in *G. pulcherrimus* Wstw. (fig. 19, cf. Pl. II), with collar not margined: prosternum with median sulcus weak: prepectus without sharply delimited triangular area before the tegula; not with median shield behind the fore coxae, marked off by a transcostate furrow (as has *Gastr-*

acanthus): notaulices percurrent and strong: mesoscutellum with distinct frenal furrow in the normal position: propodeum relatively shorter than in *G. pulcherrimus* Wstw., strongly emarginate between the plicae laterales: petiolar segment of female always strongly transverse, though sometimes a third as long as broad (figs. 20, 22), of male about three-quarters as long as broad: female gaster with first large tergite straight or very broadly rounded at apex: fore wings non-maculate, with speculum outside basal cell fully developed.

Type species *Janssoniella caudata* sp.n.

For separation of this genus from its two closest relatives, see key to genera, pp. 307-9 (below).

I have much pleasure in naming this genus after Dr. Anton Jansson.

Janssoniella caudata sp.n. [Kerrich]

Head, seen from above, moderately emarginate behind (fig. 18); in side view with malar space about half the shorter diameter of eye. Antennae with scape elongate, scarcely dilated in female, distinctly though weakly dilated in apical half in male; with two annelli very conspicuous, about half as long as broad. Metascutellum rather short and inconspicuous; propodeum rather short, deeply emarginate at apex; with median keel rather short (fig. 19). Petiolar segment of female about a quarter length of its breadth or less. Female gaster elongate and compressed, at least at apex, with last large tergite almost linear in smaller specimens: ovipositor sheaths projecting by about two-thirds or more the length of the last large tergite, measured dorsally. Fore wing with costal cell narrow, narrower than in the other species, with only a single row of hairs on under side in about basal three-fifths, sparsely hairy beyond: radius emitted at more than half a right angle (fig. 20).

Length, including ovipositor sheaths, $3\frac{1}{2}$ to $4\frac{1}{2}$ mm.

Larger specimens bluish-green, with brassy to bronzy reflections, smaller specimens dark blue-green to blue, mostly with less conspicuous reflections: legs having coxae concolorous in greater part; otherwise pale or dull testaceous, with mid and hind tarsi paler but darkened at apex, but femora and tibiae also somewhat darkened in male: antennae with scape pale or dull testaceous, usually darkened towards apex, and with pedicellus and flagellum brownish-black.

Described from the following material—ENGLAND (no further data), 1 ♀, B. Cooke coll. (registered 1884): SWEDEN, Skåne, Ringsjö, 1 ♀, C. G. Thomson (holotype) (standing as *Photismus nubilosus* Thoms.); Närke, Irvingholm, ♀ 28.viii.1941, A. Jansson: GERMANY, Berlin, Klein-Machnow, Treptow canal, 3 ♀♀ from fungus on *Quercus*, ? associated with *Cis* sp., 22.v-22.vi.1925, Bollow (Deutsches Entomologisches Institut): CZECHOSLOVAKIA, Bohemia, Král Hradec, 1 ♀, J. Gekina; Praha-Revnice, 4 ♀♀, 1 ♂, reared from *Polyporus*, vii.1953, L. Masner: U.S.A., New Jersey, Middlesex Co., 1 ♀, 1 ♂, reared from *Polyporus versicolor*, iii.1922, H. B. Wells: CANADA, Vancouver Is., Victoria, 1 ♀ 4.vi., W. H. Ashmead coll.

Holotype ♀ in Zoological Institute, Lund: paratypes in British Museum (Natural History), collection of Dr. A. Jansson, Deutsches Entomologisches Institut, Národní Museum, Prague, and United States National Museum.

The type and the similar small specimen from Dr. Jansson's collection were the first to be studied, and the figures have been drawn from these. The British specimen is much stouter, and was at first thought to be specifically distinct; but the range of variation was later indicated by a study of the Czech and German series. The North American specimens are small and slender like the type.

Janssoniella major sp. n. [Kerrich]

Head, seen from above, shallowly emarginate behind (fig. 21); in side view with malar space about a third the shorter diameter of eye (though nearer half if malar space is viewed in its own plane, for the cheeks are more strongly narrowed to mouth than in the other species). Antennae with scape less elongate, distinctly a little dilated in female, moderately dilated in apical half in male; with annelli conspicuous but strongly annelliform. Metascutellum relatively long and conspicuous: propodeum relatively longer than in *caudata* sp. n., rather coarsely sculptured, moderately emarginate at apex, with median keel correspondingly long (fig. 22). Petiolar segment about one-third length of its breadth. Gaster moderately elongate and compressed: ovipositor sheaths projecting by nearly half length of last large tergite, measured dorsally. Fore wing with costal cell rather narrow; a little narrower than in *Plutothrix scenicus* (Walk.): radius emitted at less than half a right angle.

Length, including ovipositor sheaths, $6\frac{1}{2}$ mm.

Bluish-green, with brassy to bronzy reflections: legs of female having coxae, and also fore femora behind, largely concolorous; otherwise testaceous, the femora more richly so, and the tarsal apices darkened; male with all femora and tibiae darkened: antennae with scape testaceous, darkened towards apex, and with pedicellus and flagellum brownish-black.

SWEDEN, Södermanland, Väsbyön, ♀ 24.vi.1949, A. Jansson (holotype); Skåne, Höör district, ♂ 22.vi.1938, D. M. S. and J. F. Perkins (paratype).

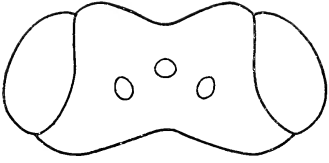
Holotype ♀ in collection of Dr. A. Jansson: paratype ♂ in British Museum (Natural History).

Key to species

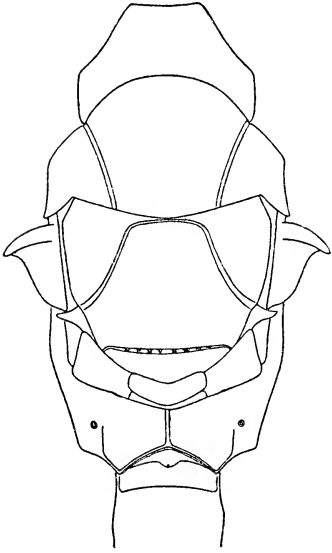
Head, seen from above, moderately emarginate behind (fig. 18): costal cell of fore wing narrow (fig. 20), with only a single row of hairs on under side in about basal three-fifths, sparsely hairy beyond: metascutellum rather short and inconspicuous (fig. 19): propodeum rather short: petiolar segment of female about a quarter the length of its breadth, or less: ovipositor sheaths projecting by about two-thirds length of last large tergite or more, measured dorsally *caudata* sp.n.

Head, seen from above, shallowly emarginate behind (fig. 21): costal cell of fore wing less narrow and more strongly hairy than in alternate: metascutellum relatively long and conspicuous (fig. 22): propodeum relatively long: petiolar segment of female about one-third length of its breadth: ovipositor sheaths projecting by not quite half length of last large tergite, measured dorsally *major* sp.n.

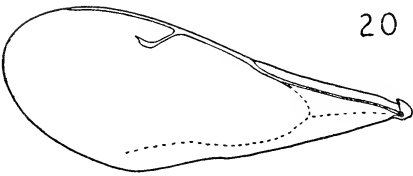
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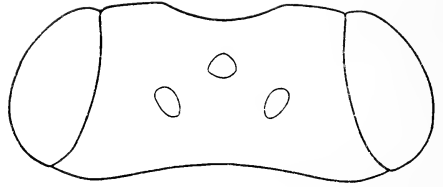
19



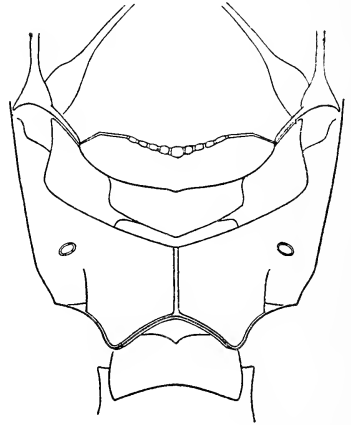
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21



22



Figs. 18-20. *Janssoniella caudata* sp.n. [Kerrich] (18) head of ♀, viewed from above (19) thorax, propodeum and base of gaster, viewed from above (20) left fore wing.

Figs. 21-22. *J. major* sp.n. [Kerrich] (21) head of ♀, viewed from above (22) hinder part of thorax, propodeum and base of gaster, viewed from above.

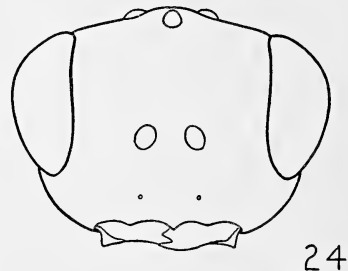
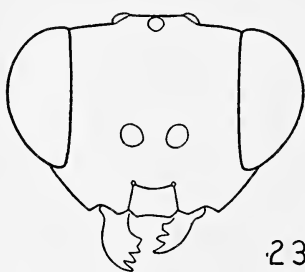
Key to genera of Cleonymidae

1. Eyes strongly hairy, in facial view strongly divergent and emarginate (fig. 2): mid tibial spur about three-quarters length of corresponding metatarsus: antennae with one annellus, which in female is large, with 7-segmented funicle, the last segment of which in female bears a strong finger-like process, and with club solid: [body form stout].....
 **Cleonymus** Latreille
- Eyes, in facial view, not strongly divergent and emarginate nor, except in *Micradelus* Walk., strongly hairy: mid tibial spur not more than about half length of corresponding metatarsus: antennae with two or three annelli, six, five or four funicle segments, of which the last bears no finger-like projection, and a distinctly 3-segmented club.....2
2. Eyes strongly hairy and labrum free (as in *Cleonymus* Latr.) (fig. 7): antennae stout, with formula 11253 (female) or 11343 (male) (figs. 5-6): wing with marginal vein only about as long as radial: small, rotund insects with pronotum not distinctly elongate; black, with fine reticulate sculpture, not shining (Pl. I)..... **Micradelus** Walker, Thomson
- Eyes not strongly hairy nor labrum free: antennae with formula 11263 or 11353: wing with marginal vein distinctly longer than radial, e.g. Pl. II: more elongate, mostly larger insects, generally distinctly shining, and metallic green at least in part.....3
3. Antennae slender and elongate, with three annelli and five funicle segments: mandibles slender, bidentate: no malar groove: brachypterous or macropterous; if macropterous, then having wings long and slender, with marginal vein more than twice length of radial, and with marginal cilia very long, those of hind wing almost as long as the greatest wing breadth..... 4
- Antennae with two annelli and six funicle segments, generally stouter (e.g. Pl. II): mandibles large and broad, tri- or quadri-dentate (e.g. fig. 23): hind wing with marginal cilia of more normal length: [antennae not inserted very near mouth: ovipositor not strongly exerted].....5
4. Mesopleura and metapleura almost in same plane: antennae inserted a short distance above mouth: female gaster with tergites fairly broadly emarginate at apex: ovipositor slender, exerted by about two-thirds length of gaster: metascutellum normal: funicle segments in both sexes sub-cylindrical, more than twice as long as broad, and with a covering of short, rather closely adpressed hairs..... **Cea** Walker
- Mesopleura strongly overhanging metapleura: antennae inserted nearer mid way between mouth and eyes: female gaster with tergites not emarginate at apex: ovipositor stouter, exerted by about one-third length of gaster or less: metascutellum very strongly developed: funicle segments of female subcylindrical, less than twice as long as broad, and with a covering of short, rather closely adpressed hairs; of male longer, each with a basal node bearing a whorl of about six long hairs.....
 **Spalangiopecta** Masi

- 5. Antennae inserted rather high on face, with scape at rest extending well above top of head: mesoscutum having notaulices incomplete, sharp in about anterior two-thirds, thereafter absent or, at most, extremely superficial: propodeum strongly produced above base of hind coxae, appearing rugose throughout on account of strongly upstanding reticulation; in about basal half almost horizontal and with median keel strong, but distinctly declived beyond this: female gaster with first large tergite much the largest, very broadly rounded behind: [prepectus with no delimited area before the tegulae: scutellum normally with a frenal furrow: all legs slender] **Panstenon** Walker

Antennae inserted less high on face, with scape at rest not extending well above top of head: mesoscutum having notaulices more or less distinctly percurrent, usually strong throughout: propodeum scarcely produced beyond base of hind coxae, not thus angled in middle and generally shining in part: female gaster with first large tergite not or not much the largest: macropterous insects, having wings of normal proportion, with marginal vein usually not twice length of radial (e.g. Pl. II)..... 6

- 6. Clypeus apically edentate (fig. 23): prepectus with upper part larger, having no sharply delimited triangular area before the tegulae: female gaster having first large tergite not apically excised..... 7



Figs. 23-24. Head of ♀ in facial view of (23) *Gastracanthus pulcherrimus* Wstw. and (24) *Trigonoderus filatus* Walk.

Clypeus apically dentate (fig. 24): prepectus with upper part rather smaller, having a sharply delimited triangular area before the tegulae: female gaster having the first large tergite medially excised at apex: [scutellum having a distinct frenal furrow in the normal position]... 9

- 7. Scutellum without frenal furrow in the normal position: [prepectus without a median shield: antennal flagellum of male bearing rather short, scarcely outstanding hairs: cheeks sharply narrowed to mouth in the European species, about as in fig. 23]... **Platygerrihus** Thomson
- Scutellum with frenal furrow in the normal position..... 8

8. Pronotum less elongate, about half as long as its greatest breadth or less (fig. 19): prepectus without a median shield behind the fore coxae: female gaster with first to third large tergites neither apically sinuate nor medially produced: flagellar segments of male almost regularly cylindrical, narrowed at base, and not with conspicuous rugose sculpture, bearing rather short, scarcely outstanding hairs: [cheeks decidedly rounded: petiolar segment of female strongly transverse (figs. 20, 22): fore wings hyaline] **Janssoniella** Kerrich

Pronotum especially elongate, clearly more than half as long as its greatest breadth (Pl. II): prepectus with a median shield behind the fore coxae, marked off by a transcostate furrow: female gaster with first to third large tergites (especially the first) apically sinuate and medially produced (Pl. II): flagellar segments of male irregularly swollen and with conspicuous rugose sculpture, bearing rather long, strongly outstanding hairs: [in the European species cheeks sharply narrowed to mouth (fig. 23), gaster distinctly petiolate, the petiolar segment not strongly transverse even in female, and fore wings maculate (Pl. II) except in smaller males and occasional small females] **Gastracanthus** Westwood

9. Fore wings with speculum outside basal vein undeveloped or very incomplete: costal cell of hind wing in basal half with a band of hairs that is complete or almost so: prosternum with median sulcus absent or weak: mesepisternum divided by a diagonal furrow (i.e. this furrow goes across the sculptured part of the mesopleuron): pronotal collar usually not sharply margined: male with antennal flagellum short-hairy **Trigonoderus** Westwood

Fore wings with speculum outside basal vein fully developed: costal cell of hind wing in basal half almost bare, or with a row of hairs decidedly incomplete: prosternum with median sulcus strong: mesepisternum not thus divided (i.e. the mesopleuron may have a furrow just below the smooth part but not across the sculptured part): pronotal collar usually sharply margined: male with antennal flagellum long-hairy **Plutothrix** Förster

Genera misplaced in Cleonymidae

Merostenus phedyma Walker 1837 is a male Eupelmid, which we leave for treatment by our colleague R. D. Eady.

Macroneura Walker 1837 (= *Eupelmella* Masi 1919) belongs, of course, in the Eupelmidae.

Macromesus amphiretus Walker 1868 was described from England, but the type has not been found in the British Museum collection.

Pegopus montanus Walker 1837 belongs in the Pteromalinae (see Graham, 1956a).

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