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Revideret fortegnelse over Færøernes sommerfugle.

(A revised list of the Lepidoptera known from the Faroe Islands.)

Af
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Der er nu forløbet 40 år siden fremkomsten af bind 39 af »Zoology of the Faroes«, der omhandlede Lepidoptera (Wolff 1929), og hvori 32 færøske arter omtaltes.

Selvom indsamlingsaktiviteten på Færøerne i dette tidsrum ikke har været omfattende, er kendskabet til den færøske sommerfuglefauna dog blevet så stærkt udvidet, at en revideret liste, der optager samtlige hidtil kendte fund, er påkrævet.

I den forløbne tid er der kun fremkommet ganske få publikationer om den færøske sommerfuglefauna. De af H. Koehn, Hamburg, i 1934 foretagne indsamlinger indskrænkede sig til en enkelt art, *Perizoma didymata* L., hvis variation på grundlag af Koehn's store materiale blev behandlet af Warnecke (1936 p. 420—444). Dog har Koehn (1936 p. 419) meddelt et fund af et exemplar af *Vanessa atalanta* L.

I perioden 1952—1959 praktiserede Dr. Leif Dahl som læge i Ejde på Østerø, og næsten hele den forøgelse af vort kendskab til den færøske sommerfuglefauna, der er sket efter 1952, skyldes hans indsamlinger. I 1954 publicerede Dr. Dahl et arbejde over de færøske sommerfugle med afbildninger af næsten alle arterne. Dette arbejde falder i to afsnit, idet det ene (p. 129—145) behandler de i Zool. Faroes omtalte arter med angivelse af nye lokaliteter for disse (men uden medtagelse af de tidligere kendte), det andet (p. 145—153) behandler de senere tilkomne 14 (12) nye arter. I 1956 udgav Dr. Dahl en mere populært betonet omtale af sommerfuglene, hvori (p. 29—31) findes en liste, der fører artsantallet à jour, men uden detaillerede fangstdata. Begge arbejder er skrevet på Færøsk.

Gennem korrespondance med Dr. Dahl under hans ophold på Færøerne, ved hans udlån af færøsk materiale, herunder alle de sidst tilkomne nye arter, samt ved gennemgang af hans samling efter hans bosættelse i Danmark, har det været muligt at medtage supplerende oplysninger om mange af arterne.

Det af Dr. Dahl tilvejebragte materiale findes dels i hans egen samling, dels i ingeniør Wilhelm van Deur's samling, men i hovedsagen på museet i Thorshavn. Zoologisk Museum i København er desuden fra forskellig side blevet forsynet med enkelte færøske exemplarer, hvoraf to arter — *Diarsia mendica* F. og *Apamea crenata* Hufn. — er nye for Færøerne.

I nærværende fortegnelse er tidligere publicerede lokaliteter, som har været nævnt i Zoology of the Faroes, mærket (ZF), medens lokaliteter publiceret af Leif Dahl er mærket (LD), uanset om der til disse er føjet supplerende oplysninger.

Et par tidligere fejlbestemmelser i Zool. Faroes er samtidig rettet.

Arternes rækkefølge og nomenklatur følger, med enkelte afvigelser, den reviderede udgave af Kloet & Hincks: A Check List of British Insects, der er under trykning. De nødvendige synonymer er nævnt i parentes.

De færøske lokaliteter — der er gengivet på originalsproget — er opført fra syd til nord, således at det sydligste punkt på den ø, hvor den pågældende lokalitet er beliggende, er bestemmende for rækkefølgen.

De angivne datoer gælder for fund af imagines.

Fortegnelsen omfatter 55 arter, en forøgelse på 72 % siden 1929.

Hepialidae

1. *Hepialus humuli* Linnaeus

Suðuroy: Vágur (LD); Tvöroyri (ZF); ved søen i Vatnadalur (ZF). — Streymoy: Tórshavn (ZF); Vestmanna, meget talrig (ZF). — Mykjunes: 2/7—10/7 1957, A. Nörrevang leg., er i coll. Zool. Mus. København. — Eysturoy: Skala (LD); Bunnisgjógv (LD); Eiði, ganske almindelig (LD). — Bordoy: Klaksvík (ZF). — »Sikkert almindelig på de fleste øer« (LD). 11/6—22/7.

De færøske ex. afviger i udseende fra den øvrige nordeuropæiske form. Af 92♂♂ taget 1953—1954 havde kun 11 (under 12 %) ensfarvede hvide forvinger, medens de øvrige var gule eller brunlige med mere eller mindre tydelig ♀-tegning (LD). Den færøske popu-

lation minder om den på Shetland forekommende form *thulensis* Newman (*hetlandica* Staud.), men synes dog så afvigende, at den kan henføres til *humuli* ssp. *faeroensis* Dahl, 1954.

Tineidae

2. *Monopis rusticella* Hübner

Suðuroy: Vágur (LD). — Streymoy: Tórshavn (ZF); Saksun (LD). — Eysturoy: Eiði (LD).

Synanthrop. Fundet i huse april—august. (Genit. præp. NLW 1734 ♂).

Gracillariidae

3. *Aspilapteryx tringipennella* Zeller

Eysturoy: Bunnisgjógv, 15/6 1954 (LD); Eiðisvatn, 28/6 1953 (LD); Eiðiskollur, 16/6 1955 (LD).

Hyponomeutidae

4. *Plutella maculipennis* Curtis

Suðuroy: Tvöroyri (ZF); Trongisvágur (ZF). — Sandoy: Sandur (ZF). — Streymoy: Argir (ZF); Tórshavn (ZF); (Ljósávatn (ZF); Vestmanna (ZF). — Eysturoy: Eiði (LD). — Borðoy: Klaksvík (ZF). — Svínoy (ZF). — Fugloy (ZF). — »ved alle bygder på Færöerne« (LD).

Iagttaget mellem 30/5 og 22/8. Set i mængde 4/8 1954 (LD).

Immigrant.

5. *Plutella senilella* Zetterstedt

Suðuroy (ZF). — Streymoy: Tórshavn (LD). — Vágar: mellem Miðvágur og Sörvágsvatn (ZF). — Eysturoy: Eiði (LD); Funning (LD).

Fundet om efteråret indtil oktober og — efter overvintringen — fra marts (LD).

Elachistidae

6. *Elachista albidella* Tengström

Suðuroy: Tvöroyri (ZF); Trongisvágur (ZF). — Stremoy: Tórshavn (ZF). — Eysturoy: Eiðisvatn, Eiði (LD). 26/6—24/7.

Arten har tidligere (Zool. Far. p. 20) fejlagtigt været opført som *E. ? eleochariella* Staint. (Genit. præp. NLW 3507 ♂).

Oecophoridae

7. *Endrosis sarcitrella* Linnaeus (*E. lacteella* Den. & Schiff.)

Suðuroy: Tvöroyri (ZF); Trongisvágur (ZF). — Streymoy:

Tórshavn (ZF); Vestmanna (ZF). — Vágar: Miðvágur (ZF). — Eysturoy: Norðskála (LD); Eiði (ZF). — Borðoy: Klaksvík (ZF). — Fugloy (ZF). — »Almindeligste husmøl på Færøerne, både indendørs og udendørs« (LD).

Synanthrop. Fundet fra februar—september.

8. *Hofmannophila pseudospretella* Stainton

Suðuroy: Tvöroyri (ZF); Trongisvágur (ZF). — Stremoy: Tórshavn (ZF); Vestmanna (ZF). — Eysturoy: Eiði (ZF). — Borðoy: Klaksvík (ZF). — Fugloy (ZF). — »Ganske almindelig i huse (LD)«.

Synanthrop. Fundet hele året i gamle lune huse.

Tortricidae

9. *Zeiraphera diniana Guenée (Eucosma d.)*

Eysturoy: Eiði, 1 ♀ 4/8 1954 (LD) (Genit. præp. NLW 1813).

10. *Epinotia solandriana* Linnaeus (*Epiblema s.*)

Streymoy: Tórshavn, larver 1952, et herfra klækket ex., H. J. Jacobsen leg., er i coll. Zool. Mus. København, ex l. 1950 (LD).

11. *Epinotia mercuriana* Frölich

Eysturoy: Eiði, 3 ex. (ZF); Eiðiskollur, meget talrig 18/7 1954, i mængde 8/8 1956 (LD); Eiðisvatn, 2 ex. 4/8 1954 (LD). (Genit. præp. NLW 3548 ♂).

12. *Bactra lanceolana* Hübner

Suðuroy: Tvöroyri (ZF); Trongisvágur (ZF).—Sandoy: Sandur, 7/8 1956 (LD) — Streymoy: Tórshavn (ZF). — Eysturoy: Toftavatn, 28/7 1955 (LD). — 27/6—7/8. (Genit. præp. NLW 3669 ♂).

13. *Argyroploce schulziana* Fabricius

Streymoy: Tórshavn, 5 ex. (ZF). — Eystúroy: Eiði, 2 ex. 25/6 1953, 4 ex. 1954 (LD). — 16/6—27/7.

14. *Lobesia littoralis* Humprey & Westwood (*Polychrosis l.*)

Sandoy: Sandur, 1 ♂ 7/8 1956 (LD), er i coll. Zool. Mus. København.

15. *Eana osseana* Scopoli (*Cnephasia o.*)

Suðuroy: Trongisvágur (ZF). — Sandoy: Sandur, 7/8 1956 i mængde (LD). — Streymoy: Kirkjubøhólmur (ZF); Argir (ZF); Tórshavn (ZF); Streymnes (LD). — Eysturoy: Stóravatn (ZF);

Svínáir (LD), Ljósá (LD); Eiði (ZF), 8/8 1955 i stor mængde (LD). — »Findes sikkert alle steder i landet« (LD). — 14/7—13/9.

16. *Acleris ferrugana* Treitschke (*Acalla f., Peronea ferrugana* sensu Pierce & Metcalfe 1922 pl. 8)

Streymoy: Kirkjubö, 2 ex. klækket 21/9 1948 fra larve, Gazet Patursson leg. (LD), er i coll. Zool. Mus. København.

Pyralidae

17. *Crambus pascuellus* Linnaeus

Eysturoy: Toftavatn, 4 ex. 28/7 1955 (LD).

18. *Crambus ericellus* Hübner

Suðuroy: Vágur, 29/6 1955 i mængde nord for byen (LD); Tvöroyri, 1 ex. juni 1935, Jacob Olsen leg., er i coll. Zool. Mus. København. — Streymoy: Tórshavn, 1 ex. (ZF); Vestmanna, 1 ex (ZF). — Eysturoy: Ljósá, 1 ex. 16/6 1954 (LD); Eiðisvatn, 1 ex. 12/7 1954 (LD). — Færöerne uden exakt lokalitet, 1 ex. (ZF). — »På nogle steder i stort antal« (LD). — 22/6—12/7.

19. *Catoptria furcatella* Zetterstedt (*Crambus f.*)

Suðuroy: Tvöroyri (ZF). — Streymoy: Vestmanna (ZF). — Eysturoy: Eiði, 1 ex. (LD); Eiðiskollur, 2 ex. 18/7 1954 (LD). — 21/6—18/7.

20. *Scoparia ambigualis* Treitschke

Suðuroy: Vágur (LD); Trangisvágur (ZF). — Streymoy: Tórshavn (ZF); Vestmanna (ZF). — Nolsoy (ZF). — Eysturoy: Skála 31/7 1955 (LD); Leirvík (ZF); Eiði (LD). — »Sikkert almindelig vidt omkring i landet« (LD). — 13/6—31/7.

Den færøske population tilhører *ambigualis* ssp. *atomalis* Stainton, 1855, og arten har tidligere (Zool. Far. p. 15—17) fejlagtigt været opført under navnet *Scoparia atomalis* Stt.

Bemærk: det sammesteds (som fig. 10) gengivne fotografi af aedeagus af *S. ambigualis* viser *S. basistrigalis* Knaggs.

21. *Udea ferrugalis* Hübner (*Pionea f.*)

Streymoy: Tórshavn, 25/8 1955 et ex. fanget og yderligere mindst 3 set (LD). — Eysturoy: Norðskáli, 21/8 1955 et ex. fanget (LD).

Immigrant.

22. *Paralispa gularis* Zeller (*Aphomia g.*)

Streymoy: Tórshavn, 2 ex. 21/5 1954, indendørs på et lager. Synanthrop.

23. *Ephestia kuehniella* Zeller

Suðuroy: Vágur (LD). — Streymoy: Tórshavn, 21/5 1954 (LD). — »Lever alle steder, hvor mel og gryn opbevares« (LD). Synanthrop.

Nymphalidae

24. *Vanessa atalanta* Linnaeus

Streymoy: Kirkjubö, 1 ex. sommer 1945, leg. Gazet Patursson (LD), er i coll. Zool. Mus. København; Tórshavn, 1 ex. 1923, 1 ex. ca. 1925 (ZF), optrådte pludseligt talrigt i den varme sommer 1933 (Koehn); Haldórsvík, ikke sjælden 1927 (ZF); Tjörnuvík, ikke sjælden 1927 (ZF), 1 af disse ex., taget 21/7 1927, er i coll. Zool. Mus. København, 1 ex. 14/6 1955 (coll. Leif Dahl). — Nólsey, 1 ex. 1945—1950 (LD). — Vágar: Dragasund, 1 ex. 2/9 1934 (Koehn). — Eysturoy: Eiði, ikke sjælden 1927 (ZF), 1 af disse ex., taget 8/8 1927, K. Rasmussen leg., er i coll. Zool. Mus. København, arten optrådte pludselig talrigt i »1925 eller 1926« (Koehn). Sidstnævnte oplysning hidrører fra samme kilde som forannævnte, og det rigtige årstal er 1927.

Siges at være klækket indendørs fra larve taget af Niels á Botni i Nólsey (LD).

Immigrant.

25. *Vanessa cardui* Linnaeus

Suðuroy: 1 ex. taget mellem 1863—1868 (ZF); Froðba, 1 ex. 10/6 1966, Ole Martin leg., er i coll. Zool. Mus. København; Tvöroyri, 2 ex. observeret 12/6 1966, Ole Martin medd. — Streymoy: Kirkjubö, 2 ex. 26/7 1952, Gazet Patursson leg. (LD), 5 imagines, klækket indendørs fra larver taget på tidsler af Gazet Patursson ult. august 1966, fremkom i tidsrummet 8/10—12/10 1966, er i coll. Zool. Mus. København; Tórshavn, 1 ex. primo september 1969 (tilsendt LD); Kollafjörður, 1 ex. 24/9 1953 (coll. Leif Dahl). — Nolsoy: 1 ex., Niels á Botni leg. (LD). — Eysturoy: Mellem Ljósá og Eiði, 1 ex. 29/8 1939, K. Rasmussen leg., er i coll. Zool. Mus. København.

Siges at være klækket indendørs fra larve taget af Niels á Botni i Nólsey (LD).

Immigrant.

Inachis io Linnaeus (*Vanessa i.*)

Streymoy: Kirkjubö, 1 ex. 30/9 1938. Gazet Patursson leg. (LD). Tilfældig forekomst.

Aglias urticae Linnaeus (*Vanessa u.*)

Streymoy: Kirkjubö, 1 ex. 1945, Gazet Patursson leg. (LD); Tórshavn, 1 ex., som er gået tabt, siges at være fundet i 1938 af lærer J. M. Kjeld (LD).

Tilfældig forekomst.

Geometridae

26. *Xanthorhoe designata* Hufnagel (*Cidaria d.*)

Suðuroy: Vágur (LD); Famjin (ZF); ? Trongisvágur (ZF). — Streymoy: Tórshavn (ZF); Murufelli (ZF); Vestmanna (ZF). — Vágár: mellem Miðvágúr og Sörvágsvatn (ZF). — Eysturoy: Eiði (ZF). — Svínoy (ZF). — »Almindelig, findes sikkert på de fleste eller alle øer« (LD). — 17/5—5/7.

Den færøske population hører til *designata* ssp. *faeroensis* Wolff, 1929.

27. *Xanthorhoe munitata* Hübner (*Cidaria m.*)

Suðuroy: Tvöroyri (ZF), juni 1935, Jacob Olsen leg., er i coll. Zool. Mus. København; Trongisvágur (ZF). — Nolsoy (ZF). — Streymoy: Kirkjuböreyn (ZF); Tórshavn (ZF); Ljósávatn (ZF); Vestmanna (ZF). — Mykjunes: 7 ex. 7/7—20/7 1957, A. Nørrevang leg., er i coll. Zool. Mus. København. — Eysturoy: Leirvík (ZF), mellem Fuglafjörður og Skipanes (ZF); Eiði (ZF); Eiðiskollur (Leif Dahl leg.). — Svínoy (ZF). — »Almindelig, findes sikkert på alle øer.« (LD). — 3/6—27/7.

28. *Xanthorhoe fluctuata* Linnaeus (*Cidaria f.*)

Streymoy: Kirkjubö, 1 ex. ca. 22/7 1952, 1 ex. ca. 22/7 1953, Gazet Patursson leg. (LD); Tórshavn, 13/6, 22/6 1957 (LD); Haldórsvík, 1 ex. 20/7 1954, Gutti Fossadal leg. (LD), 4 ex. 31/5—5/6 1955, Leif Dahl leg., »i Haldórsvík ganske almindelig« (LD). — 31/5—22/7.

29. *Entephria caesiata* Denis & Schiffermüller (*Cidaria c.*)

Streymoy: Kirkjuböreyn (ZF); Tórshavn (ZF). — Eystúroy: Svínáir (LD); Ljósá (LD); Eiði (ZF, LD). — »Ganske almindelig« (LD). — 5/7—17/9.

Den færøske population adskiller sig ikke fra den f. ex. i Danmark forekommende.

30. *Chloroclysta citrata* Linnaeus (*Cidaria c.*)

Suðuroy: Sumba, 1 ♂ ca. ult. august 1955, fyrmester Niklas Poulsen leg. (LD).

31. *Operophtera brumata* Linnaeus

Streymoy: Kirkjubö, (æg, larver, imagines), Gazet Patursson leg. (LD); Tórshavn, herfra kendt siden ca. 1930 (LD), 1 ♂ december 1939, Gazet Patursson leg., er i coll. Zool. Mus. København.

Oktober—december.

32. *Perizoma blandiata* Denis & Schiffermüller (*Cidaria b.*)

Suðuroy (ZF); Vágur, almindelig (LD); Tvöroyri, 1 ex. juni 1935, Jacob Olsen leg., er i coll. Zool. Mus. København. — Eysturoy: Eiði (ZF), almindelig (LD). — »Sikkert på alle øer, ikke ualmindelig« (LD). — 1/6—15/7.

33. *Perizoma albulata* Denis & Schiffermüller (*Cidaria a.*)

»Meget almindelig over hele landet .... tusinder af denne måler sværmer på overskyede varme dage og står som støvskyer over græsmarkerne« (ZF).

»Den almindeligste sommerfugl på Færøerne, flagrer i kolossale mængder over græsset« (LD). — 1/6—18/7.

34. *Perizoma didymata* Linnaeus (*Cidaria d.*)

Meget almindelig (ZF). — »Er ikke fundet syd for Streymoy, rimeligvis fordi der ikke er søgt efter den dér« (LD), dog taget Sandoy: Sandur 7/8 1956 (LD medd.). — 4/8—10/9.

Arten er meget variabel på Færøerne, og populationen gør et særpræget indtryk. Warnecke (1936 p. 420—444) navngiver nogle af de individuelle aberrationer, men anfører dog, at blandt 190 ex. indsamlet 1934 på forskellige af øerne kan ca. 140 ex. betegnes som mere eller mindre normale.

35. *Eupithecia satyrata* Hübner

Streymoy: Kirkjubö (ZF); Argir (ZF); Tórshavn (ZF). — Vágar: mellem Miðvagur og Sörvagur (ZF). — Eysturoy: Svínáir (LD); Ljósá (LD); Eiði (LD). — »Almindelig over hele landet, hvor hedelyng voxer. Nogle år findes den i eventyrlige mængder« (LD). — 21/5—-27/6.

Den færøske population hører til *satyrata* ssp. *curzoni* Gregson, 1884.

36. *Eupithecia nanata* Hübner

Streymoy: Tórshavn, 3 ex. (ZF); Hoydølum (LD). — Bordoy: øst for Klaksvík, 2 ex. (ZF). — 10/6—27/7.

Den færøske population hører til *nanata* spp. *zebrata* Wolff, 1929.

Sphingidae

37. *Acherontia atropos* Linnaeus

Sandoy: Húsavík, 1 ex. medio september 1941, Magnus Magnussen leg. (LD). — Nolsoy: 1 ex. 1952 eller 1953, via Niels á Botni (LD). — Fugloy: 20/10 1933 sås fra en båd 3 ex. flyvende mod øen fra øst; det ene fangedes (LD).

Immigrant.

38. *Agrius convolvuli* Linnaeus (*Herse c.*)

Streymoy: Kirkjubö, 1 ex. 19/7 1962, Gazet Patursson leg. (oplyst af Leif Dahl), 1 ex. 28/8 1947, Gazet Patursson leg. (LD); Tórshavn, 1 ex. 3/9 1947, i coll. Zool. Mus. København (LD); Kollafjörður, 1 ex. 24/9 1953, Nikolai Petersen leg. (LD). — Nólsoy: 1 ex. 1949 eller 1950, via Niels á Botni (LD).

Immigrant.

Noctuidae

39. *Agrotis ipsilon* Hufnagel (*Rhyacia ypsilon* Rott.)

Streymoy: Kirkjubö, fundet ca. 1950, Gazet Patursson leg. (LD).

Immigrant.

40. *Standfussiana lucerna* Linnaeus (*Rhyacia l.*)

Suðuroy: Akrabergsvitin, 1 ♀ 13/8 1955, 1 ♂, 1 ♀ 7/9 1955, fyrmester Niklas Poulsen leg. (LD).

41. *Noctua pronuba* Linnaeus (*Rhyacia p., Tryphaena p.*)

Suðuroy (ZF). — Streymoy: Kirkjubö, Gazet Patursson leg. (LD), 1 ex. sommer 1945 og 2 ex. august 1946 er i coll. Zool. Mus. København; Tórshavn (ZF); Haldórsvík, 1/9 1956 (LD). — Nólsey: Gazet Patursson leg. (LD), 2 ex. 13/8 1954, Leif Dahl leg. — Eysturoy: Toftavatn, 28/8 1955, Leif Dahl leg.; Oyrabakki, 18/8 1953 (LD); Eiði, 1937, R. K. Rasmussen leg., er i coll. Zool. Mus. København, 16/9 1953, 12/8 1954 (LD).

42. *Lycophotia porphyrea* Denis & Schiffermüller (*Rhyacia p., L. varia* Vill., *Rhyacia strigula* Thunb.)

Streymoy: Tórshavn, 5 ex. (ZF). — Eysturoy: Toftavatn 28/8

1955, Leif Dahl leg.; mellem Ljósá og Eiði, 16/6 1954 (LD); Eiði, 17/7 1956 i mængde (LD). — 16/6—28/8.

43. *Peridroma saucia* Hübner (*Rhyacia s.*)

Eysturoy: Eiði, 1 ex. primo oktober 1955, Leif Dahl leg. Immigrant.

Ikke tidligere publiceret fra Færøerne.

44. *Diarsia mendica* Fabricius (*D. festiva* Den. & Schiff.)

Streymoy: Kirkjubö, 1 ♂ 19/7 1962, Gazet Patursson leg., er i coll. Zool. Mus. København (Genit. præp. BWR 2268).

Tilhører *mendica* ssp. *borealis* Zetterstedt, 1840.

Ikke tidligere publiceret fra Færøerne.

45. *Amathes alpicola* Zetterstedt (*Rhyacia a.*)

Eysturoy: Eiðiskollur, 1 ♀ 18/7 1956 (LD).

46. *Hada nana* Hufnagel (*Polisa n., Mamestra dentina* Esp.)

Suðuroy: 1 ♂, 1 ♀ 1863—1868, 2 ♂♂ 1910 (ZF). — Eysturoy: mellem Svínáir og Ljósá, 2 ex. 2/6 1954 på lys (LD).

47. *Cerapteryx graminis* Linnaeus

Suðuroy, Streymoy, Eysturoy (ZF), 3 exemplarer klækket fra larve Eysturoy, Eiði, 2/7 1935, R. K. Rasmussen leg., er i coll. Zool. Mus. København, 2/9 1956, 17/9 1956 (LD). — »Almindelig, sikkert på alle øerne« (LD). — 17/7—17/9.

48. *Blepharita adusta* Esper (*Crino sommeri* Lef.)

Suðuroy (ZF); Tvöroyri, 1 ex. 10/6 1966, Ole Martin leg., er i coll. Zool. Mus. København. — Streymoy: Kirkjubö, sommer 1947, 20/6 1966, Gazet Patursson leg., er i coll. Zool. Mus. København; Tórshavn (ZF). — Eysturoy: mellem Svínáir og Ljósá, 24 ex. 2/6—5/6 1954, de 23 ex. taget på sukkerlokning (LD), Eiði (LD). — 2/6—1/7.

Den færøske population hører til *adusta* ssp. *sommeri* Lefebvre, 1836.

49. *Phlogophora meticulosa* Linnaeus (*Trigonophora m.*)

Streymoy: Kirkjubö, 1 ex. sommer 1947, Gazet Patursson leg. (LD), er i coll. Zool. Mus. København.

50. *Apamea monoglypha* Hufnagel (*Parastichtis m., Hadena m.*)

Færøerne, uden exakt lokalitet (ZF). — Suðuroy: 16 imagines og 2 larver (ZF); Sumba, aug. 1956 og 1957, Niklas Poulsen leg.

(LD); Vágur 2 ex. 11/7 1955, 1 ex. 13/7 1955, på sukkerlokning (LD).

51. *Apamea crenata* Hufnagel (*Parastichtis rurea* F.)

Mykjunes: 1 ♂ 20/7 1957, A. Nørrevang leg., er i coll. Zool. Mus. København. (Genit. præp. NLW 3609 ♂).

Ikke tidligere publiceret fra Færøerne.

52. *Apamea maillardi* Hübner-Geyer (*Crymodes exulis* Lef.)

Suðuroy (ZF), 1880, 1891 (LD). — Streymoy: Tórshavn (ZF). — Eysturoy: Eiði, 1 ex. 30/6 1957, 4 ex. juli 1957 (Leif Dahl leg.).

Den færøske population anses for at høre til *maillardi* ssp. *exulis* Lefebvre, 1836.

53. *Celaena haworthii* Curtis

Eysturoy: Eiði, 1 ex. 26/9 1956 (LD).

54. *Caradrina clavipalpis* Scopoli

Streymoy: Tórshavn, 1 ex. 29/7 1954 indendørs, Michaelu Restorff leg. (LD).

55. *Autographa gamma* Linnaeus (*Phytometra g., Plusia g.*)

Suðuroy (ZF); Tvöroyri, 1 ex. 11/10 1936, Jacob Olsen leg., er i coll. Zool. Mus. København. — Streymoy: almindelig på hømarkerne (ZF), Kirkjuböreyn (ZF), Kirkjubö, Gazet Patursson leg. (LD), et ex. 1945 er i coll. Zool. Mus. København. — Nólsoy: Niels a Botni leg. (LD). — Eysturoy: Eiði (LD). »Ikke sjælden« (LD).

Imago fundet: 3/6, 6/9, 2/10, 5/10, 8/10, 10/10, 11/10. En fuldvoxen larve taget 19/9 1953 klækkedes indendørs 2/11 1953 (LD).

Immigrant.

Summary

The present list enumerates all species of Lepidoptera hitherto known from the Faroes (55), an increase of 23 species (72 %) since 1929.

Two of the findings (*Inachis io, Aglias urticae*) being regarded as casual, 9 species being immigrants, and 5 being synanthropous, the Faroese fauna known as far counts 41 indigenous Lepidoptera.

Diarsia mendica F., *Apamea crenata* Hufn. and the immigrant *Peridroma saucia* Hübn. are recorded from the Faroes for the first time.

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(Noona Dan Papers No. 94).

Some records of Indo-Australian Scoliidae (Hym.), with notes on a case of character release in a Campsomeria species.

By
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The present paper is based mainly on an examination of the material collected during the Noona Dan Expedition to the Philippines and the Bismarck and Solomon Islands (Petersen, 1966), as well as on a study of a material collected on Rennell Island, Solomons, by Torben Wolff, during the Danish Rennell Expedition, 1965 (Wolff, 1968). A smaller but valuable material from the Solomon Islands, mainly collected by M. McQuillan in 1964—65 during the Royal Society of London Expedition, and including collections made by J. D. Bradley in Rennell in 1953, and belonging to the British Museum (Nat. Hist.) (BMNH) is also included, as well as a few specimens belonging to other museums, viz. the Zoological Museum (Berlin), the Museum of Natural History (Paris) and the Zoological Museum (Copenhagen).

The Scoliid fauna of the Philippines certainly needs revision, and only a few problems could be elucidated on the basis of the present limited material from the southern islands only. The expedition added two species and three new subspecies to the Philippine faunal list. The investigations show that the two island bridges connecting the larger Philippine islands with Borneo contain a very interesting fauna, often with clear dissimilarities between the Palawan-Balabac chain and the chain formed by the Sulu Islands.

The fauna of the Bismarck and Solomon Islands has recently been treated by Krombein (1963, 1968), and is rather well-known with regard to the larger islands, especially New Britain and New Ireland.

Krombein recorded a total of 17 native species from the Bismarcks and 13 species from the Solomons. All of these species except two (*Campsomeris fordi* Krombein and *Diliacos quadriceps manus* Krombein, both only known from single specimens) are found in the present material, and in addition two species, *Trisciloa saussurei* Gribodo and *Campsomeris microspatulata* Tuijn, are recorded for the first time from the Bismarcks and Solomons, respectively. We may not expect to find many more species in the area, but along with the accumulation of more material of rare species and material from the more remote islands, we may certainly recognize several new subspecies. Four new subspecies are recognized in the present material alone, and two previously known subspecies are recorded from the Bismarck Islands, while with regard to the Solomon Islands the small material indicates that in the case of four species, further divisions on the subgeneric level may occur.

Rennell Island in the Solomon group seems to be inhabited by only three species of Scoliidae. These were recorded previously by Krombein (1962, 1963) and all are refound in the much greater material treated here. One of the species, *Campsomeris inopinata* Krombein, is a rather remarkable endemic.

The main purpose of the Noona Dan Expedition was to visit more remote islands because such islands often possess interesting fauna elements worth investigating. With regard to the Scoliidae this programme was not set up in vain. Especially the smallest islands visited proved to contain very interesting forms. In minute Ursula Island off the coast of Palawan a distinct and in comparison with its relatives remarkable form of *Campsomeris (Campsomeriella) collaris* (F.) was collected. Dyaul Island close to the coast of New Ireland was found to be inhabited by *Austroscolia pulchripennis franclemonti* (Krombein) which is rather surprising as the nearby New Ireland is populated by another subspecies, *pulchripennis* (Cameron). The small islands Luf and Manon of the Hermit Islands, both only a few square kilometres in size, proved to contain a rarely recorded case of "character release" (MacArthur and Wilson, 1967). The islands have a rich population of a new subspecies of the polytypic *Campsomeris (Radumeris) extranea* (Kirby) and in contrast to other subspecies the specimens of this population vary exceedingly with regard to the colour pattern. This is probably due to a situation of relaxed selection pres-

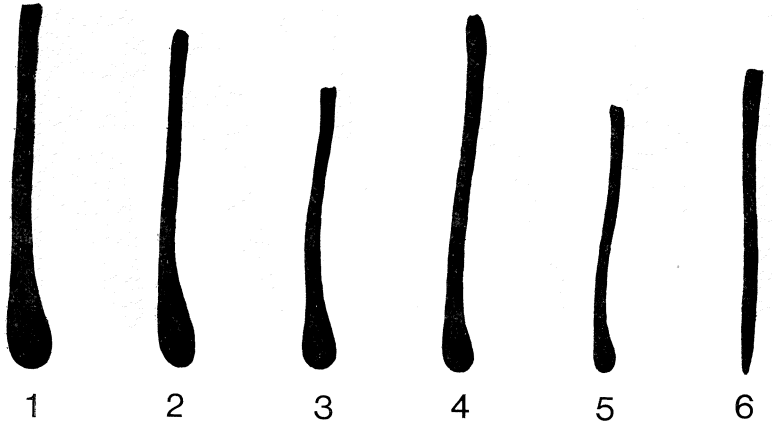
sure through absence of a normal number of interacting species.

Campsomeris (Laevicampsomeris) brandti Krombein, 1963

Bismarck Isls., NEW IRELAND: Lemkamin, 900 m, 2 ♀, 9 ♂, 7—23 April, 1962.

In order to investigate the relationship of *brandti* and the more common species of the same group, I have compared the present females with a small material of *laglaizei* Betrem, *bonguensis* Betrem and *nigerrima* Smith, including the holotypes of *laglaizei* (Museum d'Histoire naturelle, Paris) and *nigerrima* (University Museum, Oxford).

In agreement with Krombein (1963), I find it very difficult to reach an opinion on the relationship of the species of this complex, as they are mainly distinguished only by small differences in the punctation of the vertex and the dorsum of the thorax. However, in contrary to Krombein (1963:570), I find that *brandti* is not more similar to *laglaizei* than to the other species such as defined by Krombein, e.g., with a punctate area along the inner margins of the parapsidal furrows. (Such a punctation is not present in the holotypes of *nigerrima* and *bonguensis* and is apparently a variable and unreliable character). It is true that *brandti* and *laglaizei* have the presence of punctures on scutellum



Figs. 1—6. Longer spur of hind tibia in females of some *Campsomeris (Laevicampsomeris)* species. (1) *laglaizei* Betrem, holotype, (2) *bonguensis* Betrem, (3) *nigerrima* (Smith), holotype, from New Guinea, (4) *nigerrima* (Smith), specimen from New Britain, (5) *brandti* Krombein, and (6) *solomonis* Krombein.

and metanotum in common, but with regard to the degree of punctation *brandti* takes an intermediate position between *laglaizei* and *bonguensis/nigerrima.* Also with regard to the punctation on the vertex, *brandti* is an intermediate between *laglaizei* and *bonguensis,* both with punctures only posteriorly, and *nigerrima* with a richly punctate vertex.

The shape and size of the longer spur of the hind tibiae is a feature in which *brandti* differs clearly from *laglaizei. Laglaizei* has a very long and broad spur (Fig. 1) compared with the condition in *brandti* (Fig. 5). As appears from Table 1 the spur of *laglazei* is only 7—8 times as long as broad at the spatulate tip, whereas in *brandti* the spur is about 11.5 times as long as broad. It is also seen that the spur of *laglaizei* is long, as basitarsus is only about 1.20 times longer than the spur, which is clearly different from the condition in *brandti* where basitarsus is about 1.50 times longer than the spur.

Measurements on other species show that differences occur, but as long as we do not know anything about the amount of variability of the longer hind spur, it is impossible to state that the differences are significant. However, if further measurements

Table 1. Dimensions and relative length of the longer spur of hind tibiae in some *Laevicampsomeris* females. (Means of measurements in both hind legs; basitarsus measured at midline).

	Tibial spur			Basi-	Basitar-
	length	width	l./w.	tarsus	sus/spur
C.(L.) brandti:					
1) Lemkamin, 19.iv.	78	6.6	11.8	113	1.45
2) Lemkamin, 22.iv.	74	6.5	11.4	114	1.54
C.(L.) laglaizei:					
3) holotype, Moluccas	100	13.0	7.7	120	1.20
4) Sorong, N.Guinea	100	12.2	8.2	115	1.15
5) Sorong, N.Guinea	98	14.0	7.0	120	1.22
C.(L.) nigerrima:					
6) Mt.Senewit, N.Britain	107	9.0	11.9	127	1.19
7) holotype, N.Guinea	79	9.5	8.3	104	1.32
8) Misool	90	9.0	10.0	121	1.34
C.(L.) bonguensis:					
9) Mt.Lamington, NE Papua	92	10.1	9.1	120	1.30

follow the scheme found in Table 1, the conditions of the spur will be a valuable aid for the identification of the species. The present results indicate that we have to do with three more or less distinct groups: (1) *laglaizei* with a long and stout spur, (2) *brandti* with a short and narrowly spatulate spur, and (3) *nigerrima* and *bonguensis* with the spur of an intermediate build (Figs. 2, 3), and in addition to these must be mentioned *C (L.) solomonis* Krombein from the Solomons with a non-spatulate spur (Fig. 6).

Table 1 shows that rather large differences occur among the *nigerrima* specimens measured; in particular the specimen from New Britain shows deviations. It has a narrowly spatulate spur (Fig. 4), as in *brandti,* but the spur is very long, as in *laglaizei.* This might indicate that the *nigerrima* population occurring in New Britain is different from the population of New Guinea and the Moluccas and perhaps ought to be regarded as a distinct taxon, be it species or subspecies.

The males of the present series vary a good deal in size, and this variation is followed by variations in punctation and size of propodeal tubercle (see below under *nigerrima),* and also the shape of tergum 1 is substantially different in small and large specimens. The measurements presented in Table 2 show that the

Table 2. Dimensions of posterior swollen part of tergum 1 compared to size of specimen in *Campsomeris (L.) brandti* and *C (L.) nigerrima* (from New Britain).

	Tergum 1			Thorax
	length	width	w./l.	width at tegulae
C.(L.) brandti:				
1)	28	30	1.07	50
2)	30	34	1.13	57
3)	29	34	1.17	58
4)	30	35	1.17	58
5)	30	35	1.17	59
6)	32	39	1.22	66
7)	34	42	1.24	68
8)	33	42	1.28	68
9)	33	44	1.33	69
C.(L.) nigerrima:				
10)	37	55	1.49	78
11)	37	61	1.63	84

posterior swollen part of tergum 1 increases in relative width along with the increase in size of the specimens. These results may be a worning against the use of the dimensions of tergum 1 as a taxonomic character in species in which its variability is unknown.

Campsomeris (Laevicampsomeris) nigerrima Smith, 1861

Bismarck Isls., NEW BRITAIN: Yalom, 1000 m, 2 ♂, 12 and 13 May 1962.

The present males are very similar to the males of *brandti* from New Ireland, with which they share the dark colouration, as they are quite black except for small yellow lateral face marks. They do not have yellow spots dorsally on fore distitarsus as occurring in some of the *brandti* males.

Certain characters of the males of this group seem to be highly size dependent. It was already mentioned above that the dimension of the posterior part of tergum 1 varies with the size of the specimen (see Table 2). Also the size of the propodeal tubercle varies with the size of the specimen. Both males from New Britain have a rather distinct tubercle, and in the series of *brandti* males from New Ireland, which are all smaller than the New Britain males, only the biggest examples have a discernable tubercle, while it is absent in the smaller specimens. In the series of males of *brandti* and *nigerrima* it is also seen that an increase in size of the specimens is followed by an increase in the distinctness and density of the punctation of the dorsum of thorax, especially on the dorsal surface of propodeum.

The present males are placed under the name of *nigerrima* only because *nigerrima* females are previously recorded from New Britain (Krombein, 1963, 1968). True males of *nigerrima* from New Guinea (type locality) are unknown, or more likely, not discernable from males of *bonguensis* known from New Guinea in great numbers. If, in fact, true *nigerrima* males are like those of *bonguensis,* the *nigerrima* population on New Britain may be regarded as a separate subspecies which in the male sex is distinguished from the nominate form by colour differences, the most important of which is the absence of yellow lateral stripes on clypeus in the males from New Britain. Also, as mentioned above, the condition of the hind tibial spur (Fig. 4) may indicate that females of *nigerrima* from New Britain are different from those occurring in New Guinea.

Campsomeris (Laevicampsomeris) solomonis Krombein, 1963

Solomon Isls., SANTA ISABEL: Buala, 1 ♀, 22 Dec. 1964, M. McQuillan (BMNH). — GUADALCANAL: Sutakiki R., 1 ♂, 28 June 1956, E. S. Brown (BMNH). — TULAGI: 1 ♂, 24 Sept. 1953, J. D. Bradley (BMNH). — SAN CHRISTOBAL: Warahito R., 1 ♀, 21 Sept. 1955, E. S. Brown (BMNH).

The non-spatulate tip of the longer spur of the hind tibiae (Fig. 6) clearly shows that the female from San Christobal belongs to *solomonis,* buth with regard to the punctation it deviates considerably from *solomonis* as described by Krombein (1963: 570). Front between ocellar triangle and inner eye margin is not as densely punctate as in *laglaizei* as there are only 4 larger and about 8 smaller punctures present in a small area near the eye margin. Vertex is less densely punctate than in *nigerrima,* as the vertexal punctures in the present female are almost as found in *brandti.* Scutellum and metanotum are quite impunctate and there is only one row of punctures along the inner margin of the parapsidal furrows on the mesoscutum; the punctation of the dorsum of thorax is thus very similar to that of *bonguensis* but differs clearly from that of *laglaizei,* which according to Krombein should be similar to *solomonis* in this character.

The female from San Christobal thus deviates from previously known material of *solomonis,* and from the present female from Santa Isabel, by being considerably less punctate on head and thorax. Krombein (1968: 3) records a female from San Christobal without mentioning any departure from normal punctation. This seems to exclude the presence of a distinct subspecies in this island.

The integument of the present females is quite black as in the paratypes of *solomonis* and not partly brownish as in the holotype.

The male recorded from Tulagi is rather deeply and distinctly punctate, especially on propodeum and terga, as is said to be normal in *solomonis,* but it differs by having abundant greyish hairs on head, propodeum, tergum 1 and legs. The male from Guadalcanal is hardly separable from males of *brandti* from New Ireland.

Campsomeris (Laevicampsomeris) formosa (Guérin, 1835)

Bismarck Isls., NEW IRELAND: Lemkamin, 900 m, 1 ♂, 23 April 1962.

Solomon Isls., SANTA ISABEL: Moriage Lgn., 1 ♀, 8 Feb. 1955, E. S. Brown (BMNH).

The present male represents an extreme variation. It has not only a yellow spot on the sides of propodeum, which is rarely found in *formosa* males (Krombein, 1963: 574), but yellow spots are present also on propleura and mesepisternum, which are conditions never met before in this species.

Betrem (1928: 86) notes that the type of *formosa* is probably lost. Fortunately this is not true, as I saw it in the collection of the Museum of Natural History, Paris. It it labeled "Port Praslin Dumont d'Urv. 1841 1 B 32+ Scolia formosa Guér. Voy. coquille R. a. Port Praslin (Camptomeris)." Further it is labelled "Type" in red print. The specimen is in accordance with the present interpretation of the species, e.g. Krombein, 1963: 571.

Campsomeris (subg.?) oresbios Tuijn, 1961, subsp.?

Solomon Isls., GUADALCANAL: Jonapau, 1 ♂, 29 June 1956, E. S. Brown (BMNH).

This male is quite similar to the subspecies *gressitti* Krombein, 1968: 589, except that the abdomen is quite black without any yellow integumental marks as found in *gressitti*. It is thus very close to *yalomensis* n. subsp. described below but it differs by having yellow spots anteriorly on pronotum and by slightly larger yellow markings on the head. The erect hair is lighter coloured than in both *gressitti* and *yalomensis*, also the dorsum of propodeum and the first four abdominal segments are whitish.

The subspecies *gressitti* is only known from Bougainville. More material from the Solomon Islands may show that these islands contain further subspecies of *oresbios*, as indicated by the present male.

Campsomeris (subg.?) oresbios yalomensis n. subsp.

The species *C. oresbios* Tuijn, 1961 was recorded from the Bismarck Archipelago (New Britain) for the first time by Krombein (1968:10). Only a single male was at hand, and Krombein listed it as belonging to the nominate subspecies occurring in New Guinea, but as the New Britain male differed from New Guinea males he suggested that a distinct subspecies might inhabit the Bismarck Islands. The present material, including a female, supports this view.

T y p e s : Bismarck Isls., NEW BRITAIN: Yalom, 1000 m, ♂

holotype, 19 May, and 1 ♀, 15 ♂ paratypes, 9—23 May 1962. In the Zoological Museum, Copenhagen.

Description: ♂ holotype. Length 21.5 mm, fore wing 15.5 mm. Black, except the following which are yellow: lateral fourths of clypeus, narrow line along inner eye margin into lower part of ocular sinus, and a very narrow line along posterior orbit of eye. Dark ferruginous are mid part of mandibles, fore margin of clypeus, distal spots on tegulae, fore distitarsus and apices of other tarsal joints. Erect hairs on dorsum of head, thorax and abdomen and on sterna 4—6 are black or almost so, whereas hairs of the underside and legs are whitish except on tibiae and tarsi of mid and hind legs. Tomentum of thorax dull silvery. Wings strongly infumated, with dull coppery reflections. Genitalia as in *oresbios gressitti* Krombein (1963, Fig. 23) with parameres densely haired ventrally.

♂ paratypes. Length from 18 to 22 mm, fore wing length from 14 to 16 mm. The yellow mark on scrobi is very weak or absent in half of the material, but there is always a rudiment left at the entrance to ocular sinuses. Tegulae are totally black in two specimens, and in two specimens the fore tibiae are dark brownish rather than black. In some specimens even the hairs of sternum 3 are black; in others the hairs of the posterior part of propodeum and first tergum are whitish rather than black as in the holotype.

♀. Length 20 mm, length of fore wing 26 mm. Apparently not deviating significantly from the nominate form as described by Tuijn (1961: 231) and Krombein (1963: 588) except in the colour of the wings, which in the present female is very slightly infumated and clear yellowish, as seen in *C. formosa* females, rather than moderately infuscated and not yellowish as in *o. oresbios*. Spurs of hind tibiae are not at all spatulate.

Remarks: This new subspecies fills the gap between *oresbios oresbios* Tuijn from New Guinea and *oresbios gressitti* Krombein from the Solomon Islands (Bougainville). In the male sex *yalomensis* is differentiated from the other subspecies by its reduced yellow colouring on head and especially by the absence of yellow markings on abdomen (yellow spots on terga sometimes lacking in New Guinea males). The males of the new subspecies are closest to *gressitti;* both have the parameres densely haired ventrally, infumated wings, and more black hairs on head and body. In the female sex *yalomensis* is discriminated from *o. ores-*

bios by the light wing colour and probably by the non-spatulate spur of the hind tibiae. The female of *o. gressitti* is unknown.

Judging from the female sex this species might be placed in the subgenus *Laevicampsomeris,* but I hesitate to do so because the males deviate clearly from males of that subgenus, whereas they are very close to males of *C. microspatulata* Tuijn due to the characteristic shape of the first abdominal segment. *Oresbios* and *microspatulata* (including *fordi* Krombein as a subspecies, see below) may constitute a subgenus of their own.

Campsomeris (subg.?) microspatulata Tuijn, 1961

Solomon Isls., GUDALCANAL: Jonapau, 1 ♂, 29 June 1956, E. S. Brown (BMNH).

C. microspatulata is previously only known from New Guinea (Krombein, 1963:591, 1968:10).

The present male from Guadalcanal is somewhat larger than the known New Guinea males, e.g. total length: 18.5 mm,, length of fore wing: 17 mm, against 14—16 mm and 13—14 mm, respectively, in New Guinean males according to Krombein, but otherwise it agrees closely with New Guinean males, the only differences are as follows: tarsi largely black, fore distitarsus with a tiny yellow spot dorsally, yellow band of sternum 2 covers about 1/4 to almost 1/3 of the surface and is only very slightly emarginate anteriorly in middle, yellow band on sternum 3 is not interrupted on midline, and the erect hair on vertex, scutum, scutellum, metanotum, and abdominal segment 5 is not black but grey.

C. fordi Krombein, 1963:591 from New Britain is very closely related to *microspatulata.* It differs practically only in colour, and judging from the male sex (females of *fordi* are unknown) *fordi* may better be regarded as a subspecies of *microspatulata* than as a separate species.

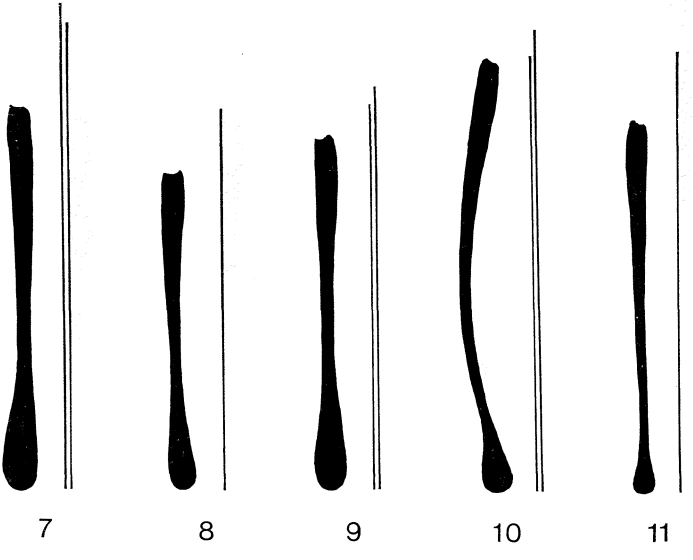
Subspecies of **Campsomeris (Radumeris) extranea** (Kirby, 1884)

In the following a number of new subspecies of this polytypic species is described. Previously no less than five subspecies were recognized by Krombein (1963: *extranea* (Kirby) from the Admiralty Islands, *toxopeusi* Betrem from Buru Is., Moluccas, *moluccensis* Betrem from Amboina, West New Guinea, New Britain and southern parts of New Ireland, *leveri* Krombein from some of the Solomons, and 1968: *shanahani* Krombein from the New Georgia group, Solomons).

The different subspecies are mainly distinguished by the extent of the yellow-orange integumental markings and by the colour of the vestiture. In other features such as punctation, form of genitalia etc., and in characters presented here for the first time (posterior margin of the scapulae (Fig. 24) the dimensions of the hind femora (Figs. 28, 31), the shape of the longer spur of the hind tibiae (Fig. 7) and the density of the fringes of the terga (Fig. 36), all subspecies are very similar. Descriptions of these characters in common are therefore normally omitted below.

Table 3 contains a review of the occurrence of yellow maculations in the subspecies known from the Bismarck and Solomon Islands. Only the more noticeable and variable maculations are tabulated. The review may replace to some degree a rather lengthy discussion of subspecific differences in connection with the descriptions of the new subspecies.

The full scheme of yellow markings occurs in the light coloured specimens of *liberata* n. subsp. with abundant yellow spots and areas in contrast to the very dark *shanahani* at the other end of



Figs. 7—11. Longer spur of hind tibia in females of (7) *Campsomeris (Radumeris) extranea liberata* n. subsp., (8) *C. (R.) novocaledonica* Turner, (9) *C. (R.) radula* (Saussure), 10 *C. (R.) tasmaniensis* (Saussure), and 11) *Campsomeris (subg.?) inopinata* Krombein, holotype. The vertical lines show the median length of basitarsus.

Table 3. Occurrence of yellow integumental markings in subspecies of *Campsomeris (Radumeris) extranea* (Kirby).

	FEMALES							MALES							
	liberata, light	*liberata*, dark	*intermedia*	*moluccensis*	*extranea*	*leveri*	*shanahani*	*liberata*, light	*liberata*, dark	*intermedia*	*moluccensis*	*extranea*	*leveri*	*mussauensis*	*shanahani*
Mandibles	●	●	—	—	—	—	—	●	●	●	+	+	+	+	+
Clypeus	●	●	+	+	+	—	—	●	●	+	+	—	—	+	—
Scrobes	●	●	—	—	—	—	—	●	+	●	+	+	+	+	+
Lamina frontales	●	●	—	—	—	—	—	always absent							
Ocular sinuses	●	—	—	—	—	—	—	always absent							
Antennal scapes	●	—	—	—	—	—	—	●	+	+	—	—	—	—	—
Vertex	●	+	+	+	+	+	+	●	+	+	+	+	+	+	+
Genae and temples	●	+	+	+	+	+	—	●	●	●	●	+	+	+	—
Pronotum, dorsum	●	●	●	●	+	—	—	●	+	+	+	+	+	+	—
— laterally	●	—	+	—	—	—	—	●	+	+	+	+	+	+	—
Mesoscut., centrally	always absent							●	—	—	—	—	—	—	—
— **posterolat.**	●	●	●	—	—	—	—	●	+	+	+	+	×	—	—
Scutellum	●	—	●	—	—	—	—	●	●	●	●	●	●	+	+
Metanotum	●	—	+	—	—	—	—	●	●	●	●	●	+	+	—
Propodeum	always absent							●	+	+	—	—	×	—	—
Mesepisternum	always absent							●	+	+	—	—	—	—	—
Metepisternum	●	—	—	—	—	—	—	●	—	—	—	—	—	—	—
Tergum 1	●	●	●	●	●	+	—	●	+	+	+	+	+	+	+
— 2	●	●	●	●	+	+	—	●	+	+	+	+	+	+	+
— 3	●	●	●	●	+	+	—	●	+	+	+	+	+	—	—
— 4	●	+	+	+	+	—	—	●	●	●	●	—	●	—	—
— 5	●	—	+	—	—	—	—	+	—	+	×	—	—	—	—
— 6	always absent							+	—	●	—	—	—	—	—
Sternum 2	●	●	—	●	●	—	—	●	+	+	+	—	—	—	—
— 3	●	+	+	+	+	—	—	●	+	●	+	+	+	+	+
— 4	●	+	+	—	—	—	—	+	—	●	+	+	+	+	+
— 5	always absent							—	—	●	—	—	—	—	—
Fore femora	●	+	—	—	—	—	—	●	+	+	+	+	×	+	—
— tibia	●	+	—	—	—	—	—	●	+	●	+	+	+	+	+
— tarsus	●	+	+	—	—	—	—	●	●	●	+	+	+	+	+

Explanations. With two exceptions the signs (●), (+) and (—) indicate a gradual decrease in size of the markings from largest extension (●) to absent (—). In the case of the clypeus and sternum 2 the yellow marking is never absent and the signs have the following meanings; clypeus: (●) totally yellow, (+) yellow with a central spot, and (—) almost black; sternum 2: (●) almost totally yellow, (+) anterior rhomboidal spot and posterior band, and (—) posterior band alone.

(×) indicates that the marking is present in a few cases.

the scale. See also the Figs. 12—23 showing the colour pattern in some of the subspecies.

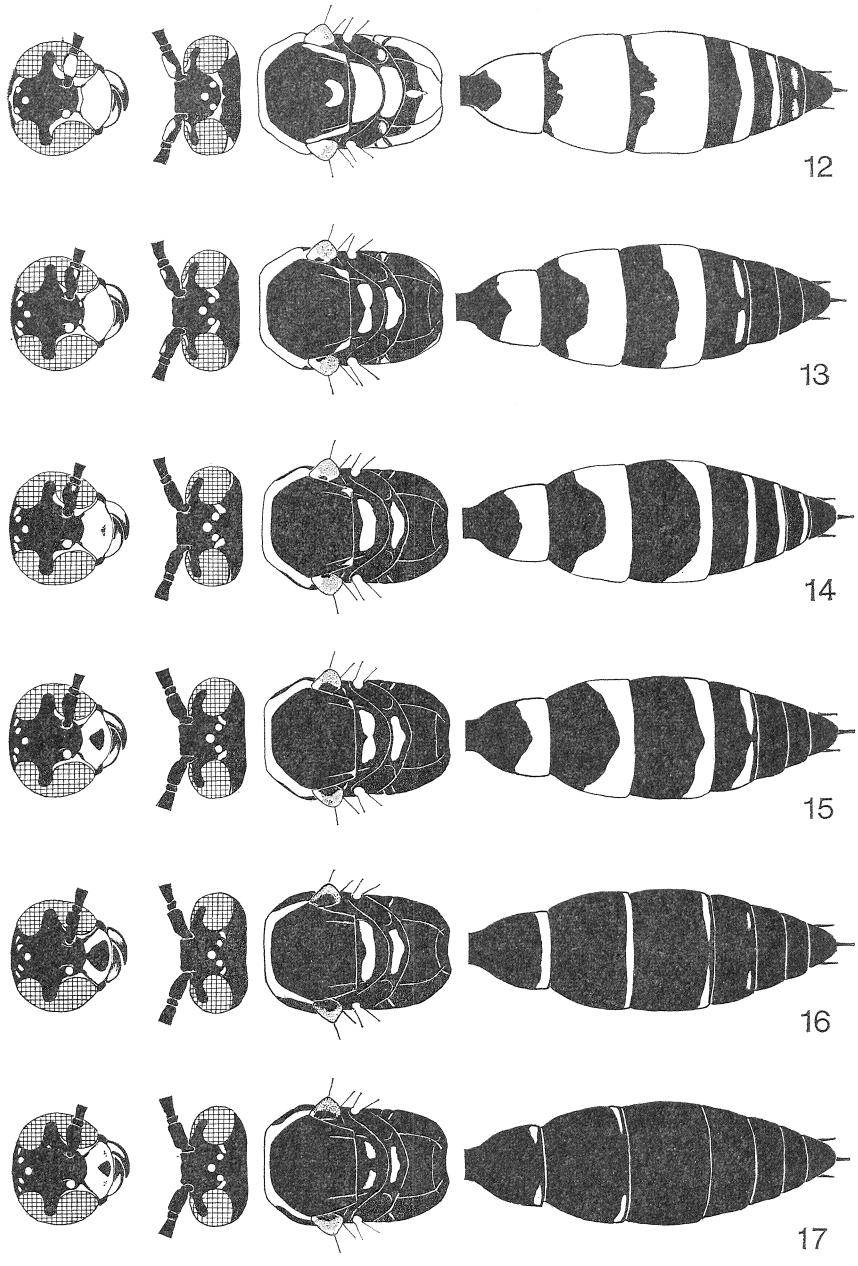
Extranea has a rather close relative in *tasmaniensis* (Saussure, 1854) from New Guinea and Australia, as only slight differences in punctation and male genitalia separate the species (see Krombein, 1963). However, the females of the species are easily distinguished by the shape of the longer spur of the hind tibiae. *Tasmaniensis* has a slender spur as long as the basitarsus and with a short spatulate tip (Fig. 10), whereas the spur of *extranea* is stouter, shorter than basitarsus and the spatulate apical part is long (Fig. 7). In this respect *extranea* is thus closer to *radula* (Saussure) from Australia (Fig. 9) and another relative *novocaledonica* Turner from New Caledonia, New Hebrides and the Loyalty Islands (Fig. 8).

Campsomeris (Radumeris) extranea liberata n. sp.
(Figs. 7, 12, 13, 18—22)

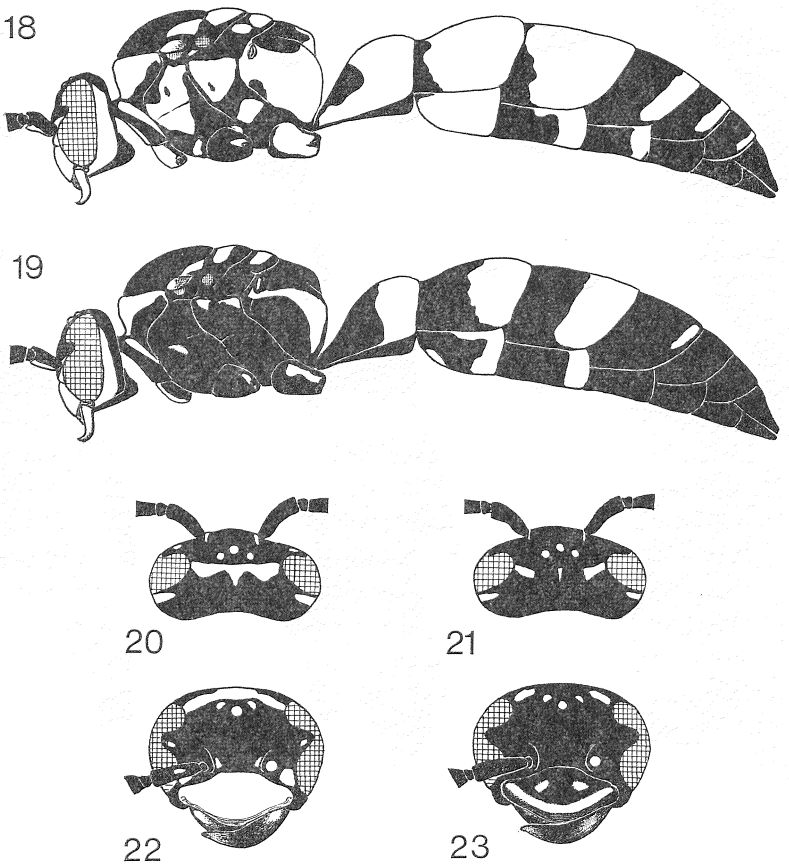
T y p e s. Bismarck Isls., HERMIT ISLS.: Luf Is. and Manon Is., ♂ holotype, 26 June 1962, ♀ allotype, 4 ♀, 9 ♂ paratypes, same date, in coconut plantings and in vegetation on the beach. In the Zoological Museum, Copenhagen.

D e s c r i p t i o n. A remarkable variation of the yellow integumental maculations occurs. The specimens with the greatest extension of the yellow colour are chosen as holotype and allotype.

♂ holotype. Black, with pale yellow maculations as follows. Head: mandibles except reddish tips, clypeus, scrobi and a narrow line reaching halfway into the ocular sinus, scapus below, mark on vertex consisting of two lateral spots narrowly connected with a median triangular spot, genae broad below as well as behind eyes. Thorax: pronotum except irregular black spots on lateral surface, spot on propleuron, lateral stripes on mesoscutum from opposite of hind corners of pronotum to posterolateral corners, median halfmoon shaped spot posteriorly on mesoscutum, scutellum, median part and small spots on lateral parts of metanotum, a small median spot on horizontal part and almost all of posterior and lateral parts of propodeum, large area in upper half and spot below on mesepisternum, upper plate and spot below on lower plate of metepisternum, tegulae at base. Legs: yellow all over except black on large parts of mid coxae, spots on hind coxae, narrow stripes dorsally on basal half of fore and mid femora,



Figs. 12—17. Colour pattern in males of some subspecies of *Campsomeris (Radumeris) extranea* (Kirby), dorsal view. (12, 13) *liberata* n. subsp., light and dark specimen, respectively, (14) *intermedia* n. subsp., (15) *moluccensis* Betrem, (16) *leveri* Krombein, and (17) *mussauensis* n. subsp.



Figs. 18—19. Colour pattern in males of *Campsomeris (Radumeris) extranea liberata* n. subsp., light and dark specimen, respectively, lateral view. — Figs. 20—22. Head of females of *C.(R.) extranea liberata* n. subsp., (20, 21) light and dark specimen, respectively, dorsal view, (22) light specimen, frontal view. — Fig. 23. Head of female of *C.(R.) extranea intermedia* n. subsp., frontal view.

broader stripe dorsally in full length of hind femora, stripe ventrally on hind tibiae, under side of hind tarsus as well as basally on joints 2—5. Abdomen: dorsal surface and lateral parts of tergum 1, terga 2 and 3 except narrow irregular bands anteriorly, posterior bands on terga 4—6 progressively narrower, that of tergum 4 covering about posterior one third of the surface, that of tergum 6 narrower, indistinctly limited and darker coloured, whole surface of sternum 2, apical band on sternum 3, and posterolateral triangles on sternum 4.

Hairs white, in places with a slight orange hue, except black on abdominal segments 5—6; in segment 4 some black hairs mixed with the white ones. Adpressed pubescense of thorax silvery.

♂ paratypes. The male paratypes may be divided into three groups according to the extent of yellow maculations; (1) two specimens coloured almost as the holotype (Figs. 12, 18), (2) two specimens of an intermediate position, but both with a considerable reduction of the yellow markings, and (3) five specimens which are the darkest representatives (Figs. 13, 19).

(1) One male of this group is exactly as the holotype. The other one almost so, but the bands of terga 5 and 6 are only indicated and the yellow area of the posterior surface of the propodeum is somewhat reduced.

In (2) and (3) the yellow maculations are considerably reduced. Most impressive is the reduction of the yellow areas of terga 1—3 into posterior bands and the large yellow areas of the sides of thorax into small spots. Some small but distinctive spots are lacking or clearly modified, viz. the band on vertex reduced to the usual lateral spots, spot in middle of mesoscutum lacking (in one specimen represented by two tiny spots), lateral mesoscutal stripe restricted to the posterolateral corners, spot on median horizontal part of propodeum lacking, and tergum 6 and hind tarsus are totally black.

In addition the darkest males (3) are lacking the following maculations or the maculations are modified: spot on propleuron and spots on mes- and metepisternum are lacking, spots on posterior part of propodeum are absent and the yellow area of the lateral parts is restricted to the hind corners, apical band of tergum 5 lacking, yellow area of sternum 2 divided into an anterior spot and an apical band, band of sternum 3 interrupted in the middle, yellow triangles of sternum 4 are absent, bands of terga 1—3 reduced to cover only posterior half to two thirds of the surface often with a rather deep emargination anteriorly in the middle, in the legs the yellow areas are reduced by black colour in dorsal stripes on all femora, ventral stripes on all tibiae, underside of mid tarsus and all of hind tarsus.

The intermediate paratypes (2) have retained reduced maculations as follows: spot on propleuron, small spot in middle of mesepisternum, spot above on metepisternum, two large spots on posterior surface of propodeum, narrow band on tergum 5, and

the anterior spot on sternum 2 is not fully out of connection with the posterior band.

♀ allotype. Black, with yellow maculations as follows. Head: (Figs. 20, 22) mandibles at base, clypeus except the reddish fore margin, spot on scrobi, minute spot on inner rim of antennal sockets, minute spot in ocular sinus, spot on antennal scapus, band on vertex consisting of two lateral spots broadly connected with a median triangular spot, small spots on genae below, and stripe along upper part of outer eye margins. Thorax: dorsum of pronotum and small spot on lateral surface of pronotum, posterolateral corners of mesoscutum, two large spots on scutellum, band on metanotum, spots above on upper plate of metepisternum, minute spot at base of reddish tegulae, line below distally on fore femora, stripe dorsally on fore and mid tibiae, spots on all joints of fore tarsus. Abdomen: terga 1—4 except extreme anterior margin and anterolateral corners, posterior one half of tergum 5, posterolateral triangles on sterna 2—4, largest on sternum 3 where the triangles almost meet medially.

Hairs fulvous on vertex, dorsum of thorax, terga except tergum 1 anteriorly, and sterna 5 and 6; in other parts whitish.

♀ paratypes. Two specimens agree almost exactly with the allotype, but both have the band of metanotum narrowly interrupted in the middle, and in one specimen only the posterior three fourths of tergum 4 is yellow. In the remaining two paratypes the maculations are considerably more reduced.

The darkest one lacks the following spots or these are modified: spot in ocular sinus, spot on antennal scapus and spot on lower genae are lacking, band on vertex is reduced to two lateral spots with a rudiment of a triangular spot in the middle (Fig. 21), spot on lateral surface of pronotum and the spots on scutellum and metanotum are lacking, in fore legs the maculations on femora and tibiae are reduced to small spots and only distitarsus is clear yellow, the other tarsal joints black and reddish, stripe on mid tibiae lacking, in abdomen only posterior half of tergum 4 is yellow and tergum 5 and sternum 4 are black.

The remaining paratype is an intermediate. It lacks only the spot on genae below, and the spots on scutellum; on vertex the lateral spots are still in connection with the median triangle, but the connection is narrow; on metanotum two spots are present although very small.

Length of fore wing 12—15 mm in male, 14—17 mm in female.

Remarks. This subspecies is immediately distinguished from other subspecies by the great extension of yellow colour as occurring in the lightest specimens, both in males and females. With regard to the darkest specimens these are distinguishable from other subspecies by the totally yellow clypeus, but in some other respects dark *liberata* may resemble *intermedia* subsp. nov. and *moluccensis* Betrem very much (Table 3, Figs. 13—15). Between *intermedia* and dark *liberata* an virtual overlapping takes place in the yellow ornamentation. Most noticeable is the presence of yellow spots on scutellum and metanotum in the female of *intermedia* and the presence of yellow bands on terga 5 and 6 and sternum 5 in males of *intermedia,* while these markings are absent in *liberata.*

Character Release. The great variation in the material of *liberata* is in strong contrast to the uniformity in colour found in the other subspecies of *extranea* as far as can be deduced from published material. Only in two subspecies, viz. *moluccensis* and *leveri,* is a reasonable material known. According to Krombein (1963:587) some variation occurs in *leveri* but the degree is inferior to the remarkable variance in *liberata,* and no doubt a certain uniformity is the normal condition in *extranea* populations as well as in populations of Scoliids in general. The great individual variation in *liberata* is a most unusual situation. Probably we have to do with a continuous variation, but it is not quite unlikely that a kind of polymorphism is involved, as at least the males seem to fall into rather distinct groups.

Another unusual condition of the *liberata* population on Luf and Manon is the abundance of individuals in the islands compared to the relative rareness of other subspecies. The collectors inform me that *liberata* was very common and they could have collected many specimens if they had concentrated on it. However, 15 specimens were collected within a few hours, which is an enormously high number compared to the results in other islands where the same kind of collecting by the same collectors was done for days or weeks: one specimen only in each of the islands of Mussau, Lavongai, New Ireland, Duke of York and New Britain.

A third interesting characteristic of the *liberata* population is the fact that a fair proportion of its individuals is much more

brightly coloured than any other *extranea* subspecies known today. It is therefore likely that this part of the population is also more brightly coloured than the probable founders. Of course we do not know where the founders came from, but possibly New Guinea was the original source region, and even if the founders came from the Admiralty Islands or from regions further away from the Hermit Islands, they have probably been rather dark, viz., much like *moluccensis* Betrem, known from New Guinea and New Britain. If this is true the colour pattern of the *liberata* population is released only in one direction, mowing from a rather dark pattern to a vivid yellow pattern, at least in a part of the population, whereas other parts are apparently still unchanged.

The above-mentioned peculiar conditions call for an explanation, even though we have only a very limited knowledge about the case. Both the great variation in the colour pattern and the abundance of specimens indicate immediately that some kind of release is involved. The strong forces of selection, which in other areas keep the *extranea* populations precise and distinct, may be presumed to have been, and probably still are, weaker in the islands now inhabited by the flourishing population of *liberata*. We may have to do with the phenomenon termed "character release" by MacArthur and Wilson (1967:165,186), which is an increase in variance of one or more phenotypic characters due to an enlargement of the niche by absence of competitors or other species whose presence would be restricting.

Both Luf and Manon are very small islands, only a few square kilometres each. They are isolated, lying about 260 km from New Guinea and about 170 km from Manus, the largest island in the Admiralties. Manon is covered by a coconut plantation, whereas Luf, in addition to coconut areas, has some remains of an original forest in the centre, which reaches a height of about 250 m and is of volcanic origin. Such conditions indicate that the fauna of the islands is poor and it can hardly be doubted that the founders of the *liberata* population encountered fewer interacting species than in the source region, and the exposure to a relaxed selection pressure, probably in combination with the effect of a small population size, resulted in this case in a considerable increase in the variation of the colour of the integument. This ecological release through the absence of a normal number of interacting species (other Scoliids as competitors, parasites, predators etc.)

may also give a fair explanation for the high population density found in the islands.

As mentioned above, the integumental colour pattern departs only in one direction out from the conditions presumed to have occurred in the founders. This may indicate that the character is not quite free from a selection pressure, or that the possibilities for a change in the character are not equal in either direction from the original conditions in the founders, or both. We do not know what forces really created the one-sided change in the character in *liberata*. To regard a selection pressure as the force would be in contradiction to the rather convincing theories set forth above on character release, unless we happen to have taken a sample of the population in a moment of very rapid evolution and in a very unstable state, which admittedly could be the case. On the other hand it is not unrealistic, and perhaps true, that what has happened is a return to a primitive state of the character, not an evolution. It is likely that the founders in the source region were controlled by a selection force preventing them from being brightly coloured, but released from this pressure after the invasion of the small islands in question, and bearing a limited tendency towards a light colour pattern, nothing prevented the appearance and survival of light coloured individuals in their offspring and a new balance could be established with allowance for a wide variation in the character.

Cases of character release are very seldomly recorded. Some more or less obvious cases are mentioned by van Valen (1965) when he reported on his investigations on some birds and discussed the connection between morphological variation and width of ecological niche. None of the examples seems to be exactly like the case mentioned here, and further investigations on the *liberata* population would certainly be rewarding.

Campsomeris (Radumeris) extranea intermedia n. subsp.
(Figs. 14, 23, 24, 28, 31, 36)

T y p e s. Bismarck Isls., LAVONGAI: Banatam, holotype ♀, 17 March 1962, allotype ♂, same data except 19 March. — NEW IRELAND: Nago Island near Kavieng, paratype ♂, 13 Jan. 1962. In the Zoological Museum, Copenhagen.

D e s c r i p t i o n. ♀, holotype. Mandibles at base, fore margin of clypeus, antennae below, outer parts of tegulae, fore tarsus and distal ends of mid and hind tarsal joints reddish, otherwise

black with the following yellow maculations: Head (Fig. 23): two small spots on disk and a line anteriorly on clypeus, two large spots on vertex, line on genae along upper part of eyes. Thorax: dorsum and minute spot laterally on pronotum, posterolateral corners of mesoscutum, two spots on scutellum, two smaller spots on metanotum, tegulae at base, minute spots on fore distitarsus, horizontal part of tergum 1, terga 2 and 3 except narrow band anteriorly and anterolateral corners, posterior half of tergum 4, and tiny spots on posterolateral corners of sterna 3 and 4.

Hairs on top of head, dorsum of thorax, all terga except tergum 1 anteriorly, and sterna 5 and 6, orange; other parts mainly white-haired.

♂. Black except yellow maculations as follows (Fig. 14). Head: mandibles except tips, clypeus except minute black spot in the middle, scrobi and a line into ocular sinus, minute spot distally on antennal scapus, two spots on vertex adjacent to eyes, stripe on genae broad below, attenuating above. Thorax: dorsum and stripe laterally on pronotum, posterolateral corners of mesoscutum, band on scutellum and metanotum, small spot laterally on hind corners of propodeum, minute spot in middle of mesepisternum, tegulae at base, fore coxae, small spots on mid and hind coxae, all femora below, all tibiae above, fore tarsus above, mid basitarsus and mid distitarsus (in paratype from Nago Island in addition a spot on joint 2 of mid tarsus). Abdomen: band on terga 1—6 progressively decreasing in width, in terga 1 and 2 approximately covering posterior one half, in tergum 6 covering only about one fourth of the surface and the band is illdefined, in sterna 2—5 progressively narrower posterior bands, in sternum 2 in addition a rhomboidal spot anteriorly.

Hairs in general whitish in allotype with exception of brownish to black hairs on terga 5—7; in paratype from Nago Island the hairs on dorsum of thorax and on terga 1—4 has a light reddish hue.

R e m a r k s. This subspecies takes an intermediate position among the subspecies of *extranea* known from the Bismarck Islands (Table 3, Figs. 12—15, 17). It is rather clearly lighter than *moluccensis* from New Britain and the southern parts of New Ireland and much lighter than *extranea* from the Admiralty Islands. Compared to *liberata,* described above, *intermedia* is much darker than the lightest coloured *liberata,* but in several respects it is

lighter than the darkest representatives of this subspecies, e.g. the female with spots on scutellum and metanotum and the male with yellow markings on abdominal terga 5—6 and sterna 4—5. With regard to yellow markings on abdominal segment 6 male *intermedia* is richer coloured than even the lightest specimens of *liberata.*

Campsomeris (Radumeris) extranea moluccensis Betrem, 1928
(Fig. 15)

Bismarck Isls., NEW BRITAIN: Valoka, 1 ♂, 8 July 1962. — DUKE OF YORK: Manuan, 1 ♂, 19 July 1962.

Both specimens agree well with the description given by Krombein (1963:584). None of them are yellow on abdominal tergum 5 (Fig. 15). The male from New Britain is not yellow on mid basitarsus above. The male from Duke of York has a small anterior spot on sternum 2 in addition to the posterior band.

Campsomeris (Radumeris) extranea ? n. subsp.

Solomon Isls., STEWART ISLANDS: Sikaiana I. (about 110 miles E. of Malaita), 1 ♂, 4 Oct. 1963, M. McQuillan (BMNH).

This male has reduced yellow markings on legs and lower part of genae as in *leveri* Krombein, but it differs from this subspecies by the presence of yellow bands on terga 1—5 and indication of one on tergum 6. It is in this respects much alike the subspecies *moluccensis* and *intermedia* from the Bismarck Islands.

Krombein (1963:584) recorded two similar males from Bougainville under the name of *moluccensis,* but it may be found that all three specimens represent a distinct subspecies with a discontinuous range.

Campsomeris (Radumeris) extranea leveri Krombein, 1963
(Figs. 16, 25)

Solomon Isls., GUADALCANAL: Marau, 1 ♀, 1 Oct. 1928, on ♂-flowers of coconut, R. W. Paine (BMNH); Rua Vatu, 1 ♂, 19 Nov. 1954, E. S. Brown (BMNH).

The present female deviates in a few structural characters from other *extranea* females mentioned in this paper, and although the differences are very small they may indicate a slight departure in morphology from other *extranea* subspecies. The scapulae are somewhat less furrowed and the more or less impunctate posterior margin of the pronotum is narrower and not as well set off (Fig.

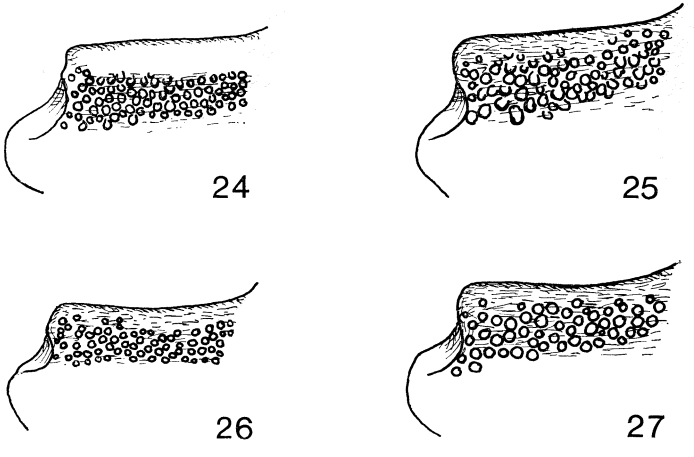
25) as in other *extranea* females, and with regard to the longer spur of hind tibiae this is rather clearly more slender in the present female and with the spatulate distal part narrower, as the spur is slightly more than 13 times longer than wide rather than only about 11—12 times longer than wide.

Campsomeris (radumeris) extranea mussauensis n. subsp.
(Fig. 17)

Types. Bismarck Isls., MUSSAU: Talumalaus, 1 ♂, holotype, 19. Jan. 1962. In the Zoological Museum, Copenhagen.

Description. ♂. Black, yellow maculations as follows: mandible at base (reddish at apex), clypeus apart from a small black spot in the middle, narrow line along inner eye margins to ocular sinus, a pair of spots on vertex adjacent to eyes, narrow line along outer eye margins, dorsum of pronotum, streak on lateral surface of pronotum, two spots on scutellum and a band on metanotum, tegulae at base, fore coxae beneath, stripes ventrally on fore femora and dorsally on fore tibiae and basitarsi, two stripes on both sides of mid femora, a narrow stripe dorsally on basal half of mid tibiae, stripe below on hind femora, and small posterolateral triangles on tergum 1 and sterna 2 and 3.

Vestiture greyish-brown to black on head and thorax above,



Figs. 24—27. The sculpture near the dorsal margin on the right corner of pronotum in females of (24) *Campsomeris (Radumeris) extranea intermedia* n. subsp., (25) *C.(R.) extranea leveri* Krombein, (26) *C.(R.) novocaledonica* Turner, and (27) *Campsomeris (subg.?) inopinata* Krombein, holotype.

more whitish below and basally on the legs; hairs of abdomen black, but mixed with some brownish hairs on segment 1 and in the posterior fringes of sterna 2 and 3. Adpressed pubescence of thorax silvery. Punctations, genitalia etc. as in other subspecies of *extranea*.

Length 15 mm, fore wing 12 mm.

Female unknown.

Remarks. This is the darkest subspecies so far recorded from the Bismarck Islands. Especially impressive are the reductions which have taken place in the yellow markings on the abdomen (Fig. 17). It is clearly less yellow ornamented than *leveri* Krombein (Fig. 16) from some of the Solomon Islands, but *shanahani* Krombein, 1968, also from the Solomons, is very similar although slightly darker: metanotum without spots, fore femora without spots and clypeus black in large areas not just with a median triangular spot (Table 3).

Campsomeris (Radumeris) novocaledonica Turner, 1918
(Figs. 8, 26, 29, 32, 35)

Loyalty Isls., UVÉA: 1 ♀, 1 ♂, 3 and 30 June 1934, "Monsunen". — LIFU: Shépénéhé, 1 ♂, 27 June 1934, "Monsunen". All in the Zoological Museum, Copenhagen.

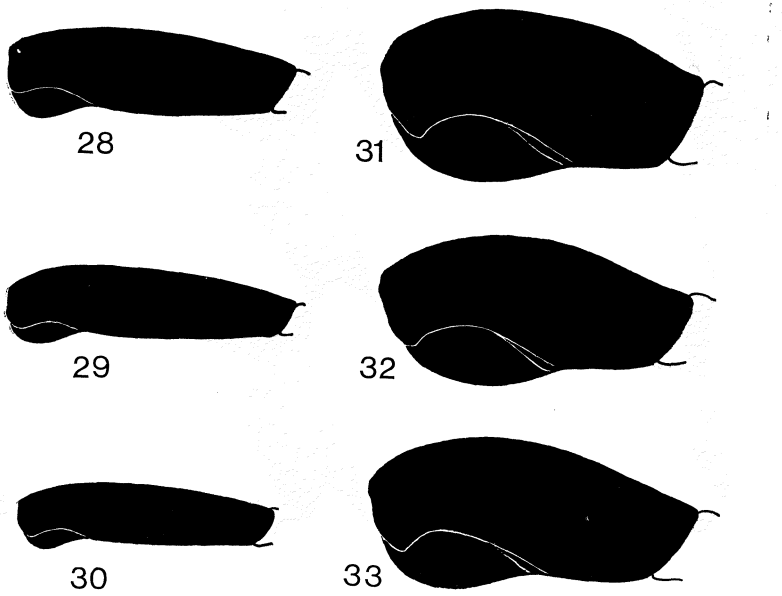
The male from Balade (Mus. Dom. Guérin, Mus. d'Hist. nat. Paris) which was misidentified as the male of *Campsomeris formosa* Guérin by Saussure and Sichel (1864: 207, 301) has also been examined. It belongs to *novocaledonica* as already suggested by Turner (1918: 237) on the basis of the description.

The present female agrees with the redescription given by Betrem (1928: 90) while the males deviate to some extent from Betrem's writings. The following orange-yellow maculations deviate from or are additions to those mentioned by Betrem: mandibles at base, clypeus yellow all over without a black spot in the centre, narrow line along outer orbits, stripe laterally on pronotum, fore coxae, fore tibiae dorsally, and posterior band of sternum 2 fully connected with the anterior rhomboidal spot. However, with regard to the conditions of clypeus and sternum 2 these agree with the characters used in Betrem's key, couplet 1ob (1928: 76). Further investigations may show that we have to do with several subspecies in the area of New Caledonia, the Loyalty Islands and the New Hebrides.

Novocaledonica belongs no doubt to the subgenus *Radumeris* and among the species of this group it is very similar to *extranea* Kirby, but small differences occur and *novocaledonica* is apparently a distinct species.

The females of the two species are very alike, e.g. is the longer spur of the hind tibiae of the same shape (Figs. 7, 8), but in the present female of *novocaledonica* the scapulae are almost evenly rounded rather than with a shallow furrow as in *extranea* and the posterior impunctate margin of pronotum is narrower and less sharply limited (Fig. 26) than in *extranea* (Fig. 24) perhaps with the exception of specimens of *leveri* Krombein (Fig. 25). Further the shape of the hind femora is more slender than in *extranea* (compare Figs. 31 and 32), and the hair fringes of the posterior margins of the terga less dense, e.g. with only about 13 hairs in one millimeter of fringe on tergum 2 compared to 16—20 hairs in *extranea* (Figs. 35, 36), seven specimens examined.

Also the males of the two species are very similar in their morphology, but measurements of the hind femora show a differ-



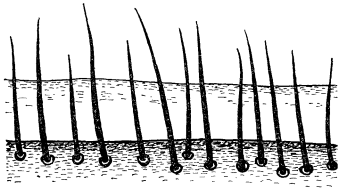
Figs. 28—33. Hind femora of males (left) and females (right) of (28, 31) *Campsomeris (Radumeris) extranea intermedia* n. subsp., (29, 32) *C.(R.) novocaledonica* Turner, and (30, 33) *Campsomeris (subg.?) inopinata* Krombein, holotype.

ence that may be significant (Figs. 28, 29). It was found that the ratio of length and height is 4.1 in two males and 4.6 (abnormal?) in one male of *novocaledonica* but not greater than 3.8 in 15 males of *extranea,* with a variation down to 3.4. With regard to the colour pattern the males of *novocaledonica* also fall somewhat outside the scheme found in *extranea,* as they have yellow markings even on tergum 7 and an extensive red colour of tibiae and tarsi. The latter attribute is less pronounced in the females, which on the other hand have an outstanding fulvous colour of the hair, even on the underside.

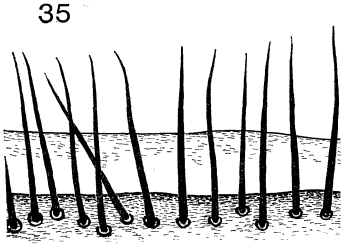
Campsomeris (subg.?) inopinata Krombein, 1962
(Figs. 11, 27, 30, 33, 34, 37)

Solomon Isls., RENNELL: Niupani, 1 ♂, 22 Aug. 1962; Hutuna, 2 ♂, 26 and 27 March 1965, T. Wolff leg.

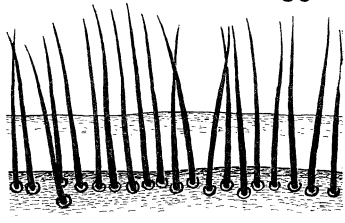
Although it is often difficult to associate separately collected males and females it seems likely that the present males belong to *inopinata* Krombein, an endemic from Rennell previously only known from the female sex. They agree closely with the female in the black colour and as the fauna of Rennell is rather limited the chance that the males belong to another species previously unknown from Rennell is very restricted.



34



35



36

Figs. 34—36. One millimeter of the median part of the hair fringe of tergum 2 in females of (34) *Campsomeris (subg.?) inopinata* Krombein, holotype, (35) *Campsomeris (Radumeris) novocaledonica* Turner, and (36) *C.(R.) extranea intermedia* n. subsp.

D e s c r i p t i o n. ♂. Integument black except mandibles, lower edge of clypeus, tegulae in distal half and the very tips of fore femora, tibiae and tarsal joints brownish. Abdomen with rather strong, thorax with much weaker bluish and purple reflections. Erect vestiture mainly white to light grey except for some dark hairs intermixed on vertex, brownish-black hairs on mesoscutum, scutellum, terga 3 and 4 and quite black hairs on terga 5—7 and sterna 6—7. Adpressed pubescence of thorax silvery, rather long and not very dense. Wings dark smoky. Punctation not characteristic; clypeus punctate laterally and above; area frontalis and spatium frontalis densely punctate, each puncture deep and distinct, but punctures close together almost meeting; front before ocelli and into the ocular sinuses impunctate, only in one specimen are there two small punctures before front ocellus; mesoscutum moderately punctate, in the middle posteriorly almost impunctate in a small area; disk of scutellum with 35—44 punctures; median part of metanotum with 32—40 punctures; median horizontal part of propodeum with distinct punctures at a distance from each other as long as the diameters; lateral horizontal areas of propodeum densely punctate all over.

Wings with second recurrent vein present; antennae long and slender, flagellar joint 3 slightly more than two times longer than wide, joint 10 about 2.4 times as long as wide; vertex not immediately declivous behind the ocelli; sternum 1 almost flat with only a poorly indicated longitudinal elevation posteriorly, median length about 1.3 the apical width; legs comparatively slender, e.g. hind femora 4.05—4.19 times as long as high (Fig. 30); genitalia without special characteristics (Fig. 37).

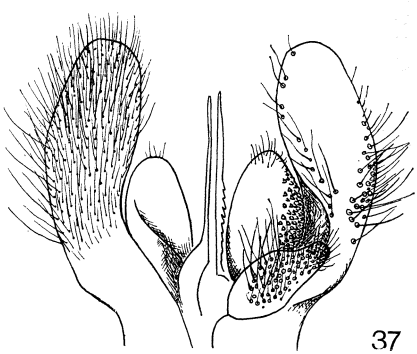


Fig. 37. Male genitalia of *Campsomeris (subg.?) inopinata* Krombein.

R e m a r k s. The combination of the black integumental colour and the presence of the second recurrent vein immediately distinguishes the present males from other species of the area. If the colour is disregarded they are superficially strikingly similar to *extranea* males, but small differences appear, viz. *extranea* has a somewhat shorter antenna with joint 3 of flagellum less than twice as long as wide and joint 10 of flagellum only about 2.1 times as long as wide; the hind femora of *extranea* are stronger, 3.4—3.8 times as long as high (Fig. 28), and the adpressed pubescense of thorax, especially easily seen on sides of propodeum and metepisternum, is shorter and denser than in *inopinata*. With regard to the dimension of the hind femora *inopinata* males are very similar to *caledonica* Turner (Fig. 29).

Our knowledge of the males does not throw much light on the subgeneric assignment of *inopinata*. As suggested by Krombein (1962, 1963) on the basis of the female alone, *inopinata* may belong to a separate subgenus which is expected to be erected in due cource by Dr. J. G. Betrem. I have had the opportunity to examine the holotype through the courtesy of Dr. Paul H. Arnaud, California Academy of Sciences, but I am not able to add much of importance to the description offered by Krombein. However, it may be noted that *inopinata* agrees closely with species assigned to the subspecies *Radumeris,* viz. *radula, tasmaniensis, extranea* and *novocaledonica* in characters hitherto regarded as of subgeneric value except for the shiny rather than mat surface of the terga and the rather evenly rounded scapulae with only a trace of a low furrow.

With regard to the shape of the scapulae, *novocaledonica* may be rather similar to *inopinata* (Figs. 26, 27). Also with regard to the density of the hair fringes of the terga the two species are rather similar, having greater space between the hairs of the fringes than found in other species of *Radumeris* known to me, see Figs. 34—36; in the holotype of *inopinata* and in the single female seen of *novocaledonica* there are 13 setae in 1 mm of fringe in the middle of tergum 2, whereas I have counted in *extranea liberata, e. intermedia* and *e. leveri* 16 to 20 (7 specimens), in *tasmaniensis* 17 to 21 (5 specimens) and in *radula* 19 setae (2 specimens).

As mentioned above, the shape of the hind femora in the males is also similar in *inopinata* and *novocaledonica* males and it may

be added that the same is the case with regard to the females (Figs. 28—33). Such characters of the legs, however, will normally not be of any subgeneric value.

In *inopinata* the shape of the longer spur of the hind tibiae is clearly different from *novocaledonica* and *extranea* but almost the same as in *tasmaniensis,* although comparatively shorter, viz. far from as long as basitarsus, see Figs. 7—11.

Future studies of more material may show if any of the characters mentioned above (scapulae, hair fringes, tibial spurs) are of subgeneric value. If not, it seems as if only the condition of the surface of the terga is of importance and practically the only character separating *inopinata* from members of *Radumeris.* However, it is not unlikely that shiny rather than mat terga may appear by parallelism in different, not closer related groups, and therefore this character must not be overestimated.

Krombein (1962:103; 1963:548, 592) thinks that species like *palauensis* (Turner) from the Palaus and *ovalauensis* (Saussure) from Fiji is close to *inopinata* and mentions some of their affinities, including the rounded scapulae and the shininess of the terga. I have been able to study a series of *ovalauensis* (8♀, 5♂ in the collections of BMNH) and it is correct that *ovalauensis* and *inopinata* are similar in many respects, but in others they do not agree and *inopinata* may not at all be closer to *ovalauensis* (and the related *palauensis,* which I have not seen) than to members of *Radumeris,* especially *novocaledonica.*

Females of *ovalauensis* differ in the following more or less important characters: (1) with a transverse band of rather close punctures through the ocellar triangle, (2) hind corners of pronotum near the tegulae without a rather clearly limited, impunctate area, (3) median ridge of mesepisternum not very sharp, somewhat curved, directed towards a point behind the pronotal corners, (4) the upper part of mesepisternum is rather bulging near the pronotal corners, (5) the longer spur of the hind tibiae is practically non-spatulate and very short, scarcely more than half as long as basitarsus, and (6) the setae of epipygium are almost scale-like, rather spread and adpressed the surface. The males of the two species are rather similar and only minor differences may be detected, e.g. in punctation and genitalia. Both females and males disagree widely in colour, and they are lacking the second recurrent vein of the fore wing.

Campsomeris (Campsomeriella) collaris mcgregori Cockerell, 1927

Philippines, BALABAC: Dalawan Bay, 1 ♀, 8 Oct. 1961. — TAWI TAWI: Tarawakan, 1 ♀, 16 Nov. 1961.

This Philippine subspecies differs only very slightly from *collaris quadrifasciata* (F.) known from the greater Sunda Islands. It is white haired only on head except occiput, propleura and forecoxae, whereas *quadrifasciata* in general has more white hair on venter of thorax and fore and mid femora, sometimes with a weak reddish tinge. In the present specimens the thick setae of the epipygium are longer and more densely placed than in other *collaris* specimens examined.

Campsomeris (Campsomeriella) collaris injubata n. subsp.

Types: Philippines, URSULA I. (8°20'N, 117°31'E): ♀ holotype, 2 ♀ paratypes, 2 Oct. 1961. In the Zoological Museum, Copenhagen.

Description. ♀. Structure, colour of integument, punctation etc. as normally present in subspecies of *collaris*. Punctures on median horizontal area of propodeum, however, largest and somewhat more concentrated in the middle than generally found in *collaris* and the number of punctures is relatively high, varying from 53 to 64. In *c. mcgregori* and *c. quadrifasciata* normally less than 50, in some cases not more than 30 punctures are present. On scutellum and metanotum the number of punctures varies from 50 to 60 and from 29 to 37, respectively. Density and length of hairs as in *collaris* except on pronotum where the density of the hairs is only about half of the density in *collaris* and the hairs do not form the usual conspicuous ruff. Hairs are black except as follows: very dark brown or black with brownish apices on underside and legs, reddish brown on mandibles, dusky or sooty white on front of head, antennal scapes, occiput, pronotum and anteriorly on mesoscutum, on pronotum the hairs are gradually more fuscous basally. Fore wings brownish apically and in radial, first cubital and anterior and apical part of second cubital cells, basally less infumated and evenly coloured as are the hind wings.

Length 15—17 mm, length of fore wing 11—12 mm.

Male unknown.

Remarks. This subspecies is distinguished from its neighbour relatives, *c. mcgregori* and *c. quadrifasciata,* by its dusky white rather than fulvous and white hair, respectively, on prono-

tum and head except occiput, and by its dark brown to black rather than white hair on propleura, forecoxae etc. The low density of the hair on pronotum also clearly differs from the condition in other subspecies of *collaris*.

In its general features this subspecies also closely resembles taxa of an easterly distribution, from Celebes via New Guinea to the Solomon Islands, e.g. the subspecies of *hirticollis* F. and *manokwariensis* Cam., but the relative dense punctation on the dorsum of the thorax clearly excludes *injubata* subsp. nov. from this group ranked as a section, *Hirtimeris*, by Betrem (1967). In eight specimens of *hirticollis* examined, the number of punctures on scutellum, metanotum and median horizontal area of propodeum varies from 10—36, 8—16 and 16—28, respectively. The hair colour and especially the thin vestiture of pronotum also distinguish *injubata* from these eastern taxa. The thick setae of the epipygium are placed rather far apart in *injubata* and their density agrees better to the conditions in *hirticollis* (only 4 females seen, including the holotype) than in *collaris*.

The condition of the hair on pronotum is remarkable and unusual in the genus and the state of this character may indicate that the specimens from Ursula belong to a distinct species. (I ignore the possibility that the specimens could be extreme variants of *c. mcgregori*). At the moment, however, I prefer to place them on the subspecies level with other subspecies of *collaris*, but someone may doubt that the conditions (ecology, isolation, small population etc.) of the island could have produced a distinct race. This is on the other hand not unlikely when the conditions of the island are taken into account. Ursula I. is less than 0.5 km^2, situated at about 18 km from nearest larger islands, Palawan and Bugssuk. Probably it is at least not older than late Pleistocene, in glacial periods it was connected with other islands of the Palawan chain, in interglacials it was probably submerged. The vegetation consists of fair remains of primary forest. There is no human population.

Campsomeris (Campsomeriella) manokwariensis manokwariensis Cameron, 1906

Bismarck Isls., NEW BRITAIN: Valoka, 1 ♀, 8 July 1962; Rabaul, 1 ♂, 25 July 1962.

This species is very closely related to *hirticollis* (F.), and since practically only colour differences occur it might be taxonomically

more correct to join together *hirticollis* and *manokwariensis* and their various races in one and the same polytypic species, *hirticollis* (F.) (= section *Hirtimeris* of Betrem, 1967) which would be a natural Papuan counterpart, eastwards from Celebes, to the more westerly Indomalyan *collaris* (F.).

Campsomeris (Campsomeriella) manokwariensis manni Krombein, 1963

Solomon Isls., SAVO: 1 ♂, 7 Oct. 1956, E. S. Brown (BMNH).

This male is registered under the name of *manni* Krombein, 1963: 606, known from other islands of the Solomon group, although it differs from males of *manni* (which according to Krombein are similar to typical *manokwariensis,* see the description by Krombein, 1963:604) in the following characters: it has (1) no spot on lateral declivous surface of pronotum, (2) no narrow apical line on scapulae adjacent to tegulae (occasionally absent i *m. manokwariensis*), (3) no apical yellow band on tergum 4, (4) yellow bands of terga 1—3 narrower, and (5) no posterolateral spots on sterna (occasionally absent in *m. manokwariensis).*

Campsomeris (Megacampsomeris) prismatica (Smith, 1855)

Philippines, PALAWAN: Pinigisan, 600 m, 3 ♂, 4—11 Sept. 1961; Tagembung, 1050 m, 2 ♀, 16 and 19 Sept. 1961. — JOLO: 1 ♀ without data, Coll. E. André, Mus. d'Hist. nat., Paris.

This is the first precise record of this species from the Philippines, as Betrem (1947:415) only briefly and without documentation included the Philippines in its range of distribution.

The colour of the hair and the abdominal bands of the males are somewhat orange rather than yellow and in the female the hind margins of the terga 2—4 are red-brown rather than black.

Both deviations, especially the conditions in the males, points in the direction of *C. (M.) limbata* (Saussure and Sichel, 1864) known mainly from high mountains of Malaya, Java and Borneo (Betrem, 1941:77). However, the colour of the hair and the abdominal bands may vary rather much and *limbata* may not be retainable as a distinct species.

The present males deviate slightly from the description given by Betrem (1928:151, described as the male of *lindenii* Lep., and 1941:79). All five specimens have a stripe on genae along lower eye margin, a small spot on the posterolateral corners of mesoscutum, two small lateral spots on scutellum, and forecoxae

beneath yellow-orange. These deviations may not indicate a distinct race, as I have seen males from Java with the same additional markings.

Campsomeris (Phalerimeris) aurulenta aurulenta (Smith, 1855)

Philippines, MINDANAO: Sapamoro, 1 ♀, 17 Dec. 1961 — TAWI TAWI: Tarawakan, 1 ♂, 1 Nov. 1961.

The female from Mindanao is a true representative of the subspecies *aurulenta* Smith, as emphazised by Betrem (1928:98) and Bradley and Betrem (1967:298), as its antennae and tibiae are black and the vestiture of the very base of the abdomen and of femora 3, partly, is white.

Probably the male from Tawi Tawi also belongs to *a. aurulenta,* but it is a small and not very typical specimen with a rather whitish vestiture and clear yellow, not orange yellowish, markings. The antennae are black and all tarsi and tibia 3 reddish brown.

Campsomeris (Phalerimeris) aurulenta defectiva Betrem, 1928

Moluccas, AMBOINA: 3 ♀, 5 ♂, February 1922, Th. Mortensen. — BANDA: 1 ♂, June 1922, Th. Mortensen. In the Zoological Museum, Copenhagen.

Betrem (1928:99) described this taxon on the basis of males alone and regarded it as a separate species. Betrem's material came from various islands of the Moluccas, e.g. Ceram, Ternate, Batjan and Amboina.

The present males agree well with the description, only the colour of the vestiture deviates. Betrem says briefly that the hairs of the underside of thorax are white, but in the specimens before me also the sides of thorax bear white hairs and whitish hairs dominate the occiput and genae, all coxae and femora, tergum 1 anteriorly, sternum 1, and sternum 2 anteriorly. The orange bands of the terga are broad, in terga 1—3 covering about ⅔ of the dorsal surfaces.

The females, previously undescribed, resemble the males closely in the distribution of white hairs, and are thus the same as described above, but in addition the tibiae of the females bear white hairs. The ground colour is black as usual in *aurulenta,* but the following parts are reddish-brown: the mandibles, the tip of clypeus, the posterior halves of the tegulae, all tarsi, the thorns of the tibiae, the apical bands on terga 1—4, and the lateral hind corners of the sterna 2—4, narrowly. The bands of the terga are

broad, covering almost the whole dorsal surface of tergum 1, almost posterior ⅔ of the terga 2 and 3, and posterior ¼ of tergum 4.

The females from the Moluccas listed by Betrem (1928: 98) under *aurulenta* belong apparently to the subspecies *defectiva*, at least those from Batjan. Those from Buru might be *aenigmatica* Betrem if this taxon holds. The identity of the males from the Moluccas (Ceram and Batjan) mentioned by Betrem under *aurulenta* is uncertain. If the information about the localities is correct, it is obvious that males of the Moluccan subspecies of *aurulenta* are strongly variable. Betrem mentions that the apical tergal bands of his Moluccan females are broader than in *aurulenta* and that the hairs of the underside of the thorax are white.

Campsomeris (Phalerimeris) aurulenta dalawana n. subsp.

Types: Philippines, BALABAC: Dalawan Bay, 1 ♂ holotype, 13 Oct. 1962, 2 ♂, 1 ♀, paratypes, 7 and 13 Oct. — PALAWAN: Pinigisan, 600 m, 1 ♂, 1 ♀, paratypes, 1 and 9 Sept. 1962. In the Zoological Museum, Copenhagen.

Description: This species differs from other subspecies of *aurulenta* only in colour.

♂. Black, but with the following exceptions. Reddish brown are antennae except scapes, hind tibiae and tarsi, and epipygium. Orange yellow in various shades are mandibles at base, clypeus, area frontalis, scrobi, ocular sinuses below, genae below, scapes, pronotum dorsally and a spot laterally, propleuron, tegulae, posterolateral corners of mesonotum, two large spots on scutellum, small spot on metanotum, fore coxae, tips of middle and hind coxae, fore and middle trochanters, femora ventrally, fore and middle tibiae and tarsi, and apical bands on terga 1—6 and sterna 2—5 (also sternum 6 in one paratype). The tergal bands cover ⅓ to ½ of the dorsal surfaces in terga 1—3, and about ⅓ of the dorsal surfaces in terga 4—5; the band on tergum 6 is interrupted in the middle in one of the paratypes. The vestiture is orange, but rather whitish posteriorly and ventrally on head, sides and underside of thorax, propodeum, anteriorly on tergum 1, on sternum 1 and on coxae and femora.

♀. Black, with the following exceptions. Reddish-brown are antennae, all tibiae and tarsi. In the female from Pinigisan the hind margins of sterna 2—4 are also brownish rather than black. Dark orange are the apical bands of terga 1—4; the bands are

comparatively narrow as in *a. aurulenta,* mainly situated posterior to the submarginal hair-band; in the middle they are wider but never covering more than ⅓ of the dorsal surfaces.

Remarks: The present material represents in my opinion an easily distinguished race, and accordingly I have described it formally, but I am well aware that *a. aurulenta* Smith as well as *a. tondanensis* Betrem, 1928 have been recorded from Palawan, and if the old locality labels give true records, no less than three subspecies of the same species occur in Palawan, which is an unlikely situation. However, I have taken the liberty to doubt the old material mentioned by Betrem (1928:98—99) and have regarded the present new material as more valuable when discussing the subspeciation of *aurulenta.* Betrem's material belonged to the Zoological Museum of Hamburg but was unfortunately destroyed during World War 2.

The females of the new subspecies differ from *a. aurulenta* and *a. defectiva* by red-brown antennae and tibiae, and furthermore, *defectiva* females have much wider tergal bands. Female *dalawana* resembles the subspecies *tondanensis* Betrem in the red-brown colour of the antennae, but *tondanensis* has black tibiae and narrower tergal bands of which that of tergum 4 may be absent. Furthermore, females of the new subspecies differ from all the other subspecies mentioned by their totally dark orange vestitute.

In the male sex *dalawana* is distinguished from all other *aurulenta* subspecies by the combination of red-brown antennae and orange band on tergum 6. *Tondanensis* has red-brown antennae, but no band on sixth tergum, and the situation is the opposite in case of *iridescens* from Aru Island (Betrem, 1928:100).

A female from the island of JOLO in the Sulu Sea (Museum of Natural History, Paris, Coll. J. Pérez 1915) is close to *dalawana,* but is not included in the type material because it deviates somewhat from the Palawan and Balabac paratypes by having very wide tergal bands, covering roughly posterior half of the dorsal surfaces of terga 1—4, almost as in *defectiva,* and red-brownish apices of the femora.

Campsomeris (Phalerimeris) loriae loriae (Mantero, 1899)

Bismarck Isls., — NEW BRITAIN: Yalom, 1000 m, 1 ♀, 23 May 1962. — NEW IRELAND: Danu, Kalili Bay, 1 ♀, 29 April 1962.

These two females are very close to females from New Guinea as described by Krombein (1963: 593) and regarded as a separate

subspecies, *loriae loriae* (Mant.), whereas they differ clearly from females of the subspecies occurring in parts of the Solomon Islands, *loriae millironi* Krombein (1963:596). Their tibiae are thus ferrugenious rather than black, the apical fringes on terga are broad and dense covering the horizontal surface of tergum 1 rather than only half of the surface and a little less than the apical third of the exposed parts of terga 2—5 rather than only one sixth, and the fringe of tergum 5 and the pygidial setae are dark orange rather than dark brown. I am therefore recording the two females under the nominate subspecies name.

However, it is likely that a distinct subspecies occurs in the Bismarck Islands with females very close to *l. loriae* from New Guinea and males like those of *l. millironi* from the Solomons. Such a male has already been recorded from New Britain by Krombein (1963:598).

Campsomeris (Phalerimeris) loriae millironi Krombein, 1963

Solomon Isls., GUADALCANAL: Rua Vatu, 1 ♂, 20 Nov. 1954, E. S. Brown (BMNH); Nalimbili R., 1 ♂, 12 Sept. 1963, McQuillan (BMNH).

Campsomeris (Phalerimeris) ferrugineipes pembertoni Krombein, 1963

Bismarck Isls., NEW BRITAIN: Valoka, 2 ♂, 5 and 13 July 1962, Vaisisi, 6 ♂, 9 July 1962; Puktas, Baining Mts., 1 ♂, 22 Nov. 1957, J. Smart (BMNH). — NEW IRELAND: Danu, Kalili Bay, 1 ♀, 2 ♂, 29 April 1962. — LAVONGAI: Banatam, 1 ♀, 14 ♂, 16—25 March 1962.

This is the first record of this species from Lavongai. The material does not deviate from that of New Ireland and New Britain in the case of the males. The single female from Lavongai is exactly similar to the female from New Ireland (both have the venter of the abdomen black as in the paratype from New Ireland (Krombein, 1963: 600)), but they are both different from the allotype and the paratype from New Britain which have legs and venter of abdomen castaneous according to Krombein. Both females recorded here have very dark castaneous, almost black legs and they are thus very close to the nominate subspecies from New Guinea.

Campsomeris (Micromeris) marginella modesta (Smith, 1855)

Philippines, PALAWAN: Uring Uring, 1 ♀, 9 Sept. 1962. — URSULA I.: 1 ♂, 2 Oct. 1962.

Previously known from several of the Philippine islands, including Palawan.

According to the note by Betrem (1928:137) some variation of the colour markings occurs in the males. The present male has an almost totally yellow clypeus, scrobi are yellow and a stripe on pronotum laterally and on hind tibia dorsally is also yellow, whereas dorsum of pronotum is almost black only with yellow spots in the middle and at the hind corners; bands on sterna are all interrupted in the middle.

Campsomeris (Tristimeris) javana (Lepeletier, 1845)

Philippines, PALAWAN: Uring Uring 2 ♂, 22 and 28 July 1962.

These Philippine males belong together with the darkest specimens of *javana* males (Betrem, 1928:109; 1937:93). They lack the yellow band on tergum 4, and sternum 4 is totally black, the yellow band on scutellum is narrow and almost interrupted in the middle, the spot on metanotum is small and the yellow spots of the scrobi are of minimum size.

The males may represent a distinct Philippine subspecies. However, more material is needed before this question can be solved. This is the first record of the species from the Philippines.

Trisciloa saussurei Gribodo, 1893

Bismarck Isls., NEW BRITAIN: Valoka, 1 ♀, 5 ♂, 6—10 July 1962.

This is the first record of this large and beautiful Scoliid from the Bismarck Islands. Previously it was known only from New Guinea and the Moluccas.

The six specimens are not quite in agreement with the descriptions by Betrem (1928:62) and Krombein (1963:607) which themselves deviate on several points. The deviations mainly concern the integumental colour. However, it is obvious that some misprints occur in Krombein's paper, viz. an interchanging of black and red in case of the legs and the abdomen, and Krombein apparently failed to mention the colour of the antennae which probably are redbrown in his material, not black as might be understood from the description. But even if these errors are taken into account, the present material deviates from Krombein's description.

In the female the following parts are black or almost black rather than red: clypeus, spatium frontale, tergum 1 and sternum 1, whereas the scrobi and the femora are red rather than black.

Additionally the present female has two small black bare spots laterally on tergum 2, and terga 3 and 4 bear two elliptical bare spots each rather than one large spot.

The males are in better agreement with Krombein's description. They deviate as follows: scrobi red rather than black, terga 2 and 3 with a posterior blackish band, although faintly expressed in tergum 2, and sterna 2—4 are partly infuscated, sternum 2 has an anterior median spot in connection with a posterior broad band, sternum 3 has a narrower posterior band, and sternum 4 bears an unsharply limited anterior spot.

Betrem's description based on Moluccan material suits the present specimens much better, especially the males. The female deviates by the almost red clypeus, spatium frontale, and tegulae.

Future investigations may demonstrate that a distinct subspecies occurs in the Bismarck Islands.

Liacos analis palawana Micha, 1927

Liacos palawana Micha, 1927 : 63 (♀, not ♂, Nord-Palawan).
Liacos philippinensis Micha, 1927: 65 (♂, Mindanao); *syn. nov.*
Scolia (Liacos) semperi Betrem, 1928: 172, new name for *philippinensis* preocc., ♂♀, Cebu, Luzon); *syn. nov.*

Philippines, PALAWAN: Uring Uring, 1 ♀, 1 ♂, 4 and 14 Sept. 1961; Pinigisan, 600 m, 5 ♂, 3—11 Sept. 1961. — MINDANAO: Sapamoro, 2 ♀, 4 ♂, 2—22 Dec. 1961. — BALABAC: Dalawan Bay, 1 ♂ tentatively referred to this subspecies, 10 Oct. 1961.

Micha (1927:63, 65) described two Philippine subspecies of *analis* F., viz, *palawana* from Palawan (1 ♀, holotype, and 2 ♂) and Balabac (1 ♂), and *philippinensis* from Mindanao (1 ♂). Also Betrem (1928:167) kept the two taxa separate, listing *palawana* as a subspecies of *dimidiata* Guérin, 1838 (now regarded as a synonym of *analis* F.) and *philippinensis* as a distinct species under the new name *semperi*. (The name *philippinensis* was preoccupied in the genus *Scolia* to which it was transferred by Betrem).

The examination of the fair number of specimens of *analis* collected in Palawan and Mindanao by the Noona Dan Expedition showed that only one subspecies was involved and indicated that *palawana* and *philippinensis* were synonyms, as Palawan and Mindanao are type localities. The females could be referred to *palawana* and the males to *philippinensis*. The description of male paratypes of *palawana* presented by Micha did not fit the present males from Palawan.

The type series of Micha's subspecies belong to the Zoological Museum, Berlin. A comparison of the holotypes selected by Micha confirms the view that *palawana* and *philippinensis* are synonyms (syn. nov.); *palawana* has page priority and is chosen as the valid name because *philippinensis* cannot be revived. I have kept the status of *palawana* on the subspecies level as Micha did, in contrary to Betrem (1928).

Palawana is normally easily distinguished from other subspecies of *analis* by the colour of abdomen. In both sexes terga 1—4 are black and tergum 5 black anteriorly with at least the posterior half orange as are the remaining terga. (Micha described the tergum 5 in the holotype of *palawana* as being yellow-red all over, but this is an error; in fact the anterior one third is black). The colour of the sterna corresponds to the colour of the terga, except that the black colour extends a little further backward; sternum 5 is thus mainly black with orange hairs only on the posterior margin and sometimes only on the posterolateral corners.

The identity of the three males from Palawan and Balabac referred to *palawana* by Micha is uncertain as they do not fit the colour scheme mentioned above. They all have more or less of tergum 4 covered by orange hairs. One of the specimens from Palawan has as much as the posterior one half orange, the other Palawan specimen has about posterior one fifth orange, and in the male from Balabac only the posterior margin of the tergum bears a few orange hairs.

If the labelling of Micha's specimens from Palawan is correct it is clear that *palawana* is variable to some extent. However, old labels without definite origin are always doubtful with regard to the locality statements, and as the two males from "Nord-Palawan" treated by Micha are very similar to males of a new subspecies found in Tawi Tawi, I think that the labelling cannot be trusted fully in this case.

The locality of the male from Balabac is probably correct. At least the Noona Dan Expedition collected a similar male in that island. The population may be found to be distinct with regard to colour, taking an intermediate position between *palawana* and the new subspecies from Tawi Tawi described below.

The subspecies *palawana* is apparently distributed over large parts of the Philippines (Palawan, Mindanao, Negros Occidental, Cebu, Luzon) as listed by Balthazar (1966).

Liacos analis tawiensis n. subsp.

T y p e s. Philippines, TAWI TAWI: Tarawakan, 1 ♂, holotype, 6 Nov. 1961, 7 ♀, 8 ♂, paratypes, 22 Oct.—16 Nov. 1961. In the Zoological Museum, Copenhagen.

This subspecies is mainly distinguished from other subspecies of *analis* by the coloration of the abdomen.

D e s c r i p t i o n. ♂. Black except integument and hairs orange as follows: tergum 4 in about posterior one half of the surface, terga 5—7 totally, sternum 4 in posteriolateral corners, sternum 5 in larger parts of posteriolateral corners, the areas meeting in the middle, and sterna 6—7.

One paratype (Oct. 24) deviates from this colour scheme as tergum 4 is black all over except for a few orange hairs at the hind margin and tergum 5 is black anteriorly in the middle. With regard to colour this specimens is thus close to males from Balabac mentioned above under the subspecies *palawana.*

♀. Coloration almost as in the male. The orange area of tergum 4 is rather narrow in the middle, but the black colour anteriorly never reaches the hind margin. In sternum 4 the extension of the orange colour on the posteriolateral corners varies rather much and in one specimen (Oct. 26) the orange areas meet in the middle and no black hairs are therefore present at the hind margin of the sclerite. Also sternum 5 is normally orange in a larger area than in the male, especially medially; in the specimen just mentioned (26 Oct) the visible part of sternum 5 is orange all over.

R e m a r k s. This new subspecies is different from *palawana,* the other Philippine subspecies, by having the terga 1—3 rather than 1—4 black, and it is different from other subspecies of *analis* by having larger parts of the abdomen black, viz. all of the terga 1—3 rather than only tergum 1 or 1+2. *Amboinae* Micha known from Amboina and North-Celebes according to Betrem (1928:167) appears rather close to *tawiensis,* as this subspecies has an almost black tergum 3 with only the hind margin orange.

Diliacos ribbei hurdi (Krombein, 1963)

Solomon Isls., SANTA ISABEL: Nagolau, 1 ♂, 7 March 1964, M. McQuillan. — GUADALCANAL: Tapananje, 3 ♀, 2 ♂, 10—23 Dec. 1953, J. D. Bradley; Aruligo, 1 ♀, 1 ♂, 8 March 1963, P. Greenslade; Kukum, 1 ♂, 4 Jan. 1964, M. McQuillan. All BMNH.

Diliacos ribbei ribbei (Betrem, 1928)

Bismarck Isls., NEW BRITAIN: Ralum, 5 ♂, F. Dahl; Kiningunang, 1 ♂, C. Ribbe (all Zoological Museum, Berlin). — NEW IRELAND: Lemkamin, 900 m, 1 ♀, 15 April 1962.

The female is the first one collected in New Ireland. It is fully in accordance with the short descriptive notes recently presented by Krombein (1968:14).

Diliacos ribbei stueberi (Krombein, 1963)

Bismarck Isls., MUSSAU: Boliu, 1 ♂, 15 Febr. 1962.

The identification of the males of the closely related species *ribbei* (Betrem, 1928) and *quadriceps* (Smith, 1859) and their various subspecies is very difficult and the present naming of a single male from Mussau may certainly be queried. However, I am fairly certain that it belongs to *ribbei stueberi,* known from New Guinea, rather than to the subspecies *ribbei,* known from New Britain and New Ireland. As to the punctation the present male falls in the middle of the range of variation as given by Krombein (1963:617), e. g. with 28 punctures on disc of scutellum and 19 on median part of metanotum, and the mesepisternal punctures are large, deep and subcontiguous. I have had the opportunity to compare the specimen directly with a paratype of *ribbei* as well as with the males mentioned above.

The present male has two recurrent veins in the fore wing, which points in the direction of *Diliacos quadriceps* and leads to the subspecies *larradiformis* (Smith, 1864) from New Guinea when the punctation is taken into account. However, as there is some variation in the development of the second recurrent vein closing the third discoidal cell, both in *quadriceps manus* (Krombein, 1963:615) and *ribbei stueberi* (Krombein, 1963:616) this character cannot be of decisive taxonomic value.

Diliacos glabrata praslini (Bradley, 1957)

Bismarck Isls., NEW BRITAIN: Valoka, 2 ♂, 7 and 10 July 1962. — DYAUL: Sumuna 2 ♀, 2 ♂, 6—8 March 1962. — MUSSAU: Talumalaus, 5 ♂, 19 Jan. 1962; Boliu, 1 ♂, 15 Feb. 1962.

Solomon Isls., RENNELL: Kagaba, 1 ♂, 5 April 1965, T. Wolff; Hutuna, 1 ♂, 31 March 1965, T. Wolff; Hutuna, 1 ♀, 4 Nov. 1933, J. D. Bradley (BMNH). — GUADALCANAL: Honiara, 1 ♂, 26 Sept. 1953, J. D. Bradley; Poha River, 1 ♀, 25 July 1954, E. S. Brown; Tapananje, 12 ♂, 2 ♀, 10—23 Dec. 1953, J. D. Bradley;

Mt. Austen, 1 ♂, 5 Sept. 1962, M. McQuillan. — MALAITA: Araki, 1 ♂, 24 Sept. 1963, M. McQuillan. — SANTA ISABEL: Holokama, 1 ♀, 4 March 1964, M. McQuillan; Tatamba, 2 ♀, 28 Sept. and 6 Oct. 1965 (Roy.Soc.Exp.). All BMNH.

In the males from Mussau the punctation, especially on mesoscutum, is less strongly impressed and the number of punctures is lower than in typical *praslini* specimens such as found in Dyaul and New Britain and as described by Krombein (1963:621). Thus, specimens are present with only 25 punctures on disc of scutellum and 22 punctures on metanotum. Just as the female from New Britain mentioned by Krombein (*l.c.*), one of the females from Dyaul is somewhat transitional to *glabrata glabrata* (Micha), as there is only one puncture in the ocellar triangle.

The material from Rennell is placed here with some doubt because the punctation of the specimens points clearly in the direction of the nominate subspecies known from New Guinea. Both males are small, fore wing length 9.5 and 10.0 mm, and they have only 21—22 and 12—14 punctures on scutellum and metanotum, respectively, rather than 30—35 and 25—33 punctures as described by Krombein in *praslini*. The female has 20 punctures on scutellum and 13 punctures on metanotum, which is clearly lower than in *praslini* (25—45 and 20—35, respectively). Krombein recorded 3 females from Rennell without mentioning any departure from normal *praslini*.

The specimens from Guadalcanal agree with Krombein's description except that some males have up to 54 punctures on scutellum rather than only up to 35 as found by Krombein in his *praslini* males.

Microscolia macrocephala (Gribodo, 1893)
= *bella* (Rohwer, 1921)

Philippines, PALAWAN: Uring Uring, 1 ♂, 25 Aug. 1961; Pinigisan, 600 m, 2 ♂, 3 Sept. 1961. — BALABAC: Dalawan Bay, 1 ♂, 1 ♀, 9 and 13 Oct. 1961. — TAWI TAWI: Tarawakan, 10 ♂, 3 ♀, 23 Oct.—10 Nov. 1961.

There are no major differences to be observed between the males from the three different localities except that the specimen from Balabac has a very faint bronzy shade over the violaceous colour of the wings, but the colour is far from typically bronzy as found in *Microscolia bellina* (Rohwer, 1921). More or less white hairs are rather abundant in all specimens on the head and the under-

side of the thorax. The degree of punctation may be illustrated by the number of punctures on disc of scutellum (28—42) and metanotum (21—30). Fore wing length varies from 8 to 12 mm.

The female from Balabac differs considerably from those collected in Tawi Tawi. It is more sparsely punctate on vertex, in fact almost impunctate, the impunctate stripes on mesoscutum are larger, and the terga, especially tergum 2, are somewhat less punctate. The description of *bella* Rohwer (1921:78) fits this female very nicely and it seems also very likely that it is very close to *macrocephala* Gribodo (1893:169) according to the original description and to the recent notes given on the holotype by Bradley (1958:101). It is a large specimen with a fore wing length of 15 mm.

The three females from Tawi Tawi are smaller (fore wing lengths 9.5—11.5 mm) and, as already mentioned, more richly punctured, especially on vertex, and were it not for the deep violaceous rather than bronzy wings they might be identical with *bellina* Rohwer (1921:80) "Frons convex and together with vertex and occiput with rather small, well-separated punctures". As far as can be judged from the short description given by Betrem (1928: 205) they probably agree with his interpretation of *macrocephala* (= *bella*), "Vertex tief, fein weitläufig punktiert", and no doubt they are the same as called *m. macrocephala* Gribodo by Micha (1927:89). This appears from Micha's description but also from a direct comparison with the specimens handled by Micha (2 ♀, Panaon, Coll. Böttcher, in the Zoological Museum, Berlin).

I suppose, that all females of the present material are conspecific although substantial differences are present. Differences of the same kind occur also among the females mentioned under various species names applied to other known Philippine material. The differences in punctation may in my opinion be explained by differences in size of the specimens, the degree of punctation decreasing along with an increase in size. Such cases are not unusual, but naturally more material is needed to prove or disprove the theory. If I am wrong the Balabac female (and the Balabac male?) is probably the true *macrocephala* (incl. *bella* as a synonym) whereas the Tawi Tawi females and the accompanying males, perhaps also those from Palawan, stand without a name so far, or, if the colour of the wings should prove not to be a decisive taxonomical character, the material would hardly be separable from *bellina* Rohwer.

Betrem (1928:205) regarded *bella* (Rohwer) as a synonym of *macrocephala* (Gribodo), but this synonymization was later set aside by Bradley (1958:102) after a study of the holotype of *macrocephala*. Bradley furnished his paper with an addition to Betrem's key to females of *Microscolia* (1928) in order to separate *macrocephala* from *bella*. Bradley's few notes are not convincing because the diagnostic characters of importance in the key extension (4c) are all to be found in *bella* according to the description of this species by Rohwer, e.g. compare the descriptions of the vertex: Rohwer says "Vertex and posterior orbits practically impunctate" while Bradley uses "Vertex very sparsely punctate, almost smooth" which is another wording but the meaning is hardly different. *Bella* (Rohwer) is therefore still to be regarded as a synonym of *macrocephala* (Gribodo).

Microscolia papuana (Micha, 1927)

Bismarck Isls., NEW BRITAIN: Valoka, 12 ♂, 11 July 1962; Ralum, 1 ♂, 1896—97, Dahl (Zoological Museum, Berlin). — DYAUL: Sumuna, 1 ♂, 6 March 1962.

The present lot of males agrees well with the description given by Krombein (1963:625). The following variation in the sculpture was observed: 17—27 punctures on scutellum and 12—15 punctures on median third of metanotum, and these conditions sustain the view that *papuana* from the Bismarck Islands is a taxon clearly different from the New Guinean *maindroni* Betrem, 1928 (Betrem, 1933:252; Krombein, 1963:633) with 32—35 punctures on scutellum and 19—30 punctures on metanotum, but as the difference is merely a matter of degree of punctation it might be advisable to regard *papuana* and *maindroni* as subspecies of one and the same species. This species may turn out to be distributed also outside of New Guinea and the Bismarck Islands. Thus the Philippine males of *macrocephala* (Gribodo), mentioned above, may hardly be distinguishable from *maindroni*.

The identity of **Scolia pygmaea** Saussure, 1858

Betrem (1928:207) synonymized *papuana* Micha with *Scolia (Lacosi) pygmaea* Saussure (1858:217) on the basis of an examination of a male belonging to the Saussure collection in Geneva. Betrem admitted that the male did not fit the description well, but nevertheless he regarded the specimen as the type (lectotype) of *pygmaea* and thereby established the synonymy.

Betrem's view was not followed by Krombein (1963:625) expressly on advice from Dr. Bradley "who studied the type of *papuana* some years ago and considers that it is not the same as *pygmaea*". However, Bradley's information to Krombein is not in accordance with the notes published by Bradley himself as late as 1958:103, "The holotype of *papuana* (Micha) is correctly placed by Betrem (1928:207), as a synonym of *pygmaea* Saussure."

In order to straighten out this case I have searched for relevant material. I have been able to find six males of interest in this connection, viz. three males from the Saussure collection in Geneva, two males from the Drewsen collection in Copenhagen, and one male perhaps with some connection with the Sichel collection in Paris. The material from Saussure's own collection and from the Drewsen collection is of the greatest interest, because it is stated in Saussure and Sichel (1864:127) that material of *pygmaea* is found in "Mus. Saussurianum et Domini Drewsen". The origin of the type material is not mentioned in the original description, but Drewsen is mentioned as a general source of material in the Introduction (Saussure, 1858:194). The type locality is said to be "La Nouvelle-Hollande (Swan River)".

The above material consists of no less than four different species. The high number involved is not surprising as it appears from the original description as well as from Saussure and Sichel (*l.c.*) that Saussure must have had a heterogenous material at hand. Unfortunately none of the specimens studied here are labelled in such a way that they must be regarded unambiguously as syntypes.

1) Only one of the specimens is labelled "Swan River", the type locality. It is a male found in the collections of the Museum of Natural History, Paris, with the following information on old handwritten labels: "S. pygmaea: Sauss. S.S.: C.132" and on younger labels, partly printed: "Museum Paris/Swan River/Collection Léon Fairmaire/Nouv. Holl. 1906". It is a male of *Campsomeris (Australelis) anthracina* (Burmeister).

Although this specimen bear labels showing some connection with old material of *pygmaea*, perhaps originating from the Sichel collection, it must be disregarded as a syntype right away.

2) The male mentioned by Betrem (1928) and Bradley (1958) and which belongs to the Saussure collection in the Museum of Natural History, Geneva, is labelled "N. Holl." and "Mus. Godefr."

and bears holotype and lectotype designations by Betrem and Bradley, respectively. It is a male of *Microscolia papuana* Micha, as could be expected. It was designated as lectotype by Betrem (1928:207).

This specimen has no doubt never been a part of the type series. It cannot be a syntype for two reasons: (1) the labelling does not unambiguously prove it, on the contrary the mention of Mus. Godeffroy disproves it, and (2) the specimen does not fit the description. It is black-haired all over rather than than covered with grey hair, and it has three cubital cells rather than two which must be the condition in *pygmaea* as it was placed in the subgenus *Lacosi* by Saussure. It is unlikely that Saussure made a mistake about the number of cubital cells and in my view, which is sustained by Dr. Betrem and Prof. Bradley, the specimen cannot be a true syntype.

Accordingly the designation of it as a lectotype by Betrem is invalid (the Code Art. 74a), and thereby it also follows that *papuana* Micha is not a junior synonym of *pygmaea* Saussure as set forth by Betrem (1928).

3) From the Saussure collection in the Museum of Natural History, Geneva, I have examined two conspecific males besides the male mentioned above standing under the name *pygmaea*. One of these males is labelled "N. Holl.", the other is unlabelled. The one with the label is deprived of its genitalia, but the genitalia of the unlabelled specimen shows that it belongs to *Scolia (Scolia)* (see Betrem and Bradley, 1964) as it has dense brushes of setae covering the base of the volsellae. According to Dr. Betrem, who kindly examined one of the specimens, both males belong to the African *Scolia (Scolia) hottentotta* (Saussure, 1858). (This species is erroneously placed in *Scolia (Discolia)* by Betrem and Bradley, 1964:95).

Both males agree fairly well with the description of *pygmaea,* being small, forewing length less than 10 mm, and white-haired to a large extent, but as they both have some red colourings on the head (clypeus partly, ocular sinus, and narrow line on outer orbits) it is evident that they belong to the variant described by Saussure ("Bouche et orbite rousses"). Thereby follows that neither of these two males is a syntype (the Code Art. 72b) and unfortunately neither of them can be designated as a lectotype.

Dr. Betrem informs me that males of *hottentotta* vary in the red

integumental colour of the head and some *hottentotta* males are quite black. Such males suit the description of *pygmaea* excellently and it is likely that Saussure actually based the description on African material of *hottentotta*.

4) Two males in the collection of the Zoological Museum, Copenhagen are labelled "Nov. Holl./Drewsen/pygmaea Sauss". and have no doubt been examined by Saussure. Just as the males mentioned above (3), they are non-Australian, as they both belong to *Scolia quadripustulata* var C (= *coerulans* Betrem, 1928 nec Lepeletier, 1845) as defined by Betrem (1941:158), see also Betrem (1928:316).

These males do not quite agree with the description as they cannot be said to be covered by white hairs, but they agree well with the description of the variant of *pygmaea* ("Poils passant tantôt au gris, tantôt noir. Ailes souvent peu obscures postérieurement"). As Saussure refers to these specimens as variants they are not syntypes according to the Code, Art. 72(b), and not available for a lectotype selection.

Unfortunately the result of the above-mentioned investigations 1—4 is that so far no true syntypes are available for selection as a lectotype in order to fix the identity of *pygmaea* Saussure. However, as mentioned above (3), there is good evidence for the statement that *pygmaea* was based on the male sex of *Scolia (Scolia) hottentotta* Saussure, 1858, and I propose *pygmaea* be regarded as a junior synonym of that species (*syn. nov.*). I have found it premature, and unnecessary, to formally fix this synonymization by designation of a neotype.

Austroscolia pulchripennis pulchripennis (Cameron, 1901)

Bismarck Isls., NEW BRITAIN: Valoka, 6 ♂, 7—11 July 1962; Yalom, 1000 m, 1 ♀, 5 ♂, 9—15 May 1962. — NEW IRELAND: Lemkamin, 900 m, 2 ♂, 17—18 April 1962. — MUSSAU: Talumalaus, 11 ♂, 19 Jan. — 9 Feb. 1962; Boliu, 8 ♂, 13—15 Feb. 1962; Malakata, 1 ♂, 15 Feb. and 1 ♀, 1 ♂, 9 June 1962.

Previously known from New Britain, New Ireland (Krombein, 1963:638; 1968:16) and Lihir, NE of New Ireland (Tuijn, 1961: 243) in the Bismarck group. Further the subspecies is recorded from Malaita in the Solomons (Krombein, 1968) and recently its presence in New Guinea was ascertained by Krombein (1968:16), but here it is apparently extremely rare in comparison with the

conditions in other parts of its striking discontinuous range of distribution.

Austroscolia pulchripennis franclemonti (Krombein, 1963)

Bismarck Isls., DYAUL: Sumuna, 1 ♂, 8 March 1962. — MANUS: Lorengau, 3 ♂, 17 and 20 June 1962.

Solomon Isls., NEW GEORGIA: Wana Wana I., 16 Aug. 1963, P. Greenslade. (BMNH).

The present material agrees fairly well with the description by Krombein (1963:636), but a few minor deviations are observed. Thus mesoscutum is punctate all over rather than with a small median space posteriorly impunctate, and there are no tawny hairs at base of costal and subcostal veins of the fore wing. Further the colour of the wings does not agree with the description, which reads: ".... with greenish to golden reflections ....", but it appears as stated in Krombein's key (entrance 65): "with dark green to purple reflections" and this is probably the true colour. This view is sustained by entrance 64 of Krombein's key: "Wing colour varied, but never with brilliant golden-green reflections".

As the nominate subspecies *p. franclemonti* is polytopic. Its main range is the Solomon Islands with exception of Malaita, one of the easternmost islands of the Solomons, but far from that region it is found in Manus, the Admiralty Islands (also Krombein, 1963:638), Umboi I. (Rook I.) between New Guinea and New Britain (Krombein, 1968:16) and Dyaul I. (present record). The larger islands in the Bismarck group are occupied by *p. pulchripennis*.

The occurrence in the islands Umboi and Dyaul is of great interest because these localities are very close to the main distributional range of *p. pulchripennis*. In case of Dyaul it is almost a fact that this locality lies inside the range of the latter, as only a narrow sound (about 14 km wide) separates Dyaul from New Ireland. It is seldom seen that distinct subspecies of insects are able to evolve and keep separate within so short distances from the presumed source populations as in this case. Apparently the means of isolation have been strong enough to prevent a mixture of the populations. In the case of Dyaul, *franclemonti* has had enough time to develope as it is presumed with confidence by Salomonsen (1964) that this island has probably been separated from New Ireland for a comparatively long time (100,000—200,000 years) and Salomonsen reports on the presence of comparatively many endemics among birds in the island. In Umboi

only a few weak subspecies of birds have developed (Salomonsen, 1964:24) and the explanation is that Umboi, as an isolated island, is probably much younger than Dyaul.

Austroscolia betremianus (Krombein, 1963)

Bismarck Isls., NEW BRITAIN: Yalom, 1000 m, 1 ♀, 38 ♂, 9—22 May 1962; Komgi, 1000 m, 1 ♂, 14 May 1962. — NEW IRELAND: Lemkamin, 900 m, 10 ♂, 6—23 April 1962.

The present record as well as previous ones (Krombein, 1963: 639; 1968:16) seem to show that *betremianus* is a species confined to mountainous areas. It has never been collected in true lowland and it is rather unlikely that such a common species should have been overlooked.

Austroscolia nitida varifrons (Cameron, 1905)

Bismarck Isls., NEW BRITAIN: Valoka, 1 ♂, 7 July 1962; Yalom, 1000 m, 4 ♂, 9—18 May 1962; Bita Paka, 1 ♂, 10 July 1962; Ralum, 2 ♀, 4 ♂, 1896—97, E. Dahl leg. (Zool. Mus., Berlin). — VITU ISLS.: Frenchinsel, Unea, 1 ♂, Preuss S.G. (Zool. Mus., Berlin). — NEW IRELAND: Lemkamin, 900 m. 5 ♂, 6—23 April 1962; Danu, Kalili Bay, 1 ♂, 30 April 1962. — DYAUL: Sumuna, 1 ♀, 1 ♂, 7—8 May 1962. — LAVONGAI: Banatam, 1 ♀, 1 ♂, 24—25 March 1962. — MANUS: Lorengau, 1 ♂, 17 June 1962.

In addition to the Bismarck Islands this subspecies has also been recorded from New Guinea, often from islands surrouding New Guinea, but also from the New Guinea highland where it thus occurs sympatrically with *nitida nitida* (Smith, 1858), see Krombein, 1963: 644 and 1968: 18. In New Guinea the two subspecies have been taken together in the same locality, on the same day and by the same collector in three different cases. The same happened once in New Ireland (at Konibiu, west coast, on the rocky seashore, Krombein, 1963). This situation may lead to a closer study of the relationship of the two taxa.

Austroscolia nitida punctatissima (Kirby, 1889)

Solomon Isls., RENNELL: Niupani, 1 ♀, 4 ♂, 18—25 Aug. 1962; Hutuna, 1 ♀, 13 ♂, 15—30 March 1965, T. Wolff, 3 ♀, 21 ♂, 14 Oct. — 13 Nov. 1953, J. D. Bradley (BMNH); Tigoa 6 ♂, 22 March 1965, T. Wolff. — GUADALCANAL: Honiara, 1 ♀, 4 Aug. 1962. Further 7 ♀ and 26 ♂ from localities in KOLOMBANGARA, SANTA ISABEL, GUADALCANAL, and SAN CHRISTOBAL; all BMNH, Roy. Soc. Exp., M. McQuillan and P. Greenslade.

This subspecies is very common in all parts of the Solomons; also previously recorded from the remote island of Rennell (Krombein, 1963:651) where it is the most abundant Scoliid. Native name: *Kanokano siba.*

Scolia (Discolia) sp.?

Philippines, PALAWAN: Tagembung, 1050 m, 4 ♂, 16 and 20 Sept. 1961.

These four males probably belong to a new species, but it is not described here as I am unable to differentiate it with confidence from near related species due to a restricted knowledge of such species and paucity of available material for comparison. Dr. J. G. Betrem who kindly examined one of the specimens would place the specimens in the genus *Microscolia* and thus not even the generic identity is quite certain. The males are totally black with black hairs except on mes- and metepisternum below and on mid and hind coxae. Thorax and abdomen are bluish iridescent. The punctation has a general character and as also the genitalia are build over a common last found in several known species (however, not as in most *Microscolia*) the identity of the specimens will be uncertain until more material becomes available.

Megascolia (Megascolia) scutellaris (Gribodo, 1893)

Philippines, MINDANAO: Sapamoro, 1 ♂, 21 Dec. 1961.

Previously known from several Philippine islands, including Mindanao.

Megascolia (Megascolia) procer bimaculata (Gribodo, 1893)

Philippines, PALAWAN: Pinigisan, 600 m, 1 ♂, 21 Sept. 1962.

This subspecies has so far not been found outside of Palawan. The present record is the first of the male sex.

As in the female a reduction of the yellow integumental areas also occurs in the male in comparison with other subspecies (*procer* (Illiger, 1802), from Sumatra; *javanensis* Betrem and Bradley, 1964, from Java; and *nigriventris* (Mantero, 1903), from Nias; see Betrem and Bradley, 1964).

Description. ♂. As other *procer* males, but distinguished by the following colour characters: clypeus black with lateral parts yellow, yellow spots on scrobi small and present only below, ocular sinus not fully yellow, yellow area on spatium frontale and frons and along upper inner margins of eyes rather narrow, leaving a comparatively large black quadrate spot around the ocellar

triangle, no yellow stripe behind ocelli and eyes, thorax is black except from a small circular spot on scapulae, and abdomen is also black except for yellow spots on tergum 3.

Males of *bimaculata* are separable from males of other known subspecies by (1) clypeus black except laterally rather than totally yellow, (2) scapulae with a small yellow spot rather than whole dorsal surface yellow, and (3) the absence of yellow on scutellum, metanotum, and tergum 1.

Acknowledgments

Several colleagues have kindly furnished me with material for comparison or study and I wish to express my sincere thanks to each of them, viz. Paul H. Arnaud (San Francisco), Cl. Besuchet (Geneva), Richard A. Bourne (London), S. Kelner-Pillault (Paris), Karl V. Krombein (Washington) and E. Königsmann (Berlin). I acknowledge the valuable advice of J. Chester Bradley (Ithaca, N.Y.) concerning a nomenclatorial question with regard to *Scolia pygmaea* Saussure, and I am especially indebted to J. G. Betrem (Deventer) who was involved in the same case and added much to its solution; he also assisted in other cases and lent me material. My studies in London, Paris and Leiden were aided by a grant form the Rask-Ørsted Foundation.

Summary

A number of species and subspecies are recorded, viz. 13 from the Philippines (incl. 3 new subspecies: *Campsomeris (Campsomeriella) collaris injubata, C. (Phalerimeris) aurulenta palawana* and *Liacos analis tawiensis)*, 1 from the Moluccas, 1 from the Loyalty Islands, 21 from the Bismarck Islands (incl. 4 new subspecies: *Campsomeris (subg.?) oresbios yalomensis, C. (Radumeris) extranea liberata, e. intermedia* and *e. mussauensis)* and 12 from the Solomon Islands. *Liacos philippinensis* Micha and *Scolia (Liacos) semperi* Betrem are new synonyms of *Liacos analis palawana* Micha. *Microscolia papuana* is not a synonym of *Scolia (Lacosi) pygmaea* Saussure; the latter species described from Australia probably being a synonym of the African *Scolia (Scolia) hottentotta* (Saussure). A previous lectotype designation in case of *pygmaea* Saussure is declared invalid.

In the rich population of *Campsomeris (Radumeris) extranea liberata* subsp. nov. on two small islands of the remote Hermit group an extremely high individual variation of the colour pattern is recorded, and is probably a case of "character release" (MacArthur and Wilson, 1967).

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Bernsteinborkenkäfer aus dem Zoologischen Museum der Universität Kopenhagen II

261. Beitrag zur Morphologie und Systematik der Scolytoidea (Coleoptera)

Von
Karl E. Schedl
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Durch die Vermittlung von Herrn Sv. G. Larsson vom Zoologischen Museum der Universität Kopenhagen gingen mir neuerdings einige Bernstein- und Kopal-Einschlüsse zu, deren Bestimmung und Benennung interessant erscheint. Auch in dieser Serie gibt es einzelne Stücke, die durch Trübungen und Spalten im Bernstein einer bestimmten Art nicht zugewiesen werden können, ein Schicksal, das bei Bernsteineinschlüssen auch früher zu beobachten war.

Da die Etikette zu den einzelnen Einschlüssen teils gleich lautend sind, habe ich mir erlaubt, dieselben mit Nummern zu bezeichnen und auf diese Weise dieselben klar zu trennen.

Drei Einschlüsse, Nr. 1, 1-VII-1966, C. V. Henningsen, Nr. 2, 1-V-1967-a, C. V. Henningsen und Nr. 8, 28-III-1968-c, A. K. Andersen scheinen mit *Taphramites gnathotrichus* Schedl identisch zu sein, wenn auch der Bau der Fühler nicht genau nachprüfbar ist. Mehr läßt sich über die Skulptierung von Halsschild und Flügeldekken aussagen, welche in den beiden Typenexemplaren nicht so klar erkennbar ist. Der Halsschild ist wohl in allen Stücken etwas breiter als lang, flach gewölbt, ohne Buckel, dicht mäßig kräftig punktiert, auf den Seiten leicht körnelig und mit sehr feinen anliegenden Schuppenhärchen bedeckt. Die Flügeldeckenscheibe ist regelmäßig gestreift punktiert, die Reihenpunkte sind rund, von nur mäßiger Größe und nicht sehr dicht gestellt, der Abstand zwischen den Punkten etwa so groß wie der Durchmesser derselben, die Zwischenräume sind mäßig breit, einreihig, äußerst

fein punktiert, die Pünktchen mit winzig schief abstehenden Härchen, die hinter der Mitte distal leicht spachtelförmig verbreitert erscheinen.

Nr. 3, 1-V-1967-c, C. V. Henningsen, gehört wohl in die Gattung *Hylurgops* Leconte, doch fehlt der halbe Hinterleib, vermutlich von einem Räuber abgezwickt, und die Fühler sind nicht ausnehmbar.

Nr. 4, 28-III-1968-a, A. K. Andersen, kommt, dem allgemeinen Erscheinungsbild nach zu schließen, für die Gattung *Taphramites* Schedl in Frage und könnte eventuell mit *T. immaturus* Schedl identisch sein. Wegen der Trübungen im Bernstein läßt sich der Bau der Fühler nicht nachprüfen und auf der Unterseite des Käfers sind die für *immaturus* charakteristischen Schuppen nicht festzustellen. Offensichtlich handelt es sich bei dem vorliegenden Einschluß um ein Alttier, bei dem die Behaarung schon größtenteils abgerieben ist.

Zwei Einschlüsse, Nr. 5, 28-III-1968-b und Nr. 9, 28-III-1968-f, beide A. K. Andersen sind durch starke Trübungen und Sprünge nicht näher zu identifizieren, doch handelt es sich dabei wohl um zwei Vertreter der Gattung *Phloeosinites* Hagedorn.

Einschluß Nr. 6, 28-III-1968-c, A. K. Andersen stimmt mit den beiden Typen von *Hylurgops pilosellus* Schedl gut überein, sowohl in bezug auf die Größe, die Körperproportionen als auch der Skulptierung und ist zweifellos trotz der undeutlichen Fühler mit dieser Art identisch.

Das Stück Nr. 7, 28-III-1968-a, A. K. Andersen, wurde mit der Type von *Phloeosinites sexspinosus* Schedl vergleichen und eine völlige Übereinstimmung festgestellt, wenn auch zwei Sprünge die Proportionen etwas verzerren. Die Skulptierung der Flügeldeckenscheibe erscheint sogar klarer als in der Type und die 6 kegelförmigen Zähnchen auf dem Absturz lassen sich gut erkennen. Die Zwischenräume der Flügeldeckenscheibe sind relativ breit, die in der Originalbeschreibung erwähnten Querrisse, Querrunzeln und blattförmige Bildungen sind in den nunmehr vorliegendem Belegstück nicht vorhanden und dürfte diese in der Type durch Luftbläschen und Spiegelungen verursacht sein. Im neuen Fund sind die Zwischenräume mehr einfach punktiert, die Zwischenraumpunkte deutlich kleiner als jene der Hauptreihen und außerdem tragen sie kurze schief abstehende Börstchen, die gegen die Seiten der Flügeldecken distal leicht spachtelförmig verdickt er-

scheinen. Auch auf dem Halsschild sind anliegende feine Schuppenhärchen gut erkennbar.

Von Kopal mit Einschlüssen liegen 2 Stücke vor, ein Stück mit der Bezeichnung Nörrejyllands Vestkyst, 28-VIII-1899, Ravarbejder Nielsen, Struer, enthält ein angeschliffenes Exemplar einer *Xyleborus*-Art, wahrscheinlich *Xyleborus mascarensis* Eichhoff. Drei Bruchstücke einer zweiten Serie mit der Bezeichnung Th. Bartholin, 11/-1918, läßt einen Platypodid erkennen, möglicherweise ein Weibchen von *Platypus hintzi* Schaufuss, doch ist die distale Hälfte der Flügeldecken weggeschliffen, sodaß eine eindeutige Determination nicht möglich ist.

Summary

Some Scolytidae and one Platypodidae are recorded from Baltic amber and copal. The description of *Taphramites gnathotrichus* Schedl and *Phloeosinites sexspinosus* Schedl are improved.

(Noona Dan Papers No. 95.)

Tephritidae (Diptera) collected by the Noona Dan Expedition in the Philippine and Bismarck Islands. *)

By
D. Elmo Hardy
University of Hawaii

This important collection has added much to our knowledge of the fruit flies of the regions covered by this expedition (Petersen, 1966). Sixty-seven species are present, 43 from the Southern Philippines (18 are new species) and 24 species from the Bismarck Islands (7 are new). The collections from the Philippines and the Bismarcks are being discussed separately since the two faunas are not related. The species from Palawan, Tawi Tawi and Balabac show close relationship to the fauna of Malaysia and Indonesia and those of the Bismarcks are close to New Guinea.

A monographic study of the Philippine fruit flies is now being prepared and will present keys, descriptions and figures to all of the known species from these Islands.

The illustrations have been prepared by Miss Geraldine Oda and Mrs. Amy Farmer.

1. Species from the Philippine islands

Subfamily **DACINAE**

Tribe ADRAMINI

Adrama determinata (Walker)

Dacus determinatus Walker, 1857, Jour. Proc. Linn. Soc. Lond. 1:133.

Twenty-two specimens. PALAWAN: Pinigisan, 600 m., Sept. 9, 1961; Makagwa, Sept. 18, 1961. — BALABAC: Dalawan Bay, Oct. 7, 1961. — TAWI TAWI: Tarawakan, Oct. 25, 1961.

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[1]) Published with the approval of the Director of the Hawaii Agricultural Experiment Station as Journal Series No. 1093.

Tribe DACINI

Callantra pedunculata (Bezzi)

Mellesis pedunculata Bezzi, 1916, Bul. Ent. Res. 7:115; 1919, Phil. Jour. Sci. 15(5) 439, pl. 2, fig. 5.

One female. TAWI TAWI: Tarawakan, Oct. 23, 1961, in Malaise trap.

Callantra picta n. sp. (figs. 1a—c)

This species is related to *C. smieroides* Walker, from the Celebes and Borneo, but differs by having the white mark over each mesopleuron expanded, occupying almost the entire dorsal margin of that sclerite and almost continuous with the white mark over the humerus. In *smieroides* the mark over the mesopleuron is pale yellow, straight-sided, and occupies a rather narrow strip over the posterior portion of the sclerite; the humeri of *picta* are entirely white and the marks along the suture, the scutellum, metapleura and pleuroterga, also the spot at upper portion of each sternopleuron white, rather than these marks being yellow to rufous with upper portion of each humerus brown and with the pleuroterga dark brown. Also, *picta* has the pleura predominantly shining black in ground color and sides of metanotum shining black, and abdomen with prominent yellow markings. In *smieroides* the pleura are predominantly red, tinged with brown and the meta-

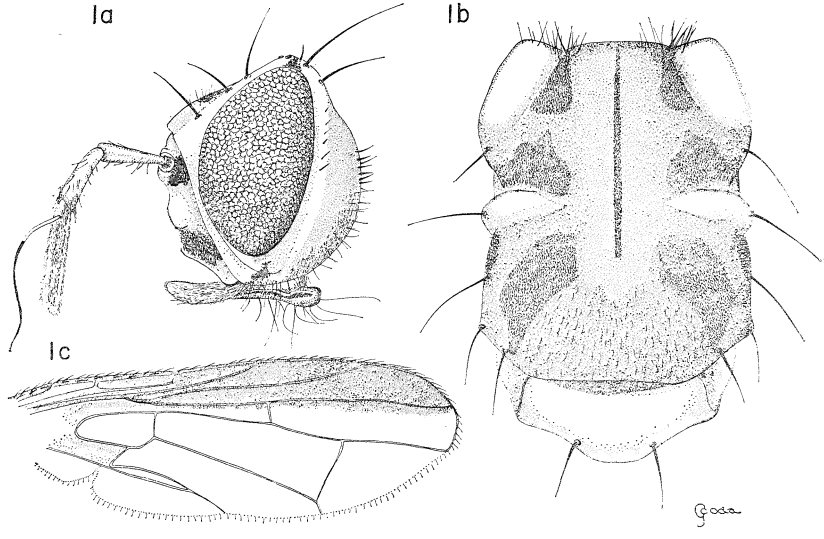


Fig. 1. *Callantra picta* n. sp.: a, head; b, thorax, dorsal; c, wing.

notum is rufous. Because of the wing markings, this would also resemble *conopsoides* (de Meijere) and *longicornis* (Wiedemann), from Indonesia, but those species differ by having two preapical ventral spines on the front femora as well as in other respects. It would fit near *bioculata* (Bezzi) from the Philippines, but differs by having a yellow mark covering most of the pleurotergon, lacking ventral spines on front femora, having the tergal glands on fifth segment yellow, and cell M not elongate.

♂. *Head:* Largely yellow, occiput bicolored with margin bordering eyes and vertex yellow-white. A shining black mark across vertex connects with the black of the ocellar triangle. Front with a brown spot at the base of each bristle and a brown discoloration in middle of the swollen portion. Front one-half longer than wide. Face yellow except for the large shining black spots in each antennal furrow, these extend almost to oral margin and each extends a short distance across middle of front. Face with a small concavity at lower two-thirds (fig. 1a). Palpi elongate, slightly tapered apically, yellow except for brown basal two-fifths. Front with two pairs inferior fronto-orbitals and one pair of superior fronto-orbitals. A prominent pair of black postocellar setae are present. A small brown mark present below each eye margin, also lower median portion of occiput brown and a dark brown to black mark present below frontal suture just below antennae. Antennae elongate, first segment equal in length to second and equal to length of face (fig. 1a), first segment yellow, tinged faintly with brown. Second segment rufous, tinged with brown, third segment dark brown to black. Arista yellow basally, otherwise black. *Thorax:* Mesonotum broadly rufous down median portion with a large black mark behind each humerus and with a black vitta on each side extending from behind suture almost to inner postalar bristle and another small brown to black streak on each side extending from supraalar bristle to suture (fig. 1b). With white markings as mentioned above and with the white spot at upper margin of sternopleuron extended posteriorly for a short distance under the edge of the pteropleuron. Propleura, anterior portion of mesopleuron around spiracle, ventral margin of sternopleuron, and lower portion of pteropleuron rufous. Pleura otherwise black in ground color, except for the mentioned white spots, densely grey pubescent. Metanotum and postscutellum with a rufous mark extending down the middle. Scutellum narrow, slightly over two

times wider than long, basal margin brown. Halteres white. *Legs:* Coxae and trochanters brown, tinged with red. Front and middle femora predominantly brownish red, yellow down the antero-dorsal surfaces. Hind femora dark brown, tinged with yellow-red on apical third to two-fifths. Tibiae mostly brown, tarsi white, base of hind femur pale yellow. *Wings:* With a broad dark brown costal band extending through upper third to two-fifths of cell R_5 for its entire length (fig. 1c). Cubital streak rather faint. Subcostal cell equal in length to second costal and subequal to fourth costal section (cell R_1). Fourth and fifth costal sections approximately equal in length, r-m crossvein situated near apical two-thirds of cell 1st M^2. Vein Cu_1 + 1st A approximately half as long as the lobe of cubital cell. *Abdomen:* Typically *Callantra*-like in shape. First tergum shining brown to black except for yellow-white apical margin. Second tergum subshining black with a pair of large apical yellow spots. Third tergum tinged with yellow on each side of the median black line before hind margin. Fourth, fifth and sixth terga yellow submedianly, broadly blackened on sides and with a black vitta extending down the middle. The genitalia have not been dissected for study.

Length: Body, 8.5 mm.; wings, 7.0 mm.

♀. Unknown.

Holotype male, PALAWAN: Uring Uring, Sept. 26, 1961, in Malaise trap. — In the Zoological Museum, Copenhagen.

Dacus (Strumeta) dorsaloides Hardy and Adachi

Dacus (Strumeta) dorsaloides Hardy and Adachi, 1954, Pac. Sci. 8(2): 167, figs. 9a—b.

Two specimens. BALABAC: Dalawan Bay, Oct. 12, 1961.

Dacus (Strumeta) limbiferus (Bezzi)

Chaetodacus ferrugineus var. *limbiferus* Bezzi, 1919, Philip. Jour. Sci. 15(5):424.

Two specimens. BALABAC: Dalawan Bay, Oct. 8, 1961.

Dacus (Strumeta) pedestris (Bezzi)

Chaetodacus ferrugineus var. *pedestris* Bezzi, 1913, Philip. Jour. Sci. 8:322.

Twenty-one specimens. PALAWAN: Uring Uring, Aug. 20—25, 1961. — BALABAC: Dalawan Bay, Oct. 8—11, 1961. — TAWI TAWI: Tarawakan, Oct. 23—Nov. 13, 1961. — MINDANAO: Sapamoro, Dec. 18—21, 1961.

Dacus (Strumeta) peterseni n. sp. (figs. 2a—b)

Because of the bulla in the male wing, the lack of tergal glands, the peculiar shape of the male abdomen, the all yellow to white face, etc., this fits in a complex with *mcgregori* (Bezzi), from the Philippines and Singapore. It differs readily from *mcgregori* by having the thorax predominantly black, the third antennal segment rounded at apex and the costal band greatly expanded at the wing apex and also with a streak of brown extending through most of cell R_5 beyond the r-m crossvein (fig. 2a). *D. mcgregori* has the thorax chiefly or entirely rufous with the third antennal segment obliquely truncate at apex and the costal band not expanded, etc. *D. peterseni* is closely related to a new species from Thailand which is being described in a monograph on Southeast Asian species, in press, but differs by having the broad rufous median band on the mesonotum continuous to the hind margin; the middle femora brown to black at apices and the middle and hind tibiae brown to black; by having a continuous yellow-white vitta on each side of mesonotum from innner postalar bristle to the humerus; and the abdomen with prominent rufous markings over terga 3—5 (figs. 2b).

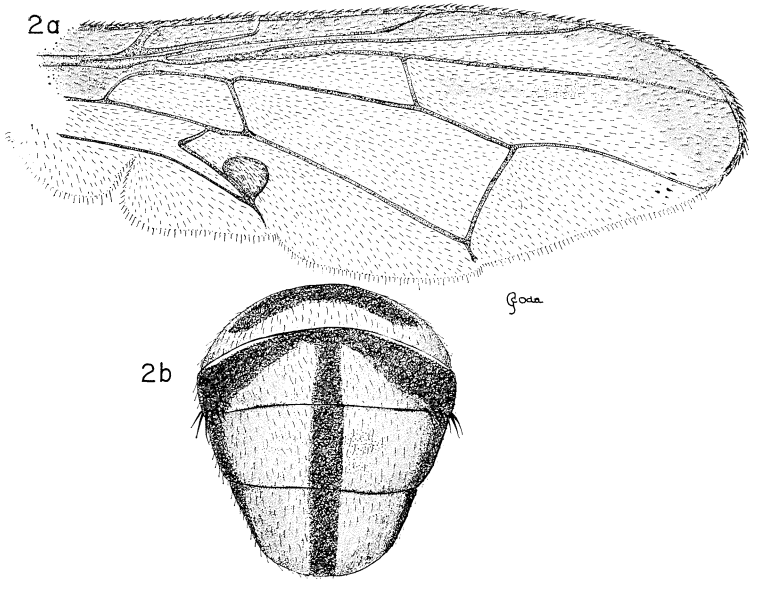


Fig. 2. *Dacus (Strumeta) peterseni* n. sp.: a, wing; b, abdomen, dorsal.

♂. *Head:* Entirely yellow to ivory-white except for the reddish brown eyes and the brown posteromedian portion of the occiput, also with a faint tinge of brown in the median portion of the front. Front about two times longer than wide, two pairs of inferior fronto-orbitals. Face entirely ivory-white, slightly concave in lower median portion. Antennae yellow, tinged faintly with brown on apical portion of third segment, third segment three to four times longer than wide. Palpi yellow, almost devoid of setae. *Thorax:* Mostly polished black in ground color with the postsutural vittae white, rather broad, straight-sided, and continuous along sides of thorax over humeri. Median rufous vitta densely grey pubescent and extending to posterior margin of mesonotum and with a rather faint narrow faintly brown vitta extending down middle just beyond suture. Area of mesonotum immediately behind the lower corner of each humerus polished black, this coloring extending over upper half of notopleural callous, over the suture, and continuing as a narrow line along outer margin of each postsutural white vitta in line with the anterior supraalar and ending before reaching a level with the outer postalar bristle. Posterolateral margins of mesonotum yellow to rufous. Scutellum yellow with a polished black band across the base, this is expanded on the sides. Pleura predominantly polished black, propleura yellow to rufous. Yellow mark over mesopleuron extending onto sternopleuron but not expanded at this point. Halteres brownish red. *Legs:* Yellow, except for black preapical dorsal and posterior surfaces of middle femora, broad bases of middle tibiae, and the hind tibiae which are black. One strong apical spur present on middle tibia. Hind tibia with a sensory structure on the posterodorsal surface at about the apical two-thirds to three-fourths of the segment. This is different in formation than those which I have observed on other Dacini and consists of a slightly raised area with a fringe of prominent yellow hairs in a straight row. *Wings:* As in figure 2a. Largely hyaline with a brown band extending from base along margin to apex and filling all of apical portion of cell R_5. The bulla in cell M is pale brown and prominent. *Abdomen:* Distinctive in shape, broadest at segment three, and with fourth and fifth segments narrowed (fig. 2b). First tergum black anterolaterally and otherwise rufous, second tergum with a prominent black mark on anterior margin, yellow to rufous on sides and on posterior margin. Third tergum with a shining black band across

base which is narrowed medianly, expanded laterally and continuous with a black mark over lateral margins of terga 4—5. Also, with a broad median black vitta extending from base of third tergum to apex of fifth (fig. 2b).

Length: Body and wings, 4.5—4.7 mm.

♀. Unknown.

Holotype male, TAWI TAWI: Tarawakan, Nov. 6, 1961, in malaise trap. — In Zoological Museum, Copenhagen.

This species is named after Dr. Børge Petersen, leader of the Noona Dan Expedition to the Southern Philippines.

Dacus (Zeugodacus) calumniatus n. sp. (figs. 3a—d)

This species is differentiated from other *Zeugodacus* which have three postsutural yellow vittae, two black spots on the face

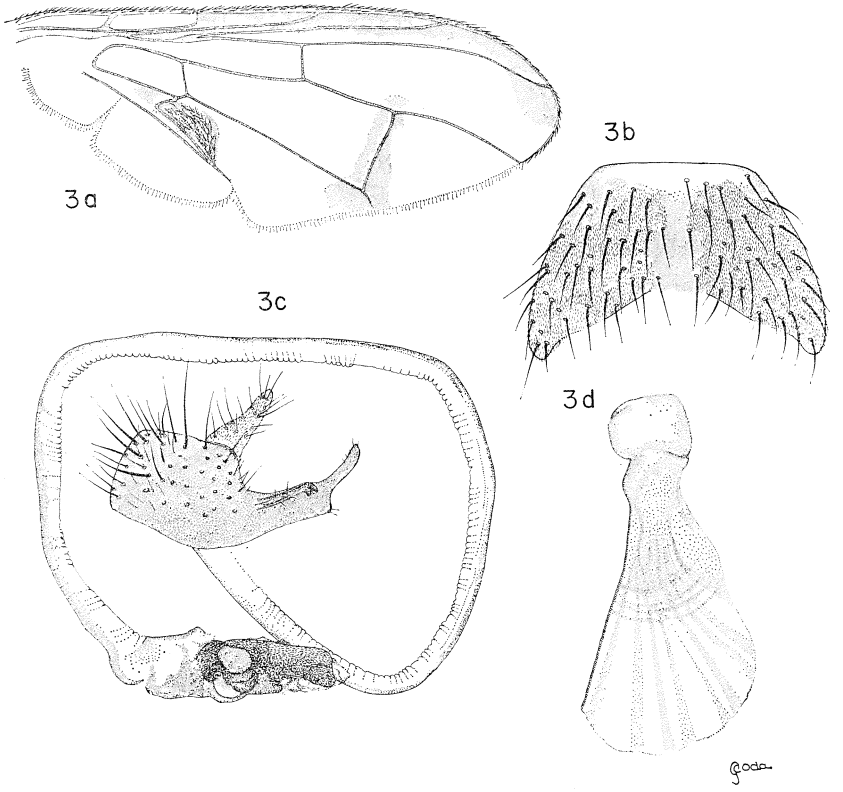


Fig. 3. *Dacus (Zeugodacus) calumniatus* n. sp.: a, wing; m, fifth sternum of male; c, male genitalia, lacking hypandrium; d, ejaculatory apodeme.

and the costal band enlarged at the wing apex, by having a prominent brown vitta extending over the m crossvein (fig. 3a). It fits the concept of *Dacus caudatus* Wiedemann, 1830, *nec* Fabricius, 1805. This species is similar in most respects to *tau* (Walker) and is differentiated by the brown mark extending over the m crossvein.

♂. *Head:* Yellow except for the compound eyes, a brown to black line across the vertex and including the ocellar triangle, a faint discoloration of brown in the median portion of the front and in the submedian portions of the occiput, also a tinge of brown beneath the eye margin on each gena and a prominent black spot in each antennal furrow. Front broad, about one-fifth longer than wide, entirely yellow except for the median discoloration, no dark spots at bases of bristles. Three pairs of inferior fronto-orbital bristles present. Facial spots oblong, filling antennal furrows but not extending to oral margin. Antennae yellow, tinged faintly with brown on the apical portion of the third segment. *Thorax:* Largely black in ground color, anterior portion of mesonotum rufous in ground color with a black median vitta extending forward to a line about opposite the middle of the humeri, not extending to inner scapular bristles. Postsutural yellow vittae broad, the median tapered anteriorly and extending slightly beyond the suture, blunt posteriorly and ending near the prescutellar bristles. Lateral vittae parallel sided, ending slightly beyond inner postalar bristles. Propleuron and anterior portion of mesopleuron rufous, tinged faintly with brown. The yellow spot on upper portion of sternopleuron large, occupying approximately half of the length of the upper margin of sternopleuron and extending posteriorly a short way under edge of pteropleuron. Scutellum yellow with a narrow brown band at the base. *Legs:* Coxae, trochanters and tibiae yellow-brown. Apices of hind femora faintly marked with brown. Basitarsi pale yellow, other tarsomeres yellow, tinged with brown. *Wings:* Costal band extending into the upper edge of cell R_3 under vein R_{2+3} and rather broadly expanded in the apex of the wing, at its widest point the band is over twice as wide as the band measured at tip of vein R_{2+3} (fig. 3a). Other details of the wing venation and markings as in the figure. *Abdomen:* Largely yellow, black on the lateral margins and with complete black bands over bases of the second and third terga. First tergum narrowly black at base and on lateral margins.

Fourth and fifth terga broadly blackened posterolaterally and with a median black vitta which extends from third over the apex of the fifth. Tergal glands yellow to rufous. The fifth sternum is more than two times wider than long, gently concave on hind margin (fig. 3b). The genitalia are as in figure 3c. The surstyli are slender, curved inwards at apices. The ejaculatory apodeme is as in figure 3d.

Length: Body, 6.5 mm.: wing, 6.0 mm.

♀. Unknown.

Holotype male, TAWI TAWI: Tarawakan, Nov. 7, 1961, in malaise trap. — In the Zoological Museum, Copenhagen.

Dacus (Zeugodacus) mundus (Bezzi)

Chaetodacus mundus Bezzi, 1919, Philip. Jour. Sci. 15(5):429, pl. 1, fig. 9.

One male, one female. PALAWAN: Uring Uring, Aug. 25, 1961; Pinigisan, 600 m., Sept 12, 1961.

Dacus (Zeugodacus) pubescens (Bezzi)

Chaetodacus pubescens Bezzi, 1919, Philip. Jour., Sci. 15(5):434, pl. 2, fig. 2.

One female. TAWI TAWI: Tarawakan, Nov. 8, 1961, in malaise trap.

Subfamily **TRYPETINAE**

Tribe ACANTHONEVRINI

Hexacinia pellucens n. sp. (figs. 4a—e)

This species is readily differentiated from all known *Hexacinia* by having the spots over the wing comparatively large, mostly consisting of transverse, elongated subhyaline marks equal or nearly equal to the width of the cell (fig. 4a). It is related to *stellipennis* (Walker) but that species has the spots in the wing field tiny, round, only a fraction the width of the cells. All of the known species of *Hexacinia* will be keyed in a monograph of the Philippine Tephritidae in press.

An almost all yellow species with sides of metanotum brown to black, and lacking conspicuous brown spots on mesonotum and with small spots of brown at bases of scutellar bristles.

♂. *Head:* Bristles of the front brownish yellow. Two pairs inferior fronto-orbitals and two pairs superior fronto-orbitals, the former placed on lower fourth of front. Upper superior fronto-

orbitals just below inner vertical bristle. Ocellar bristles tiny, hair-like, dark brown to black, subequal in length to and much thinner than the postorbital row of bristles. Postocellar bristles yellow-white. Outer vertical bristles black. Face vertical, slightly raised down the median portion and with a small brown to black spot on each lower lateral margin. Antennae entirely yellow. Third segment slightly over two times longer than wide. Arista long plumose. Palpi and mouthparts yellow, palpi thickly brown setose. *Thorax:* Entirely yellow except for four small indistinct spots on hind portion of mesonotum, a mark above and below each humerus, a few faint spots on pleura, spots at bases of scutellar bristles and metanotum mostly brown to black. *Legs:*

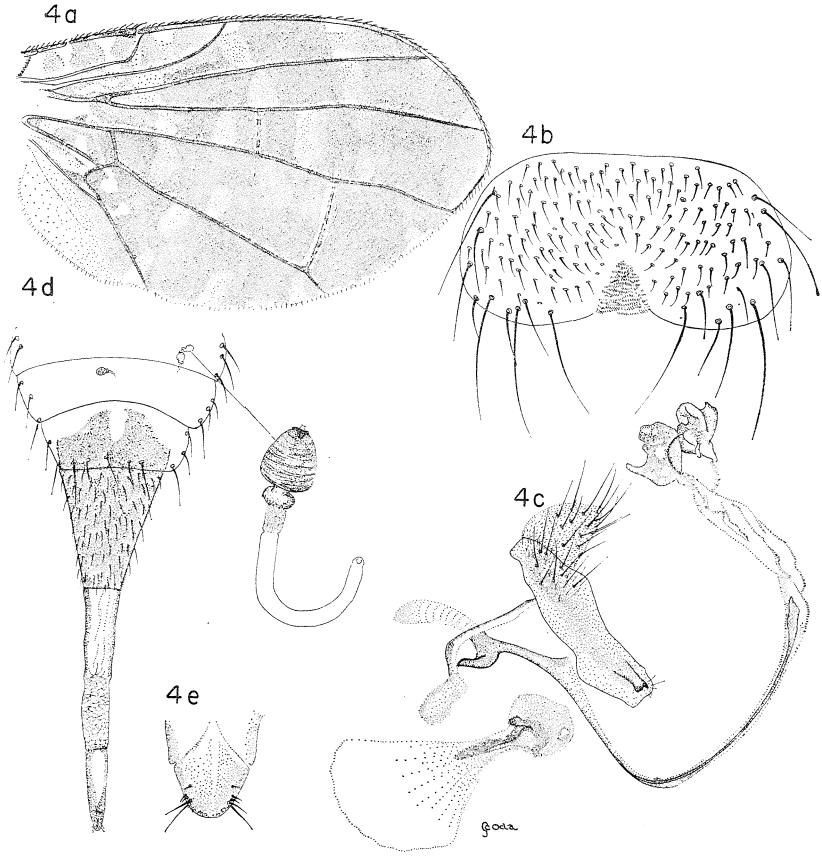


Fig. 4. *Hexacinia pellucens* n. sp.: a, wing; b, fifth sternum of male; c, male genitalia, lateral; d, extended ovipositor; e, apex of piercer.

Yellow except for a small brown ventral spot at apical two-thirds to three-fourths of each middle and hind femur. Middle tibia with one strong apical spur. Hind femur with two prominent preapical dorsal bristles. Hind tibia with six anterodorsal and three anteroventral bristles at the middle. *Wings:* As is typical of this genus, very broad, predominantly brown with the subhyaline markings as in figure 4a. *Abdomen:* Yellow with one black spot on sides of terga 1 and 2, with four black spots arranged across terga 3 and 4 and with fifth tergum entirely shining dark brown to black. Sterna yellow, except for brown lateral and posterolateral margins of fifth sternum. Fifth nearly two times wider than long, densely setose with a bare area extending down the middle and with three or four prominent bristles on each side of hind margin. Hind margin with a U-shaped concavity in the middle, the membrane in the concavity is densely covered with microscopic setae or spicules (fig. 4b). Epandrium brown, slender, at its broadest point it is equal in width to the broad surstyli, the latter are truncate at apices and completely hide the tenth sternum (fig. 4c).

Length: Body, 5.5 mm.; wings, 5.5 long by approximately 2.8 mm. wide.

♀. Fitting the description of the male, but with some faint, tiny brown spots on pleura and four broken spots on each of terga 2—6. Three small round spermathecae present. Basal segment of ovipositor rufous, as seen from dorsal view, just slightly longer than terga 4—5 and approximately 1.0 mm. in length. From ventral view the basal segment is 1.25 mm. Piercer short and blunt (fig. 4e), .75 mm. long. Extended ovipositor 3.4 mm. (fig. 4d).

Holotype male, PALAWAN: 3 km. N.E. Tinabog, May 13, 1962, in forest (H. Holtmann). Allotype female, same data except May 11, in bushes along creek. Approximately 75 paratypes both sexes. LUZON: Mt. Limay, July 1914; Banahao, April 1914; Dalton Pass, Nueva Viscaya, Apr. 9—10, 1968 (M. D. Delfinado); Baquio, Benquet (Baker); Imugin, Nueva Viscaya (Baker); Mt. Makiling Laguna, (some from Baker collection — no data) a number of collections March, April, July and September 1930—1968 (F. C. Hadden, T. C. Maa, M. D. Delfinado, D. E. Hardy, J. L. Gressitt); Mayoyao, Ifugao, Mt. Province, 1200—1500 m., Aug. 31, 1966 (H. M. Torrevillas); Camarines Sur, Mt. Isarog, 20 km. E. of Naga, 500—600 m., April 6, 1963 (H. M. Torrevillas); Antipolo, Rizal,

March—Sept., 1952—53 (Townes family); Wa-Wa Dam, Mr. Montalban, Rizal, 150—200 m., March 22, 1965 (H. M. Torrevillas). — MINDORO: Mangarin, November 1917; San Theodora, January 1916. — MINDANAO: Davao, no date (Baker); Dapitan (Baker); Lake Lanao, Tagaya, Lanao 470—720 m. June 15, 1958 (H. E. Milliron); Sula, Jolo I., near base of Mt. Dahao, 150 m., Sept. 2, 1958 (H. E. Milliron). — PALAWAN: Binaluan, Nov.—Dec. 1913 (G. Boetcher); Uring Uring, May 1, 1947, in second growth forest and Aug. 22, 1961, in malaise trap (M. Celestino and Noona Dan Expedition); Puerto Princesa, sea level, second growth forest, April 24, 1947 (H. Hoogstraal). — SIBUYAN: No data (Baker). — NEGROS: Cuernos Mts. (Baker). — Holotype, allotype, and a series of paratypes in the B. P. Bishop Museum, paratypes in the U.S. National Museum; Bureau of Plant Industry, Manila; Zoological Museum, Helsinki; Zoological Museum, Copenhagen; University of Hawaii; B. P. Bishop Museum, and the Field Museum of Natural History, Chicago.

Hexacinia stellipennis (Walker)

Trypeta stellipennis Walker, 1860, Jour. Proc. Linn. Soc Lond. 4:159.

One female. TAWI TAWI: Tarawakan, Oct. 24, 1961, in malaise trap.

Rioxa megispilota n. sp. (figs. 5a—d)

This species is differentiated from *R. sexmaculata* (Wulp) by the comparatively large marginal wing spots (fig. 5a). On the anterior margin these extend almost or entirely across the cells and a large hyaline spot is present near the base of cell R_1, a very prominent hyaline spot present in cell M_4 on posterior margin of wing, also in female a hyaline spot is present in cell 2nd R_5 beyond the r-m crossvein. In most specimens of *sexmaculata* which have been studied, the marginal spots are much smaller, the ones on the anterior margin are confined to the margin and do not extend across the cell. The spot in cell M_4 is small, indistinct and there is no prominent hyaline spot in the basal portion of R_1, also there is no hyaline spot in cell R_5 just beyond the r-m crossvein. The size and shape of the hyaline spots in the wings obviously do vary somewhat, but the series on hand shows consistant differences from another series (*sexmaculata*) from the Philippines and I believe that these are distinct species. This species also shows resemblance to *lucifer* Hering from the Philippines, but differs by

having a prominent spot extending through apex of cell R_3 and a large, oblong, hyaline spot near the base of cell R_1.

♂. Fitting the general characteristics of most *Rioxa*. *Head:* Distinctly broader than high, slightly higher than long. Mostly yellow, with brown markings on the back part of the occiput, a brown spot on lower margin of each gena and lower corners of front, also upper two-thirds of face brown in ground color, densely grey pollinose. Lower third of face white. With two pairs of inferior fronto-orbitals and two pairs of superior fronto-orbitals. Ocellar bristles rudimentary. Postocellars strong, yellow-white. Antennae brown. Arista pectinate, with long plumes on the dorsal margin, also with short hairs along anterior margin but with the ventral margin bare. *Thorax:* Yellow with four narrow brown to black vittae on the mesonotum, the two submedian vittae in line with dorsocentral bristles and extending onto sides of scutellum. Lower portion of each humerus, and a very narrow line along margin of notopleuron, black. Propleura, mesopleura and a line across upper pteropleuron to pleurotergon dark brown to black.

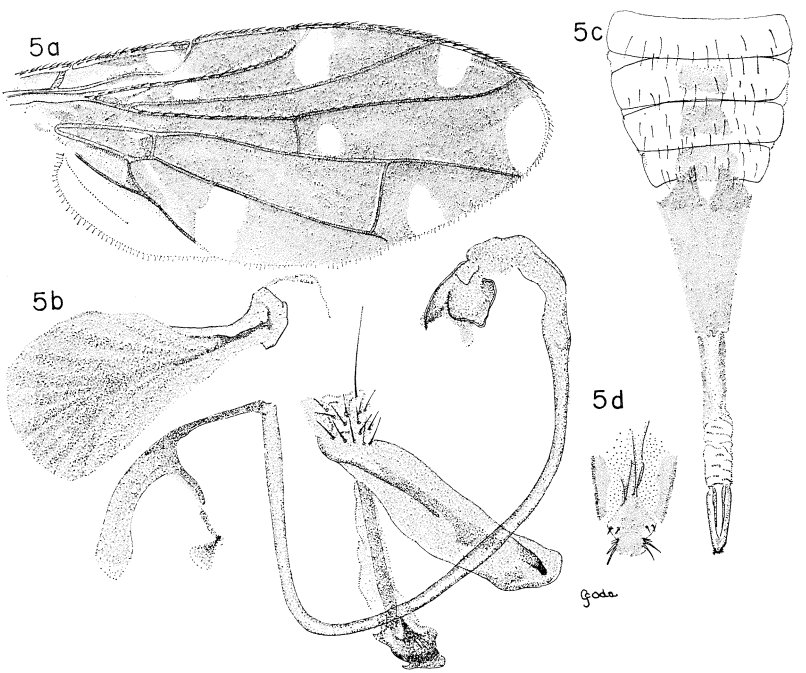


Fig. 5. *Rioxa megispilota* n. sp.: a, wing; b. male genitalia; c. extended ovipositor; d, piercer of ovipositor.

Also another black line extending from lower edge of each mesopleuron to hypopleuron. Postscutellum and metanotum yellow to rufous medianly, brown to black on sides. Dorsocentral bristles about opposite anterior supraalars. *Legs:* Yellow. Middle tibia with one strong apical spur. Hind femora brown. *Wings:* As in figure 5a (drawn from female). On the type no hyaline spot is present in 2nd portion of cell R_5 beyond the r-m crossvein, this is present in all other specimens on hand. It is obviously not just a sexual character since the spot is present on the paratype male. Subcostal vein undulate, rather strongly curved upward medianly, and sloping rather gradually to the costa, not bent at a right angle as in most Tephritidae. Vein R_1 ending approximately half-way between the r-m and m crossveins. Vein R_{4+5} curved sharply upward before the apex. Cubital cell with a short, pointed lobe at apex. Vein R_{4+5} setose almost its entire length, the setae extending well beyond a level with the m crossvein. *Abdomen:* Principally shining black, yellow down the middle of terga 1—3. Fourth and fifth sterna each with a broadly U-shaped concavity in middle of hind margin. Epandrium very narrow, forming a slender bridge above the anal area. Surstyli broad, straight-sided and blunt at apices, completely hiding the tenth sternum as seen from lateral view (fig. 5b). Each anal plate with a strong apical bristle. Ejaculatory apodeme large, fan-like.

Length: Body and wings, 7.0 mm. Paratype measures 5.0 mm. for body and wings.

♀. Fitting the description of the male except for the wing markings (fig. 5a). Also the brown marking of the anterior portion of the pleura is not so extensive and the pleura are chiefly yellow, each with two longitudinally stripes extending the entire length, one at a level near upper margin of mesopleuron and one at lower margin of that sclerite. The sterna are brown and three oblong spermathecae are present. Sixth tergum well developed, as viewed from above at least three-fourths as long as fifth. Base of ovipositor dark brown, tinged with red, approximately equal in length to terga 3—5, and 1.7 mm. long. Piercer short, thick, blunt at apex (fig. 5d), .7 mm. long. Extended ovipositor (fig. 5c), 4.0 mm.

Length: Body and wings, allotype, 6.0 mm.; paratypes, range from 5.0 to 6.0 mm.

Holotype male, allotype female, and six paratypes, one male,

five females, TAWI TAWI: Tarawakan, Oct. 24—Nov. 7, 1961, in malaise traps. — Type, allotype and two paratypes in the Zoological Museum, Copenhagen, the remainder of the paratypes in the B. P. Bishop Museum and the University of Hawaii.

Rioxa sexmaculata (van der Wulp)

Ptilona sexmaculata van der Wulp, 1880, Tijds. Ent. 23:185.

Five specimens. BALABAC: Dalawan Bay, Oct. 9, 1961, in malaise trap. — PALAWAN: Pinigisan, 600 m., Sept. 1—10, 1961, in malaise and light traps.

Themara lunifera Hering

Themara lunifera Hering, 1938, Deuts. Ent. Zeits. 1938, p. 408.

One male. TAWI TAWI: Tarawakan, Nov. 2, 1961 in malaise trap.

Themara hirtipes Rondani

Themara hirtipes Rondani, 1875, Ann. Mus. Geneva 7:435.

One female, 3 males. PALAWAN: Pinigisan, 600 m., Sept. 13, 1961; Uring Uring, Aug. 20, 1961; and Makagwa, Sept. 18, 1961. All from malaise traps.

Xarnuta stellaris n. sp. (figs. 6a—d)

This species is very close to *X. obsoleta* (Wiedemann) (*morosa* de Meijere is a synonym) from Java, but differs by having two hyaline spots on the wing margin in cell R_1 in the female (fig 6a) and one spot in the male, rather than having no hyaline spots on margin until beyond apex of vein R_{2+3}; by lacking a transverse hyaline streak through cells 2nd R_5 and 1st M_2 between the m and r-m crossveins. In other respects, fitting the characteristic features of most other known *Xarnuta,* with the body red, tinged with brown, and very densely black setose, also legs very black setose and with prominent rows of black bristles on the femora, and hind tibiae. The genitalia have not been compared with other species, these probably are distinctive. Fifth sternum of male about half longer than wide, gently concave on posterior margin, densely covered with erect black setae and with four or more strong black bristles on each side of posterior margin. Epandrium dark brown to black over the dorsum, yellow ventrally, thickly covered with erect black hairs. Surstyli narrow, blunt at apices and completely covering tenth sternum. Ejaculatory apodeme large, fan-shaped, other aspects of genitalia as in figure 6b. Sixth tergum of female

well developed, two-thirds to three-fourths as long as fifth and with black bristles along entire hind margin. Basal segment of ovipositor yellow, brown at apex, very short and thick, (fig. 6c), as seen from dorsal view, only slightly longer than sixth abdominal tergum. Measured from ventral view, the basal segment is about .6 mm. long. Piercer very short, less than two times longer than wide and about .25—.3 mm. in length. The apex is serrated along the margin (fig. 6d). The fully extended ovipositor is only about 1.0 mm. in length. The piercing structure seems to be weakly sclerotized.

Length: Body, 5.5—5.75 mm.; wings, 4.8—5.0 mm.

Holotype female, PALAWAN: Uring Uring, Aug. 22, 1961, collected in light trap. Allotype male, LUZON: Manila, June 11, 1919 (McGreggor). One paratype female, same data as type and one

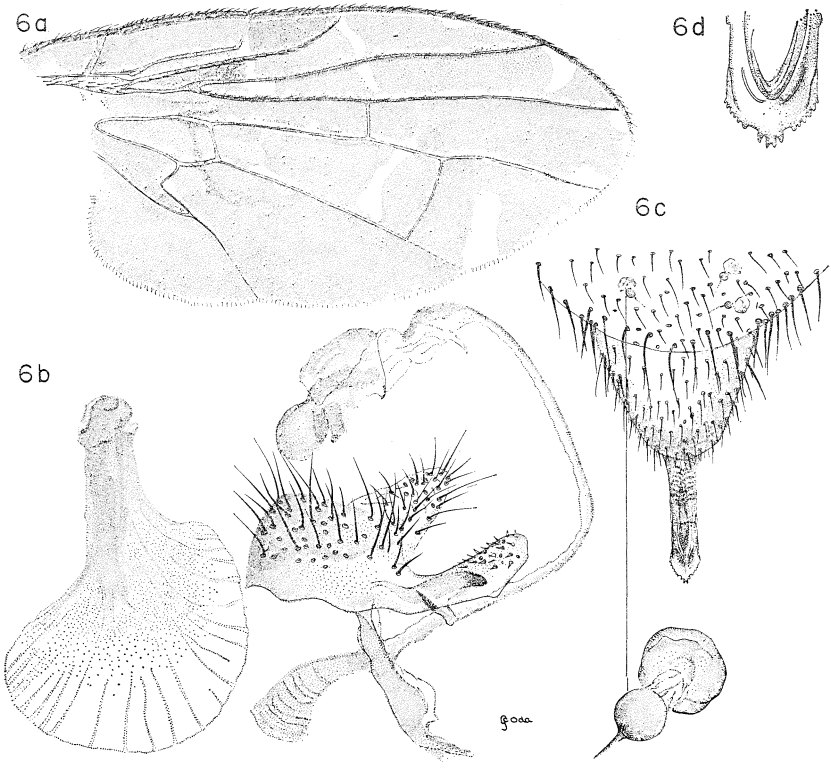


Fig. 6. *Xarnuta stellaris* n. sp.: a, wing of female; b, male genitalia; c, extended ovipositor; d, apex of piercer.

paratype male, same data as allotype. — Type in the Zoological Museum, Copenhagen, allotype in the Museo Civico di Storia Naturale, Milano. Paratypes in the University of Hawaii collection.

Tribe ACIURINI

Sphaeniscus atilius (Walker)

Trypeta atilia Walker 1849, List, Dipt. Ins. Brit. Mus.: 4:1021.

Thirty-five specimens. MINDANAO: Sapamoro, Dec. 20, 1961.

Tribe EUPHRANTINI

Cyclopsia univittata n. sp. (figs. 7a—d)

The genus *Cyclopsia* Malloch is borderline between Euphrantini and Adramini. Hering (1941:4) treated this as an Adramini and Malloch (1939:441) treats it in the same group as *Euphranta.* Because of the presence of dorsocentral bristles and at least rudimentary sternopleural bristles, I am placing this in Euphrantini. I find no evidence of postocellars on the specimens at hand, Malloch makes no mention of these in his description and it is apparent that these are lacking in this genus. *Cyclopsia* then would be the only included genus in Euphrantini which lacks postocellar bristles and in this regard it would show much closer relationship to the Dacinae and to *Adrama.* The problem requires much more study, but it is now obvious that Euphrantini and at least genera like *Adrama* cannot be correctly considered as belonging in two separate subfamilies and it is more likely that they should be placed in the same Tribe.

C. univittata shows relationship to *inscripta* (Walker) (*C. inaequalis* Malloch, the type of the genus is a synonym. Refer to Hardy, 1959:176). It is differentiated by having a subhyaline wedge from the wing margin extending through cells 2nd M_2 and R_5 to vein R_{4+5}, not with the entire wing apex beyond m crossvein brown; by having the thorax and abdomen predominantly black with a median yellow vitta on the mesonotum and with yellow marks on the basal abdominal segments, rather than having the thorax brownish yellow. Mesonotum with two broad brown vittae, and abdomen reddish yellow.

♀. *Head:* Slightly higher than long, (fig. 7b) at the widest point the gena is less than the width of one eye, the upper two-thirds of the face is vertical, the lower margin is projected,

and rather distinct antennal furrows are present. Front polished black on upper portion directly beneath the median ocellus, this mark extending down median portion, two-thirds the length of front and pointed anteriorly. Vertex broadly yellow. Upper sides of occiput polished black, lower portion pale yellow. Genae and face yellow-white. First two antennal segments rufous, third rufous at base, otherwise black, about three times longer than wide and rounded at apex. Arista moderately plumose, the longest hairs are about half the width of the third segment. Palpi and mouthparts yellow, with short black setae on outside surface of each palpus. Two pairs inferior fronto-orbital bristles present, these are located close together near the lower portion of the front. One pair superior fronto-orbitals situated in the black mark near upper one-fourth of front. Ocellar bristles absent or rudimentary

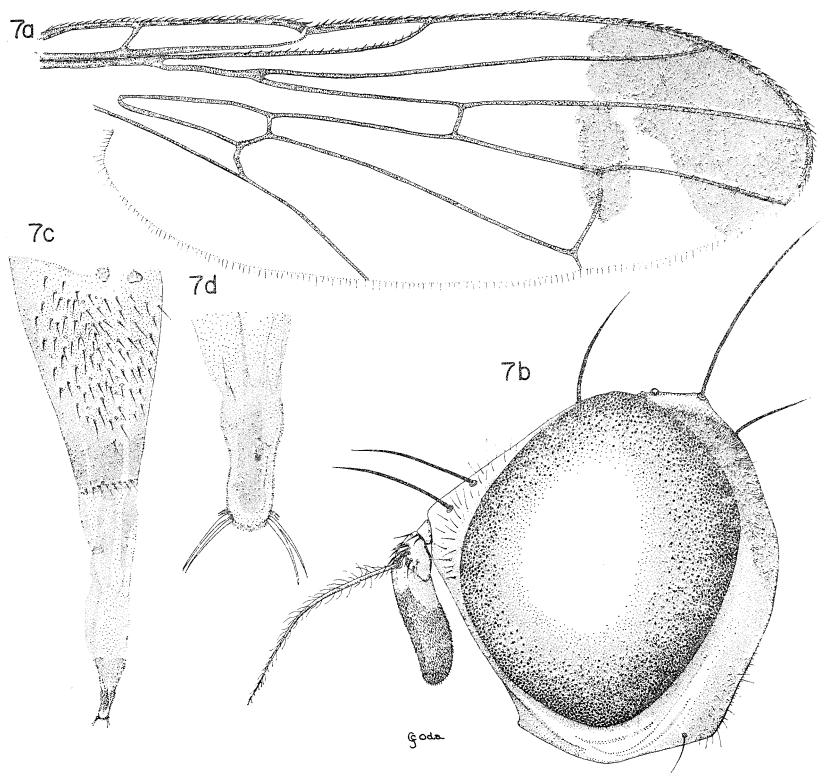


Fig. 7. *Cyclopsia univittata* n. sp.: a, wing; b, head; c, extended ovipositor; d, apex of piercer.

and no postocellars visible on the specimen at hand. Inner and outer vertical bristles are present. *Thorax:* Largely polished black, mesonotum with a prominent yellow mark extending from each notopleural callus a short distance along the suture, and with a median rufous vitta extending from anterior margin to slightly beyond a level with the supraalar bristles, this area is densely grey pollinose, almost obscuring the rufous ground color. Scutellum, humeri, propleura, prosternum and a large spot on mesopleura extending onto upper portion of sternopleura yellow-white. Halteres yellow-white. One pair of small dorsocentral bristles present, situated distinctly in front of the inner postalars and approximately one-fourth as long as the latter. Humerals, presutural, and prescutellar bristles lacking. Sternopleural bristles represented by a small pale seta which under high power can be differentiated as a rudimentary bristle. *Legs:* Mostly yellow, middle and hind tibiae and tarsi brown. Front tibiae and tarsi yellow, tinged faintly with brown. Femora slender. One strong apical spur present on middle tibia. *Wings:* Mostly hyaline, lacking brown or yellow markings in basal cells and in posterior portion of wings behind m crossvein. Cell Sc and most of cells R_1 and R_3 yellow. Apical portions of R_1 and R_3 brown, with this marking continuing around wing apex until upper third of cell 2nd M_2 and continuing as a transverse band across the wing at m crossvein; also a narrow band of brown present along r-m crossvein (fig. 7a). Subcostal cell about four-fifths as long as second costal, r-m crossvein situated near middle of cell 1st M_2 and lobe of cubital cell short, one-fifth to one-sixth as long as Cu_1 + 1st A. *Abdomen:* Mostly polished black on dorsum, thickly covered with short black setae. With a broad yellow mark extending from base, over basal two-thirds of second tergum and with sides of terga 1—3 yellow. Also, with sixth tergum yellow, faintly tinged with brown. Sterna 1 and 2 yellow; 3 yellow, tinged with brown; 4 and 5 are brown and 6 is yellow, tinged with brown at apex. The latter is less than half as long as 5. Conjunctiva pale yellow. Three tiny spermathecae present, two round and one oblong. Base of ovipositor rufous, tinged with brown at apex, as seen from dorsal view, the basal segment is approximately equal to terga 4—5, and measured on ventral margin the base is 1.5 mm. Piercer very short, weakly sclerotized and blunt at apex (fig. 7d), measuring .375 mm. in length. Extended ovipositor (fig. 7c) 3.0 mm.

Length: Body, without ovipositor, 7.0 mm.; wings, 6.0 mm.

♂. Unknown.

Holotype female, LUZON: Mt. Makiling, Mud Spring, Laguna, 1000', March 30, 1968 (D. E. Hardy). One paratype female. PALAWAN: Uring, Uring, Aug. 25, 1961, in malaise trap. Type in B.P. Bishop Museum. Paratype in the Zoological Museum, Copenhagen.

Dimeringophrys bilineata (Walker)

Dacus bilineatus Walker, 1860, Proc. Linn. Soc. Lond. 4:150.
Dimeringophrys ortalina Enderlein, 1911, Zool. Jahrb. 31:452, fig. W.

Two specimens. TAWI TAWI: Tarawakan, Nov. 9—14, 1961.

Elleipsa new genus

A remarkable Trypetinae on hand from Balabac Island, S. W. Philippines which fits in Euphrantini by having the pleuroterga covered with fine erect hairs, and the presutural bristles lacking. It differs from all known members of this Tribe by having the aristae bare and in this regard would be like Trypetini. This genus also differs by lacking dorsocentral bristles, and by having rows of short, black, ventral spines on the middle and hind femora similar to *Callistomyia* Bezzi. These are not related. Other characteristics are as described below under the type of the genus.

Type of genus *E. quadrifasciata* n. sp.

Elleipsa quadrifasciata n. sp. (figs. 8a—b)

♂. *Head:* Entirely rufous except for the dark reddish brown eyes, approximately one-third higher than long with occiput only slightly swollen. Compound eyes oval. Front sloping, antennae situated at or slightly below middle of head as seen in direct lateral view. Face almost vertical, and nearly flat with just a shallow furrow developed on each side. Antennae and mouthparts entirely yellow, third segment three times longer than wide, rounded at apex (fig. 8a). Palpi with short black setae around the margins. Three pairs inferior fronto-orbitals and one pair of superior fronto-orbitals, the latter are shorter than the inferior fronto-orbitals (fig. 8a). Ocellar bristles rudimentary or lacking. Postocellars moderately developed, about two-thirds as long as the superior fronto-orbitals. *Thorax:* Mesonotum with a broad black vitta extending down the median portion from the anterior margin between the outer scapular bristles almost to the hind margin, ending just beyond prescutellars. This area is densely grey polli-

nose and entire mesonotum is covered with short yellow recumbent setae. Sides of mesonotum broadly rufous in ground color, covered with grey pollen. Humeri, notopleura, and scutellum rufous to yellow. Scutellum with four strong reddish brown marginal bristles and almost devoid of setae, with only a few scattered hairs around the margin. Postscutellum and metanotum polished black. Pleura predominantly black in ground color covered with grey pollen and pubescence. Pleuroterga densely grey pubescent and with numerous erect yellow hairs over most of its surface. Halteres pale yellow. *Legs:* Yellow, tinged with brown on hind tibiae. All femora rather stout, middle and hind with short black posteroventral and anteroventral spines extending over apical half to two-fifths of the segment. Middle tibia with one strong apical spur. *Wings:* Predominantly hyaline with four brown bands: one from apex of subcostal vein extending to base of cell M_4; a broad band across the wing at level of r-m and m crossveins; a narrow

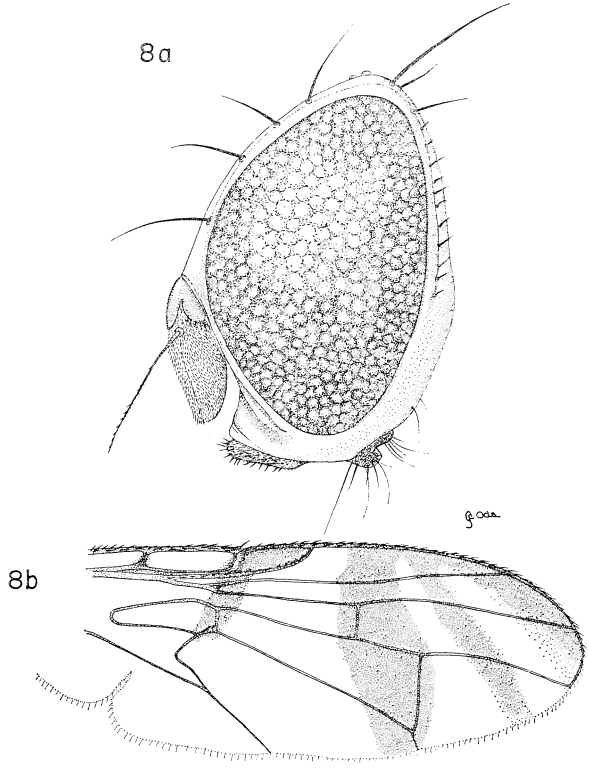


Fig. 8. *Elleipsa quadrifasciata* n. sp.: a, head; b, wing.

transverse band extending from about apical third of cell R_1 across wing ending in hind margin before apex of cell 2nd M_2 and with a costal band connected with the latter mark extending through the apical four-fifths of cell R_5 (fig. 8b). Subcostal cell rather short, scarsely over half as long as second costal. The r-m crossvein situated near apical two-thirds of cell 1st M_2 and lobe of cubital cell short, scarcely one-fourth as long as vein Cu_1 + 1st A. Vein R_{4+5} with only four or five setae at base, these do not extend much beyond a level with apex of subcostal vein. *Abdomen:* Rather clavate, gradually expanded, widest at segment four. Rufous except for black first tergum and narrow latero-basal margins of second tergum, yellow pilose on sides of first two terga, otherwise covered with reddish brown setae and with dark brown to black marginal bristles on the fifth tergum. The genitalia have not been studied.

Length: Body, 5.7 mm.; wings, 4.4 mm.

♀. Unknown.

Holotype male, BALABAC: Dalawan Bay, Oct. 7, 1961, in malaise trap. — In the Zoological Museum, Copenhagen.

Euphranta (Euphranta) flavoscutellata n. sp. (fig. 9)

This species differs from all known *Euphranta* by the wing markings and body coloration. The wings are characterized by having the apex entirely hyaline; a broad dark brown mark extending across the apical two-fifths (excluding the hyaline apex); a tiny hyaline spot at apex of cell R_3 and another hyaline spot on the margin in cell 2nd M_2; also with a brown mark extending from subcostal cell across r-m crossvein into upper portion of cell 1st M_2; thorax polished black in ground color with scutellum yellow, densely black setose.

♂. *Head:* Slightly higher than long, the front gently sloping.

fig. 9

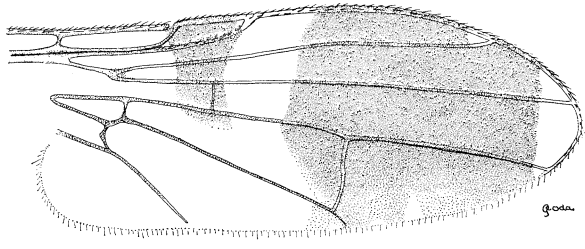


Fig. 9. *Euphranta (Euphranta) flavoscutellata* n. sp. wing.

Occiput black, except for anterobasal corners and ventromedian area. Front brown on upper two-thirds, yellow below, with a faint reddish brown tinge extending down median portion but not reaching front margin. Face entirely pale yellow, distinctly concave as seen from lateral view, with the epistomal margin projecting. Two pairs inferior fronto-orbitals present. Antennae yellow, third segment approximately three times longer than wide and rounded at apex. Arista long plumose; the longest hairs are equal or greater than the width of the third segment. Palpi yellow with black setae around the margin. *Thorax:* Predominantly polished black in ground color covered with grey pubescence, and with a tinge of yellow along the suture and in the ground color of the posterolateral margins. No definite pattern is present in the grey of the mesonotum although the area behind each humerus is broadly shining and the sides of the mesonotum behind the suture are subshining. Scutellum entirely yellow, densely black setose with a faint tinge of brown along the base. Postscutellum and metanotum polished black, lightly grey pubescent. Pleura dark brown to black, marked with yellow in the area around anterior spiracles, and with the prosternum yellow. The chaetotaxy is typical for the subgenus *Euphranta.* Halteres pale yellow *Legs:* Mostly yellow, each front femur with a large posterior preapical brown spot. Middle femur brown except for yellow apices and bases. Hind femur broadly yellow at base and apex with a broad brown band from near middle to about apical three-fourths. Middle and hind tibiae brown to black except for yellow apices. Middle tibia with one strong apical spur. *Wings:* As noted above and as in figure 9. The subcostal cell about two-thirds as long as second costal and r-m crossvein situated near basal two-fifths of cell 1st M_2. Vein R_{4+5} setose only at its base, the setae extend along the vein only to about a level with apex of subcostal vein. *Abdomen:* Second tergum and apical portion of 1st yellow over the entire median portion, brown to black on lateral margins. Remainder of abdomen polished black in ground color, lightly brown pubescent and thickly black setose. The genitalia have not been dissected for study. The epandria are polished black and the surstyli are yellow and are slender, straight sided.

Length: Body, 5.5 mm.; wings, 5.0 mm.

♀. Unknown.

Holotype male, BALABAC: Dalawan Bay, Oct. 7, 1961, in malaise trap — In the Zoological Museum, Copenhagen.

Euphranta (Staurella) canangae Hardy

Euphranta (Staurella) canangae Hardy, 1955, Pac. Sci. 9:83, figs. 4a—d.

Two males, two females. TAWI TAWI: Tarawakan, Nov. 1, 1961, in malaise trap.

Euphranta (Staurella) ferenigra n. sp. (figs. 10a—b)

Resembling *E. maculifemur* (de Meijere), from Sumatra, but differing by having the r-m crossvein situated at or slightly beyond middle of cell 1st M_2 and distinctly beyond apex of vein R_1, rather than being near basal fourth of cell 1st M_2 and distinctly before apex of R_1; by the brown marking across wing from subcostal cell extending obliquely over r-m crossvein through upper two-thirds of cell 1st M_2, rather than extending as a straight mark to vein M_{1+2} but not covering over r-m crossvein; also by lacking a hyaline spot in apical two-thirds of cell R_1 and in apex of cell 2nd M_2 (fig. 10a). Compare with figure 9, de Meijere, 1924:39). The body markings are also very different in these species. *E. ferenigra* is superficially similar to *flavoscutellata* n. sp. but these belong to different subgenera.

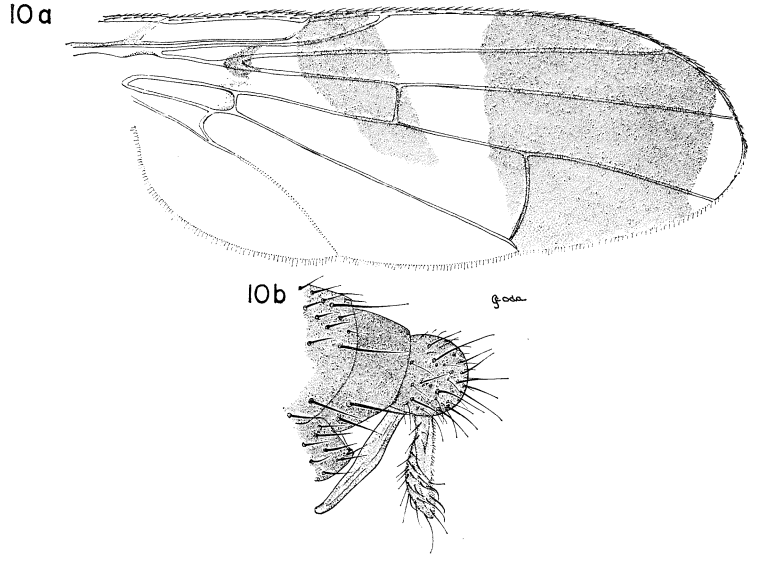


Fig. 10. *Euphranta (Staurella) ferenigra* n. sp.: a, wing; b, male genitalia.

♂. *Head:* Almost all dark brown to black, tinged with rufous in the ground color of the front, yellow over the vertex, and on upper portion of face and lower margin of front. Clypeus black, mouthparts brown, tinged with red, labella fringed with long pale hairs. Palpi brownish red with black setae around the margin. First two antennal segments rufous, tinged with brown. Third segment brown, three times longer than wide. Arista plumose, the longest hairs are almost equal in length to the width of the third segment. Three pairs inferior fronto-orbital bristles present. Front just slightly longer than wide. Eyes, oval, higher than long, and occiput only slightly swollen. *Thorax:* Entirely polished black in ground color, densely grey pubescent except for the yellow scutellum, the latter has a narrow brown basal margin. Scutellum almost devoid of setae, with only a few scattered hairs around margin. Halteres yellow. *Legs:* Predominantly black. Tarsi yellow, tinged faintly with brown and extreme apices of hind tibiae tinged with rufous. Middle tibia with one strong apical spur. *Wings:* As discussed above and as in figure 10a, with the apex broadly hyaline and with a tiny hyaline spot at apex of cell R_1. *Abdomen:* Approximately three times longer than wide. Densely grey pollinose, with terga 2 and 3 broadly yellow through the median portions, black on the sides; abdomen otherwise polished black in ground color. Epandrium polished black, globose in shape. Surstyli yellow to rufous, elongate, straight-sided, one-half to two-thirds longer than the epandrium (fig. 10b). Anal plates elongate, almost as long as surstyli.

Length: Body, 5.0 mm.; wings, 4.5 mm.

♀. Unknown.

Holotype male, BALABAC: Dalawan Bay, Oct. 10, 1961, in malaise trap. — In the Zoological Museum, Copenhagen.

Ptilona confinis (Walker)

Rioxa confinis Walker, 1857, Jour. Proc. Linn. Soc. Lond. 1:132.

One female. PALAWAN: Uring Uring, 16, 1961, in malaise trap.

Scolocolus new genus

A species on hand from Palawan, fits intermediate between Adramini and Euphrantini, but would best fit in the latter because of the presence of postocellar, dorsocentral, and prescutellar bristles. The pleuroterga are thickly covered with erect pale hairs, as in Euphrantini, and also *Adrama*. It differs from other known

Euphrantini by having anteroventral and posteroventral rows of preapical spines on front and middle femora; by lacking humeral and sternopleural bristles; and the aristae short plumose (fig. 11c). The genus *Paraeuphranta* Hardy, based upon *furcifer* (Walker) (ref. Hardy, 1959: 173), also has ventral spines on the femora but these are confined to the front pair, also *Paraeuphranta* differs by having sternopleural and humeral bristles and having the aristae long plumose, face concave in profile, 3 pairs inferior fronto-orbitals, as well as in other regards.

Wing markings and venation as in figure 11a. Genitalia as in figures 11e and 11f.

Type of genus *Scolocolus bicolor* n. sp.

Scolocolus bicolor n. sp. (figs. 11a—h)

Differing from other Euphrantini by the characters given above. Superficially resembling *Lagarosia striatella* Wulp from Java but the wing markings, chaetotaxy, etc. are distinctive.

♂. *Head:* Entirely black except for the reddish eyes, a dull black vitta extending down the front to about level with upper inferior fronto-orbital bristles, and also a polished black spot on lower portion of each antennal furrow. The latter spots extend from anterior margin of face in an elongate triangle about two-fifths the length of face. The basal half of each palpus is black, the apical portion is yellow (giving rise to the name *bicolor*). The labella are brownish red and fringed with long yellow cilia. Front distinctly narrowed above, broadest at about level with anterior-inferior fronto-orbital bristles and narrowest just before the vertex. Measuring the width through the median portion and the length from median ocellus to anterior margin, the front is approximately two times longer than wide. Two pairs inferior fronto-orbital bristles present, the upper inferior fronto-orbital is rather widely spaced from the superior fronto-orbitals, the distance between these is two-thirds greater than the distance between inferior-orbitals. Head higher than long with face vertical as seen in direct lateral view and occiput, at its widest point, about two-thirds as wide as the eye (fig. 11c). Face very slightly raised down median portion. Antennae yellow to rufous, third segment about three times longer than wide and rounded at apex. Arista very short plumose, the longest hairs are only a fraction of the width of the third segment. *Thorax:* Mostly black in ground color densely grey pubescent. Mesonotum with a pair of narrow, shining black vittae

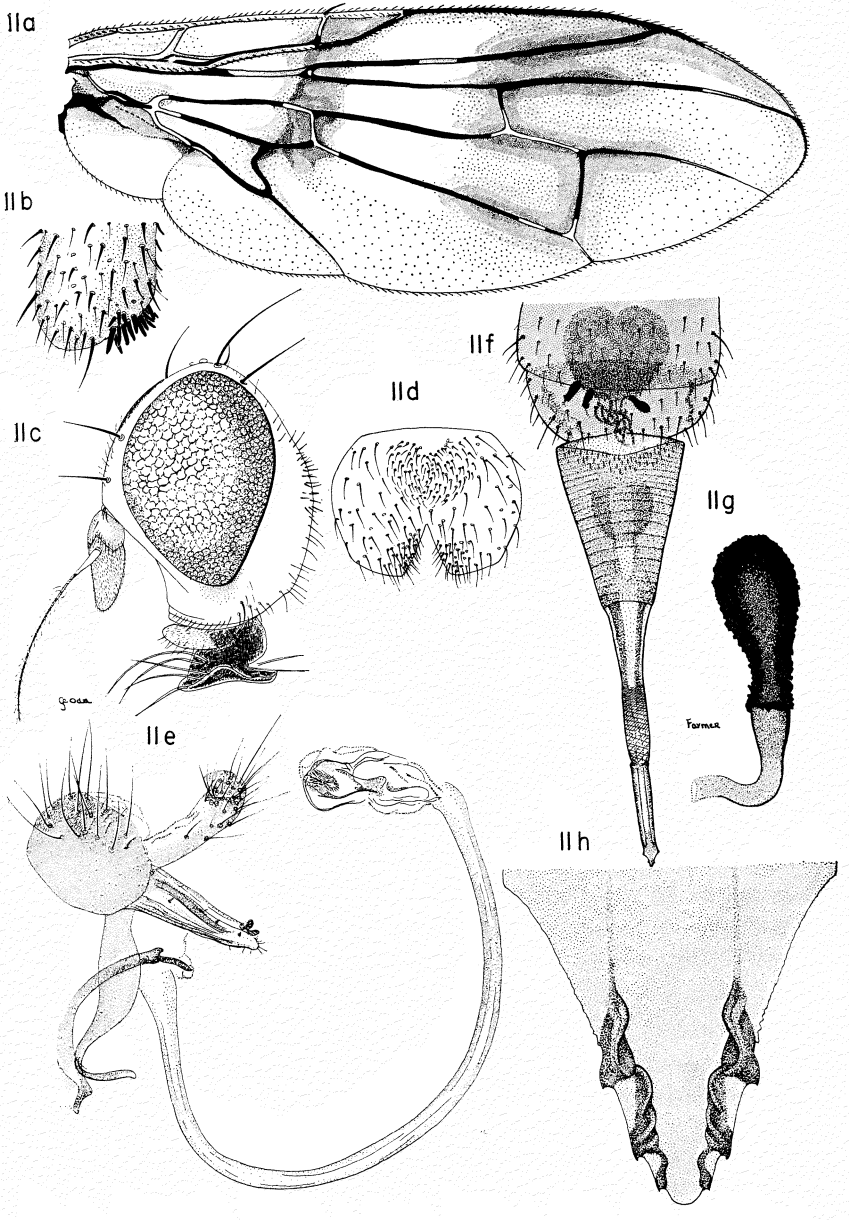


Fig. 11. *Scolocolus bicolor* n. sp.: a, wing; b, front tibia of male; c, head; d, fifth sternum of male; e, male genitalia; f, extended ovipositor; g, spermatheca of female; h. apex of piercer.

extending in the dorsocentral line from just before dorsocentrals to a line drawn between posterior third of humeri. Mesonotum otherwise black in ground color, obscured by the grey pollen, except for a yellow line, continuous with the yellow humeri, extending posteriorly over and along the suture covering all except anterior edge of notopleural callus; with a small isolated brown spot behind each suture, continuous over posterolateral margins to hind margin of sclerite. Lateral margins of mesonotum beneath notopleural bristles, narrowly black. Scutellum black covered with grey pubescence on the disc, yellow around margin and on ventor. Postscutellum, metanotum and pleuroterga black in ground color, densely grey pubescent; the latter thickly covered with erect yellow hairs. Propleura, anterior portion of each mesopleuron, behind the spiracle, and the posterior portion behind the episternal suture yellow, also yellow on upper portion of pteropleuron and posteroventral and narrow posterior border of sternopleuron. Upper edge of each mesopleuron with a rather broad white stripe, extending to base of humerus, also metapleura largely white. Pleura otherwise black covered with grey pubescence. Halteres pale yellow-white. Dorsocentral and prescutellar bristles rather short, approximately half as long as inner postalar bristles. Four strong scutellar bristles present. Scutellum flat with sparse setae around margins. *Legs:* Largely yellow, middle and hind coxae dark brown. Front tibia with a black line extending down the posterior surface and a brown line extending down the anterior surface. Front femur with a small brown posterior spot near apical two-thirds. Front basitarsus brown. Middle femur brown on ventral surface and hind with a preapical ring of brown. Front femur with about five prominent posteroventral spines before the apex and a row of small anteroventral preapical spines. Middle femur with four to five preapical spines in each of the anteroventral and posteroventral rows. Middle tibia with one strong apical spur. Front tibia with a cluster of short, thick, black spines on anteroventral surface at the apex (fig. 11c). *Wings:* Largely hyaline with a prominent dark brown to black crossband extending from subcostal cell to upper basal portion of cell M_4. Also, with a broad brown band extending across apical third of wing, covering the area occupied by the r-m and m crossveins, and also continuing around the margin as a very narrow band extending to apex (fig. 11a). The r-m crossvein situated near apical fourth of cell 1st M_2 and

cubital cell with a short pointed lobe at apex. *Abdomen:* Largely black, densely grey tomentose and covered with yellow setae, apical two-thirds of fifth tergum shining black. Terga 1—4 with a yellow mark on each side on posterior margin. Fifth tergum entirely black. Abdomen rather elongate, almost straight sided, three times longer than wide. Fifth sternum about as wide as long with a deep narrow cleft extending half the length of the sclerite on the hind margin (fig. 11d). Male genitalia as in figure 11e. Epandrium almost globose and surstyli slender, straight sided, rather truncate at apices. Ejaculatory apodeme very slender, not at all expanded.

Length: Body, 9.2 mm.; wings, 8.0 mm.

♀. Fitting the description of the male in most respects with broad yellow posterolateral markings on second tergum and narrow yellow markings on terga 3—5. Fifth tergum entirely pollinose. Sixth tergum subshining dark brown to black, about three-fifths as long as fifth. Basal segment of ovipositor dark brown, tinged with rufous and as seen from dorsal view about equal in length to terga 5—6. Three spermathecae, these are clavate in shape (fig. 11g). Ovipositor as in figure 11f. Basal segment measures 1.75 mm. Piercer rather short, distinctively pointed and serrated at apex as in figure 11h, 1.2 mm. long. Extended ovipositor 4.4 mm.

Holotype male, allotype female and eight paratypes, six males, two females, PALAWAN: Tagembung, 1150 m., Sept. 17—20, 1961. — Type, allotype and some paratypes in the Zoological Museum, Copenhagen. Other paratypes in the U. S. National Museum, B.P. Bishop Museum, and the University of Hawaii.

Staurocneros imitator n. sp. (figs. 12a—b)

This species is very close to *Staurella circumscripta* Hering (1941), from the Lesser Sunda Islands and is differentiated by having only two inferior fronto-orbital bristles, not three; by having the thorax and abdomen entirely rufous except for a clear yellow median vitta extending down the mesonotum from suture to apex of scutellum, and a white mark extending along upper edge of each mesopleuron over the humerus; not with mesonotum and abdomen conspicuously marked with black. Also by having the basal segment of the ovipositor rufous except for a brownish tinge at apex, and equal in length to terga 3—5; not brown to

black, tinged with rufous and about as long as abdomen. The wing markings are very similar in the two, I see no differences which appear to be of significance. This is also close to *flavina* (Hering) from New Guinea and Bismarck Islands, but differs by having the head distinctly longer than wide, much more distinctly narrowed in front as seen in direct lateral view; by having a large black spot occupying the middle of the front and a prominent pale yellow median vitta extending down mesonotum from suture over apex of scutellum.

The genus *Staurocneros* Hering was erected, with *Staurella circumscripta* Hering as type, to differentiate those species of *Staurella* (I treat this as a subgenus of *Euphranta*) which have the subcostal cell elongate, equal in length to the second costal cell. Hering also included other characteristics which I have found to be trivial and of no value. I also question the value of the length

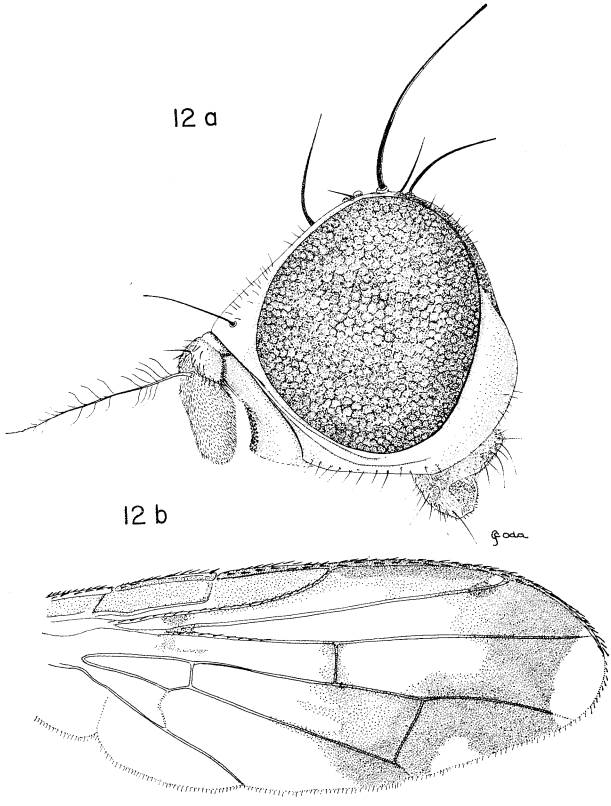


Fig. 12. *Staurocneros imitator* n. sp.: a, head; b, wing.

of the subcostal cell in this particular case and I am discussing this in my monograph of the Philippine Tephritidae, *in press*. The new species on hand has such a distinctive head shape (fig. 12a), that I am treating it under *Staurocneros*. The status will be discussed in the Philippine study. The head shape has not been recorded for the type of the genus. Hering made no mention of it and this may not be a generic character.

♂. *Head:* Longer than high, distinctly narrowed anteriorly as seen in lateral view. The height measured at about level with the vertex is almost two times the height measured along the front margin (fig. 12a). As seen from dorsal view, head broad, distinctly wider than the front portion of the thorax. Front rather broad, not much longer than wide and yellow with a large oblong median spot extending between the upper pair of inferior fronto-orbitals from ocellar triangle to lower two-thirds of front. Face yellow with a polished black spot in middle just above epistoma. A large shining black spot also occupies each side of upper occiput. Occiput slightly swollen, at widest point about half the width of the eye. Compound eyes almost circular. Antennae yellow, third segment about twice as long as wide, rounded at apex. Arista plumose, the longest hairs are about four-fifths the width of the third segment. Three pairs inferior fronto-orbitals present with the second pair rudimentary, hair-like, and not clearly differentiated. Lower inferior fronto-orbitals situated just above lower margin of front and upper pair situated near upper two-thirds of front and just slightly in front of superior fronto-orbitals. Ocellar bristles rudimentary, postocellars short but distinct. *Thorax:* Shaped as in *Euphranta* (*Staurella*) and with strong dorsocentral and prescutellar bristles. Entirely rufous except for the yellow vitta extending down middle of mesonotum from about level of anterior notopleural bristle over middle of scutellum and with a white band extending along upper margin of each pleuron over humerus. With a tinge of brown on anterior margin of mesonotum in the areas between the inner and outer scapular bristles and with a pair of faint longitudinal streaks of brown extending over the metanotum. *Legs:* Entirely yellow, each middle tibia with a single strong apical spur. *Wings:* As in figure 12b. Median portion largely hyaline, with brown markings extending from base of second costal cell around wing margin to apex of cell R_3; with a broad brown band extending across the wing at this point,

leaving a large hyaline apical spot extending to hind margin of wing, along vein M_{3+4} over the m crossvein, to wing margin, with an isolated hyaline spot on margin on cell 2nd M_2 in the female (fig. 12b) and with 2nd M_2 entirely brown in the male. Vein R_1 extending slightly beyond a level with the r-m crossvein so the subcostal cell is equal or slightly longer than 2nd costal cell. Vein R_{4+5} is setose from the base about half the distance to r-m crossvein. The lobe at apex of cubital cell is short and pointed. *Abdomen:* Entirely rufous, lacking any dark markings except for the shining black epandrium of the genitalia. Abdomen straight sided and slender, about four times longer than wide. The genitalia have not been dissected for study.

Length: Body, 6.0 mm.; wings, 5.0 mm.

♀. Fitting the description of the male in most respects. Basal segment of ovipositor rufous except for a tinge of brown at apex and about equal in length to terga 3—5. The piercing structures have not been extended for study.

Holotype male and allotype female, BALABAC: Dalawan Bay, Oct. 11, 1961, in malaise trap. — In the Zoological Museum, Copenhagen.

Tribe GASTROZONINI

Enicoptera spoliata Hering

Henicoptera spoliata Hering, 1937, Phil. Jour. Sci. 63(1):106, figs. 1a-b.

One female, MINDANAO: Sapamoro, Dec. 18, 1961, in malaise trap.

Tribe TRYPETINI

Acidiella denotata n. sp. (figs. 13a—b)

This species rather closely resembles *A. tumifrons* Chen, from Chekiang, China, but is differentiated by having the dorsocentral bristles situated rather near the postalar bristles rather than just slightly behind the supraalars; by having the subcostal cell almost entirely brown rather than predominantly hyaline and by having small hyaline spots on wing margin just beyond middle of cell R_1, in middle of cell 2nd M_2 and in middle of cell M_4, rather than having large hyaline spots in these cells; and also by lacking a hyaline spot at upper apex of cell 2nd M_2 (compare figure 13a with figure 14, Chen, 1948:114). Also, the front is not swollen and produced above the antennae as in *tumifrons* (it should be noted

that *tumifrons* was described from the male and this may be a sexual character).

♀. *Head:* Entirely yellow, except for the eyes, similar in shape and most respects to that of *freyi* n. sp., with three pairs inferior fronto-orbitals and two pairs superior fronto-orbitals. Ocellar bristles slightly smaller than postocellars. *Thorax:* Entirely yellow covered with grey tomentum on the dorsum and thickly pale setose. Humeri, and a line along upper mesonotum extending to wing base, white. Scutellum concolorous with mesonotum, bare on the disc and with short yellow-brown setae along sides in addition to the four strong black bristles. All thoracic bristles black. Postscutellum dark brown to black covered with grey pubescence. Metanotum reddish brown. Propleura rather thickly yellow setose. *Legs:* Yellow, densely setose, middle tibia with one strong black apical spur. *Wings:* Predominantly dark brown with small hyaline spots around margin as in figure 13a. Subcostal cell slightly over half as long as second costal. The r-m crossvein is situated at about apical two-thirds of cell 1st M_2 and lobe of cubital cell short, one-sixth to one-eighth as long as Cu_1+1st A. The r-m and m crossveins approximately parallel. Vein R_{4+5} setose almost to a level opposite the m crossvein. *Abdomen:* Mostly yellow-brown, darker down the median portions of the terga, yellow on sides of all terga. Sixth tergum almost as long as fifth. Entire abdomen densely yellow-brown setose. Base of ovipositor brownish red, about equal in length to fifth tergum and about .75 mm. long. Piercer short and thick, shaped very much like that of *freyi* but narrower and with fewer serrations on the margins (fig. 13b). Piercer .3 mm. long. Extended ovipositor 1.25 mm. long.

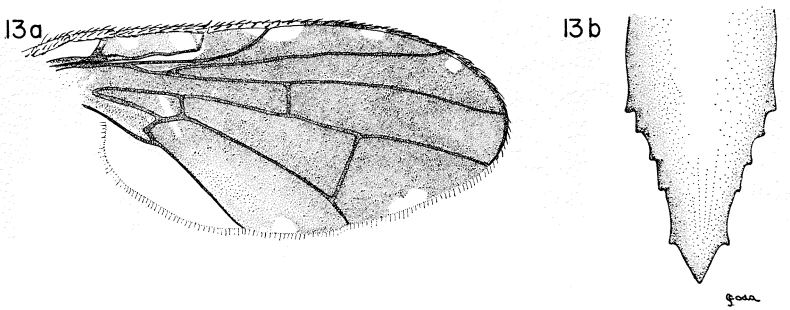


Fig. 13. *Acidiella denotata* n. sp.: a, wing; b, apex of piercer *in situ*.

Length: Body, excluding ovipositor, and wings, 6.0 mm.

♂. Unknown.

Holotype female, PALAWAN: Uring Uring, Aug. 17, 1961, in light trap. One female paratype, PALAWAN: Pinigisan, 600 m., Sept. 17, 1961, in malaise trap, inside forest. — Type in the Zoological Museum, Copenhagen. Paratype in the University of Hawaii collection.

Acidiella freyi n. sp. (figs. 14a—d)

This species fits the characteristics of *Acidiella* but differs from any previously described species by having one large wedge-shaped mark in the middle of anterior margin of the wing and a large elongate hyaline spot extending through the area between the r-m and m crossveins (fig. 14b).

♀. *Head:* Higher than long, with the occiput gently swollen on the lower portion, at its widest point approximately half the width of the eye (fig. 14a). Eyes oblong, almost one-third higher than long. Head yellow to rufous except for reddish brown eyes, and except for a tinge of brown on the genae. Three pairs of inferior fronto-orbitals. Interfacial area rather thickly setose. Ocellar bristles moderately developed, about equal in size to postocellars. Face gently concave medianly as seen from lateral view, the epistomal margin produced, especially on the sides; median portion of face almost flat. Genae rather densely short setose. Antennae yellow to rufous. Third segment approximately three times longer than wide, rounded at apex. Arista short pubescent. *Thorax:* Largely yellow, tinged reddish brown in ground color of the dorsum, entirely subshining, thickly reddish to black setose on the dorsum, yellow setose on the sides. Humeri white and with a white mark extending along upper mesonotum connecting with the notopleural callus. Scutellum white, tinged faintly with yellow, completely bare except for the four strong black bristles. Postscutellum yellow, metanotum and pleuroterga rufous, tinged faintly with brown. All thoracic bristles black, propleura with three brown to black bristle-like setae on the front margin, and with a number of yellow hairs scattered over the sclerite. *Legs:* Entirely yellow, densely setose, with rows of posteroventral and posterodorsal setae (small bristles) on front femur and a prominent row of anterodorsal setae on hind tibia. Middle tibia with one strong apical spur. *Wing:* Predominantly brown with large hyaline marks as in figure 14b. The r-m crossvein situated near apical

three-fourths of cell 1st M_2 and m crossvein slightly bent, convergent to r-m. Lobe of cubital cell approximately one-fourth as long as Cu_1 + 1st A. Subcostal cell about half as long as second costal. Wings rather slender, tapered slightly on posteroapical margin, about three times longer than wide. Vein R_{4+5} with four setae arranged near base and usually with one seta beyond, approximately opposite tip of vein R_1. *Abdomen:* Mostly yellow, rather thickly black setose, with a broad brown band on each of terga 3 and 4, and with lateral margins of terga 3—6 brown. Two oblong spermathecae present. Sixth tergum approximately two-thirds to three-fourths as long as fifth. Basal segment of ovipositor shining brown to black. As seen from dorsal view, the basal segment is

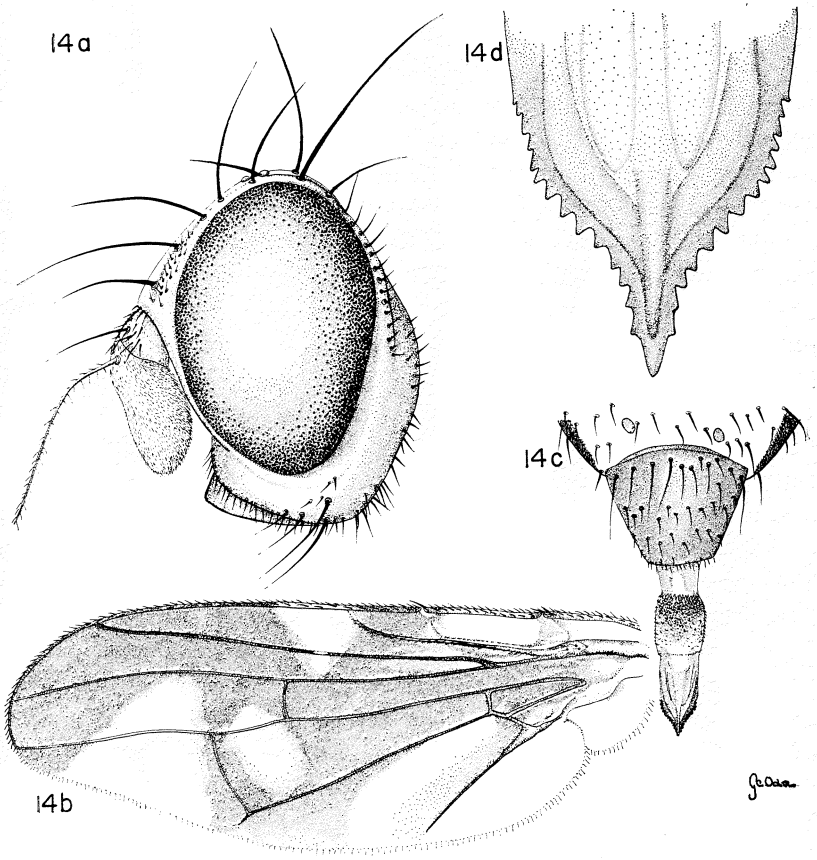


Fig. 14. *Acidiella freyi* n. sp.: a, head; a, wing; c, extended ovipositor; d, apex of piercer.

approximately equal to the fifth tergum, is just slightly longer than wide, and measures approximately .7 mm. Piercer short and thick, tapered to a sharp point at apex and with numerous serrations along the tapered margins (fig. 14d). Piercer .5 mm. long by approximately .19 mm. at its widest point. Extended ovipositor (fig. 14c) 1.2 mm.

Length: Body and wings, excluding ovipositor, 5.4 mm.

♂. Unknown.

Holotype female, LUZON: Banahao, April, 1914 (from the Frey Collection, Helsinki). One paratype female, TAWI TAWI: Tarawakan, Nov. 8, 1961, in malaise trap. — Type in the Zoological Museum, Helsinki. Paratype in the Zoological Museum, Copenhagen.

Acidoxantha balabacensis n. sp. (figs. 15a—d)

This species resembles *A. punctiventris* Hendel, from Formosa, but differs by having four prominent black spots on the fourth tergum of the male and having the lower portions of metapleura and hypopleura marked with black. It appears most closely related to a new species being described from Laos, but differs by having the Y-shaped marking through the middle of the wing much narrower, with the width of stem of the Y in cell 1st M_2 about equal to the length of the r-m crossvein and with the anterior arm of the Y narrower, leaving a large elongate hyaline spot occupying the basal three-fifths to two-thirds of cell R_5 (from base of R_5 at junction of vein R_{4+5} with R_{2+3}, three-fifths to two-thirds distance to r-m crossvein). In the species from Laos, the Y-shaped mark through the middle of the wing is very broad and in middle of cell 1st M_2 the width is almost equal to the length of the m crossvein and about two times longer than r-m crossvein. The anterior arm of the Y nearly fills the basal portion of cell R_5. Also in *balabacensis* the costal band fills all of the apex of cell R_5 and is rather broad (fig. 15a), while in the species from Laos the costal band is very narrow in wing apex and does not fill the apex of cell R_5. Otherwise fitting the description of other species of *Acidoxantha,* these are all very much alike in body coloring and wing markings. I see no distinctive features in the male genitalia. Wings as in figure 15a. Genitalia as in figure 15b. Abdominal terga 4 and 5 each with two submedian basal black spots and two posterolateral black spots. Mesonotum with a narrow brown mark on hind margin behind each prescutellar bristle. Female with a

pair of conspicuous submedian basal spots on terga 4 and 5, and with a tiny pair of submedian basal spots on tergum 6. Fifth tergum with a small inconspicuous posterolateral spot on each side and sixth with a rather prominent pair of posterolateral spots (fig. 15c). The basal segment of the ovipositor is almost straight sided, thick, rather bulbous, and as seen from direct dorsal view almost equal to the length of the last three terga. The base is 1.4 mm. long by 0.6 mm. wide. The piercer measures 2.7 mm.

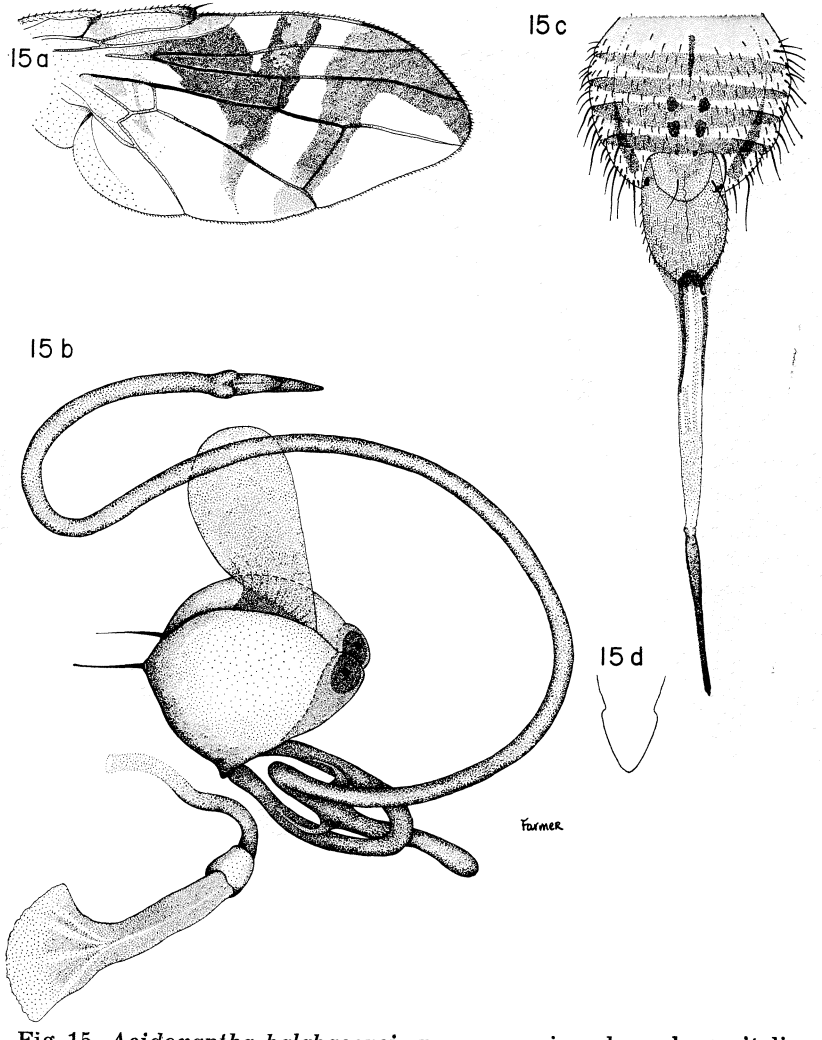


Fig. 15. *Acidoxantha balabacensis* n. sp.: a, wing; b, male genitalia; c, abdomen and ovipositor of female; d, piercer of female.

and the tip is developed into a distinct spear head (fig. 15d). The extended ovipositor (fig. 15c) measures 6.7 mm.

Length: Male, body, 5.5 mm.; wings, 5.0 mm.; female, body, 6.0 mm.; wings, 5.5 mm.

Holotype male, allotype female, and seven paratypes, one female, six males, BALABAC: Dalawan Bay, Oct. 8, 1961. — Type, allotype and two paratypes in the Zoological Museum, Copenhagen. Other paratypes in the B. P. Bishop Museum and the University of Hawaii.

Acidiella longipennis Hendel

Acidiella longipennis Hendel, 1915, Ann. Mus. Nat. Hung. 13:457.

Four females, PALAWAN: Uring Uring, Aug. 14, 1961, in light trap; Pinigisan, 600 m., Sept. 3—9, 1961, in malaise trap, outside forest.

Neanomoea n. sp.

One male, TAWI TAWI: Tarawakan, Nov. 16, 1961, in malaise trap.

Being described in Philippine monograph in preparation.

Vidalia tuberculata n. sp. (figs. 16a—b)

The species on hand fits the genus *Vidalia* because of the presence of only one pair of superior fronto-orbital bristles and by the wing venation and markings. It differs from most species in this genus by lacking the long processes developed from the front, but it does show the beginning stage of this development. The front is carinate on each side, and the upper inferior fronto-orbital bristle is situated on a rather prominent tubercle (fig. 16a). This would appear to fit nearest *V. bidens* Hendel from Formosa, the wing markings are almost identical in the two. It differs by having the head almost normal in shape with the sides of the front slightly raised and with just a small tubercle at base of upper superior fronto-orbital bristle, rather than having both pairs of the inferior fronto-orbitals situated on very prominent tubercles and the bristles large and flattened. In *bidens* the upper inferior fronto-orbitals are nearly two times longer and more than twice as broad as the inner vertical bristles. In *tuberculata* the upper inferior fronto-orbital bristle is just slightly longer and slightly thicker than the inner vertical and the lower inferior fronto-orbital is comparatively small, not noticeable thickened or flat, and less than two-thirds as long as inner verticals.

♂. Head: Slightly higher than long, with the occiput only scarcely produced as seen in lateral view, and the front gently sloping so that the antennae are situated at the middle of the head (fig. 16a). Head entirely yellow, except for the reddish brown compound eyes and the black ocellar triangle. Face nearly vertical, only slightly raised down the median portion. Front narrowing anteriorly, the width measured just below median ocellus is one-third greater than the width measured just above antennae. At the broadest point, the front is as wide as long. Lateral margins gently carinate, median portion flat, smooth, devoid of setae. Bristles arranged as in figure 16a. One pair of small superior fronto-

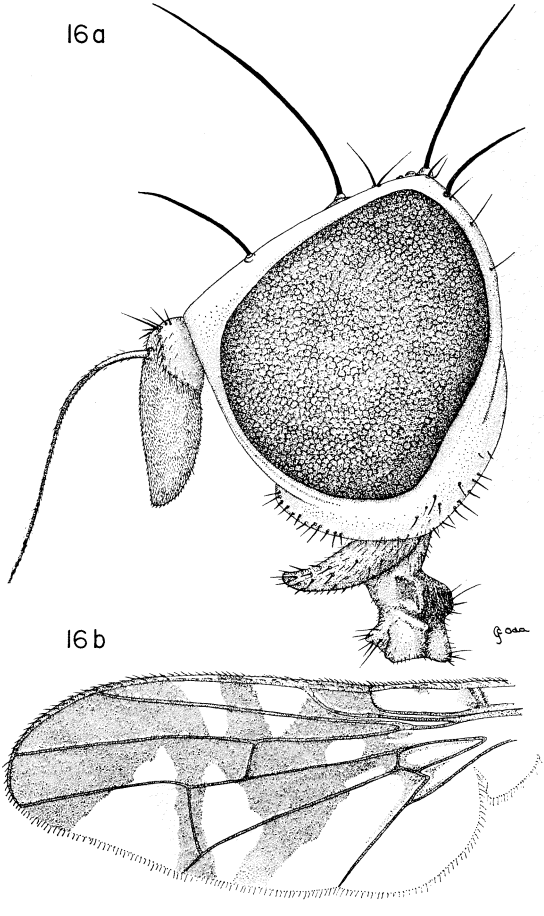


Fig. 16. *Vidalia tuberculata* n. sp.: a, head; b, wing.

orbitals, these are rather hair-like and approximately equal in size to postocellar bristles. Also, a prominent seta (rudimentary bristle) is present immediately above the upper inferior fronto-orbital. Ocellar bristles rudimentary, seta-like. Antennae yellow, third segment about two times longer than wide and rounded at apex. Arista nearly bare. Palpi yellow, with few scattered black setae around the margins. *Thorax:* Yellow to rufous in ground color with humeri yellow-white. Notopleura and scutellum white. Propleura with prominent yellow setae, thoracic bristles black. Scapulars well developed. Dorsocentrals situated almost in line with supraalars. *Legs:* Yellow, middle tibia with one strong apical spine. *Wings:* Marked as in figure 16b, with two hyaline wedges on costal margin beyond apex of vein R_1, these extend to vein R_{4+5}. Also with a prominent hyaline wedge from wing margin through cell 2nd M_2 two-thirds the distance to cell R_5 and another wedge from margin near apex of M_4 through 1st M_2 into part of cell R_5. Also with a large hyaline spot near basal portion of cell 1st R_5. The r-m crossvein situated near apical three-fourths of cell 1st M_2. Lobe of cubital cell approximately one-third as long as vein Cu_1 + 1st A. Vein R_{4+5} setose to the r-m crossvein. *Abdomen:* First three terga entirely yellow; terga 4—5 polished black. Epandrium polished black; surstyli yellow, long and narrow. The genitalia have not been dissected for detailed study.

Length: Body, 3.9 mm.; wings, 3.6 mm.

♀. Unknown.

Holotype male, BALABAC: Dalawan Bay, Oct. 8, 1961, in light trap. — In the Zoological Museum, Copenhagen.

Subfamily SCHISTOPTERINAE

Rhabdochaeta bakeri Bezzi

Rhabdochaeta bakeri Bezzi, 1913, Phil. Jour. Sci. D, 8:328.

One male. TAWI TAWI: Lapid Lapid, Nov. 21, 1961.

Rhabdochaeta dorsosetosa n. sp. (figs. 17a—b)

This species fits near *senior-whitei* Bezzi, from Ceylon because of the narrow dark rays in the anterior portion of the wing and the presence of presutural dorsocentral bristles on the mesonotum. It differs by having four pairs of dorsocentral bristles, two presutural in position, rather than three pairs of dorsocentrals and one presutural pair; by having the mesonotum uniformly black, not

with a broad stripe down the middle; by having the hyaline mark from the wing margin in cell R_3 extending uninterrupted into upper portion of cell 2nd M_2, rather than being interrupted by a brown mark in cell R_5; and by having only two shining red bullae in the middle of the wing, rather than three. The presence of two extra pairs of marginal setae on the scutellum is also probably diagnostic. This species would also fit near *centralis* Hendel, from Formosa but differs by having the four pairs of dorsocentral

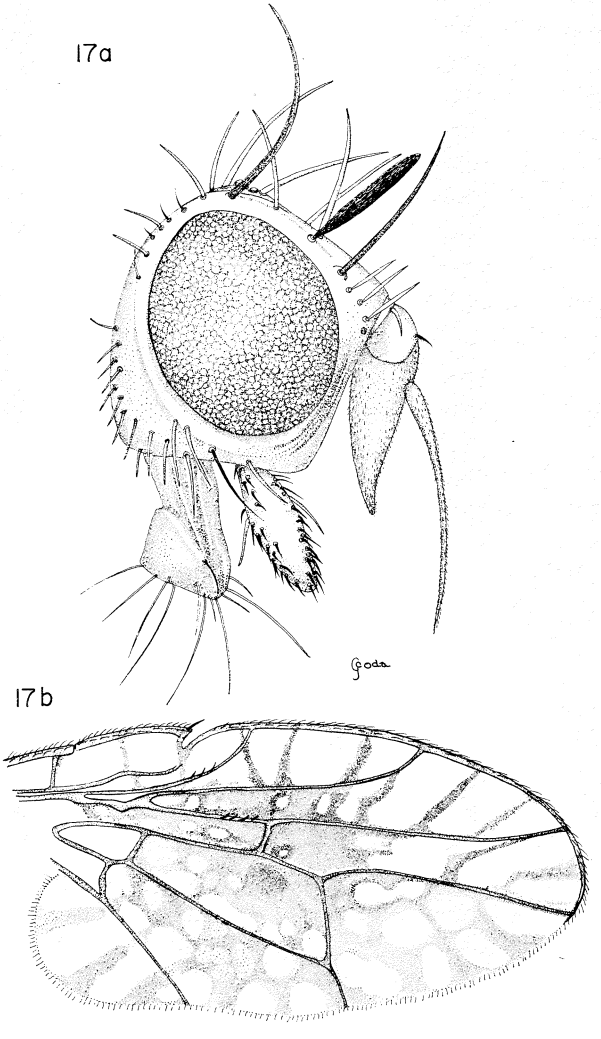


Fig. 17. *Rhabdochaeta dorsosetosa* n. sp.: a, head; b, wing.

bristles and by having an isolated brown streak through apex of cell R_5.

♂. *Head:* Slightly broader than thorax as seen directly from above, and as seen in lateral view approximately as long as high. Compound eyes oval. Entirely yellow-grey except for the compound eyes and except for a dark mark in ground color of median portion of occiput. Front broad, distinctly wider than long and greater in width than one compound eye as seen from above. Face concave medianly as seen in lateral view and raised down the median portion. Front with four pairs of inferior fronto-orbital bristles, the upper bristle is black, flat and scale-like. The second bristle from the top is dark colored. The lower bristles are white. Two pairs superior fronto-orbitals, the lower is yellow-brown and situated almost opposite the upper inferior fronto-orbital. Also, with a pair of white bristles situated in the middle of the front in line with the ocellar triangle. Ocellar bristles strong and white, also postocellars white, inner vertical bristle yellow-brown, well developed; outer vertical short, white, about equal in size to postocular setae. Antennae yellow, third segment long-pointed as in figure 17a. One black bristle present on each gena, about equal in length to fronto-orbitals. *Thorax:* Dark brown to black in ground color over most of the dorsum, yellow on lateral margins and densely grey pollinose with a rather thick covering of flat scale-like yellow setae over the mesonotum. Scutellum yellow, postscutellum yellow-brown in ground color covered with grey pollen. Metanotum shining black in ground color densely grey pollinose over the upper portion, polished black below. Pleura predominantly brown to black in ground color with propleura yellow except for a brown spot immediately below each humerus, anterior and dorsal margins, also posteroventral portion of each sternopleuron yellow. Halteres pale yellow-white. The two pairs of presutural dorsocentrals are white, the postsutural dorsocentrals are yellow-brown. Scutellum with four strong bristles, the lateral bristles yellow-brown, the dorsoapical bristles yellow-white, also with a pair of smaller cruciate white setae immediately posterior to the dorsoapical bristles and with one or two prominent white setae on each side. *Legs:* Mostly yellow, middle femur with two brown ventral spots, one near basal fourth and one near apical two-thirds. Middle tibia with a narrow brown band near basal one-fourth of segment. Hind femur with a preapical brown mark

extending over postero-ventral and anterior margins and with a corresponding brown ring near base of hind tibia. One prominent apical spur on middle tibia. *Wings:* As in figure 17b, with only two shining red areas in the middle. *Abdomen:* Brown to black on the sides with a broad yellow mark extending down the middle from near base of first tergum to apex. The brown to black marking on the sides is opaque grey except on the fifth tergum where a polished brown preapical mark is present on each side. A pair of preapical, dorsal, white bristles is present in the middle of terga 2—5. Genitalia yellow, these have not been dissected for study.

Length: body and wings, 2,0 mm.

♀. Fitting the description of the male in most respects. Sixth tergum well developed, one-half longer than the fifth, and with a polished dark brown to black crescent-shaped mark in the middle portion, with the points directed posteriorly. Ovipositor yellow, basal segment about .8 mm. long. The piercer has not been extended for study.

Holotype male, allotype female, one male paratype, PALAWAN: Pinigisan, 600 m., Sept. 8, 1961. — Type and allotype in the Zoological Museum, Copenhagen. Paratype in the University of Hawaii collection.

Rhabdochaeta multilineata Hering

Rhabdochaeta multilineata Hering, 1941, Arb. Morph. Taxon. Ent. Berlin 8(1):44, fig. 14.

One male. BALABAC: Dalawan Bay, Oct. 7, 1961.

Subfamily **TEPHRITINAE**

Tribe PLATENSINI

Platensina zodiacalis (Bezzi)

Tephritis zodiacalis Bezzi, Mem. Ind. Mus. 3:163, pl. X, fig. 65.

One male. TAWI TAWI: Lapid Lapid, Nov. 21, 1961.

Tribe TEPHRITINI

Dioxyna sororcula (Wiedemann)

Trypeta sororcula Wiedemann, 1830, Aussereur. Zweifl. Ins. 2:509.

Two specimens. PALAWAN: Pinigisan, 600 m. Sept. 6—7, 1961.

Scedella sinensis (Schiner)

Sphenella sinensis Schiner, 1868, Reise Österr. Freg. Novara. Zool. 2(1):267.

Three specimens. TAWI TAWI: Tarawakan, Nov. 18, 1961.

Tephritis formosella (Hendel)

Euribia formosella Hendel, 1915, Ann. Mus. Nat. Hung. 13:465, fig. 20.

One male. PALAWAN: Uring Uring, Aug. 13, 1961.

Trupanea glauca (Thomson)

Trypeta glauca Thomson, 1869, Dipt. Eugen. Resa. p. 581.

Two specimens. MINDANAO: Sapamoro, Dec. 19, 1961. — TAWI TAWI: Lapid Lapid, Nov. 21, 1961.

Trupanea decepta n. sp. (fig. 18)

This species fits near *T. ambigua* Shiraki, from Formosa, but differs by having the subcostal cell short, less than half the length of the second costal cell, rather than costal cell comparatively elongate, two-thirds as long as second costal; by having the thorax yellow to rufous in ground color, except for brown discoloration over the posterior portion of the mesonotum, rather than having the thorax almost entirely black in ground color; also the wing markings differ as shown in figure 18, compared with figure 5, Shiraki, 1933, pl. 13.

♂. *Head:* Yellow except for the dark-colored eyes and a tinge of brown on hind portion of occiput. Front with a faint tinge of brown in the ground color and densely grey pollinose. Head approximately as long as high, front gently sloping so the antennae are situated at the middle of head as seen in direct lateral view. Occiput gently swollen, at its widest point approximately two-fifths the width of the eye. Eye oblong, narrower on upper portion,

fig. 18

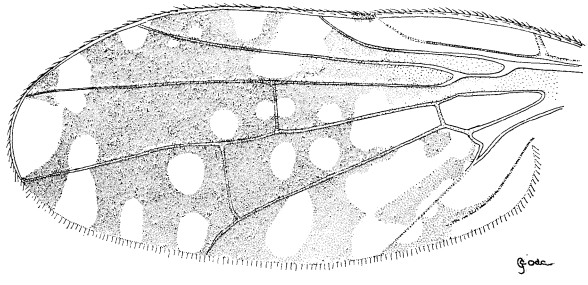


Fig. 18. *Trupanea decepta* n. sp.: wing.

broadly rounded below. Genae rather broad, at widest point about one-fifth the height of eye. All head, and body, bristles yellow with a faint tinge of brown. Three pairs of inferior fronto-orbitals and two pairs superior fronto-orbitals, these are comparatively short, only about two times longer than squamose white postocular setae on the occiput. Antennae yellow, third segment short, scarcely longer than wide. Arista short pubescent. Palpi with numerous yellow hairs on ventral margins and with brown to black setae at apices. *Thorax:* Yellow-red in ground color, brown on posterior portion of mesonotum, tinged with brown on upper portion of pteropleura and brown to black on metanotum except for rufous tinge down median portion. Mesonotum yellow-grey pubescent, thickly covered with flat, recumbent pile. Humeri pale yellow. Scutellum sparsely setose with flat, scale-like setae around margins, and with two strong yellow bristles. Dorsocentral bristles situated distinctly in front of a line drawn between supraalars. *Legs:* Entirely pale yellow. *Wings:* Hyaline basally, largely dark brown over apical half with hyaline spots around the margin and in the field as in figure 18. The r-m crossvein situated near apical four-fifths of cell 1st M_2 and cubital cell with a very short point at lower apex. Only vein R_1 setose, others bare. *Abdomen:* Predominantly yellow, tinged with brown at apices and at median portions of terga. The genitalia have not been relaxed for study.

Length: Body, 5.0 mm.; wings, 4.75 mm.

♀. Unknown.

Holotype male, PALAWAN: Uring Uring, Aug. 17, 1961, in light trap. — In the Zoological Museum, Copenhagen.

2. Species from the Bismarck Islands

Subfamily **DACINAE**

Tribe ADRAMINI

Adrama rufithorax Malloch

Adrama rufithorax Malloch, 1939, Ann. Mag. Nat. Hist. ser. 11, 4:249.

Type male and one female paratype Russell Is., Lingatu, Solomons, in British Museum (Nat. Hist.).

Seven males, two females, MUSSAU: Talumalaus, 23 Jan. 1962 fit here but show some slight differences from the type of *rufithorax*. The spacing of the inferior fronto-orbital bristles seems variable and is slightly less than in the type of *rufithorax:* 2nd

bristle placed one-fourth to slightly over one-third the distance to superior fronto-orbitals, rather than about two-fifths as in Malloch's type (in his paratype it is one-third). The Bismarck specimens have a distinct dark brown band extending from wing margin across r-m crossvein to middle of cell 1st M_2, vein M_{3+4} evanesces before reaching the wing margin and the middle femur has 6—7 anteroventral spines. In the two specimens from the Solomons a rather faint brown mark extends over r-m but not to wing margin or into cell 1st M_2, vein M_{3+4} appears to reach the wing margin and the middle femur has 9 anteroventral spines. I see no other differences in these and doubt that the characters noted are of significance. It will be neccessary to examine more specimens from the Solomons.

This species is characterized by having the entire thorax and face, rufous, and the wings almost entirely brownish yellow with a subhyaline mark in cells R_5 and 1st M_2 beyond the r-m crossvein. It fits near *fuscoapicata* Malloch, from Guadalcanal, but is differentiated by having the r-m crossvein situated in a distinct dark fascia at about basal two-fifths from apex of cell 1st M_2. In *fuscoapicata* the crossvein is not clouded and is situated at or slightly before middle of cell 1st M_2. I question the value of the spacing of the inferior fronto-orbitals in separating *rufithorax* from *fuscoapicata*. This character seems variable especially in specimens from the Bismarcks.

Tribe DACINI

Dacus (Strumeta) atramentatus (Hering)

Strumeta atramentata Hering, 1941, Siruna Seva. 3:9, fig. 5.

Two males. MANUS: Lorengau, June 15, 1962.

Dacus (Strumeta) caliginosus n. sp. (figs. 19a—c)

This species fits near *nigrotibialis* (Perkins), from Malaya, but differs by having the costal cells infuscated with brown and covered with microchaetae, not hyaline and bare except at apex of 2nd costal cell; by having the abdomen all black, not with apex of second yellow and with yellow marks in middle of fourth and fifth terga; by having the face predominantly yellow with black spots, rather than predominantly dark brown to black; the cubital streak very broad (fig. 19a), not narrow, etc. It also appears similar to *exspoliatus* (Hering), from New Guinea but differs by

having the costal cells brown, not hyaline; by having two post-sutural yellow vittae on the mesonotum; having no brown spots at bases of frontal bristles; the costal band extending only a short way beyond apex of vein R_{4+5} (fig. 19a), not extending two-thirds the distance between apices of R_{4+5} and vein M_{1+2}; and by having hind femora yellow basally, not with all femora black.

♂. *Head:* Occiput brown to black except for a narrow yellow to rufous margin around sides and across top. Front rufous, face yellow with a large oblong spot in each antennal furrow, these do not reach the margin; also with a small brown spot on each gena below eye margin. Basal two segments of antennae yellow, third segment brown, tinged with rufous. Two pairs of evenly spaced fronto-orbital bristles, one pair superior fronto-orbitals. Front about one-third longer than wide, and approximately two-thirds

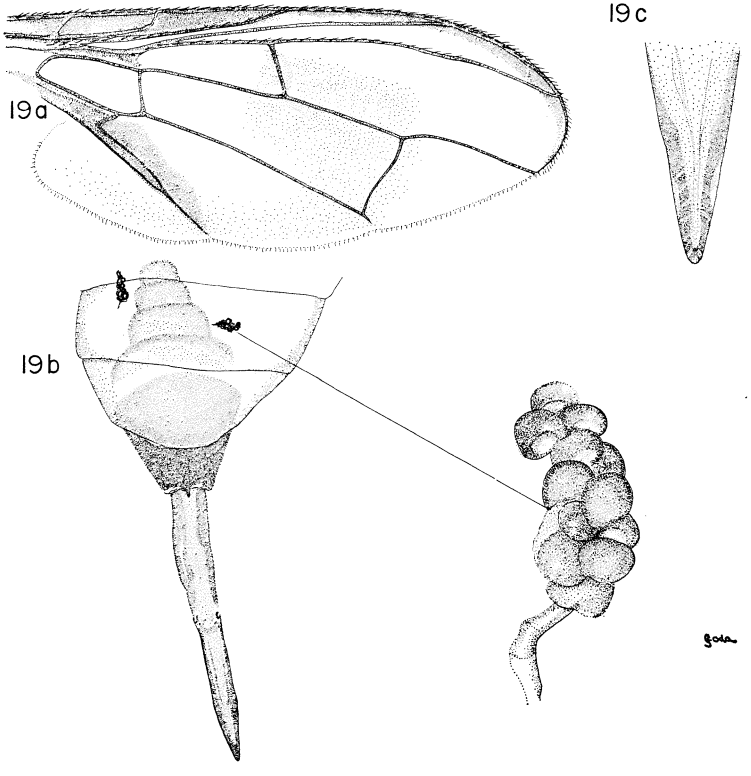


Fig. 19. *Dacus (Strumeta) caliginosus* n. sp.: a, wing; b, extended ovipositor; c. apex of piercer.

the width of one eye. *Thorax:* Polished black, with grey pubescence on pleura and on mesonotum in form of two submedian vittae extending the entire length, also grey pubescent on each side along suture. Postsutural yellow vittae very narrow, evanescing a considerable distance before the inner postalar bristle; the vittae extend scarcely half the distance between the supraalars and postalars. Humeri, except for yellow-brown anterolateral corners, notopleural calli and scutellum, except for rather broad black basal band, white. Also the vertical mark on the mesonotum, a tiny spot on upper sternopleuron and a broad mark over metapleuron and pleurotergon are white. *Legs:* Coxae, trochanters, front and middle femora, and hind tibiae brown to black. Hind femora brown on apical halves, brown basally and middle and front tibiae yellow, tinged with brown. Basitarsi yellow, other tarsomeres yellow-brown. Preapical dorsal sensory structure on hind tibia prominent. *Wings:* Subhyaline with a prominent costal band and comparatively broad cubital band, also with a tinge of brown through costal cells and along r-m crossvein. Costal cells densely covered with microchaetae. Costal band rather narrow, fading out in upper portion of apex of cell R_5 (fig. 19a). The r-m crossvein situated at middle of cell 1st M_2. *Abdomen:* Subshining black, the integument minutely sculptured and densely covered with white hairs. Posterolateral margins of second tergum and apex of fifth tergum tinged with yellow. Tergal glands large, occupying the greater portion of each side of the fifth tergum. The genitalia have not been dissected for study.

Length: Body, 6.0 mm.; wings, 5.5 mm.

♀. Fitting the description of the male. Basal segment of ovipositor shining black, as seen from dorsal view, the base protrudes scarcely half of the length of the fifth abdominal tergum. As seen from ventral view, the basal segment is short and thick, only slightly longer than wide, the length equaling 1.25 mm. Piercer reddish brown, evenly tapered to the apex (fig. 19c), and 1.35 mm. in length. Extended ovipositor (fig. 19b) measures 3.85 mm.

Holotype male, NEW BRITAIN: Yalom, 1000 m., May 20, 1962. Allotype female, same data as type, except May 8, 1962. Four paratypes, two males, two females same data as type, May 8—18, 1962. — Type, allotype and two paratypes in the Zoological Museum, Copenhagen. Two paratypes in the University of Hawaii collection.

Dacus (Strumeta) epicharis n. sp. (figs. 20 a—b)

Fitting very near *caliginosus* n. sp. but differing by having the costal cells bare of microchaetae except in apical half of second cell and along the extreme upper edge of first; also by the very broad costal band (fig. 20a); by having a distinct yellow mark on each side of posterior margin of second tergum and the bases and ventral margins of all femora yellow. Because of the broad costal band it would resemble *latus* (Perkins), from Malaya, but that species differs by having the face predominantly black, the front and middle femora black, the postsutural yellow vittae on mesonotum much larger and extending to postalar bristles, etc.

♂. Fitting the description of *caliginosus* in most regards. *Head:* With a slight discoloration of brown present at bases of frontal bristles. *Thorax:* White mark over mesopleuron occupying posterior third of that sclerite, both anterior and posterior margins of white mark are nearly vertical. White mark on upper portion of sternopleuron tiny as in *caliginosus*. *Legs:* With bases and ventral margins of femora yellow, also anterior surface of front femora yellow. *Wings:* Costal cells hyaline or nearly so. Devoid of microtrichia in basal portion of second cell and in all, except dorsal margin, of first costal cell. Costal band filling almost all of cell R_3 (fig. 20a) and with a tinge of brown extending over upper portion of r-m crossvein. Cubital band broad. The r-m crossvein situated near apical three-fifths of cell 1st M_2. *Abdomen:* As in *caliginosus* except that the apex of second tergum is yellow with a black vitta through middle.

Length: Body, 7.0 mm.; wings, 6.0 mm.

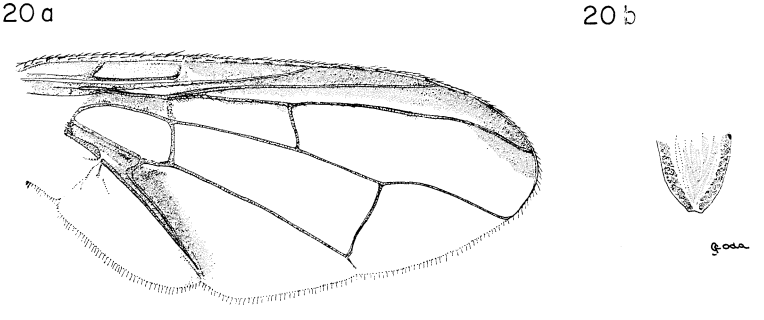


Fig. 20. *Dacus (Strumeta) epicharis* n. sp.: a, wing; b, apex of piercer.

♀. Fitting the description of the male in most respects, base of ovipositor dark, shining brown to black, as seen from above about three-fourths as long as fifth tergum. Basal segment viewed from below just slightly longer than wide, 1.4 mm. long. Piercer rather broad, almost straight-sided, broadly rounded apically, and with a slight concavity at the extreme apex (fig. 20b), very differently shaped than in *caliginosus*. The piercer measures 1.8 mm. in length. Extended ovipositor 4.5 mm. long.

Holotype male, allotype female, and two male paratypes, MUSSAU: Malakata, June 9, 1962. — Type and allotype in the Zoological Museum, Copenhagen; paratypes in the University of Hawaii collection.

Dacus (Strumeta) moluccensis (Perkins) (fig. 21a—d)

Strumeta moluccensis Perkins, 1939, Univ. Queensl. Papers, Dept. Biol. 1(2):17, pl. 1, fig. 12.

This has been listed as a synonym of *froggatti* (Bezzi) by Hardy and Adachi (1954:169). Mr. George Steyskal, U. S. Department of Agriculture, Washington, D.C. has studied a topotypic specimen, from Banika, Russell Group, Solomon Islands, and has pointed out that *froggatti* is distinct from the closely related species which occurs in the Solomon Islands, by lacking a complete black basal band on the third tergum of the abdomen; by having a rather broad stripe of black hairs down each side of the mesonotum; by having the yellow mark at upper portion of sternopleuron not extended posteriorly under the pteropleuron; and on the specimen he studied, the postsutural yellow vittae were short, ending well before the inner postalar bristles. I have one specimen on hand from the Solomon Islands, July—August, 1909, collected by W. W. Froggatt, which fits the original description and apparently the characteristics of the topotype studied by Steyskal except that the postsutural yellow vittae are extended approximately to the inner postalar bristle. A prominent distinguishing feature which separates this from *moluccensis* is that the entire median portion of the mesonotum is black, rather than with the ground color rufous, tinged faintly with brown (it is often necessary to wet the mesonotum with alcohol in order to bring out the ground color); the third tergum of *moluccensis* has a complete black basal band and the mesonotum is typically covered with pale hairs. The extent of the dark hairs on the mesonotum is apparently variable, in some specimens a thin streak of dark hairs is present down each side of

the mesonotum, in others a broader area, usually subshining black, of black setae extends down each side in line with the dorsocentral bristles. Wings as in figure 21a. The costal band is yellow and rather broad, occupying the upper half to two-thirds of cell R_3 to the base of vein R_{2+3}. Abdomen predominantly rufous, with a black band across the base of third tergum, with sides of fourth and fifth terga narrowly brown to black, and with a narrow black vitta extending from base of third almost to apex of fifth. Fifth sternum of male with a V-shaped cleft in the middle of the hind margin, extending about half the length of the segment (fig. 21b). Male genitalia as in figure 21c; the ejaculatory apodeme broadly expanded distally. Fifth sternum of male of *froggatti* with a deep,

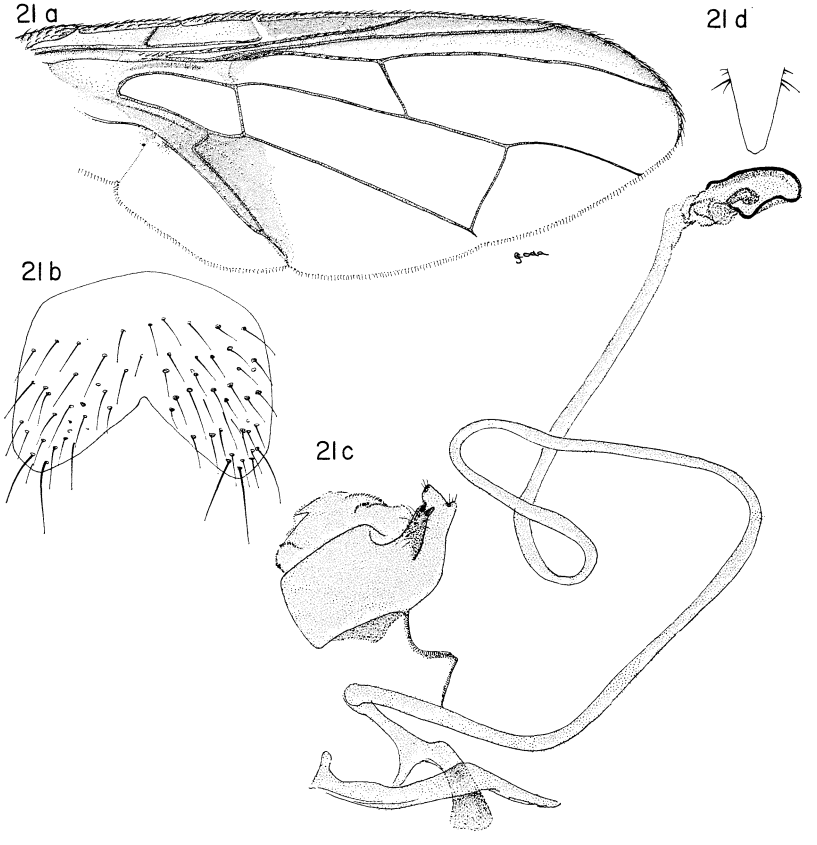


Fig. 21. *Dacus (Strumeta) moluccensis* (Perkins): a, wing; b, fifth sternum of male; c, male genitalia; d, apex of piercer.

broadly U-shaped concavity on the hind margin extending two-thirds the length of the segment and the surstyli are broadly truncate at apices. In *moluccensis,* the surstyli are broadly bilobate at apices. Female ovipositor elongate, approximately 9.5 mm. when fully extended. The basal segment is 2.42 mm. long by 1.79 mm. at its widest point. The piercer is long and slender, approximately 3.17 mm. long by 0.25 mm. at its widest point, the apex is microscopically trilobate (fig. 21d), this is seen only under high power magnification.

Length: Body, 8.0—10.0 mm.; wings, 7.5—8.5 mm.

The description and figures under the name *froggatti* by Hardy and Adachi (1954:169), figures 11a—c, pertain to this species. Specimens are on hand from GUADALCANAL, Solomon Islands; AMBOINA, Indonesia; and Rabaul, NEW BRITAIN, October-November 1949, reared from "aila" *Inocarpus edulis* (N. L. H. Krauss). This species was not represented in the Noona Dan collection.

Subfamily **TRYPETINAE**

Tribe ACANTHONEVRINI

Clusiomorpha adustata Hering

Clusiomorpha adustata Hering, 1947, Siruna Seva. 6:3.

Two males, DUKE OF YORK: Manuan, July 21, 1962.

Clusiosoma biseriata Malloch

Clusiosoma biseriata Malloch, 1939, Proc. Linn. Soc. N. S. Wales 64 (3—4):426, pl. XI, fig. 7.

Three females, one male, NEW BRITAIN: Yalom, 1000 m., May 23, 1962. — DYAUL: Sumuna, March 9, 1962.

Clusiosoma melanthes Hering

Clusiosoma melanthes Hering, 1947, Siruna Seva. 6:3.

Eleven specimens. NEW IRELAND: Lemkamin, 900 m., April 21, 1962. — DUKE OF YORK: Manuan, July 21, 1962.

Rabauliomorpha new genus

An Acanthonevrini, fitting in the complex of genera with *Rabaulia* Malloch, *Clusiosoma* Malloch, and *Clusiomorpha* Hering which are apparently confined to New Guinea, the Bismarck and Solomon Islands and characterized by having dark fumose wings, strong setae along veins M_{3+4} and Cu_1, and by having the front legs of the male modified, usually with a row of black spines on

front basitarsus or a process on the front tibia, and sometimes with a dense clump of ventral spines on the front femora of the male. *Rabauliomorpha* is similar to *Clusiomorpha* Hering because of the convex face and the comb on the front basitarsus of the male. It differs by having the antennae two-thirds as long as the face, rather than not more than half as long; by the middle tibia having only one black apical spine, not two; and by having the face strongly convex, rather than slightly convex. In Malloch's Key (1939:417), it would run to *Rabaulia* Malloch, but differs by having only one black apical spur on middle tibia and no black ventral bristles on front femora; also the front basitarsus of the male has a ventral comb of black teeth extending the entire length; the antennae extend over half the length of the face (fig. 22a) and the front is very narrow, measured from the lower ocellus to the anterior margin it is two times longer than wide. *Rabaulia* has two strong and two short black bristles at apex of front tibia; the front femora have black ventral bristles; front basitarsus lacking ventral comb; third antennal segment about half as long as face; and front broader, about one-half longer than wide. Head slightly higher than long with the face strongly gibbose and the lower occiput markedly swollen. Front sharply receding, so that the antennae are situated at or slightly below a level with the middle of the head as seen in direct lateral view (fig. 22a). Front narrow, two times longer than wide and vertex with a distinct transverse carina, as in *Rabaulia*. Third antennal segment slightly tapered apically. Arista long plumose. Two pairs inferior fronto-orbital bristles and two pairs superior fronto-orbitals. Ocellars tiny. Genal bristle yellow, all other head bristles, also postocular bristles black. Thorax densely black setose over mesonotum. Anterior dorsocentral bristles situated opposite supraalars. Six pairs scutellar bristles present, intermediate pair less than half the length of the other bristles. Thorax with the normal complement of bristles. Front basitarsus with a complete comb as in figure 22b. Veins R_1, R_{4+5}, M_{3+4} and Cu_1 conspicuously setose, subcostal cell (third costal section) approximately half as long as second costal cell. The r-m crossvein situated near middle of cell 1st M_2 and cell Cu with a short pointed lobe at apex, this is approximately one-fourth as long as vein Cu_1 + 1st A.

Type of genus *R. gibbosa* n. sp.

Rabauliomorpha gibbosa n. sp. (figs. 22a—c)

♂, *Head:* Pale yellow except for a dark brown mark on each side of upper portion of occiput and a brown streak extending longitudinally down the front. In addition to the characteristics given above, the palpi are slender, with one brown bristle at apex and numerous short yellow setae over apex and along ventral margin. At its widest point the occiput is almost half the width of the eye. Genae rather broad at the widest point almost one-fourth the eye height. *Thorax:* Predominantly yellow, with a longitudinal black mark on each side of mesonotum in line with anterior dorsocentrals on inner margin, extending over scutellum on each side to just beyond the secondary pair of bristles. Also, with a short brown mark extending along each notopleuron. Each mesopleuron with a narrow brown vitta extending longitudinally at a level with the lower of the two mesopleural bristles, this extends almost the full length of the sclerite. Metanotum dark brown to black and hind margins of pleuroterga with brown. Pleura with a few scattered brown to black setae on upper portions of mesopleura and pteropleura, otherwise with fine yellow setae. *Legs:* Entirely pale yellow. Front femur with four or five yellow posteroventral bristles extending over the length of the

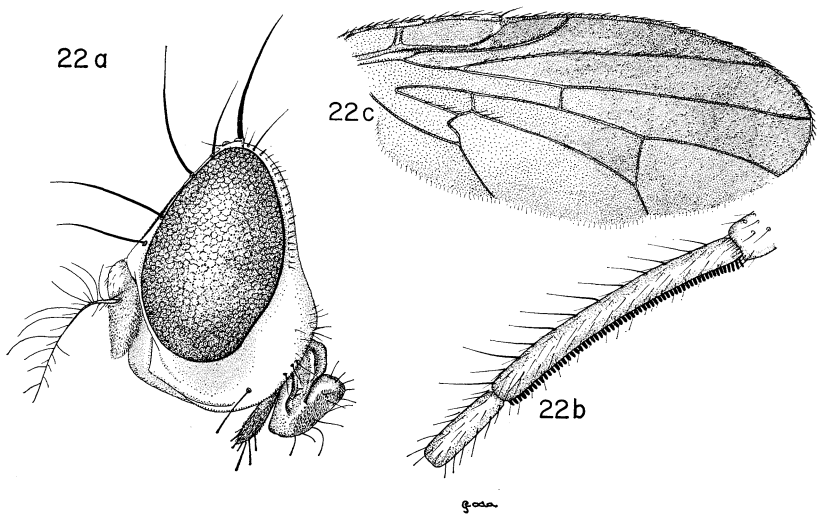


Fig. 22. *Rabauliomorpha gibbosa* n. sp.: a, head; b, front basitarsus of male; c, wing.

segment. Front tibia with a rather prominent row of posterodorsal bristles extending the full length of the segment. Front basitarsus with a row of short yellow posterodorsal setae and with a prominent comb of short blunt teeth as noted above and as in figure 22b. Middle tibia with a strong black bristle at apex extending about half he length of basitarsus and lacking other black bristles or setae. Hind tibia with one brownish yellow anteroventral bristle near middle and four or five anterodorsal bristles (strong setae) in a row from near base to just beyond middle of segment. *Wings:* Predominantly brown, subhyaline through the basomedian portion (fig. 22c). *Abdomen:* Basal four segments yellow except for a faint brown streak on each side of anterior margin of second and a brown longitudinal band over the middle of the fourth. Fifth tergum polished black except for the narrow basal margin. Abdomen rather thickly black setose and with prominent black bristles at apices of terga. Venter of abdomen entirely pale yellow. The genitalia have not been relaxed for study. The epandrium is yellow-brown, the surstyli and anal plates are pale yellow.

Length: Body and wings, 3.5—3.7 mm.

♀. Unknown.

Holotype male, NEW BRITAIN: Yalom, 1000 m., May 16, 1962, in malaise trap. — In the Zoological Museum, Copenhagen.

Neothemara exul (Curran)

Themarohystrix exul Curran, 1936, Proc. Calif. Acad. Sci. 22(1):27.

One female. LAVONGAI: Banatam, March 23, 1962.

Xarnuta confusa Malloch

Xarnuta confusa Malloch, 1939, Ann. Mag. Nat. Hist. Ser. 11, vol. 4:261, pl. 11, fig. 20.

One female. MUSSAU: Boliu, June 5, 1962.

Tribe ACIURINI

Sphaeniscus atilius (Walker)

Trypeta atilia Walker, 1849, List. Dipt. Ins. Brit. Mus. 4:1021.

Two females. NEW BRITAIN: Yalom, 1000 m., May 17, 1962 and NEW IRELAND: Danu, Kalili Bay, April 30, 1962.

Tribe EUPHRANTINI

Euphranta (Euphranta) vitabilis n. sp. (fig. 23)

Fitting very close to *E. flavoscutellata* n. sp., from the Philippi-

nes, the wing markings are almost identical. Differing by having a large white spot in the middle of the hind portion of the mesonotum, having the scutellum brown over the disc, the face brown, front and hind femora yellow-brown, and abdomen dark brown to black, tinged with yellow to rufous over the first tergum and the base of the second. Not with the first two terga clear yellow except on lateral margins.

♂. *Head:* Higher than long, with the front gently sloping and the antennae situated slightly above the middle as seen from lateral view. Face gently concave in the middle. Occiput only slightly swollen. Front largely brown, yellow along extreme lateral and anterior margins. Face shining brown in median portion, yellow on sides. Antennae and palpi yellow. Two pairs inferior fronto-orbitals. *Thorax:* Mostly polished black in ground color, covered with grey pubescence or tomentum and short black setose on the dorsum, yellow to white setose on sides. The white spot on posteromedian portion of mesonotum occupies almost the entire area between the dorsocentral bristles. A rather prominent broad grey vitta extends down middle of mesonotum from inner scapular bristles almost to the white posterior spot, also the suture on each side is bordered by grey tomentum. Humeri and notopleural calli yellow, covered with grey tomentum. Pleura brown, tinged with yellow in the ground color. Scutellum brown on the disc, yellow on the sides, extreme apex and venter, with short recumbent black setae scattered over dorsal surface. Postscutellum and metanotum dark brown, tinged with rufous. Halteres pale yellow. *Legs:* Predominantly brown with a yellow to rufous tinge in ground color of femora. Coxae and trochanters pale yellow. *Wings:* Brown over the apical two-fifths except for a small hyaline spot at apex of

fig. 23

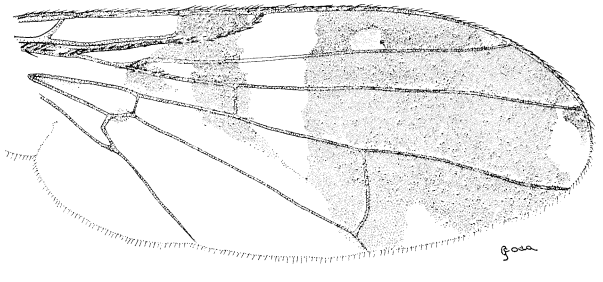


Fig. 23. *Euphranta (Euphranta) vitabilis* n. sp. wing.

cell R_1, also three spots on margin in apices of cells R_3, R_5, and 2nd M_2. A broad brown band extends from subcostal cell over the wing at level with the r-m crossvein into upper portion of cell 1st M_2, narrowing and evanescing in that cell (fig. 23). Subcostal cell just slightly over half the length of second costal cell. The r-m crossvein situated near basal third of cell 1st M_2 and lobe of cubital cell short, scarcely one-sixth the length of vein Cu_1 + 1st A. Vein R_{4+5} setose only on the basal portion, the setae extend only about one--third the distance to the r-m crossvein. Abdomen: Shining dark brown to black, tinged faintly with rufous in ground color and with first tergum and base of second yellow, tinged with brown. Sides of abdomen almost parallel. The genitalia have not been dissected for study.

Length: Body and wings, 5.5 mm.

♀. Fitting the male except for genital characters. Basal segment of ovipositor shining black, about equal in length to terga 4+5 and approximately 1.25 mm. long. The piercer has not been studied.

Holotype male and allotype female, NEW BRITAIN: Keravat, July 4—5, 1965 (R. W. Crosskey). Two male paratypes, one same as type, one NEW IRELAND: Lemkamin, 900 m., April 15, 1962. — Type and allotype in the British Museum (Nat. Hist.). The paratypes in the Zoological Museum, Copenhagen and the University of Hawaii.

Staurocneros flavina (Hering)

Staurella flavina Hering, 1941, Ann. Mus. Nat. Hung. 34:56, fig. 3.

One female. LAVONGAI: Banatam, March 25, 1962, in malaise trap.

Tribe TRYPETINI

Hendelina fossata (Fabricius)

Tephritis fossatus Fabricius, 1805, Syst. Antl. p. 320.

Two females. MUSSAU: Malakata, June 10, 1962. — NEW IRELAND: Lemkamin, 900 m., April 23, 1962.

Hendelina humeralis (Hendel)

Pseudospheniscus humeralis Hendel, 1915, Ann. Mus. Nat. Hung. 13:452.

Two males, NEW BRITAIN: Valoka, July 11, 1962.

Hendelina taylori (Malloch)

Pseudospheniscus taylori Malloch, 1939, Proc. Linn. Soc. N. S. Wales 64(3—4):450, pl. XI, fig. 16.

One male. NEW IRELAND: Lemkamin, 900 m., April 14, 1962, in malaise trap.

Subfamily **SCHISTOPTERINAE**

Rhabdochaeta pluscula n. sp. (fig. 24a—b)

In Bezzi's key to *Rhabdochaeta* (1926:310) this runs to *asteria* Hendel by having the dark rays in the anterior portion of wing narrow, scutellum with only four bristles, only two pairs dorsocentral bristles and by having vein M_{1+2} curved upward sharply just beyond m crossvein. The wing markings are very different, however, in the two, and *pluscula* is readily differentiated from all known *Rhabdochaeta* by having three complete longitudinal brown lines through apical portion of cell R_5, four brown streaks through cell R_3, with three of these complete to the wing margin and with one abbreviated; and cell R_1 with one complete brown crossband and two abbreviated, incomplete marks (fig. 24b).

♂. *Head:* Mostly yellow, with the upper median portion of occiput brown on each side. Three pairs inferior fronto-orbitals, two pairs of superiors. Antennae yellow, third segment tapered to a sharp point (fig. 24b). Palpi long, rather straight-sided, densely covered with flat, appressed setae around the margins, and also with erect yellow-white hairs on dorsal and ventral margins. *Thorax:* Dark brown to black in ground color of mesonotum, completely opaque, grey-brown pollinose. Pleura yellow to rufous, tinged brown on upper pteropleura and with the metapleura and

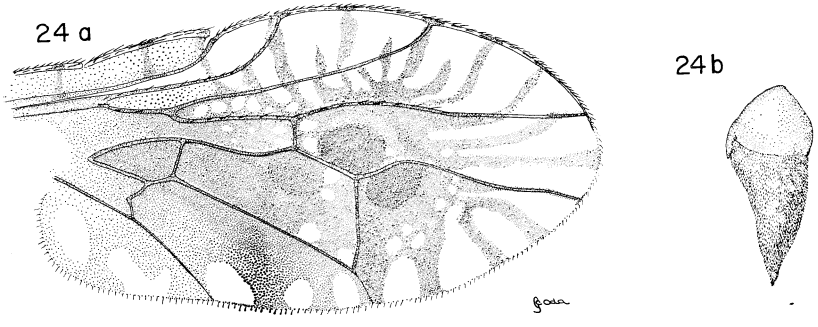


Fig. 24. *Rhabdochaeta pluscula* n. sp.: a, wing; b, antenna.

pleuroterga dark brown. Humeri and notopleural calli pale yellow. Scutellum brown over dorsal portion with a yellow mark near base on each side, with the apex narrowly yellow and with the venter yellow. Postscutellum and metanotum polished black, covered with grey tomentum. Halteres pale yellow. Two pairs of dorsocentral bristles and four pairs of scutellar bristles. *Legs:* Entirely yellow to rufous, lacking brown or black rings on femora. *Wings:* As in figure 24a, with four shining red areas and also a dark brown to black area in the middle of the wing. Fourth costal section, between apices of veins R_1 and R_{2+3} distinctly shorter than fifth section. *Abdomen:* Largely brown, with extreme lateral margins of the terga and the median portions of terga 3—5 yellow. Abdomen rather thickly covered with short flattened yellow setae. The genitalia have not been dissected for study.

Length: Body, 2.5 mm.; wings, 2.3 mm.

♀. Unknown.

Holotype male, MUSSAU: Boliu, June 4, 1962. — In the Zoological Museum, Copenhagen.

Subfamily **TEPHRITINAE**

Tribe PLATENSINI

Platensina malaita Curran

Platensina malaita Curran 1936, Proc. Calif. Acad. Sci. (4) 22:29, pl. 1, fig. 1.

Nine specimens, LAVONGAI: Banatam, March 23, 1962. — MUSSAU: Talumalaus, Feb. 7, 1962, and Eabarae, Feb. 13, 1962. — NEW IRELAND: Lemkamin, 900 m., April 14, 1962.

Solomon Isls., RENNELL: Niupani, Aug. 25, 1962; Hutuna, March 19—29, 1965 (T. Wolff).

Dioxyna sororcula (Wiedemann)

Trypeta sororcula Wiedemann, 1830, Aussereur. zweifl.. Ins. 2: 509.

One specimen. NEW IRELAND: Lemkamin, 900 m., Apr. 23, 1962. (See also the Philippine list).

Tribe TEPHRELLINI

Tephrella heringi n. sp. (figs. 25a—c)

This species fits closer to *sexincisa* Malloch from Solomon Islands than to any other known species in this genus but differs

by having four pairs of inferior fronto-orbital bristles, not two; by having very different wing markings, i.e. three hyaline spots in cell R_1, and three on margin in cell 2nd M_2, not two; two hyaline spots in 1st M_2, not one; etc. It should be noted that *sexincisa* is very similar to *decipiens* Bezzi, the type of the genus, but differs by having two pairs inferior fronto-orbitals, and by having a prominent dark brown mark through middle of second costal cell, rather than having second costal hyaline except for the extreme apex.

♀. *Head:* Approximately as long as high, the front gently sloping with antennae situated at about middle of head. Eyes almost oval, occiput slightly swollen below. Face gently concave as seen in direct lateral view. Front rather broad, about as wide as long, and about four-fifths the width of one eye, the lateral margins converging sharply on lower portion. Front with four pairs of inferior fronto-orbital bristles the first and third bristles are small, one-half to three-fourths the length of the second and fourth bristles. Ocellar bristles strong, equal in size to lower superior fronto-orbitals. Frontal, ocellar and inner vertical bristles black, also genal bristles black; all other head bristles and setae yellow-white. Postocular setae flat, scale-like, but sharply pointed at apices. Head and appendages yellow except for brown upper and median portions of occiput. Third antennal segment short, about one-half

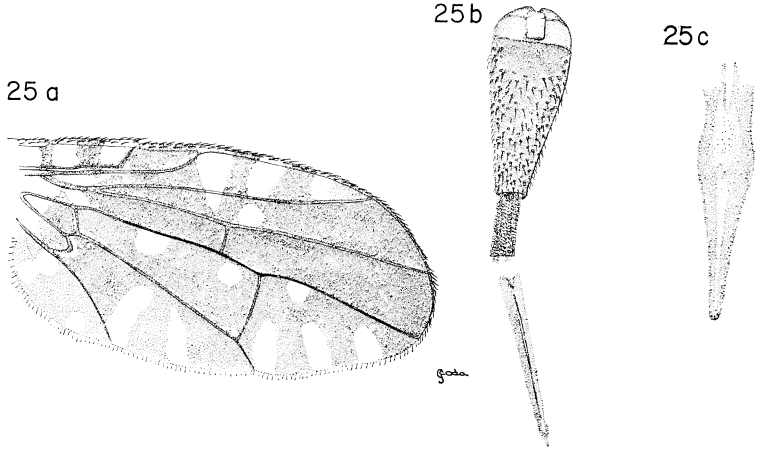


Fig. 25. *Tephrella heringi* n. sp.: a, wing; b, extended ovipositor; c, apex of piercer.

longer than wide. Arista short pubescent at base, otherwise bare or nearly so. *Thorax:* Largely black in ground color, tinged with yellow to rufous on parts of the pleura, and rather densely grey to grey-brown pollinose, covered with flat yellow-white scale-like hairs. All bristles dark brown to black. Two strong scutellar bristles present, and two pairs of dorsocentral bristles, the anterior dorsocentrals situated just slightly behind the suture. Humeri yellow, tinged with brown and densely grey pollinose over dorsal halves. Halteres pale yellow. *Legs:* Coxae and femora yellow-brown. Tibiae and tarsi yellow. *Wings:* Predominantly brown with hyaline spots arranged as in figure 25a. The r-m crossvein situated near apical four-fifths of cell 1st M_2 and apex of cubital cell almost straight, not lobate. *Abdomen:* Entirely polished dark brown to black, the sixth tergum distinctly longer than fifth. Basal segment of ovipositor black, as seen from above, about equal in length to terga 3—6. On ventral margin the basal segment measures 1.25 mm. Piercer slender, spearhead-like at apex (fig. 25c) and 1.25 mm. long. The extended ovipositor (fig. 25b) measures 3.75—4.0 mm.

Length: Body, excluding ovipositor, 3.25 mm.; wings, 3.0 mm.

♂. Unknown.

Holotype female and one female paratype, MUSSAU: Eabarae, Feb. 13, 1962. — Type in the Zoological Museum, Copenhagen. Paratype in the University of Hawaii collection.

Tribe TEPHRITINI

Spathulina acroleuca Schiner

Spathulina acroleuca Schiner, 1868, Reise Novara, Dipt., p. 268.

Four specimens, NEW IRELAND: Lemkamin, 900 m., April 15, 1962.

Tephritis formosella (Hendel)

Euribia formosella Hendel, 1915, Ann. Mus. Nat. Hist. 13:465, pl. 9, fig. 20.

One male, NEW BRITAIN: Valoka, July 11, 1962.

Trupanea lyneborgi n. sp. (figs. 26a—b)

Fitting close to *T. aucta* Bezzi, from India, the wing markings are almost identical in the two, but *lyneborgi* differs by having brownish grey markings extending through base of cell 1st M_2 and across cell M_4, by having an isolated hyaline spot in cell R_5 beyond

r-m crossvein, rather than having the basal portion of cell 1st M_2 and M_4 hyaline and a continuous hyaline mark across the wing at level with the r-m crossvein (Ref. to Bezzi, 1913, plate 10, fig. 69). *T. lyneborgi* also differs by having six inferior fronto-orbital bristles rather than three. It also fits near *mutabilis* Hering, from Flores, but has a brown mark extending through upper apex of cell 2nd M_2 over the tip of vein M_{1+2} and has six rather than three inferior fronto-orbital bristles, etc.

♂. *Head:* Yellow in ground color, densely grey pubescent, or pollinose, slightly longer than high. The front broad, flat, gently sloping, with the antennae situated near upper two-thirds of head (fig 26a). Eyes broadly rounded ventrally, narrowed posterodorsal-

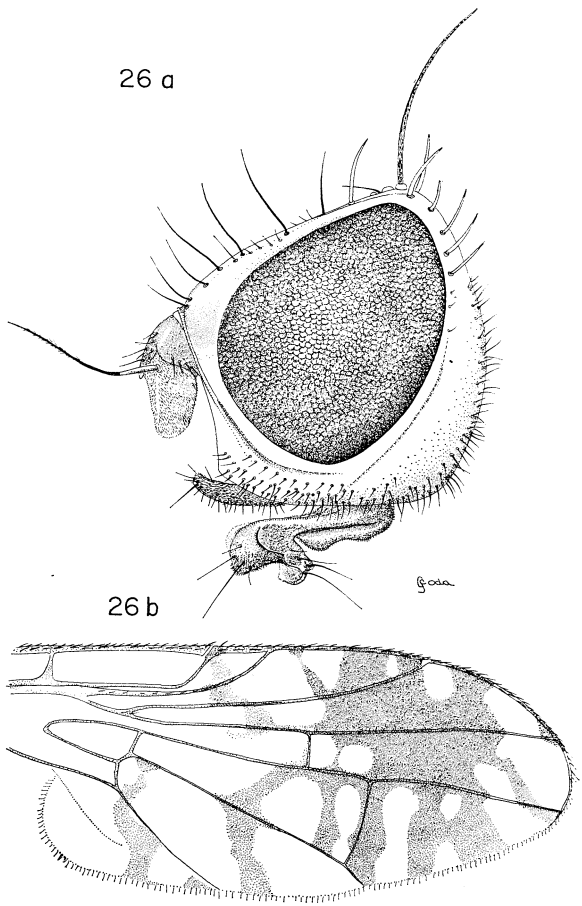


Fig. 26. *Trupanea lyneborgi* n. sp.: a, head; b, wing.

ly. Occiput moderately swollen and genae about one-fifth to one-sixth the eye height, the latter very densely setose along lower margin. Front approximately as broad as long, and approximately equal in width to one eye as seen directly from above, with about six brown inferior fronto-orbital bristles and two superior fronto-orbital bristles, one brown and one white. Median portion of front with scattered inconspicuous pale setae. Ocellar bristles brown, rather small, about equal in length to upper superior fronto-orbital. Inner vertical bristles yellow-brown, outers white. Postocellar and postocular bristles white, flat, but sharp-pointed at apices. Antennae yellow, third segment scarcely longer than wide, arista bare or nearly so. *Thorax:* Black in ground color, very densely grey pollinose and densely white setose, the setae are flat, rather scale-like. Humeri largely yellow in ground color. All thoracic bristles yellow, some tinged faintly with brown. Anterior dorsocentrals situated distinctly in front of anterior supraalars. One strong pair of scutellar bristles. Halteres pale yellow. *Wings:* Marked as in figure 26b. Subcostal cell short, scarcely one-third to one-fourth as long as second costal. The r-m crossvein situated near apical three-fourths of 1st M_2 and cubital cell ending in a short point at lower apex. Vein R_{4+5} with one or two short setae at base above. *Abdomen:* Black in ground color except for extreme lateral margins of first and second terga, narrow apices of second, third, fourth and fifth terga, which are yellow, densely grey pollinose and thickly covered with short yellow setae. The genitalia have not been dissected for study.

Length: Body, 5.0 mm.; wings, 4.8 mm.

♀. Unknown.

Holotype male, NEW IRELAND: Lemkamin, 900 m., April 23, 1962. One male paratype, same locality as type, April 7, 1962, in light trap. — Type in the Zoological Museum, Copenhagen. Paratype in the University of Hawaii collection.

This species is named after Dr. Leif Lyneborg, a leading worker on the Diptera, who was the Entomologist for the expedition in the Bismarcks.

Summary

This report deals with 67 species, 43 from the Philippines, with two genera (*Elleipsa* and *Scolocolus*) and 18 species described as new, one species from Rennell I. in the Solomons and 24 species from the Bismarcks with one new genus (*Rabauliomorpha*) and 7 new species.

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Anmeldelse

S. L. Tuxen, ed.: Taxonomist's glossary of genitalia in insects. 2nd. enlarged edition. Munksgaard. 359 pp., 248 figs. Pris 200 kr.

Dr. Tuxens gode ide fra 1951 om sammen med en række kolleger at lave en ordbog over betegnelser for dele af insekternes ydre genitalier blev ført ud i livet i 1956. Et bevis på nytten af en sådan bog er 2. udg. af »glossariet«, — der nu foreligger — beklageligvis, til en alt for høj pris; så meget koster svært papir da heller ikke. Retfærdigvis må dog siges, at bogen er udvidet og indeholder ændringer af betydeligt omfang. 11 insektgrupper er totalt ombearbejdede eller i alt fald reviderede. Gennemgående er der tale om fremskridt. F. eks. er afsnittet om Hymenoptera sikkert bedre og rigtigere nu, men også besværligere; alene på side 156 beriger Edward L. Smith os med fire nye betegnelser, som ikke ligefrem kan siges at have stor interesse netop for taxonomer. (Rundhåndet gentages 2—3 linier tekst side 166, l. 10—12 f.n.) Imidlertid uden denne gennem tiderne stadige tilstrømning af nye termer intet glossary, og det kan vi ikke undvære. Afsnittene er stadig meget uensartede, og i den ny udgave kunne man jo nok have forventet en stramning af stoffet. Anm. kunne også have ønsket en orienterende indledning. Hvis man uden væsentlige forudsætninger læser de enkelte afsnit, bliver man temmelig desorienteret, fordi man får det indtryk, at insektgrupperne er meget mere forskellige fra hverandre, end det i virkeligheden er tilfældet. De fleste af forfatterne kører lige ud efter deres specielle gruppes næsetip og glemmer, at de burde have medvirket mere til mellemfolkelig forståelse. Ordbogafsnittet kan klare mange problemer, men da mange termer forklares alene ved de definitioner, som er givet under den pågældende insektorden, kommer man ikke vidt, når man vil sammenligne med andre ordner. Hvad er f. eks. »external« og »internal parameres« sammenlignende anatomisk set?

Børge Petersen.

A List of Danish Aphids

8.: Lachnidae, Chaitophoridae, and Callaphididae.

By
Ole E. Heie
Skive Seminarium, Skive.

Parts 1—7 dealing with the family Aphididae (with 212 Danish species) appeared in Entomologiske Meddelelser 1960 (29: 193—211), 1961 (31: 77—96), 1962 (31: 205—224), 1964 (32: 341—357), 1967 (35: 125—141), and 1969 (37: 70—94, 373—385). The present paper, the 8th part of the list, comprises records of the Danish species belonging in the families Lachnidae, Chaitophoridae, and Callaphididae (sensu Börner 1952).

List of the species

Lachnidae

213. *Eulachnus brevipilosus* Börner, 1940
214. *E. rileyi* (Williams, 1910)
215. *Schizolachnus obscurus* Börner, 1940
216. *S. pineti* (Fabricius, 1781)
217. *Cinara bogdanowi* Mordvilko, 1895
218. *C. grossa* (Kaltenbach, 1843)
219. *C. kochiana* (Börner, 1939)
220. *C. laricis* (Walker, 1848)
221. *C. piceicola* (Cholodkovsky, 1896)
222. *C. pilicornis* (Hartig, 1841)
223. *C. pinea* (Mordvilko, 1895)
224. *C. pini* (Linné, 1758)
225. *C. (Cupressobium) juniperi* (de Geer, 1773)
226. *C. (Cupr.) juniperina* (Mordvilko, 1895)
227. *C. (Dinolachnus) piceae* (Panzer, 1801)
228. *C. (Lachniella) costata* (Zetterstedt, 1828)
229. *C. (Todolachnus) pectinatae* (Nördl., 1880)
230. *Tuberolachnus salignus* (Gmel., 1788)
231. *Lachnus roboris* (Linné, 1758)
232. *L. (Schizodryobius) exsiccator* Altum, 1882
233. *L. (S.) longirostris* (Mordvilko, 1901)

234. *Stomaphis quercus* (Linné, 1758)
235. *Protrama flavescens* (Koch, 1856)
236. *P. ranunculi* (del Guercio, 1909)
237. *Neotrama caudata* (del Guercio, 1909)
238. *Trama rara* Mordvilko, 1908
239. *T. troglodytes* v. Heyden, 1837

Chaitophoridae

240. *Periphyllus aceris* (Linné, 1758) subsp. *acericola* (Walker, 1848)
241. *P. lyropictus* (Kessler, 1886)
242. *P. testudinaceus* (Fernie, 1852)
243. *Chaitophorus beuthani* (Börner, 1950)
244. *Ch. capreae* (Mosley, 1841)
245. *Ch. leucomelas* (Koch, 1854)
246. *Ch. parvus* Hille Ris Lambers, 1935
247. *Ch. populeti* (Panzer, 1805)
248. *Ch. populialbae* (Boyer d. Fonscolombe, 1841)
249. *Ch. salicti* (Schrank, 1801)
250. *Ch. tremulae* (Koch, 1854)
251. *Laingia psammae* Theobold, 1922
252. *Atheroides serrulatus* Haliday, 1838
253. *Sipha glyceriae* (Kaltenbach, 1843)
254. *S. (Rungsia) kurdjumovi* Mordvilko, 1921
255. *S. (R.) arenarii* Mordvilko, 1921
256. *Chaetosiphella berlesei* (del Guercio, 1905)

Callaphididae

257. *Drepanosiphum acerinum* (Walker, 1848)
258. *D. aceris* Koch, 1855
259. *D. platanoidis* (Schrank, 1801)
260. *Symydobius oblongus* (v. Heyden, 1837)
261. *Clethrobius comes* (Walker, 1848)
262. *Euceraphis punctipennis* (Zetterstedt, 1828)
263. *Phyllaphis fagi* (Linné, 1767)
264. *Callipterinella callipterus* (Hartig, 1841)
265. *C. tuberculata* (v. Heyden, 1837)
266. *Calaphis betulicola* (Kaltenbach, 1843)
267. *C. flava* Mordvilko, 1928
268. *Betulaphis brevipilosa* Börner, 1940
269. *B. quadrituberculata* (Kaltenbach, 1843)
270. *Callaphis juglandis* (Goetze, 1778)
271. *Chromaphis juglandicola* (Kaltenbach, 1843)
272. *Eucallipterus tiliae* (Linné, 1758)
273. *Myzocallis carpini* (Koch, 1855)
274. *M. castanicola* Baker, 1917
275. *M. coryli* (Goetze, 1778)
276. *M. myricae* (Kaltenbach, 1843)
277. *Tuberculoides annulatus* (Hartig, 1841)
278. *Tuberculatus querceus* (Kaltenbach, 1843)

279. *Pterocallis albidus* Börner, 1940
280. *Pt. alni* (de Geer, 1773)
281. *Pt. maculatus* (v. Heyden, 1837)
282. *Ctenocallis setosus* (Kaltenbach, 1846)
283. *Therioaphis luteola* (Börner, 1949)
284. *Th. ononidis* (Kaltenbach, 1846)
285. *Th. trifolii* (Monell, 1882)
286. *Trichocallis cyperi* (Walker, 1848)
287. *Allaphis verrucosa* (Gillette, 1917)
288. *Subsaltusaphis flava* (Hille Ris Lambers, 1939)
289. *Iziphya bufo* (Walker, 1848)
290. *I. leegei* Börner, 1940

Genus **EULACHNUS** del Guercio, 1909

213. *Eulachnus brevipilosus* Börner, 1940

Protolachnus brevipilosus: Börner 1952, p. 40, no. 4

Distribution: Germany, England, Scotland, Czechoslovakia, Sweden, Norway, and Denmark in Europe, Washington, USA, in North America.

Occurrence in Denmark: Jutland: On Pinus silvestris at Brunshåb near Viborg (12-7-59), specimens gone astray from Pinus at Skive (6-7-59, Hille Ris Lambers det.) and Blokhus (6-7-62). Sealand: On Pinus at Ordrup Strand at Fårevejle (9-12-64, J. Reitzel leg.).

214. *Eulachnus rileyi* (Williams, 1910)

Eulachnus bluncki Börner, 1940, p. 1
Protolachnus bluncki: Börner 1952, p. 40, no. 3
Eulachnus rileyi: Pintera 1968, p. 103; Szelegiewicz 1968, p. 21

Distribution: Europe, Turkey, and North America. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Pinus mugo at Blokhus (8-7-65). The Danish Islands: On Pinus nigra at Drejet on Ærø (8-7-57).

Genus **SCHIZOLACHNUS** Mordvilko, 1909

215. *Schizolachnus obscurus* Börner, 1940

Schizolachnus obscurus: Börner 1952, p. 40, no. 7

Distribution: Central Europe.

Occurrence in Denmark: Jutland: On Pinus nigra at Femmøller, Mols (8-8-59) and at Ulstrup in Djursland (6-7-60). The Danish Islands: On Pinus nigra at Drejet on Ærø (8-7-57).

Pintera (1968) and Szelegiewicz (1968) regard *obscurus* as a

synonym of *pineti* Fabr., but there is a morphological difference; the Vth rostral segment is longer in *obscurus* than in *pineti* as pointed out by Börner.

216. *Schizolachnus pineti* (Fabricius, 1781)

Schizolachnus tomentosus (Villers, 1789): Mordvilko, 1909
Schizolachnus pineti: Börner 1952, p. 40, no. 6

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Pinus (mugo, silvestris) at Blokhus (31-7-63, 2-7-65), Legind Bjerge, Mors (3-6-59), Brunshåb near Viborg (12-7-59), and Dalgas Plantation between Skive and Viborg (16-6-59). Sealand: On Pinus at Dragerup near Holbæk (7-7-1890, Meinert leg.), Hornbæk (9-8-17, M. Thomsen leg. et det.), and Copenhagen (8-10-17, M. Thomsen leg. et det.).

Genus **CINARA** Curtis, 1835

217. *Cinara (Cinara) bogdanowi* Mordvilko, 1895

Cinaropsis (Pityaria) pruinosa: Börner 1952, p. 43, no. 25
Cinara bogdanowi: Szelegiewicz 1968, p. 15

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Picea sitchensis at Blokhus (8-8-65, 3-6-67, 24-7-68) and Hune in Vendsyssel (19-6-61), and on Picea abies at Madum Lake in Himmerland (10-6-58, 25-5-60).

218. *Cinara (Cinara) grossa* (Kaltenbach, 1843)

Cinaropsis (Mecinaria) piceae: Börner 1952, p. 44, no. 30
Cinara grossa: Pintera 1966, p. 314; Szelegiewicz 1968, p. 16
Cinara piceae: auct., nec Panzer, 1801, according to Pintera 1966

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Picea sitchensis at Ydby, Thy (21-6-59) and Blokhus (24-7-68), on Picea glauca at Ville, Salling (26-7-59), on Picea or gone astray from Picea at Jellinge (16-6-48, Bayer leg.) and Legind Bjerge, Mors (4-6-59). Sealand: On Picea abies at Lyngby (17-6-38, the collection of the State Experiment Station).

219. *Cinara (Cinara) kochiana* (Börner, 1939)

Cinaria kochiana: Börner, 1939
Laricaria kochiana: Börner 1952, p. 42, no. 16
Cinara kochiana: Szelegiewicz 1968, p. 16

Distribution: Outside Denmark known from Sweden, England, Czechoslovakia, Poland, Austria, Italy, and Mongolia.

Occurrence in Denmark: Sealand: On Larix at Holte (26-7-64, J. Reitzel leg.).

220. *Cinara (Cinara) laricis* (Walker, 1848)

Cinaria laricis: Börner 1952, p. 42, no. 21
Cinaria laricis (Hartig, 1837): Szelegiewicz 1968, p. 16

Distribution: Europe, Asia, and North America. It is known from Sweden and Finland.

Occurrence in Denmark: Jutland: On Larix at Femmøller, Mols (3-8-59). Sealand: On Larix at Rude Forest (22-9-17, M. Thomsen leg. et det.).

221. *Cinara (Cinara) piceicola* (Cholodkovsky, 1896)

Cinaropsis cistata: Börner 1952, p. 43, no. 26
Cinara piceicola: Stroyan 1964, p. 30; Szelegiewicz 1968, p. 17

Distribution: Europe, Asia, and North America. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Picea abies at Madum Lake, Himmerland (21-5-57, 11-6-58, 2-9-58), Rold Forest (19-6-58), Kronhede Plantation (27-5-58), Hvidemose at Rønbjerg south of Skive (18-9-58), Estvadgård Plantation at Flyndersø (18-9-58), and Femmøller, Mols (6-7-60), on Picea glauca at Blokhus (24-7-65), and on Picea sitchensis at Blokhus (4-8-63, 6-6-66) and Buderupholm, Himmerland (12-6-58). Sealand: On Picea abies at Geel Forest (24-9-50), Grib Forest (17-10-65), and Tokkekøb Hegn (2-6-66).

222. *Cinara (Cinara) pilicornis* (Hartig, 1841)

Cinaropsis pilicornis: Börner 1952, p. 43, no. 28
Cinara pilicornis: Szelegiewicz 1968, p. 17

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, Finland, and Iceland.

Occurrence in Denmark: Jutland: On Picea abies at Sødal Forest near Viborg (16-6-57), south of Skive (24-7-58), Dalgas Plantation between Skive and Viborg (16-6-59), Brunshåb near Viborg (12-7-59), east of Holstebro (30-6-58), and Brassø near

Silkeborg (12-7-60), on Picea glauca at Blokhus (2-7-65) and Sejstrup near Skive (16-6-59), and on Picea sitchensis at Blokhus (20-6-61, 31-7-66), Rold Forest (19-6-58), Krabbesholm Forest at Skive (25-6-57), and Kølsen near Viborg (26-6-57). Funen: On Picea sitchensis at Hylkedam (28-5-57). Other islands: On Picea abies at Nørre Alslev on Falster (23-6-64, J. Reitzel leg.) and on Picea sitchensis at Hventgård on Læsø (11-8-57).

223. *Cinara (Cinara) pinea* (Mordvilko, 1895)

Cinara pini: Börner 1952, p. 41, no. 8
Cinara (Cinarella) pinea: Szelegiewicz 1968, p. 14

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Pinus (mugo, silvestris, sp.) at Blokhus (18-6-60, 13-7-64, 10-7-65, 7-6-66, 24-7-68), Madum Lake, Himmerland (28-5-59), Borup at Skals (26-6-57), Bruddals Bakker at Skive (3-8-57), Skive (22-6-60, 6-7-63), south of Skive (1-8-58, 13-5-59), Skørsø at Vinderup (24-6-57), Hald Lake at Viborg (20-5-59), and Femmøller, Mols (3-8-59, 6-7-60). The Danish Islands: West of Byrum, Læsø (6-8-57) and Hventgård, Læsø (6-8-57).

224. *Cinara (Cinara) pini* (Linné, 1758)

Cinaria nuda: Börner 1952, p. 42, no. 22 (The true *Lachnus nudus* Mordvilko, 1895, is according to Szelegiewicz (1968) another species, of which *Cinaria escherichi* Börner, 1950, is a synonym)
Cinaria pini: Szelegiewicz 1968, p. 17

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Pinus mugo at Legind Bjerge, Mors (21-5-60), Skive (11-5-59), south of Skive (13-5-59), and Skørsø near Vinderup (24-6-57), and a single alate individual on Abies (gone astray from Pinus) at Blokhus (4-8-63).

225. *Cinara (Cupressobium) juniperi* (de Geer, 1773)

Cupressobum juniperi: Börner 1952, p. 44, no. 33
Cinara (Cupressobium) juniperi: Szelegiewicz 1968, p. 19

Distribution: Europe, Asia, North America, and New Zealand. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Juniperus communis at Blokhus (29-7-60, 17-7-65), Hammer Bakker, Vendsyssel (1-8-68), Lundby Bakker south of Ålborg (10-7-68), Rebild

(3-8-64), Skive (2-9-56, 16-5-59, 7-6-63), and Femmøller, Mols (3-8-59, 7-7-60). The Danish Islands: On Juniperus communis at Hventgård on Læsø (6-8-57).

226. *Cinara (Cupressobium) juniperina* (Mordvilko, 1895)

Cupressobium juniperinum: Börner 1952, p. 44, no. 34
Cinara (Cupressobium) juniperina: Szelegiewicz 1968, p. 19

Distribution: Nearly all over the world. It is known from Sweden.

Occurrence in Denmark: Sealand: On Chamaecyparis at Sundby, Copenhagen (17-10-51, the collection of the State Experiment Station, Lyngby). Bovien (1950, p. 223) mentions attacks of *Cinara tujae* (= *C. juniperina)* on thuja in two cemeteries in Copenhagen in October, 1947.

227. *Cinara (Dinolachnus) piceae* (Panzer, 1801)

Todolachnus abieticola (Cholodkovsky, 1899): Börner 1952, p. 44, no. 31
Cinara (Dinolachnus) piceae: Szelegiewicz 1968, p. 18
Cinara grossa: auct., nec Kaltenbach, 1843 (according to Szelegiewicz 1968)

Distribution: Europe and North America. It is known from Sweden and Finland.

Occurrence in Denmark: Jutland: On Abies alba at Blokhus (6-8-65, 5-7-68, 15-7-68) and Brårup Plantation at Skive (24-5-67). Sealand: On Abies sp. at Rude Forest (22-9-17, M. Thomsen leg.) and Tisvilde (6-9-59, C. Bisgaard leg.).

228. *Cinara (Lachniella) costata* (Zetterstedt, 1828)

Lachniella costata: Börner 1952, p. 45, no. 37
Cinara (Lachniella) costata: Szelegiewicz 1968, p. 20

Distribution: Europe and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Picea glauca at Blokhus (4-8-63, 30-6-64, 6-8-65), on P. sitchensis at Oddense, Salling (15-8-65) and near Varde (29-6-59, the collection of the State Exper. Station, Lyngby), and gone astray from Picea at Blære, Himmerland (27-6-67). Sealand: On Picea abies at Grib Forest (17-10-65).

229. *Cinara (Todolachnus) pectinatae* (Nördl., 1880)

Lachnus pichtae Mordvilko, 1895
Buchneria pectinatae: Börner 1952, p. 41, no. 15
Cinara (Todolachnus) pectinatae: Szelegiewicz 1968, p. 15

Distribution: Europe. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Abies alba at Hune, Vendsyssel (12-8-60), Hammer Bakker (29-7-64), Legind Bjerge, Mors (26-9-56), coniferous plantation west of Viborg (2-5-57), Brassø near Silkeborg (12-7-60), and Vind south of Holstebro (5-9-68). Funen: On Abies alba at Hylkedam (28-5-57). Sealand: On Abies at Bøgeholm Lake (10-8-17, M. Thomsen leg. et det.).

Genus **TUBEROLACHNUS** Mordvilko, 1909

230. *Tuberolachnus salignus* (Gmel., 1788)

Tuberolachnus salignus: Börner 1952, p. 45, no. 38

Distribution: All over the world. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Salix sp. at Brønderslev (25-10-31, the collection of the State Exper. Station, Lyngby). The species is mentioned by Bovien & Thomsen (1950).

Genus **LACHNUS** Burmeister, 1835

231. *Lachnus (Lachnus) roboris* (Linné, 1758)

Lachnus roboris: Börner 1952, p. 46, no. 42

Distribution: Palaearctic. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Quercus (robur, sp.) at Blokhus (29-7-60), Hammer Bakker, Vendsyssel (29-7-64), Lundby Krat south of Ålborg (29-7-68), Højris on Mors (10-7-60), Øster Assels, Mors (1944, Sigurd Nielsen coll.), Hvalpsund (27-8-66), Krabbesholm Forest at Skive (28-8-58, 28-9-58, 9-5-59, 13-5-59, 1-7-59), Estvadgård Plantation south of Skive (18-9-58), Fly south of Skive (26-9-68), Hald Lake at Viborg (27-8-64), Himmelbjerget (22-7-18, M. Thomsen leg. et det.), Nørre Feldborg Plantation (11-10-65), Ginneskov Krat (11-10-65), Femmøller, Mols (3-8-59, 8-8-59), and Auning, Djursland (17-7-68). Funen: On Quercus robur at Morud (10-7-58). Other islands: On Quercus sp. at Ulfshale on Møen (8-5-67, Anfred Pedersen coll.).

The species is mentioned by Boas (1923) and Heie (1965).

232. *Lachnus (Schizodryobius) exsiccator* Altum, 1882

Schizodryobius pallipes (Hartig, 1841): Börner 1952, p. 46, no. 40

Lachnus (Schizodryobius) pallipes: Szelegiewicz 1968, p. 23
Lachnus exsiccator: Ossiannilsson 1969, p. 38

Distribution: Europe, USSR. It is known from Sweden.

Occurrence in Denmark: Jutland: On Fagus silvatica at Femmøller, Mols (7-8-59) and Lundby Bakker south of Ålborg (10-7-68).

This species and its harmful effects on beech is mentioned by Boas (1923, p. 646), who says that it is common in Denmark.

233. *Lachnus (Schizodryobius) longirostris* (Mordvilko, 1901)

Schizodryobius longirostris: Börner 1952, p. 46, no. 41
Lachnus (Schizodryobius) longirostris: Szelegiewicz 1968, p. 23

Distribution: Europe, USSR. It is known from Sweden.

Occurrence in Denmark: Jutland: On Quercus robur at Hammer Bakker, Vendsyssel (1-8-68).

Genus **STOMAPHIS** Walker, 1870

234. *Stomaphis quercus* (Linné, 1758)

Stomaphis quercus: Börner 1952, p. 47, no. 46

Distribution: Europe. It is known from Sweden and Norway.

Occurrence in Denmark: Sealand: On Quercus robur at Tikøb (17-10-65, 2-6-66, J. Reitzel and Heie leg.). The species was first recorded from Denmark by Reitzel (1965) from the same locality (11-6-65).

Genus **PROTRAMA** Baker, 1920

235. *Protrama flavescens* (Koch, 1856)

Protrama ranunculi: Börner 1952, partim, p. 48, no. 50
Protrama flavescens: Eastop 1953, p. 391

Distribution: Germany, England, USSR, Poland, Italy, Sweden, and Denmark.

Occurrence in Denmark: Funen: On Artemisia vulgaris east of Fåborg (13-7-57).

236. *Protrama ranunculi* (del Guercio, 1909)

Protrama ranunculi: Börner 1952, partim, p. 48, no. 50
Protrama ranunculi: Eastop 1953, p. 395

Distribution: England, Italy, Netherlands, Germany, Poland, Sweden, Norway, Finland, and Denmark.

Occurrence in Denmark: Jutland: Yellow Moericke-trays at Tylstrup, Vendsyssel (20-7-56), Borris (3-8-56), Jyndevad

(10-8-56), Rønhave, Als (21-6-57), and Spangsbjerg at Esbjerg (1-8-58). Funen: Yellow tray at Årslev (22-6-56, 27-7-56). Sealand: Yellow trays at Lyngby (26-8-55) and Ørslev at Ringsted (July and August, 1956). Bornholm: On Ranunculus bulbosus at Hammeren (June 1956).

Genus **NEOTRAMA** Baker, 1920

237. *Neotrama caudata* (del Guercio, 1909)

Protrama caudata: Börner 1952, p. 48, no. 52
Protrama (Neotrama) flavescens: Börner 1952, p. 48, no. 53
Neotrama caudata: Eastop 1953, p. 399

Distribution: USSR, Germany, Italy, France, England, Netherlands, and Denmark.

Occurrence in Denmark: Jutland: On Hypochoeris radicata at Femmøller, Mols (5-8-59, 5-7-60). These finds are mentioned by Heie (1965).

Genus **TRAMA** v. Heyden, 1837

238. *Trama rara* Mordvilko, 1908

Trama rara: Börner 1952, p. 49, no. 56; Eastop 1953, p. 403

Distribution: USSR, Germany, Czechoslovakia, Netherlands, England, Poland, Denmark, Japan, and North America.

Occurrence in Denmark: Jutland: On Taraxacum (cultivated) at Odder (October 1958, M. Clausen coll.). Sealand: On Taraxacum at Holte (22-8-49).

239. *Trama troglodytes* v. Heyden, 1837

Trama troglodytes + T. centaureae + T. mordvilkoi + T. pubescens + T. longitarsis: Börner 1952, p. 49, nos. 55, 57, 58, 59, and 60
Trama troglodytes: Eastop 1953, p. 405

Distribution: Europe, USSR. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Achillea millefolium at Store Vildmose (26-7-68) and Femmøller, Mols (5-7-60), on Matricaria chamomilla at Resen, Skive (18-7-57), on Leontodon autumnalis at Lyby, Salling (23-6-68), and on Hieracium pilosella at Henne (1-7-58). Sealand: On Carduus at Jonstrup (23-8-63, J. Reitzel leg.), on Artemisia vulgaris at Benløse near Ringsted (14-8-58), and on Matricaria inodora at Marbjerg Forest near Næstved (14-8-58, Børge Petersen leg.). Other Islands: On Artemisia vulgaris at Brundby on Samsø (10-8-58) and on Tanecetum vulgare at Rudkøbing on Langeland (5-7-57).

Genus **PERIPHYLLUS** v. d. Hoeven, 1863

240. *Periphyllus aceris* (Linné, 1758) subsp. *acericola* (Walker, 1848)

Chaetophoria acericola: Börner 1952, p. 50, no. 63

Distribution: Europe. It is known from Norway and Sweden.

Occurrence in Denmark: Jutland: On Acer pseudoplatanus at Lønstrup (24-7-60), Legind Bjerge, Mors (4-6-59, 30-5-60), Femmøller, Mols (4-7-60, 8-9-60), and on Acer sp. at Råsted, western Jutland (10-9-67). Funen: On Acer pseudoplatanus at Morud (10-7-58). Other islands: On Acer pseudoplatanus at Vesterø on Læsø (9-8-57) and Nordby on Samsø (11-8-58).

The finds belong to subsp. *acericola,* which lives on Acer pseudoplatanus, whereas *aceris* s. str. (= *xanthomelas* Koch, 1854) lives on A. platanoides.

241. *Periphyllus lyropictus* (Kessler, 1886)

Periphyllus lyropictus: Theobald 1929, p. 42
Chaetophorella aceris: Börner 1952, p. 50, no. 66

Distribution: Europe, USSR, and North America. It is known from Sweden and Finland.

Occurrence in Denmark: Jutland: On Acer pseudoplatanus at Århus (7-9-60) and on Alnus glutinosa (1 alate individual; this is not a host) east of Struer (25-7-57). The Danish Islands: On Acer pseudoplatanus at Onsbjerg on Samsø (13-8-58).

242. *Periphyllus testudinaceus* (Fernie, 1852)

Periphyllus testudinatus (Thornton): Theobald 1929, p. 37
Periphyllus villosus (Hartig): Börner 1952, p. 51, no. 67
Periphyllus testudinacea (Fernie): Essig & Abernathy 1952, p. 121

Distribution: Holarctic. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Acer pseudoplatanus at Komdrup, Himmerland (4-10-57), Tingbæk, Himmerland (19-6-58), Skørping (21-6-58), Krabbesholm Forest at Skive (27-10-57, 22-4-59), Fur (22-6-58), Legind Bjerge on Mors (3-6-58, 4-6-59), Lundø near Skive (7-7-59), Avnsbjerg (13-8-59), and Arrild near Løgumkloster (5-7-58), on Acer platanoides at Krabbesholm Forest (27-10-57), Kjellerup (14-6-59), and Århus (14-5-59), on Acer campestre at Løvel, Himmerland (16-6-57), Rebild (27-5-59), Skive (several finds), Brårup Plantation at Skive (6-5-59), Fur

(22-6-58), Grinderslev, Salling (11-7-58, 11-8-59), Kongenshus (16-10-60), Kjellerup (25-10-64), Lemvig (4-7-59), Studsgård (9-7-59), and Kolding (1-6-64), on Acer pennsylvanicus at Studsgård (18-6-64), and in yellow Moericke-trays at Tylstrup, Vendsyssel (1-6-56) and Hornum, Himmerland (31-5-57). Funen: On Acer platanoides at Morud (20-10-59) and Hofmansgave near Otterup (28-5-65), on A. campestre at Odense (14-5-58), and in yellow tray at Årslev (1-6-56). Sealand: On Acer pseudoplatanus at Holte (21-5-50) and Gentofte (26-5-68, H. Enghoff coll.), on A. campestre at Forsthaven (7-7-18, M. Thomsen leg.), Bagsværd (12-7-65), Dragør (19-10-57), and Kongelunden, Amager (in the collection of the State Exper. Station, Lyngby), and on Acer sp. in Copenhagen (6-11-17, M. Thomsen leg.). Other islands: On Cornus (1 alate individual; this is not a host) at Sophiehøj, Lolland (20-5-53, Børge Petersen coll.) and on Acer platanoides at Klemensker, Bornholm (28-5-64, J. Reitzel leg.).

Genus **CHAITOPHORUS** Koch, 1854

243. *Chaitophorus beuthani* (Börner, 1950)

Tranaphis beuthani: Börner 1952, p. 53, no. 84
Chaitophorus beuthani: Szelegiewicz 1961, p. 245

Distribution: Germany, Austria, Poland, England, Sweden, and Denmark.

Occurrence in Denmark: On Salix viminalis and other Salix spp. with narrow leaves in Jutland at V. Vandet, Thy (14-10-64), Skive (14-9-58), Højslev at Skive (3-8-57), and Højer (8-8-56), on Funen at Fåborg (13-7-57), and on Læsø at Hventgård (10-8-57).

244. *Chaitophorus capreae* (Mosley, 1841)

Tranaphis capreae: Börner 1952, p. 52, no. 83
Chaitophorus capreae: Szelegiewicz 1961, p. 249

Distribution: Europe and Asia. It is known from Sweden and Norway.

Occurrence in Denmark: On Salix (caprea, aurita, cinerea; species with broad leaves) in Jutland at Blokhus (24-7-65), Store Vildmose (5-10-57), Ålestrup, Himmerland (28-8-68), Harrevig, Salling (15-10-56), Sundsøre (14-8-68), Haderup (1-10-59), and Femmøller (5-7-60), on Sealand at Tikøb (17-10-65), and on the island of Strynø south of Funen (7-7-57).

245. *Chaitophorus leucomelas* (Koch, 1854)

Eichochaitophorus versicolor (Koch): Börner 1952, p. 52, no. 77
Chaitophorus leucomelas: Szelegiewicz 1961, p. 254

Distribution: Europe and Asia. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Populus italica at Skive (9-9-56 and — in galls of *Pemphigus spirothecae* Pass. — 12-9-56). Sealand: On Populus sp. at Forsthaven near Copenhagen (7-7-18, M. Thomsen leg. et det.) and Lammefjord (24-9-59, J. Jørgensen leg.). Other islands: On Populus sp. at Hventgård on Læsø (7-8-57).

246. *Chaitophorus parvus* Hille Ris Lambers, 1935

Pseudomicrella parva: Börner 1952, p. 52, no. 75
Chaitophorus parvus: Szelegiewicz 1961, p. 276

Distribution: Outside Denmark only in Poland and Netherlands.

Occurrence in Denmark: Jutland: On Salix repens in the dunes at Blokhus (2-7-64, 30-6-69). The Danish islands: On Salix repens in the dunes at Danzigmand on Læsø (8-8-57).

247. *Chaitophorus populeti* (Panzer, 1805)

Chaitophorus populeti: Börner 1952, p. 53, no. 81
Chaitophorus populialbae (B. d. Fonsc.): Börner 1952, p. 53, no. 82
Chaitophorus betulinus (v. d. Goot): Börner & Heinze 1957, p. 70
Chaitophorus populialbae: Börner & Heinze 1957, p. 70
Chaitophorus populeti: Stroyan 1957, p. 338; Szelegiewicz 1961, p. 278

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Populus tremula at Madum Lake, Himmerland (13-6-58), Lundby Bakker south of Ålborg (29-7-68), Legind Bjerge, Mors (4-6-59), and Femmøller, Mols (6-7-60). Funen: On Populus alba at Fåborg (16-7-57). Sealand: On Populus alba at Luknam at Holte (15-8-57, 16-8-58). Other islands: On P. alba at Frellesvig on Langeland (6-7-57).

248. *Chaitophorus populialbae* (Boyer d. Fonscolombe, 1841).

Eichochaitophorus albus (Mordv.): Börner 1952, p. 52, no. 78
Chaitophorus albus: Stroyan 1957, p. 338
Chaitophorus populi-albae: Szelegiewicz 1961, p. 285

Distribution: Europe, Asia, and North Africa. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Populus tremula at Madum Lake in Himmerland (29-5-59).

249. *Chaitophorus salicti* (Schrank, 1801)

Pseudomicrella salicti: Börner 1952, p. 52, no. 72
Chaitophorus salicti: Stroyan 1957, p. 340; Szelegiewicz 1961, p. 295

Distribution: Europe and Asia. It is known from Sweden and Finland.

Occurrence in Denmark: Jutland: On Salix cinerea at Madum Lake in Himmerland (2-9-58).

250. *Chaitophorus tremulae* (Koch, 1854)

Eichochaitophorus tremulae: Börner 1952, p. 52, no. 76
Eichochaitophorus populeti (Panz.): Börner 1952, p. 220
Chaitophorus tremulae: Stroyan 1957, p. 338; Szelegiewicz 1961, p. 300

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Populus tremula at Strandby at Frederikshavn (19-8-56), Madum Lake, Himmerland (14-9-60), north of Brande (20-8-67), Lyngballe Forest near Århus (6-10-60), Femmøller, Mols (8-8-59), and Fuglsø, Mols (14-9-62).

Genus **LAINGIA** Theobald, 1922

251. *Laingia psammae* Theobald, 1922

Laingia psammae: Börner 1952, p. 53, no. 85

Distribution: Europe. It is known from Sweden and Finland.

Occurrence in Denmark: Jutland: On Ammophila (Psamma) arenaria at Blokhus (several finds, July-September 1959—69) and Hune, Vendsyssel (5-8-68), and at Sønder Lem Vig, Salling (19-8-69).

Genus **ATHEROIDES** Haliday, 1839

252. *Atheroides serrulatus* Haliday, 1838

Atheroides serrulatus: Börner 1952, p. 54, no. 88

Distribution: Europe. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: Collected by sweeping (it lives on grasses) at Skiveren, Vendsyssel (28-7-64),

Blokhus (4-8-63, 14-7-64, 17-7-65), Madum Lake in Himmerland (5-9-58, 28-5-59), Skive (6-7-63), Hanbjerg near Struer (16-7-59, and Femmøller, Mols (7-8-59).

Genus **SIPHA** Passerini, 1860

253. *Sipha (Sipha) glyceriae* (Kaltenbach, 1843)

Sipha glyceriae: Börner 1952, p. 54, no. 90

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Glyceria at Blokhus (17-7-65), on Phleum at Oddense, Salling (13-7-63), on Poa at Krabbesholm Forest at Skive (8-7-59), and collected by sweeping at Skive (6-7-63) and Kongsø near Bryrup (11-7-58). Sealand: Collected by sweeping at Tikøb (17-10-65).

254. *Sipha (Rungsia) kurdjumovi* Mordvilko, 1921

Sipha agropyrella Hille Ris Lambers, 1939, p. 82
Rungsia kurdjumovi: Börner 1952, p. 55, no. 93
Sipha (Rungsia) kurdjumovi: Szelegiewicz 1968, p. 71

Distribution: Europe, Asia, and North America. It is known from Sweden and Finland.

Occurrence in Denmark: Jutland: On Agropyrum repens at Vodskov in Vendsyssel (18-8-62) and at Egeris, Skive (23-8-62).

255. *Sipha (Rungsia) arenarii* Mordvilko, 1921

Rungsia arenarii: Börner 1952, p. 55, no. 94
Sipha (Rungsia) arenarii: Szelegiewicz 1968, p. 71

Distribution: USSR, Poland, Sweden, Norway, Finland, and Denmark.

Occurrence in Denmark: Sealand: On Elymus arenarius at Humlebæk (6-10-66, J. Reitzel leg., D. Hille Ris Lambers det.).

Genus **CHAETOSIPHELLA** Hille Ris Lambers, 1939

256. *Chaetosiphella berlesei* (del Guercio, 1905)

Chaetosiphella berlesei: Hille Ris Lambers 1939, p. 84; Börner 1952, p. 55, no. 97; Stroyan 1955, p. 326

Distribution: Netherlands, Belgium, Germany, Poland, England, Italy, Sweden, Norway, Finland, and Denmark.

Occurrence in Denmark: Jutland: Collected by

sweeping in the coniferous plantation in the dunes at Blokhus (9-8-63). The species lives on Festuca and Aira.

Genus **DREPANOSIPHUM** Koch, 1855

257. *Drepanosiphum acerinum* (Walker, 1848)

Drepanosiphon gracilis Börner, 1940: Börner 1952, p. 59, no. 115
Drepanosiphum acerinum: Hille Ris Lambers 1963

Distribution: England, Netherlands, Germany, Poland, Czechoslovakia, and Denmark.

Occurrence in Denmark: Jutland: On Acer pseudoplatanus at Ålborg (12-7-68). The find consists of one immature specimen, only. The identification with *acerinum* (= *gracilis* Börner) is based on one character which by Börner is said to be diagnostic: "Spinal and pleural hairs of young larva very small from vertex of head to 4th and 5th abdominal segments".

258. *Drepanosiphum aceris* Koch, 1855

Drepanosiphon acerinus (Walker): Börner 1952, p. 59, no. 113
Drepanosiphum aceris: Hille Ris Lambers 1963

Distribution: Europe and Asia. It is known from Sweden.

Occurrence in Denmark: Jutland: On Acer campestre at Skive (16-10-56, 4-8-57, 4-5-59), Rebild (29-6-60), Kjellerup (25-10-64), Kolding (12-9-68), and Løgumkloster (6-9-68), on Acer pseudoplatanus (1 alate specimen; this is not a host) at Århus (7-9-60), and in yellow Moericke-tray at Borris (20-7-56).

259. *Drepanosiphum platanoidis* (Schrank, 1801)

Drepanosiphon platanoidis: Börner 1952, p. 59, no. 114

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, Finland, and the Faroes.

Occurrence in Denmark: Very common in all parts of the country from May till October on Acer pseudoplatanus. Collected or only observed at the following localities:

Jutland: Hammer Bakker and Tylstrup in Vendsyssel, Ålborg, Komdrup and Hornum in Himmerland, Skørping, Bejstrup in Han Herred, V. Vandet in Thy, Frøslev and Legind Bjerge on Mors, Fur, Grinderslev and Oddense in Salling, Skive, Krabbesholm Forest at Skive, Lundø near Skive, Lemvig, Mønsted, Skjelhøje, Råsted, Kjellerup, Ring Forest south of Brædstrup, Århus, Femmøller, Gjerrild, Borris, Kolding, Arrild near Løgumkloster, and Store Jyndevad.

Funen: Strib, Odense, Hofmansgave near Otterup, Årslev, and Svendborg.

Sealand: Hundested, Espergærde, Tokkekøb Hegn, Malmmose at Holte, Ny Himmelev at Roskilde, Ringsted, Ørslev, Næstved, and Skelskør.

Other islands: Nordby on Samsø, Tranekær on Langeland, and Marstal on Ærø.

Genus **SYMYDOBIUS** Mordvilko, 1894

260. *Symydobius oblongus* (v. Heyden, 1837)

Symydobius oblongus: Börner 1952, p. 56, no. 100
Symydobius piceus (Börner): Börner 1952, p. 56, no. 101

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Common in all parts of the country from May till October on Betula verrucosa (= pendula) and B. pubescens (= alba). Jutland: Dannerhøj in Vendsyssel, Blokhus, Store Vildmose, Hammer Bakker, Oksholm Forest on Øland in Han Herred, Rold Forest, Madum Lake and Lundby Bakker in Himmerland, Legind Bjerge and Højris Forest on Mors, Skive, Krabbesholm Forest, Højslev at Skive, Tastum at Skive, Flyndersø and Hjerl Hede, Aulum, Kjellerup, Femmøller, Bryrup, Hampen, Juelsminde, Blåbjerg at Henne, and Store Jyndevad. Funen: Fåborg. Sealand: Tokkekøb Hegn and Marbjerg Forest near Næstved. Other islands: Kanehave and Brattingborg on Samsø.

Genus **CLETHROBIUS** Mordvilko, 1928

261. *Clethrobius comes* (Walker, 1848)

Clethrobius comes: Hille Ris Lambers 1947
Betacallis gigantea (Cholodk.): Börner 1952, p. 56, no. 102
Betacallis comes: Börner 1952, p. 56, no. 103

Distribution: Palaearctic. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Betula verrucosa at Skive (20-5-59), Kjellerup (14-6-59), and Femmøller, Mols (7-7-60), on Betula pubescens at Blokhus (2-9-62), Legind Bjerge on Mors (8-10-62), and Addit Forest (12-5-59), and on Alnus glutinosa at Blokhus (24-7-65). Sealand: On Betula papyracea in Copenhagen (13-10-09, in the collection of the State Exper. Station, Lyngby).

Genus **EUCERAPHIS** Walker, 1870

262. *Euceraphis punctipennis* (Zetterstedt, 1828)

Euceraphis betulae (Linné): Theobald 1927, p. 372
Euceraphis punctipennis: Börner 1952, p. 57, no. 104

Distribution: Holarctic. It is known from Sweden, Norway, Finland, Iceland, and Greenland.

Occurrence in Denmark: Very common in all parts of the country from April till October on Betula verrucosa and B. pubescens. Observed or collected at the following localities:

Jutland: Frederikshavn, Tylstrup, Dannerhøj, Blokhus, Store Vildmose, Hammer Bakker, Vilsbøl Plantation in Thy, Oksholm Forest on Øland, Nibe, Ålborg, Lundby Bakker south of Ålborg, Rold Forest, Rebild, Store Økssø, Madum Lake, Villestrup, Hjedsbæk, Skivum, Borup at Skals, Sønderup, Hvidsten, Tvede, Randers, Legind Bjerge on Mors, Fur, Jebjerg, Eskær, Sundsøre, Ø. Lyby, Spøttrup, Kås at Lihme, Dølby near Skive, Skive, Krabbesholm Forest, Tastum and Fly south of Skive, Dalgas Plantation and other localities between Skive and Viborg, Flyndersø, Havredal, Kongenshus, Handbjerg and Tingholt Mølle near Struer, Skørsø at Vinderup, Aulum, Idum near Holstebro, Blåbjerg at Henne, Kjellerup, Brunshåb near Viborg, Ejer Bavnehøj, Brassø at Silkeborg, Bryrup, Ring Forest south of Brædstrup, Århus, Femmøller, Stubbe Lake and Ulstrup in Djursland, Fuglsø, Bygholm at Horsens, Gødding at Randbøl, Borris, Sønder Omme, Kolding, Rømø, and Jyndevad.

Funen: Kongebro at Lillebælt, Hylkedam, Årup, Fåborg, Odense, Årslev, Nyborg, and Holckenhavn.

Sealand: Grib Lake, Espergærde, Mørdrup, Holte, Bagsværd, Rungsted, Copenhagen, Marbjerg Forest near Næstved, south of Næstved.

Other islands: Hventgård on Læsø, Brundby on Samsø, Nykøbing on Falster, and Bodilskirke on Bornholm.

Genus **PHYLLAPHIS** Koch, 1856

263. *Phyllaphis fagi* (Linné, 1767)

Phyllaphis fagi: Börner 1952, p. 57, no. 106

Distribution: Nearly all over the world. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Very common on Fagus silvatica from May till November.

Jutland: Hammer Bakker in Vendsyssel, Vilsbøl Plantation in Thy, Ålborg, Rold Forest, Randers, Legind Bjerge on Mors, Jebjerg, Skive, Krabbesholm Forest, Estvad south of Skive, Aulum, Brassø at Silkeborg, Århus, Addit Forest, Ring Forest south of Brædstrup, Hampen, Vandel, Grejsdal, Varde, Vedsted, Kolding, and Skamlingsbanken.

Funen: Strib, Hindsgavl, Hofmansgave near Otterup, Svanninge Bakker, Korinth, Fåborg, and Svendborg.

Sealand: Grib Forest, Tokkekøb Hegn, Holte, Lyngby, and Jystrup south of Roskilde.

Other islands: Langeland, Turø, and Avernakø.

It is mentioned as a common pest to beech in Denmark by Boas (1923) and Bovien & Thomsen (1945). Henriksen (1944, p. 69) gives localities on Sealand (Præstevangen, Tisvilde Hegn, and Sorø) and Funen (Klingstrup). It is recorded from Frederiksdal near Nakskov on Lolland by Birger Jensen (1962). Danish name: Bøgebladlus.

Genus **CALLIPTERINELLA** van der Goot, 1913

264. *Callipterinella callipterus* (Hartig, 1841)

Calaphis callipterus: Börner 1952, p. 58, no. 108
Procalaphis callipterus: Quednau 1954, p. 23
Callipterinella calliptera: Szelegiewicz 1968, p. 49

Distribution: Europe, Asia, and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Betula verrucosa at Blokhus (several finds, May till October), Rebild (17-9-60), Fly south of Skive (20-9-62), Hatnæs at Silkeborg (9-10-60), Femmøller, Mols (4-7-60, 10-9-60), Ahl Strand at Ebeltoft (6-8-59), and Juelsminde (28-6-59) and on Betula pubescens at Blokhus (2-9-62, 20-10-62) and Skive (10-10-60, 15-10-62). Sealand: On Betula verrucosa at Holte (22-10-60).

265. *Callipterinella tuberculata* (v. Heyden, 1837)

Calaphis tuberculata: Börner 1952, p. 58, no. 109
Procalaphis tuberculata: Quednau 1954, p. 23
Callipterinella tuberculata: Szelegiewicz 1968, p. 50

Distribution: Palaearctic. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Sealand: On Betula sp. at Charlottenlund at Copenhagen (8-7-50). It is remarkable that this

species never has been found in Jutland where intensive investigations of birch aphids have gone on for years.

Genus **CALAPHIS** Walsh, 1862

266. *Calaphis betulicola* (Kaltenbach, 1843)

Kallistaphis betulicola (partim): Börner 1952, p. 58, no. 110
Kallistaphis betulicola: Stroyan 1957, p. 341

Distribution: Europe. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Betula verrucosa at Blokhus (25-7-61) and on B. pubescens at Juelsminde (28-6-59).

267. *Calaphis flava* Mordvilko, 1928

Kallistaphis betulicola (partim): Börner 1952, p. 58, no. 110
Kallistaphis basalis Stroyan, 1957, p. 343
Kallistaphis flava: Szelegiewicz 1968, p. 50

Distribution: Europe, Asia, and Australia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Common on Betula from April till November.

Jutland: On Betula pubescens at Blokhus, Hune, Øland, Vilsbøl Plantation in Thy, Nibe, Sønderup in Himmerland, Rold Forest, Madum Lake, Blåkilde at Villestrup, Møldrup in Himmerland, Tvede, Randers, Rom near Lemvig, Højris and Legind Bjerge on Mors, Jebjerg and Dølby in Salling, Kås at Lihme, Skive, Krabbesholm Forest, Dalgas Plantation between Skive and Viborg, Hvidemose at Rønbjerg, Vridsted at Karup Å, Havredal, Kjellerup, Avnsbjerg, Aulum, Simmelkjær north of Herning, Studsgård, Brassø at Silkeborg, Bryrup, Hampen, Lyngballe Forest near Århus, Femmøller, Addit Forest, Skanderborg, Blåbjerg at Henne, Sækbæk north of Varde, Bramminge, and Rømø and on Betula verrucosa at Dannerhøj in Vendsyssel, Madum Lake in Himmerland, Jebjerg, Højslev at Skive, Haderup, Aulum, Brassø at Silkeborg, and Rømø.

Funen: On Betula pubescens at Fåborg and in yellow tray at Årslev.

Sealand: On Betula spp. in Copenhagen and in yellow tray at Ørslev near Ringsted.

Other islands: On Betula pubescens on Samsø (Dyret, Onsbjerg,

and Langemark Strand) and Falster (Nykøbing) and on B. verrucosa on Samsø (Mårup).

Genus **BETULAPHIS** Glendenning, 1926

268. *Betulaphis brevipilosa* Börner, 1940

Betulaphis brevipilosa Börner, 1940, p. 2
Betulaphis quadrituberculata subsp. brevipilosa: Börner 1952, p. 58

Distribution: Europe. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Common on Betula verrucosa. Jutland: Frederikshavn (6-8-62), Dannerhøj in Vendsyssel (22-9-58), Blokhus (15-7-60, 13-10-60), Ålborg (11-10-59), Madum Lake in Himmerland (29-5-59), Rebild (16-7-62), Randers (3-7-60), Skive (several finds), Tastum at Skive (26-9-59), Aulum (9-7-59), Femmøller, Mols (8-8-59), Fuglsø (15-9-62), and Juelsminde (28-6-59). Funen: Odense (20-10-59). Sealand: Mørdrup near Espergærde (21-10-60), Holte (several finds), and Copenhagen (13-7-18, M. Thomsen leg.). Other islands: Dyret on Samsø (9-8-58), Brundby on Samsø (5-6-61), and Nykøbing on Falster (16-8-57).

269. *Betulaphis quadrituberculata* (Kaltenbach, 1843)

Betulaphis quadrituberculata (partim): Börner 1952, p. 57, no. 107
Betulaphis quadrituberculata: Börner & Heinze 1957, p. 79

Distribution: Holarctic. It is known from Sweden, Norway, Finland, and Iceland.

Occurrence in Denmark: Very common on Betula pubescens and B. verrucosa from April till October. Jutland: Blokhus, Store Vildmose, Hune in Vendsyssel, Dannerhøj in Vendsyssel, Oksholm Forest on Øland, Vilsbøl Plantation in Thy, Sønderup in Himmerland, Rebild, Madum Lake, Rold Forest, Borup at Skals, Hvidsten, Tvede at Randers Fjord, Højris and Legind Bjerge on Mors, Grynderup and Jungetøre in Salling, Skive, Krabbesholm Forest, Bråruр and Fly at Skive, Vridsted, Flyndersø, Dalgas Plantation between Skive and Viborg, Skørsø between Skive and Vinderup, Haderup, Simmelkjær, Kjellerup, Brassø at Silkeborg, Studsgård, Bryrup, Addit Forest, Lyngballe Forest, Aulum, and Femmøller. Funen: Fåborg and Nyborg. Sealand: Holte and Bagsværd. Other islands: Læsø (Hventgård), Samsø (Dyret, Onsbjerg, Brundby), and Langeland.

Genus **CALLAPHIS** Walker, 1870

270. *Callaphis juglandis* (Goetze, 1778)

Callaphis juglandis: Börner 1952, p. 60, no. 117

Distribution: Europe, Asia, and North America. It is known from Sweden.

Occurrence in Denmark: Jutland: On Juglans regia at Hvidsten (13-7-59). Sealand: On Juglans regia at Holte (16-8-58), Lyngby (30-7-64, J. Reitzel leg. et det.), and Frederiksberg (July 1957, Røpke coll.).

Genus **CHROMAPHIS** Walker, 1870

271. *Chromaphis juglandicola* (Kaltenbach, 1843)

Chromaphis juglandicola: Börner 1952, p. 60, no. 118

Distribution: Europe, Asia, and North America. It is known from Sweden.

Occurrence in Denmark: Sealand: Caught in yellow Moericke-tray at Lyngby (11-7-58, V. F. Eastop leg. et det.) and collected on Juglans regia at Lyngby (9-6-64, J. Reitzel leg. et det.).

Genus **EUCALLIPTERUS** Schouteden, 1906

272. *Eucallipterus tiliae* (Linné, 1758)

Eucallipterus tiliae: Börner 1952, p. 60, no. 121

Distribution: Nearly all over the world. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Very common on Tilia in all parts of the country from spring till autumn.

Jutland: Hjørring (10-8-60), Brønderslev (2-8-60), Legind Bjerge on Mors (3-6-59), Grinderslev in Salling (14-8-68), Skive (6-5-59, 20-5-59, 24-6-69), Estvad south of Skive (17-6-59), Randers (7-6-67), Kjellerup (25-10-64), Studsgård (9-7-59), Varde (29-8-68), Kolding (12-9-68), Løgumkloster (29-8-68), Rømø (5-7-58), and Tønder (5-9-68).

Funen: Svendborg (12-7-57).

Sealand: Rungsted (1-6-66), Copenhagen (23-9-17 and 29-8-19 (M. Thomsen leg. et det.), 12-6-69), Dragør on Amager (19-10-57), and — in yellow Moericke-trays — at Lyngby (11-7-58) and Ørslev near Ringsted (29-6-56, 20-7-56, 27-7-56).

Other islands: Onsbjerg and Brundby on Samsø (10-8-58) and Stoense on Langeland (6-7-57).

Genus **MYZOCALLIS** Passerini, 1860

273. *Myzocallis carpini* (Koch, 1855)

Myzocallis carpini: Börner 1952, p. 61, no. 123

Distribution: Europe, USSR. It is known from Sweden and Norway.

Occurrence in Denmark: On Carpinus betulus in Jutland at Ålborg (26-6-69), Skive (30-6-60), Herning (19-6-69), Studsgård (9-7-59), and Vedsted near Haderslev (5-7-58), on Funen at Fåborg (16-7-57, 6-7-58), and on Amager at Dragør (19-10-65).

274. *Myzocallis castanicola* Baker, 1917

Myzocallis castanicola: Theobald 1927, p. 338; Börner 1952, p. 61, no. 125

Myzocallis (Agrioaphis) castanicola: Richards 1965, p. 35

Distribution: Europe and North America. It is known from Sweden.

Occurrence in Denmark: Sealand: On rape at Dyrehavegård near Copenhagen (15-7-62, J. Reitzel leg.), one alate specimen, only, gone astray. The host plants are Quercus and Castanea.

275. *Myzocallis coryli* (Goetze, 1778)

Myzocallis coryli: Börner 1952, p. 61, no. 122

Distribution: Europe and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Very common on Corylus avellana from May till October. It has been collected or observed at the following localities:

Jutland: Tolne, Flauenskjold near Sæby, Hammer Bakker in Vendsyssel, Fosdalen in Han Herred, Oksholm Forest on Øland, Lundby Krat south of Ålborg, Skørping, Randers, Fur, Lyby and Jungetøre in Salling, Kås at Lihme, Krabbesholm Forest and Estvad at Skive, Avnsbjerg, Lyngballe Forest, Århus, Femmøller, Studsgård, Gesten Forest near Kolding, and Tavlov between Kolding and Fredericia.

Funen: Kongebro at Lillebælt, Årup, Brenderup, Fåborg, Årslev, Gerskov north of Odense, Holckenhavn, and Bovense north of Nyborg.

Sealand: Espergærde, Holte, Bagsværd, and Copenhagen.

Other islands: Samsø (Ballebjerg), Turø, and Lolland (Sophiehøj at Rødby).

276. *Myzocallis myricae* (Kaltenbach, 1843)

Myzocallis myricae: Börner 1952, p. 61, no. 124

Distribution: Europe. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: On Myrica gale in Jutland at Blokhus (several finds in July and August 1964—69), Svinkløv (1-8-62), Trend in Himmerland (21-7-67), Harrevig in Salling (4-9-66), west of Jebjerg in Salling (26-7-58), Kongsø near Bryrup (11-7-58), and Femmøller in Djursland (4-8-59), and on Læsø at Hventgård (6-8-57). Caught in yellow Moericke-tray at Borris in Jutland (13-7-56).

Genus **TUBERCULOIDES** van der Goot, 1915

277. *Tuberculoides annulatus* (Hartig, 1841)

Tuberculoides annulatus: Börner 1952, p. 61, no. 128

Distribution: Nearly all over the world. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Very common on Quercus (robur, sp.) in all parts of the country from spring till autumn. Collected or observed at the following localities:

Jutland: Near Råbjerg Mile, Blokhus, Hammer Bakker in Vendsyssel, Lundby Bakker south of Ålborg, Dokkedal, Muldbjerge, Rold Forest, Rebild, Hvalpsund, Højris on Mors, Jungetøre and Lyby in Salling, Skive, Krabbesholm Forest, Fly at Skive, Dalgas Plantation between Skive and Viborg, Brunshåb and Hald near Viborg, Kjellerup, Studsgård, Himmelbjerget, Bryrup, Lyngballe Forest, Århus, Femmøller in Djursland, Hampen, Borris, Kvong south of Tarm, Henne, Sækbæk north of Varde, Juelsminde, Tavlov between Fredericia and Kolding, Gesten Forest near Kolding, Bramminge, Løgumkloster, Store Jyndevad, and Tønder.

Funen: Svanninge Bakker, Fåborg, and Årslev.

Sealand: Nyrup Hegn near Espergærde, Tikøb, Tokkekøb Hegn, Lyngby, and Ørslev at Ringsted.

Other islands: Læsø, Samsø (Dyret), and Bornholm (Svaneke).

Genus **TUBERCULATUS** Mordvilko, 1894

278. *Tuberculatus querceus* (Kaltenbach, 1843)

Tuberculatus querceus: Börner 1952, p. 62, no. 131

Distribution: Europe, USSR. It is known from Sweden and Norway.

Occurrence in Denmark: On Quercus robur at Lyngballe Forest near Århus (21-7-59) and Krabbesholm Forest at Skive (19-8-65), both in Jutland.

Genus **PTEROCALLIS** Passerini, 1860

279. *Pterocallis albidus* Börner, 1940

Pterocallis albida: Börner 1952, p. 62, no. 134

Distribution: Europe, but not known from the Scandinavian Peninsula.

Occurrence in Denmark: In Jutland on Alnus incana at Sækbæk north of Varde (5-9-68).

280. *Pterocallis alni* (de Geer, 1773)

Pterocallis alni: Börner 1952, p. 62, no 133

Distribution: Europe and North America. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Alnus glutinosa at Blokhus (10-8-60, 24-7-65, 13-7-68), Hammer Bakker in Vendsyssel (14-8-63), Støvring Nørreskov near Randers Fjord (13-7-59), Højris on Mors (10-7-60), Højslev at Skive (19-7-58), Krabbesholm Forest (October 1956), Limbjerggård at Struer (25-7-57), Hinge Lake at Kjellerup (18-10-56), Femmøller, Mols (7-8-59), and Tønder (5-9-68). The Danish Islands: On Alnus glutinosa at Stoklund on Læsø (9-8-57).

281. *Pterocallis maculatus* (v. Heyden, 1837)

Pterocallis maculata: Börner 1952, p. 62, no. 132

Distribution: Europe and Asia. It is known from Sweden and Finland.

Occurrence in Denmark: Jutland: On Alnus glutinosa at Højslev near Skive (19-7-58; together with *Pt. alni).*

Genus **CTENOCALLIS** Klodnickij, 1924

282. *Ctenocallis setosus* (Kaltenbach, 1846)

Oniscomyzus setosus: Börner 1952, p. 62, no. 137

Distribution: Europe and North America. It is not known from Scandinavia.

Occurrence in Denmark: Jutland: On Sarothamnus

scoparius at Strandkjær, Femmøller, Mols (4-8-59). The find has been mentioned by Heie (1965).

Genus **THERIOAPHIS** Walker, 1870

283. *Therioaphis luteola* (Börner, 1949)

Triphyllaphis luteola: Börner 1952, p. 63, no. 138
Therioaphis luteola: Stroyan 1957, p. 35; Hille Ris Lambers & v. d. Bosch 1964, p. 23

Distribution: Netherlands, Germany, Austria, Poland, England, and Denmark.

Occurrence in Denmark: In yellow Moericke-trays on Funen at Årslev (10-8-56, 20-7-56) and on Sealand at Ørslev near Ringsted (17-8-56).

284. *Therioaphis ononidis* (Kaltenbach, 1846)

Therioaphis ononidis: Börner 1952, p. 63, no. 142; Hille Ris Lambers & v. d. Bosch 1964, p. 32

Distribution: Europe, West Asia. It is known from Sweden.

Occurrence in Denmark: Jutland: On Ononis repens at Ø. Lyby in Salling (22-7-57) and Femmøller, Mols (5-8-59). The Danish Islands: On Ononis repens on Avernakø (11-7-57).

285. *Therioaphis trifolii* (Monell, 1882)

Pterocallidium maculatum (Buckton), P. propinquum Börner, P. lydiae Börner: Börner 1952, p. 63, nos. 139, 140, 141
Pterocallidium trifolii: Quednau 1954, p. 35
Therioaphis trifolii: Hille Ris Lambers & v. d. Bosch 1964, p. 36

Distribution: Europe, Asia, North America, and Africa. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Trifolium pratense at Kjellerup (13-8-59) and Studsgård (9-7-59) and caught in yellow Moericke-trays at Tylstrup in Vendsyssel (6-7-56), Ødum between Århus and Randers (23-9-55), Studsgård (13-7-56), and Jyndevad (22-6-56). Sealand: On rape (this is not a host) at Dyrehavegård near Copenhagen (9-7-62, J. Reitzel leg.) and in yellow tray at Ørslev near Ringsted (3-8-56).

Genus **TRICHOCALLIS** Börner, 1930

286. *Trichocallis cyperi* (Walker, 1848)

Thripsaphis cyperi: Börner 1952, p. 64, no. 146
Trichocallis caricis (Mordv., 1908): Börner 1952, p. 64, no. 145

Distribution: Europe. It is known from Sweden, Norway, and Finland. *T. cyperi* subsp. *arctica* H.R.L., 1955, occurs in Greenland and Iceland (Hille Ris Lambers 1955).

Occurrence in Denmark: Jutland: On Carex vesicaria at Hald Lake near Viborg (27-8-64, 19-9-64).

Genus **ALLAPHIS** Mordvilko, 1921

287. *Allaphis verrucosa* (Gillette, 1917)

Allaphis leporinae (Börner, 1939): Börner 1952, p. 64, no. 148
Allaphis verrucosa: Szelegiewicz 1968, p. 60

Distribution: Europe and North America. It is known from the Faroes (Jørgensen 1932), Sweden, and Norway.

Occurrence in Denmark: Jutland: On Carex goodenoughii at Blokhus (4-8-63) and taken by sweeping at the same locality (10-8-63, Hille Ris Lambers det.).

Genus **SUBSALTUSAPHIS** Quednau, 1953

288. *Subsaltusaphis flava* (Hille Ris Lambers, 1939)

Saltusaphis flava: Börner 1952, p. 64, no. 154

Distribution: Europe. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Carex goodenoughii at Blokhus (4-8-63, 10-8-63, Hille Ris Lambers det.).

Genus **IZIPHYA** Nevsky, 1929

289. *Iziphya bufo* (Walker, 1848)

Iziphya bufo: Börner 1952, p. 65, no. 157

Distribution: Europe and Asia. It is known from Sweden.

Occurrence in Denmark: Jutland: On Carex arenaria at Blokhus (7-8-63, 12-8-63). Sealand: On rape (one alate specimen, gone astray; this is not a host) at Dyrehavegård near Copenhagen (15-7-62, J. Reitzel leg.).

290. *Iziphya leegei* Börner, 1940

Caricaphis leegei: Börner 1952, p. 65, no. 160

Distribution: England, Netherlands, Germany, Sweden, Norway, and Denmark.

Occurrence in Denmark: Jutland: Collected by sweeping in a meadow at Skive (27-6-58).

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(continued from Entom. Medd. 37, 1969, p. 385)

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Nye danske biller (Coleoptera) 1969

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Siden tillægget for 1968 (Ent. Medd. bind 39, 1969: 386—388) til fortegnelsen over Danmarks biller i Ent. Medd. bind 33, 1964 er der konstateret 5 nye arter for vor fauna.

Deronectes canaliculatus Lac. (Fortegn. 53, efter *duodecimpustulatus*; Reitter F. G. I: 212, Ganglb. Die Käfer von Mitteleuropa I: 463, Horion Faun. I: 400). Dueodde (Bornholm), et eks. i en vandfyldt klitgryde, 22.7.1965 (M. Holmen leg. et det.). Den forekommer især i stillestående, undertiden også i langsomt rindende ferskvand; ved Düsseldorf er den en enkelt gang fundet i hundredvis i flade, ubevoksede vandpytter med ganske klart vand i gamle sand- og grushuller, sept.; dyrene sad ved vandkanten under småsten og i sandet.

Arten kan indføjes i bestemmelsestabellen i D.F. VIII: 71 ved, at l. 6—10 (nr. 4) erstattes af følgende:

4. Pronotum bredest i eller lidt foran midten, bagud stærkt tilsmalnet, rødgul med sort tegning fortil og bagtil, uden fordybet længdestreg på hver side foran roden. Længde 5—6 mm .... 2. *duodecimpustulatus*
—. Pronotum bredest ved roden, tilsmalnet herfra fremefter, i modsat fald (*canaliculatus*) ensfarvet gulligt. Længde 2,2—5,2 mm 4a
4a. Større, 4,8—5,2 mm. Pronotum ikke tilsmalnet fremefter allerede fra roden, i bageste halvdel omtrent parallelsidet eller tilsmalnet noget mod roden, omtrent ensfarvet gulligt, uden fordybet længdestreg på hver side foran roden ..... 2a. *canaliculatus*
—. Mindre, 2,2—4,5 mm. Pronotum bredest ved roden, tilsmalnet herfra fremefter 5

D. canaliculatus er blegt gul eller brungul, vingedækkerne med nogle smalle, mørkebrune længdelinier, der oftest danner vagt

afgrænsede mørke pletter, bryst og bug mørke. Vingedækkerne hvert med 3 svage, ophøjede længderibber. Længde 4,8—5,2 mm.

♂: Forfødderne svagt udvidede, forkløerne næsten kun krummede ved rod og spids (hos ♀ mere jævnt krummede).

Neuraphes plicicollis Reitt. (Fortegn. 84, efter *elongatulus*; Ganglb. Die Käfer von Mitteleuropa III: 31, Horion Nachtrag: 187, Horion Faun. II: 183, 188). Dyrehaven, 1 eks. sigtet fra gamle frønnede bøgestubbe 15.9.1969 (V.H. leg. et det; coll. V.H.). Er i udlandet især fundet i svampet, frønnet løvtræved af hule stubbe eller stammer (bøg, asp, birk), men også i fyr og gran og (i Oldenburg) i tykke lag af nedfaldne fyrrenåle (ofte meget tørre) og i tuer (undertiden forladte) af *Formica rufa* (Kerstens i Ent. Blätter 1958:28).

Arten kan indføjes i bestemmelsestabellen i D.F. XXV: 145 ved at erstatte l. 15—11 f.n. med følgende:

1. Pronotums rod i midten med en længdekøl. Issen med eller uden grube på hver side inden for øjet 1a
—. Pronotums rod i midten uden længdekøl. Issen uden sådanne gruber (3. underslægt *Scydmoraphes*) 4
1a. Issen uden gruber inden for øjnene (2. undersl. *Pararaphes*). Rustrød. Længde 1,1—1,2 mm ..... 3a. *plicicollis*
—. Issen med en tydelig grube på hver side inden for øjet (1. undersl. *Neuraphes* s.str.) 2

Arten ligner i habitus og farve *sparshalli*, men adskilles fra den, såvelsom fra *helvolus* og *minutus* ved pronotums midtkøl. Fra vore arter i underslægten *Neuraphes* s.str. adskilles den let ved manglen af issegruber, fra *angulatus* og *elongatulus* yderligere ved lysere farve og ringere størrelse. Rustrød, vingedækkernes behåring ret lang, lidet tæt og noget udstående. Panden fladtrykt, næsten glat. Pronotum ganske lidt længere end bredt, næsten glat, roden med en ret svag grube på hver side af midtkølen og en smal, aflang grube inden for de bagtil yderst svagt indbuede siderande, rodtværfuren meget fin og smal. Vingedækkerne meget svagt og spredt punkterede. Længde 1,1—1,2 mm.

Hannen er kendetegnet ved en gruppe kortere hår, noget foran vingedækkernes spids på hver side af sømmen.

Acritus atomarius Aubé (Fortegn. 194, efter *nigricornis*; *Reitter* F.G. II: 297, Ganglb. Die Käfer von Mitteleuropa III: 407, Horion Fauna. II: 330, 376). Dyrehaven, nogle eks. sigtet fra en gammel, frønnet bøgestub med *Dorcus*-angreb og bo af *Lasius niger*, 15.—

17.9.1969 (V.H. leg. et det., coll. V.H.). Arten er i udlandet fundet i mørt ved af bøg, eg og poppel, ofte sammen med *Lasius brunneus,* og i mørt elmeved med *Dorcus*-angreb (E.M.M. 1951:59).

Arten adskilles let fra vore to andre arter (D.F.XXV: 338—339) ved tydeligt smallere form, meget tydeligt finere, yderst svag og spredt punktur på pronotum og vingedækkerne og usynligt (hos de to andre meget lille, men dog synligt) scutellum og fra *nigricornis* yderligere ved, at pronotum mangler den tæt punkterede tværlinie foran roden. Arten er lysere eller mørkere brun, følehorn og ben lysere, følehornskøllen gul. Længde 0,8—0,9 mm.

Pocadius lanuginosus H. Franz (Fortegn. 254, efter l. 2 f.o.; H. Franz i Ent. Blätter 1969: 146—148). Arten har været sammenblandet med *P. ferrugineus.* Den er antageligt hos os udbredt som denne. Arten er af Franz beskrevet fra Østrig hvor den er udbredt, men er senere bl. a. konstateret i Hamburgegnen og i Oldenburg. Danske eks. foreligger bl. a. fra Rugballegård, Marselisborg skov, Lolland og Dyrehaven. (V.H. leg. et det.).

Arten kendes let fra *ferrugineus* (D.F.XIII: 127—128) ved afvigende overfladebehåring. Hårbræmmen på pronotums siderande rager betydeligt (hos *ferrugineus* ikke eller næppe) længere ud fra sideranden end 2. følehornsleds bredde, og hårbræmmen på vingedækkernes siderande rager mindst ca. så langt (hos *ferrugineus* ikke nær så langt) ud fra sideranden som mellemskinnebenets midterbredde. Endvidere er vingedækkernes bagudrettede behåring længere og meget mere opstående end hos *ferrugineus.* De angivne behåringsforskelligheder er meget lette at iagttage ved sammenligning af de to arter. Også hannens og hunnens genitalorganer viser forskelligheder hos de to arter, men dissektion er unødvendig til bestemmelse.

I D.F. XIII: 27, l. 7 f.o. ændres »lange hår« til »skråt udad og bagud rettede, mod spidsen bagudbøjede hår«. På fig. 42 (*P. ferrugineus*) er randbehåringen upræcist gengivet og gennemgående for lang.

Ceuthorrhynchus rapae Gyll. (Fortegn. 427; D.F.XXI: 266). Læsø 3 eks. nær klitplantagen 27.7.1969, vistnok på raps (*Brassica napus*) (Bodil Noe-Nygaard leg. et det.).

Arten er nærbeslægtet med *C. pleurostigma* og *roberti* (med *alliariae*). En fjerde nærstående art er *C. puncticollis* Boh., som nylig er fundet i Øst-Skåne og muligvis kunne træffes også hos os.

Da denne art ikke er med i bestemmelsestabellen i D.F. XXI: 264 afsnit 3 og 4, og da disse afsnit også iøvrigt vil kunne udformes bedre, bringes her en ny affattelse:

3. Vingedækkernes stribemellemrum med ret tætstillede, ret kraftige, hvidlige, meget iøjnefaldende hår, striberne med ligeledes meget iøjnefaldende, hvide, kraftige skæl. Pronotum med tydelige, hvidgrå, ret lange hår. Pronotums forrand, set fra siden, betydeligt opadbøjet ..... 30a. *rapae*

—. Vingedækkernes stribemellemrum med ret spredt stillede, meget spinkle, brunlige, utydelige eller meget lidt iøjnefaldende hår. Pronotum næsten nøgent eller med yderst fine og korte, grålige eller brunlige, meget utydelige hår 4

4. Vingedækkernes striber kun med yderst fine og korte, brunlige, næppe synlige hår, der er meget svagere end mellemrummenes hår. Pronotums forrand, set fra siden, kun meget svagt opadbøjet. Den fra oven synlige del af mellembrystets epimerer ikke væsentligt tættere skælklædt end den øvrige del af dem ..... *roberti* (med *alliariae*)

—. Vingedækkernes striber med tydelige, omend fine, hvidlige skæl, der er meget kraftigere end mellemrummenes hår. Pronotums forrand, set fra siden, tydeligt opadbøjet 5

5. Den fra oven synlige del af mellembrystets epimerer tæt hvidt skælklædt, meget tættere end den øvrige del af dem. Pronotum ret kraftigt punkteret. Vingedækkernes striber ikke særligt dybe og brede ..... 30. *pleurostigma*

—. Den fra oven synlige del af mellembrystets epimerer ikke tættere skælklædt end den øvrige del af dem. Pronotum yderst groft punkteret. Vingedækkernes striber påfaldende dybe og brede ..... *puncticollis*

Fra *pleurostigma,* som er den eneste af de danske arter i 8. artsgruppe, med hvilken *rapae* kan forveksles, adskilles *rapae* lettest ved den angivne forskel i behåringen på vingedækkernes stribemellemrum og på pronotum, men de to arter kan også — i begge køn — med sikkerhed adskilles ved de sekundære kønskarakterer på følgende måde:

1. Mellem- og bagskinnebenenes spids indvendig med en torn (♂♂). 5. (sidste) bugled med, 4. bugled med eller uden midtgrube 2

—. Mellem- og bagskinnebenenes spids uden torn (♀♀). 5. bugled med eller uden, 4. bugled uden midtgrube 3

2. 4. (næstsidste) bugled simpelt ..... 30a. *rapae* ♂

—. 4. bugled med en midtgrube, der er svagere og smallere end 5. bugleds grube og på hver side begrænset af en lille, blank knude ved 4. leds bagrand ..... 30. *pleurostigma* ♂

3. 5. bugled i midten med en tydelig grube (svagere end hos ♂) ..... 30. *pleurostigma* ♀
—. 5. bugled i midten ganske svagt og utydeligt affladet, men uden grube ..... 30a. *rapae* ♀

I D.F. XXI: 266 ændres l. 13 — 11 f.n. »Skællene ... hvide.« til: »Vingedækkernes skæl og hårbeklædning som ovenfor anført i tabellen.«

C. puncticollis har tydeligt grovere punkteret pronotum og tydeligt dybere og bredere vingedækkestriber og smallere stribemellemrum end de 3 andre arter. Den fine behåring på vingedækkernes stribemellemrum er hos denne art og *roberti* endnu svagere og mere spredt end hos *pleurostigma.*

C. puncticollis er i Øst-Skåne fundet på grusbund på *Berteroa incana,* i antal 28.5.—3.6.1967 (jfr. Stig Lundberg og Folke Olsson i Sv. Ent. T. 1968:76).

C. alliariae, der oftest har været anset som en var. af *roberti* lader sig ikke ved ydre kendetegn med sikkerhed adskille fra hovedformen, men anses nu af Strejcek (Ent. Bl. 1969: 161—162) for en særskilt art på grund af noget afvigende penisform.

Summary

Five species of Coleoptera are recorded as new to the Danish fauna, e.g. *Deronectes canaliculatus* Lac., *Neuraphes plicicollis* Reitt., *Acritus atomarius* Aubé, *Pocadius lanuginosus* Franz and *Ceuthorrhynchus rapae* Gyll.

Tægen Scoloposcelis pulchella Zett. i Danmark (Het., Anthocoridae)

Af
Henrik Enghoff
Zoologisk Museum, København

På en ekskursion til Rude Skov nord for København d. 27. maj 1969 fandt undertegnede tægen *Scoloposcelis pulchella* Zett. Denne art er ikke tidligere kendt fra Danmark. Både nymfer og imagines fandtes i stort tal under barken på nogle opstablede grankævler (diameter 30—40 cm). Sammen med *Sc. pulchella* fandtes anthocoriden *Xylocoris cursitans* Fallén og barkbillen *Pityogenes chalcographus* L.

Ved senere lejligheder (25.1.1970 og 5.5.1970) har *Sc. pulchella* ikke været at finde på lokaliteten. Derimod var på begge de nævnte datoer *X. cursitans* uhyre talrig. Muligvis kan dette tydes således, at *X. cursitans,* der er en veletableret og almindelig art i Danmark og vides at udsuge biller (Southwood & Leston 1959) i lighed med *Sc. pulchella* (jvf. nedenfor), har udkonkurreret *Sc. pulchella.* Dog kan vel også f. eks. udtørring af grankævlerne have haft betydning for *Sc. pulchella's* forsvinden.

At *Sc. pulchella* ikke er fundet før i Danmark kan skyldes, at den har været overset. Den findes i alle vore nabolande. Imidlertid kan det også tænkes, at den først er indvandret for nylig, jvf. andre nåleskovdyrs indvandring og tiltagen i nyere tid (f. eks. jættebarkbillen *Dendroctonus micans* Kugel. (Hansen 1956)).

Sc. pulchella's biologi er meget speciel, idet den så vidt vides udelukkende lever af barkbillen *Pityogenes chalcographus*' larver (Wagner 1967), og fortrinsvis kan findes i denne billes gange. Det kunne måske tænkes, at billesamlere er faldet over *Sc. pulchella* uden at hæfte sig nærmere derved. Arten er letkendelig. Den kan

beskrives som en mindre og smallere udgave af den almindelige bladlustæge *Anthocoris nemorum* L.: ca. 3 mm lang, aflang-parallel-sidet og sort-hvid broget; især er forvingernes hvide membran iøjnefaldende. Forfatteren vil med tak modtage oplysninger om eventuelle fund af *Sc. pulchella.*

Stud. mag. Nils Møller Andersen takkes for hjælp ved bestemmelsen af arten.

Summary

The anthocorid bug *Scoloposcelis pulchella* Zett. is recorded for the first time from Denmark (N. of Copenhagen, 27.v.1969). January and May 1970 it was absent from the biotope perhaps as a result of competition from another anthocorid, *Xylocoris cursitans* Fall.

Litteratur

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Anmeldelse

A short history of the Brown-tail Moth. By William Curtis (1782). Facsimile Reprint 1969. Introduction by W. T. Stearn and Entomological Notes by D. S. Fletcher. Curwen Press. Sole Distributor E. W. Classey Ltd. Pris £ 3.15.0 d.

Blandt de senere års rige høst af lepidopterologisk literatur bør fremhæves de faksimileudgaver af »klassikere«, som p.g.a. et for beskedent oplag hurtigt forsvandt fra markedet.

Ikke mindst ved E. W. Classey's initiativ er uundværlige værker af f. ex. Haworth, Meyrick og ikke mindst Pierce, hvis sidste bind (om noctuidernes hun-genitalier) udkom i 1942 i et oplag af — 100 exemplarer, nu atter til at købe.

Ovennævnte lille bog fra 1782, skrevet af botanikeren William Curtis (ikke at forvexle med den kendte og produktive entomolog John Curtis, der levede et halvt hundrede år senere) er vel langt fra uundværlig, men dog en art klassiker indenfor skadedyrslitteraturen. Foruden detailleret at beskrive og illustrere »The Brown-tail Moth«s livshistorie giver forf. nemlig tillige — hvad der var ukendt i samtiden — anvisning på dens bekæmpelse. Han anbefaler nedskæring og af-

brænding af larverederne, da »desinfektion« med væsker eller pudder er virkningsløs.

Udenfor Storbritanniens grænser undrer man sig over englændernes stædige fastholden ved brugen af engelske navne for hver eneste af de dér fundne 2467 sommerfuglearter. I dette tilfælde må man misunde dem. Der findes nemlig to meget ens udseende *Euproctis*-arter, en brunhalet og en gulhalet. Ingen kan være i tvivl om, hvilken man mener, når man kan nøjes med at sige »Brown tail« eller »Gold tail«. Tvivlen opstår ved anvendelsen af videnskabelige navne. Curtis selv bruger ikke noget videnskabeligt navn om sin »Brown-tail Moth«, men tager dog (p. 5) afstand fra, at den kan være den samme som Linné's »*Phalæna Chrysorrhæa*, or *Yellow-tail Moth*«. Det lyder også umiddelbart sandsynligt, at den art, Linné døber med det græske navn »chrysorrhoea« (udstrømmende guld) og hvis bagkropspids han omtaler på latin som »barbato luteo« (med gult skæg), er den gulhalede og ikke den brunhalede.

Alligevel har i lange tider (i Danmark altid) den brunhalede været kaldt *chrysorrhoea* L. (og den gulhalede *similis* Fuessl.). Navnet *chrysorrhoea* L. har dog også været flyttet over på den gulhalede, og den brunhalede døbt om til *phaeorrhoea* Donov., hvilket man stadig kalder den i U.S.A. og Canada.

Til støtte for teorien om, at Linné har været uheldig med opfattelsen af halefarven, er anført, at man senere i hans samling har fundet »typen«, og den var den brunhalede. Uden at have noget kendskab til, hvor skudsikker denne type er, vil anm. dog i al almindelighed bemærke, at man skal være meget forsigtig med blindt at stole på en »type« i så gamle samlinger. Tiden går ikke sporløst hen over dem, materialet kan være flyttet over i nye kasser og herunder have fået make-up, og det vides, at der efter 1758 (allerede af Linné selv) er sket udskiftninger med »bedre«, men altså ikke originale, exemplarer i Linné's samling.

Den her omtalte bog er den første i en ny serie kaldet »Classica Entomologica«. Den har forord af W. T. Stearn og D. S. Fletcher og er — sit unægtelig noget spinkle emne til trods — ualmindelig nydeligt udstyret, ikke mindst er Curtis' smukke farvetavle nænsomt gengivet. At Curtis' »bog« (den er på kun 13 sider) allerede blev genoptrykt i 1804 nævnes ikke, men fremgår af Walther Horn's Index.

Niels L. Wolff

Notes on the synonymy of two Elachista species (Lep., Elachistidae)

By
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1. *Elachista incanella* (Herrich-Schäffer, 1855), a synonym of *pulchella* Haworth, 1829.

Among the species entered in the lists of Danish Microlepidoptera (Larsen 1916 p. 234, 1927 p. 145) *Elachista incanella* HS. is stated to occur in several localities in Denmark.

This species — described by Herrich-Schäffer (1855 p. 308) in the genus *Poeciloptilia* — is included as a distinct species in the catalogues and hand-books, e.g. by Staudinger & Rebel (1901 p. 202), Spuler (1910 (1906) p. 428), W. Petersen (1924 p. 528), Hering (1932 p. 55), Eckstein (1933 p. 169), and Lhomme (1935—1949 (1963) p. 849).

In his revision of the *Elachista pulchella* group Janmoulle (1949 p. 119—122, pl. 9) depicts the genitalia of the type specimens of *E. pomerana* Frey, 1880, *pulchella* Haworth, 1829, *humilis* Zeller, 1850, (and *subnigrella* Douglas, 1851), and establishes the following synonymy:

pulchella:	**humilis:**
pulchella Haworth, 1829	*humilis* Zeller, 1850
obscurella Stainton, 1849	*occultella* Douglas, 1851
subobscurella Doubleday, 1859 (? a nomen nudum).	*humiliella* Herrich-Schäffer, 1856*)

The above revision does not include *E. incanella* HS. Judging from the Danish specimens present this species must, however,

*) According to Cat. Libr. Brit. Mus. (N. H.) vol. 6, Suppl. A—I (1922), p. 458 the description (Syst. Bearb. Schmett. Eur. vol. 5, p. 308) was published in 1855.

be involved. In fact its identity had been questioned even before the description was published. Herrich-Schäffer thus states in his description that Stainton "als sicher angibt" a connection between *incanella* and *pulchella,* a supposition from which Herrich-Schäffer dissociates himself.

To arrive at a definite conclusion I applied to the Humboldt Museum in Berlin for loan of authentical material. By the courtesy of Dr. H. J. Hannemann I have been enabled to examine the type lot of Herrich-Schäffer's *Elachista incanella.*

The syntypes consist of two specimens, both no doubt conspecific, one of them, however, without body. The other specimen bears 4 labels stating: (1) M Zül (?), (2) + 957, (3) Coll. H.-Sch., (4) Origin. (red label). Concerning label (1) and (2), both in Herrich-Schäffer's hand-writing, the first refers to the locality, the second to the number by Herrich-Schäffer. An examination of the genitalia of this specimen (fig. 1) proved it to belong to *Elachista pulchella* Hw.

As lectotype I have designated the specimen mentioned, and have attachted to the pin a fourth label inscribed: "Lectotype of *Elachista incanella* Herrich-Schäffer,, 1855. Genit. prep. 3365♂. Niels L. Wolff". The genital slide has been marked accordingly.

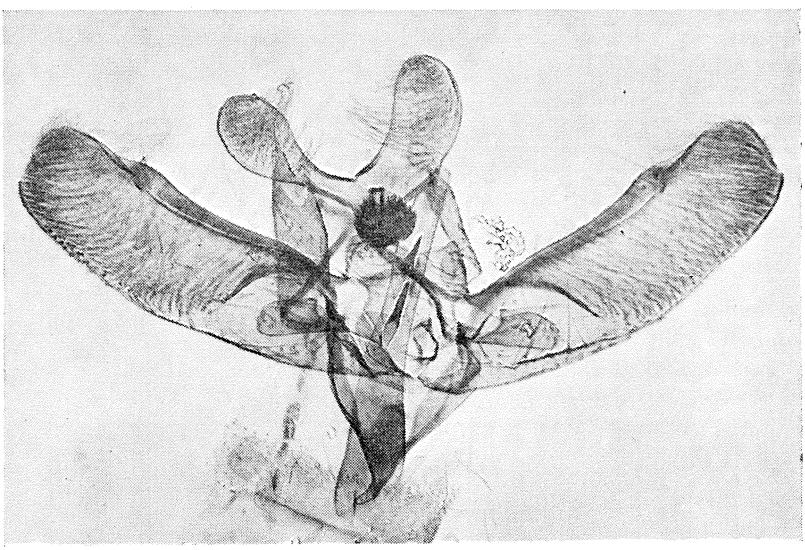


Fig. 1. Genitalia of lectotype of *Elachista incanella* (Herrich-Schäffer). Prep. NLW 3365 ♂ (× 110).

The name *Elachista incanella* HS. thus disappears from the lists being substituted by *E. pulchella* Haw.; *syn. nov.*

2. *Elachista rhynchosporella* (Stainton, 1848), a synonym of *albidella* Tengström, 1848.

The well-known *Elachista* species, feeding preferably on Eriophorum, the characteristic genitalia of which are illustrated by Pierce & Metcalfe (1938) on pl. 28 top left, appears in British papers, e. g. by Meyrick (1928 p. 719—720) Pierce & Metcalfe (1938 p. 48), Ford (1949 p. 131), and Heslop (1964 p. 73) under the name of *rhynchosporella* Stt. But in Continental literature, thus by e.g. Staudinger & Rebel II (1901 p. 204), Spuler (1910 (1906) p. 430), Larsen (1916 p. 235, 1927 p. 147), W. Petersen (1924 p. 528), Hering (1932 p. 57), Eckstein (1933 p. 170), and Benander (1946 p. 58) the specific name *albidella* Tgstr. is applied. As an exception Lhomme (1935—1949 (1963) p. 858) enters the species under the name *rhynchosporella* Stainton with "*albidella* Tengström (1847)" as a synonym.

E. rhynchosporella is described in the genus *Aphelosetia* by Stainton (1848 p. 2164—2165) while *albidella* is described in the genus *Elachista* by Tengström (1848 (1847) p. 150); the title page states 1847 but the paper was first published in 1848.

No doubt exists that the names *rhynchosporella* and *albidella*, respectively, refer to the same species but the fact that both descriptions appeared in 1848 has been responsible for the unsettled decision of the nomenclatorial correct name. More precisely to define the dates of publication was necessary.

On my behalf the secretary of Soc. Fauna & Flora Fennica — in the annals of which *albidella* was described — Dr. Göran Bergman, Helsingfors, has by request of Dr. Walter Hackman been kind enough to go through the old minutes of the society and has succeeded in finding a note according to which it can be stated that the paper in question was published before 31st May 1848 at which date a meeting was held in the society, and the reprints of the papers included in the volume concerned were distributed.

As I have been informed by Mr. J. D. Bradley that Stainton's name dates from July 1848 the name *albidella* Tengström, 1848 thus predates *rhynchosporella* Stainton, 1848 and has to be accepted for the species in question; *syn. nov.*

I am indebted for kind assistance rendered by Dr. G. Bergman, Mr. J. D. Bradley, Dr. W. Hackman, and Dr. H. J. Hannemann.

Summary

1. The type material of *Poeciloptilia* (now *Elachista*) *incanella* Herrich-Schäffer, 1855 p. 308 counts two specimens, one without body. The other specimen is designated as lectotype. Dissection of its genitalia (♂), proved it to belong to *E. pulchella* Haworth, 1829, (syn. nov.).

2. Two specific names, *rhynchosporella* Stainton, 1848, and *albidella* Tengström, 1848, respectively, applied to the same *Elachista* species, are in common use. The name *albidella* was published not later than 31st May 1848 while the name *rhynchosporella* Stainton dates from July 1848 and thus falls as a junior synonym of *albidella* Tengström, 1848, (syn. nov.).

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(Noona Dan Papers No. 96)

Some Heteroptera Nabidae (Hemiptera) from the Southern Philippines and the Bismarck Islands.

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Thanks to the kindness of Dr. Børge Petersen (Zoological Museum, Copenhagen) I have received for examination the Nabidae collected by the Noona Dan Expedition (Petersen, 1966), a total of 13 specimens from Philippines and 87 specimens from the Bismarck Islands.

The material from the Bismarck Islands is very interesting. Only one species of Nabidae, namely *Tropiconabis nigrolineatus* (Distant) (= *Nabis tasmanicus* Remane), has been reported previously from New Britain (Remane, 1964; Kerzhner, 1970, in press). The Noona Dan Expedition has collected 11 species, all new for the islands and 4 of them are new species. 6 species are common with New Guinea and all new species are closely related to species described from New Guinea. One species, *Arbela immista* Harris, is common with the New Hebrides, but not recorded as yet from New Guinea.

The Nabidae of the Philippines are studied relatively well. Approximately 20 species are recorded from these islands. The Noona Dan material contains 4 species; one of them (common with the Bismarck Islands) is a new species, three other species are previously known to occur in the Philippines.

The material examined, including holotypes of all new species, is deposited in the Zoological Museum, Copenhagen; a part of the material, including some paratypes of all new species, is in the Zoological Institute, Leningrad.

I wish to extend my sincere appreciation to Dr. Børge Petersen and Dr. Niels Møller Andersen (Copenhagen), for the opportunity to study this interesting material and to Dr. W. J. Knight (London), Dr. M. Meinander (Helsinki) and Dr. Á. Soós (Budapest) for help with comparative and supplementary material.

Alloeorhynchus (Psilistus) tarsalis (Walker, 1873)

Bismarck Isls., New BRITAIN: Yalom, 1000 m., 1 ♂, 21 May 1962.

This species has been known only from New Guinea (Papua: Dorey; Kokoda). The male examined agrees well with the description of a female given by Harris (1937), though the body is smaller (length 5.2 mm.; width at pronotum 1.6 mm, at abdomen 1.8 mm.), the three basal segments of the connexivum are orange-red and the row of punctures along the inner margin of clavus is indistinct.

Alloeorhynchus (s.str.) vinulus Stål, 1864

Philippines, PALAWAN: Uring Uring, 1 ♀, 22 Sept. 1961, in Malaise trap.

Distribution: India, Burma, Indochina, Formosa, Java, Philippines (Luzon; Palawan is a new record).

Phorticus flavoscutellatus sp.n.

Bismarck Isls., NEW BRITAIN: Valoka, ♀ holotype, ♀ paratype, 13 July 1962, in rotten wood in rain forest.

Description. Very small, brachypterous, oblong-ovate, dull (except the head), clothed with short golden hairs.

Head shining dark brown, in the fore part yellow, strongly declivent. Vertex 2.1 times as wide as an eye. Eye width: depth: length ratio as 0.08 : 0.20 : 0.11 mm. Ocelli very small. Rostrum yellowish, reaching slightly behind the fore coxae, segment II nearly twice as long as III. Antennae yellow, with long setae on the distal segments, segment I slightly surpassing the apex of the head, segment II thickened to the apex, proportion of segments 0.15 : 0.21 : 0.24 : 0.30 mm.

Pronotum flattened, dark brown, the collar and triangular spot on the fore lobe attached to this yellow, the remaining part of the fore lobe and the hind lobe sometimes with a median yellowish line. The fore and hind lobes with a distinct longitudinal furrow. Pronotum 1.25 times as wide as long and two times as wide as the head, sides slightly concave in the fore and hind thirds. Scutellum light yellow. The under side of the prothorax dark brown, of the meso- and metathorax somewhat lighter. Hind margin of the metathorax nearly straight. Ostiolar canal wide, shining, directed obliquely to the hind margin of the metathorax but not attaining this by a distance approximately equal to the width of the canal.

Hemelytra abbreviated, three times as long as the scutellum, leaving nearly one third of the abdomen uncovered. Membranes relatively well developed, nearly completely overlapping, without veins. The basal third of hemelytra and sometimes all margins of clavus yellow, the remaining part of corium and clavus dark brown; the membrane blackish grey with hind margin and the inner half of the basal margin narrowly whitish.

Legs yellow. Fore femora incrassate, armed beneath near the middle with a strong tooth and denticulate from there to apex. Fore tibiae widened distally, rather abruptly cut off and provided with a fossa spongiosa at apex; inner margin with some dark teeth, of which the last is the largest. Length of the hind tibia 0.6 mm.

Length 2 mm., width at pronotum 0.68 mm., at abdomen 0.8 mm.

Male unknown.

Remarks. Closely related to *Ph. ochraceus* Reut. and *Ph. pygmaeus* Popp., described from New Guinea (Astrolabe Bay). The types of both these species are examined by me.

Holotypus (the only present specimen) of *Ph. ochraceus* Reut. is a macropterus female from Erima in the collection of the Hungarian National Museum of Natural History. It is a teneral, insufficiently pigmented specimen. Length only 2.21 mm. In all other respects it agrees well with macropterous females described in *Ph. pygmaeus* (see below).

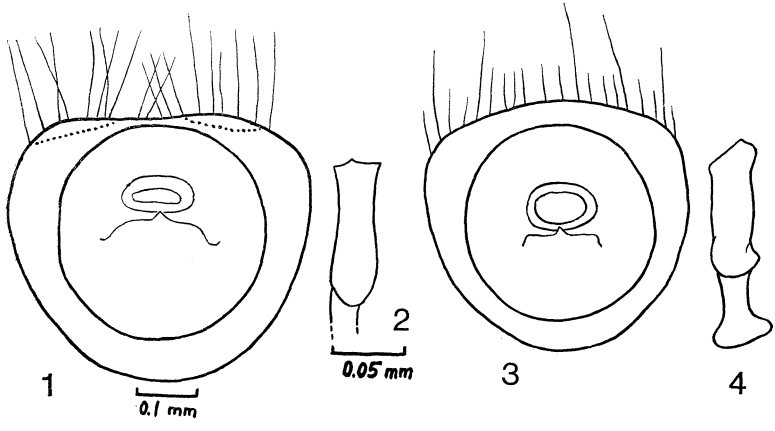
Ph. pygmaeus was described from macropterous as well as brachypterous specimens. Apparently I have examined the whole type series: two macropterous females from Erima and Stephansort and two brachypterous males from Stephansort in the Hungarian Museum and in addition one macropterous male from Erima in the Helsinki Museum. The type series is mixed, and at least brachypterous and macropterous specimens belong to different species.

In all macropterous specimens the hind pronotal lobe is without a longitudinal furrow. In the females the fore femora are entirely yellow; hemelytra not surpassing the apex of abdomen; total length 2.4—2.47 mm., width 0.93 mm.,; pronotum length 0.64 mm., width 0.86 mm.; proportion of the antennal segments 0.15 : 0.3 : 0.3 : 0.33 mm.; length of the hind tibia 0.71 mm. In the male the fore femora are brownish in the middle part; heme-

lytra reaching well beyond the apex of abdomen, total length 2.2 mm.; body length (without hemelytra) 2 mm.; width of the abdomen and pronotum 0.83 mm.; length of the pronotum 0.64 mm.; proportion of the antennal segments 0.14 : 0.23 : 0.26 : 0.29 mm.; length of the hind tibia 0.66 mm.; praegenital segment with the hind margin almost straight, somewhat concave at the middle, clothed with long hairs (Fig. 1), paramere as in Fig. 2.

The macropterous females are identical with the holotype of *Ph. ochraceus* in all respects, except the colouring, which is very pale in the teneral and unpigmented holotype of *Ph. ochraceus,* and I think that they are conspecific with *Ph. ochraceus.* The macropterous male differs from the females in the darkened fore femora and shorter antennae, but may also belong to *Ph. ochraceus.*

In addition to the macropterous specimens from Astrolabe Bay discussed above there is a macropterous female from Simbang, Huon Golf (Biró leg.) in the Hungarian Museum with the label "Phorticus pygmaeus R. et P. typ" in the handwriting of Poppius (other specimens bear only a light blue label "typ" in the same handwriting. The locality Simbang is not mentioned in the original description, probably due to inadvertance or printer's error; however, I believe it is better not to include this specimen in the type-series. The female from Simbang resembles much the macropte-



Figs. 1, 2. *Phorticus ochraceus* Reut., male lectoparatype of *Ph. pygmaeus* Popp.; 1) genital and praegenital segments; 2) paramere. Figs. 3, 4. *Ph. pygmaeus* Popp., male lectotype; 3) genital and praegenital segments; 4) paramere.

rous females from Astrolabe Bay, but is somewhat larger (length 2.53 mm., width 1.03 mm., pronotum more convex, length 0.71 mm., width 0.96 mm.), hemelytra reaching slightly beyond the tip of abdomen and the fore femora are brownish at the middle. This specimen belongs probably to *A. ochraceus* or at least to a closely related species.

The two brachypterous males of the type-series differ from the macropterous specimens by the presence of a longitudinal furrow not only on the fore but also on the hind lobe of pronotum, in addition they are smaller, with shorter legs and antennae (total length 1.65—1.8 mm., width 0.7 mm., pronotum length 0.51 mm., width 0.6 mm., proportion of the antennal segments 0.15:0.2:0.21: 0.29 mm., length of the hind tibia 0.57 mm.); praegenital segment with more short hairs, hind margin slightly convex (Fig. 3), and paramere differently shaped (Fig. 4).

Since the type-series is mixed and the macropterous specimens belong probably to *Ph. ochraceus,* I have designated a brachypterous male as lectotype for *Ph. pygmaeus.*

The males of *Ph. pygmaeus* (in the sense restricted here by the designation of a lectotype) differ from the females of *Ph. flavoscutellatus* n. sp. in the dark brown scutellum; in addition in *Ph. pygmaeus* the hind margin of the metasternum is angularly concave on the sides and here the ostiolar canal nearly reaches the hind margin of the thorax; membranes are somewhat narrower and in one third not overlapping one the other (it is erroneously stated in the original description "hemelytris formae brachypterae scutello paullo longioribus, membrana destitutis"; hemelytra are really 2.75 times as long as scutellum and with a distinct membrane).

Three other species described from New Guinea, namely *Ph. ochraceus* Reut., *Ph. fasciatus* Reut. and *Ph. fuliginosus* Reut. (types of all these species are examined by me) are larger than *flavoscutellatus* n. sp., with fully developed hemelytra and brown scutellum (exception: the discoloured holotype of *Ph. ochraceus).*

Gorpis sordidus Reuter, 1909.

Philippines, MINDANAO: Sapamoro, 2 ♀, 16 and 21 Dec. 1961, in Malaise traps.

Distribution: Philippines (Luzon, Panay, Samar, Mindanao), New Guinea, Deslacs Isl.

Gorpis harrisi Kerzhner, 1970.

Bismarck Isls., NEW BRITAIN: Bita Paka 15 km SE of Kokopo, 1 ♂, 10 July 1962.

The species is described from a single male from Papua and is closely related (if not synonymous) to *G. neglectus* Harris from Queensland. The dark marking on scutellum is feebly developed in the present specimen.

Arbela telomi (Distant, 1903). (Figs. 5,6)

Nabis telomi Distant, 1903, Fasc. Malay. Zool., 1:268.

Acanthobrachys virescens Kirkaldy, 1908, Proc. Linn. Soc. N. S. Wales, 32:782.

Arbela bakeri Harris, 1938, Ann. Mag. nat. Hist. (11), 1 (6):571—572.

Arbela splendida Harris, 1938, Ann. Mag. nat. Hist. (11), 1 (6):573, fig., *syn. nov.*

Arbela hibisci Esaki and Ishihara, 1943, Mushi, 15:71, fig.

Arbela telomi Kerzhner, 1970, Acta ent. Mus. Nat. Pragae, figs. (synonymy). (In press).

Bismarck Isls., NEW BRITAIN: Yalom, 1000 m., 1 ♂, 2 ♀, 14 and 22 May 1962. — NEW IRELAND: Lemkamin, 900 m., 1 ♂, 1 ♀, 11 April 1962; Namatanai, 2 ♀, 23 June 1939, G. F. Gee, British Museum (Nat. Hist.). — MUSSAU: Talumalaus, 1 nymph, 24 Jan. 1962; Boliu, 1 ♂, 4 June 1962.

Distribution: Malay Peninsula, Borneo, Philippines, Micronesia, New Guinea, Bismarck Isls. (new record), Solomon Isls., Australia (Queensland).

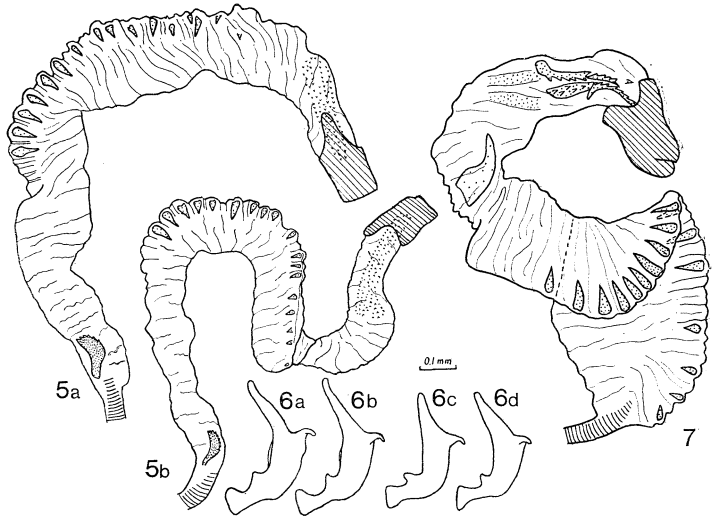
An examination of a female from the authentic series of *A. splendida* Harris with the label "Papua: Mafulu, 4000 ft., Jan. 1934, L. E. Cheesman", deposited in the British Museum (Nat. Hist.) has shown that this species is a synonym of the very variable and widely distributed *A. telomi* (Distant); *syn. nov.*

It is possible that *A. telomi* can be subdivided in some subspecies (or even closely related species), but the material at hand is insufficient for such subdivision. Measurements of some specimens are given in the Table 1.

The colouring is very variable. The male from Mussau is uniformly pale green, only scutellum and the base of hemelytra are black. In the other specimens collected by the Noona Dan Expedition the head is black with apex yellow, the collar and the fore lobe of pronotum entirely or partly black, the inner part of the hemelytra dark grey. The two females from New Ireland in

Table 1. Measurements of *Arbela telomi* (Distant). (Each unit equals 0,01 mm)

	Total length	Head length	Head width	Vertex width	Eye length	Postocular part length	Pronotum length	Pronotum width	Antennal segments length I	II	III	IV	Hind femur length
♂, Ponape, paratype of *A. hibisci*	525	71	67	23	33	10	93	79	200	225	?	?	400
♂, Mussau	510	71	69	23	36	7	97	81	170	185	?	?	340
♂, New Ireland, Lemkamin	560	79	74	30	39	7	107	97	180	210	300	?	350
♂, New Britain, Yalom	630	80	79	29	39	7	120	107	200	?	?	?	375
♂, Philippines, Mindanao, Iligan	560	79	74	30	37	9	107	96	175	200	?	?	?
♀, Ponape, paratype of *A. hibisci*	675	87	76	30	36	10	114	100	225	250	300	?	400
♀, Papua: Mafulu, *A. splendida,* Harris det. ..	675	93	79	30	37	9	123	117	210	225	?	?	375
♀, New Britain, Yalom	685	87	79	30	40	7	121	107	185	200	?	?	350
♀, New Ireland, Namatanai	600	81	74	30	39	7	117	97	200	215	?	?	350
♀, Australia, Kuranda, topotype of *A. virescens*	600	79	70	27	34	7	107	96	175	200	?	?	350



Figs. 5, 6. *Arbela telomi* (Dist.); 5) aedeagus of male from a) New Ireland, b) Mussau; 6) paramere seen from the outer side, a) Philippines, b) New Ireland, c) Mussau, and d) Ponape). Fig. 7. *A. inerma* Harris, paratype, aedeagus.

the British Museum have the ground colouring reddish, head and pronotum somewhat more pale.

In the male from Mussau and also in a male and a female from Ponape (paratypes of *A. hibisci*), which I have examined, the collar is shining and with more or less indistinct punctures, whereas in other specimens the collar is dull and distinctly punctured. Also in some measurements and in the genital structures (see Figs. 5, 6) the male from Mussau is more related to the male from Ponape, than to specimens from the main Bismarck Islands. Possibly if a splitting in subspecies or related species occurs, the Mussau specimen should be referred to *hibisci,* and specimens from other Bismarck Islands to *splendida* or to *telomi.*

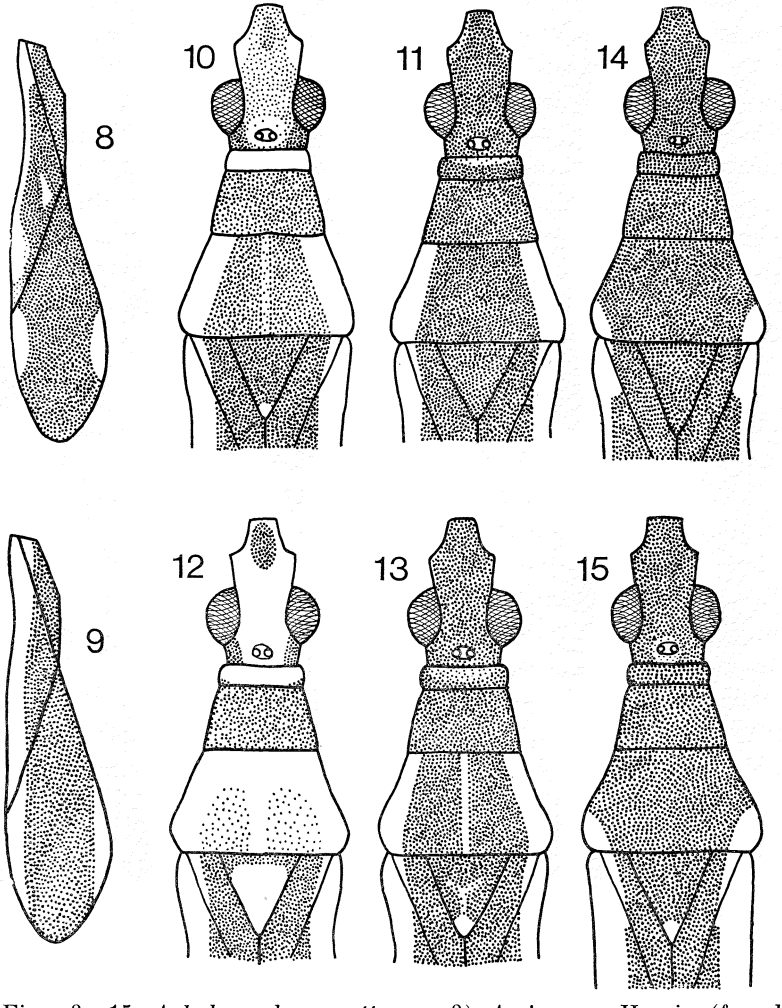
A nymph from Mussau Island, determined by the form of the claws as belonging to this species, is very remarkable in its myrmecoid appearance: venter constricted at base, hind margins of metanotum and second abdominal segment with long spine-like median projections: the colouring is yellow with large orange areas, head (except the apex) and pronotum dark brown.

Arbela inerma Harris, 1938. (Figs. 7, 8, 18, 21)

Bismarck Isls., NEW BRITAIN: Yalom, 1000 m., 1 ♀, 21 May 1962.

Previously known only from Papua (Kokoda).

The determination is confirmed by comparison with two male paratypes from the British Museum (Nat. Hist.). The specimen



Figs. 8—15. *Arbela,* colour patterns; 8) *A. inerma* Harris (female from New Britain), hemelytron; 9) *A. limbata* sp.n., hemelytron; 10, 11) *A. limbata* sp.n. (light and dark extremes), fore part of the body; 12, 13) *A. peterseni,* sp.n., the same; 14) *A. lemkaminensis* sp.n. the same; 15) *A. papuana* Harris, the same.

from New Britain is much darker, but the colour pattern is the same. This species is very similar in general appearance and in measurements to *A. limbata* sp. n. The following differences from the latter can be established:

1) lateral yellow stripe on the hemelytra is narrower, widened before the apex of the corium and on the membrane, not or feebly ranging on the clavus, more or less distinctly interrupted by brown on the apex of corium, having a convex inner margin on the membrane (Fig. 8); 2) corium with a pale spot near the inner angle (Fig. 8); 3) head yellowish even in the darkest specimen; 4) sides of the meso- and metathorax with longer and more outstanding hairs; 5) connexivum with larger and more curved teeth (Fig. 18); 6) apical process of the paramere (Fig. 21) with differently shaped tip and with concave lateral margin below the tip, lateral process (Fig. 21a) distinctly narrowed in the apical part; and 7) aedeagus (Fig. 7) with a claw-like feebly sclerotized plate in the subapical part.

Arbela limbata, sp. n. (Figs. 9, 10, 11, 16, 19, 22, 26)

Types. Bismarck Isls., NEW BRITAIN: Yalom, 1000 m., holotype ♂, 17 May 1962, 4 ♂, 6 ♀, 1 nymph, 8—23 May 1962; Komgi, 1 ♂, 1 ♀, 1 nymph, 14 May 1962. — NEW IRELAND: Lemkamin, 900 m., 1 ♂, 1 ♀, 6 and 12 April 1962.

Description. Head (except the under side), collar and fore lobe of pronotum shining, hind lobe of pronotum and elytrae feebly shining or nearly dull. Mesothorax with a very narrow shining area along the coxal cavities (Fig. 26).

Head black, apex yellow, rarely nearly the whole head brownish-yellow; ocelli red. Collar black or dark brown, rarely yellow. Fore lobe of pronotum black, rarely brown, hind lobe black or brown, sides dirty yellow, sometimes medially with a narrow yellowish stripe (Figs. 10, 11). Scutellum black apex sometimes yellowish. Hemelytra black, laterally with a whitish-yellow stripe, which is subequally wide in the whole length and runs distinctly on the outer part of the clavus (Fig. 9). Underside black or brown, fore margin of prothorax, the bordering of the fore, middle and sometimes hind coxal cavities yellowish, abdomen dirty yellow, sometimes brownish at base. Antennal segment I dirty yellow, gradually darkened to the apex, segments II—IV brown to black. Rostrum yellow; segment IV, except the

base black. Legs yellow, tibiae and tarsi apically brown, hind femora usually reddish at the apex.

Head longer than wide (65:55), gula feebly convex, vertex in both sexes 1.1 times as wide as the eye, postocular part with nearly parallel sides, eyes 2.7 times as long as the postocular part of the head. Ocelli subcontiguous. Antennae shortly pilose, attached behind the middle of the praeocular part, proportion of the segments 1.57:1.70:2.55:1.85 mm. Eye length:width:depth = 28:17:30. Rostrum reaching to the middle coxae.

Collar without or with indistinct punctures. Fore lobe of pronotum distinctly raised above the level of the collar, without a longitudinal furrow; hind lobe gradually raised to the base, with regular dense but not very deep punctures. Length of the pronotum in the male equal to, in the female slightly more than its width. Proportion of the lengths of the collar:fore lobe:hind lobe = 10:27:40. Scutellum somewhat longer than wide, with a distinct Y-formed elevation.

Hemelytra with the base of the costal margin concave and pilose, membrane with feeble veins or without veins. Ostiolar canal broad. Fore and middle femora and tibiae with relatively stout brown spines; fore femur 10 times as long as thick. Hind

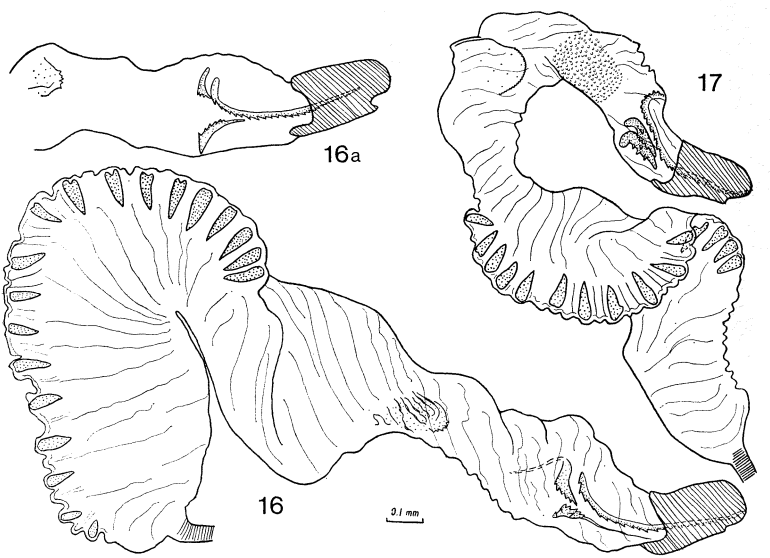


Fig. 16, 16a. *Arbela limbata,* sp.n. aedeagus of two different specimens. Fig. 17. *A. peterseni,* sp.n., aedeagus.

tibiae of the male without subbasal enlargement. Praegenital segment of the male laterally with a black tooth (Fig. 19). Paramere as in Fig. 22; aedeagus as in Fig. 16.

Length 5.5 — 6.2 mm, width of the pronotum 1.1 — 1.3 mm.

Remarks. The species stands near to *A. inerma* Harris and *A. peterseni,* sp. n., but differs in characters mentioned under these species.

Arbela peterseni, sp. n. (Figs. 12, 13, 17, 20, 23, 27)

Types. Philippines, PALAWAN: Pinigisan, 600 m; 1 ♀, 1 Dec. 1961. — MINDANAO: Sapamoro, ♂ holotype, 2 ♂, 3 ♀, 1 nymph, 18 Dec. 1961.

Bismarck Isls., MANUS: Lorengau, 1 ♀, 20 June 1962.

Description and Remarks. Closely related to *A. limbata,* sp. n., but differs in the following characters:

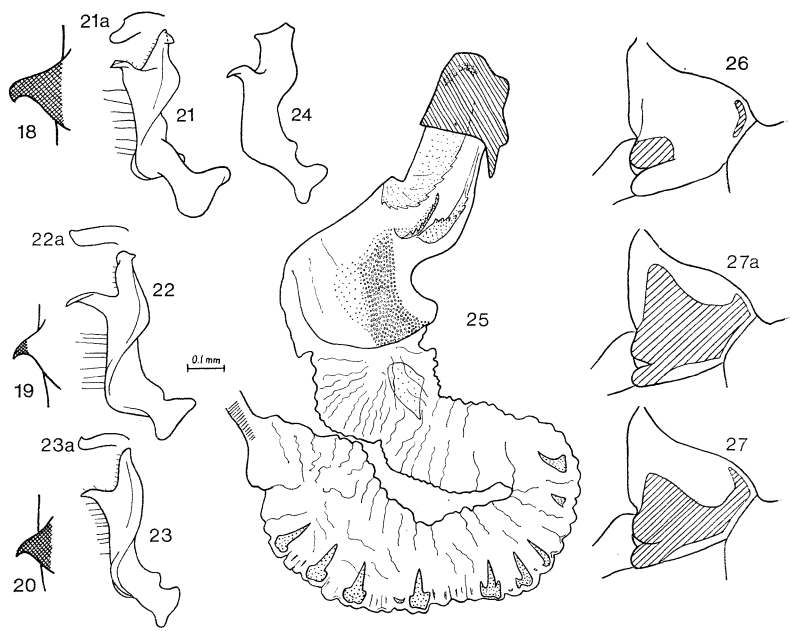


Fig. 18. *Arbela inerma* Harris, abdominal tooth. Fig. 19. *A. limbata,* sp.n. the same. Fig. 20. *A. peterseni* sp.n. the same. Fig. 21. *A. inerma* Harris, paramere from the inner side; 21a) lateral process from above. Fig. 22. *A. limbata* sp. n., the same. Fig. 23. *A. peterseni* sp.n., the same. Fig. 24. *A. lemkaminensis* sp.n., the same. Fig. 25. *A. lemkaminensis* sp.n., aedeagus. Fig. 26. *A. limbata* sp.n. mesothorax from the side (the shaded part shows the shining area). Fig. 27. *A. peterseni* sp.n., the same, female from Mussau; 27a) female from Palawan.

1) Mesothorax with a large shining area (Fig. 27); 2) teeth on the praegenital segment larger (Fig. 20); 3) colouring of the upper surface more light, hind lobe of pronotum always with a median yellow stripe, sometimes nearly the whole hind lobe dirty yellow (Figs. 12, 13); 4) colouring of the underside more dark, margins of the middle and hind coxal cavities and sometimes the base of the abdomen black; first segment of the rostrum brown or black; 5) lateral stripe on the hemelytra not so regular, somewhat resembling those of *A. inerma;* corium often with a light coloured spot in the inner hind angle; 6) paramere (Fig. 20) without a lateral projection on the end of the apical process, lateral process somewhat less wide (Fig. 20a); 7) aedeagus (Fig. 17) smaller and with differently shaped structures in the subapical and apical parts.

The new species differs from *A. inerma* Harris by the large shining area on the mesothorax and in the male genitalia.

Length of the body 5.5—6.8 mm.

Arbela lemkaminensis, sp. n. (Figs. 14, 24, 25)

Bismarck Isls., NEW IRELAND: Lemkamin, 900 m; ♂ holotype, ♀ paratype, 11 and 12 April 1962.

Description. Head (except the underside), collar and fore lobe of pronotum strongly shining, hind lobe and elytrae feebly shining or nearly dull. Mesothorax shining only along the coxal cavity.

Head black, gula with a large yellow spot, ocelli red. Pronotum black with humeral angles yellow (Fig. 14). Scutellum black. Hemelytra black, lateral margin with a narrow yellow stripe, widened in the hind third of the corium and on the membrane, clavus only with a very small yellowish spot on the outer part of the base. Underside of thorax black or dark brown; two spots on the fore margin of prothorax, a spot on prothorax behind the coxal suture, and the margins of the middle and hind coxal cavities yellow. Abdomen yellow, at the base brown. Rostrum yellow, first segment and the apex of the last segment brown. Antennal segment I yellow, segments II—IV more or less brownish. Legs yellow, apex of the femora and base of the tibiae slightly reddish.

Head 1.4 times as long as wide, gula nearly straight, vertex 1.3 times as broad as an eye. Eyes small, from the side nearly round, only 1.75—1.85 times as long as the postocular part of the head, proportions of length:width:depth = 25:14:25. Postocular part

of the head with parallel sides. Ocelli subcontiguous. Antennae attached slightly behind the middle of praeocular part, pilosity longer than in *A. peterseni* (hairs of the second segment three times as long as the width of the segment V), proportion of segments = 1.38:1.34:2.30:1.70 mm. Rostrum reaching the middle coxae.

Collar smooth or with indistinct punctures. Fore lobe of pronotum slightly raised above the level of the collar and gradually raised backwards. Hind lobe convex, distinctly raised backwards, with regular and dense punctures. Pronotum 1.05 times as long as wide, proportion of the lengths of the subdivisions = 14:25:47. Scutellum slightly longer than wide, with distinct Y-formed elevation.

Hemelytra at the base of the lateral margin concave, with long (0.3 mm) hairs; membrane without distinct veins. Ostiolar canal broad. Fore and middle femora and tibiae with long slender, light brown or yellowish spines; fore femur 10 times as long as wide; the hairs on the femora and tibiae distinctly longer than in *A. limbata* and *A. peterseni*. Hind tibia of the male without a basal enlargement. Praegenital segment of the male on the sides with small pale teeth. Paramere and aedeagus as in Figs. 24, 25.

Length ♂ 6.9 mm, ♀ 7.4 mm, width of the pronotum 1.15—1.2 mm.

Remarks. Closely related to *A. papuana* Harris from New Guinea (Papua, Kokoda). A study of the allotype ♀ of *A. papuana* gives following differences from *A. lemkaminensis:* the body and particularly the head and pronotum shorter and relatively broader (see Table 2); eyes larger (length:width:depth = 28:16.5:32), ovate in lateral view; postocular part of the head distinctly shorter; pale stripe on the hemelytra broader and distinctly ranging on the clavus; underside of the thorax without light spots, only the fore coxal cavity (in the whole length) marginated with yellow.

However, in spite of differences mentioned above it is not excluded, that further investigations will show that *A. lemkaminensis* is only a subspecies of *A. papuana*.

Arbela immista Harris, 1938. (Figs. 28, 29)

Bismarck Isls., LAVONGAI: Banatam, 9 ♂, 3 ♀, 22—26 March 1962. — MUSSAU: Talumalaus, 6 ♂, 6 ♀, 1 nymph, 25 Jan. and 5 Febr. 1962.

Previously only known from the New Hebrides (Malekula).

Table 2. Measurements of *Arbela lemkaminensis* sp.n. and *A. papuana* Harris. (Each unit equals 0.01 mm)

	Total length	Head length	Head width	Vertex width	Eye length	Postocular part length	Pronotum length	Pronotum width	Collar length	Fore lobe length	Hind lobe length	Antennal segments length			
												I	II	III	IV
A. lemkaminensis, ♂	690	93	69	27	34	19	120	114	19	36	66	138	138	225	173
A. lemkaminensis, ♀	740	100	70	27	37	21	129	121	21	37	70	138	130	238	?
A. papuana, ♀	680	93	80	27	40	15	117	129	14	41	61	150	133	?	?

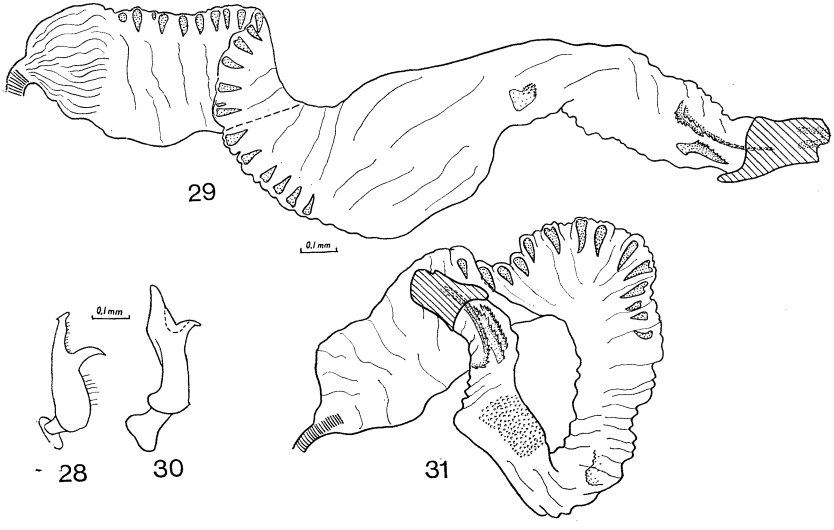
The determination is confirmed by comparison with specimens from the type-locality (Malekula) from the British Museum (Nat. Hist.) and the Copenhagen Museum (collected by the Galathea Expedition). Male genitalia are shown in Figs. 28, 29.

In the specimens from Mussau, collected together with a nymph and often distinctly immature, the pronotum is lighter than in normally coloured specimens from Lavongai and Malekula. In the light coloured specimens the sides of pronotum have a yellow spot between fore and hind lobes, sometimes the collar and the whole fore lobe are yellowish-brown or even the hind lobe has a median longitudinal light stripe.

Arbela nitidula (Stål, 1859). (Figs. 30, 31)

Bismarck Isls., NEW BRITAIN: S. of Cape Hoskins Aerodrome, 1 ♂, 6 July 1962. — NEW IRELAND: Danu, Kalili Bay, 2 ♂, 1 ♀, 29 April 1962. — MUSSAU: Talumalaus 4 ♂, 4 ♀, 19 Jan. — 7 Febr. 1962; Boliu, 5 ♂, 9 ♀, 2 nymphs, 4—7 June 1962; Malakata, 1 ♀, 10 June 1962.

This widely distributed species (from India to the Solomons) is hereby recorded from the Bismarck Islands for the first time. An additional new record is the Nicobar Islands (Galathea Expedition, Zoological Museum, Copenhagen).



Figs. 28, 29. *Arbela immista* Harris, male from Bismarck Islands; 28) paramere from the outer side; 29) aedeagus. Figs. 30, 31. *A. nitidula* (Stål), male from Bismarck Islands; 30) paramere from the outer side; 31) aedeagus.

All specimens from the Bismarck Islands are very pale, with eyes relatively smaller and antennae shorter than in specimens from other regions. They belong possibly to a distinct subspecies.

Key to the *Arbela* species from the Bismarck Islands.

1. Claws strongly curved at the base. Fore pronotal lobe with a distinct median furrow. Spines on the fore and middle legs very fine, pale, hair-like. Abdomen of the male without tooth on the sides before genital segment ..... *A. telomi* (Distant)
—. Claws gradually and feebly curved. Fore pronotal lobe without a furrow. Spines on the legs more os less stout and darkened. Abdomen of the male with more or less distinct tubercle or tooth 2
2. Hind tibia of the male with a sub-basal enlargement. Hemelytra pale or tinged with brown in the inner portion, rarely black. Pronotum pale or if dark, then the fore lobe with a median pale stripe ..... *A. nitidula* (Stål)
—. Hind tibia of the male without enlargement. Hemelytra black without pale median stripe 3
with pale sides. Fore lobe of pronotum black without pale median stripe 3
3. Hind lobe of pronotum dull, black, rarely yellowish in the fore angles. Small, 4.5—5.3 mm. ..... *A. immista* Harris
—. Hind lobe of pronotum feebly shining, brown to black, its sides or hind angles yellow, 5.5—7.3 mm. 4
4. Only humeral angles of pronotum yellow (Fig. 14). Abdomen of males with a pale tubercle before the genital segment ..... *A. lemkaminensis* sp.n.
—. Lateral sides of the hind pronotal lobe yellow. Abdomen of males with a black tooth on the sides before the genital segment 5
5. Mesothorax with a large shining area (Fig. 27) ..... *A. peterseni* sp.n.
—. Mesothorax narrowly shining only along the fore part of the coxal cavity (Fig. 26) 6
6. Pale stripe along the sides of hemelytra of approximately equal width throughout; corium near the inner angle without pale spot (Fig. 9) ..... *A. limbata* sp.n.
—. Pale stripe along the sides of hemelytra not of equal width throughout; corium with a pale spot near the inner angle (Fig. 8) ..... *A. inerma* Harris

Stenonabis tagalicus tagalicus (Stål, 1860).

Philippines, PALAWAN: Uring Uring, 2 ♀, 14 Aug. 1961, caught at Mercury light, 19.00—21.00.

Stenonabis limbatellus Kerzhner, 1970.

Bismarck Isls., MANUS: Lorengau, 1 ♂, 19 June 1962.

This species is described from New Guinea and the Solomon Islands. The specimen from Manus is very small (6.2 mm) and shows some differences in the colouring of the legs and in the structure of the male genitalia. It is probably a new subspecies, but the material is insufficient for a description.

Summary

Fourteen species of Nabidae are recorded. Four species are new: *Phorticus flavoscutellatus* from New Britain, *Arbela limbata* from New Britain and New Ireland, *A. peterseni* from Palawan, Mindanao and Manus, and *A. lemkaminensis* from New Ireland. Further seven species are new to the Bismarck Archipelago. *A. splendida* Harris is synonymized with *A. telomi* (Distant). A lectotype of *Phorticus pygmaeus* Poppius is designated.

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Anmeldelse

F. Nordström, Sv. Kaaber, M. Opheim & O. Sotavalta (ed. P. Douwes): De fennoskandiska och danska nattflynas utbredning (Noctuidae). Gleerup's Förlag. Lund.

Så kom — efter en pause på denne gang 9 år (mod 6 sidst) — næste bind — om uglerne — af den samling udbredelseskort over de nordiske storsommerfugle, der i sin oprindelse er en del af Frithiof Nordström's livsværk, og som siden er blevet suppleret af andre nordiske lepidopterologer. Det har været ventet med utålmodighed. Et stateligt værk med 158 sider text og 309 sider med prikkort.

Enhver fortegnelse over findesteder vil, med den samleaktivitet, der glædeligvis udfolder sig i disse år, være dømt til hurtig forældelse, men alligevel er det en fordel, at den ved sin udgivelse er ført á jour. Det kan ikke siges om denne. Prikkortene er afsluttet i 1966, forordet er skrevet i 1967, et lille tillæg fører nogle (men langtfra alle da kendte) fund frem til 1968, bogen angives trykt i 1969, og den udkom i 1970. Alt i alt en forsinkelse på 4 år — en skærende kontrast til det tempo, der f. ex. har været over Hoffmeyer's bøger.

Opsætningen er den samme som i de to forgængere (anm. Ent. Medd., bd. 28, p. 69—70: dagsommerfugle, Ent. Medd., bd. 31, p. 160: sværmere og spindere), men på et meget væsentligt punkt er der forskel: nu er Danmark med — helt på linie med de øvrige nordiske lande.

Den danske indsats er betroet Svend Kaaber, et lykkeligt valg, da næppe nogen anden her i landet er i besiddelse af den nødvendige faunistiske all round-viden parret med den ligeså nødvendige kritiske sans. Endnu en ændring er sket. Medens kommentarerne til de svenske og finske fund der som tidligere er skrevet på svensk, fremtræder de danske og norske nu på det respektive originalsprog, hvilket dog ikke nævnes i det engelske forord.

For at spare plads er mange arters udbredelse prikket ind på en helt anden arts kort. Allerede på første kort over art 1 er art 36 puttet ind, og senere er der ofte meget lange spring mellem artnumrene på samme kort. Det føles naturligt, at en decideret nordlig, respektive sydlig art må deles om ét kort (som f. ex. art 57—72, 74—96, 304—332 og mange andre), men helt overflødige skråstreger (for art 90 med flere) eller den mosaik, der danner puslespillet vedrørende art 305 og dens medløbere, pynter ikke.

Fra starten har man lagt sig fast ved, at alle samleres (meddeleres) navne skal nævnes og angives ved 3 store bogstaver, af hvilke det første skal være efternavnets forbogstav. Tanken lyder fix, men ideen letter ikke identifikationen. Man må stadig slå efter for at opdage, at f. ex. GAR står for Gullander, eller finde ud af hvem, der er hvem af de 9 Jensen'er (JBA, JJO, JNH, JNT, JOV osv.). Endvidere er man nu nået op på hele 727 forskellige meddelere, hvad der har overbelastet

alfabetets beholdning af bogstaver. Som et kuriosum skal lige bemærkes, at LFM ikke er en Larsen, men en landsdelsbetegnelse.

Nomenklaturen slutter sig stort set til den i Svenska Fjärilar (1941) anvendte, hvad der her forekommer naturligt. Dog er der enkelte ændringer. Således har man »rettet« *Diarsia mendica* F. til *festiva* Schiff., hvilket er forkert, da Fabricius 1775 jo har prioritet over Denis & Schiffermüller 1775. Mere påkrævet havde det været at rette ved nu endelig at placere navnene rigtigt på de to smertensbørn *Triphaena orbona* og *comes,* nemlig som man gjorde i »gamle dage«, og som Boursin i 1963 så klart har påvist, var rigtigt (*orbona* m e d kantplet, *comes* u d e n).

Skal enkelte af kortene fremhæves, kan rent tilfældigt nævnes kort 5, der bedre end nogen fortegnelse kan gøre, illustrerer, hvorledes *Arsilonche albovenosa* smyger sig langs kysterne. Danske samlere vil kunne inspireres af f. ex. kort 23 (*Euxoa recussa*), kort 45 (*Rhyacia lucernea*), kort 67 (*Rhyacia cuprea*) eller 119 (*Harmodia caesia*), der viser, hvor snublende nær vi i Danmark er ved disse arter.

De to foregående bind var begge udgivet som årsskrifter fra Lunds Universitet, hvad dette ikke er. Men bogen må kunne fås ved at skrive til forlaget, hvilket herved varmt anbefales enhver dansk faunistisk interesseret lepidopterolog.

Niels L. Wolff.

A List of Danish Aphids

9.: Thelaxidae, Pemphigidae, Adelgidae and Phylloxeridae

By

Ole E. Heie

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The list of aphid species found in Denmark is completed with the present paper, the 9th part of the list, which comprises records of the Danish species belonging in the families Thelaxidae, Pemphigidae, Adelgidae, and Phylloxeridae, and finally some additional remarks.

The first eight parts dealing with the families Aphididae (parts 1—7), Lachnidae, Chaitophoridae, and Callaphididae (part 8) appeared in Entomologiske Meddelelser 1960 (29: 193—211), 1961 (31: 77—96), 1962 (31: 205—224), 1964 (32: 341—357), 1967 (35: 125—141), 1969 (37: 70—94, 373—385), and 1970 (38: 137—164).

I wish to thank Mr. G. Kristensen, Herlev, and Mr. J. Reitzel, Lyngby, for sending some very interesting aphid samples to me.

List of the species

Thelaxidae

291. *Anoecia corni* (Fabricius, 1775)
292. *A. pskovica* Mordvilko, 1916
293. *A. vagans* Koch, 1856
294. *Thelaxes dryophila* (Schrank, 1801)
295. *Glyphina betulae* (Linné, 1758)
296. *Mindarus abietinus* Koch, 1856
297. *M. obliquus* (Cholodkovsky, 1896)
298. *Hormaphis betulina* (Horvath, 1896)

Pemphigidae

299. *Eriosoma lanigerum* (Hausmann, 1802)
300. *Schizoneura lanuginosa* Hartig, 1841
301. *S. patchae* Börner et Blunck, 1916
302. *S. ulmi* (Linné, 1758)

303. *Kaltenbachiella pallida* (Haliday, 1838)
304. *Tetraneura ulmi* (Linné, 1758)
305. *Asiphum tremulae* (Linné, 1761)
306. *Pachypappella tremulae* (Tullgren, 1925)
307. *Prociphilus bumeliae* (Schrank, 1801)
308. *P. fraxini* (Geoffroy, 1762)
309. *P. pini* (Burmeister, 1835)
310. *P. xylostei* (de Geer, 1773)
311. *Thecabius affinis* (Kaltenbach, 1843)
312. *Pemphigus bursarius* (Linné, 1758)
313. *P. filaginis* (Boyer de Fonscolombe, 1841)
314. *P. lysimachiae* (Börner, 1916)
315. *P. phenax* Börner et Blunck, 1916
316. *P. spirothecae* Passerini, 1860
317. *Forda formicaria* v. Heyden, 1837
318. *Smynthurodes betae* Westwood, 1849
319. *Geoica utricularia* (Pass., 1856) sensu Mordv., 1927

Adelgidae

320. *Pineus orientalis* (Dreyfus, 1889)
321. *P. pini* (Macq., 1819)
322. *P. strobi* (Hartig, 1837)
323. *Dreyfusia nordmannianae* (Eckstein, 1890)
324. *D. piceae* (Ratz., 1844)
325. *Adelges laricis* Vallot, 1836
326. *A. tardus* (Dreyfus, 1888)
327. *Gilletteella cooleyi* (Gillette, 1907)
328. *Sacchiphantes abietis* (Linné, 1758)
329. *S. viridis* (Ratz., 1843)

Phylloxeridae

330. *Phylloxera coccinea* (v. Heyden, 1837)
331. *Ph. glabra* (v. Heyden, 1837)

Genus **ANOECIA** Koch, 1856

291. *Anoecia corni* (Fabricius, 1775)
Anoecia corni: Börner 1952, p. 179, no. 707

with *A. corni,* which is the most common species in Europe, but

Distribution: Europe, Asia, and Africa. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Cornus alba at Skive (several years, in spring (May) and autumn (September and October)). Sealand: Lille Svenstrup near Ringsted (5-10-60). Lolland: Sophiehøj at Rødby (20-5-53, Børge Petersen coll.).

It is impossible to identify species of *Anoecia* from Cornus as for the spring generations. I have identified the Danish material

the following European species according to Zwölfer (1958) also have Cornus as the primary host plant: *A. disculigera* Börner (only four finds in Central Europe), *A, maior* Börner (has not yet been found on Cornus, but accepts it as a host in transfer experiments), *A. haupti* Börner (not yet found on Cornus), *A. nemoralis* Börner (no observations of the spring generations on Cornus have been published), *A. furcata* (no observations of the spring generations on Cornus have been published), and *A. vagans* Koch (apterous fundatrigeniae of *corni* and *vagans* cannot be separated, but the alate individuals are very distinct).

292. *Anoecia pskovica* Mordvilko, 1916

Neanoecia pskovica: Börner 1952, p. 179, no. 706
Paranoecia pskovica: Zwölfer 1958, p. 198

Distribution: USSR, Germany, England, and Denmark.

Occurrence in Denmark: Jutland: On Carex arenaria at Femmøller, Mols (8-9-60; E. Torp Petersen coll., D. Hille Ris Lambers det.). The find has been mentioned by Heie (1965).

293. *Anoecia vagans* Koch, 1856

Anoecia (Subanoecia) vagans: Börner 1952, p. 180, no. 714

Distribution: Europe. It is known from Sweden.

Occurrence in Denmark: Jutland: Femmøller, Mols (flying specimen, 8-9-60). Sealand: On Agropyrum repens at Lyngby (11-9-58, 8-10-58, J. Jørgensen coll.) and on Hordeum vulgare at Lyngby (8-7-60, the collection of the State Exper. Station, Lyngby).

Genus **THELAXES** Westwood, 1840

294. *Thelaxes dryophila* (Schrank, 1801)

Thelaxes dryophila: Börner 1952, p. 181, no. 717

Distribution: Europe, USSR. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: On Quercus (robur, sp.). Jutland: Blokhus (13-8-62), Rebild (3-8-64), Grønningøre in Salling (29-6-62), Krabbesholm Forest at Skive (29-6-60), Estvadgård Plantation (18-9-58), Flyndersø (21-5-59), Hald Lake at Viborg (20-5-59), Bryrup (11-7-58), Femmøller, Mols (7-8-59, 4-7-60), Henne (1-7-58), Horslund Egekrat at Ribe (25-5-65), and Arrild at Løgumkloster (5-7-58). Funen: Svanninge Bakker (12-7-57) and Morud (10-7-58). Sealand: Tokkekøb Hegn (2-6-66). Other islands: Turø (4-7-57).

Genus **GLYPHINA** Koch, 1856

295. *Glyphina betulae* (Linné, 1758)

Glyphina betulae: Börner 1952, p. 181, no. 715

Distribution: Europe and Asia. It is known from Norway, Sweden, and Finland.

Occurrence in Denmark: On Betula pubescens. Jutland: Madum Lake in Himmerland (16-6-58, 25-5-59), Krabbesholm Forest (1-7-59), and Skive (several years, from May till August). The Danish Islands: Onsbjerg on Samsø (12-8-58) and Turø (4-7-57).

Genus **MINDARUS** Koch, 1856

296. *Mindarus abietinus* Koch, 1856

Mindarus abietinus: Börner 1952, p. 182, no. 722

Distribution: Europe, Asia, and North America. It is known from Norway, Sweden, and Finland.

Occurrence in Denmark: Jutland: On Abies nordmanniana at Legind Bjerge on Mors (7-6-57) and on Abies alba at Legind Bjerge (3-6-59) and Sødal Forest north of Viborg (16-6-57).

The species is mentioned as a pest to Abies in Denmark by Boas (1904, 1918, 1923) and Bejer-Petersen (1959).

297. *Mindarus obliquus* (Cholodkovsky, 1896)

Mindarus obliquus: Börner 1952, p. 182, no. 723

Distribution: Europe, USSR. It is known from Norway, Sweden, and Finland.

Occurrence in Denmark: On Picea glauca and P. sitchensis. Jutland: Blokhus (several finds, from June till August), Løvel in Himmerland (16-6-57), Legind Bjerge on Mors (3-6-59), Glyngøre in Salling (10-7-59), west of Viborg (16-6-57), Toftum Bjerge at Struer (22-6-57, 25-7-57), Resen at Skive (10-7-67), Krabbesholm Forest (25-6-57), Studsgård (9-7-59, 18-6-64), Juelsminde (28-6-59), and Arrild at Løgumkloster (5-7-58). Sealand: Copenhagen (8-6-18, M. Thomsen leg.).

Genus **HORMAPHIS** Ost.-Sack., 1861

298. *Hormaphis betulina* (Horvath, 1896)

Mansakia betulina: Börner 1952, p. 184, no. 729

Distribution: Europe and Asia. It is known from Sweden and Finland.

Occurrence in Denmark: Sealand: Dyrehavegård at Copenhagen (1 alate specimen on rape, not a host; 12-7-62, J. Reitzel coll.). Betula is the host.

Genus **ERIOSOMA** Leach, 1818

299. *Eriosoma lanigerum* (Hausmann, 1802)
Eriosoma lanigerum: Börner 1952, p. 186, no. 734

Distribution: Nearly all over the world. It is known from Sweden and Norway.

Occurrence in Denmark: Funen: On Pyrus malus at Anhof, East-Funen (15-9-65, J. Reitzel leg. et det.). Sealand: On Pyrus malus at Roskilde (25-11-62, the collection of the State Exper. Station, Lyngby). The species is mentioned as a pest to apples in Denmark by Boas (1923), Bovien & Thomsen (1945) and Gram et al. (in the annual surveys from the State Plant Pathology Institute: "Plant diseases and pests in Denmark"), e.g. in Jutland (the Århus area, Viborg, Mols, South-Jutland), Funen (Odense, Blangstedgård, Svendborg), Sealand (Copenhagen, the Holbæk area), Amager, Lolland, Falster, Langeland, Ærø, and Tåsinge. Henriksen (1944, p. 121) mentions localities in Jutland (Viborg, Holstebro), Funen (Odense), Sealand (Copenhagen, Høsterkøb, Helsinge), and Amager. Danish name: Blodlus.

Genus **SCHIZONEURA** Hartig, 1837

300. *Schizoneura lanuginosa* Hartig, 1841
Schizoneura lanuginosa: Börner 1952, p. 185, no. 732

Distribution: Europe, Asia, North America, Australia, New Zealand, and South Africa.

Occurrence in Denmark: Recorded from Jutland (Nebsager and Sæby) and Sealand (Copenhagen) on Ulmus by Henriksen (1944, p. 93). Boas (1923) mentions this species, too, but he found it in Switzerland, not in Denmark.

301. *Schizoneura patchae* Börner et Blunck, 1916
Schizoneura patchae: Börner 1952, p. 185, no. 731; Heie 1969, p. 222

Distribution: Europe and Asia. It is known from Sweden and Norway.

Occurrence in Denmark: On Ulmus. Jutland: V. Hjermitslev (1-8-69), Oddense in Salling (26-7-63, 9-9-63), Skive (24-6-59, 28-6-68), and Kolding (5-7-58).

302. *Schizoneura ulmi* (Linné, 1758)
Schizoneura ulmi: Börner 1952, p. 185, no. 730

Distribution: Europe and Asia. It is known from Finland, Sweden, Norway, the Faroes, and Iceland.

Occurrence in Denmark: On Ulmus in Jutland at Madum Lake in Himmerland (27-5-60), Skive (20-6-57, 24-5-59), and Skamlingsbanken (13-6-64), on Funen at Udby (6-7-58) and Hylkedam (30-5-57), and on Sealand at Rudersdal (26-5-18, M. Thomsen leg.) and Ålsgårde (22-6-18, M. Thomsen leg.). On roots of Ribes rubrum in Jutland at Jebjerg in Salling (autumn, 1958) and Skive (21-6-59) and on Ribes on Sealand at Tystofte (16-10-14, the collection of the State Exper. Station). Flying individuals caught in Jutland at Skive (30-6-60) and Kongsø near Bryrup (11-7-58). Caught in yellow Moericke-trays in Jutland at Tylstrup, Borris, Jyndevad, and Spangsbjerg at Esbjerg, on Funen at Årslev, and on Sealand at Lyngby and Ørslev near Ringsted. Empty galls on Ulmus observed in Jutland at Hune in Vendsyssel (30-7-69), Hammer Bakker (1-8-68), Jebjerg in Salling (26-7-58), Skive (18-5-59, 24-6-59), Krabbesholm Forest (9-5-59), Brassø near Silkeborg (12-7-60), Studsgård (9-7-59), and Snepsgårde at Ribe (25-5-65), and on Funen at Svendborg (2-7-57), Fåborg (13-7-57), and Nyborg (9-7-58).

The species is mentioned by Boas (1923). Henriksen (1944, p. 92) gives localities in Jutland (Viborg, Fanø, Vorsø), Funen (Klingstrup), Sealand (Copenhagen, Hellerup, Holte, Lyngby, Glorup, Korsør Forest), Amager, Langeland (Lohals), and Bornholm (Rønne, Almindingen, Svaneke, Listed, Randkløvegård, Helligdommen, Rø, Allinge, Hammershus, Olsker, Gudhjem). Jensen (1962) found the gall at Frederiksdal at Nakskov on Lolland. The species is mentioned as a pest to Ribes by Bovien & Thomsen (1945). Danish name: Ribs-rodlus.

Genus **KALTENBACHIELLA** Schout., 1906

303. *Kaltenbachiella pallida* (Haliday, 1838)
Kaltenbachiella pallida: Börner 1952, p. 187, no. 736

Distribution: Europe, West-Africa. It is known from Sweden.

Occurrence in Denmark: Jutland: On Ulmus at Rye (22-7-18, M. Thomsen leg. et det.).

Genus **TETRANEURA** Hartig, 1841

304. *Tetraneura ulmi* (Linné, 1758)

Byrsocrypta ulmi: Börner 1952, p. 188, no. 737
Byrsocrypta personata Börner, 1950: Börner 1952, p. 188, no. 738
Tetraneura ulmi: Zwölfer 1958, p. 539; Szelegiewicz 1968, p. 30

Distribution: Europe, Asia, and North America. It is known from Finland, Sweden, and Norway.

Occurrence in Denmark: Jutland: On Ulmus glabra at Skørping in Himmerland (30-5-59), Skive (24-6-59, 1-7-59, 3-7-59), Funder (17-7-18, M. Thomsen leg. et det.), and — the gall only — at Studsgård (9-7-59), on roots of Avena pubescens at Pinen in Salling (29-5-58), Holcus lanatus at Rømø (3-7-58), Lolium sp. at Studsgård (13-7-60), and Gramineae at Blokhus (1-7-64) and Henne (1-7-58). The Danish Islands: On Corynephorus canescens at Færøn on Læsø (11-8-57).

According to Henriksen (1944) the galls on Ulmus have been found at several localities in Jutland and on Sealand, Funen, and Bornholm. The species is also mentioned by Bovien & Thomsen (1945) and Jensen (1962), who found it at Frederiksdal at Nakskov on Lolland.

Genus **ASIPHUM** Koch, 1856

305. *Asiphum tremulae* (Linné, 1761)

Asiphon tremulae: Börner 1952, p. 190, no. 744

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Populus tremula at Madum Lake in Himmerland (11-6-58, 27-5-59) and Legind Bjerge on Mors (4-6-59).

Genus **PACHYPAPPELLA** Baker, 1920

306. *Pachypappella tremulae* (Tullgren, 1925)

Pachypappella (Gootiella) tremulae: Börner 1952, p. 191, no. 750

Distribution: Sweden and Denmark.

Occurrence in Denmark: Sealand: On Populus tremula at Lyngby (21-8-40, O. Hagerup coll.). I made the slides from an alcohol sample received from the Zoological Museum, Copenhagen. Henriksen (1944, p. 58) mentions a find of *Gootiella tremulae* on Populus tremula from Fuglevad, Lyngby, 21-8-40,

probably the same sample, though Henriksen says that Harry Madsen is the collector.

Professor Dr. F. Ossiannilsson most kindly certified the identification.

Genus **PROCIPHILUS** Koch, 1856

307. *Prociphilus bumeliae* (Schrank, 1801)

Prociphilus bumeliae: Börner 1952, p. 193, no. 755

Distribution: Europe, USSR. It is known from Sweden.

Occurrence in Denmark: Jutland: On Fraxinus excelsior at Skørping in Himmerland (30-5-59) and Krabbesholm Forest at Skive (9-6-59) and on Abies alba (1 alata) at Ydby, Thy (21-6-59).

308. *Prociphilus fraxini* (Geoffroy, 1762)

Prociphilus fraxini: Börner 1952, p. 193, no. 754

Distribution: Europe, USSR. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: On Fraxinus excelsior at Krabbesholm Forest at Skive (6-7-67).

Pemphigus poschingeri Holzn., which is a synonym, is mentioned from roots of Abies at several localities in the country, the first time at Charlottenlund near Copenhagen, by Boas (1890 and 1923), at Trustrup in Jutland in 1921 by Gram & Rostrup (1922, p. 232) and at Svebølle on Sealand in 1927 by Gram, Jørgensen & Rostrup (1928, p. 821). Henriksen (1944) gives several localities of finds on Fraxinus. Both Boas and Henriksen regarded *poschingeri* and *bumeliae* as synonyms, however, so the finds or some of them may belong in the preceding species.

309. *Prociphilus pini* (Burmeister, 1835)

Stagona crataegi (Tullgr., 1909): Börner 1952, p. 192, no. 752

Distribution: Europe. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Crataegus monogyna at Hune in Vendsyssel (7-7-64, 10-8-64).

310. *Prociphilus xylostei* (de Geer, 1773)

Stagona xylostei: Börner 1952, p. 192, no. 751

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Lonicera at

Skive (several finds in May, June, and July), Holstebro (1-7-59), and Studsgård (9-7-59, 13-7-60). Henriksen (1944) mentions the species, referring to Gertz (1927), who found the zoocecidium on Lonicera xylosteum at Gudhjem on Bornholm.

Genus **THECABIUS** Koch, 1856

311. *Thecabius affinis* (Kaltenbach, 1843)

Thecabius affinis: Börner 1952, p. 193, no. 756

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Populus italica at Blokhus (6-7-65), Hune (15-8-60), Vorså in Vendsyssel (23-7-69), Vilsund (10-7-60), Tambohus in Thy (23-7-63), Skive (24-6-57, 29-6-60), and Kjellerup (31-7-59); on Ranunculus repens at Madum Lake in Himmerland (5-9-58) and Skive (4-8-57); one alate specimen at Flyndersø (22-7-57). Sealand: On Populus italica at Marienlyst (4-7-18, M. Thomsen leg. et det.) and Lammefjord (29-6-61, the collection of the State Exper. Station, Lyngby); on Ranunculus repens at Svinninge (14-7-64, J. Reitzel leg.) and Tikøb (17-10-65).

The species is mentioned by Boas (1923), Gram & Rostrup (1922, p. 232; on Populus at Svebølle on Sealand in 1921), and Henriksen (1944; localities on Bornholm, Sealand, and Fanø).

Genus **PEMPHIGUS** Hartig, 1837

312. *Pemphigus bursarius* (Linné, 1758)

Pemphigus bursarius: Börner 1952, p. 194, no. 762

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Populus italica at Skive (6-6-60, 29-6-60), Rodskov at Løgten (11-7-60), and — empty galls only — Kjellerup (31-7-59, 30-6-60); on roots of Lactuca sativa at Resen at Skive (22-9-68), on root of Tussilago farfara at Skive (16-5-58), and on roots of unknown plant at Nr. Bjært (12-10-62, the collection of the State Exper. Station, Lyngby).

The species is mentioned by Boas (1923) and Bovien & Thomsen (1945). Henriksen (1944) gives several localities on Bornholm and Sealand. It is recorded from Populus italica at Valby in Copenhagen in 1921 by Gram & Rostrup (1922, p. 232).

313. *Pemphigus filaginis* (Boyer de Fonscolombe, 1841)
Pemphigus populi-nigrae (Schrk.): Börner 1952, p. 195, no. 765
Pemphigus filaginis: Börner & Heinze 1957, p. 307

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: Jutland: On Populus italica at Skive (31-5-59, 29-6-60) and — empty galls only — at Gjerrild in Djursland (19-10-69); on Gnaphalium at Kandestederne in Vendsyssel (1-8-66) and Kjellerup (2-8-59). Funen: On Gnaphalium silvaticum at Svanninge Bakker (12-7-57). Other islands: On Gnaphalium at Hventgård on Læsø (7-8-57).

This is what Boas (1923) called *Pemphigus ovato-oblongus*. Finds on Populus italica are recorded from Bornholm and Sealand and finds on Filago and Gnaphalium are recorded from Steensgård on Lolland by Henriksen (1944).

314. *Pemphigus lysimachiae* (Börner, 1916)
Parathecabius lysimachiae: Börner 1952, p. 193, no. 757; Zwölfer 1958, p. 560

Distribution: Germany, Austria, France, Great Britain, Sweden, and Denmark.

Occurrence in Denmark: Sealand: On Lysimachia nummularia at Herlev in Copenhagen (autumn, 1963, G. Kristensen coll.). Nursery-man cand. hort. G. Kristensen, Herlev, most kindly sent me material and told me that it was a well-known pest to Lysimachia nummularia in nurseries in the Copenhagen area (Herlev, Gladsakse, Rødovre).

315. *Pemphigus phenax* Börner et Blunck, 1916
Pemphigus dauci: Börner 1952, p. 195, no. 766

Distribution: Europe. It is known from Sweden.

Occurrence in Denmark: Sealand: On Daucus carota at Lammefjord (17-9-59, the collection of the State Exper. Station, Lyngby).

316. *Pemphigus spirothecae* Passerini, 1860
Pemphigus spirothecae: Börner 1952, p. 194, no. 760

Distribution: Europe. It is known from Norway and Sweden.

Occurrence in Denmark: On Populus italica (pyramidalis) in Jutland at Skive (12-9-56, 31-5-59, 3-7-59), Gjerrild in Djursland (19-10-69), and Ebeltoft (6-8-59), on Sealand at Gad-

strup near Roskilde (Nov. 1958) and Copenhagen (21-8-18, M. Thomsen leg., and Oct. 1940), and on Strynø south of Funen (7-7-57).

The species is mentioned by Boas (1923), Bovien & Thomsen (1945), Henriksen (1944), and Jensen (1962). Henriksen gives several localities on Bornholm, Sealand, Lolland, and Ærø. Jensen's find is from Frederiksdal at Nakskov on Lolland.

Genus **FORDA** v. Heyden, 1837

317. *Forda formicaria* v. Heyden, 1837

Forda formicaria: Börner 1952, p. 198, no. 780

Distribution: Europe and Asia. It is known from Sweden, Norway, and Finland.

Occurrence in Denmark: On roots of Gramineae in Jutland at Pinen in Salling (29-5-58, on Festuca rubra a. o.), Brunshåb near Viborg (12-7-59), and Mellerup at Randers Fjord (13-7-59), on Sealand at Skoven in Horns Herred (21-4-51, in nest of *Lasius flavus)* and at Lyngby (27-7-66, J. Reitzel leg., on Elymus arenarius).

Genus **SMYNTHURODES** Westwood, 1849

318. *Smynthurodes betae* Westwood, 1849

Trifidaphis phaseoli (Pass.): Theobald 1929, p. 208
Smynthurodes betae: Börner 1952, p. 200, no. 789

Distribution: Europe, Asia, and North America. It is known from Finland and Sweden.

Occurrence in Denmark: Sofie Rostrup (1900) mentioned the occurrence of *Tychea phaseoli* on potato in Denmark. Bovien (1939) gave a record of *Geoica phaseoli* from Nr. Åby on Funen, where it was found feeding on the roots and subterranean stems of potato in 1938. These names are synonyms. I have not yet seen this aphid species myself.

Genus **GEOICA** Hartig, 1894

319. *Geoica utricularia* (Passerini, 1856) Mordvilko, 1927

Geoica discreta Börner, 1952, p. 203, no. 794
Geoica utricularia sensu Mordvilko: Zwölfer 1958, p. 140; Szelegiewicz 1968, p. 90

Distribution: Europe. It is known from Sweden.

Occurrence in Denmark: Jutland: On roots probably of grass under Salix repens at Blokhus (24-7-68).

Genus **PINEUS** Shim., 1869

320. *Pineus orientalis* (Dreyfus, 1889)

Pineus orientalis: Börner 1952, p. 204, no. 798; Börner & Heinze 1957, p. 326; Heinze 1962, p. 205

Distribution: Europe. It is known from Sweden.

Occurrence in Denmark: Several finds of galls on Picea orientalis have been referred to *Pineus pini* by Henriksen (1944). Previously this specific name covered both *P. pini* and *P. orientalis,* but eventually the latter was recognized as an independent species, having a gall-making fundatrix-generation on Picea orientalis, which *P. pini* s.str. does not have.

The finds on Picea orientalis are all made by M. Thomsen on the Danish Islands: Charlottenlund on Sealand (9-10-36) and Knuthenborg Park on Lolland (4-9-36).

321. *Pineus pini* (Macq., 1819)

Pineus pini: Börner 1952, p. 204, no. 797; Börner & Heinze 1957, p. 327; Heinze 1962, p. 203

Distribution: Nearly all over the world. It is known from Sweden, Norway, Finland, and Iceland.

Occurrence in Denmark: On Pinus mugo and P. silvestris. Jutland: Blokhus (18-6-60), Skive (several finds), Strandkjær at Femmøller (6-7-60), Henne (1-7-58), and Rømø (5-7-58). Sealand: Holte (May, 1959). Other islands: Turø (2-7-57).

The species is mentioned as a pest to Pinus silvestris and P. mugo by Boas (1923), Bovien & Thomsen (1945), and Bejer-Petersen (1965).

322. *Pineus strobi* (Hartig, 1837)

Pineus strobi: Börner 1952, p. 204, no. 800; Börner & Heinze 1957, p. 329; Heinze 1962, p. 205

Distribution: North America and Europe. It is known from Sweden.

Occurrence in Denmark: Boas (1923) says that this species is common on Pinus strobus in Denmark.

Genus **DREYFUSIA** Börner, 1908

323. *Dreyfusia nordmannianae* (Eckstein, 1890)

Dreyfusia nordmannianae: Börner 1952, p. 205, no. 802; Börner & Heinze 1957, p. 332; Heinze 1962, p. 208

Distribution: Europe, North America, West Asia. It is known from Sweden and Norway.

Occurrence in Denmark: It is mentioned as a common pest to Abies in Denmark by Bovien & Thomsen (1945) and Bejer-Petersen (1959, 1962, 1965, 1967). Boas (1923) regarded it as a variety of *D. piceae* (see below). According to Bejer-Petersen (1962). *D. nordmannianae* is by far the more predominant of the two species. My own records are: Jutland: Blokhus (several finds), Dronninglund Great Forest (5-5-57), Rold Forest (7-5-57), Madum Lake in Himmerland (28-5-59), Vejerslev on Mors (29-5-58), Legind Bjerge on Mors (several finds), Skive (6-5-59), Fly south of Skive (several finds), west of Viborg (2-5-57), Brassø at Silkeborg (12-7-60), and Bryrup (11-7-58); Funen: Hylkedam (28-5-57) and Hofmansgave (28-5-65); all on Abies.

Finds of its galls on Picea orientalis, which is the primary host, are recorded by Henriksen (1944) from localities on Sealand (Charlottenlund, Ordrup, Teglstrup Hegn, Lyngby, Hæsede) and Lolland (Knuthenborg).

324. *Dreyfusia piceae* (Ratz., 1844)

Dreyfusia piceae: Börner 1952, p. 205, no. 803; Börner & Heinze 1957, p. 336; Heinze 1962, p. 208

Distribution: Europe, North America. It is known from Sweden and Norway.

Occurrence in Denmark: Most Danish records of *D. piceae* refer to *D. nordmannianae* (Boas 1904, 1918, 1923), though not all of them. *D. piceae* occurs sporadically on young Abies-trees (Bejer-Petersen 1962). It is more than *D. nordmannianae* attached to the very trunk of Abies. Opposite to *D. nordmannianae* it is anholocyclic and does not migrate to Picea orientalis. Boas drew attention to its spreading nearly exclusively by man's planting of infested young trees. Henriksen (1944) mentions a find from Hellerup on Sealand (27-5-40, A. F. Bruun leg.) on Abies sp.

Genus **ADELGES** Vallot, 1836

325—326. *Adelges laricis* Vallot, 1836, s. lat.

Cnaphalodes strobilobius (Kaltenbach, 1843)

Two species of this species-complex occur in Denmark, viz. *A. laricis* s. str. and *A. tardus* (Dreyfus). Galls on Picea abies with aphids identifiable with *A. laricis* s. lat., only, have been seen on Funen at Hylkendam (29-5-57). Jensen (1962) recorded it from Frederiksdal at Nakskov on Lolland. Henriksen (1944) mentions

finds of the gall on Picea from Jutland (Fanø), Funen (Lundeborg, Langesø Plantation), and on Sealand (Hareskov, Tisvilde, Geel Forest). The species is also mentioned by Boas (1923), Bovien & Thomsen (1945), and Bejer-Petersen (1968).

It is known from Sweden, Norway, and Finland. Danish name: Jordbærgallebladlus.

325. *Adelges laricis* Vallot, 1836, s. str.

Adelges laricis: Börner 1952, p. 207, no. 809; Börner & Heinze 1957, p. 343; Heinze 1962, p. 213

Distribution: Europe.

Occurrence in Denmark: In Jutland collected on Larix (decidua and sp.) at Kjellerup (1-8-59) and Femmøller, Mols (3-8-59), on Funen on Larix at Hylkedam (6-7-58). Henriksen (1944) gives several localities on Sealand (Jægersborg Dyrehave, Geel Forest, Rørvig, Asnæs), all on Larix.

The primary host is Picea. The gall opens in the first part of the summer, and then the alate migrants go to Larix.

326. *Adelges tardus* (Dreyfus, 1888)

Adelges tardus: Börner 1952, p. 207, no. 811; Börner & Heinze 1957, p. 344; Heinze 1962, p. 212

Distribution: Europe, Asia.

Occurrence in Denmark: The galls on Picea abies found in Jutland at Estvadgård Plantation at Flyndersø (22-8-60), Brassø at Silkeborg (12-7-60), and Femmøller, Mols (7-8-59, 6-7-60). The gall opens in the end of the summer, and migration to Larix does not take place.

Genus **GILLETTEELLA** Börner, 1930

327. *Gilletteella cooleyi* (Gillette, 1907)

Gilletteella cooleyi: Börner 1952, p. 208, no. 813; Börner & Heinze 1957, p. 347; Heinze 1962, p. 213

Distribution: North America, Europe. It is known from Sweden and Norway.

Occurrence in Denmark: Jutland: The gall on Picea sitchensis found at Blokhus (29-7-60), Rolf Forest (14-4-57), Madum Lake in Himmerland (20-6-58), Great Blåkilde (20-5-57), Brårup Plantation at Skive (3-9-69), Fly Plantation at Skive (17-4-69), Addit Forest (12-5-59), and Juelsminde (28-6-59), colonies on Pseudotsuga taxifolia found at Rold Forest (27-5-59, Nørreskov at Rebild (25-5-57), and Brårup Plantation at Skive (3-9-69).

Funen: At Hylkedam both on Picea sitchensis (20-5-57) and on Pseudotsuga taxifolia (29-5-57). Other islands: On Picea sitchensis at Rødby Fjord on Lolland (16-8-57).

Thomsen (1940) gave the first records of this species in Denmark. Danish name: Douglasgranbladlus. It has since been mentioned by Bovien & Thomsen (1945), Bejer-Petersen & Søegaard (1958), and Bejer-Petersen (1965). It is widely distributed in Denmark today. Henriksen (1944) recorded finds of galls (M. Thomsen leg.) from Funen (Langesø at Odense) and Lolland (Knuthenborg and Roden Forest). Jensen (1962) tells about finds of the gall at Frederiksdal at Nakskov on Lolland.

Genus **SACCHIPHANTES** Curtis, 1844

328—329. *Sacchiphantes abietis* (Linné, 1758), s. lat.

Chermes abietis Linné, 1758

Two species of this species-complex occur in Denmark, viz. *S. abietis* s. str. and *S. viridis* (Ratz.). Galls on Picea (abies, glauca) with aphids identifiable with *S. abietis* s. lat., only, have been found in Jutland north of Hals in Vendsyssel (5-5-57), at Madum Lake in Himmerland (several finds), Legind Bjerge on Mors (7-6-57), Fur (22-8-57), Fly at Skive (7-4-57), Hvidemose at Flyndersø (18-9-58), Skive (24-11-58, 6-5-59), and west of Viborg (4-5-58), on Sealand at Holte (17-10-57). Jensen (1962) recorded the gall from Frederiksdal at Nakskov on Lolland. Henriksen (1944) mentions finds of the gall on Picea from Jutland, Sealand, Møen, and Bornholm. The species is also mentioned by Boas (1923), Bovien & Thomsen (1945), and Bejer-Petersen (1968).

It is known from Sweden, Norway, and Finland. Danish name: Ananasgallebladlus or granbladlus.

328. *Sacchiphantes abietis* (Linné, 1758), s. str.

Sacchiphantes abietis: Börner 1952, p. 209, no. 815; Börner & Heinze 1957, p. 352; Heinze 1962, p. 215

Distribution: Europe, Asia.

Occurrence in Denmark: On Picea (abies, glauca, sitchensis). Jutland: Blokhus (25-7-60), Øland west of Ålborg (31-7-60), Vejerslev on Mors (29-5-58), Højris on Mors (10-7-60), Krabbesholm Forest at Skive (22-4-59), south of Skive (28-8-57), Flyndersø (22-7-57), Bryrup (11-7-58), Funder (12-7-60), Femmøller (5-8-59), and Ebeltoft (6-8-59). Sealand: Holte (15-8-57). Other islands: Dyret on Samsø (9-8-58).

329. *Sacchiphantes viridis* (Ratz., 1843)

Sacchiphantes viridis: Börner 1952, p. 208, no. 814; Börner & Heinze 1957, p. 350; Heinze 1962, p. 215

Distribution: Europe.

Occurrence in Denmark: Jutland: On Picea abies on Fur (22-8-57) and on P. sitchensis at Fly Plantation south of Skive (29-8-60).

Genus **PHYLLOXERA** Boyer de Fonscolombe, 1834

330. *Phylloxera coccinea* (v. Heyden, 1837)

Phylloxera coccinea: Börner 1952, p.. 210, no. 821; Börner & Heinze 1957, p. 357; Heinze 1962, p. 222

Distribution: Europe. It is known from Sweden.

Occurrence in Denmark: *Ph. coccinea* is mentioned by Boas (1923). The Danish records of *Ph. quercus* given by Henriksen (1944) and Jensen (1962) may refer either to this species or *glabra* or perhaps *foaae* Börner. The appearance of oak leaves attacked by *glabra* is exactly like that caused by *coccinea*. *Ph. quercus* B.d. Fonsc. is a mediterranean species.

331. *Phylloxera glabra* (v. Heyden, 1837)

Phylloxera glabra: Börner 1952, p. 210, no. 820; Börner & Heinze 1957, p. 357; Heinze 1962, p. 222

Distribution: Europe. It is known from Sweden and Norway.

Occurrence in Denmark: Collected on Quercus robur at Femmøller in Jutland (5-8-59, 6-7-60).

Additional remarks to previous parts of the list

Part 2:

No. 30. *Macrosiphum silenium* (p. 83)

Macrosiphum montanum H.R.I. and *M. hartigi* H.R.L. are not synonyms of this species. The Danish specimens are more like the *euphorbiae-gei*-complex. The identification with *silenium* Theobald may be correct or not, as the interpretation of Theobald's name is uncertain.

No. 31. *Macrosiphum stellariae* (p. 84)

It is doubtful if the Danish material is different from *M. euphorbiae*. If this really be the case then the use of the name *stellariae* Theobald is dubious because more than one kind of *Macrosiphum*s occur on Stellaria. At least the *Macrosiphum* on Stellaria in Nether-

lands is different from the *Macrosiphum* on Stellaria in Denmark. Dr. D. Hille Ris Lambers wrote to me (1961, in litt.): "What you describe as *stellariae* differs incredibly from the aphid infesting Stellaria holostea in this country. We find here an extremely slender, small *Macrosiphum* on strongly shadowed plants with few caudal hairs, while you find a real giant with many caudal hairs. Species of this group have been found also on Sanicula, Eryngium, Dianthus, Caryophyllus, and other plants. I utterly failed to find consistent differences in studies after 1939".

No. 43. *Acyrthosiphon spartii* (p. 90)

This is only a synonym of *A. pisum* Harris (no. 42).

Part 3:

No. 73. *Pleotrichophorus filaginis* (p. 219)

The finds at Femmøller from 1960 differed from *P. filaginis* Schouteden — as mentioned — in several respects. The *Pleotrichophorus* on Gnaphalium (Helichrysum) arenarium has since been described as a new species in U.S.S.R., *P. helichrysi* Bozhko, 1963.

Part 5:

Nos. 108—109. *Holcaphis frequens* and *H. holci* (p. 127)

Holcaphis H.R.L. shall be regarded as a subgenus within the genus *Diuraphis* Aizenberg, 1935.

No. 138. *Ceruraphis eriophori* (p. 139)

The find from Lyngby belongs to no. 187 (vide part 6, p. 93).

Part 7:

Nos. 192—193. *Longiunguis elisabethae* and *L. luzulellus* (p. 377—378).

Longiunguis van der Goot, 1917, has been sunk as a synonym of *Melanaphis* van der Goot, 1916.

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(continued from Entom. Medd. 38, 1970, p. 164)

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Hypocoena dispersa n. sp. (Lep., Noctuidae) from Iceland

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During his travel in Iceland in 1937, studying geology, A. Nørvang collected some insects at random.

On the shores of Kópasker, a locality situated at nearly the northernmost point of Iceland (66°20′N., 29°00′E.) he took (on 2nd September) a somewhat worn specimen of a noctua, the identification of which has caused severe difficulties. Its forewings are little characteristic, blackish coloured, apparently without any wing markings, and the shape of its genitalia (♂) was unfamiliar to me.

Having sent the specimen in question including the genital slide to the British Museum (Natural History) in London asking if Mr. H. W. T. Tams would be kind enough to assist, I got the reply that the specimen beyond any doubt belonged to the genus *Hypocoena* Hampson, and probably to *rufostrigata,* a species described by Packard (1868 p. 36) in the genus *Leucania* Hb. Mr. Tams included a photograph illustrating the Icelandic specimen in company with two *Hypocoena rufostrigata* of Canadian origin as well as a photograph of the male genitalia of the last-named species.

The genus *Hypocoena* which was erected by Hampson (1910 p. 301—302) for *rufostrigata* Pack. alone (misspelled by Hampson as *rufostriga)* at present covers 6 species, all occurring in northern parts of North America ranging from Labrador westwards to Alaska, and south in the west to Utah and California. The genus is not known from Europe. It is closely allied to *Coenobia* Stph. — the neuration is almost identical — but differs e.g. by the smooth rounded frons lacking the corneous pointed plate at middle and

flattened plate below it, conspicuous in *Coenobia*.

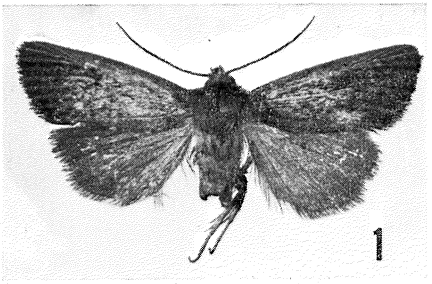
While treating the Icelandic *Lepidoptera* for the work "The Zoology of Iceland" I undertook a renewed study of the specimen. Examination of material of *Hypocoena rufostrigata* Pack., *basistriga* McDunn., *inquinata* Gn., and *defecta* Grt., obtained for comparison through Dr. D. F. Hardwick of the Department of Agriculture in Ottawa, disclosed that none of the three last-named species exhibited any conformity with the Icelandic specimen.

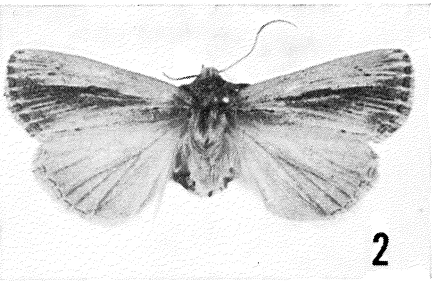
As to the two still remaining *Hypocoena* species, *orphinia* Dyar, and *variana* Morr. (not represented in the collection in Ottawa), Dr. E. L. Todd of the United States Department of Agriculture in Washington, D.C. deliberately dissected two syntypes of *orphinia*, demonstrating this species to be very distinct from all other described species of *Hypocoena* and from the species from Iceland. Regarding *H. variana*, its specific status seems not quite clear. The type is apparently lost, the specimen standing in the collection in Washington as *variana* exhibited on dissection an aedeagus like that of *inquinata* depicted in fig. 6, and the specimen illustrated by Holland (1905, pl. 26, fig. 26) as (*Tapinostola*) *variana* (figured from the collection of the United States National Museum) now — according to Dr. Todd — stands as *Hypocoena inquinata*.

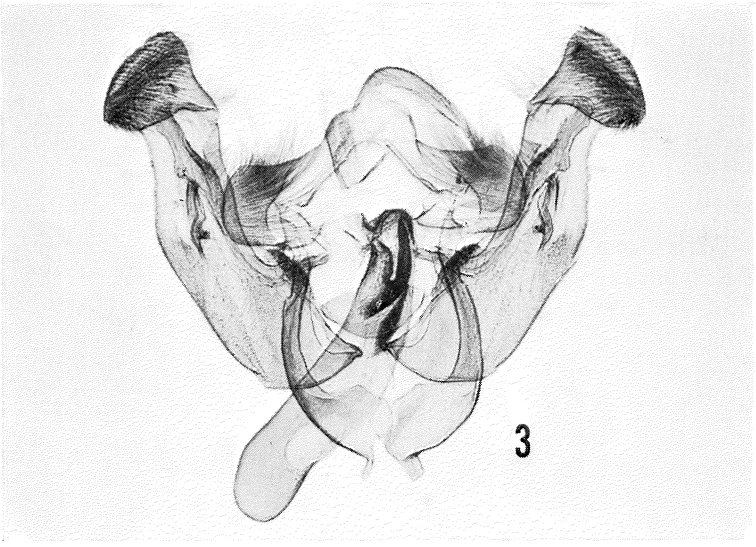
The only described *Hypocoena* species approached by the Icelandic is *rufostrigata*. The neuration, the head (frons), the palpi, and the legs agree. The genitalia of these two are in fact also rather similar (plate I, figs. 3—4) but in general appearance the moths look widely different. The Icelandic specimen (plate I, fig. 1) is stout, has pointed blackish forewings and dark hindwings. The Canadian species (plate I, fig. 2) is slender, forewings wider with a dark central streak broadening out towards the outer margin but otherwise light coloured. A fine picture of *Hypocoena rufostrigata* is shown by Holland (1905, pl. 19, fig. 27) under the name of *Caradrina punctivena* Smith.

PLATE I

Fig. 1: *Hypocoena dispersa* n. sp., holotype (× 2). — Fig. 2: *Hypocoena rufostrigata* Pack. (× 2). Canada, Bradore Bay, Quebec 12. VIII. 1930. W. J. Brown leg. — Fig. 3: Genitalia of same specimen as shown in fig. 1 (× 20), prep. NLW 1830. — Fig. 4: Male genitalia of *Hypocoena rufostrigata* Pack. (× 20). Canada, Sunnydale, Lloydminster, Alberta 26.VI.1941. P. F. Bruggemann leg., prep. NLW 2402.







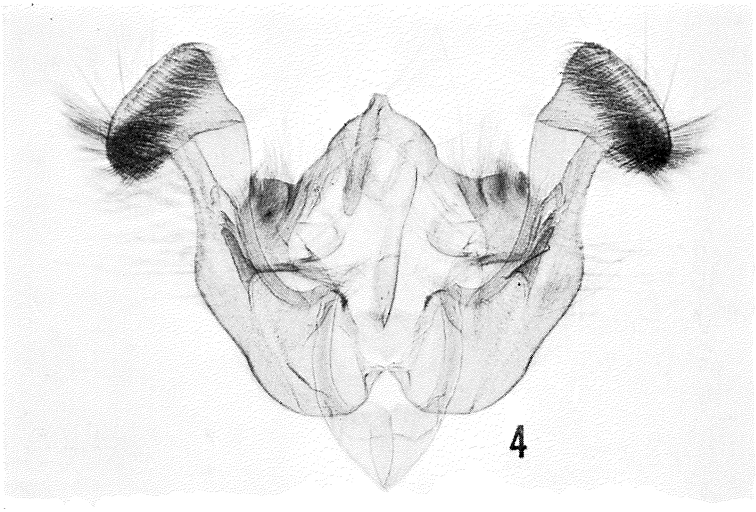
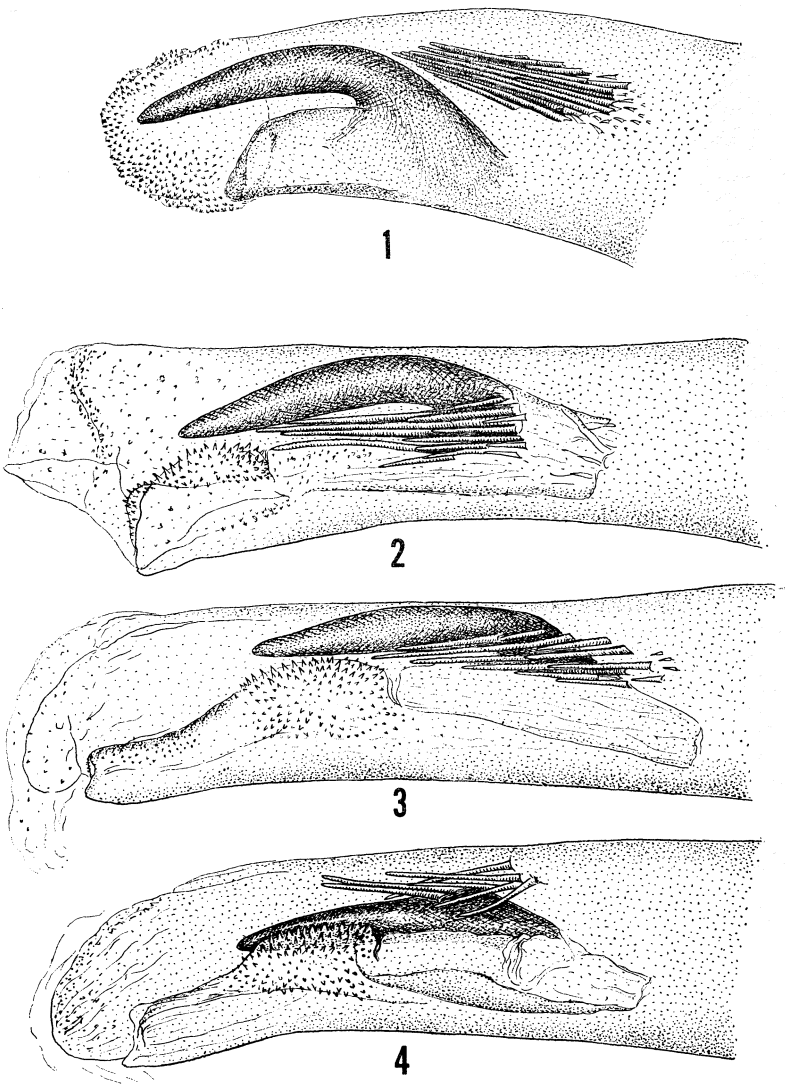
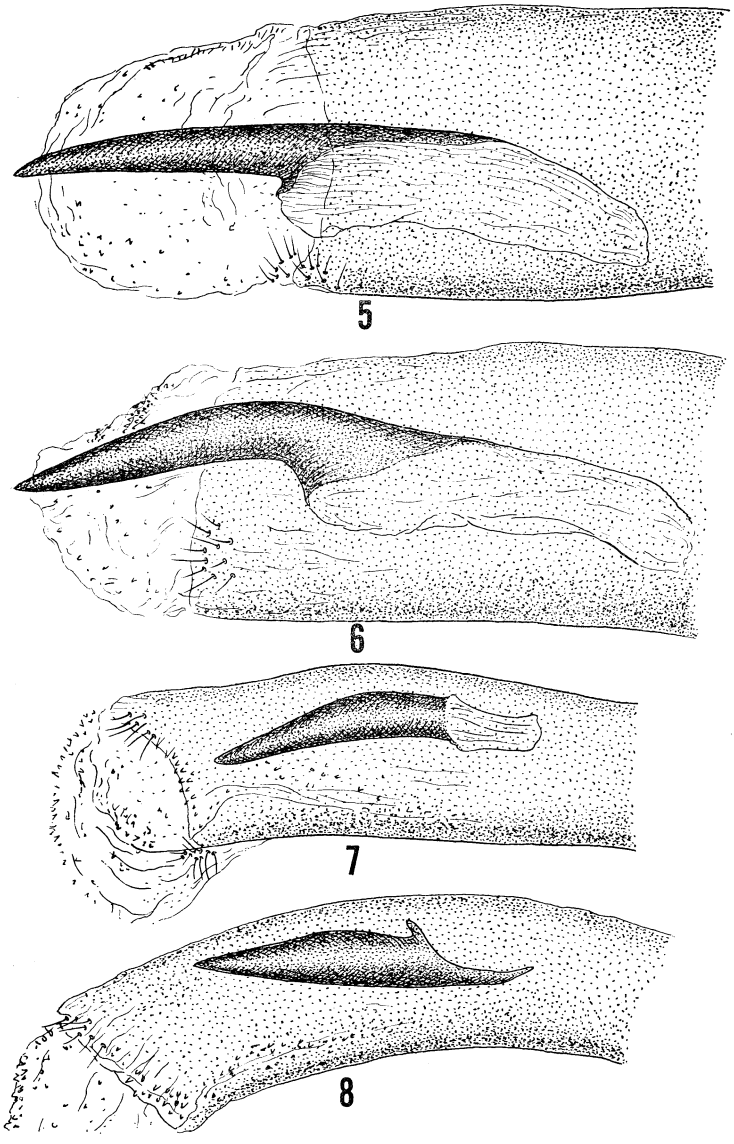


PLATE I

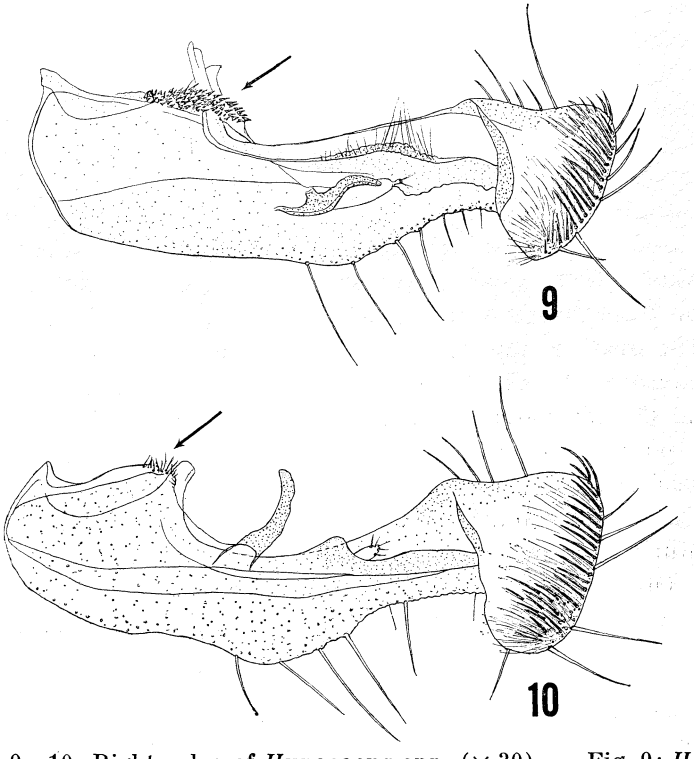


Figs. 1—4: *Hypocoena spp.* Distal part of aedeagus with cornuti (× 70). — Fig. 1: *H. dispersa* n. sp:, holotype, prep. NLW 1830. — Fig. 2: *H. rufostrigata* Pack. Canada, Sunnydale, Lloydminster, Alberta 26.VI.1941. P. F. Bruggemann leg., prep. NLW 2402. — Fig. 3: *H. rufostrigata* Pack. Canada, Bradore Bay, Quebec 12.VIII.1930. W. J. Brown leg., prep. 2403. — Fig. 4: *H. rufostrigata* Pack. Canada, Rutland, Saskatchewan 15.VII.1940. A. R. Brooks leg., prep. NLW 2401.



Figs. 5—8: *Hypocoena spp.* Distal part of aedeagus with cornutus (× 70). — Figs. 5: *H. inquinata* Gn. Canada, Saskatoon, Saskatchewan 1.VII.1937. Kenneth M. King leg., prep. NLW 2400. — Fig. 6: *H. inquinata* Gn. Canada, Saskatoon, Saskatchewan 12.VII.1937, Kenneth M. King leg., prep. NLW 2399. — Fig. 7: *H. basistriga* McDunn. Canada, Sunnydale, Lloydminster, Alberta 10.IX.1948. P. F. Bruggemann leg., prep. NLW 2397. — Fig. 8: *H. basistriga* McDunn. Data as in fig. 7, prep. NLW 2398.

The armature of aedeagus of the two species mentioned looks but little different (figs. 1—4) especially compared to that in e.g. *inquinata* (figs. 5—6) and *basistriga* (figs. 7—8), but other genital characters, such as the structure of the valva differ definitely. In *rufostrigata* the cucullus is larger and the clasper far longer and movable. The photograph (plate I, fig. 4) shows the clasper in its normal position whereas fig. 10 shows it bent upwards. The central area of the valva also differs and especially the shape of the ampulla is clearly distinct from that in *rufostrigata*. Judging from four preparations of the male genitalia of *rufostrigata* the shape of the clavus represents a characteristic difference, as indicated by the arrow in the drawings (figs. 9—10). In *rufostrigata* the clavus forms a short projection, set with weak hairs, in the Icelandic specimen the clavus is broad, build up by a series of small stout spines.



Figs. 9—10: Right valva of *Hypocoena spp.* (× 30). — Fig. 9: *H. dispersa* n.sp., holotype, prep. NLW 1830. — Fig. 10: *H. rufostrigata* Pack. Canada, Rutland, Saskatchewan 15.VII.1940. A. R. Brooks leg., prep. NLW 2401.

Although merely one specimen is available I consider it necessary to regard it as belonging to a new species: *Hypocoena dispersa,* the specific characters of which are given above. The holotype (N. Iceland, Kópasker 2. IX. 1937, A. Nørvang leg.) belongs to the Zoological Museum of Copenhagen.

It is most difficult to set forth a probable explanation of the presence of this individual in Iceland. The supposition that it may belong to an indigenous Icelandic population seems little probable. More likely it is — like the other *Hypocoena* species — a native of North America, having by some means landed in this remote area.

Although incidental transport by human activity of the specimen from e.g. Canada to just that part of Iceland can be left out of consideration, it may very well have been transported from its native soil through the air. Quite a series of species, such as, e.g. *Herse convolvuli* L., *Mythimna unipuncta* Haw., *Orthonama obstipata* F., *Nomophila noctuella* Den. & Schiff., and *Udea ferrugalis* Hb. found at intervals in Iceland have undoubtedly been transported from their habitat far away (as far as more than 1500 miles) by air-currents. The species mentioned have all travelled from the south northwards, but the probability of eastwards dispersal also exists. The presence of some specimens of *Nomophila noctuella* on the west coast of Greenland in 1954 is interpreted by Mikkola (1968 p. 509—510) as the result of air-born transportation from North America to Greenland by a warm air-current.

The weather maps issued by the Danish Meteorological Institute demonstrate that on 29th August 1937 a warm air-current moved from Canada across Greenland directly towards Iceland, where the temperature was 7° C. The specimen may have reached Kópasker this way.

I am greatly indebted to Mr. H. W. T. Tams, British Museum (Natural History), to Dr. D. F. Hardwick, Department of Agriculture, Ottawa, and to Dr. E. L. Todd, United States Department of Agriculture, Washington, D.C., for their helpful collaboration.

Summary

A specimen of the genus *Hypocoena* Hamps., known exclusively from Canada, caught in the northernmost part of Iceland belongs to a new species described under the name *H. dispersa.* It is compared to other *Hypocoena spp.,* especially *rufostrigata* Pack. Its presence in Iceland may be explained as a result of transportation from Canada by air-currents.

References

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Holland, J. W., 1905: The Moth Book. New York.

Mikkola, K., 1968: Transportation by Air of Nomophila noctuella Schiff. (Lep., Pyralidae) to Greenland from North America in 1954. — Entom. Medd. 36.

Packard, A. S., 1868: View of the Lepidopterous Fauna of Labrador. — Proc. Boston Soc. Nat. Hist. 11. (1866—68).

Anmeldelse

N. P. Kristensen: Systematisk Entomologi. Kbh. (Munksgaard) 1970, 173 sider, 41 underafdelte figurer. Pris: 45 kr.

Undertiden kan en ydre foranledning og et pres afstedkomme et godt resultat. De zoologistuderende skal nu lære invertebratzoologi efter Barnes' amerikanske lærebog, men Barnes sjofler bevidst entomologien — i Amerika hedder det jo »zoology *and* entomology«. Boas-Thomsens entomologiske afsnit er for stærkt præget af veneration, Lindroths »Entomologi« fra 1967 er også gammeldags i snittet, og altså opfordrede man museets insektafdelings yngstemand, lige ansat, til at skrive en lærebog i systematisk entomologi for de studerende, der ikke skal have entomologi som hovedfag. Pres var der på, den skulle foreligge i løbet af nogle måneder, ved kursus' begyndelse!

Man ville heri kunne fristes til at søge en undskyldning, men bogen behøver ingen undskyldning. Det er et ualmindelig helstøbt arbejde, der er kommet ud af det, og en bog der i så høj grad er med på det nyeste, at man næsten taber pusten. Den har måske som lærebog en fejl, anm. også andetsteds har anket over: den er for koncentreret, for knap i stilen. At lære en bog, hvor faktisk hver sætning skal kunnes, er ingen spøg; lidt dyppelse skal der til for at få de tørre facts til at glide ned. Så anm. misunder ikke den student, der ikke selv må få lov at udtrække af stoffet, men højst få nogle indskudte sætninger med petit, som han får lov at glemme (ofte er det forøvrigt netop dem, der bliver hængende). Men sådan er tiderne nu, og forf. har måttet rette sig derefter.

Det er en helstøbt bog, præget af forf.'s uhyre viden; men den får i sit tvungne oplæg en lille smule slagside: Universitetet ønsker, at de studerende ikke-entomologer skal kende mere til de afvigende smågrupper end til de store »klassiske«, og også det har forf. naturligvis måttet indrette sig på. Men derved kommer også det for insekternes udvikling spændende frem; hovedpunkterne i insekternes udvikling kommer klarere til deres ret, når embiopterer, proturer, strepsipterer

etc. får en udførlig beskrivelse på bekostning af udviklingen inden for f.ex. sommerfugle eller biller. Der er meget, der set fra et alment zoologisk synspunkt taler for dette Universitetets krav.

Det er insekternes almene udvikling, deres fylogeni, som man har ønsket belyst i denne bog; og der er man da kommet til den rette. Forf. er morfolog og systematiker og kender sine dyr og sine principper eller rettere Hennig's! I en kort indledning, som gik i fisk og som har måttet udbedres med et indlagt blad, fremstiller han Hennig's tanker om monofyli, polyfyli og parafyli, om søstergrupper, og om oprindelige og afledede karakterer som basis for betragtninger over slægtskabsforhold. Og ved sine betragtninger inde i den egentlige text følger forf. nøje disse principper, så nøje at han måske lejlighedsvis går lidt ud over, hvad anm. helt kan goutere, som f.ex. i placeringen af termiter og zorapterer. Men atter må et meget positivt træk i bogen fremhæves: forf. er ikke dogmatiker. Sjældent finder man så redeligt gjort klart, hvis der er eller har været fremsat andre meninger; hvor man ved læsningen af Boas fik indtryk af, at problemerne var løst, får man her ethvert afvigende synspunkt loyalt refereret.

Den standende strid om de entognathe »insekter« er insekter eller absolut slet ikke, løser forf. salomonisk ved at erstatte insektbegrebet med begrebet Hexapoda, og lade Insecta kun omfatte pterygoter og thysanurer, — idet han samtidig opfatter Hexapoda som en monofyletisk enhed modsat tusindben. Indenfor Insecta holder han sig til de recente ordner, men giver dog som en mundsmag to sider om insekternes (hexapodernes) alder og nogle uddøde former. Om de enkelte ordner giver han, systematisk arrangeret, en del morfologiske og biologiske oplysninger, hvori anm. ingen fejl har kunnet finde, men hvori han tværtimod har fundet en beundringsværdig overskuelighed og fremhæven af det væsentlige.

Bogen er meget smukt illustreret af fru Grete Lyneborg. Anm. er, som bekendt, ikke begejstret for omtegnede figurer; men som det her er gjort må han udtrykke sin anerkendelse. Det er gjort med en nænsomhed, som originalfigurerne ofte må misunde de omtegnede, og hvor anm. har kunnet kontrollere, er det aldrig sket på bekostning af noget i originalen, men har skaffet billedstoffet en rolig balance. Måske de hårde og tykke pile er lidt for meget af en pegefinger, men det er jo dog altså en lærebog. At den er generøst, men usystematisk forsynet med trykfejl, må lægges presset til last. *S. L. Tuxen.*

Tillæg til Fortegnelse over Danmarks biller (Coleoptera)

Af
Victor Hansen
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Forord

Efter fremkomsten i juni 1964 af min »Fortegnelse over Danmarks biller (Coleoptera)« som bind 33 af Entomologiske Meddelelser, har jeg som planlagt (jfr. Ent. Medd. bind 34 (1965), p. 123) udsendt 6 årlige tillæg til fortegnelsen i Ent. Medd. bind 34 (1965) p. 123—124 (for året 1964) og p. 264—268 (for året 1965), bind 35 (1967) p. 218—222 (for året 1966), bind 36 (1968) p. 409—413 (for året 1967), bind 37 (1969) p. 386—388 (for året 1968) og bind 38 (1970) p. 165—169 (for året 1969). Disse årlige tillæg indeholder imidlertid — i overensstemmelse med de sidste par årtiers tradition — kun meddelelse om nye arter for vor fauna. Som ligeledes planlagt (jfr. ovenfor) udsendes derfor nu efter ca. 5 års forløb et samlet tillæg, indeholdende oplysninger også om andre fund af interesse for kendskabet til vore arters udbredelse eller om deres biologi, om nyere litteratur af betydning m. v.

De i de ovennævnte 6 tillæg opførte 35 nye arter, der også er medtaget i nærværende tillæg, mærket med en *, er følgende:

Deronectes canaliculatus Lac. . . . . p. 227
Gyrinus substriatus Steph. 228
Helophorus aequalis Thoms 228
Helophorus walkeri Sharp 228
Cephennium thoracicum M.&K. 229
Neuraphes plicicollis Reitt 229
Neuraphes minutus Chaud 229
Ptiliolum brevicolle Matth. 230
Micropeplus tesserula Curt 230
Oxytelus mutator Lohse 230
Lathrobium fennicum Renk 231

Conosoma testaceum F. 233
Thiasophila wockei Schneider 235
Euplectus kirbyi kirbyi Denny 235
Euplectus infirmus Raffr. 235
Acritus atomarius Aubé. 236
Agrilus sulcicollis Lac. 237
Attagenus longicornis Pic 238
Attagenus bifasciatus Oliv 238
Trogoderma angustum Sol. 238
Thylodrias contractus Motsch 238
Pocadius lanuginosus Franz 239
Cryptophagus postpositus Sahlb. 239
Lathridius kokujewi Semenov. 240
Enicmus anthracinus Mannh. 240
Cis jacquemarti Mell 241
Cis hanseni Strand 241
Anthicus tobias Mars. 242
Aphodius nemoralis Er. 243
Haltica tamaricis Schrank 244
Chaetocnema heikertingeri Ljub. 245
Otiorrhynchus porcatus Hbst. 245
Ceuthorrhynchus posthumus Germ 246
Ceuthorrhynchus chrysanthemi Germ 247
Ceuthorrhynchus rapae Gyll. 247

To arter udgår:

Amischa cavifrons Sharp ..... p. 233
Bagous diglyptus Boh. 246

Idet de i hovedfortegnelsen opførte danske arters antal er 3447, er der således nu (marts 1970) kendt ialt 3480 danske billearter.

Siden hovedfortegnelsens fremkomst er billebindene i »Danmarks Fauna« forøget med 6 bind: Biller XXI (Snudebiller), XXII (Træbukke), XXIII (Smældere og pragtbiller), XXIV (Sandspringere og løbebiller), og XXV (Ådselbiller, stumpbiller m. m.), hvilke bind træder i stedet for de tilsvarende tidligere bind IV, III, II, XI og V, samt endelig Biller XXVI (Andet tillægsbind).

De i hovedfortegnelsen fulgte retningslinier (jfr. dennes forord p. 5—6) er også fulgt i dette tillæg. For de i de ovennævnte 6 nye bind behandlede arter er dog som hovedregel en speciel henvisning for hver enkelt art til det nye bind anset for upåkrævet.

Tallet foran navnene angiver sidetallet i hovedfortegnelsen.

Hovedfortegnelsens »Tilføjelser og rettelser« (p. 507) er medtaget i dette tillæg.

En tak retter jeg til de coleopterologer, der har givet meddelelser om fund eller ydet mig anden bistand.

CARABOIDEA

7—8. **Cicindelidae og Carabidae.**

Se nu D.F. XXIV. Om biologi m. v. se B. Schjøtz-Christensen: Biology and population Studies of Carabidae of the Corynephoretum, Natura Jutlandica Vol. 11 (1965) og artikler smds. Vol. 12 (1966): 225—234 (*Harpalus, Bradycellus*) og Vol. 14 (1968): 127—151 (*Carabus hortensis*). Endvidere Bangsholt i E.M. 34 (1966): 207—209.

9. **Carabus intricatus.** Bokul (B).

12. **Elaphrus uliginosus.** Skallingen.

13. **Dyschirius salinus.** Ikke kendt fra Bornholm.

14. **D. angustatus.** Lynæs havskrænt.

15. **Miscodera arctica.** Strandkær på Mols: 1 eks på åben sandbund 29.6.1966 på e nlokalitet, der gennem flere år havde været grundigt undersøgt med hensyn til løbebillefaunaen, uden at denne art blev fundet; på lokaliteten levede *Byrrhus fasciatus* og *Cytilus sericeus*. Jfr. B. Schjøtz-Christensen i Fl. og F. 1967: 110.

Om larven se Johan Andersen i N.E.T. 15 (1968): 71—74.

15. **Bembidion litorale.** Om larven se Johan Andersen i N.E.T. 13 (1966): 448—450.

16. **B. nigricorne.** Rye, på en sti gennem lyngbevoksning, i antal 10.—18.5.1962 og 1963, nogle eks. 24.9.1964; Karup (1 eks.); Fasterholt ved Brande i antal på sandbund, afskrællet for lyng i forbindelse med brunkulsgravning, under jordklumper o. l., 13.8.1964, enkeltvis april 1968.

16. **B. dentellum.** Blykobbe ås udløb (B). Om larven se Johan Andersen i N.E.T. 13 (1966): 450—452.

18. l. 2—3 f.o. læs: »fugtig bund«.

19. **B. fumigatum.** Rudbøl sø vest for Tønder; Blykobbe (B).

19. **B. transparens.** Øle ås udløb (B).

19. **B. normannum.** Skallingen.

19. **B. tenellum.** Skejten ved Fuglsang (Lolland).

20. **B. humerale.** Svanemose (syd for Kolding), Sandfeld ved Brande.

21. **B. lunulatum.** Roden skov, Tissø; Sose, Rutsker.

22. **Trechus micros** og **discus.** Grejsdalen.

23. **Panagaeus bipustulatus.** Ikke kendt fra Jylland.

28. **Harpalus rufitarsis.** Strandkær på Mols; Jægerspris Nordskov; Øle å.

29. **Stenolophus skrimshiranus.** Skelsmyre.

30. **Acupalpus dubius.** Svejbæk.

33. **Amara convexior.** Ikke kendt fra Bornholm.

33. **A. famelica.** Skallingen, Trandum ved Skive.

34. **A. fusca.** Ristinge klint, Jægerspris Nordskov.

34. **A. cursitans.** Rye Nørreskov.

34. **A. quenseli var. silvicola.** Karup; Mogenstrup.

35. **A. majuscula.** Saltuna, 1 eks. på ultraviolet lys 22.7.1964.

37. **Pterostichus macer.** Røsnæs (på højtliggende, solåbent, bakket terræn oven for havstokken ved Kongstrup, under sten, træstykker, tørre kokasser o. lign. 24.4. og 7.5.1964 og 4.6.1965).

37. **Pt. augustatus.** Bredballe (4 eks. på ryddet, afbrændt skovareal, okt. 1966), Rye Nørreskov (på et åbent, ryddet bakketerræn med forkullede nåletræsstubbe, i antal okt. 1963 og maj 1964); Dyrehaven (3 eks. under forkullede træstykker, juni 1965), Gribskov (Haragerhegn), Jægerspris savværk; Dueodde.

39. **Abax ater.** Der tilføjes: »(J, Ø).«

39. **Calathus.** L. 11—12 f. o. affattes således: »Arterne overvintrer som larve og i mindre omfang også som imago.«

41. **Agonum ericeti.** Svanemose syd for Kolding, Give (nær Kærstoft å), Karup.

41. **A. dolens.** Melsted (B) (1 eks. ved Kobbeå, juni).

41. **A. lugens.** Tystrup sø.

42. **Europhilus micans.** Tystrup sø.

43. **Lebia cyanocephala.** »1879« rettes til »1870«.

43. **L. chlorocephala.** I 1. 6 indføjes efter »slutningen«: »af juli«.

43. **L. cruxminor.** »(J, Ø)« rettes til »(Ø, B)«.

44. **Demetrias imperialis.** Blykobbe, Øle å (B) (ved roden af *Phragmites,* 17.7.).

44. **Dromius longiceps.** I l. 2 f.n. rettes »kun fundet« til: »også fundet«. Nivå strand (1 eks. løbende fremme 12.9.1967).

44. **Dr. angustus.** Dueodde.

45. **Dr. marginellus.** Der foreligger nu et fund fra nyeste tid: Blykobbe plantage (B), 1 eks. banket af fyr (sammen med flere

Dr. angustus) 22.9.1965 (Bangsholt leg.).

46. **Cymindis angularis** og **vaporariorum.** Karup.

47. I l. 1 f.o. rettes »og« til: »af«.

48. **Haliplus flavicollis.** Ikke kendt fra Bornholm.

48. **H. laminatus.** Boelstrøm på Læsø, 3 eks. i en svagtrindende ferskvandsgrøft nær stranden, sammen med *H. flavicollis,* 27.7. 1967. Jfr. Ole Lomholdt i E.M. 36 (1968): 138.

50. **Coelambus confluens.** Også på Bornholm (Dueodde i en vandfyldt klitgryde).

51. **Hydroporus striola.** Der tilføjes: »(J. Ø.)«.

*53. (efter *Deronectes duodecimpustulatus).* **D. canaliculatus** Lac. (foran p. 165). Dueodde, et eks. i en vandfyldt klitgryde, 22.7.1965 (M. Holmen leg. et det., jfr. Fl. og F. 1970: 19—20). Den forekommer især i stillestående, undertiden også i langsomt rindende ferskvand; ved Düsseldorff er den en enkelt gang fundet i hundredvis i flade, ubevoksede vandpytter med ganske klart vand i gamle sand- og grushuller, sept.; dyrene sad ved vandkanten under småsten og i sandet (Horion I (1941): 400).

54. **Platambus maculatus.** Jfr. Bent Lauge Madsen i Fl. og F. 1956: 11 ff.

55. **Agabus affinis.** Ikke kendt fra Bornholm.

55. **A. nebulosus.** Også på Bornholm (Dueodde i en vandfyldt klitgryde, Hundsemyre ved Balka i en lavvandet grøft i mosen, Hammershus i en skovsø).

55. **A. conspersus.** Også på Bornholm.

56. **Rantus notatus.** Jfr. D.F. XXVI: 17.

57. **Colymbetes paykulli.** Også på Bornholm (Hundsemyre i en tørvegrav).

58. **Acilius canaliculatus.** Også på Bornholm (Bastemose i Almindingen, Ekkodalen, Skovsø syd for Hammershus, Hundsemyre ved Balka i en lavvandet grøft i mosen).

58. **Dytiscus dimidiatus.** Også på Bornholm.

59. **Cybister lateralimarginalis.** I Bøllemosen er arten i årene 1963—68 fundet flere gange i tiden 4/2—1/6, 20/8—28/8 og 29/9 —26/10, talrigst i aug.-sept., umiddelbart efter at den nye generation er kommet frem. Den overvintrer som imago, sandsynligvis på ret dybt vand, og går tilsyneladende tidligere i overvintring end *Dytiscus-arterne.* Æglægningen foregår midt i maj; den 29.6. er larven fundet talrigt i alle stadier. På den gamle lokalitet Bursø tørvegrave (Lolland) er arten flere gange senest i 1968 eftersøgt

forgæves, men i Listrup lyng nordøst for Tingsted på Falster fandtes den ret talrigt i maj 1968 i lavvandede tørvegrave, som var kransede af dunhammer. Jfr. Mogens Holmen i Fl. og F. 1969: 107—110.

59. **Gyrinus.** Jfr. Georg Ochs i Ent. Bl. 1967: 174—186. Endvidere Bent Lauge Madsen i Fl. og F. 1960: 70—76 og Bo Svensson i Opusc. Ent. 1969: 241—242.

*59. **G. substriatus** Steph. må anses for en særskilt art, jfr. Ent. Bl. 1967: 174 og 182 og D.F. XX: 189.

60. **G. caspius.** Bornholm: i en dam nær Allinge (Bo Svensson leg. et det.).

60. **Orechtochilus villosus.** Bornholm (Hammersø).

PALPICORNIA

63. **Helophorus.** Jfr. D. K. Kevan i E.M.M. 1965: 254—268, A. Strand i N.E.T. 13 (1965): 68—77 og R. B. Angus i E.M.M. 1969: 1—24 (*minutus*-gruppen).

63. **H. tuberculatus.** Dueodde.

*63. **H. aequalis** Thoms. (D.F. IX: 38 og XXVI:19) må anses for en særskilt art. Jfr. A. Strand i N.E.T. XII (1962): 33—35 og D. K. Kevan i E.M.M. 1965: 165—168.

*64. (efter *flavipes*). **H. walkeri** Sharp (D.F. XXVI: 19—20, E.M. 35 (1967): 218—219). Denne form må anses for artsforskellig fra *H. flavipes,* med hvilken den tidligere har været forenet. Jfr. D. K. Kevan i E.M.M. 1965: 259 og 261—262.

Eksemplarer foreligger fra Amager fælled 19.8.1923 (V.H. det; coll. V.H.). Den forekommer undertiden sammen med *flavipes.* I England angives *flavipes* at foretrække sure vande, *walkeri* neutrale eller alkaliske vande.

64. **H. pumilio.** Ordene »I Frankrig ... tørvemoser« udgår.

65. **Cercyon.** Jfr. H. Vogt i Ent. Bl. 1968: 172—191.

65. **C. laminatus** (D.F. XXVI: 21—22). I l. 1 rettes »E.M. 1931« til »E.M. 31 (1961—1962)«.

65. **C. ustulatus.** Også på Bornholm.

66. **C. subsulcatus Rey.** Arten bør benævnes **sternalis** Sharp (*subsulcatus* auct. nec Rey), jfr. Ent. Bl. 1968: 183—185.

67. **Cryptopleurum subtile.** I l. 1 rettes »E.M. 31« til »E.M. 32 (1963): 173«. Jfr. D.F. XXVI: 22—23.

68. **Helochares.** Vor art er **obscurus** Müll. (*griseus* Fabr.), som er artsforskellig fra *lividus* Forst. Jfr. D.F. XXVI: 23.

STAPHYLINOIDEA

69. **Staphylinoidea.** D.F.V. er nu erstattet af D.F. XXV.

69. **Silphidae.** Se nu D.F. XXV: 10—131 (herunder *Liodinae)* og 135—136 (*Leptinidae*).

73. **Choleva reitteri.** Strandkær på Mols.

74. **Catops dorni.** Grejsdalen, en han 18.7.1968 (Ole Jensen leg.).

75. **C. coracinus.** Også på Bornholm.

75. **C. neglectus.** Assendrup, 1 eks. i bøgeskov ved rester af et fugleådsel, 4.2.1967 (Ole Jensen leg.).

75. **C. subfuscus.** Assendrup, 1 eks. 22.8.1965.

75. **Sciodrepa** bør benævnes **Sciodrepoides** Hatch (Sciodrepa auct. nec Thoms.).

76. **Colon.** Jfr. D. K. Kevan i E.M.M. 1947: 249—267.

76. **C. puncticolle.** Denne form er næppe artsforskellig fra *serripes.* Jfr. D. K. Kevan i E.M.M. 1947: 254.

77. **Liodidae.** Se nu D.F. XXV: 85—130 (*Liodinae*).

77. **Liodes.** Jfr. A. Strand i N.E.T. X (1957): 119—130.

78. **L. furva.** Hansted-reservatet (i indlandsklitterne).

82. **Clambidae.** Se nu D.F. XXV: 131—135.

82. Den første *Clambus*-art benævnes nu almindeligt **punctulum** Beck (*borealis* A. Strand 1946).

82. **Scydmaenidae.** Se nu D.F. XXV: 137—162 og XXVI: 120—121.

*83. **Cephennium thoracicum** M. & K. (D.F. XXVI: 120—121). Rosenvænget, Kbh., i en have: nogle eks. ved sigtning af jord og planterester nær planterødder, især af bregner, okt.-nov. 1968 og juni 1969. Jordbunden var ikke fugtig (V.H. leg. et det.; coll. V.H. og Z.M.).

*84 (efter *elongatulus).* **Neuraphes plicicollis** Reitt. (foran p. 166). Kun fundet i Dyrehaven (Ø): 1 eks. sigtet fra gamle frønnede bøgestubbe, 15.9.1969 (V.H. leg. et det., coll. V.H.). Arten er i udlandet især fundet i svampet, frønnet løvtræved af hule stubbe eller stammer (bøg, asp, birk), men også i fyr og gran og (i Oldenburg) i tykke lag af nedfaldne fyrrenåle (ofte meget tørre) og i tuer (undertiden forladte) af *Formica rufa* (Kerstens i Ent. Bl. 1958:28).

*84. **N. minutus** (D.F. XXV: 149). Arten er nu fundet i Danmark (Ø): Bognæs Storskov (1 eks. sigtet af muld fra en gammel

hul eg, 28.8.1967), Stampeskoven (1 eks. under lignende forhold, 8.7.1968) (V.H. leg. et det.; coll. V.H.).

86. [*helwigi* rettes til: *hellwigi*.]

86. **Sphaeriidae.** Se nu D.F. XXV: 169—170.

86. **Ptiliidae.** Se nu D.F. XXV: 170—229.

87. **Ptenidium intermedium.** »Meget sjælden« ændres til »Sjælden«. Hansted skov; Vester Ulslev mose, Ermelunden.

87. **Ptilium affine.** Kohaven ved Nykøbing F.

88. **Euryptilium.** Den første art bør betegnes: **gillmeisteri** Flach (*saxonicum* auct. nec Gillm.), den anden art: **saxonicum** Gillm. (*marginatum* auct. nec Aubé). Yderligere lokaliteter for sidstnævnte art: Sundby Storskov, Dyrehaven.

*88. (efter *kunzei*). **Ptiliolum brevicolle** Matth. (D.F. XXV: 193). Dyrehaven, dels et enkelt eks. i hestegødning, 17.7.1945, dels i betydeligt antal i en kompostbunke ved Eremitagevildthuset, 27.7.—6.8.1967 (Cl. Besuchet det.; coll. V.H. og Z.M.).

89. **Pt. lederi** Flach bør betegnes **marginatum** Aubé (*lederi* Flach).

91. **Scaphidiidae.** Se nu D.F. XXV: 230—235.

*92. **Micropeplus tesserula.** Nu fundet i Danmark (Ø): Jægerspris Nordskov, 3 eks. sigtet af granaske og 1 eks. flyvende, juni 1965 (Bangsholt leg. et det.), Gribskov (Stenholtsvang) i antal ved sigtning af forkullede egestubbe og -grene, 14.—19.7.1965 (Johs. Petersen og — senere — V.H. leg. et det.). Om larven se Horion IX (1963): 2.

93. **Staphylinidae.** Jfr. K.M. bind 4 (*Micropeplinae* bis *Tachyporinae*) (Lohse, 1964).

94. **Acrolocha sulculus.** Donse, 2 eks. i hestegødning, 1.8.1965.

96. **Omalium caesum, rugatum** og **littorale.** Se D.F. XXVI: 57—60.

99. **Arpedium tenue** bør benævnes **brachypterum** Grav. (*tenue* auct. nec Lec.).

101. **Coprophilus striatulus.** »Paulian 1951« rettes til »Paulian 1941«.

102. **Thinobius.** Se D.F. XXVI: 61—63.

104. **Oxytelus rugifrons.** Jægerspris Nordskov.

*105. (efter *sculpturatus*). **O. mutator** Lohse (D.F. XXVI: 64—65). Arten har antagelig været sammenblandet med *sculpturatus*. Eks. foreligger fra Dyrehaven (i hjortegødning, maj, aug.), Lejre (i hestegødning på skovbund, juni) (V.H. det., coll. V.H.) og Kilde-

høj skov ved Nivå (1 eks. i muldvarpegang 28.7., Gunnar Israelson leg. et det.).

105. **O. fairmairei.** Ordrup mose, Strandmølleåen. Den er i udlandet undertiden fundet på fugtig bund i siv og mos, men også på sandbund (i menneskegødning).

106. **Platysthetus cornutus.** Ikke kendt fra Bornholm.

106. **Bledius spectabilis.** Jfr. D.F. XXVI: 65.

107. **Bl. diota.** Læsø i antal 6. aug.

107. **Bl. bicornis.** (J, Ø). Amager skydeterræn, 3 eks. 23.8.1964.

107. **Bl. nanus.** Lynæs i antal 26.9., sammen med *Bl. atricapillus.*

108. **Bl. dissimilis.** Lyø.

108. **Bl. erraticus.** Ristinge klint.

108. **Bl. larseni.** Gels å.

109. **Stenus.** Se D.F. XXVI: 66—69.

110. **St. excubitor** Er. var. **gallicus Fauv.** bør benævnes **gallicus** Fauv., idet *excubitor* Er. er den til underslægten *Nestus* hørende p. 112 som *rossicus* benævnte art, se nedenfor.

112. **St. rossicus.** Arten bør benævnes **excubitor** Er. (*rossicus* Bernh., *neglectus* Gerh., *silesiacus* L. Benick).

112. **St. cautus** Er. og **vafellus** Er. bør benævnes henholdsvis **europaeus** Puhtz (*cautus* auct. nec Er.) og **cautus** Er. (*vafellus* auct. nec Er.). Jfr. D.F. XXVI: 67.

113. **St. problematicus, crassus** og **formicetorum.** Se D.F. XXVI: 68.

113. **St. ibericus** bør benævnes **oscillator** Rye (*ibericus* Mach., *angulatus* L. Benick).

114. **St. solutus.** Også i Jylland: Bredballe.

117. **Stilicus geniculatus.** I udlandet fundet i kompost, hø, ukrudt i haver og på marker, i løv, mos og foderrester på skovbund, og på tør, sandet hedebund, men dog mest på fugtige steder ved kær- og bækbredder eller på mosebund i sphagnum. Forår og efterår, overvintrende som imago.

118. **Scopaeus.** Jfr. A. A. Allen i E.M.M. 1968: 198—207.

118. **Sc. minutus.** Af Horion angives arten at leve på fugtig bund: ved flod- og søbredder, i sumpområder og i ellemoser (i siv og vådt mos). I England er den især fundet på tør, gruset eller småstenet bund ved havkyster.

*120. **Lathrobium fennicum.** Arten er nu fundet i Danmark (Ø): Søskær mose ved Korsør (1 eks. 9.4.1961, Bangsholt leg. et

det.; coll. Bangsholt); Vrange skov ved bredden af Langesø (2 eks. 27.5.1965 sigtet af opskyl Korn. leg. et det.; coll. Korn.). Den lever på meget fugtig sump- og mosebund nær vandkanter i mos og planterester. Jfr. D.F. XXVI: 69—70.

120. **L. ripicola.** Arten lever på fugtig eng- og mosebund ved vandkanter (også ved rindende vand) i mos og planterester, og er også fundet i sand- og grusgrave og om vinteren i muldvarpereder.

120. **L. longulum.** Om 2 hanformer se D.F. XXVI: 70.

122. **Leptacinus formicetorum.** Om larven se A. Smetana i Reichenbachia nr. 65 (1964): 289—292.

122. **Xantholinus fracticornis.** Se D.F. XXVI: 72 og 75.

122. **X. atratus.** Ikke kendt fra Bornholm.

123. **X. laevigatus.** Coiffait har bekræftet, at *clairei* Coiff. er synonym til *laevigatus* Jacobs.

123. **X. linearis, longiventris, roubali** og **audrasi.** Se D.F. XXVI: 71—78.

125. **Philonthus addendus.** Trellesvig (Langeland).

125. **Ph. carbonarius.** Om larven se A. Smetana i Act. Soc. Ent. Cechosl. 1962: 131—134.

126. **Ph. alpinus.** Se D.F. XXVI: 79.

126. **Ph. sordidus.** Om denne og nogle nærstående arter se D.F. XXVI: 79—81.

127—128. **Ph. varians, confinis** og **pseudovarians.** Se D.F. XXVI: 81—82.

128. **Ph. jurgans.** Rosenvænget (Kbhvn), Charlottenlund (i havekompost), Dyrehaven (i kompost), Nivå strand.

128. **Ph. micans og micantoides.** Se D.F. XXVI: 82—83.

129. **Ph. puella.** Hønning plantage; Jægerspris Nordskov; Bornholm (Ekkodalen).

130. [*Gabrius toxotes.* Se D.F. XXVI: 83.]

134—135. **Quedius ochripennis** og **fulgidus.** Jfr. H. Korge i Ent. Bl. 1968: 51—52.

136. **Qu. molochinus, hispanicus** og **balticus.** Se D.F. XXVI: 84—86. Om larven til *molochinus* se A. Smetana i Act. Soc. Ent. Cechosl. 1962: 134—137.

137. [*Qu. pseudoumbrinus* antages ikke at være artsforskellig fra *umbrinus,* jfr. A. Strand i N.E.T. 14 (1967): 87.]

139. **Heterothops quadripunctulus.** Ikke kendt fra Bornholm.

139. **Acylophorus wagenschieberi.** Hjortesøle i Gadevang (Gribskov), foråret 1968 (Kornerup leg.).

140. **Mycetoporus ruficornis.** Synonymet *bimaculatus* Boisd. udgår. Der tilføjes: (J, Ø).

140. **M. baudueri** Muls. og **hellieseni** A. Strand bør benævnes henholdsvis **erichsonanus** Fagel (*baudueri* auct. nec Muls.) og **baudueri** Muls. (*hellieseni* A. Strand).

141. **Bryophacis crossicornis** rettes til **B. crassicornis.**

142. **Conosoma litoreum.** Også på Bornholm.

142. **C. testaceum** erstattes af følgende:

C. marshami Steph. (D.F. XXVI: 88). Alm. (J, Ø, B).

***C. testaceum** F. (D.F. XXVI: 88—89). Udbredt (J, Ø), men vistnok sjældnere end *marshami*, sammen med hvilken den ofte træffes. Eksemplarer foreligger fra Lindum, Skørping; Dyrehaven, Asserbo plantage.

Jfr. E.M. 35 (1967): 219—220.

142. **Lamprinodes saginatus.** Skallingen.

143. **Tachyporus scutellaris.** Også i Jylland: Rebild, 1 eks. i opskyl, 17.6.1966.

143. [*T. signifer.* Jfr. D.F. XXVI: 89.]

143. **T. pulchellus.** Uldum kær, Femmøller.

145. **Tachinus laticollis** og **marginellus.** Se D.F. XXVI: 89—90.

146. **Hypocyptus hanseni.** Se D.F. XXVI: 90.

147. **Deinopsis erosa.** Brejninge på Tåsinge.

147. **Myllaena.** Jfr. A. Strand i N.E.T. 14 (1967): 56—59 og D. K. Kevan i E.M.M. 1968: 183—187.

147. **M. gracilicornis** Fairm. og **kraatzi** Sharp bør benævnes henholdsvis **kraatzi** Sharp (*gracilicornis* auct.) og **elongata** Matth. (kraatzi auct.).

151. **Gyrophaena joyioides** (Jfr. D.F. XXVI: 91). Keldskov, Dyrehaven (i antal 25.7 i paddehatte på bøgestubbe).

152. **Placusa.** Jfr. Colin Johnson i N.E.T. 15 (1968): 90—92.

152. **Pl. tachyporoides** og **incompleta.** Se D.F. XXVI: 92.

153. **Homalota plana.** Jægerspris savværk, i antal under bøgebark, juni—juli 1969.

153. **Phytosus spinifer.** Ulfshale; Arnager (B).

155. **Bohemiellina.** Slægten bør benævnes **Aneurota** Casey (*Bohemiellina* Mach.) og arten **sulcifrons** Casey (*paradoxa* Mach.).

158. **Amischa.** Se D.F. XXVI: 93—97.

158. **A. analis** og **cavifrons.** Vort *analis*-materiale (udelukkende

hunner) rummer muligvis foruden *analis* en anden, hos os udbredt, nærstående art, hvis rette benævnelse endnu er usikker. Vort *cavifrons*-materiale (udelukkende hanner) er antagelig hanformen til *analis* eller en af de som *analis* anførte arter.

159. **A. decipiens og arata.** Hos os er der kun fundet hunner af disse to arter. Den sidstnævnte bør benævnes **soror** Kr. (*arata* Muls. & Rey, *sarsi* Munster).

159. **Atheta.** Jfr. A. Strand og A. Vik i N.E.T. XII (1964): 327 ff. (afbildninger af genitalorganerne).

161. **A. nannion.** Dyrehaven.

161. **A. subgrandis.** Se D.F. XXVI: 97—99.

163. **A. microptera.** Geelskov.

165. **A. n.sp.** Arten er nu beskrevet som **kerstensi** G. Benick, se D.F. XXVI: 99—100. I Oldenburg er arten taget i udlagt hønsegødning i nåleskov i antal juni—juli, på udlagt kaninådsel i meget tør fyrreskov 1 eks. 12.9, i menneskegødning (1eks.) og på lys (1 eks.).

165—166. **A. glabricula.** Om denne art og **glabriculoides** se D.F. XXVI: 100—102.

166. **A. trinotata.** Se D.F. XXVI: 97.

166. **A. scapularis.** Lyngsbæk på Mols, 1 eks. ketset 7.6. kl. 17.30. Også på Bornholm.

168. **A. strandiella.** Jfr. D.F. XXVI: 102—103 og 104—105.

169—170. **A. angusticollis,** formen *ravilla.* Munkeskov 1 eks. 13.10., Ryget skov 1 eks. 6.7.

179. I l. 1—2 f.o. udgår ordene: »aftenketset ... ellebuske«.

179. **Meotica.** De 2 arter nederst på siden bør benævnes: l. 5 f.n.: **apicalis** G. Benick (*exilis* div. auct. nec Er.) og l. 1 f.n.: **exilis** Er. (*exiliformis* Joy, A. Strand, Victor Hansen). Jfr. D.F. XXVI: 106.

180. **Oxypoda.** Jfr. A. Strand og A. Vik i N.E.T. 13 (1966): 169 ff. (afbildninger af genitalorganer).

182. **O. abdominalis.** De danske exemplarer er ikke den rigtige *abdominalis* Mannh., men enten *strandi* Scheerp. eller en denne meget nærstående, måske ubeskreven art.

Lokaliteten Thorsager overføres til *vicina.*

182. **O. rugulosa.** De danske eksemplarer er ikke den rigtige *rugulosa* Kr., og deres bestemmelse er indtil videre usikker (form af *brachyptera?).* Jfr. A. Strand og A. Vik i N.E.T. 13 (1966): 170—171.

*184 (efter *inquilina*). **Thiasophila wockei** S. W. Schneider (*nitescens* Fauv.) (D.F. XXVI: 107—108, E.M. 35 (1967): 220). Asserbo plantage, nogle eks. hos *Camponotus herculeanus* dels i en væltet birkestamme 22.—27.7.1965 (Johs. Petersen leg., V.H. det.; coll. Z.M.), dels i en væltet granstamme 31.5.1966 (V.H. leg et det.; coll. V.H.).

184. **Eurymniusa.** Se D.F. XXVI: 106 og 109.

185. **Aleochara.** Jfr. A. Strand og A. Vik i N.E.T. 15 (1968): 105 ff. (Afbildninger af genitalorganer).

185 og 186. **A. sparsa** og **diversa.** Jfr. D.F. XXVI: 110 om disse arter samt *stichai* Lik. og *albovillosa Bernh.* Vor som *diversa* opførte art er antagelig *albovillosa* Bernh.

185. Efter navnet **moesta** tilføjes: Grav.

186. Om den **lanuginosa** nærstående art *peeziana* Lohse se D.F. XXVI: 110—111.

187. **A. verna** Say. Se D.F. XXVI: 111.

187. **Pselaphidae.** Se nu D.F. XXV: 235—289.

188. **Euplectus bohemicus** bør benævnes **bescidicus** Reitt. (*bohemicus* Mach.).

*188 (efter *nanus*). **E. kirbyi kirbyi** Denny (D.F. XXV: 249). Sjælden (Ø). Fundet for mange år siden talrigt i barkblandet gødning omkring drivkasser i haver i København. Enkeltvis i Dyrehaven, sigtet fra bark og ved af gammel bøg, 1961—1968. Måske er den hos udbredt som, men langt sjældnere end, **nanus.**

*188 (efter *signatus*). **E. infirmus** Raffr. (D.F. XXV: 250). Meget sjælden (Ø). Charlottenlund skov (1 eks. sigtet fra en muldvarperede, april), Dyrehaven (nogle eks. sigtet enkeltvis eller fåtalligt fra gamle løvtræer, bl. a. hule ege, 1 eks. fra savsmuld ved en bøgestub, 1 eks. under en i skovbunden liggende gammel træsvamp, juli—okt.). Besuchet og V.H. det.; coll. V.H. I udlandet bl. a. fundet under egebark og i muld af gamle ege, i græskompost i have og enkeltvis ved ketsning.

188. **E. falsus** bør benævnes **fauveli** Guill. (*falsus* Bedel, *tomlini* Joy). Jfr. D.F. XXV: 252.

188. **E. punctatus.** Lokaliteterne Charlottenlund og Dyrehaven udgår. Jfr. D.F. XXV: 252—253.

189. **Bibloporus.** Jfr. W. O. Steel i E.M.M. 1963: 49—51.

189. **B. hoeglundi** bør benævnes **minutus** Raffr. (*hoeglundi* Palm). Jfr. D.F. XXV: 261—263. Tisvilde hegn (1 eks. i birkestub, Kornerup leg. et det.).

189. **Bibloplectus spinosus.** Skanderborg sø.

189. **B. ambiguus.** Skanderborg sø, Silkeborg, Ørnsø.

190. **Brachygluta helferi.** I l. 5 rettes »maj—juni« til: »april—sept.«. Thurø rev, Kølholm i Roskilde fjord.

190. **B. hanseni** bør benævnes **paludosa** Peyr. (*hanseni* Besuchet).

191. **Bryaxis** Leach ændres til **Rybaxis** Saulcy, **Bythinus** Leach til **Bryaxis** Kug. og **distinctus** Chaud. (*macropalpus* Aubé) til **macropalpus** Aubé (*distinctus* Chaud.).

192. **Claviger longicornis** er nu på Røsnæs fundet i stort antal, maj 1964.

192. **Histeridae.** Se nu D.F. XXV: 289—339.

*194 (efter *nigricornis*). **Acritus atomarius** Aubé (foran p. 166). Kun fundet i Dyrehaven (Ø): nogle eks. sigtet fra en gammel, frønnet bøgestub med *Dorcus*-angreb og bo af *Lasius niger,* 15.—17.9.1969 (V.H. leg. et det., coll. V.H.). Arten er i udlandet fundet i mørt ved af bøg, eg og poppel, ofte sammen med *Lasius brunneus,* og i mørt elmeved med *Dorcus*-angreb (E.M.M. 1951:59).

194. **Saprinus cuspidatus** bør benævnes **planiusculus** Motsch. (*cuspidatus* Ihssen).

195. **Pachylopus maritimus.** Læsø (ved Østerby havn).

198. **Hister bissexstriatus.** Efter navnet *bissexstriatus* tilføjes: Fabr. Det er usikkert, om arten er fundet på Bornholm.

DIVERSICORNIA

199. **Dictyopterus aurora.** Jægerspris Nordskov.

200. **D. cosnardi.** Jægerspris Nordskov.

200. **Platycis minuta.** Keldskov, 3 eks. ketset 22.8.1964 kl. 16,15—17,15, 1 eks. dagen efter på en brændestabel kl. 15,30.

202. **Cantharis annullaris.** Blykobbe, Almindingen, Bølshavn.

202. **C. rufa var. darwiniana.** Hansted reservatet.

202. **C. cryptica.** Tisvilde.

203. **Rhagonycha limbata.** Iflg. Gunnar Dahlgren i Ent. Bl. 1968: 103 er denne form en nordlig var. af **femoralis** Brulle.

204. **Malthinus biguttulus.** Ikke kendt fra Bornholm.

205. **Malthodes spathifer.** Ikke kendt fra Bornholm.

211. **Laricobius erichsoni.** Korselitse, Bøtø; Bornholm (Ekkodalen).

211. **Sternoxia.** Se nu D.F. XXIII.

211. **Elateridae.** Se nu D.F. XXIII: 7—96, 131—157.

212. l. 3 f.n. »Huster« læs: »Husler«.

213. **Elater sanguineus.** Stensbæk, 3 eks. i en på jorden liggende, rødmuldet fyrregren, 3.6.1962 (Ole Jensen leg., jfr. E.M. 35 (1967): 350).

214. **E. balteatus.** Også på Bornholm.

214. **E. erythrogonus.** Draved skov, i eks. i den øverste tørre del af en rødmuldet ellestub sammen med mange *nigrinus,* 24.5. 1964 (Ole Jensen leg; jfr. E.M. 35 (1967): 350).

215. **Ischnodes sanguinicollis.** Om larven se D.F. XXIII: 149.

216. **Hypnoidus pulchellus var. arenicola.** Dueodde.

216. **Cardiophorus.** Om larven se T. E. Leiler i Sv. E. T. 1967: 89—109.

219. **Athous mutilatus.** Jfr. Stig Lundberg i Sv. E.T. 1963: 247.

220. **Corymbites pectinicornis.** Også på Bornholm.

224. **Denticollis linearis.** Også på Bornholm.

224. **Eucnemidae.** Se nu D.F. XXVIII: 96—103, 158—162.

225. **Throscidae.** Se nu D.F. XXVIII: 103—107, 162.

226. **Throscus carinifrons.** Ryget skov, Jægerspris Nordskov.

226. **T. obtusus.** Alsø skov n. f. Vester Ulslev, 1 eks. 9.7.1901 (coll. Zool. Mus.).

226. **Buprestidae.** Se nu D.F. XXIII: 107—130, 163—170.

226. **Dicerca moesta.** Efter »*moesta*« tilføjes: Fabr.

*229. **Agrilus sulcicollis** Lac. (*elongatus* Hbst.) (D.F. XXIII: 121, E.M. 34 (1965): 123—124). Arten er nu fundet i Danmark (Ø) (først konstateret af Bangsholt). Donse (1 eks. 5.6.1964), Gribskov (Kagerup og Storkevad, 1 eks. 14.6.1952, 1 eks. 7.6.1960, 5 eks. 2.6.1961), Jægerspris Nordskov (2 eks. 13.6.1960 og 30.5.1961, nogle imagines og pupper i og under bark af en fældet eg 5.6.1969, 3 eks. (et på brombærblomster, to på udgåede egegrene) 25.6. 1969). Arten er knyttet til eg og fundet fra maj til juli, især på stammer, på skud af nylig fældede træer og på afhuggede grene. Larven lever under og i barken af grene, stammer og stubbe og især i unge egeplanter, på hvilke den undertiden har gjort stor skade i udlandet. I Sverige er den især fundet i tørt egeved med ru egebark, f. eks. hegnspæle, afbrækkede grene af gamle træer og endvidere på roden stående træer, der er døde som følge af brand eller oversvømmelse. Forpupning i splinten eller barken, udviklingstid 1 år eller under ugunstige vejrforhold 2 år. Larven er undtagelsesvis også fundet i bøg.

229. **Trachys minutus.** Geelskov.

229. **T. nanus.** Også fundet i Jylland: Helgenæs (M. Rudkjøbing).

237. **Dermestes szekessyi.** Jfr. D.F. XXVI: 24—25.

*237. **Attagenus longicornis** Pic (D.F. XXVI: 25, E.M. 34 (1964): 124). Fundet synantropt i Herlev i boliger dec. 1963 og jan. 1964.

*237. **A. bifasciatus** Oliv. (D.F. XXVI: 26, E.M. 34 (1966): 264). Fundet synantropt i en bolig i Søborg (Kbh.) (bl.a. i en fåreskindsforligger) maj—juni 1965.

*239. (efter *T. granarium*). **Trogoderma angustum** Sol. (D.F. XXVI: 26). Et enkelt eks. (♀), bestemt af Mroczkowski, er fundet i en beboelseslejlighed i Hellerup 13.6.1959. Arten, der stammer fra Amerika, har bredt sig og er bl. a. fundet synantropt i Tyskland, Polen, Finland og Sverige. Den har gjort skade i insektsamlinger. Imago undertiden i haver på blomster af *Spiraea*.

*240 (efter *Trinodes hirtus*). **Thylodrias contractus** Motsch. (D.F. XXVI: 24, 26—27). Denne art, der er beskrevet fra Persien, og som er fundet kosmopolitisk bl. a. i Rusland, U.S.A., Canada og i nyeste tid også i England og Tyskland (Hamburg), er nu også fundet synantropt hos os: Valby, i en beboelseslejlighed, okt. 1964, aug. og okt. 1967 og aug. 1968; imagines klækkede i Statens Skadedyrslaboratorium om foråret. Larven lever antagelig mest af døde insekter og skal være optrådt som skadedyr i museer. Larven angives også at snylte på kakerlakker, jfr. Horion IV (1955): 187.

241. **Byrrhus arietinus.** Arten har vist sig at være udbredt, og fund foreligger bl. a. fra Gribskov, Rørvig og Lumsås.

245. **Meligethes.** Jfr. K. M. bind 7 (1967, Spornraft): 31—49 (med forskinnebens- og aedeagus-tegninger).

245. [*M. hebes* bør benævnes *denticulatus* Heer (*hebes* Er.).]

245. **M. lumbaris** bør benævnes **flavimanus** Steph. (*lumbaris* Sturm).

247. **M. picipes** bør benævnes **nigrescens** Steph. (*picipes* Sturm).

247. **M. flavipes.** Bølshavn (Bornholm) i stort antal på *Symphytum officinale*, 7.6.

248. **M. lugubris** og **gagatinus.** Jfr. D.F. XXVI: 32, 33—34.

249. **Epuraea.** Jfr. K.M. bind 7 (1967, Spornraft): 51—64 (med skinnebens- og aedeagus-tegninger).

250. **E. rufomarginata.** Også på Bornholm (Rø).

252. **E. laeviuscula.** Løvenholt 2 eks. aug. 1901.

*254. (efter l. 2 f.o.). **Pocadius lanuginosus** H. Franz (foran p. 167). Arten har været sammenblandet med *P. ferrugineus*. Den er beskrevet af Franz i 1969 fra Østrig, hvor den er udbredt, og er senere konstateret bl. a. i Hamburgegnen og i Oldenburg. Danske eks. foreligger fra Rugballegård, Marselisborg skov; Lolland og Dyrehaven (J, Ø). Antagelig hos os udbredt som *ferrugineus*. Jfr. H. Franz i Ent. Bl. 1969: 146—148.

254. **Cyllodes ater.** De 2 sidste linier affattes således: »der svampet bark af løvtræer, især bøg og ahorn, og ofte også ved andre svampe.«

254. **Glischrochilus quadripunctatus.** Også på Bornholm.

255. **Rhizophagus ferrugineus.** Skallingen; Dueodde, Blykobbe.

256. **Rh. parallelocollis.** Også på Bornholm.

258. **Silvanus bidentatus.** Dyrehaven, 1 eks. under bark af en fældet eg, 26.5.1951.

259. **Uleiota planata.** Jægerspris savværk, i antal under bøgebark, 13.7.1968 og juni—juli 1969 (Bangsholt leg.).

261. **Combocerus glaber.** Der tilføjes: Maj—juli, sept.

262. **Diphyllus fagi.** Dyrehaven.

263. **Henoticus serratus.** Jægerspris savværk, i antal under bøgebark med grøn skimmelsvamp, 13.7.1968 og juni—juli 1969 (Bangsholt leg.).

263. **Cryptophagus.** Jfr. Coombs & Woodroffe i Trans. Royal Ent. Soc. London, 106 (1955): 237—282; K.M. bind 7 (1967, Lohse): 116—137 (begge med tegninger af pronotum og aedeagus).

264. **Cr. badius.** Også på Bornholm.

*265. **Cr. postpositus** (D.F. XXVI: 35—36). Nu fundet i Danmark: Rosenvænget (Kbh.), i gamle *Polyporus sulphureus* svampe på eller ved foden af et gammelt æbletræ, sept.-okt. 1966 og 1968 (J. Th. Skovgaard leg., V.H. det., teste Woodroffe; coll. V.H.).

266. **Cr. westi** bør benævnes **falcozi** Roub. (*westi* Bruce).

267. **Caenoscelis.** D.F. XXVI: 37—39.

267. **C. ferruginea.** I l. 1 rettes »271« til: »221«. Arten er nu også fundet i Jylland: Sønderhav strand, 1 eks. i en hul elm, 10.7.1965.

267. **C. grandis** bør benævnes **fleischeri** Reitt. (*grandis* Thoms.). Rosenvænget (Kbh.), 1 eks. sigtet fra svamp (*Polyporus sulphureus*) ved et gammelt æbletræ.

267. **Atomaria.** Jfr. K.M. bind 7 (1967, Lohse): 140—157.

267. **A. barani.** Se D.F. XXVI: 39—40.

269. **A. ornata.** Også på Bornholm.

269. **A. nitidula.** Rudbølsø. Også på øerne (Sundby Storskov, Krenkerup park, Tystrup sø).

270. **A. clavigera.** Jfr. D.F. XXVI: 41. Bognæs Storskov, 1 eks. sigtet fra gammel eg, 28.8.67.

271. **A. gibbula** Er. Vor art er ikke *gibbula* Er., men den meget nærstående **rubricollis** Bris.

272. **Olibrus baudueri.** Femmøller, Hansted-reservatet (i indlandsklitterne); Ærø (Trappeskov).

273. **Corylophidae.** Se nu D.F. XXV: 162—168.

*274 (efter *Lathridius angusticollis*). **L. kokujewi** Semenov (D.F. XXVI: 41, 44, 45, E.M. 36 (1968): 409—410).

Arten har været sammenblandet med *angusticollis*. Begge arter er antagelig udbredt. De foreligger fra følgende lokaliteter:

angusticollis. Mange steder i Jylland (fra Sønderborg til Århusegnen); på Lolland-Falster (f. eks. Frejlev, Redsle) og på Sjælland f. eks. Holte-egnen, Jægerspris).

kokujewi. Østbirk; Svenstrup ved Borup st., Lyngby-Åmose, Geelskov (banket af granris), Strandmølleåen nær Hjortekær (sigtet af planterester), Bøllemosen, Kratmosen ved Trørød.

275. **L. bergrothi.** Også på Bornholm.

*275. **Enicmus anthracinus** Mannh. (D.F. XXVI: 42—43, 45—47, E.M. 36 (1968) 410—413). Dyrehaven: sigtet af kompost ved vildthusene, i antal sammen med *minutus*, men ikke nær så talrig som denne.

275. **E. nidicola.** D.F. XXVI: 42, 46, E.M. 36 (1968): 410—413.

275. [*E. pseudominutus*. D.F. XXVI: 43, 46, E.M. 36 (1968): 410—413.]

276. [*Cartodere separanda*. Se D.F. XXVI: 48—49.]

282. **Anommatus duodecimstriatus.** Rosenvænget (Kbh.), nogle eks. ved sigtning af svamp og planterester, okt. 1968, maj—juni 1969.

285. **Cynegetis impunctata.** I l. 2 rettes »1940« til: »1949«.

286. **Scymmus auritus.** Også på Bornholm.

287. **Sc. bisignatus.** Jægerspris Nordskov, på en sandskrænt.

287. **Hyperaspis pseudopustulata.** Tisvilde (1 eks. 1.6.1903).

289. **Coccinella duodecimguttata.** Der tilføjes: Maj—sept., i antal bl. a. først i juli og sidst i aug.

290. **C. hieroglyphica.** Arten er endnu ikke med sikkerhed konstateret på Bornholm.

290. **C. bipunctata.** I l. 2 udgår ordet »mere«.

291. **Sphindus dubius.** Dyrehaven.

291. **Cisidae.** Jfr. K.M. bind 7 (1967, Lohse): 280—295.

291. **Cis.** Jfr. D.F. XXVI: 50—56 og E.M. 34 (1966) 264—267.

291. l. 6 f.n. — 292 l. 2 f.o. erstattes af følgende:

nitidus Hbst. Alm. (J, Ø, B). Især i tøndersvamp (*Fomes fomentarius*).

***jacquemarti** Mell. Alm. (J, Ø). Især i tøndersvamp, ofte sammen med *nitidus*.

[*glabratus Mell.* Fundet bl. a. i Hamburgegnen i tøndersvamp, men meget sjældnere end de to foregående. I Norge har den overvejende en sydlig og østlig udbredelse og er vistnok kun fundet i *Polyporus marginatus* (*pinicola*) på gran.. Den angives at foretrække bjergegne.]

***hanseni** A. Strand. Hidtil kun kendt fra Sundby Storskov og fra Dyrehaven, hvor den er taget i antal i meget gamle, møre, nedfaldne tøndersvampe, 10.6.—2.7.1956 og 15.5—31.5.1965 (A. Strand det., V.H. leg; coll. V.H. og Z.M.).

lineatocribratus Mell. Meget sjælden (Ø) og hidtil kun fundet på Sjælland: i ældre tid ved Sorø (7 eks. april 1848 og sept. 1878) og i Bognæs Storskov (7 eks. i tøndersvamp 5.8.1878), og i nyere tid i Jægerspris Nordskov (nogle eks. i tøndersvamp på en gammel, liggende birkestamme, 12. og 14.6.1965).

292. **C. comptus.** Storkevad i antal i svampen *Daedalea unicolor* på en stående, udgået birkestamme, 6.6.1964. Formen *substriatus* kan næppe opretholdes som var. eller ab.

292 (efter *boleti*).

[*rugulosus* Mell. (D.F. XXVI:55). Denne art har været sammenblandet med *boleti,* med hvilken den stemmer overens i levevis. Den antages at være udbredt i Mellemeuropa og er bl. a. fundet i Hamburgegnen og i Småland.]

292. **C. pygmaeus** bør benævnes **vestitus** Mell. (*pygmaeus* Nyholm nec Marsh.).

293. [*C. rhododactylus* bør benævnes *pygmaeus* Marsh (*rhododactylus* Marsh., Nyholm). Jfr. D.F. XXVI: 55.]

293. **C. fusciclavis** bør benævnes **castaneus** Mell. (*fusciclavis* Nyholm).

293. **C. punctulatus.** Dyrehaven.

301. **Gibbium.** Navnet **psylliodes** rettes til: **psylloides.** Århus: Imagines og larver i en havestue 14.8.1966.

302. **Ptinus dubius.** Bøtø plantage.

302. **Pt. fur.** Også på Bornholm.

HETEROMERA

304. **Nacerda melanura.** Også på Bornholm (Randkløve).

304. **Chrysanthia viridis.** Regnemark Huse (Ø. f. Ringsted).

305. **Oedemera virescens.** Endnu ikke kendt fra Bornholm.

307. **Pyrochroa coccinea.** Også på Bornholm.

308. **Aderus populneus.** Grønholt hegn, 1 eks. 7.5.1964. I England er arten fundet i antal i ugleredestof i en hul ask, 16.9.

308. **A. pentatomus** Thoms. Det danske eksemplar er ikke *pentatomus* Thoms., men **brevicornis** Perris (Gunnar Israelson det.; coll. V.H.). Jfr. G. Israelson i Ent. Scand. 1970: 21—29 og A. A. Allen i E.M.M. 1969: 164. I stedet for angivelserne om levevis i l. 2—4 indsættes: I udlandet fundet på gammel bøgestub, i gnav under bøgebark, under elme- og fyrrebark, og ved ketsning under og bankning af eg.

309. **Anthicus bifasciatus.** I l. 3 rettes »undtaget« til: »udlagt«.

*309. (efter l. 5 f.n.). **Anthicus tobias** Mars. (D.F. XXVI: 28, 29). Jægerspris savværk, nogle eks. under bark på liggende bøgestammer juli 1968 og aug. 1969 (Bangsholt leg., V.H. det.), Stampeskov, i kompost, i antal 12.—13.9.1969 (V.H. leg.). Arten er beskrevet fra Lilleasien og har i nyere tid bredt sig over Europa. Den er i udlandet fundet i kompost, i affaldsbunker på lossepladser, under sten og under muggent sækkelærred. Den er meget livlig og tager let til vingerne; undertiden taget ved ketsning eller flyvende, især måske henad aften.

313. **Anaspis bohemica.** Skallingen, i antal 5.—16.6.

316. **Caridina triguttata.** Karup.

321. **Bolitophagus reticulatus.** Jægerspris Nordskov.

321. **Eledona agaricola.** Vemmetofte.

LAMELLICORNIA

325. **Scarabaeidae.** I l. 5 efter »117—127« indføjes: »og 181—192«.

326. **Onthophagus vacca.** Kongstrup på Røsnæs, 2 eks. i frisk kogødning, 4.6.1965.

327. **Typhoeus typhoeus.** Rom hede ved Lemvig, 23.5.1963.

328. **Aphodius quadriguttatus.** Kongstrup på Røsnæs, 4 eks. 23.5. og 4.6.1965 på og i frisk kogødning (Ole Martin leg.). Jfr. D.F. XXVI: 9—10.

329. **A. conspurcatus.** Jfr. D.F. XXVI:8. Grejs, på høj, åben, til løvskov grænsende sandbund: dels i hestegødning (24.10: fåtallig sammen med få *pictus* og mange *prodromus,* 6.11: talrig sammen med få *pictus,* men ingen *prodromus*), dels enkeltvis i fåre- og kogødning.

329. **A. obliteratus.** I l. 1 rettes »(Ø)« til: »(J)«.

*331. **A. nemoralis** Er. (D.F. XXVI: 7—8). Nu fundet i Danmark: Tisvilde hegn, 1 eks. 1.10.1965 sigtet af planterester (V.H. det.; coll. V.H.). Jfr. E.M. 34 (1966): 267—268.

332. **Psammobius asper.** Lynæs.

336. **Osmoderma eremita.** Charlottenlund park, 1 eks. på en eg, 29.9.1965.

PHYTOPHAGA

339. **Cerambycidae.** Se nu D.F. XXII. Om sexual behavior se Axel Michelsen i E.M. 34 (1966): 329—355.

340. **Spondylis buprestoides.** Jægerspris Nordskov; Dueodde, Gudhjem.

340. **Tetropium castaneum.** Også på Bornholm.

340. **T. gabrieli.** Ganløse Egede (nær Buresø) imagines, pupper og larver i antal under bark af fældede lærkestammer, 8.6.1969.

341. **Gracilia minuta.** I l. 6 rettes «309« til: »307«.

343. **Pachyta lamed.** Jægerspris Nordskov 1 ♂ på en skærmblomst, juli 1963.

344. I l. 5 f.o. indføjes efter »Kr. og S«: »I: 83 og«.

347. **Molorchus minor.** Også på Bornholm.

347. **M. umbellatarum.** Også på Bornholm (Melsted).

348. **Phymatodes testaceus.** I l. 4 ændres »juli« til »juni«, og i l. 7 tilføjes: Boas 1923: 376—377, Trägårdh 1939: 47—48.

349. **Xylotrechus rusticus.** Ved Buresø, nær Ganløse Egede, 1 eks. flyvende 8.6.1969 (H. Friis Jensen leg.).

350. **Anaglyptus mysticus** var. **albofasciatus.** Nørreskov ved Furesø.

350. **Lamia textor.** I l. 7 indføjes efter »jorden«: »fra maj«.

350. **Monochamus sutor.** Også på Bornholm: Sømarken, 1 eks. 27.7.1958.

351. **M. galloprovincialis** Oliv. ændres til **titillator** Fabr. Arten hører hjemme i Nordamerika. Jfr. D.F. XXII: 116.

351. **Oplosia fennica.** Arten er genfundet i nyeste tid: Fuglsang park, Lolland, 2 eks. banket af liggende løvtræsgrene, 27.6. og 4.7.1964.

352. **Acanthocinus aedilis.** Også i Jylland (Vejers plantage, maj 1959) og på Bornholm (Dueodde).

355. **Tetrops praeusta.** Jfr. D.F. XXII: 145—147 og A. Strand i N.E.T. 15 (1968): 47—48.

356. l. 13 f.o. og 17 f.n. »**sagittaefolia**« ændres til »**sagittifolia**«.

358. **Orsodacne cerasi.** Roden skov i antal på blomstrende hvidtjørn 8.6.1957.

358. **Zeugophora scutellaris** var. **frontalis.** Stensbæk og Dalgas plantager, Melgårde; Jonstrup vang.

359. **Crioceris duodecimpunctata.** Jægerspris Nordskov.

361. **Cryptocephalus biguttatus.** Draved skov (3 eks. ketset på klokkelyng 6.6.1964 kl. ca. 17), Jenskær ved Gedsø, Svanemose syd for Kolding. På sidstnævnte lokalitet var arten fremme i antal 12.6.1966 og 18.7.1967 en halv times tid sidst på eftermiddagen i varmt, stille vejr, krybende på klokkelyng enkeltvis eller i parring; lokaliteten var bevokset med hede- og klokkelyng og enkelte mindre birke og omgivet af høje birke. Se Ole Jensen i E.M. 35 (1967): 27.

364. **Chrysomela quadrigemina.** Svejbæk Færgegård 1 eks. på lyng- og mosklædt sandbakke.

369. **Phyllodecta atrovirens.** Frøslev mose, Dalgas plantage.

371. **Galeruca laticollis.** Herlev, Jægerspris Nordskov.

373. **Phyllotreta.** Jfr. K.M. bind 9 (1966, K. H. Mohr): 208—214.

374. **Ph. cruciferae, atra** og *diademata.* Jfr. D.F. XXVI: 15.

375. **Longitarsus.** Jfr. A. strand i N.E.T. XII (1962): 25—26; K.M. bind 9 (1966, K. H. Mohr): 220—230; D.K. Kevan i E.M.M. 1967: 83—110 (alle med afbildninger af aedeagus, Kevan tillige af spermatheca).

375. **L. exoletus.** Ikke kendt fra Bornholm.

376. **L. suturellus.** Ikke kendt fra Bornholm.

376. **L. kutscherae.** Lokaliteten Hansted-reservatet udgår.

378. **Haltica aenescens** Weise. Vor art er **lythri** Aubé.

*378. (efter *aenescens)* **H. tamaricis** Schrank (D.F. VII: 197 og XXVI:14). Nu fundet hos os på Bornholm: Dueodde i antal (begge køn) på pil 2.8.1963 (G. Israelson leg.), 1 eks. ♂ 2.7.1963 (M. Rudkjøbing leg.).

378. **H. oleracea.** Arten lever også på *Calluna vulgaris. Haltica-*

eksemplarer, fundne på denne plante, vil derfor kunne være enten *oleracea* eller *britteni;* de kan for hunnernes vedkommende være meget vanskelige at adskille, medens penis-forskellen gør hannerne lette at bestemme.

*381 (efter *concinna).* **Chaetocnema heikertingeri** Ljub. (D.F. XXVI: 11 og 12—13, E.M. 35 (1967): 220—222). Arten, der er beskrevet fra Sibirien, har vist sig at være udbredt i Mellemeuropa, og er formodentlig udbredt hos os, men antagelig sjældnere end *concinna.* Eks. foreligger fra Eisbøl, Rugballegård; Saltø skov, Damhusmosen og Geelskov, marts, juni, sept. I Sverige forekommer den ofte sammen med *concinna,* som den ligner til forveksling, og de to arter, der er fundet talrigst i juni og aug., klækkes sikkert om eftersommeren med overvintring som imago; *heikertingeri* er fundet på meget forskelligartede lokaliteter og lever måske, ligesom *concinna,* især på *Rumex* og *Polygonum;* ved en enkelt lejlighed er de begge banket i antal af *Sisymbrium officinale* og *heikertingeri* af *Carduus.*

383. **Dibolia rugulosa.** Den under dette navn opførte art er **cynoglossi** Koch. Arten er hos os og i England fundet på *Galeopsis* og har utvivlsomt ingen tilknytning til *Cynoglossum.*

RHYNCHOPHORA

388. **Rhynchophora.** Se nu D.F. XXI.

389. **Anthribus albinus.** Hals Nørreskov.

390. **Choragus.** Se D.F. XXI: 19—20, Kymorek i Ent. Bl. 1963: 151—161, Palm i Sv. E.T.1964: 42—43.

391. **Otiorrhynchus dubius.** Ullerup ved Thisted, 1 eks. 28.4. 1889.

*391. (efter *scaber*). **O. porcatus** Hbst. (D.F. XXVI: 114—115). Grejsdalen i en have (1 eks. krybende fremme 25.8.1968, i antal forsommeren 1969 ved planterødder især af *Primula,* Ole Jensen leg.); Rosenvænget (Kbh.) i en have, nogle eks. ved planterødder, især af bregner, og på undersiden af udlagte skiferplader (*Primula* fandtes ikke på lokaliteten), maj—juni 1969 (V.H. leg.). Arten, der tidligere især er fundet i bjergegne, er måske ved at brede sig og er fundet bl. a. i Hamburg og Holsten.

391. **O. singularis.** Arten har undertiden gjort skade på ædelgranpodninger.

396. **Polydrosus cervinus.** Også på Bornholm.

397. **Barypithes mollicomus.** Også i Jylland (Grejs).

402. **Lixus iridis.** Hareskov, Ryget skov, Jægerspris Nordskov.

406. **Limobius borealis.** Randkløve (B.).

408. **Pissodes.** Se D.F. XXI: 134—140.

409. **Magdalis.** Om larven til *ruficornis* og *violacea* se B. Lekander i Sv. Ent. Tidskr. 1967: 123—129.

409. **M. carbonaria.** Også på Bornholm.

409. **M. memnonia.** Hjarbæk, Lindum skov, Læsø.

409. **M. frontalis.** Også fundet i Jylland (Stensbæk plantage).

409. **M. violacea.** Jægerspris Nordskov i stort antal på birk, maj—juni.

410. **M. exarata.** Efter artsnavnet tilføjes: Bris.

410. **M. barbicornis.** Hals Nørreskov; Jægerspris Nordskov.

411. **Cossonus parallelepipedus.** Bredballe.

412. I l. 6 f.n. rettes »*elongatulus*« til »*elongatus*«.

414. **Bagous.** Jfr. D.F. XXI: 174—190; Dieckmann i Ent. Bl. 1964: 88—111.

415. **B. lutulosus.** Jægerspris.

416. **B. diglyptus** og **curtus.** *B. diglyptus* kan vistnok ikke anses som en selvstændig art, men kun som en form af *curtus,* jfr. D.F. XXI: 186—187. Af hovedformen *curtus* er 5 eks. fundet ved Sletterhage fyr, nedfaldne i et lille sandhul på meget tør bund, 6.5. 1962 (M. Rudkjøbing leg.). Var. *diglyptus* er også fundet på Bornholm.

416. **B. lutulentus.** I l. 3 rettes »L.« til »E.)

419. **Thryogenes festucae.** Også på Bornholm.

419. **Thr. nereis.** »*Heleocheris*« rettes til »*Heleocharis*«.

424. [*Ceuthorrhynchus rhenanus.* I l. 2 tilføjes efter »Skåne«: »på *Thlaspi arvense*)«.]

424. *[Ceuthorrhynchus hampei.* I l. 4 erstattes »I Skåne på *Thlaspi arvense*« af: »I Stockholm-egnen på *Berteroa incana*«.]

424. **C. posthumus** Germ. ændres til: **C. pumilio** Gyll. (D.F. XXI: 242). Af lokaliteter kan nævnes: Fanø, Rugballegård, Thorsager, Femmøller, Vrist klit; Ristinge, Sandbjerg ved Holte.

*424 (efter *pumilio).* **C. posthumus** Germ. (D.F. XXI: 242). Arten har været sammenblandet med *pumilio* og er antagelig udbredt som denne, hos os dog måske noget sjældnere (J, Ø). Af lokaliteter kan nævnes: Rugballegård; Fruens Bøge, Geelskov, Ørholm. Levevis antagelig som *pumilio,* sammen med hvilken den undertiden forekommer.

424. **C. pollinarius.** Også på Bornholm.

425. **C. millefolii.** Også på øerne: Vodrup klint (Ærø) 1 eks. 24.8.1961 (Bangsholt leg. et det.).

*425. **C. chrysanthemi** Germ. Denne form må, bl. a. på grund af tydeligt afvigende aedeagus-form, anses for en særskilt art, jfr. D.F. XXI: 257, ændret ved D.F. XXVI: 115—116. Genfundet ved Tankefuld (ved Svendborg), i antal på *Artemisia vulgaris,* 12.8.1967.

427. **C. pleurostigma.** Jfr. foran p. 167—169.

427. [*C. roberti.* Formen *alliariae* Bris. lader sig ikke ved ydre kendetegn med sikkerhed adskille fra hovedformen, idet fødderne farve er varierende hos begge former, men anses nu af Strejcek (Ent. Blätter 1961: 161—162) for en særskilt art på grund af noget afvigende penisform. Jfr. iøvrigt foran p. 167—169]

*427. **C. rapae** (D.F. XXI: 266 og foran p. 167—169). Nu fundet os på Læsø: 3 eks. nær klitplantagen 27.7.1969, vistnok på raps (*Brassica napus*). (Bodil Noe-Nygaard leg. et det.).

429. **C. chalybaeus** og **thomsoni** er i udlandet fundet på *Thlaspi arvense,* larven til den førstnævnte i stængelgaller.

430. **C. sulcicollis.** Nexelø.

435. **Anthonomus pedicularius.** Også på Bornholm.

437. **Elleschus scanicus.** Keldskov, friskklækkede eks. i stort antal på unge bævreaspe, 22.7.1969 (V.H. leg.). Endvidere Smørmosen (2 eks. på bævreasp 7.6.1965) og Lille Hareskov ved Hyrebakken (2 eks. 3.8.1969 på bævreasp) (O. Kristensen leg.).

438. l. 13 f.o. »*penistae*« rettes til »*genistae*«.

438. **Tychius schneideri.** Hald Ege.

442. **Miarus graminis.** Hjarbæk; Sejrø.

443. **Cionus tuberculatus.** Ikke kendt fra Bornholm.

443. **Rhynchaenus rufus.** Hals Sønderskov.

444. **R. decoratus.** Frøslev mose.

446. **Apion fuscirostre.** Om larven se J. R. Parnell i E.M.M. 1964: 85—87.

446. **A. dissimile.** Jægerspris Nordskov; Arnager.

447. **A. interjectum.** Bornholm (Hammeren).

447. **A. assimile.** Også på Bornholm.

447. **A. filirostre.** Ganløse, Lynæs, Jægerspris Nordskov.

448. **A. columbinum.** Høppet v.f. Gerup skov, i antal på *Lathyrus silvestris* ved en vejkant (H. Gønget leg. et det.) 13.6.1966, 25.6. og 10.8. 1967. I juni fandtes overvintrede og friskklækkede imagines samt larver og pupper (i sammenrullede blade) og i aug. friskklækkede, overvejende udhærdede imagines.

448. **A. meliloti.** Kongstrup klint (Røsnæs). Også på Bornholm (Nexø havn).

449. **A. minimum.** Spodsbjerg.

449. **A. seniculus.** Også på Bornholm.

450. **A. sedi.** Også i Jylland (Helgenæs).

452. **A. penetrans.** Vodrup klint (Ærø), Lynæs.

452. **A. armatum.** Vodrup klint (Ærø), Klinteby klint, v.f. Karrebæksminde.

452. **A. aeneum, radiolus** og **rufirostre.** Også på Bornholm.

452. **A. flavofemoratum.** Hov hede s.v. for Ålestrup i antal juni 1968 (H. Gønget leg. et det.).

452. **A. pallipes.** Ikke kendt fra Bornholm.

453. **A. vicinum.** Af subsp. *origani* Planet (D.F. XXI: 439) er et eks. fundet ved Mogenstrup. Den lever på *Origanum vulgare.*

454. **Rhynchites cupreus.** I l. 3 ændres »Imago« til: »larven«.

456. **Scolytidae.** Om larverne se B. Lekander: Scandinavian bark beetle larvae (Dep. For. Zool. nr. 4) 1968 og Sv. E.T. 1968: 25—34.

456. **Scolytus ratzeburgi.** Også på Bornholm (Åker plantage).

456. **Sc. scolytus.** Vejrhøj.

456. **Sc. intricatus.** Også på Bornholm (Ekkodalen).

457. **Leperisinus fraxini.** I l. 6 rettes »E.M.M.1959« til: »E.M.M.1958«.

458. **Hylastes ater.** Yderligere lokaliteter: Frøslev plantage, Feldballe, Nystrup klitplantage; Ulfshale, Geelskov, Tisvilde; Blykobbe, Dueodde.

464. **Pityophthorus pubescens.** Dueodde.

Forkortelser

K.M. = Die Käfer Mitteleuropas af Freude, Harde og Lohse.

Horion med et efterfølgende romertal = A. Horion: Faunistik der deutschen Käfer.

Iøvrigt henvises til hovedfortegnelsen p. 468 (Forklaring til forkortelserne).

Summary

Thirty five new Danish Coleoptera, captured in the years 1965—69, are listed and new information on many rare Danish species is given. Two species formerly recorded as Danish are striked from the Danish list. The total number of known Danish Coleoptera is 3480 (March 1970).

Litteratur

De litteraturcitater, der er givet i dette tillæg under de enkelte familier, slægter eller arter, er ikke medtaget her.

Endvidere henvises til hovedfortegnelsen p. 469—474 (Litteratur) og til litteraturcitaterne i de enkelte bind af Danmarks Fauna.

F. Bangsholt: Bidrag til kendskabet til Bornholms billefauna. E.M. 34 (1965): 125—133.

Danmarks Fauna, udgivet af Dansk Naturhistorisk Forening. København. Biller.

VI. Lamellicornia af Victor Hansen og K. Henriksen. 1926.

VII. Chrysomelidae og Lariidae af Victor Hansen og K. Henriksen. 1927.

VIII. Dytiscidae og Gyrinidae af Victor Hansen og K. Henriksen. 1930.

IX. Palpicornia af Victor Hansen og K. Henriksen. 1931.

X. Malacodermata, Brachymera m.v. af Victor Hansen og Sv. G. Larsson. 1938.

XII. Heteromera af Victor Hansen og Sv. G. Larsson. 1945.

XIII. Clavicornia I af Victor Hansen. 1950.

XIV. Clavicornia II og Bostrychoidea af Victor Hansen. 1951.

XV. Staphylinidae 1. del af Victor Hansen. 1951.

XVI. Staphylinidae 2. del af Victor Hansen. 1952.

XVII. Staphylinidae 3. del af Victor Hansen. 1954.

XVIII. Scolytidae og Platypodidae af Victor Hansen og B. Beier Petersen. 1956.

XIX. Almindelig del af Victor Hansen og Sv. G. Larsson. 1957.

XX. Første tillægsbind af Victor Hansen. 1958.

XXI. Rhyncophora af Victor Hansen og Sv. G. Larsson. 1965.

XXII. Cerambycidae af Victor Hansen og Sv. F. Larsson. 1966.

XXIII. Elateridae, Buprestidae m. v. (Sternoxia) af Victor Hansen og K. Henriksen. 1966.

XXIV. Cicindelidae og Carabidae af Victor Hansen og Sv. G. Larsson. 1968.

XXV. Silphidae, Histeridae m. v. af Victor Hansen. 1968.

XXVI. Andet tillægsbind af Victor Hansen. 1969.

Die Käfer Mitteleuropas af Heinz Freude, Karl Wilhelm Harde og Gustav-Adolf Lohse:

Bd. 1. Almindelig del. 1965.

Bd. 4. Staphylinidae I (Micropeplinae bis Tachyporinae). 1964.

Bd. 7. Ostomidae bis Cisidae. 1967.

Bd. 8. Lyctidae bis Lucanidae. 1969.

Bd. 9. Cerambycidae bis Chrysomelidae. 1966.

Freude, se Die Käfer Mitteleuropas.

Handbooks for the identification of British Insects Vol. IV, Part 1 (Introduction and key to families, 1956, af R. A. Crowson), Part 3 (Hydrodephaga, 1953, af F. Balfour-Browne), Part 6 (a) (Clambidae,

1966, af C. Johnson), Part 8 (a) (Staphylinidae (part.), 1954, af C. E. Tottenham), Part 9 (Pselaphidae, 1957, af E. J. Pearce), Part 10 (Histeroidea, 1963, af D. G. H. Halstead). — Vol. V, Part 5 (b) (Phalacridae, 1958, af R. T. Thomson), Part 7 (Coccinellidae and Sphindidae, 1951, af R. D. Pope), Part 9 (Lagriidae-Meloidae, 1954, af F. D. Buck), Part 11 (Scarabaeoidea, 1956, af E. B. Britton), Part 12 (Cerambycidae, 1952, af E. A. J. Duffy), Part 15 (Scolytidae and Platypodidae, 1952, af E. A. J. Duffy).

Victor Hansen: Danmarks Fauna, se ovenfor.

— : Tillæg til fortegnelsen over Danmarks biller for årene 1964—1969. Ent. Medd. bind 34, p. 123—124 og 264—268, bind 35, p. 218—222, bind 36, p. 409—413, bind 37, p. 386—388 og bind 38, p. 165—169.

— : Danmarks Fauna, Biller. Et tilbageblik og et blik fremefter. Ent. Medd., bind XXVIII (1958) p. 161—168.

Harde, se Die Käfer Mitteleuropas.

Kai L. Henriksen, se Danmarks Fauna VI—IX og XXIII.

A. Horion: Faunistisk der deutschen Käfer.

Bd. I: Adephaga, Caraboidea. 1941. Wien.
Bd. II: Palpicornia, Staphylinoidea (ausser Staphylinidae) 1949. Frankfurt a.M.
Bd. III: Malacodermata, Sternoxia. 1953. München.
Bd. IV: Sternoxia, Fossipedes, Macrodactylia, Brachymera. 1955. Tutsing bei München.
Bd. V: Heteromera. 1955. Tutsing bei München.
Bd. VI: Lamellicornia. 1958. Überlingen Bds.
Bd. VII: Clavicornia 1, 1960. Überlingen Bds.
Bd. VIII: Clavicornia 2. Teredilia, Coccinellidae. 1961. Überlingen Bds.
Bd. IX: Staphylinidae 1 (Micropeplinae bis Euastethinae). 1963. Überlingen Bds.
Bd. X: Staphylinidae 2. Paederinae bis Staphylininae, 1965. Überlingen Bds.
Bd. XI: Staphylinidae 3. Habrocerinae bis Aleocharinae (ohne Subtribus Athetae). 1967. Überlingen Bds.

Landin, se Svensk Insektfauna nr. 27 og 35.

Sv. G. Larsson, se Danmarks Fauna X, XI, XIX, XXII og XXIV.

Lindroth, se Svensk Insektfauna nr. 27 og 35.

Lohse, se Die Käfer Mitteleuropas.

Palm, se Svensk Insektfauna nr. 38 og 48—51.

B. Beier Petersen, se Danmarks Fauna XVIII.

M. Rudkjøbing: Tilføjelser og rettelser til listen over billefund i Hansted-reservatet. E.M.34 (1966) 277—278.

Spessivtseff, se Svensk Insektfauna nr. 28.

Svensk Insektfauna, udgivet af Entomologiska Föreningen i Stockholm. 9. Coleoptera.

Nr. 27. Heteromera af Carl H. Iindroth 1933.
- 28. Scolytidae af H. Spessivtseff. 1925.
- 35. Carabidae af Carl H. Lindroth (2. oplag). 1961.
- 38. Staphylinidae 1 af Thure Palm. 1948.
- 46. Lamellicornia af B.-O. Landin. 1957.
- 48. Staphylinidae 2 af Thure Palm. 1961.
- 49. Staphylinidae 3 af Thure Palm. 1963.
- 50. Staphylinidae 4 af Thure Palm. 1966.
- 51. Staphylinidae 5 af Thure Palm. 1968.

Navneregister

Navne, der findes i hovedfortegnelsens navneregister, p. 475—506, er ikke medtaget her, medmindre særlige grunde gør sig gældende.

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Rhypholophus affinis Lundbeck, 1898, from Greenland; redescription and lectotype designation (Diptera: Tipulidae)

By
Bo Tjeder
Zoological Institute, Lund, Sweden

The Danish dipterologist Will. Lundbeck described in 1898 in "Diptera Groenlandica" the new species *Rhypholophus affinis* and figured its right wing. This figure indicates that the species is an *Ormosia* Rond. s. str. (*Rhypholophus* Kol. is nowadays regarded as another subgenus of *Ormosia*). Lundbeck states that the species is "not scarce but hitherto not captured north of 61° 45' N". He enumerates the following localities: Tunugdliarfik-Fjord, Ivigtut, Sermiligarssuk-Fjord and Neria-Fjord, all situated on the western coast of southernmost Greenland. The species seems not to have been dealt with in later papers and its identity was until now unknown.

I am indebted to Dr. S. L. Tuxen, Copenhagen, for the loan of one ♂ of the type series and give the following supplementary notes and figures of the genital structures. The specimen carries the label "Type" (in Lundbeck's handwriting) but lacks locality label. I have designated the specimen as lectotypus of *Rhypholophus affinis* Lundbeck and labelled it accordingly.

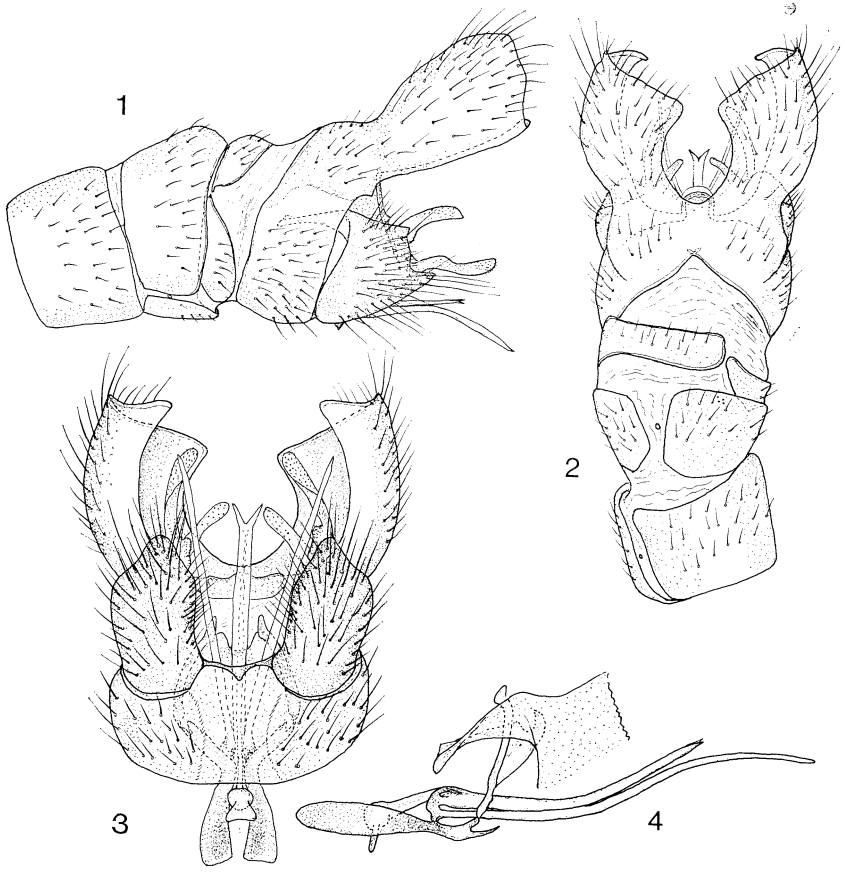
Redescription. Size: length of forewing 4 mm.

Head brown with yellowish brown, 4-segmented palpi and yellowish brown, short antennae; the flagellar segments are narrow and elongate, about 2½ times as long as broad (not pear-shaped as in many species). The head carries long hairs as do also the palpi and the antennae, the verticils of the flagellar segments being very long, several times as long as the segments.

Thorax brownish. Prescutum unstriped, with whitish paratergites (projecting strips at side of prescutum) and with dorso-

lateral rows of long and erect yellowish brown hairs. Hair tufts of pteropleura white. Wings with venation as figured by Lundbeck. Halteres brownish. Legs yellowish brown, long and slender, with pale, almost golden yellow hairs.

Abdomen yellowish brown with sparse golden yellowish hairiness, dense only on the basistyles (coxites) which are dark brown. The hypopygium is very large, owing to the immense size of the 9th tergite which, caused by the torsion of the apical part of the abdomen is situated ventrally. This tergite is prolonged backwards as shown in figs. 1 and 2 and has a central very deep ovate incision.



Figs. 1—4. *Ormosia affinis* (Lundbeck, 1898), lectotypus ♂. 1. Apex of abdomen, lateral. — 2. Ditto, ventral, showing the 9th tergite and the torsion of the distal segments. — 3. Hypopygium, dorsal, more enlarged. — 4. Aedeagus structures and part of basistyle, lateral.

The prolongations on each side of this incision are convex with inwardly curved lateral portions as shown in figs. 2 and 3. The 9th tergite and sternite are fused, with only faintly indicated lateral dividing-lines. The lower margins of the tergite fuse apically into a transverse plate-like structure which is directed into the space between the basistyles where it broadens and forms a transverse dark-pigmented structure carrying the proctiger. The basistyles are shaped as illustrated in figs. 1 and 3 and are fused by a transverse strip-like structure which carries a median tooth, visible also in lateral view (fig. 1). The dististyles are elongate, pale and have a number of extremely minute setae. The outer dististyle has a broader basal part. Penis very long and pale, its extreme apex bifid. Parameres extremely long and narrow, quite pale. The complicate aedeagus-structures are shown in figs. 3 and 4. They are by means of a pair of rod-like structures attached to the forwards directed edges of the basistyles which in a curve are fused with one another. The mentioned rods are distally broadened into a large hook as shown in fig. 4. This hook is vertical and therefore not distinct in dorsal view. The vesica (ejaculator) is small and globular and has an apodeme, shaped as indicated in fig. 3.

Lundbeck says that the thorax has three brown stripes but also that these stripes are sometimes indistinct "interdum indistinctis". The available ♂ lacks stripes and may belong to one of his specimens in which they are "indistinct". Dr. Tuxen informs me that also all the other specimens of the types series (1 ♂, 10♀♀) lack dark stripes on the thorax.

Dr. Charles P. Alexander of Amherst, Mass., who has seen the now published figures informs me that he considers that the species is the same as the wide-spread North-American *O. manicata* (Doane, 1900). I am grateful to him also for a slide preparation of a specimen (from a Californian locality) as well as new data of its distribution for inclusion in this paper. These are: *Nova Scotia:* Economy Mountain, Colchester County, June 13, 1965, Alexander leg. and *Newfoundland:* Logy Bay, August 1961, Ray Morris leg. The species name given by Lundbeck has priority. Hence:

Ormosia (s.str.) affinis (Lundbeck, 1898)

Rhypholophus affinis Lundbeck, 1898, Dipt. Groenl., Vidensk. Medd. nat. hist. For. Copenhagen, p. 266, Pl. vi, f. 17.

Rhypholophus manicatus Doane, 1900, Journ. N.Y. Ent. Soc., 8:187, pl. 7, f. 17 (New synonymy)

Ormosia modica Dietz, 1916, Trans. Am. Ent. Soc., 42: 141, f. 7, 7A.
» *deviata* Dietz, 1916, ibid. 42:143, f. 9, 9A.
» *stylifer* Alexander, 1919, Insecutor Inscitiae Menstruus, 7:146.
» *fuscopyga* Alexander, 1924, Proc. U.S. Nat. Mus., 64 (10): 3.
» *subdeviata* Alexander, 1924, Philipp. J. Sci., 24:586.
» *manicata:* Alexander, 1942, Bull. Conn. St. Geol. Nat. Hist. Surv., 64:470. — Id. 1965, Cat. Dip. north of Mexico: 86, — Id. 1967, Bull. Calif. Ins. Surv., 8:145, f. 490.

(The species *O. modica, deviata, stylifer, fuscopyga* and *subdeviata* were enumerated by Alexander as synonyms of *O. manicata* in the above-mentioned paper of 1967).

Locus typicus (restricted): Greenland, Ivigtut. — Type: a male in the collections of the Zoological Museum, Copenhagen.

Geographical distribution: Greenland; Newfoundland, Nova Scotia, Quebec, Ontario, British Columbia; Washington, Oregon, California, eastward to the northeastern United States; Japan (Saghalien).

Systematik der Mittel- und Nordeuropäischen Bombus und Psithyrus (Hym., Apidae)

Von
K. Fæster (†) und **K. Hammer**
Zoologisches Museum, Kopenhagen

Ingenieur K. Fæster hatte, als er starb, diese Arbeit über die nordeuropäischen Arten von *Bombus* und *Psithyrus* fast vollendet. 1968 wurde mir die Fertigstellung und endliche Nachprüfung der Arbeit übertragen, und ich habe mich überall, wo ich konnte, an Fæsters Stil gehalten, und nur geändert, wo ich persönlich nicht für die Beobachtungen einstehen konnte.

Ebenso habe ich Fæsters Einteilung des *Bombus* in *Anodontobombus* und *Odontobombus* und die Untereinteilung in »Artsgruppen« beibehalten, denn obwohl diese keine klare, systematische Definition haben, können sie bei der Bestimmung sehr nützlich sein.

Ich danke dem Carlsberg-Fond für Unterstützung während der Arbeit und für die Drucklegung. Ferner danke ich Dr. phil. S. L. Tuxen für die Durchlesung des Manuskriptes. Einen Dank richte ich auch an Herrn William O'Brian, der die Figuren gezeichnet hat.

Tribus **BOMBINI**

Umfasst die Genera *Bombus* Latr. (sozial) und *Psithyrus* Lep. (parasitär, ohne Arbeiter).

Grosse haarige Bienen mit 3 Cubitalzellen in den Vorderflügeln. Dadurch gekennzeichnet und von allen übrigen Bienen unterschieden, dass 1. Cubitalzelle durch eine undeutliche, dünne und bleiche faltenartige der Costa winkelrecht gestellte Ader geteilt wird (Fig. 1).

Weibchen: Klaue sichelförmig gebogen mit grossem nach innen gekrümmtem Nebenzahn. Mandibel schaufel- oder breit lanzettförmig, blank mit deutlichen Leisten. Unterrand ohne Borstenver-

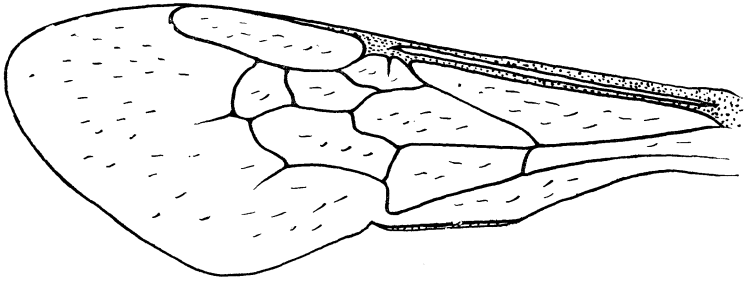


Fig. 1. Vorderflügel × 12½.

brämung. Kopfschild fast unbehaart. Fühler (Schaft mitgerechnet) 12-gliedrig, 6 sichtbare Hinterleibssegmente.

Männchen: Klaue gerade, schmal parallelseitig, an der Spitze gabelförmig gespalten (bifid). Mandibel ganz schmal, ohne Leisten. Unterrand (*pomorum* ausgenommen) mit dichter Verbrämung aus langen gekrümmten Borsten. Kopfschild ± dicht behaart. Fühler 13-gliedrig, 7 sichtbare Hinterleibssegmente.

Trennung von *Bombus* und *Psithyrus*. ♀♂

Abstand zwischen dem Hinterrand des Kopfes und dem Nebenaugenkomplex etwas bis viel grösser als dessen totale Breite (am besten wahrzunehmen mit dem Licht in der Richtung vom Hinterkopf her). *Die Punktierung der Stirn oberhalb des Netzauges und seitlich der Nebenaugen höchstens mit schwacher Einmischung von feinen Punkten, eben so grob und eben so gleichartig wie die Punktierung unterhalb der Nebenaugen.* Wange kürzer oder höchstens za. 1½ mal länger als das Mandibelgelenk. Vordere Hälfte des 2. Sternits oft plateau-artig gehoben oder mit Querwulst. Hinterleib ohne federartig verästelte Haare ..... *Psithyrus*

Abstand zwischen dem Hinterrand des Kopfes und dem Nebenaugenkomplex kürzer, in der Regel viel kürzer als dessen totale Breite, falls grösser (*hortorum*-Gruppe) ist gleichzeitig die Wange viel (2—2½ mal) länger als Gelenk. *Die Punktierung oberhalb des Netzauges und seitlich der Nebenaugen mit stärkerer Einmischung von feinen Punkten, und weit unebenartiger als die Punktierung unterhalb der Nebenaugen.* 2. Sternit höchstens mit schwach angedeutetem Querwulst. Hinterleib mit oder ohne federartig verästelte Haare ..... *Bombus*

Genus **Bombus** Latr.

Historisches.

Die Artsbestimmung macht bekanntlich innerhalb dieser Gattung erhebliche Schwierigkeiten. Weniger bei den Männchen, wo

die äusseren Genitalien, wenn gewünscht, gute Kennzeichen darbieten können. Was die Weibchen und besonders die Arbeiter betrifft, so haben die Arten ein, von der wenig verschiedenartigen Morphologie bedingtes, recht ebenartiges Gepräge. Hierzu kommt, dass innerhalb der einzelnen Arten eine ± starke Neigung zum Variieren der Farbe der Behaarung auftritt und zu den Beschwerden beiträgt. Nichts-desto-weniger hat man sich bis in die Gegenwart in den systematischen Schlüsseln hauptsächlich auf die Farbenkennzeichen gestützt. So auch in Schmiedeknechts hervorragender Arbeit, — September 1930. E. Krüger suchte jedoch in seiner grossen Arbeit Sept. 1920 das Gewicht auf das Verhältnis zwischen Länge und Breite des Kopfes zu legen und hat bei der Abmessung dieses Verhältnisses der Arten eine kolossale Arbeit geleistet. Ein Blick auf seine Tafeln muss doch davon überzeugen, dass diesem »Index« zufolge ganz allmähliche Verschiebung von Art zu Art jedenfalls als differenzialdiagnostisches Hilfsmittel wertlos sein muss. Hierzu kommt, dass dieser Index als Durchschnitt von Messungen an Weibchen hervorgegangen ist und auf die weniger charakteristisch entwickelten Arbeiter nicht übertragen werden kann. Von wissenschaftlich entscheidender Bedeutung ist dagegen Krügers Beobachtung mit Bezug auf die Gestaltung der hinteren Apicalecke der Metatarse des Mittelbeins (spitz oder stumpf), auf welche er seine Einteilung in *Odontobombus* und *Anodontobombus* gründete. Es wird durch diese Zerteilung der grosse Vorteil erreicht, dass eine etwaig vorliegende Art entweder unter *Odontobombus* oder *Anodontobombus* hinzuführen sein wird und damit zugleich mit den ihr verwandten Arten zusammengestellt wird. Diese Teilung Krügers ist meines Erachtens eine unumgängliche Voraussetzung dafür, eine einigermassen übersichtliche Systematik der Gattung zu erreichen. Dieses grundlegende Merkmal ist an wohlerhaltenen Exemplaren und mit Hilfe der in der vorliegenden Arbeit angeführten stützenden Kennzeichen bei den Weibchen nicht zu verkennen, bei den Arbeitern ist es oft schwieriger (beim Präparieren muss darauf Rücksicht genommen werden, dass die Metatarse wahrnehmbar ist).

Die Männchen, auf welche das Merkmal nicht verwendbar ist, lassen sich ohne Hinblick auf die Genitalien mittels anderer guter morphologischer Kennzeichen merkwürdigerweise mit oft grösserer Sicherheit, als die Weibchen, zu der einen oder anderen dieser Gruppen hinführen, was anscheinend der Aufmerksamheit Krügers entgangen ist.

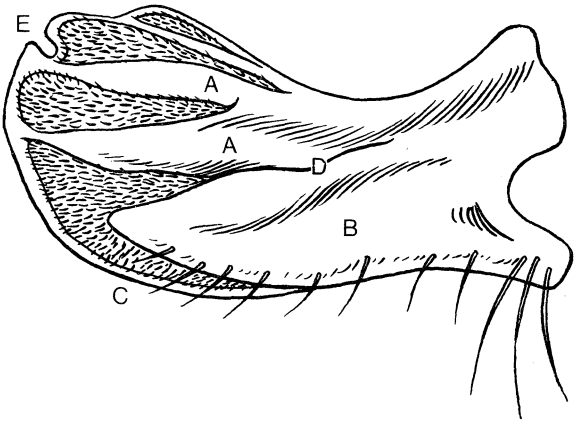


Fig. 2. Linke Mandibel × 50. A) Gabelige Leiste, B) Transversalvulst, C) Untere Querleiste, D) Schiefe Furche, sulcus obliquus und E) Einkerbung am Vorderrand.

Morphologie.

Bei den Männchen ist es (abgesehen von äusseren Genitalien, die aus prinzipiellen Gründen hier gar nicht verwendet werden)*) besonders die Form und Länge der Fühlerglieder und die Ausbildung des Analsternits (7. Sternit), die von Bedeutung ist. Bei den Weibchen (worunter, wenn nicht ausdrücklich bemerkt, auch die Arbeiter miteinbegriffen sind) ist es Form und Skulptur der Oberlippe und der Mandibel, die von Bedeutung ist. Die Oberlippe (Fig. 10) hat beiderseits einen ± hervortretenden Seitenhöcker und zwischen diesen eine Mittelgrube. An ihrem Unterrand findet sich in dessen ganzen Länge eine schmale Randlamelle, die in der Regel deutlich in ein Mittel- und zwei Seitenläppchen geteilt ist.

Die Mandibel (Fig. 2) ist ihrem Oberrande entlang von einer Leiste begrenzt, die sich ungefähr halbwegs zwischen Gelenk und Vorderrand gabelförmig teilt (gabelige Leiste), am Unterrand entlang von einer breiteren, distal glatten Leiste (untere Querleiste). Zwischen diesen erstreckt sich eine breite, distal zugespitzte ± punktierte flache Wulst (hier Transversalwulst genannt), die den Vorderrand nicht erreicht und proximal in die Basalfläche der Mandibel übergeht. Zwischen dem Transversalwulst und der gabeligen Leiste verläuft eine schmale tiefe

*) Bezüglich der Morphologie dieser Organe wird auf Schmiedeknecht 1882—84, Krüger 1920 und Pittioni 1937 verwiesen.

Furche; zwischen dem Transversalwulst und der unteren Querleiste eine Furche, die in der Mitte der Mandibel schräg gegen den Unterrand gerichtet und ± verwischt ist (»Schiefe Furche«, Sulcus obliquus auct.). Die grössere oder geringere »Deutlichkeit« dieser »Schiefen Furche«, die als Artskennzeichen von Verfasser auf Verfasser bis auf die heutige Zeit treulig vererbt in den Schlüsseln auftritt, ist meines Erachtens als Kennzeichen ohne jeden Wert. Bei Länge der »Wange« ist der Abstand zwischen Netzauge und Oberkiefergelenk im Verhältnis zu dessen Höhe zu verstehen. Es ist eins der brauchbarsten Kennzeichen, es darf aber nicht vergessen werden, dass es wie alle anderen innerhalb einer und derselben Art variieren kann — und immer bei den Arbeitern verhältnismässig kürzer als bei Weibchen und Männchen ist. Als Differenzialkennzeichen darf dieses Verhältnis deshalb so weit möglich nur dann Verwendung finden, wenn es bei vorliegenden Arten augenfällig verschieden ist. Das Analsternit (6. Sternit) des Weibchens ist halbkegelartig abgerundet oder ± dachförmig mit oder ohne Längskiel, der zuweilen leistenartig hervortritt und dann ein gutes Kennzeichen abgeben kann. Bekanntlich ist es ein Spezialkennzeichen aller Bienen, dass die Haare federartig verästelt sind. Dieses Verhältnis, da ja gewissermassen als morphologisch betrachtet werden kann, ist doch ± hervortretend. So bei *Bombus,* wo dieses Verhältnis an den zwei vorletzten Tergiten, besonders am Hinterrand entlang und an den Seiten, wahrzunehmen ist. Die Haare sind hier entweder sehr schwach und höchstens am Grunde etwas federartig verästelt oder sie sind bis zur Spitze oder fast bis zur Spitze stark und augenfällig federartig verästelt, was nur bei *Odontobombus* der Fall ist (*pomorum*-Gruppe samt *mucidus* und *ruderarius der agrorum*-Gruppe ausgenommen)*). Bei wohlerhaltenen Exemplaren, wo die Behaarung nicht abgenutzt oder verklebt ist (Vergrösserung 25—50 mal) ist es in beiden Geschlechtern ein Kennzeichen grössten Wertes.

Das Adernetz im Vorderflügel ist nur selten als Kennzeichen verwendbar (*hypnorum*-Gruppe). In vereinzelten Fällen, wo alles andere versagt, können zuweilen sehr spezielle morphologische Verhältnisse in Betracht kommen, z. B. die Krümmung der Klaue *lapponicus*-Gruppe (Fig. 15, 16). Im Allgemeinen wird in Betracht der verwendeten Termini bemerkt, dass, wenn nichts spezielles

*) Diese accessorische Behaarung ist zuweilen äusserst fein und dicht, das Haar in dessen ganzen Länge ringsum bekleidend, so z.B. *subterraneus*-gr.

angeführt wird, mit »Thorax« dessen Behaarung auf der Oberseite gemeint ist. Mit »Hinterleibsspitze« wird 4. und 5. (beim Männchen 4.—6.) Tergit bezeichnet. Wie schon eingangs erwähnt, wird bei der Anzahl der Fühlerglieder der Schaft mitgerechnet (so ist z: B. das 4. Fühlerglied das 3. Geisselglied.)

Art und Artskennzeichen.

Der Artscharakter besteht aus einem oder mehreren so weit wie möglich festen Einzelcharakteren, die die Art eindeutig kennzeichnet. Diese Einzelkennzeichen müssen, wenn möglich, morphologischer Art sein (z. B. *B. pomorum*-Gruppe, ♀ und ♂). Als morphologisches Kennzeichen kann gewissermassen die Art der Behaarung betrachtet werden: z. B. sind die Haare von gleicher Länge, die Behaarung daher samtartig (wie geschoren), oder die Haare sind von ungleicher Länge; die Behaarung kann struppig oder angedrückt sein, die einzelnen Haare können kurz, grob, lang, dünn, am Ende plözlich zugespitzt oder allmählich verjüngt sein oder auch (als Einmengung, besonders am Kopf) ganz kurz und ± daunenartig verästelt. Auch die Färbung (dunkel oder hell) der Behaarung des Analtergits kann als besonderes Artskennzeichen herbeigezogen werden (z.B. schwarz bei *equestris*-♂ und *terrestris*-♀, — hell bei *silvarum*-♂ und *soroeensis*-♀). Die Färbung im Übrigen ist teils recht eintönig, teils innerhalb gewisser Arten vielfach variierend, in beiden Fällen als Artskennzeichen wenig geeignet. Eine Ausnahme bildet die *lapponicus*-Gruppe, bei welcher die Färbung des Hinterleibs immer innerhalb eines so festen und eigentümlichen Schemas erscheint, dass diese Gruppe dadurch charakterisiert wird. Anderseits kann die Farbe der Behaarung bei im Übrigen morphologische identischen Arten so konstant verschieden sein, dass es annäherungsweise eine Geschmackssache wird, wie weit diesem Unterschied Artswert zuzuschreiben ist. Solche Formen sind *consobrinus* und *gerstäckeri* im Verhältnis zu *hortorum* und die beiden erstgenannten zu einander, *argillaceus* zu *ruderatus, elegans* zu *pomorum, decipiens* zu *lapidarius* und *nigrescens* zu *silvarum.*

Die innerhalb der einzelnen Arten durch alle möglichen Zwischenstufen verbundene mehr oder wenig starke Variation der Farbe der Körperbehaarung hat zur Errichtung einer Unmenge von benannten »Varietäten« Anlass gegeben. In der vorliegenden

Arbeit sind nur die am meisten überraschenden oder befremdenden dieser Formen erwähnt.

Artsgruppen.

Bestimmungsschlüssel wie die in der vorliegenden Arbeit müssen rein praktisch erstreben, so schnell und sicher wie möglich das Ziel zu erreichen. Demgemäss ist eine möglichst systematische gruppenmässige Teilung des Materials erwünscht; leider scheint aber bei der bisherigen Aufteilung der Gattung vorzugsweise eine möglichst weitgehende Zertrümmerung dieser an sich engverbundenen Formengruppe in »Untergattungen« von systematisch höchst ungleichem Wert erstrebt gewesen, wobei jede grosszügigere Gruppierung der Arten aus dem Auge gelassen worden ist. »Untergattungen« sind im Wesentlichsten oder allein auf die Gestaltung der äusseren Genitalien der Männchen aufgestellt. Diese Organe können unwidersprechlich Arts- und Gruppenkennzeichen wertvollster Art leisten. Es scheint mir jedoch, dass diesen Organen als systematischem Charakter betrachtet im Verhältnis zu anderen morphologischen Kennzeichen ein fundamentaler, fast mystischer Wert beigemessen wird. Die Auffassung, dass die Morphologie dieser Organe von grosser Bedeutung als Hindernis artsfremder Kopulation wäre, ist wohl längst verlassen.*) Die Unhaltbarkeit dieser Auffassung müsste allein aus der Tatsache hervorgehen, dass der morphologische Unterschied bei den einander nahestehenden Arten, innerhalb welcher dieser Unterschied ja von besonderer Bedeutung sein müsste, am geringsten ist. Die morphologische Gestaltung dieser Organe ist als geschlechtlich bedingtes Kennzeichen von sekundärer Bedeutung, parallell z.B. zu den eigenartigen Bildungen der Fühlergeisseln und der Beine bei den Männchen mancher Hymenopteren. In der vorliegenden Arbeit habe ich es vorgezogen, von den Genitalien der Männchen ganz abzusehen, weil sie für die Artsbestimmung der Männchen keineswegs notwendig sind und für die Bestimmung der Weibchen ja ohne Bedeutung bleiben müssen. Ausserdem ist das Auspräparieren der Organe zeitraubend.

Statt der rigoristischen Bezeichnung »Untergattung« für solche Gruppen, in welche die Arten ± willkürlich verteilt werden können und deren systematischer Wert doch immer von sehr ungleicher Wucht bleiben muss, habe ich die weniger anspruchsvolle »Artsgruppe« vorgezogen.

*) Vergl. auch Vogt, Sitzungsber. Ges. naturf. Freunde Jahrg. 1909 pag. 67.

Es folgt unten eine Liste meiner »Artsgruppen« mit den herkömmlichen »Untergattungen« zusammengehalten.

Artsgruppen:	Undergattungen:
Sectio *Odontobombus*	
agrorum	*Agrobombus* Vogt, *Mucidobombus* Vogt
pomorum	*Pomobombus* Vogt
subterraneus	*Subterraneobombus* Vogt
hortorum	*Hortobombus* Vogt
Sectio *Anodontobombus*	
mastrucatus	*Alpigenobombus* Skor.
terrestris	*Bombus* s.str. auct.
lapidarius	*Lapidariobombus* Vogt
lapponicus (*lapponicus, alpinus*)	*Pratobombus* Vogt part., *Alpinobombus* Skor. part.
balteatus (*balteatus, hyperboreus*)	*Alpinobombus* Skor. part.
soroeensis (*soroeensis, cullumanus*)	*Soroeensisbombus* Vogt, *Cullumanobombus* Vogt
vorticosus (*vorticosus, mendax, confusus*)	*Sibiricobombus* Vogt, *Mendacibombus* Skor., *Confusibombus* Ball.
hypnorum (*hypnorum, cingulatus, jonellus*) woran sich *pratorum* am nächsten schliesst	*Pratobombus* Vogt part.

In den meisten Fällen habe ich die bisherige Gruppierung der Arten beibehalten, obwohl ich verwandte, meines Erachtens unnötig getrennte Arten zusammengestellt habe.

So in der *vorticosus*-Gruppe *vorticosus, mendax* und *confusus*. welche Arten jede ihre Untergattung gehabt haben, aber sehr nahe verwandt sind und u.a. durch die drohnenartigen Netzaugen und stark vorgerückten Nebenaugen der Männchen charakterisiert sind, (welche Kennzeichen, obwohl weniger ausgeprägt, ich auch beim Weibchen finde).

In die *soroeensis*-Gruppe sind *soroeensis* und *cullumanus* zusammengestellt, (während Vogt diesen beiden im Habitus fast identischen Arten wegen bedeutender Unterschiede der Genitalien der Männchen den Rang von Untergattungen erteilt). Sie sind bei den Männchen durch die ungewöhnlich lange Fühlergeissel mit gekrümmten Gliedern und die sehr dichte, gleichartige, fast narbenartige Punktierung der Mandibel der Weibchen verbunden und gleichzeitig von allen anderen Arten dieser Sectio unterschieden.

Überdies ist es kaum immer möglich mit Sicherheit das *cullumanus*-Weibchen und die rothaarige Form des *soroeensis*-Weibchens zu unterscheiden.

Von systematisch tiefgreifender Bedeutung ist die Errichtung der aus den Untergattungen *Alpinobombus* und *Pratobombus* hervorgegangenen drei Artsgruppen *lapponicus*-Gruppe, *balteatus*-Gruppe und *hypnorum*-Gruppe.

Lapponicus (aus *Pratobombus)* und *alpinus* (aus *Alpinobombus*) habe ich in die *lapponicus*-Gruppe gestellt. Diese beiden Arten sind einerseits von allen anderen durch das äusserst eigentümliche und feste Farbenschema der Behaarung des Hinterleibs deutlich unterschieden und andererseits einander so nahestehend und der Unterschied so geringfügig, dass es sich dem Unmöglichen nähern kann, die Weibchen zu unterscheiden (wogegen Vogt wegen Unterschieden in den Genitalien der Männchen dieses Zwillingpaar halbiert und die Hälften in zwei verschiedenen Untergattungen mit mehreren anderen Arten zusammen unterbringt).

Balteatus und *hyperboreus* (aus *Alpinobombus*), die durch die sehr lange Wange der Männchen und durch den breiten abgeplatteten unteren Ast der gabeligen Leiste der Mandibel der Weibchen wohlgekennzeichnet sind, habe ist in der *balteatus*-Gruppe gesammelt.

Die *hypnorum*-Gruppe, umfassend *hypnorum, cingulatus* und *jonellus* (aus *Pratobombus*), woran sich *pratorum* am nächsten schliesst, ist die am wenigsten charakteristische und vielleicht am besten durch ihren Mangel an positiven Charakteren gekennzeichnet.

Es zeigt sich nun, dass die oben angegebene Gruppenteilung, die ohne Rücksichtnahme auf die Genitalien der Männchen und deren mehr als fraglichen systematischen Wert aufgestellt ist, die Systematik der Gattung nicht unwesentlich vereinfacht und, wie es aus dem folgenden Gruppenschlüssel hervorgehen wird, es ermöglicht, jede der aufgestellten Artsgruppen, beide Geschlechter umfassend, eindeutig zu definieren.

Als erläuterndes Beispiel kann die *balteatus*-Gruppe dienen, die durch folgende Kennzeichen eindeutig definiert wird.

♂♀: Hinterleib ohne federartig verästelte Haare. 3. Tergit schwarz. ♀: Hintere Apicalecke der Metatarse des Mittelbeins nicht spitz (Sectio *Anodontobombus*). Wange so lang wie oder länger als Mandibelgelenk. Analsternit ohne Längsfurche, Randlamelle der Oberlippe mit

deutlichem Mittelläppchen. *Unterer Ast der gabeligen Leiste des Mandibels breit und abgeplattet.*

♂: Unterrand der Mandibel mit Borstenverbrämung. 3. Fühlerglied höchstens za. 1½ mal so lang wie breit. Geissel nicht zusammengedrückt oder unten knotig gezackt. Mandibel an der Spitze bifid. Netzaugen nicht drohnenartig. *Wange 2—2½ mal so lang wie das Mandibelgelenk.*

Bei der Artsbestimmung ist es im Allgemeinen am zweckmässigsten, die nachstehenden ausführlichen Artsschlüssel der zwei Geschlechter direkt zu verwenden. Diese sind, um die Arbeit zu beschleunigen, teilweise unter Verwendung von leicht wahrnehmbaren, aber systematisch nicht bedeutenden Farbenkennzeichen ausgearbeitet.

Der Gruppenschlüssel, der dem Artsschlüssel sozusagen gleichlaufend, aber nach eng systematischen Prinzip aufgestellt ist, kann zur Bestimmungsarbeit und zum Kontrollieren derselben sehr beitragen, indem die Hinführung einer etwa vorliegenden Art zu einer bestimmten Artsgruppe ja damit die Möglichkeiten auf die dieser Gruppe angehörigen Arten beschränkt.

Schlüssel zu den Artsgruppen, ♀♂

I. ♀: Wange nur halb so lang wie die Breite des Mandibelgelenkes. Untere Querleiste der Mandibel am Vorderrand breit, die gabelige Leiste fast berührend.
♂: Mandibel mit einfacher Spitze (Innenzahn kurz).
♀♂: Hinterleib ohne federartig verästelte Haare (*mastrucatus)* ..... Sectio *Anodontobombus,* p. 268

— ♀: Wange so lang wie das Gelenk oder länger. Untere Querleiste der Mandibel am Vorderrand von der gabeligen weit getrennt.
♂: Mandibel an der Spitze bifid (Innenzahn lang) II

II. ♀: Hintere Apicalecke der Metatarse der Mittelbeine dornartig oder spitzwinkelig. Abstand zwischen der unteren Querleiste der Mandibel und dem unteren Zweig der gabeligen Leiste am Vorderrand so gross wie oder grösser als der Zwischenraum zwischen deren Zweigen.
♂: Geissel entweder zusammengedrückt und unten knotig gezackt, Wange gleichzeitig höchstens 1½mal so lang wie das Gelenk, oder Geissel anders, aber immer sehr lang (3. Fühlerglied sowie vorletztes mindestens 2 mal so lang wie ihre distale Breite) und Wange lang (1¾—2 mal das Gelenk). Netzaugen nicht drohnenartig.
♀♂: Die beiden vorletzten Tergiten mit federartig verästelten Haaren (*pomorum*-Gruppe samt *mucidus* und *ruderarius* der *agrorum*-Gruppe ausgenommen) ..... Sectio *Odontobombus,* p. 267

— ♀: Hintere Apicalecke der Metatarse der Mittelbeine gerundet, annähernd rechtwinkelig oder ganz schwach spitzwinkelig. Abstand

zwischen der unteren Querleiste der Mandibel und dem unteren Zweig der gabeligen am Vorderrand immer 1½—2 mal grösser als der Zwischenraum zwischen deren Zweigen.

♂: Netzaugen drohnenartig (*vorticosus*-Gruppe) oder von gewöhnlichem Habitus und Wange dann gleichzeitig höchstens 1½ mal das Gelenk, falls länger (2—2½ mal das Gelenk), ist gleichzeitig die Länge des 3. Fühlergliedes weniger als 2 mal die distale Breite (*balteatus*-Gruppe). Geissel nie zusammengedrückt oder unten knotig gezackt.

♀♂: Hinterleib ohne federartig verästelte Haare .... Sectio *Anodontobombus*, p. 268

Sectio Odontobombus

1. ♀: Basalfläche der Mandibel flach oder deutlich konvex gewölbt, nie konkav. Der Unterrand glatt und gerundet, der Transversalwulst sanft gewölbt, unmerklich in die Basalfläche übergehend. Mundschild oft mit basalem Längseindruck.

   ♂: Mandibel am Unterrand entlang mit kurzen Borsten von gleicher Länge, nur proximal zerstreute lange Borsten. Hinterschiene vom Habitus der Mittelschiene.

   ♂♀: Hinterleib ohne federartig verästelte Haare .. *pomorum*-Gruppe

— ♀: Basalfläche der Mandibel ± konkav, am Unterrand entlang etwas innerhalb derselben von einem schmalen ± deutlichen und scharfen Wulst oder einer Leiste begrenzt, die eine Fortsetzung des Transversalwulstes bildet.

   ♂: Mandibel am ganzen Unterrand entlang mit einer ± dichten Verbrämung von langen gekrümmten Borsten. Hinterschiene nicht vom Habitus der Mittelschiene.

   ♂♀: Hinterleib (*mucidus* und *ruderarius* der *agrorum*-Gruppe ausgenommen) mit federartig verästelten Haaren 2

2. ♀: Mittelläppchen der Randlamelle der Oberlippe von Länge (der Quere nach) des Seitenläppchens. Kiel des Analsternites leistenartig hervortretend, oral jäh unterbrochen.

   ♂: Borsten am Hinterrand der Metatarse der Hinterbeine von gleichartiger Länge, ganz kurz, angedrückt, kaum sichtbar. Geissel lang, distale Hälfte etwas zusammengedrückt.

   ♀♂: Wange lang ..... *subterraneus*-Gruppe

— ♀: Mittelläppchen 2—3 mal länger als das Seitenläppchen. Kiel des Analsternits einfach oder undeutlich (*equestris* und *silvarum* der *agrorum*-Gruppe ausgenommen).

   ♂: Borsten am Hinterrand der Metatarse der Hinterbeine proximal struppig, ihre Länge wenigstens ¼ der grössten Breite des Sclerites erreichend 3

3. ♀♂: Wange 2—2½ mal länger als Gelenk. Abstand zwischen Hinterrand des Kopfes und dem Nebenaugenkomplex in der Regel mindestens so lang wie dessen totale Breite.

   ♂: Geissel nicht zusammengedrückt oder unten knotig gezackt, sehr lang, 3. sowie vorletztes Fühlerglied wenigstens 2 mal länger als

deren distale Breite.*) Hinterschiene ähnlich der des Weibchens, stark abgeplattet, die Fläche ohne oder mit wenigen Borsten.
♀: Die Einkerbung am Vorderrand der Mandibel liegt unmittelbar längs der oberen Leiste der gabeligen, diese berührend. Kopfschild gewöhnlich mit basalem Längseindruck ..... *hortorum*-Gruppe
— ♀♂: Wange höchstens za. 1½ mal das Gelenk. Abstand zwischen Hinterrand des Kopfes und dem Nebenaugenkomplex kürzer als dessen totale Breite.
♂: Geissel zusammengedrückt und unten ± deutlich knotig gezackt, lang. Fläche der Hinterschiene ± unregelmässig gewölbt und mit zerstreuten Borsten bekleidet.**)
♀: Die Einkerbung am Vorderrand der Mandibel nur äusserst selten unmittelbar längs der Leiste. Mundschild ohne basalen Längseindruck ..... *agrorum*-Gruppe

Sectio Anodontobombus.

1. ♀: Mandibel sehr breit, untere Querleiste breit, am Vorderrand die gabelige fast berührend. Wange nur halb so lang wie das Gelenk.
♂: Mandibel mit einfacher Spitze (Innenzahn kurz), Wange ungefähr von Länge des Gelenks ..... *mastrucatus*-Gruppe
— ♀: Abstand zwischen der unteren Querleiste und der gabeligen am Vorderrand so gross wie oder grösser als der Zwischenraum zwischen den Gabelästen. Wange so lang wie oder länger als Gelenk.
♂: Mandibel an der Spitze bifid (Innenzahn lang). Wange in der Regel deutlich länger als Gelenk 2
2. ♀: Randlamelle der Oberlippe ganz schmal, ohne oder mit undeutlichem Mittelläppchen. Nebenaugen (♀) in deutlichen Dreieck und deutlich oral verschoben.
♂: Netzaugen drohnenartig globulos. Nebenaugen im Dreieck, stark oral verschoben ..... *vorticosus*-Gruppe
— ♀: Randlamelle wohlausgebildet mit deutlichem Mittelläppchen. Nebenaugen in eine fast gerade Linie gestellt, nicht vorgeschoben.
♂: Netzaugen nicht drohnenartig globulos 3
3. ♀♂: 3. Tergit (oder zugleich 2.) rot behaart. Hinterleibsspitze rot. Wange kurz ..... *lapponicus*-Gruppe
— ♀♂: 3. Tergit schwarz behaart 4
4. ♀: Unterer Ast der gabeligen Leiste der Mandibel abgeplattet, breit, parallelseitig oder gegen die Verzweigungsstelle breiter werdend. Wange 1½—1¾ mal das Gelenk.
♂: Wange sehr lang (2—2½ mal das Gelenk). Hinterschiene abgeplattet, die Fläche blank mit vereinzelten Borsten .....
..... *balteatus*-Gruppe

*) Geissel kürzer. Behaarung des Hinterleibs vielleicht nicht wahrnehmbar. (*balteatus*-Gr., siehe *Anodontobombus*).

**) Geissel nicht zusammengedrückt oder unten knotig gezackt, (Behaarung des Hinterleibs vielleicht nicht wahrnehmbar), siehe *Anodontobombus*.

— ♀: Unterer Ast der gabeligen Leiste nicht breit und abgeplattet, schnur- oder spindelförmig.
♂: Wange kurz, höchstens za. 1½ mal so lang wie das Gelenk 5

5. ♀♂: Die Borsten an der Aussenseite der Metatarse der Mittelbeine kurz, von gleicher Länge, wie eine Bürste, die proximalen nicht länger als die entsprechenden der Innenseite.
♂: Hinterrandsborsten der Metatarse der Hinterbeine ganz kurz oder Geissel sehr lang 6

— ♀♂: Die Borsten (oftmals nur einzelne) an der Aussenseite der Metatarse der Mittelbeine mindestens proximal lang, dünn und struppig, 1½—2 mal länger als die entsprechenden an der Innenseite.
♂: Hinterrandsborsten der Metatarse der Hinterbeine so lang wie oder länger als die Breite des Gliedes. Geissel kurz 7

6. ♀: Mundschild abgeplattet.
♂: Die Länge der Randborsten der Metatarse der Hinterbeine nur za. ¼ der Breite des Gliedes. Geissel kurz, Länge des vorletzten Gliedes höchstens 1½ mal die Breite.
♀♂: Hinterleibsspitze weiss ..... *terrestris*-Gruppe

— ♀: Mundschild kräftig gewölbt.
♂: Länge der Randborsten der Metatarse der Hinterbeine ungefähr wie die Breite des Gliedes. Geissel sehr lang, vorletztes Glied mindestens 2½ mal länger als breit, die einzelnen Glieder deutlich gekrümmt.
♂♀: Hinterleibsspitze rot, weiss oder schwarz..*soroeensis*-Gruppe

7. ♀: Mundschild sehr stark abgeplattet.
♂: Randborsten der Metatarse der Hinterbeine 1½—2 mal länger als die grösste Breite des Gliedes.
♀♂: Die proximalen Borsten an der Aussenseite der Metatarse der Mittelbeine sehr augenfällig dünn und lang, Hinterleibsspitze glühend rot (*lapidarius*) oder hell gelbrot (*sicheli*) ..... *lapidarius*-Gruppe

— ♀: Mundschild kräftig gewölbt.
♂: Randborsten der Metatarse der Hinterbeine ungefähr so lang wie die Breite des Gliedes 8

8. ♀: Der grössere, mittlere (seitlich von groben, unebenartig und dichtgestellten Punkten umgrenzte) Teil der Fläche des Mundschildes grob und zerstreut, aber verhältnismässig gleichartig punktiert.
♂: Behaarung hinter dem Grunde des Fühlerschaftes ohne Einmischung von kurzen daunenartig verästelten hellgrauen Haaren.
♀♂: Hinterleibsspitze rot, rötlich oder gelblich. Behaarung des Thorax ungefähr wie bei *pratorum* .... *lapponicus-Gruppe* (3)

— ♀: Die Fläche des Mundschildes entweder grob, zerstreut und ungleichartig punktiert oder fast punktlos.
♂: Behaarung hinter dem Grunde des Fühlerschaftes mit Einmischung von kurzen daunenartig verästelten hellgrauen Haaren 9

9. ♀: Die erwähnte Fläche des Mundschildes fast punktlos, höchstens mit vereinzelten groben oder feinen Punkten.
♀♂: Hinterleibsspitze nie (Mittel- und Nordeuropa) von rein weisser Farbe. Die Farbe variierend von einem wenig lebhaften Rot bis zu einem ± schmutzigen (wie versengten) Hellgelb oder Hellbraun. Thorax schwarz mit ± hervortretender heller Binde am Pronotum. Scutellum schwarz, höchstens mit schwacher Einmischung von hellen Haaren (es gibt doch auch Formen mit hellem Scutellum) ..... *pratorum*
— ♀: Punktierung des erwähnten Teiles des Mundschildes grob und zerstreut, die Verteilung der Punkte äusserst ungleichartig und variierend.
♀♂: Hinterleibsspitze rein oder fast rein weiss. Thorax entweder einfarbig oder fast einfarbig hell oder hell mit schwarzer Querbinde. Scutellum immer eben so ausgedehnt hell gefärbt wie das Pronotum ..... *hypnorum*-Gruppe

Schüssel zu den Arten, Weibchen (♀) und Arbeiter (☿)

1. Wange wie 1/2 Breite des Mandibelgelenkes (*mastrucatus*) *Anodontobombus* 37
— Wange wenigstens von der Breite des Gelenkes 2
2. 5. und 6. Tergit, besonders am Hinterrand entlang und an der Seite, mit federartig verzweigten Haaren. Bei wohlbewahrten Exemplaren, wo die Behaarung nicht abgenutzt oder zusammengeklebt ist, ist die federartige Verzweigung augenfällig und erreicht ganz oder fast ganz die Spitze der Haare (z.B. *distinguendus* und *silvarum*, Vergrösserung 25—50 ×). Gleichzeitig ist die hintere Apicalecke an der Metatarse des Mittelfusses in eine ± dornartige oder jedenfalls stark spitzwinklige Ecke ausgezogen (kann in der oft dichten Borstenbekleidung schwer zu sehen sein, besonders bei ☿). Auch die hintere Apicalecke der Metatarse des Hinterfusses ist in eine stark spitzwinklige Ecke ausgezogen. Die Dörnchen oder Borsten, die vom Seitenrand der Ecke ausgehen, ragen nicht oder nur wenig weiter hervor als die Spitze der Ecke. Bei der hierhergehörigen *agrorum*-Gruppe (*equestris* ausgenommen) ist der Abstand von der unteren Querleiste der Mandibel bis zum unteren Zweig der gabeligen Leiste ungefähr wie der Zwischenraum zwischen den Gabelästen. Bei den *hortorum*- und *subterraneus*-Gruppen ist dagegen der obenerwähnte Abstand 1 1/2—2 mal grösser als der Zwischenraum. (*hortorum, subterraneus*- und *agrorum*-Gruppen (mit Ausnahme von *ruderarius* und *mucidus*)) *Odontobombus* 4
— 5. und 6. Tergit ohne deutlich federartig verzweigte Haare, diese höchstens nur am Grunde schwach federartig verzweigt, der übrige Teil mitunter etwas gliedartig aufgeteilt mit schwachen Einschnürungen 3

3. Die hintere Apicalecke der Metatarse sowohl des Mittel- als des Hinterfusses dornartig oder stark spitzwinklich ausgezogen (*pomorum*-Gruppe sowie *ruderarius* und *mucidus* aus der *agrorum*-Gruppe). *Odontobombus* 4
— Apicalecke der Metatarse des Mittel- und Hinterfusses abgerundet, annähernd rechtwinklich oder schwach spitzwinklich. Die Dörnchen oder Borsten, die auf der Metatarse des Hinterfusses vom Seitenrand der Ecke ausgehen, ragen weit über die Spitze der Ecke hinaus. Der Abstand zwischen der unteren Querleiste der Mandibel und dem unteren Zweig der gabeligen Leiste immer 1½—2 mal grösser als der Zwischenraum zwischen den Gabelästen. Kopf kurz, Mundschild höchstens etwas länger als der quergehende Teil der Epistomalnaht. *Anodontobombus* 37
4. Thorax einfarbig hell, weisslich bis hell rot- oder gelbbraun, ganz ohne Beimischung von dunklen Haaren 5
— Thorax nicht einfarbig hell. Wenn hell, dann mit deutlicher Beimischung von dunklen Haaren 6
5. Wange 2—2½ mal die Breite des Mandibelgelenkes. Abstand vom Hinterrand des Kopfes bis zum Nebenaugenkomplex in der regel wenigstens wie dessen Gesamtbreite. Grosse Hummeln (*hortorum*-Gruppe). (Bei *B. argillaceus* ist die Wange oft nur 1¾—2 mal die Breite des Mandibelgelenkes) 13
— Wange höchstens za. 1½ mal das Gelenk. Abstand vom Hinterrand des Kopfes bis zum Nebenaugenkomplex viel kleiner 28
6. Behaarung an der Thoraxunterseite, an den Hüften und am Schenkel dunkel, schwarz bis braunschwarz oder dunkel graubraun (NB. Behaarung mitunter verblichen). Mundschild schwarz behaart, höchstens mit Beimischung von kurzen dunkelgrauen daunenartig verzweigten Haaren (nur bei *fragans* ♀ ± bräunlich. Thorax mit schwarzer Querbinde oder einfach dunkel bis schwarz.*) .. 7
— Behaarung der Unterseite hell, weiss bis hellgelb- oder braungrau*) 21
7. Behaarung des Analtergits schwarz oder dunkelbraun, deutlich dunkler als 5. Tergit, wenn dieses hell ist 8
— Behaarung des Analtergits hell, von derselben Farbe wie auf dem 5. Tergit 18
8. Hinterleib (2.—5. Tergit) einfarbig hell 9
— 3. Tergit schwarz 10
9. Hinterkopf hellgelb behaart. Mundschild schwarz behaart (bei ♀ oft bräunlich). Hinterleib kurz und dicht pelzartig behaart. Analtergit mit schwarzer Behaarung (*fragrans*) 10
— Der ganze Kopf schwarz behaart, höchstens mit einiger Beimischung von kurzen dunkelgrauen, daunenartig verzweigten Haaren. Behaarung des Hinterleibs nicht schwarz und pelzartig. Analtergit bräunlich behaart (*elegans*) 18

*) Die Farben an der Unterseite können bei *elegans, variabilis* und *pomorum* ♀ variieren, weshalb diese sowohl unter 7 als 21 mitverzeichnet sind.

10. Mittelläppchen der Randlamelle der Oberlippe kurz, etwa eben so lang (in der Quere) wie der sichtbare Teil des Seitenläppchens. Der Kiel des Analsternits leistenartig vorspringend, oral plötzlich unterbrochen. Die Buckeln der Oberlippe sind auf der Innenseite von einer scharfen (♀) oder abgerundeten Kante begrenzt, die immer zur Randlamelle hinunterreicht und die tiefe Mittelgrube umgibt, die eben so breit wie der Buckel ist (Fig. 10). Der Abstand zwischen der unteren Querleiste der Mandibel und dem unteren Zweig der gabeligen Leiste am Vorderrand ist 1½—2 mal länger als der Zwischenraum zwischen den Gabelästen. Der untere Zweig der gabeligen Leiste stark abgeflacht und breit. Wange 1¼—1¾ mal Gelenk. Behaarung auf dem 4. und 5. Tergit, besonders am Hinterrand entlang und an der Seite, stark federartig verzweigt (50 ×). (*subterraneus*-Gruppe) 11

— Mittelläppchen 2—3 mal länger als der sichtbare Teil des Seitenläppchens. Kiel des Analsternits einfach, geht gleichmässig in die Fläche des Sclerits hinüber 13

11. Mundschild etwa so lang wie der quergehende Teil der Epistomalnaht, gleichmässig gewölbt, so gut wie auf der ganzen Fläche verstreut punktiert. Der untere Zweig der gabeligen Leiste am Vorderrand nicht breiter als der obere. Behaarung des Hinterleibs pelzartig, kurz und angedrückt. Behaarung der Stirn hinter den Nebenaugen hellgelb, um die Fühler herum und auf dem Mundschild kurz grob und schwarz (bei ♀ oft bräunlich). Thoraxunterseite, Hüften und Schenkel schwarz. Thorax an der Oberseite kräftig gelbbraun mit schwarzer Querbinde. Hinterleib einfarbig hell gelblich- oder bräunlich-grau. Flügel dunkel. Sehr gross. ♀ ohne beulenartig angeschwollenen Kiel an der Spitze des Analtergits ..... *B. fragrans* Pallas

— Mundschild länger als der quergehende Teil der Epistomalnaht, nur an der Seite punktiert. Flügel nicht verdunkelt. Etwas kleiner. Analtergit bei ♀ mit ± hervortretendem beulenartig angeschwollenem Kiel an der Spitze 12

12. Mundschild — von der Seite gesehen — an der Basis am stärksten gekrümmt, hier in der Regel abgerundet dachförmig und etwas hügelig erhoben. An der Seite schwach eingedrückt und dichter punktiert. Der untere Zweig der gabeligen Leiste der Mandibel gegen den Vorderrand gleichmässig und nur schwach eingeengt, hier meistens breiter als der obere Zweig. Behaarung um die Fühler und auf dem Mundschild schwarz, kurz und griffelartig, ohne oder mit schwacher Beimischung von dunkel graubraunen, federartig verzweigten Haaren. Von den Nebenaugen aus gehen nach oben drei schwache Längseindrücke (Vertiefungen), die (vom Hinterrand des Kopfes aus belichtet) zusammen eine dreizackige Figur bilden. Die Unterseite des Thorax, Hüften und Schenkel schwarz. Thorax an der Oberseite schwarz mit oder ohne gelbbraune Binde. Hinterleib schwarz mit oder ohne Beimischung von braunen Haaren. Spitze weiss oder bräunlich .....
..... *B. subterraneus* L. (*latreillellus* K.)

— Mundschild sowohl in Längs- als Seitenrichtung gleichmässig gekrümmt. Der untere Zweig der gabeligen Leiste am Vorderrand stark und recht plötzlich eingeengt, hier eben so schlank wie der obere Zweig. Behaarung um die Fühler und auf dem Mundschild in der Regel hell bräunlich-grau, mit Beimischung von feder- oder daunenartig verzweigten Haaren, selten schwarz. Hinter den Nebenaugen kein Längseindruck. Thoraxunterseite, Hüften und Schenkel hell. Thorax an der Oberseite hell gelbbraun mit schwarzer Querbinde. Hinterleib einfarbig hell gelbgrau oder mit dunkleren, undeutlichen, braunen Basalbinden ..... *B. distinguendus* Mor.

13. Die Einkerbung am Vorderrand der Mandibel über dem oberen Zweig der gabeligen Leiste liegt unmittelbar an dieser entlang und diese berührend. Der Unterrand der Einkerbung liegt in der Verlängerung des Oberrands der Leiste (Fig. 8), obgleich oft mit diesem einen Winkel bildend. Dieses Merkmal ist bei der *hortorum*-Gruppe immer vorhanden. Bei allen übrigen Arten berührt die Einkerbung sehr selten die gabelige Leiste und ist in der Regel sehr deutlich von ihr getrennt und zwar durch eine annähernd rechteckige kleine Fläche der blanken Vorderrandsverbrämung (Fig. 9) oder die Einkerbung liegt etwa in der Mitte zwischen dem oberen Zweig und der über diesem liegenden Leiste. Der Abstand zwischen der unteren Querleiste und dem unteren Zweig der gabeligen Leiste ist am Vorderrand 1½—2 × länger als der Zwischenraum zwischen den Gabelästen (mitunter bei ♀ nur etwas länger). Der Abstand vom Hinterrand des Kopfes bis zur Nebenaugengruppe so gross wie oder grösser (♀) als die Gesamtbreite der Nebenaugengruppe. Mundschild an der Basis oft mit einem oder mehreren oberflächlichen, falten- oder beulenartigen, am Boden grubig punktierten Längseindrücken (Vertiefungen), oft von der halben Länge des Mundschildes (wie bei der *pomorum*-Gruppe. Wenn solche Eindrücke vorhanden sind, kann das Tier mit Sicherheit zu einer von diesen beiden Gruppen hingeführt werden). Wange 2—2½ × Gelenk, selten (♀) weniger. 3. Fühlerglied deutlich länger als 2 × Breite. Behaarung auf dem 4. und 5. Tergit, besonders am Hinterrand entlang und an der Seite federartig verzweigt (50 ×). Analsternit mit einfachem Kiel. Grosse bis sehr grosse Tiere. (*hortorum*-Gruppe) 14

— Die Einkerbung am Vorderrand der Mandibel nicht unmittelbar an der gabeligen Leiste entlang. Wange höchstens 1½ × Gelenk .. 21

14. Thorax einfarbig hell. Behaarung hier und auf dem 2. und 3. Tergit von ungleichartiger Länge wie bei *hortorum*. Behaarung auf Mundschild und Stirn, auch hinter den Nebenaugen, mit Beimischung von helleren, feder- oder daunenartig verzweigten Haaren. Wange (♀) etwa 2½ × Gelenk. Der untere Rand des Netzauges, gerade von vorn gesehen, in der Regel dem quergehenden Teil der Epistomalnaht gegenüber. Mundschild glatt, fast ohne Punkte auf der Fläche, seine Seitenborsten struppig. Hinterleibsspitze weiss behaart, Analtergit etwas, aber nicht wesentlich dunkler als das

5. Tergit behaart 15
— Thorax mit schwarzer Querbinde oder ganz schwarz. Mundschild und Stirn, auch hinter den Nebenaugen, schwarz behaart ohne Beimischung von feder- oder daunenartig verzweigten Haaren. Wange (♀) za. 2 × Gelenk. Unterer Rand des Netzauges deutlich vor dem quergehenden Teil der Epistolmalnaht. Seitenborsten des Mundschildes weniger struppig, ± über die Fläche geneigt. Analtergit schwarz oder braunschwarz behaart, viel dunkler behaart als das 5. Tergit, wenn dieses hell ist 16
15. Thorax hell gelblich-braun. 2. Tergit ohne helle Binde. (Alpen, Pyrenäen.) ..... *B. gerstäckeri* Mor.
— Thorax mehr rötlichgelb. 2. Tergit immer mit heller Binde von derselben Farbe wie Thorax. (Nördliches Europa) .... *B. consobrinus* Dahlb.
16. Thoraxbehaarung von ungleicher Länge, was — von vorn gesehen — deutlich ist. Von der Seite gesehen zeigt sich die Behaarung auf dem 2. und 3. Tergit als aus langen dünnen Haaren von ungleicher Länge bestehend, fächerartig gesträubt, fast rechtwinklich auf dem Integument. Mundschild in der Regel mit nur wenigen deutlichen Punkten auf der Fläche. Die Haare um Fühler und Mundschild dünn und von ungleicher Länge, die längsten (wenn nicht abgenutzt etwa so lang wie der Fühlerschaft. Mundschild etwas länger als bei der folgenden Art. Pronotum, Scutellum und 1. Tergit mit hellen Binden. Der vordere Teil des Scutellums ± schwarzhaarig, weshalb die schwarze Querbinde ± kreisrund hervortritt, immer viel heller als die helle Binde des Pronotums. Hinterleibsspitze weiss ..... *B. hortorum* L.
(Kann wie *ruderatus* auch fast ganz schwarz sein, oder schwarz mit weisser oder (Südeuropa) rötlicher Hinterleibsspitze).
— Thoraxbehaarung von gleicher Länge, von vorne sieht man es deutlich. Von der Seite gesehen zeigt sich die Behaarung auf dem 2. und 3. Tergit als aus kurzen dicken Haaren von gleichartiger Länge bestehend, parallel und etwas schräg nach hinten gerichtet. Haare nur auf dem hinteren Teil des 5. Tergits länger, da sie aber mehr nach hinten gerichtet sind, ist der Umriss der Behaarung als Ganzes ganz gleichmässig bogenförmig. Mundschild meistens fast überall auf der Fläche mit ± deutlichen groben und feinen Punkten. Die Haare um Fühler und Mundschild kürzer und dicker und von mehr gleichartiger Länge, die längsten etwa halb so lang wie der Schaft. Länge des Mundschildes ziemlich verschiedenartig, oft nur wenig grösser als der quergehende Teil der Epistomalnaht 17
17. 1. Tergit mit heller Binde, Hinterleibsspitze weiss. Pronotum mit heller Binde, und da das Scutellum ganz hell behaart ist, ist die schwarze Querbinde in der Regel schmal, nur etwas breiter als die helle Binde des Pronotums. Flügel hell. ..... *B. ruderatus* F.

(Kann wie *hortorum* auch ± stark schwarzfarbig mit weisser oder (Südeuropa) rötlichbrauner Hinterleibsspitze vorkommen. Wenn der Hinterleib einfarbig schwarz ist, ist das ganze Tier es auch).

— Hinterleib einfarbig schwarz, Thorax gleichzeitig mit breiter scharfgezeichneter hellbrauner Binde. Flügel dunkel. Sehr gross. (☿ und ♂ sollen sich von *ruderatus* nicht unterscheiden lassen). ..... *B. argillaceus* Scop.

18. Behaarung des 3. Tergits entweder rein schwarz oder am Hinterrand entlang mit schmaler Kante von hellen roten oder weisslichen Haaren. Die basale Hälfte der Mandibelfläche eingehöhlt. Der untere Zweig der gabeligen Leiste nicht abgeflacht. Nur die Borsten immer ± hell gelblich oder rötlich-braun. Mittelgross 19

— Behaarung des 3. Tergits ganz oder überwiegend rot (von derselben Farbe wie auf dem 4. und 5. Tergit). Wenn das Tergit nicht rein rot behaart ist, sondern mit ± Beimischung von schwarzen Haaren, sind diese entweder gleichmässig verstreut oder wesentlich auf den Hinterrand beschränkt. Das Tergit also im letzteren Fall den Hinterrand entlang am dunkelsten behaart.
Basale Hälfte der Mandibelfläche flach oder deutlich konvex gewölbt, niemals eingehöhlt, am Unterrand entlang gleichmässig abgerundet. Der Transversalwulst ebenfalls abgerundet, indem er gleichmässig in die Basalfläche der Mandibel übergeht und wie diese blank, fein und schwach punktiert ist. In diesen Merkmalen unterscheidet sich die Gruppe von allen anderen, da die Basalfläche der Mandibel bei diesen letzteren ± eingehöhlt ist und den Unterrand entlang, etwas innerhalb desselben, von einer ± hervortretenden, oft scharfrandigen, schmalen Wulst begrenzt ist, die eine Fortsetzung der Transversalwulst bildet. Der untere Zweig der gabeligen Leiste stark abgeflacht und gegen die Verzweigungsstelle zu in der Breite kaum eingeengt. Behaarung auf dem 4. und 5. Tergit nicht oder äusserst schwach federartig verzweigt (50 ×). Analsternit dachförmig abgerundet ohne deutlichen Kiel. Mundschildfläche fast punktlos, oft an der Basis mit einem oder mehreren beulen- oder faltenartigen Längseindrücken, die oft von der halben Länge des Mundschildes sind (wie bei der *hortorum*-Gruppe). Wange 1½—2 × Gelenk. Gross (*pomorum*-Gruppe) ... 20

19. Analsternit in der Regel (♀) mit deutlichem Kiel, der oral knotenartig erweitert ist (wie ein Trommelschlägel) oder hier bloss abgerundet und plötzlich unterbrochen, oder der Kiel ist auf den ovalen Knoten allein reduziert, seltener (☿) ganz glatt. Die Behaarung des 4. und 5. Tergits und des Analtergits, besonders am Hinterrand entlang und an der Seite, stark federartig verzweigt (50 ×). Behaarung des Hinterleibs dünn. Das Integument leicht sichtbar, verstreut punktiert und blank. 3. Tergit am Hinterrand entlang mit einer schmalen Kante von hellen Haaren, die wie eine entsprechende Kante am Hinterrand des 4. Tergits entlang

weisslich ist und (besonders bei ♀) einen deutlichen Kontrast zur basalen rotgelben Behaarung des 4. Tergits bildet (wie bei der Nominatform), was bewirkt, dass die Behaarung der Hinterleibsspitze als Ganzes bleicher wirkt als bei der folgenden Art. Thorax in der Regel einfarbig schwarz, die Hinterrandsfransen des Sternits weisslich, seltener schwach rötlich-gelb. Die Borsten am Seitenrand des Mundschildes entlang sind über dessen Fläche geneigt, fast wie an diese angeklebt, und jedenfalls an der Spitze gelbbraun. Mittelläppchen der Randlamelle der Oberlippe flach und scharfrandig. Morphologische Übereinstimmung mit *silvarum* L. Der Farbenunterschied scheint konstant zu sein, ohne Zwischenformen ..... *B. silvarum* L. var. *nigrescens* Pérez

— Analsternit mit einfachem oder undeutlichem Kiel. Behaarung des 4. und 5. Tergits und des Analtergits nicht oder äusserst schwach federartig verzweigt (50 ×). Behaarung des Hinterleibs dicht. Das Integument schwierig sichtbar, dicht punktiert und matt. Behaarung des 3. Tergits ganz schwarz oder am Hinterrand entlang mit einer schmalen Kante von roten Haaren von derselben roten Farbe wie auf dem 4. Tergit, wo auch die hellen Hinterrandsfransen fehlen. Hinterrandsfransen des Sternits immer rotgelb. Die Borsten am Seitenrand des Mundschildes entlang struppig, nicht einwärts geneigt, schwarz. Mittelzipfel der Randlamelle der Oberlippe abgerundet, schnurartig (oft undeutlich). Thorax und 1.—3. Tergit schwarz oder mit undeutlichen hellen Binden. Hinterleibsspitze von lebhafter roter Farbe ..... *B. ruderarius* Müll. *(derhamellus, rajellus* K.)

20. Behaarung des Analtergits hell, von derselben Farbe wie auf dem 5. Tergit. Behaarung auf dem 3. Tergit von derselben Farbe wie auf dem 4. und 5., rot oder rötlich-grau. Entweder einfarbig oder mit Beimischung von schwarzen Haaren, die gleichmässig verstreut (♀) oder om Hinterrand entlang gesammelt sind, und dann oft (♀) wie ein schwarzer Büschel in der Mittellinie. Bei ☿ hat das Pronotum, Scutellum und 2. Tergit helle Binden, und der Hinterleib ist oft fast einfärbig rötlich-grau. Bei ♀ sind Thorax und 1. und 2. Tergit schwarz oder mit sehr schwacher Beimischung von hellen Haaren. Hinterleibsspitze rot. ..... *B. pomorum* Panz.

— Behaarung des Analtergits schwarz oder dunkelbraun. Pronotum und Scutellum immer mit scharfgezeichneten hellen Binden. Der ganze Hinterleib hell bräunlich-grau (♀ ☿) ..... *B. elegans* Seidl.

21. Wange nur sehr wenig länger als das Gelenk. Behaarung des Thorax kurz von gleichmässiger Länge, samtartig. Unterer Zweig der gabeligen Leiste der Mandibel stark abgeflacht, proximale $^2/_3$ fast parallellseitig ganz bis zur Verzweigungsstelle. Mundschild hell, Analtergit schwarz behaart. Behaarung des Hinterleibs übrigens einfarbig hell gelbbraun, pelzartig, kurz, dicht und angedrückt. Thorax mit kreisrundem, oft etwas verwischtem schwarzem Fleck in der Mitte oder (Schmiedeknecht: Apidae europaeae 1882) fast ganz schwarz. Mittlere Grösse ..... *B. laesus* Mor.

— Wange 1½—2 × Gelenk oder, wenn nur etwas länger als das Gelenk, Behaarung des Thorax nicht samtartig 22

22. Thorax mit schwarzer Querbinde oder schwarzem Fleck in der Mitte, der ± kreisrund, aber nie dreieckig ist und vom Flügelansatz breit getrennt bei heller Behaarung (wie bei *agrorum, tricuspis!*). Wenn Thorax überwiegend dunkel ist, dann Pronotum jedenfalls mit heller Behaarung, die deutlich bandartig ist und die Schulterecke erreicht 23

— Thorax ohne schwarze Querbinde oder schwarzen kreisrunden Fleck in der Mitte (conf. *tricuspis*). Wenn Thorax überwiegend dunkel ist, dann Pronotum nie mit heller Behaarung, die die Schulterecke erreicht und als »bandförmig« aufgefasst werden kann 28

23. 3. Tergit schwarz, wie das 2. und 4. mit oder ohne weissliche Hinterrandsfransen. 2. Tergit dunkel oder hell, 4. und 5. rötlichgelb, ohne Beimischung von schwarzen Haaren. Thorax gelb-grau mit undeutlich begrenztem Fleck in der Mitte, Behaarung nicht samtartig. Behaarung des Analtergits hell, Mundschild hell (♀) oder schwarz (♂) (*silvarum*) 26

— 3. Tergit hell, höchstens mit einiger Beimischung von verstreuten struppigen schwarzen Haaren, die auch ± deutlich auf dem 4.—6. Tergit zu finden sind 24

24. 2. Tergit schwarz (1. Tergit ±), 3.—5. hell behaart. Thoraxbehaarung nicht samtartig, graulich mit (oft undeutlich begrenztem) schwarzem, kreisrunden Fleck in der Mitte. Mundschild und Analtergit schwarz behaart, Wange nur wenig länger als Gelenk. 4. und 5. Tergit ohne deutlich federartig verzweigte Haare. Behaarung des Hinterleibs sehr dünn und struppig, das blanke Integument deshalb sichtbar. (Die Blankheit jedoch nicht besonders auffällig). Klein ..... *B. mucidus* Gerst.

— 2. Tergit hell. 3.—6. höchstens mit einiger Beimischung von verstreuten struppigen schwarzen Haaren 25

25. Mundschild schwarz behaart mit oder ohne Beimischung von kurzen daunenartig verzweigten dunkelgrauen Haaren. Thoraxbehaarung nicht samtartig. Analtergit hell oder dunkel bräunlich behaart. 3—6. Tergit ohne Beimischung von verstreuten schwarzen struppigen Haaren (*pomorum* ♂, *elegans*) ..... (18)

— Behaarung des Mundschildes aus langen weisslichen oder gelblichen Haaren bestehend, höchstens mit schwacher Beimischung von schwarzen Haaren, selten (*distinguendus*) ganz schwarz 26

26. Behaarung des Thorax hell gelbbraun, kurz und gleichmässig samtartig, mit schmaler, scharf begrenzter schwarzer Querbinde. 3.—5. Tergit ohne Beimischung von schwarzen Haaren. Behaarung des Analtergits schwarz (*distinguendus*) ..... (10)

— Behaarung des Thorax gelbgrau, von ungleichartiger Länge, nicht samtartig, mit undeutlich begrenzter breiter schwarzer Querbinde oder kreisrundem Fleck in der Mitte. Hinterleib ± mit Beimischung von (oft nur wenigen) schwarzen struppigen Haaren.

(Analsternit in der Regel (♀) mit stark vorspringendem, kurzem Kiel, der oral knotenförmig angeschwollen ist (trommelschlägelartig) oder plötzlich unterbrochen, oder der Kiel ist zu einem Knoten allein reduziert, selten (♀) einfach oder fehlend. Mundschild ± stark abgeflacht. 4. und 5. Tergit, besonders den Hinterrand entlang und an der Seite mit stark federartig verzweigten Haaren. Analtergit hell oder bräunlich behaart. Behaarung des Pronotums hell grau, gelblich- oder bräunlich-grau, fast überall mit verstreuter Beimischung von schwarzen Haaren, weshalb der Vorderrand der breiten schwarzen Querbinde oder der schwarze kreisrunde Fleck in der Mitte nicht scharf begrenzt ist. Wange za. $1^1/_2 \times$ Gelenk oder etwas kürzer. Kleine bis mittelgrosse Tiere) 27

27. Die Furche zwischen der gabeligen Leiste der Mandibel und dem Transversalwulst in ihrer ganzen Länge parallel mit der Furche zwischen diesem und der unteren Querleiste, so dass der Transversalwulst zwischen diesen Furchen parallelseitig begrenzt oder schmal lanzettförmig ist (Fig. 3). Der Abstand zwischen der unteren Querleiste und dem unteren Zweig der gabeligen Leiste ist am Vorderrand in der Regel $1^1/_2$—2 mal grösser als der Zwischenraum zwischen den Gabelästen. Mundschild sehr stark abgeflacht, seine oralen $^3/_4$ auf einer annähernd dreieckigen Fläche, die die Seitenecken des Vorderrandes erreicht, fast eben. Hinterleib hell bräunlich oder gelblich grau. ♀ 3.—5. Tergit mit schwach angedeuteter dunkler bräunlicher Basalbinde. ♂ 3.—5. Tergit mit Beimischung von (oft nur wenigen) schwarzen struppigen Haaren .... *B. equestris* F. (*arenicola* Thoms.)

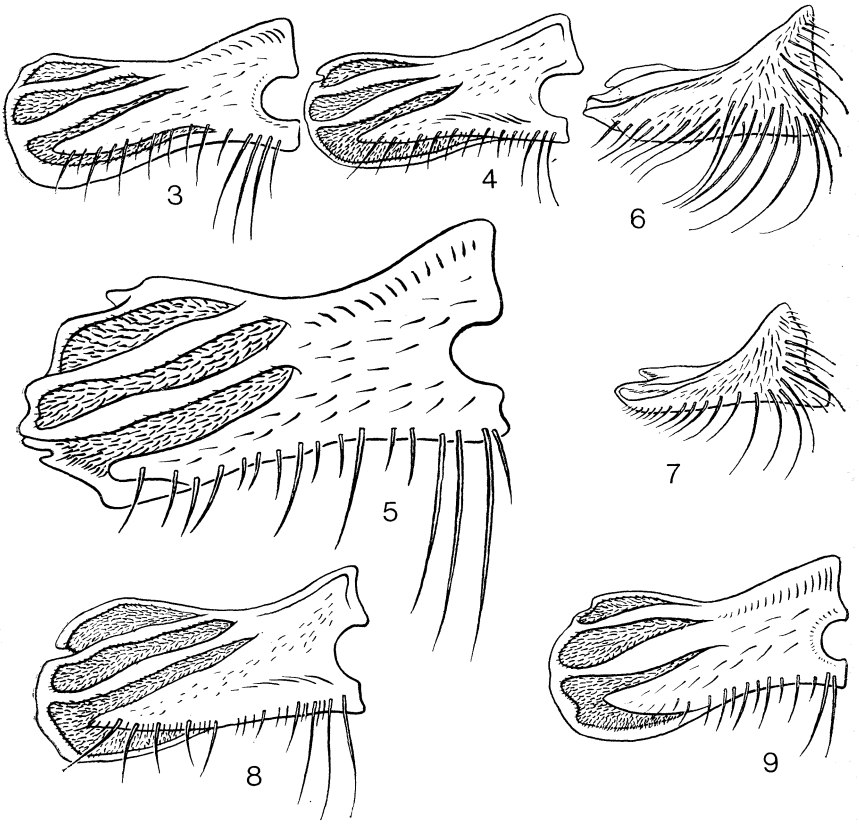
— Die Furchen divergieren proximal stark voneinander, wobei der Transversalwulst zwischen diesen Furchen als ein Dreieck erscheint (wie bei allen Arten mit Ausnahme von *equestris*) (Fig. 4). Der Abstand zwischen der unteren Querleiste und dem unteren Zweig der gabeligen Leiste am Vorderrand etwa so gross wie oder sehr wenig grösser als der Zwischenraum zwischen den Gabelästen. Mundschild weniger stark abgeflacht. 3. Tergit schwarz. Thorax mit unscharf begrenzter schwarzer Querbinde oder kreisrundem Fleck in der Mitte.

— 3. Tergit mit weisslicher Hinterrandsfranse. Hinterleibsspitze hell rötlich-gelb bis (selten) weisslich. Die helle Farbe des Thorax gelbgrau ..... *B. silvarum* L.

— 3. Tergit ohne helle Fransen. Hinterleibsspitze stärker rot. Die helle Farbe des Thorax hellbraun (Italien) .... *B. silvarum* var. *rogenhoferi* D.T.

28. Analtergit auf der Fläche hell behaart, von derselben Farbe wie der helle Teil der Behaarung auf dem 5. Tergit, wenn diese nicht einfarbig hell ist 29

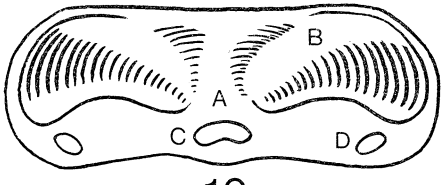
— Analtergit auf der Fläche schwarz oder dunkelbraun behaart, deutlich viel dunkler behaart als das 5. Tergit 30



Figs. 3—9. Linken Mandibeln. 3) *B. eQuestris* ♀, 4) *B. silvarum* ♀, 5) *B. mastrucatus* ♀, 6) *B. mastrucatus* ♂, 7) *B. lapidarius* ♂, 8) *B. hortorum* ♀ und 9) *B. pomorum* ♀.

29. Thoraxbehaarung von variierender Farbe, nicht auffällig lang. Hinterleib mit schwarzer Binde oder mit ± Beimischung von oft nur wenigen, schwarzen struppigen Haaren. Unterseite des Körpers hell (*agrorum*) 36
— Thoraxbehaarung einfarbig rotgelb oder gelbbraun und auffällig lang. Hinterleib von derselben Farbe, 2. und 3. Tergit in der Regel mit ± hervortretender, verwischter, braunschwarzer Binde. Unterseite des Körpers dunkel (*agrorum erlandsoni* Krusemann 1950) (= var. *arcticus* Dahlb.) ..... (36)
30. Thorax dunkelgrau, dunkelbraun bis schwarz behaart 31
— Thorax von heller Färbung, mit oder ohne Beimischung von dunklen Haaren. 3.—5. Tergit ohne Beimischung von schwarzen struppigen Haaren 32

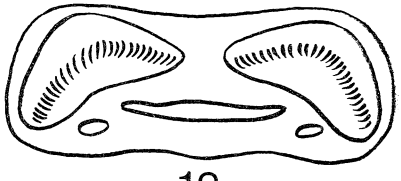
31. Haarbüschel auf der Unterseite des 1. Tergits von rein weisser Farbe (*agrorum*) 36
— Haarbüschel gelblich oder bräunlich bis schwarz, nie von rein weisser Farbe (*variabilis*) 35
32. Thoraxbehaarung von vollständig gleichmässiger heller Färbung, ganz ohne Beimischung von dunkleren Haaren 33
— Thorax nicht einfarbig hell, mit verschiedenen dunkleren Farben, oder wenn hell mit ± Beimischung von (oft nur wenigen) dunkleren Haaren. Behaarung nicht samtartig, nicht von ganz gleichartiger Länge (*variabilis*) 35
33. Thoraxbehaarung samtartig. Die Haare alle von gleicher Länge, wie geschoren. Thorax und Hinterleib einfarbig hell rotgelb oder gelbbraun 34
— Thoraxbehaarung nicht samtartig, die Haare nicht ganz gleichartig lang. Die Hauptmenge der Haare von einigermassen gleichartiger Länge, aber untermischt mit verstreuten etwas längeren Haaren. Behaarung rotgelb oder gelbbraun oder von anderer heller Färbung (*variabilis*) 35
34. Behaarung auf der Unterseite und auf dem Kopf dunkel bis schwarz. Mesopleuron nur unmittelbar vor dem Flügelansatz hell behaart. Gross. (England, auch aus Skandinavien gemeldet) .... *B. smithianus* White.
— Behaarung auf der Unterseite und auf dem Kopf hell. Das ganze Mesopleuron hell behaart. Etwas kleiner .... *B. muscorum* F. (*cognatus* Steph.)
35. Die Buckel der Oberlippe immer komma- oder halbkreisförmig, ihr gegen die Mittellinie gekehrter krummer Rand reicht immer bis zur



10



11



12

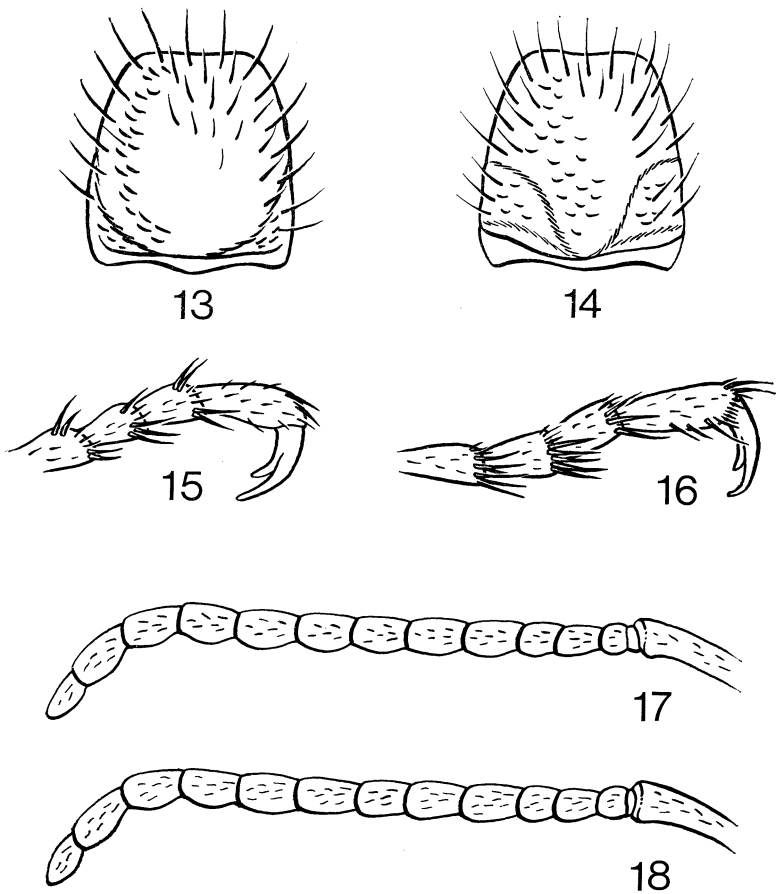
Figs. 10—12. Oberlippen. 10) *B. subterraneus* ♀, A. Mittelgrube, B, Buckel (Seitenhock), C, Randlamelle, Mittelläppchen, D, Randlamelle, Seitenläppchen, 11) *B. variabilis* ♀ und 12) *B. agrorum* ♀.

Randlamelle hinunter, die Mittelgrube deshalb wohlabgegrenzt (Fig. 11). Die fast punktlose Fläche des Mundschildes gleichmässig flach gewölbt, vom Vorderrand durch zwei schmale recht gleichartig punktierte keilförmige Vertiefungen getrennt und deshalb am Vorderrand entlang von einem flachen Bogen begrenzt, der diesen berührt (Fig. 13). Der untere Zweig der gabeligen Leiste der Mandibel oft ± breit und abgeflacht. (Diese Verhältnisse findet man meistens in mehr ausgeprägter Form bei *muscorum* und *smithianus* wieder). Thoraxbehaarung bildet in der Regel einen recht ebenen Teppich, dessen Haare von einigermassen gleichartiger Länge sind, und aus dem verstreute, etwas längere Haare hervorragen. Die Farbe des Thorax ist, wie bei *agrorum*, äusserst verschiedenartig, von gelblich (aber wohl nie wie bei *agrorum* fast rein weiss) bis graulich, rotgelb und allen Nuancen von braun bis schwarz. Die Farbe in der Regel lebhafter und rötlicher als bei *agrorum*. Wenn in der hellen Behaarung dunklere Haare beigemischt sind, sind diese oft rot oder rotbraun. Diese Beimischung von dunkleren Haaren kann (wie bei *agrorum*) vor dem Flügelansatz und auf dem Pronotum vorkommen, oft nur als wenige verstreute Haare, und können sich von hier am Seitenrand des Scutums und am Hinterrand des Scutellums entlang verbreiten. Die Farbe der Behaarung also am hellsten auf der Mitte des Thorax. Bei stärkerer Beimischung von dunklen Haaren werden sie ± diffus über das ganze Sclerit verbreitet. Analtergit, soweit man es beobachtet hat, immer mit kurzer schwarzer oder dunkelbrauner Behaarung, die deutlich viel dunkler ist als auf dem 5. Tergit, wenn dieses hell ist. Klein, von derselben Grösse wie *agrorum* ..... **B. *variabilis* Schmiedeknecht**
(*humulis, helferanus, venustus, solstitialis* auct.)

(*B. variabilis* schliesst sich dicht an *muscorum* und *smithianus* und unterscheidet sich wie diese von *agrorum* durch die kürzere und mehr gleichartige Behaarung, durch die dunkle Behaarung auf dem Analtergit und durch die Morphologie des Mundschildes und der Oberlippe, wobei die Morphologie doch so wenig charakteristisch und fest ist, dass sie nur als stützendes Merkmal verwendet werden kann. Eine vollständig sichere Unterscheidung zwischen *variabilis* und *agrorum* (im Besonderen bei ♀) ist kaum in allen Fällen möglich, was obendrein schwierig gemacht wird durch die enorme Variabilität dieser Arten, wenn man auch die Farbe der Behaarung in Betracht nimmt.)

36. Die Buckel der Oberlippe können ganz wie bei *variabilis* sein, sind aber meistens bohnenförmig oder abgerundet dreieckig, indem sie die obere Seitenecke der Oberlippe ausfüllen. Ihr Unterrand ± aufwärts konvergierend (Fig. 12). Die Fläche des Mundschildes bildet eine ± deutlich plateauartig gehobene schmale zungenartige Fläche, die sich zum Vorderrand hinunterschiebt und an der Seite von einer breiten Vertiefung begrenzt ist, die sehr un-

regelmässig grob und verstreut punktiert ist, oft mit nur einzelnen sehr groben Punkten in bedeutendem Abstand vom Vorderrand (Fig. 14). Thoraxbehaarung von sehr ungleicher Länge, bestehend aus sehr langen Haaren, mit kürzeren und sehr kurzen Haaren gemischt, so gut wie alle Haare von verschiedener Länge. Farbe der Behaarung wie bei *variabilis* äusserst variierend, von fast rein weiss bis gelblich und graulich und alle Abstufungen von hellbraun bis schwarz. Wenn in die hellere Behaarung dunklere



Figs. 13. Mundschild, *B. variabilis* ♀. Fig. 14. Mundschild, *B. agrorum* ♀.

Figs. 15—16. Aussenumriss der Klauen des Mittelbeins. 15) *B. lapponicus* ♀, 16) *B. alpinus* ♀.

Figs. 17—18. Geissel, von der Seite gesehen. 17) *B. agrorum* ♂, 18) *B. variabilis* ♂.

Haare beigemischt sind, sind diese wohl nie rot oder rotbraun. Diese Beimischung von dunkleren Haaren tritt vor dem Flügelansatz und auf dem Pronotum auf, von wo sie sich T-förmig an der Mittellinie des Scutums entlang verbreitet. Behaarung also am dunkelsten auf der Mitte des Thorax, um sich bei stärkerer Beimischung bei der dunklen Form ± diffus über das ganze Sclerit zu verbreiten. Behaarung des Analtergits hell, von derselben Farbe wie auf dem 5. Tergit, nur bei sehr melanen Individuen schwarz oder braun ..... *B. agrorum* F.

37. *(Anodontobombus)* Wange za. wie die halbe Breite des Mandibelgelenks. Untere Querleiste der Mandibel dreieckig, am Vorderrand tief eingeschnitten und so breit, dass sie fast den unteren Ast der gabeligen Leiste berührt. Mandibel breit schaufelförmig und, da die drei innersten Zähne an den Vorderrand vorgerückt sind, mit im ganzen sechs (nicht immer leicht erkenntlichen) Zähnen (Fig. 5). Thorax und 1.—3. Tergit schwarz behaart, selten mit Beimischung von helleren Haaren. Hinterleibsspitze rot. Grosse Tiere ..... *B. mastrucatus* Gerst.

— Wange ungefähr wie das Gelenk oder länger. Untere Querleiste der Mandibel schmal, von dem unteren Ast der gabeligen Leiste durch einen breiten Zwischenraum getrennt. Vorderrand der Mandibel anders 38

38. 3. Fühlerglied lang, 2½ bis fast 4 mal länger als breit. Randlamelle der Oberlippe ungeteilt, eine schmale bogenförmige Verbrämung bildend oder (*vorticosus*) mit schmalem Mittelläppchen das vielmal länger (in der Querrichtung) als das Seitenläppchen ist, von dem er sehr undeutlich getrennt ist. Behaarung des Thorax kurz und dicht, von gleichartiger Länge, samtartig (besonders bei *confusus*). Hinterleibsspitze rot bis gelblich-grau (selten weiss). Wange za. 1½ mal Gelenk ♀ (aber nicht ☿). Nebenaugenkomplex in einem deutlichen (stumpfwinkligen) Dreieck, dessen obere Begrenzung bedeutend vor einer gedachten Linie liegt, die die oberen Pole der Netzaugen tangiert (Abstand fast wie der Durchmesser des Nebenauges). (*vorticosus*-Gruppe) 39

— 3. Fühlerglied höchsten etwas mehr als 2 mal so lang wie breit. Randlamelle der Oberlippe mit deutlichem Mittelläppchen, Mittelgrube deutlich und tief. Oberer Ast der gabeligen Leiste erreicht nur bei anormalen Individuen den Vorderrand nicht. Hintere Schiene blank, höchstens mit schwachem Alutaceus.
♀ Nebenaugen in fast gerader Linie, ihr oberer Rand ungefähr in Zielrichtung mit einer gedachten Linie, die die oberen Pole der Netzaugen tangiert 41

39. Oberlippe mit tiefer und breiter Mittelgrube. Randlamelle mit schmalem Mittelläppchen, der undeutlich vom Seitenläppchen getrennt und (in der Querrichtung) vielmal länger als diese ist. 3. Fühlerglied 3—4 mal länger als breit, ungefähr wie das 4. u. 5. zusammen. Oberer Ast der gabeligen Leiste der Mandibel erreicht den Vorderrand. Hintere Schiene blank, ohne Alutaceus. Thorax

hell gelblich-grau mit scharfgezeichneter schwarzer Querbinde. 1. u. 2. Tergit hell gelblich-grau, 3. ± schwarz behaart. Hinterleibsspitze hell rötlich- oder bräunlich-grau. Das Tier auffällig schlank, gross ..... *B. vorticosus* Gerst.

— Oberlippe ohne oder mit undeutlicher Mittelgrube, die Buckel ± zusammenfliessend. Die Randlamelle bildet eine ungeteilte schmale bogenförmige Verbrämung. Oberer Ast der gabeligen Leiste der Mandibel erreicht nicht den Vorderrand. Thorax und 1. u. 2. Tergit schwarz behaart oder mit ± hervortretenden hellen Binden. Kleine Tiere 40

40. Fläche der hinteren Schiene vollständig matt, überall mit stark hervortretendem Alutaceus. 3. Fühlerglied 3½—4 mal länger als breit, wie 4., 5. u. 6. zusammen. Die Buckel der Oberlippe fast punktlos. Oberer Ast der gabeligen Leiste in der Regel kurz hinter dem Vorderrand unterbrochen. Behaarung des 3. Tergits, von der Seite gesehen, ungleichartig. Hinterleibsspitze rot .... *B. mendax* Gerst.

— Hintere Schiene blank, ohne oder mit schwachem Alutaceus. 3. Fühlerglied ungefähr von derselben Länge wie das 4. u. 5. zusammen. Die Buckel der Oberlippe grob und unregelmässig punktiert. Oberer Ast der gabeligen Leiste plump, mit breitem Abstand vom Vorderrand. Behaarung des 3. Tergits, von der Seite gesehen, bestehend aus kurzen, an der Spitze plötzlich verjüngten Haaren von fast gleichartiger Länge, viel kürzer als die Haare auf dem 4. Tergit. Hinterleibsspitze rot, selten weiss .. *B. confusus* Schenk

41. Entweder der ganze Hinterleib rot oder jedenfalls vom 3. Tergit an rot behaart (In seltenen Fällen kann auch das 3. Tergit schwarz sein, doch hiervon später). Wenn das 2. Tergit nicht rot ist, ist es ganz schwarz, nie mit Beimischung von heller (nicht-roter) Behaarung. Nur das 1. Tergit kann an jeder Seite einen weisslichen Haarbüschel haben. Die Ausdehnung der roten Farbe geschieht nach einem festen und sehr charakteristischen Schema, das diese Artsgruppe von allen anderen unterscheidet. Wenn man z.B. von dem ganz roten Hinterleib ausgeht, wird man sehen, dass die rote Farbe von vorne beginnend nach und nach vom 1., 2. u. 3. Tergit an von schwarzer Farbe verdrängt wird und (1. Tergit ausgenommen) nur vom Schwarzen, d.h. wenn die Farbe geändert wird, dann nur ins Schwarze. Darin unterscheidet sich diese Artsgruppe von allen anderen, bei denen ja eine hell weissliche oder gelbliche Farbe vom 2. u. 3. Tergit an normal auftritt 42

— 3. Tergit schwarz, höchstens am Hinterrand entlang hell. (Wenn, mitunter bei sehr kleinen verkümmerten Individuen, der ganze Hinterleib fast einfarbig hell ist, wird das 3. Tergit in der Regel einige Beimischung von schwarzen Haaren haben und als Ganzes dunkler hervortreten als das 2. Tergit.) 43

42. Aussenumriss der Klauen des Mittelbeins, von der Fläche gesehen, gleichmässig bogenförmig gekrümmt (Fig. 15). Analtergit mit ± deutlicher Längsfurche (scharfes Seitenlicht). Fläche mit zer-

streuten kurzen schwarzen (jedenfalls dunklen) Haaren. Die gabelige Leiste der Mandibel nicht abgeflacht. Pronotum ohne (var. *lugubris* Sp. Schn.) oder mit heller Behaarung, Scutellum fast immer mit ± deutlichem V-förmigen hellen Haarbüschel. 2. Tergit rot oder schwarz behaart.*) Unterseite hell oder (England) schwarz. Kleine bis mittelgrosse Tiere .... *B. lapponicus* F. (*lugubris* sensu Pittioni)

— Aussenumriss der Klauen (von der Fläche gesehen) an der Basis oder auf dem proximalen Drittel der Klaue am stärksten gekrümmt. Die distalen 2/3 fast gerade, nur an der Spitze nach Innen gekrümmt (in der Regel am deutlichsten auf dem mittleren Fuss) (Fig. 16). Analtergit ohne Längsfurche, Fläche mit langen dünnen ± einwärtsgebogenen hellen Haaren (am Seitenrand entlang doch oft kürzere dunkelbraune Haare). Unterer Ast der gabeligen Leiste der Mandibel abgeflacht und (besonders, aber nicht immer beim ♀) parallelseitig oder gegen die Verzweigungsstelle in der Breite zunehmend. Thorax schwarz oder (♀) mit ± Beimischung von graubraunen Haaren auf Pronotum und Scutellum. Behaarung des 2. Tergits immer rot. Unterseite immer schwarz. Grosse Tiere .... *B. alpinus* L. (und *alpiniformis* Rich.?)**)

43. Unterer Ast der gabeligen Leiste der Mandibel stark abgeflacht, breit, parallelseitig oder gegen die Verzweigungsstelle mit zunehmender Breite. Wange lang (za. 1 1/2—1 3/4 mal Gelenk). Vorderrandsborsten der hinteren Schiene streng auf den Vorderrand begrenzt. (*balteatus*-Gruppe) 44

— Untere Zinke der gabeligen Leiste nicht oder nur schwach abgeflacht, schnur- oder spindelförmig. Wange ungefähr wie oder nur etwas (za. 1 1/4 mal) länger als Gelenk 45

44. Hinterleibsspitze schwarz. Pronotum, Scutellum und 1. u. 2. Tergit mit stark hervortretenden hellen gelbbraunen Binden. Sehr grosse Tiere ..... *B. hyperboreus* Sparre Schn.

— Hinterleibsspitze hell, weiss bis hell bräunlich oder rötlich-grau. Die Binden auf Thorax und 1. u. 2. Tergit heller, gelblich-grau oder fehlend. Grosse Tiere ..... *B. balteatus* Dahlb.

45. Borsten auf der Aussenseite der Metatarse des Mittelbeines kurz, von gleichartiger Länge und Dicke (wie auf einer Bürste), gegen den Apex gleichmässig kürzer werdend, die proximalen nicht länger als die entsprechenden auf der Innenseite 46

— Den kurzen Borsten der Aussenseite sind längere, dünne struppige Haare beigemischt, die proximal (oft nur einzelne) wenigstens

*) Frey-Gessner erwähnt, Fauna insectorum helvetica (1899—1907), Apidae I p. 47, »Individuen, bei denen das Schwarz über das zweite Hinterleibssegment nach hinten weiter reicht« und »Individuen, bei denen nur noch die zwei letzten Hinterleibssegmente rot sind«. — Dafür habe ich in dem mir vorliegenden (nicht besonders grossen) Material keine Bestätigung gefunden. Ich habe aber im vorliegenden Schlüssel die Art auch unter »3. Tergit schwarz« mitgenommen.

**) Richards, 1931 p. 13; Pittioni, 1938 p. 254.

$1^1/_2$—2 mal länger als die entsprechenden auf der Innenseite sind 49

46. Mundschild stark abgeflacht, überall zerstreut und fast gleichartig punktiert. Die Buckel der Oberlippe stark eingehöhlt, scharfrandig. Von vorne gesehen erstreckt sich dieser scharfe Rand oder dieser schmale Wulst vom Untersten der Mittelgrube am Oberrand der Oberlippe entlang bis zu deren obere Seitenecke oder geht an der Aussenseite entlang weiter bis zur Randlamelle. Die Fläche der Buckel ist mit dem Seitenläppchen der Randlamelle zusammenfliessend und bildet mit dieser eine schalenförmige blanke Fläche. Das Mittelläppchen der Randlamelle sitzt hoch über den Seitenläppchen und schneidet den scharfen Innenrand der Buckel ungefähr in der Mitte zwischen deren Oberrand und dem Unterrand der Seitenläppchen. Diese Verhältnisse im Verein geben der Oberlippe eine oft grosse Ähnlichkeit mit drei ineinander eingreifenden Kettengliedern (bei ♀ sind die Buckel oft nur abgeflacht und scharfrandig). Die Borstenverbrämung über der Randlamelle zerstreut und schwach entwickelt. Der untere Ast der gabeligen Leiste ist an der Verzweigungsstelle in der Regel nicht mit der oberen vereinigt, sondern von dieser durch einen Zwischenraum getrennt. Wange kurz, ungefähr wie das Gelenk. Vorderrandsborsten der hinteren Schiene streng auf den Vorderrand begrenzt, auf der distalen Hälfte vom eigentlichen Vorderrand ausgehend, auf der proximalen Hälfte zugleich von einem ganz schmalen Gürtel innerhalb des Vorderrandes, auf der Fläche selbst höchstens einzelne Borsten. Schwarze Tiere, Pronotum, Scutellum und 2. Tergit mit, seltener (var. *cryptarum* F.) ohne helle, weissliche, gelbliche oder bräunliche Binden, auch 1. Tergit oft mit heller Binde. Hinterleibsspitze weiss, seltener gelblich oder bräunlich. Behaarung des Analtergits immer schwarz oder dunkelbraun, jedenfalls mit Beimischung von dunklen Haaren, deshalb als Ganzes deutlich dunkler als auf dem 5. Tergit. Grosse bis sehr grosse Tiere. (*terrestris*-Gruppe) 47

— Mundschild kräftig gewölbt und unregelmässig zerstreut punktiert. Die Buckel der Oberlippe kissenförmig. Vorderrandsborsten der hinteren Schiene nicht streng auf den Vorderrand begrenzt. Auf der Fläche an diesem entlang in grösserer oder kleinerer Ausdehnung unregelmässig zerstreute Borsten. Hinterleib weiss, rot oder rötlich bis schwarz. Wenn er hell ist, ist die Behaarung des Analtergits ganz ohne Beimischung von dunklen Haaren. (*soroeensis*-Gruppe) 48

47. 3. Fühlerglied wenigstens $1^1/_2$ mal länger als breit, deutlich länger als das 4. ..... *B. terrestris* L. *)
Abweichend durch ziegelrotes Integument auf den hinteren Schienen und oft gelbliche oder bräunliche Hinterleibsspitze (mediterrane Form) .. var. *ferrugineus* Schmiedekn.

*) *lucorum* L. und *magnus* Vogt sind morphologisch von *terrestris* nicht abweichend, und in der Farbe so wenig, dass es mir nicht möglich gewesen ist, mit bloss einiger Sicherheit diese Formen abzutrennen.

— 3. Fühlerglied nur wenig (za. 1¼ mal) länger als breit. 3., 4. und 5. Glied ungefähr gleich lang (östliche Form) .. *B. sporadicus* Nyl.

48. Die proximale Hälfte der hinteren Schiene auf der übrigens ganz glatten Fläche distal vor dem dichtbehaarten Basalteil fast immer mit mehreren oder wenigen (oft nur einzelnen) isolierten kurzen groben struppigen Borsten, die aus blanken kegelförmigen warzenartigen Erhebungen entspringen.**) Wange kürzer als oder ungefähr so lang wie das Gelenk. Hinterleibsspitze rot, weiss oder schwarz behaart. 4. Tergit oft teilweise schwarz. Thorax und 1. und 2. Tergit schwarz mit oder ohne helle, bräunliche oder gelbliche Binden ..... *B. soroeensis* F.

— Hintere Schiene (soweit es beobachtet ist) ohne diese isolierten kurzen grauen, von warzenartigen Erhebungen ausgehenden Borsten. Wange kürzer als Gelenk. Mundschild etwas flacher. Hinterleibsspitze rot, die Farbe kräftiger. 4. Tergit ganz rot .... *B. cullumanus* Kirby

Die im nördlichen Mitteleuropa vorkommende Form hat in der Regel schwache helle Binden auf Thorax und auf dem 1. u. 2. Tergit. Behaarung der Hinterleibsspitze ziemlich lang. Die in Osteuropa vorkommende Form *serrisquama* Mor. (*silantjevi* Mor.) hat scharf-gezeichnete weissliche Binden auf Thorax und auf dem 1. u. 2. Tergit. Behaarung des Hinterleibs kürzer und struppiger.

49. Mundschild sehr stark abgeflacht, zerstreut und oberflächlich, aber gleichartig punktiert. Die Buckel der Oberlippe gleichmässig, flach gegen den Oberrand gewölbt. An ihrem Unterrand entlang geradlinig abgeschnitten und stufenartig gegen den glatten Seitenzipfel der Randlamelle abgehoben. Diese stufenartige Kante bildet mit dem Rand der Buckel eine winkelförmige Ecke, die etwas über den Rand der mittleren Grube hineinreicht. Mittlere Grube tief, scharf begrenzt, annäherungsweise quadratisch oder fast kreisförmig. Die Buckel (besonders beim ♀) mit ± deutlichem Alutaceus. 3. Fühlerglied fast doppelt so lang wie breit. Vorderrandsborsten der hinteren Schiene streng auf den Vorderrand begrenzt, auf der distalen Hälfte vom eigentlichen Vorderrand ausgehend, auf der proximalen Hälfte zugleich von einem ganz schmalen Gürtel innerhalb des Vorderrandes. Auf der eigentlichen Fläche höchstens einzelne Borsten. Die struppigen Borsten vorne auf der Aussenseite der Metatarse des Mittelbeins länger und augenfälliger als bei irgend einer anderen Art, 3—4 mal länger als die entsprechenden auf der Innenfläche. 4. Tergit ganz rot. Grosse Tiere.
♀ Analtergit mit ± deutlich rundem, beulenartig hervorstehendem Zeichen. (*lapidarius*-Gruppe) 50

— Mundschild kräftig und gleichmässig gewölbt. Skulptur der Oberlippe anders, die Buckel nicht stufenartig abgehoben und ohne Alutaceus. 3. Fühlerglied weniger als doppelt so lang wie breit.

**) Fehlen scheinbar auf englischen Exemplaren.

Vorderrandsborsten der hinteren Schiene streng auf den Vorderrand begrenzt, auf der Fläche an diesem entlang in grösserem oder kleinerem Ausmass unregelmässig zerstreute Borsten. Die struppigen Borsten proximal auf der Aussenfläche der Metatarse des mittleren Beines nicht auffällig lang, höchstens doppelt so lang wie die entsprechenden auf der Innenfläche. Kleine bis mittelgrosse Tiere.
♀ Analtergit ohne beulenartig rundes Zeichen 51

50. Behaarung des 3. Tergits sehr kurz und gleichartig, viel kürzer als auf dem 4. Behaarung der Hinterleibsspitze sehr lang, das Integument ganz verdeckend, leuchtend rot. Behaarung des Mundschildes und des Korbes schwarz.
♀ Das Zeichen auf dem Analtergit stark hervortretend, scharf begrenzt. Analsternit mit deutlichem, abgerundetem Kiel, an diesem entlang etwas eingedrückt ..... *B. lapidarius* L.
Bei der gewöhnlichen Form ist der Thorax und 1. u. 2. Tergit schwarz, ohne helle Binden. Im südlichen Europa eine Varietät *decipiens* Pérez (Vogt 1909) mit breiten, scharfgezeichneten, goldenbraunen Binden auf Pronotum, Scutellum und 1. u. 2. Tergit. Wohl die schönste unserer Hummelformen.

— Behaarung des 1.—3. Tergits ungleichartig, von ungefähr derselben Länge wie auf dem 4. Behaarung der Hinterleibsspitze verhältnismässig kurz und struppig, so dass das Integument, schräg von hinten gesehen, überall sichtbar ist, rötlich gelbgrau. Der Korb rotgelb. Thorax und 1. u. 2. Tergit mit hellgrauen Binden.
♀ Das Zeichen auf dem Analtergit flacher und undeutlich begrenzt. Analsternit abgerundet dachförmig ohne deutlichen Kiel .....
..... *B. sicheli* Rad. (*alticola* Kriechb., Vogt 1909)

51. Hinterleibsspitze (wenn nicht missfarbig) von weisser Farbe. Thorax einfarbig oder fast einfarbig hell oder mit schwarzen Querbinden, und die helle Farbe des Scutellums dann eben so hervortretend wie die des Pronotums 52

— Hinterleibsspitze von roter oder rötlicher, oft ziemlich unbestimmbar schmutziger (wie versengt) gelbbrauner Farbe 54

52. Thorax hell gelblich bis bräunlich-grau mit breiter scharfer schwarzer Querbinde.
♀ ohne Längseindruck am Aussenrand des Netzauges entlang, die Krümmung der Fläche bildet eine gleichmässige Fortsetzung derjenigen des Auges. Das Stück, dass die 2. Cubitalzelle auf der Radialader abschneidet, fast doppelt so lang wie dasjenige, das die 3. Cubitalzelle abschneidet (mit einiger Variation) .....
..... *B. jonellus* K. (*scrimshiranus* K.)

— Thorax einfarbig hell gelbbraun bis rotgelb oder in der Mitte mit ± Beimischung von schwarzen Haaren.
♀ Am Aussenrand des Netzauges entlang, besonders auf der oralen Hälfte, ein schwacher Längseindruck (tangierendes Licht vom Augenrand), undeutlich bei *cingulatus*. Die beiden Stücke, die die 2. und 3. Cubitalzelle von der Radialader abschneiden, fast gleich lang (mit einiger Variation) 53

53. ♀ Analtergit kurz vor der Spitze mit einer ± deutlichen, beulenartigen Auftreibung, die oft klein ist, die aber einen ansehnlichen Querwall zwischen den Seitenrändern des Sclerits bilden kann und sich mitunter oral in einem undeutlichen Längswulst oder einer Längsfurche fortsetzt. Mittelfläche des Mundschildes zerstreut punktiert. Mittelgrube der Oberlippe tief und wohlentwickelt. .... *B. hypnorum* L.
— ♀ Analtergit ohne beulenartige Auftreibung, flach-konkav bis zur Spitze. Mittelfläche des Mundschildes blank und fast punktlos. Mittelgrube der Oberlippe undeutlich. Östliche Form .... *B. cingulatus* Wahlb.
54. Der grössere mittlere von dichtgestellten groben Punkten begrenzte Teil der Fläche des Mundschildes grob zerstreut, aber verhältnismässig gleichartig punktiert. 2. Tergit schwarz. Scutellum mit schwacher Beimischung von hellen Haaren. (*lapponicus, lapponicus*-Gruppe) ..... (41)
— Die obenerwähnte Fläche des Mundschildes fast punktlos, höchstens mit einzelnen groben oder feinen Punkten. 2. Tergit mit oder ohne helle Binde. Pronotum und Scutellum (Mittel- und Nordeuropa) in der Regel ohne oder mit ± hervortretender heller Behaarung. 4.—6. Tergit, selten (var. *luctuosus* Schmidekn.) nur das 5. u. 6. rotbraun oder fast der ganze Hinterleib schwarz behaart ..... *B. pratorum* L*)

Schlüssel zu den Arten, Männchen (♂)

Die Farbe der Behaarung ist im Allgemeinen ungefähr wie beim ♀ und wird deshalb nur angeführt, wenn sie sehr abweichend oder von besonderer Bedeutung als Artskennzeichen ist.

1. Netzaugen sehr gross, drohnenartig, Zwischenraum zwischen ihnen oben etwa wie ihre grösste Breite. Der Nebenaugenkomplex bildet ein deutliches Dreieck und liegt weit vor dem oberen Rand der Netzaugen. Die Metatarse des Hinterfusses mit langen Hinterrandsborsten. Hinterleibsspitze rot, rotgelb oder weiss. (*vorticosus*-Gruppe). *Anodontobombus* 2
— Netzaugen nicht drohnenartig, Abstand zwischen ihnen oben mehr als doppelt so gross wie ihre Breite. Nebenaugen liegen fast in einer geraden Linie, und ihr Oberrand liegt in derselben Zielrichtung wie der Oberrand der Netzaugen 4
2. Die mittleren Geisselglieder mehr als dreimal so lang wie breit. Hinterrand des Analsternits breit abgerundet und häutig verbrämt, ohne Randwulst, in der Mittellinie mit einer dicht behaarten, kurzen und breiten Längsvertiefung. Hellbraungrau, Thorax und 3. Tergit mit schwarzer Binde. Hinterleibsspitze rotgelb bis rot ..... *B. vorticosus* Gerst.

*) Betreffend *B. pyrenaeus* Pérez wird verwiesen auf: Krüger, 1920 p. 458, Schmiedeknecht, 1930 p. 868 und Pittioni, 1937 p. 109.

— Mittleres Geisselglied weniger als zweimal Breite. Thorax und 1.—3. Tergit schwarz. Pronotum, Scutellum, 1. u. 2. Tergit mit oder ohne helle Binde 3

3. 3. Fühlerglied etwa dreimal länger als das vierte. Analsternit flach, Hinterrand gleichmässig bogenförmig mit ± undeutlichem Randwulst. Hinterleibsspitze rotgelb bis rot ..... *B. mendax* Gerst.

— 3. Fühlerglied nur 1½—2 mal länger als das vierte. Analsternit abwärtsgekrümmt oder mit Vertiefung, Hinterrand flach eingeschnitten oder breit abgestutzt. Randwulst stark hervortretend. Hinterleibsspitze rotgelb bis rot, seltener weiss ..... *B. confusus* Schenck

4. Geissel sehr lang, im Ganzen stark seitlich zusammengedrückt, Die Glieder an der Unterseite, jedenfalls an der distalen Hälfte der Geissel, konvex bogenförmig, ± *knotenartig* erweitert und hier stärker zusammengedrückt als der übrige Teil des Gliedes. Geissel »rundzackig«. Die Geissel muss rechtwinklich von der Seite gesehen werden (undeutlich bei *mucidus,* welche Art an dem tief eingeschnittenen Apicalrand und der dornartig ausgezogenen Ecke der Metatarse des Hinterfusses kenntlich ist). 5. u. 6. Tergit mit stark federartig verzweigten Haaren (mit Ausnahme von *mucidus* und *ruderarius*) (50:1) (*agrorum*-Gruppe). *Odontobombus* 5

— Geissel nicht oder nur auf der distalen Hälfte schwach zusammengedrückt. Unterseite der Glieder eben, nicht bogenförmig-knotenartig erweitert (Apicalrand der hinteren Metatarse nicht tief eingeschnitten und nicht dornartig ausgezogen) 17

5. Behaarung des Thorax von gleichartiger Länge, samtartig. Von vorn gesehen an der Oberseite des Thorax entlang zeigt sich die Behaarung auf dem Mesopleuron und über dem Flügelansatz nicht länger als auf der Fläche des Scutums, weshalb der Umriss der Haarschicht auf Mesopleuron und Scutum einen gleichmässigen Bogen bilden 6

— Behaarung des Thorax von ungleicher Länge. Von vorn gesehen erweist sich die Behaarung auf dem Mesopleuron und über dem Flügelansatz büschelartig struppig und viel länger als auf der Fläche des Scutums, oder der ganze Thorax lang und ungleichartig behaart 8

6. 4. Fühlerglied wenigstens 1½ mal so lang wie breit, länger als das dritte. Wange kaum länger als Gelenk. Thorax hell gelbbraun mit oder ohne schwarze Querbinde oder ganz schwarz ..... *B. laesus* Mor.

— 4. Fühlerglied etwa so lang wie breit oder nur wenig länger, wie oder kürzer als das dritte. Wange bedeutend (1¼—1½ mal) länger als Gelenk. Thorax einfarbig rotgelb 7

7. Behaarung der Unterseite des Körpers schwarz. Behaarung des Kopfes gelblich mit ± starker Beimischung von schwarzen Haaren — oder schwarz ..... *B. smithianus* White

— Behaarung der Unterseite und des Kopfes hell .... *B. muscorum* F.

8. 5. und folgende Fühlerglieder auf der Unterseite stark und annäherungsweise symmetrisch bogenförmig erweitert (Fig. 17). Thorax ohne schwarze Querbinde. Wenn Thorax dunkel mit heller Behaarung auf dem Pronotum ist, ist diese helle Behaarung nicht bindenförmig. Behaarung des Analtergits hell oder (besonders bei im Übrigen dunkelfarbigen Tieren) ± dunkel ..... *B. agrorum* F.
— 5.—7. Fühlerglied auf der Unterseite flach bogenförmig und ihre proximale Hälfte fast geradlinig (Fig. 18) 9
9. Behaarung des Analtergits schwarz oder dunkelbraun, jedenfalls mit Beimischung von dunklen Haaren, im Allgemeinen deutlich dunkler als auf dem 6. Tergit (, wenn dieses hell ist) 10
— Behaarung des Analtergits hell, von derselben Farbe wie auf dem 6. Tergit. Ganz ohne Beimischung von dunklen Haaren 14
10. Apicalrand der Metatarse des Hinterfusses stark, fast halbkreisförmig eingeschnitten und die hintere Ecke in eine schlanke dornartige Spitze ausgezogen. Behaarung des Hinterleibs ohne oder mit sehr schwach federartig verzweigten Haaren. Thorax hell braungrau mit ± deutlichem schwarzem Fleck in der Mitte. Hinterleib mit lockerer, struppiger, einfarbig hell braungrauer Behaarung. Wange recht kurz. Geisselglieder auf der Unterseite undeutlich bogenförmig erweitert ..... *B. mucidus* Gerst.
— Apicalrand der Metatarse schwach eingeschnitten oder fast gerade, hintere Ecke nicht in eine dornartige Spitze ausgezogen. 5. u. 6. Tergit (besonders am Hinterrand entlang) mit stark federartig verzweigten Haaren (50:1) 11
11. Thorax hellgrau mit breiter schwarzer Querbinde. Hinterleib hell gelblich-grau. 3.—6. Tergit mit ± hervortretender Basalbinde aus kurzen struppigen schwarzen Haaren ..... *B. equestris* F.
Thorax ohne deutliche schwarze Querbinde 12
12. Thorax hell graulich mit zerstreuter Beimischung von schwarzen Haaren 13
— Thorax andersfarbig ..... *B. variabilis* Schmiedekn.
13. 3.—6. Tergit mit Beimischung von schwarzen struppigen Haaren ..... *B. equestris* F.
— Behaarung des Hinterleibs (Analtergit ausgenommen) ohne Beimischung von schwarzen struppigen Haaren .... *B. variabilis* Schmiedekn.
14. Unterseite dunkel. Thorax schwarz oder schwarz mit graulicher Querbinde (im letzteren Falle kann auch die Unterseite graulich sein 15
— Unterseite hell. 5. u. 6. Tergit (besonders am Hinterrand entlang) mit Beimischung von stark federartig verzweigten Haaren (50:1) 16
15. Haare am Hinterrand des 5. u. 6. Tergits nicht federartig verzweigt, sondern mit ± deutlichen gliederartigen Einschnürungen, höchstens am Grunde mit ganz schwachen federartigen Verzweigungen (50:1). Thorax und 1.—3. Tergit einfarbig schwarz oder Pronotum, Scutellum und 1. u. 2. Tergit mit ± deutlicher hell-

grauer Binde. Behaarung der Hinterleibsspitze rot oder hell rötlich- bis gelblich-grau, lang und etwas angedrückt ..... *B. ruderarius* Müll.

— Haare am Hinterrand des 5. u. 6. Tergits, jedenfalls auf der unteren Hälfte, aber in der Regel ganz bis zu deren Spitze stark und augenfällig federartig verzweigt (50:1). Thorax und 1. u. 2. Tergit schwarz mit undeutlicher Beimischung von helleren Haaren. 3. Tergit schwarz. Behaarung der Hinterleibsspitze rötlich- bis gelblich-grau, kürzer und struppiger ..... *B. silvarum* var. *nigrescens* Perez.

16. 2.—5. Tergit mit weisslicher Hinterrandsfranse. Hinterleibsspitze hell rötlich- oder gelblich-grau ..... *B. silvarum* L.

— 2.—5. Tergit ohne helle Hinterrandsfransen. Hinterleibsspitze stark rotgelb ..... *B. silvarum* var. *rogenhoferi* D.T.

17. Unterrand der Mandibel mit ganz kurzen ungefähr gleich langen Borsten, nur proximal mit wenigen langen gekrümmten Borsten. Fläche fast nackt, das Integument sichtbar. Die hintere Schiene rund, vom selben Habitus wie die mittlere Schiene, überall borstig. Geissel lang, von gleichartiger Dicke. Behaarung am Hinterrand des 5. u. 6. Tergits entlang ohne federartig verzweigte Haare. Analsternit mit oder ohne Randwulst. Hinterleibsspitze rot bis gelblich. (*pomorum*-Gruppe). *Odontobombus* 18

— Der ganze untere Rand der Mandibel mit ± dichter Verbrämung von langen gekrümmten Borsten. Die Fläche dicht samtartig behaart. Hintere Schiene ± abgeflacht oder unregelmässig beulig 19

18. Behaarung des Analtergits hell, gleichfarbig mit dem 6. Tergit ..... *B. pomorum* Panz.

— Behaarung des Analtergits ganz oder teilweise schwarz oder dunkelbraun ..... *B. elegans* Seidl.

19. Hinterrandsborsten auf der Metatarse des Hinterfusses ganz kurz, kaum sichtbar. Geissel lang, das zweitletzte Glied mehr als doppelt so lang wie breit. Distale Hälfte der Geissel etwas zusammengedrückt, von der Oberseite gesehen vom 7. Fühlerglied ab nach der Spitze zu gleichmässig schmaler werdend, und schmaler als von der Seite gesehen, wo die Konturen parallel sind. Analsternit caudal stark abgeflacht, ohne oder mit schwach angedeutetem flachem Randwulst. Behaarung des 5. u. 6. Tergits (besonders am Hinterrand entlang) mit stark federartig verzweigten Haaren (50:1). Behaarung des Analtergits schwarz. (*subterraneus*-Gruppe). *Odontobombus* *20*

— Hinterrandsborsten wenigstens so lang wie 1/4 der grössten Breite des Gliedes. Geissel distal nicht zusammengedrückt 22

20. Fläche des Analsternits überall griesig mit erhobenen Haaransatzstellen und Mikroskulptur. Hinterrandsborsten der hinteren Schiene grob und angedrückt. Hell gelbbraun. Thorax mit schwarzer Querbinde, an der Unterseite schwarz. Hinterleib einfarbig .. .. *B. fragrans* Pallas

— Analsternit blank, zerstreut punktiert. Hinterrandsborsten der hinteren Schiene dünn und struppig 21

21. Hinterrand des Analsternits an der Seite mit einem ganz schwach bogenförmigen Einschnitt, der lateral in einer schwach knotenförmigen Ecke endigt. Hell gelbbraun, Thorax mit schwarzer Querbinde, an der Unterseite hell gelbbraun, Hinterleib einfarbig, ganz ohne Beimischung von dunklen Haaren .... *B. distinguendus* Mor.
— Hinterrand des Analsternits gleichmässig bogenförmig ohne deutlich knotenförmige Ecke. Thorax einfarbig schwarz oder mit ± hervortretender heller Binde auf Pronotum und Scutellum, an der Unterseite dunkel graubraun bis schwarz. 2. u. 3. Tergit schwarz mit hellerer Hinterrandsfranse, immer mit jedenfalls einiger Beimischung von schwarzen Haaren. Der übrige Teil des Hinterleibs hell oder der ganze Hinterleib ± schwarz .... *B. subterraneus* L.
22. Wange sehr lang, 2—2½ mal Gelenk 23
— Wange kurz, höchstens za. 1½ mal Gelenk. Behaarung des Hinterleibs ganz ohne federartig verzweigte Haare. *Anodontobombus* . 28
23. 3. Fühlerglied wenigstens doppelt so lang wie breit. 5. u. 6. Tergit (besonders am Hinterrand entlang) mit stark federartig verzweigten Haaren (50:1). *(hortorum*-Gruppe). *Odontobombus* 24
— 3. Fühlerglied za. 1½ mal länger als breit. Behaarung des Hinterleibs ohne Beimischung von federartig verzweigten Haaren (50:1). *(balteatus*-Gruppe). *Anodontobombus* 27
24. Thorax einfarbig hell 25
— Thorax schwarz oder mit schwarzer Querbinde 26
25. 2. Tergit schwarz ..... *B. gerstäckeri* Mor.
— 2. Tergit hell ..... *B. consobrinus* Dahlb.
26. Behaarung auf Thorax und Kopf verhältnismässig kurz und grob. Haare um Mundschild und Fühler nach der Spitze zu recht plötzlich schmaler werdend, fast griffelartig, von der Seite gesehen von einigermassen gleichartiger Länge, die längsten etwa 1½ mal so lang wie der Fühlerschaft. Das ganze Scutellum hell behaart. Bei Betrachtung von vorn den Rücken entlang sieht man die schwarzen Haare des Scutums dick und borstenartig, kurz und von fast gleichartiger Länge, nur nach hinten zu an der Seite fächerartig gespreizt, indem sie einen deutlichen Kontrast zu den fast dreimal längeren, dünnen, fächerartig gespreizten hellen Haaren des Scutellums bilden ..... *B. ruderatus* F. (und *B. argillaceus* Scop.)
— Behaarung länger und dünner. Haare um Mundschild und Fühler schlank zugespitzt, von der Seite gesehen von sehr ungleichartiger Länge, die längsten so lang wie der Schaft oder länger. Der vordere Teil des Scutellums schwarz behaart. Bei Betrachtung wie oben sieht man die Haare des Scutums lang, dünn und von ungleicher Länge mit gleichmässigem Übergang zu den stark fächerartig gespreizten langen schwarzen Haaren auf dem vorderen Teil des Scutellums ..... *B. hortorum* L.
27. Hinterleibsspitze schwarz. Pronotum, Scutellum und 1. u. 2. Tergit mit leuchtend rotbrauner- gelbbrauner Binde. Wange za. 2½ mal Gelenk ..... *B. hyperboreus* Schönh.

— Hinterleibsspitze hell: weiss, hell gelblich- oder rötlich-grau. Pronotum, Scutellum und 1. u. 2. Tergit in der Regel mit hell bräunlich-grauer Binde, seltener ganz schwarz. Wange za. zweimal Gelenk ..... *B. balteatus* Dahlb.

28. Geissel sehr lang, zweitletztes Glied deutlich mehr als zweimal länger als breit. Glieder gekrümmt. Die Metatarse des mittleren Fusses proximal an der Aussenseite ohne die langen dünnen, struppigen Borsten, die für die *lapidarius*-Gruppe kennzeichnend sind (Punkt 32). (*soroeensis*-Gruppe) 29

— Geissel kurz, zweitletztes Glied höchstens za. 1½ mal länger als breit 30

29. Metatarse des Hinterfusses auf dem proximalen Drittel des Vorderrandes rechtwinklich zur Aussenfläche stark abgeflacht, wie mit einem Messer abgeschält, wodurch eine dreieckige oder lanzettförmige oft schwach vertiefte, scharfrandige schwächer behaarte Längenfläche gebildet wird. Fläche des Analsternits blank ohne Mikroskulptur. Haare der Franse am Hinterrand entlang verhältnismässig lang, alle parallell nach hinten gerichtet und von ungefähr gleicher Länge. Wange etwas (za. 1¼ mal) länger als Gelenk. Hinterleibsspitze rot, weiss oder schwarz behaart. 4. Tergit oft teilweise schwarz. Thorax und 1. u. 2. Tergit mit oder ohne helle Binde ..... *B. soroeensis* F.

— Vorderrand der Metatarse des Hinterfusses nicht abgeflacht, in seiner ganzen Länge abgerundet oder schmal wie ein Lineal. Fläche des Analsternits halbmatt mit Mikroskulptur. Haare der Franse am Hinterrand entlang verhältnismässig kurz, an der Seite sich gegen die Mittellinie neigend und hier viel kürzer als an der Seite. Wange so lang wie Gelenk oder etwas kürzer. Hinterleibsspitze immer rot. Das ganze 4. Tergit rot. Thorax und 1. u. 2. Tergit mit hellbrauner Binde ..... *B. cullumanus* Kirby.

30. 3. Tergit (oder auch das zweite) rot oder gelblich. (*lapponicus*-Gruppe) 31

— 3. Tergit ganz oder teilweise schwarz 32

31. Die hintere Schiene stark abgeflacht, Fläche glatt und blank, höchstens mit einzelnen Borsten. 2. Tergit rot-gelblich, selten schwarz, 4. Tergit immer rot oder gelblich ..... *B. alpinus* L.

— Fläche der hinteren Schiene ± unregelmässig gewölbt, so gut wie überall zerstreut mit Borsten bekleidet. 2. Tergit rot oder schwarz 4. mitunter schwarz (vergl. Punkt 40) ..... *B. lapponicus* F.

32. Die Metatarse des Mittelfusses proximal auf der Aussenfläche nur mit kurzen Borsten von derselben Länge wie die entsprechenden auf der Innenfläche. Borsten der Fläche kurz und grob. Hinterrandsborsten auf der Metatarse des hinteren Beines kurz, höchstens so lang wie ¼ der grössten Breite des Gliedes. Hintere Schiene stark abgeflacht. Fläche glatt und blank, so gut wie ohne zerstreute Borsten (fast wie beim ♀). Thorax und 3. Tergit schwarz, Pronotum und 1. u. 2. Tergit mit heller Binde oder sowohl 3. als 4. Tergit hell mit ± hervortretender schwarzer Basalbinde. Behaa-

rung des Hinterleibs weiss oder gelblich bis bräunlich. Mitunter sowohl des Thorax als des Hinterleibs fast ganz hell behaart. (*terrestris*-Gruppe) 33

— Metatarse des mittleren Beines proximal auf der Aussenfläche mit (mitunter nur wenigen) langen dünnen struppigen Borsten, die viel länger sind als die entsprechenden auf der Innenfläche. Behaarung der Aussenfläche ungleichartig mit Beimischung von dünnen Haaren zwischen den groben Borsten. Hinterrandsborsten auf der Metatarse des hinteren Beines von derselben Länge wie die grösste Breite des Gliedes oder länger 34

33. 3. Fühlerglied deutlich länger als das 4., das fast quadratisch ist ..... *B. terrestris* L.

— 3. Fühlerglied etwa so lang wie das 4., das fast 1½ mal so lang wie breit ist (östliche Form) ..... *B. sporadicus* Nyl.

34. Mandibel mit einzelner Spitze (der innere Zahn kurz, Fig. 6). Aussenfläche der Mandibel mit breit lanzettförmiger, haarlos blanker Längenfläche. Wange ungefähr wie Gelenk. Hinterleib rot-rotgelb ..... *B. mastrucatus* Gerst.

— Mandibel an der Spitze bifid (innerer Zahn lang, stumpf gespalten wie bei einen Zweihufer, Fig. 7). Aussenseite nur mit ganz schmalem, haarlosem Längenwulst. Wange in der regel deutlich länger als Gelenk 35

35. Hinterrandsborsten auf der Metatarse des hinteren Fusses 1½—2 mal länger als die grösste Breite des Gliedes. Auch die proximalen Borsten auf der Aussenfläche der Metatarse des mittleren Beines augenfällig länger als bei irgend einer anderen Art. Analsternit am Hinterrand entlang mit schmaler, kammartig hervorstehender Leiste oder jedenfalls scharfrandig. Mundschild hellgelb behaart, ganz ohne Beimischung von dunklen Haaren. Hinterleibsspitze rot oder rötlich. (*lapidarius*-Gruppe) 36

— Hinterrandsborsten höchstens von etwa derselben Länge wie die grösste Breite des Gliedes, längere können nur vereinzelt vorkommen. Analsternit mit breitem, flachem oder undeutlichem unscharfem Randwulst 37

36. Behaarung des 3. Tergits besteht am Hinterrand entlang aus (oft wenigen) zerstreuten langen dünnen Haaren, im Übrigen aus kurzen, dicken, nur am Ende zugespitzten, fast stabartigen Haaren, die viel kürzer sind als die Haare auf dem 4. Tergit. Hinterleib glühend rot bis gelblich-rot gefärbt ..... *B. lapidarius* L.
Bei der gewöhnlichen Form ist 2. Tergit in der Regel schwarz, und die Binde des Pronotums schwach. Var. *decipiens* Pérez mit stark hervortretender goldenbrauner Binde.

— Behaarung des ganzen 3. Tergits besteht aus dünnen, gleichmässig schmaler werdenden spitzen Haaren von gleichartiger Länge, etwa wie die Haare auf dem 4. Tergit. Pronotum, Scutellum und 1. u. 2. Tergit mit bleichbraunen Binden. Farbe der Hinterleibsspitze bleich ..... *B. sicheli* Rad.

37. Hinterleibsspitze vom 4. Tergit an (wenn nicht missfarbig) von rein weisser Farbe (*B. cingulatus* mit vielen gelblichbräunlichen Haaren den weissen beigemischt). (*hypnorum*-Gruppe) 38
— 4. Tergit schwarz oder wie der übrige Hinterleib rot oder rötlich, oft von einer schmutzigen wie versengt gelblich-braunen Färbung 40
38. Thorax bräunlich, gelblich oder hellgrau mit scharfgezeichneter schwarzer Querbinde. Behaarung des eigentlichen Mundschildes ohne Beimischung von schwarzen Haaren (die Fläche zwischen Mundschild und Netzauge wie immer schwarz behaart) .... *B. jonellus* Kirby
— Thorax einfarbig hell gelbbraun oder mit undeutlich dunkler Querbinde oder Fleck in der Mitte. Behaarung des Mundschildes mit ± Beimischung von schwarzen unverzweigten Haaren 39
39. 3. Fühlerglied bedeutend (1½—1¾ mal) länger als breit, länger als das 4., das za. 1¼ mal länger als breit ist. 5. Fühlerglied von derselben Länge wie das 3. Thorax in der Regel einfarbig .... *B. hypnorum* L.
— 3. Fühlerglied nur etwas (za. 1¼ mal) länger als breit, ungefähr von derselben Länge wie das 4., das nur wenig länger als breit ist, 5. Fühlerglied etwa 1½ mal länger als das 4. Thorax mit oder ohne dunkle Querbinde oder Fleck in der Mitte (östliche Form) ..... *B. cingulatus* Wahlb.
40. Behaarung hinter der Fühlerbasis ohne Beimischung von kurzen daunenartig verzweigten hellgrauen Haaren. 2. Tergit ohne Beimischung von hellen (nicht roten) Haaren. (*lapponicus*)*) .. 31
— Behaarung hinter der Fühlerbasis rot mit Beimischung von kurzen daunenartig verzweigten hellgrauen Haaren ..... *B. pratorum* L.

Genus **Psithyrus** Lep.

Schlüssel zu den Arten, Weibchen (♀)

1. Analsternit ragt, von der Seite gesehen, hinter dem Tergit hervor und ist hier, von der Seite gesehen, in eine nach unten gebogene vogelschnabelähnliche Spitze ausgezogen, die in einer nach hinten gerichteten kleinen blanken spitz dreieckigen Fläche endigt. Sternit zusammengedrückt, von der Unterseite gesehen schmal dreieckig mit nur an der Seite deutlichem Seitenwulst, der causal in einen mehr oder weniger undeutlichen Kiel verlängert ist .. 6
— Analsternit von etwa derselben Länge wie das Tergit. An der Spitze nicht vogelschnabelähnlich nach unten gebogen, sondern mehr oder weniger stumpf abgerundet und hier mit einem kleinen in der Behaarung kaum sichtbaren blanken Knoten. Sternit von der

*) Da die Literatur mitunter einen starken Umfang des Schwarzen auf dem Hinterleib beim ♀ angibt, muss angenommen werden, dass ein ähnliches Verhältnis beim ♂ angetroffen werden kann, obgleich ich es in dem mir vorliegenden nicht besonders grossen Material nicht beobachtet habe.

Unterseite gesehen breit dreieckig mit breitem blankem Seitenwulst oder stark hervorstehender scharfer Kante. Grosse 2

2. Analsternit sehr breit, die Seite entlang mit zusammengedrücktem Kamm, der in einen breiten, von der Oberseite sichtbaren und hier dicht behaarten flossenartigen Zipfel ausgezogen ist. Analtergit matt mit Mikroskulptur, dicht und tief punktiert und stark behaart. Die plateauartig gehobene Fläche auf der vorderen Hälfte des 2. Sternits nimmt nur das mittlere Drittel der Breite ein, ihr Hinterrand scharfkantig, meistens mit einer Einbuchtung in der Mitte. Hinterleibsspitze einfarbig rot. Flügel sehr dunkel .... *Ps. rupestris* F.

— Analsternit mit Seitenwulst, der von der Oberseite nicht sichtbar ist. Analtergit schwach behaart. Die plateauartig gehobene Fläche des 2. Sternits nimmt fast die ganze Breite ein, ihr Hinterrand konkav bogenförmig und nicht scharfrandig. Hinterleibsspitze weiss, gelblich- oder bräunlich-grau bis fuchsrot 3

3. Die Seitenwülste des Analsternits bilden caudal breite flache Falten, die an ihrer Berührungsstelle durch eine lange und tief rinnenartige Furche von einander getrennt sind, und die den kleinen blanken Knoten an der Spitze des Gliedes nicht erreichen. Analtergit stark punktiert. Der obere Zweig der gabeligen Leiste der Mandibel wohlentwickelt, meistens den Vorderrand erreichend. Die Metatarse des Hinterfusses an der Basis nur sehr wenig breiter als am Apex 4

— Die Seitenwülste des Analsternits bilden caudal schmale Leisten, die V-förmig zusammenstossen und hier die dreieckige Innenfläche des Sclerits begrenzen. Die Leisten erreichen den kleinen blanken Knoten an der Spitze des Sclerits. Analtergit nicht oder schwach punktiert, ohne Kiel. Der obere Zweig der gabeligen Leiste mehr oder weniger deutlich, aber meistens rudimentär, bestehend aus einem undeutlichen Stumpf am Verzweigungsort. Die Metatarse des Hinterfusses an der Basis viel breiter ($1^3/_4$—$1^1/_2$ mal) als am Apex 5

4. Die Seitenwülste des Analsternits liegen in bogenförmiger Verlängerung von einander und sind stark flachgedrückt mit fast scharfem Seitenrand. Die samtartig behaarte Fläche zwischen dem Hinterrand der Wülste und der Spitze des Gliedes beinahe dreieckig, keine Behaarung zwischen den Wülsten, an der Berührungsstelle. Analtergit matt, sehr fein dicht und gleichmässig punktiert, mit ± deutlichem Längskiel. Hinterrandsborsten an der Metatarse des Hinterfusses von ungleichartiger Länge, aber ungefähr wie die Breite des Gliedes ..... *Ps. maxillosus* Klug. *(barbutellus* K.)

— Die Seitenwülste bilden einen stumpfen bis rechten Winkel miteinander und sind angeschwollen mit abgerundetem Seitenrand. Die samtartig behaarte Fläche zwischen den Hinterrändern der Wülste und der Spitze des Gliedes tief eingeschnitten, pfeilförmig. Die Wülste an der Berührungsstelle durch einen schmalen Haar-

streifen von einander getrennt. Analtergit blank, zerstreut grob und unregelmässig punktiert, ohne Längskiel. Randborsten der Metatarse von gleichmässiger Länge, etwa wie die halbe Breite des Gliedes ..... *Ps. campestris* Panz.

5. Analtergit fein und zerstreut, aber in der Regel deutlich punktiert. Mundschild mit tiefem Quereindruck hinter dem Vorderrand. 4. Fühlerglied etwa doppelt so breit wie lang. 3. Tergit an der Seite rotgelb behaart. Etwas grösser als die folgende Art. .... *Ps. vestalis* Geoffr.

— Analtergit vollständig punktlos oder die Seite entlang äusserst schwach und oberflächlich punktiert. Mundschild fast gleichmässig bis zum Vorderrand gewölbt oder hier etwas abgeflacht. 4. Fühlerglied nur etwas breiter als lang. 3. Tergit an der Seite weiss oder schwach gelblich behaart ..... *Ps. bohemicus* Seidl.

6. Die äusserste dreieckige Spitze des Analtergits mit einer Einhöhlung 8

— Die äusserste dreieckige Spitze des Analtergits schwach gewölbt, meistens mit Längsgrat 7

7. Die vorspringende Fläche, die die Buckel der Oberlippe verbindet, tief schalenförmig eingehöhlt. Der obere Zweig der gabeligen Leiste der Mandibel kurz, bei weitem nicht den Vorderrand erreichend. 5. Tergit dunkelbraun-schwarz, 4. hellbräunlich-gelblich. Pronotum und Scutellum mit breiter heller Binde .... *Ps. lissonurus* Thoms.

— Die vorspringende Fläche, die die Buckel der Oberlippe verbindet, flach oder schwach eingehöhlt. Der obere Zweig der gabeligen Leiste etwas länger als bei der vorigen Art, kann mitunter den Vorderrand erreichen. 5. Tergit bräunlich, 3. und 4. hell bräunlich bis gelblich. Pronotum mit breiter heller Binde .... *Ps. norvegicus* Sparre Schn.

8. Analtergit überall ziemlich dicht — aber ungleichmässig — punktiert und überall (wenn nicht abgenutzt) mit kurzer angedrückter Behaarung. 5. Tergit mit dunkel bräunlich- oder rötlich-grauer (bärenbrauner), seltener gelbbrauner Behaarung.*) Thorax mit breiter, heller Binde ..... *Ps. silvestris* Lep.

— Analtergit nur an der Seite deutlich punktiert und nach hinten zu. Dementsprechend nur an diesen Stellen angedrückt behaart. 5. Tergit gleichfarbig behaart, wie und eben so hell wie an der Seite und am Hinterrand des 3. Tergits entlang. 3. Tergit ganz oder teilweise wie das 4. hellrot oder gelbrot 9

9. Hinterleibsspitze einfarbig rot behaart. Thorax ohne oder mit undeutlicher heller Binde (Möglicherweise nur eine Form der folgenden Art) ..... *Ps. meridionalis* Rich.

— Hinterleibsspitze bleicher behaart, gelbrot. 4. Tergit in der Regel

*) Die Farbe unter allen Umständen sehr verschieden von und viel dunkler als an der Seite und am Hinterrand des 3. Tergits entlang. Wie auf dem 4. Tergit hell gelblich bis rein weiss.

etwas heller, weisslicher. Thorax mit breiter heller Binde .... *Ps. quadricolor* Lep. (*globosus* Ev.)

Schlüssel zu den Arten, Männchen, (♂)

1. Die Behaarung des 5.—7. Tergits und des Analsternits hell rot oder rotgelb, ganz ohne Beimischung von schwarzen oder dunkelbraunen Haaren 2
— Eins oder mehrere vom 5.—7. Tergit oder Analsternit ± schwarz behaart oder mit ± starker Beimischung von schwarzen oder dunkelbraunen Haaren. Die helle Behaarung weisslich-gelblich oder bräunlich-grau 4
2. Behaarung des 4. Tergits weisslich, 5.—7. rötlich. Das helle Band des Pronotums stark hervortretend. Die Behaarung um die Nebenaugen mit deutlicher Beimischung von bräunlichen Haaren. Behaarung des 3. Tergits jedenfalls an der Seite überwiegend rot oder weisslich. 4. Fühlerglied etwa so lang wie breit .... *Ps. quadricolor* Lep.
— Behaarung des 4.—7. Tergits einfarbig rot. Pronotum ohne oder mit schwachem Band. Behaarung um die Nebenaugen schwarz. 3. Tergit schwarz oder mit einiger Beimischung von helleren Haaren 3
3. 4. Fühlerglied bedeutend breiter als lang. ..... *Ps. rupestris* F.
— 4. Fühlerglied etwa so lang wie breit ..... *Ps. meridionalis* Rich.
4. Analsternit mit breitem ± tiefpunktiertem Randwulst, der in der Mittellinie von einem tiefen Längseindruck gespalten ist, wobei er wie 2 kommaförmige stark augenfällige Knoten hervortritt. Das übrige der Fläche blank, fast punkt- und haarlos. Die dunkle Behaarung auf dem 6. und 7. Tergit oft schwach hervortretend. Die helle Behaarung weisslich ..... *Ps. maxillosus* Klug. (*barbutellus* K.)
— Analsternit nicht so, ohne oder mit schmalem Randwulst 5
5. Hinterrand des Analsternits spitz halboval (wie das spitze Ende eines Eies), an der Spitze ± deutlich gerade abgestutzt und hier mit einem kurzen Randwulst, der oft einen an der Seite eckig begrenzten kurzen Vorsprung bildet. Die Fläche nur unmittelbar am Hinterrand entlang dicht punktiert, und hier in der Regel stark abwärtsgekrümmt, im übrigen fast punkt- und haarlos. 5. Tergit mit ± Beimischung von schwarzen oder dunkelbraunen Haaren, deutlich dunkler als sowohl auf dem 6. und 7. als dem 4. Tergit. Pronotum mit heller Binde 6
— Hinterrand des Analsternits breit abgerundet, höchstens ganz schwach zugespitzt oder abgestutzt. Die Fläche nicht oder nur schwach nach unten gekrümmt 7
6. Mundschild dicht behaart. Analsternit unmittelbar vor dem Wulst mit ± deutlichen unregelmässigen Querrunzeln .... *Ps. norvegicus* Sparre Schn.
— Mundschild weniger dicht behaart. Analsternit ohne deutliche Querrunzeln ..... *Ps. silvestris* Lep.

7. Analsternit nur unmittelbar am Hinterrand entlang dicht punktiert, im übrigen blank, fast punkt- und haarlos. Der Randwulst in der Mitte am breitesten, nach den Seiten zu regelmässig schmaler werdend, mit einer dünnen Franse von langen etwas nach hinten gerichteten Haaren. 5. Tergit schwarz, 4., 6. und 7. hell behaart. Pronotum, Scutellum und oft auch 1. Tergit mit hellen Binden ..... *Ps. lissonurus* Thoms.

— Analsternit tief, grob und ziemlich gleichmässig über dem grössten Teil seiner Fläche punktiert, ± lang und struppig behaart. Randwulst flach oder undeutlich. Behaarung des 5. Tergits in der Regel hell, viel heller als auf dem 6. und 7. und eben so hell wie auf dem 4. Tergit. Wenn 5. Tergit dunkel ist (melanistische Individuen), ist der ganze Hinterleib schwarzhaarig 8

8. 3. Fühlerglied etwa 1½ mal länger als breit. 3. + 4. Fühlerglied länger als das 5., das etwa 1½ mal länger als breit ist. Die Behaarung von sehr ungleichartiger Länge. Hinterrandsborsten auf der Metatarse des Hinterfusses ungefähr von gleicher Länge wie die Breite des Gliedes ..... *Ps. bohemicus* Seidl.

— Länge des 3. Fühlergliedes weniger als 1½ mal die Breite. 3. + 4. Fühlerglied von derselben Länge wie das 5., das etwa doppelt so lang wie breit ist. Behaarung von gleichartiger Länge, fast samtartig. Randborsten der Metatarse kürzer 9

9. Analsternit an jeder Seite mit einem dichten Büschel von langen schwarzen Borsten, an der Mittellinie entlang von einem fast haarlosen Zwischenraum abgetrennt. Behaarung auf der Aussenfläche der Metatarse des Hinterfusses kurz (von der Seite und von der Basis belichtet, so dass das Licht von den Haaren reflektiert wird), auf dem proximalen Drittel fast unsichtbar. Hinterrandsborsten ungefähr wie die halbe Breite des Gliedes, höchstens mit einzelnen längeren und dünneren Haaren ..... *Ps. campestris* Panz.

— Analsternit ohne dichten Haarbüschel an der Seite. Die ganze Fläche gleichmässig und schwach behaart, nur an der Seite einen dünnen Besatz von langen Haaren bildend. Behaarung auf der Aussenfläche der Metatarse länger (belichtet wie oben), sehr augenfällig ganz bis zur Basis des Gliedes. Hinterrandsborsten mit Beimischung von viel längeren und dünneren Borsten .... *Ps. vestalis* Geoffr.

Summary

With new characters applied in several cases, but without the use of the genital features of the males, detailed keys for the determination of the North-European *Bombus* and *Psithyrus* are presented. The genus *Bombus* are divided into species-groups rather than subgenera as in general use; a species-group key reflects the author's view on the classification.

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Faunistic Notes on Danish Spiders (Araneae). I

By
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At the very early age of 41 Peer Larsen died suddenly from a heart attack, at a time when the manuscript of this paper was nearly complete. With a degree in jurisprudence he was a Principal of the Copenhagen Taxation Authorities. His interest in spiders evolved when he was 35, and he rapidly acquired a thorough insight into spider taxonomy. His field predictions about the identity of even very small specimens were usually to the point, and at any rate very helpful. With this insight, and with his eminent abilities for drawing, he could have rendered great services to arachnology if his work had not been so abruptly cut short. He was a gay, dynamic, and helpful participant in our meetings. We sadly miss him.

O.B.

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Introduction

The main purpose of these notes is the publication of records for species found in Denmark for the first time and of further

localities for species having been recorded from a few localities only, or which appeared to have a restricted distribution.

For the convenience of those interested in Danish spiders the present paper includes a brief survey of the relevant literature supplementing Brændegaard's catalogue from 1928. With a view to non-Danish readers we have considered it useful also to comment on two of the Danish surveys preceding Brændegaard's catalogue.

Literature on Danish spiders

A. *The surveys by Sørensen and by Deichmann, with a note concerning compilations.*

Sørensen's survey of 1904 is complete, with the qualification that the genera *Dictyna* and *Pachygnahta,* and the families Pholcidae, Mimetidae, Theridiidae, Nesticidae, Erigonidae, and Linyphiidae are omitted. These groups were treated by Deichmann in 1920. Between them, these two surveys covered all the species then known to occur in Denmark.

As it might be expected that several other species would be found, both authors included many species with the remark that they had not yet been found in Denmark. The inclusion of these species in papers written in Danish has caused some confusion to foreign authors compiling lists of the world fauna of spiders, as already pointed out by Brændegård (1959, 1965). In view of this fact, it is recommended to handle statements of occurrence of species in Denmark with caution if these statements are based solely on Sørensen's or Deichmann's paper, unless the statement comes from an author who is known to be familiar with one of the Scandinavian languages.

B. *Brændegaard's Catalogue*

Brændegaard's 'Catalogue of Danish Spiders' (in Danish) appeared in 1928 as part of E. Nielsen's 'De danske Edderkoppers Biologi'.

The catalogue was made at the request of E. Nielsen and prepared on short-term conditions, too short a time to allow a definitive assessment of the material on which it was based. So errors were inevitable, but several of them would anyway have been difficult to disclose through a revision based on the literature then available.

A revision of the older Danish material, mainly belonging to

the Zoological Museum in Copenhagen, is now in progress. The revision is being carried out by Dr Brændegård, who will publish a revised list, Part I having already appeared (Brændegård 1965). The 1928 catalogue (from No. 74 and onwards) will be used as the basis of the present paper, and it will only be commented on in connection with species for which new data are published here.

C. *Nielsen's Supplement*

In 1932 Nielsen published a supplement to Brændegaard's catalogue. He added a further 24 species to the Danish fauna and gave additional records for a number of other species. However, his enumeration of the species new to Denmark (p. 222) is misleading. The correct numbers are therefore adduced here:

Dr Bornebusch increased the Danish fauna by 14 new species, viz. Nos. 12, 39, 42, 49, 52, 55, 56, 66, 74, 79, 81, 82, 87, and 90. The 10 species added by Nielsen himself are Nos. 37, 57, 60, 65, 72, 73, 75, 84, 88, and 89.

D. *Brændegård's new list and "Danmarks Fauna"*

In 1965 Brændegård published the first part of a revised list of Danish spiders, comprising 83 species of 11 families (for names of the families, see References). This paper, in English, was followed in 1966 by a volume in the series Danmarks Fauna treating the same species more thoroughly, this time in Danish.

E. *Other species added since 1928*

Although *Dolomedes plantarius* (Cl.) was included in Sørensen's survey (1904) it was recognized by neither Brændegaard nor Nielsen. However, several Danish localities were recorded by Bonnet (1930).

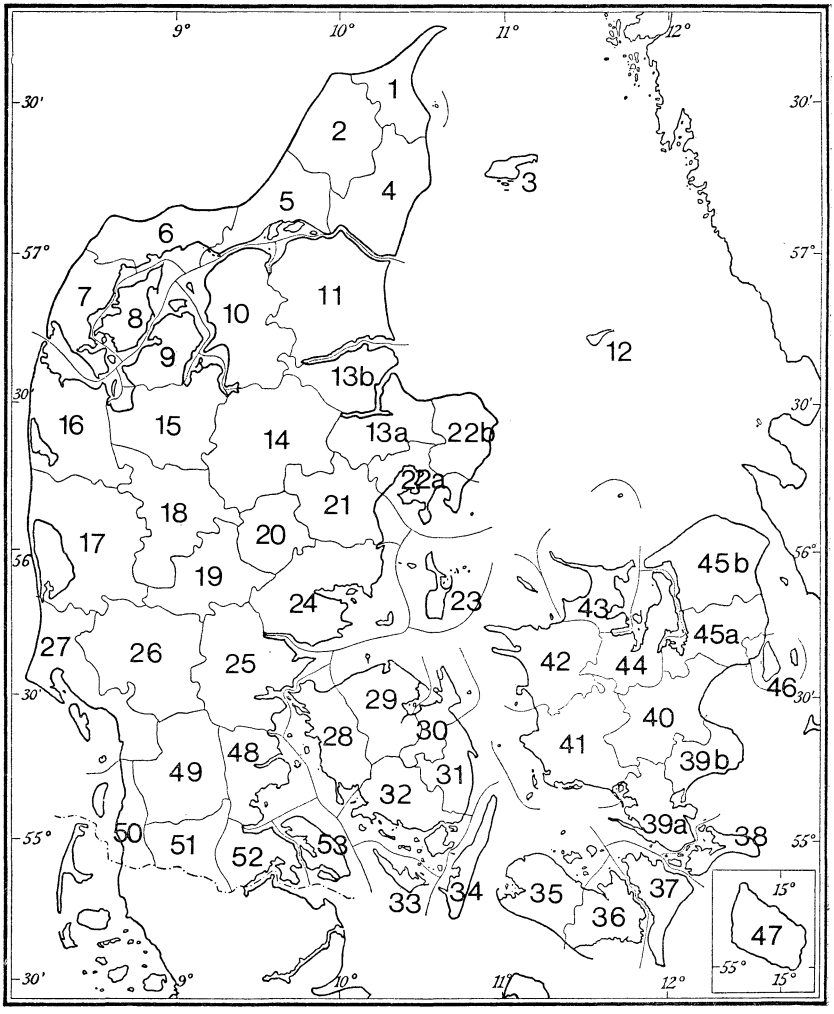
Further additions are: *Tibellus maritimus* (Menge) (Klefbeck 1951), *Hahnia cacuminata* Bös. (Lohmander 1943), *Lessertia dentichelis* (Simon) (Nielsen 1937), *Wideria capito* (Westr.) replacing *Prosopotheca incisa* (O.P.-C.), and *Erigone longipalpis* (Sund.) (Brændegård 1958). Later 7 + 12 species were added as new by Bøggild (1961, 1962). However, as it turned out, *Tibellus maritimus* was not new, and *Entelecara media* ought not to have been included as will be shown in the present paper.

F. *Additional records of localities*

Further records of species already known to occur in Denmark were published in papers by Berg & Petersen (1956, p. 173),

Cloudsley-Thompson (1955), Jespersen (1944), Klefbeck (1951), Lohmander (1942), Nørgaard (1940, 1941, 1943, 1945, 1948, 1952), Schjøtz-Christensen (1966), Ussing (1951), and Wesenberg-Lund (1937, p. 639).

Nielsen (1932) transferred all the data from one of his papers (1930) to his supplement except those for *Macrargus rufus*; the species was probably overlooked.



Map showing the numbers of the Danish botanical districts (cf. page 307: : New records).

The two *Linyphia* species treated by Nørgaard (1943) were both of them found in both the two localities mentioned in his paper (Nørgaard, personal communication).

Total number of Danish species

Brændegård (1965, 1966) enumerated 83 species. Of other families Brændegaard (1928) mentioned 274 species and *Oedothorax tuberosus,* which we regard as being only a form of *Oe. gibbosus.* Nielsen (1932) added 24 species.

A further 22 species is the net result of additions in section E (see above). In the present paper 73 species are recorded as new to Denmark.

Thus the Danish spider fauna would now seem to comprise 476 species if published data can be trusted. However, it must be borne in mind that some of these data may be altered through the revision mentioned in section B.

New records

The ordering of species has been made to conform broadly with the check list by Locket & Millidge (1953, p. 423).

The number in brackets [ ] after each place name is the number of the botanical district in which the locality is situated. These districts and their numbers are shown in the map on page 306.

On abbreviations used: OB and PL, respectively, mean that the specimens were collected and determined by Ole Bøggild or Peer Larsen, and that they are in their collections, unless otherwise stated. ZM denotes specimens lodged in the Zoological Museum of Copenhagen University. Plantation has been abbreviated to Pl.

DICTYNIDAE

Dictyna uncinata Th.

Rold Skov [11] 23.v.1965: 1 ♀ (PL).

First record from Jutland. All previous records are from Sealand: Ledøje and Islev [45a]; Copenhagen and Kongelunden [46] (Brændegård 1966).

Lathys humilis (Bl.).

Skoven, Læsø [3] 16.x.1968: 3 ♂-juv. from tree trunks (OB).
The beach by Tofte Skov [11] 4.viii.1969: 1 ♀ (PL).

All previous records are from Sealand: Tystofte by Skælskør

[41], Fortunens Indelukke [45a], and Asserbo [45b] (Brændegård 1966).

Argenna subnigra (O.P.-C.).

Byrum [3] 28.vii.1964: 1 ♀, 1 juv. in moss among *Calluna* (OB).
Bulbjerg [6] 23.x.1964: 1 ♀, 1 juv. in reindeer moss a few hundred metres west of the cliff (OB).
Maglehøj Strand [35] 17.vii.1967: 1 ♀ in lyme grass on the dike (OB).

Previously recorded from Rømø [50] (Brændegård 1966).

Argenna patula (Simon).

By Værebro, Læsø [3] 18.x.1968: 4 ♀♀, 1 ♂ in *Zostera* washed ashore (PL).

Previously recorded from Kobæk Strand [41] and the beach by Jyderup Lyng [43] (Brændegård 1966).

OONOPIDAE

Oonops domesticus de Dalmas.

Aars [10] 23.i.1966 — 16.i.1970: 8 ♀♀, 2 ♂♂, 1 juv. found indoors in all seasons of the year (OB).
Vordingborg [39a] indoors; 11.viii.1963: 1 juv. (Poul Sejr Nielsen leg., OB); 10.vii.1966: 1 ♀ (OB).

Previously recorded from Lyngby [45a], Lundtofte [45a], and Hørsholm [45b] (Brændegård 1966).

PHOLCIDAE

Pholcus phalangioides (Fuesslin).

Arden [11] 31.vii. — 4.viii.1969: 4 ♀♀, 2 ♂♂, 2 juv. (PL).

First record from Jutland. Alle previous records are from Sealand: Skraverup [41], Copenhagen [46], and Vanløse [46] (Brændegård 1966).

GNAPHOSIDAE

Herpyllus scutulatus (L. Koch).

Vordingborg [39a] 18.v.1962: 1 ♀ taken indoors (Ragnhild Nielsen leg., OB).

Previous records are all from Copenhagen [46] (Brændegård 1966).

Phaeocedus braccatus (L. Koch).

Tornbakke Rimme near Hulsig [1] 3.vii.1968: 1 juv. in reindeer moss (OB).

Tisvilde Hegn [45b] 1.v.1970: 1 juv. (PL).

Only 3 specimens have been recorded (Brændegård 1966). They were found in Teglstrup Hegn [45b] and by Tisvilde Strand [45b].

Zelotes latreillei (Simon).

Tinkerup by Smidstrup [45b] 7.viii.1966: 1 ♀, 1 ♂ (PL).

Although this species is regarded as being quite common in Denmark (Brændegård 1965), this is the first Danish record of an adult male (cf. Brændegård 1966).

Zelotes clivicola (L. Koch).

Ravnsholt [45b] 9.vii.1966: 1 ♀, 1 ♂ (PL).

Previously are recorded 1 ♀ from Ørholm [45a] and 1 ♀ from Grib Sø [45b] (Brændegård 1966). Consequently this is the first Danish record of a male.

Micaria aënea Th.

Marbjerg [10] 14.v.1966: 1 ♂ in a vole tunnel underneath grass (OB).

Ravnsholt [45b] 9.vii.1966: 1 ♀ (PL).

First Danish records.

CLUBIONIDAE

Clubiona norvegica Strand.

Svinkløv [6] 15.viii.1965: 1 ♀ (PL).

First Danish record.

Clubiona lutescens Westr.

Svinkløv [6] 16.viii.1965: 2 ♀♀; 19.viii.1965: 1 ♀ (PL).

The west end of Salten Langsø [20] 26.v.1969: 1 ♂ in litter, moss and grass near the water's edge (OB).

Recorded from a number of localities in Sealand (Brændegård 1966), and once recorded in Jutland: Draved Skov [51] (Cloudsley-Thompson 1955).

Clubiona frutetorum L. Koch.

Byrum [3] 24.vi.1968: 2 ♀♀, 1 ♂ swept from birch and oak (OB).

Near the site of Hals Kirke, Læsø [3] 25.vi.1968: 1 ♀ swept from birch (OB).

Previously recorded from Hald [14] (Brændegård 1966).

Clubiona compta C.L.K.

Near Foldgaard Sø, Læsø [3] 15.x.1968: 1 ♀-juv., 1 ♂-juv. in

leaf litter and grass below birches (OB).
Skoven, Læsø [3] 16.x.1968: 1 ♀, 1 ♀-juv., 1 ♂-juv. in leaf litter (OB).
Aars [10] 10.vi.1968: 1 ♀ (OB).
Halkær [11] 31.v.1964: 3 ♀♀ swept from a beech hedge (OB).
Gudhjem Pl. [47] 20.x.1967: 1 ♀ in leaf litter (OB).
All previous records are from Sealand (Brændegaard 1966).

Clubiona genevensis L. Koch.

Bulbjerg [6] in marram grass in a dune at the west side of the cliff; 9.viii.1963: 1 ♂; 23.ix.1966: 1 ♂, 2 ♀-juv. (OB).
This is the only Danish locality known. The first find was mentioned by Brændegård (1966).

Clubiona diversa O.P.-C.

Thorupstrand [6] 27.vi.1970: 1 ♂ on the beach (OB).
Langsted Huller, Fur [9] 27.vii.1969: 1 ♀ (PL).
Søttrup Pl. [10] 5.viii.1969: 1 ♀, 1 ♂ (PL).
The beach by Tofte Skov [11] 31.vii.1969: 13 ♀♀, 6 ♂♂; 4.viii. 1969: 8 ♀♀, 11 ♂♂ (PL).
Kongenshus Hede [15] 1.vi.1969: 1 ♂ in *Cladonia* in the low, western part of the heath (OB).
These are the first Danish records of males. The only other locality known is Tranum Klit [5] (Bøggild 1961).

Clubiona subtilis L. Koch.

Maglehøj Strand [35] on the dike; 11.vii.1966: 1 ♀ in lyme grass; 14.vii.1967: 8 ♀♀, 3 ♂♂ in marram grass; 17.vii.1967: 1 ♀ in lyme grass; 23.vii.1968: 1 ♀ in mixed herbaceous vegetation; 24.vii.1968: 2 ♀♀, 3 ♂♂ in lyme grass (OB).
Horreby Lyng [37] 20.v.1966: 1 ♀, 1 ♂; 15.vi.1969: 1 ♀ (PL).
The beach by Donnemose [37] 17.v.1969: 1 ♀ (PL).
First Danish records.

Scotina gracilipes (Bl.).

Asserbo Pl. [45b] 23.viii.1969: 2 ♀♀ (PL).
First record from Sealand.

Phrurolithus festivus (C.L.K.).

Fur [9] 6.ix.1963: 1 ♀ near the water's edge on the north beach (OB).
First record from Jutland.

PHILODROMIDAE

Tibellus maritimus (Menge).

Kandestederne [1] 5.vii.1968: 1 ♀, 5 juv. in marram grass (OB).
Danzigmand [3] 29.vii.1964: 5 juv. in marram grass (OB).
Hansted-Reservatet [6] 16.v.1965: 1 ♀, 1 ♀-juv., 2 ♂-juv. in marram grass (OB).
Maglehøj Strand [35] on the dike; 11.vii.1958: 1 ♂ in lyme grass; 14.—17.vii.1967: 2 ♀♀ in marram grass and in lyme grass (OB).
Rødbyhavn [35] 13.vi.1955: 1 ♀ in lyme grass on the quay (OB).
Holbæk Amts Sandflugtsplantage [43] 4.v.1968: 1 ♀, 2 ♂♂ (PL).
Dueodde [47] 18.x.1967: 13 juv. in marram grass, the epigyne visible through the cuticles of two specimens (OB).

The previous records are from Tranum Klit [5] (Bøggild 1961) and from Anholt [12] (Klefbeck 1951).

SALTICIDAE

Salticus zebraneus (C.L.K.).

Vordingborg [39a] 15.v.1958: 1 ♀, 1 juv. (OB).
Tystofte [41] 28.vi.1959: 1 ♂ (OB).
Springforbi [45a] 4.—6.vii.1955: 6 ♀♀, 5 ♂♂, 2 juv. on tree trunks (OB).

Previous records: Ulvshale [38] and Gribsø [45b] (Brændegaard 1928).

Marpissa radiata (Grube).

Glænø [41] in the heads of *Phragmites*; 23.vii.1967: 5 ♀♀, 3 ♂♂, 3 juv.; 1.viii.1968: 2 ♀♀, 1 ♀-juv.; 27.vi.1969: 3 ♀♀, 3 juv. (OB).

Recorded from 3 localities in district [14] and from Tranekær [34] by Brændegaard (1928).

Hyctia nivoyi (Lucas).

Højsande, Læsø [3] 17.x.1968: 2 ♀♀ (PL).
Syrodde, Læsø [3] 17.x.1968: 1 ♂ (PL).
By Vesterø søndre Kirke, Læsø [3] 18.x.1968: 2 ♀♀ (PL).
By Donnemose, Falster [37] 21.v.1966: 3 ♀♀ (PL).

Previously recorded from Skagen Pl. [1] and from the dunes by Aalbæk [1] and by Svinkløv [6] (Brændegaard 1928).

Euophrys lanigera (Simon).

Copenhagen [46] 13.vi.1970: 1 ♂ (I. M. Thamdrup leg., PL).

First Danish record.

Synageles venator (Lucas).

Kandestederne [1] 5.vii.1968: 2 ♂♂ in marram grass (OB).

First Danish males. Previous records: Blokhus [5] (Brændegaard 1928) and Tranum Klit [5] (Bøggild 1961).

LYCOSIDAE

Lycosa rubrofasciata (Ohlert).

Horreby Lyng [37] 20.v.1966: 3 ♀♀ (PL).

First Danish record.

Tarentula pinetorum Th.

Rold Skov [11] 23.viii.1963: 6 ♀♀, 3 ♀-juv., 3 ♂-juv. from a grass-covered glade in the forest (OB).

First Danish record.

Tarentula inquilina (Cl.)

Jægerspris Nordskov [44] 15.iv.1965: 4 ♀♀, 2 ♂♂ (PL).

First record from Sealand. All previous records are from Jutland: Hald and Lindum Skove [14], the forests near Julsø and Himmelbjerget [20], and Vejle [25] (Brændegaard 1928).

Pirata latitans (Bl.)

Livø [10] 29.vii.1969: 1 ♀ (PL).

Hesselholt Skov [11] 30.vi.1968: 1 ♂ (PL).

First Danish records.

Pirata uliginosus (Th.)

Rold Skov [11] 23.v.1965: 1 ♀ (PL).

Hesselholt Skov [11] 29.vi.1968: 3 ♀♀, 1 ♂ (PL).

Jægersborg Skov [11] 1.viii.1969: 9 ♀♀ (PL).

Madum Sø [11] in *Sphagnum* cushions among grass tussocks; 29.v.1966: 2 ♀♀, 3 ♂♂; 16.vi.1966: 3 ♀♀ (OB).

The only previous record is 1 ♀ from Bommerlund Pl. [52] (Bøggild 1962).

AGELENIDAE

Coelotes terrestris (Wider) sensu Wiehle 1963.

Denderup Vænge [39a] 9.vi.1968: 3 ♀♀ (PL).

First Danish record.

HAHNIIDAE

Hahnia montana (Bl.).

Strandkjær, Mols [22a] 30.viii.1970: 11 ♀♀, 2 ♂-juv. in beech and oak litter on the sloping wood floor west of Langemosen (OB).

Vindeholme Skov [35] 14. and 16.vii.1967: 1 juv., 1 ♂ in needle litter (OB).

Tisvilde Hegn [45b] 24.iii.1961: 1 ♀, 1 juv. in moss (OB).

The dunes by Asserbo Pl. [45b] 30.viii.1969: 2 ♂♂ (PL).

Paradisbakkerne [47] 18.x.1967: 2 ♀♀, 1 ♀-juv., 2 ♂-juv. in moss below mountain pine, on the eastern uppermost edge of the Kodal ravine (OB).

First Danish records.

Hahnia cacuminata Bös.

Feddet [39b] 9.vi.1968: 1 ♀ (PL).

Melby Overdrev [45b] 4.v.1968: 1 ♀ (PL).

The only reference to Danish finds is 'also in Denmark' (Lohmander 1943).

Hahnia nava (Bl.)

Vesterø Hede, Læsø [3] 23.vii.1946: 1 ♀ (Ove Ørsnes leg., OB det., ZM).

Byrum [3] 28.vii.1964: 1 ♀, 2 juv. in moss beneath *Calluna* (OB); 17.x.1968: 1 ♀ (PL).

Højsande, Læsø [3] 17.x.1968: 2 ♂♂ (PL).

Danzigmand [3] 15.x.1968: 1 ♀ beneath *Empetrum* at the foot of the dune (OB).

Bulbjerg [6] 23.ix.1966: 1 ♀ in a dune at the west foot of the cliff (OB).

Svinkløv [6] 22.vii.1970: 1 ♀ in marram grass (OB).

Holbæk Amts Sandflugtsplantage [43] 4.v.1968: 1 ♂ (PL).

First Danish records.

Hahnia helveola Simon.

Glænø [41] in beech and oak litter in the south fringe of the wood; 1.viii.1968: 1 ♀ (Peder Sejr Jensen leg., OB); 27.vi.1969: 1 ♀, 1 juv. (OB).

Gribskov [45b] 25.ix.1965: 1 ♀ (PL).

First Danish records.

Hahnia pusilla C.L.K.

Vorsø [24] 19.iv.1946: 1 ♀ in a spruce stand (Ove Ørsnes leg., OB det., ZM).

Vindeholme Skov [35] 14.vii.1967: 1 ♂, 1 juv. in thin moss cushions on needle litter (OB).

Denderup Vænge [39a] 9.vi.1968: 1 ♀ (PL).

Gribskov [45b] 25.ix.1965: 1 ♀; 3.xii.1965: 7 ♀♀, 1 ♂; 12.iii.1966: 3 ♀♀, 2 ♂♂ (PL).

First Danish records.

MIMETIDAE

Ero cambridgei Kulcz.

Donnemose [37] 18.v.1966: 1 ♀ (PL).

Horreby Lyng [37] 20.v.1966: 2 ♀♀ (PL).

Nørreskov, Als [53] 12.iv.1968: 1 ♀ (PL).

First Danish records.

THERIDIIDAE

Dipoena tristis (Hahn).

Skoven, Læsø [3] 16.x.1968: 2 ♀-juv., 2 ♂-juv. (PL).

First Danish record.

Crustulina guttata (Wider). See sub *C. sticta*.

Crustulina sticta (O.P.-C.).

Øster Hurup [11] in marram grass, with dense low grass in it, on the west side of the low dunes, 2.5 km north of the town; 9.viii.1967: 8 ♀♀, 1 ♂-juv., 1 juv.; 27.viii.1967: 4 ♀♀, 3 ♂-juv., 6 small juv.; 12.iv.1968: 15 ♀♀, 4 ♀-juv., 8 ♂-juv., 2 smaller juv.; 19.x.1968: 22 ♀♀, 1 ♀-juv., 8 ♂-juv.; 2.vi.1969: 15 ♀♀, 7 ♂♂, 8 ♀-juv., 2 ♂-juv., 2 smaller juv. (OB).

The beach by Tofte Skov [11] 31.vii.1969: 6 ♀♀, 1 juv.; 4.viii. 1969: 3 ♀♀. All specimens were found — together with *Crustulina guttata* (Wider) — among dry grass and low herbage close to the coast (PL).

First Danish records. The world distribution of this species is interesting: Widespread in the United States, including one Alaskan record, and in southern Canada (Levi 1957), occurring in Spain: Minorca (Denis 1961), parts of France (Levi 1957, Denis 1954), Finland: Valsörarna, 63°25'N., 21°05'E. (Westman 1959), and Japan: Awashima, 38°29'N., 139°14'E. (Ohno & Yaginuma 1967).

Theridion tepidariorum C.L.K.

Maglehøj Strand [35] 12.vii.1951: 1 ♀, 2 ♂♂; 10.vii.1958: 1 ♀ in a poplar; 11.vii.1958: 2 ♀♀, 3 ♂♂, 1 ♀-juv. probably taken out of doors (Eyvind Knudsen leg.); 16.—17.vii.1967: 9 ♀♀, 2 ♂♂ taken out of doors (OB).

Tillitse Sønderskov [35] 13.vii.1951: 1 ♀ taken far from the nearest house (OB).

Vordingborg [39a] 7.—10.viii.1950: 2 ♀♀; 14.—16.vii.1951: 5 ♀♀ probably taken out of doors, two of them with 87 and 106 eggs, respectively; 6.viii.1961: 1 ♂ on a lilac in a garden (OB).

Marienlyst Skov near Vordingborg [39a] 29.vii.1968: 1 ♂ in grass along the closed railroad (OB).

Tystofte [41] 24.vii.1951: 6 ♀♀ in a garden, four of them with 87, 108, 134, and 158 eggs, respectively; 7.vii.1958: 1 ♀ (OB).

Kobæk Strand [41] 26.vii.1951: 1 ♂ on the trunk of a Scots pine (OB).

Near Slusegaard, Bornholm [47] 24.vii.1950: 1 ♀ out of doors (OB).

Frøslev Pl. [51] 9.x.1954: 2 ♀♀ out of doors (OB).

Padborg [52] 30.vii.1955: 4 ♀♀, 1 ♂, 1 juv. from a cowshed (OB).

Bov [52] 30.vii.1955: 2 ♀♀ from a pigsty, one of them with 3 egg-sacks: the oldest of them with 129 young ones and 71 dried-up eggs; the next with 102 young ones, 26 eggs near hatching, and 33 eggs without visible legs; the youngest of them with 165 eggs with visible short legs (OB).

It is worth noting, and it may be significant, that all these finds are from the southern part of Denmark, all south of 55°20'N. It is tempting to suppose that the species is advancing northward due to climatic changes. However, Brændegaard (1928) recorded a find by Engelhart, who died in 1919, from Aalholm [36]. It is not known if this find was made out of doors. Thus, if the data presented above do indicate a north limit, this limit may have been stationary for half a century or more. Brændegaard recorded a further number of finds, from districts [45a] and [46], some of them, and possibly all of them, from hothouses.

Theridion pictum (Walck.).

Marienlyst Skov near Vordingborg [39a] 22.vii.1951: 1 ♀ (OB).

Luknam by Furesø [45a] 4.x.1953: 1 ♀-juv., 1 ♂-juv., 1 smaller juv. (OB).

Malmmose, Holte [45a] 31.v.1955: 1 ♀-juv. (OB).

Recorded from hothouses in Islev Mark [45a] (Brændegaard 1928).

Theridion neglectum Wiehle.

Vindeholme Skov [35] 14.vii.1967: 1 ♂ swept from herbaceous vegetation along a road in the wood (OB).

Tystofte [41] 8.—9.vi.1957: 2 ♀♀, 3 ♂♂ on tree trunks; 6.vi.1958: 1 ♀ in a kitchen (Svend Møller leg.); 4.vii.1958: 1 ♀ with 104 eggs, on a tree trunk (OB).

Fortunen [45a] 22.vi.1958: 1 ♀ (OB).

Springforbi [45a] 24.v.1954: 1 ♀ (Ole Maae Jensen leg., OB).

West of Gudhjem [47] 15.vii.1950: 1 ♀ (OB).

First Danish records.

Theridion melanurum (Hahn).

Fortunbyen, Lyngby [45a] in a house; 26.xi.1954: 1 ♀; 11.i.1956: 1 ♂-juv. that moulted to an adult male 17—18 days later; 20.i.1956: 1 ♂; 10.vii.1957: 7 ♀♀ (OB).

The distinction of this and the preceding species is of recent date. A revision of older material is necessary, and for the present the distribution of this species is thus uncertain.

Theridion familiare O.P.-C.

Byrum [3] 25.vi.1968: 2 ♂♂ in a room at Wilsen's Pension (OB).

Copenhagen [46] in a small room, always with open window to the north, in the Zoological Laboratory of the Royal Veterinary and Agricultural College; 20.ix.1960: 1 ♀; 10.vi.1961: 1 ♂ (OB).

First Danish records.

Theridion pallens Bl.

Skoven, Læsø [3] 16.x.1968: 1 ♀-juv. from a tree trunk (OB).

Marbjerg [10] 30.v.1966: 1 ♂ swept from *Vaccinium myrtillus* with patches of *Calluna* (OB).

Rold Skov [11] 25.v.1965: 1 ♂ (PL).

Venø [16] 2.vi.1968: 1 ♂ in conifers on Forstov Bakke (OB).

Vorsø [24] 7.vii.1946: 2 ♂♂ (Ove Ørsnes leg., OB det., ZM); 25.v. 1968: 1 ♀ on the fringe of a wood (OB).

First records from Læsø and Jutland.

Robertus arundineti (O.P.-C.).

Store Hareskov [45a] 22.vi.1969: 1 ♀ (PL).

Fortunbyen, Lyngby [45a] 10.vii.1957: 1 ♂ in a cellar; 26.x.1958: 2 ♀♀ out of doors (OB).

Bøllemosen [45a] 21.vi.1955: 1 ♂ (OB).
First Danish records.

Robertus neglectus (O.P.-C.).

Rold Skov [11] 26.v.1965: 1 ♂; 29.v.1965: 1 ♂ (PL).
Donnemose [37] 18.v.1966: 1 ♂ (PL).
Geel Skov [45a] 7.viii.1957: 1 ♂ (OB).
First Danish records.

Pholcomma gibbum (Westr.).

Byrum [3] 17.x.1968: 2 ♀♀ (PL).
Vester Thorup Pl. [6] in moss below mountain pine; 9.viii.1963: 1 ♀; 6.x.1963: 2 ♀♀; 23.x.1964: 1 ♀, 1 ♂; 20.v.1966: 1 ♀; 25.vi. 1966: 2 ♀♀, 1 ♂; 23.ix.1966: 1 ♂ (OB).
Nørremiler near Fjerritslev [6] 19.vii.1970: 1 ♀, 1 ♂-juv. in moss and *Empetrum* (OB).
Strandkjær, Mols [22a] 30.viii.1970: 2 ♀♀ in beech and oak litter on the sloping wood floor west of Langemosen (OB).
Jyderup Skov [43] 5.vii.1960: 1 ♀ beneath a heap of branchwood; 24.iii.1961: 1 ♀, 1 ♂ in moss (OB).
Bognæs [45a] 10.iv.1965: 1 ♀ (PL).
Gribskov [45b] 3.x.1965: 9 ♀♀, 4 ♂♂; 3.xii.1965: 1 ♀; 6.iii.1966: 2 ♀♀, 1 ♂ (PL).
Hammeren [47] 17.x.1967: 3 ♀♀ in needle litter below mountain pine (OB).
Sorthat Pl. [47] 19.x.1967: 1 ♀ in moss below mountain pine (OB).
Gudhjem Pl. [47] 16.x.1967: 1 ♀, 1 ♂ in leaf litter on the forest floor (OB).
The only previous record is 1 ♀ from Svinkløv Pl. [6] (Brændegaard 1928).

TETRAGNATHIDAE

Tetragnatha dearmata Th.

Emborg by Mossø [20] 1.—10.viii.1955: 3 ♀♀, 1 ♂ (Harald van Deurs leg., OB).
First Danish record. The specimens recorded as being of this species by Brændegaard (1922) were later grouped with *T. obtusa* C.L.K. (Brændegaard 1928).

ARANEIDAE

Meta menardi (Latr.).

Romsø [30] 21.vii.1953: 1 ♀ in a cellar with dripping wet walls

(Johs. Keiding leg., OB).

Recorded from Hyllested [11], Jægerspris [44], and three localities in Bornholm [47] (Brændegaard 1928).

Araneus gibbosus (Walck.).

Kongelunden [46] 8.v.1961: 1 ♀ swept from branches of European larch (OB).

First Danish record.

Araneus sturmi (Hahn).

Hareskoven [45a] 17.vii.1965: 1 ♂ (PL).

Previously recorded from Bommerlund Pl. [52] (Bøggild 1962).

Theridiosoma gemmosum (L. Koch).

The west end of Salten Langsø [20] 26.v.1969: 1 ♂-juv. in litter, moss and grass roots, quite close to the water's edge (OB).

Vejlemose, Holte [45a] 2.v.1956: 1 ♂-juv. (OB).

Malmmose, Holte [45a] 11.v.1956: 1 ♂-juv., 1 juv. (OB).

Kollemose, Virum [45a] 17.v.1956: 1 juv. (OB).

First Danish records. The specimens from Malmmose and Kollemose were found close to a water surface, whereas the Vejlemose specimen was found in a slightly moist area ab. 70 metres from a water surface.

ERIGONIDAE

Ceratinella brevipes (Westr.).

Tranum Strand [5] 28.iii.1968: 1 ♂ in a dune (OB).

Maglehøj Strand [35] 11.vii.1966: 1 ♀ in lyme grass on the dike; 15.vii.1967: 1 ♀ on the soil surface in mixed, herbaceous vegetation above the lyme grass zone on the dike; 24.vii.1968: 1 ♀ in lyme grass on the dike (OB).

Tystofte [41] 21.vi.1961: 1 ♀ beneath grass quite close to the water surface in a bog south of Korsagergaard (OB).

Saltholm [46] 1.vi.1968: 1 ♂ (PL).

First Danish records.

Ceratinella brevis (Wider).

Søndbjerg Strand [7] 26.ix.1969: 1 ♀ in a valley with *Calluna* and *Sphagnum* (Ulla Nordtorp leg., OB).

Fur [9] 11.v.1965: 1 ♀ beneath *Calluna* near Lille Jens Høj (OB).

Livø [10] 29.vii.1969: 1 ♀ in oak litter among ferns, near Louisehøj (OB).

Hesselholt Skov [11] 29.vi.1968: 1 ♀; 1.vii.1968: 5 ♀♀, 1 ♂ (PL).
Horreby Lyng [37] 20.v.1966: 1 ♂ (PL).
Marienlyst Skov near Vordingborg [39a] 15.v.1958: 2 ♀♀, 1 ♂ in anemones below young beeches. In beech litter in the same locality: 1.iv.1961: 1 ♀; 10.viii.1961: 1 ♂, 1 ♀-juv.; 10.vii.1966: 1 ♂, 1 juv. (OB).
Denderup Vænge [39a] 9.vi.1968: 4 ♀♀, 2 ♂♂ (PL).
Holbæk Amts Sandflugtsplantage [43] 4.v.1968: 1 ♀ (PL).
Jægerspris Nordskov [44] 15.iv.1965: 1 ♀; 15.vi.1968: 1 ♀ (PL).
Previously recorded from Lyngby Mose [45a], Rude Skov [45b], and Teglstrup Hegn [45b] (Brændegaard 1928).

Ceratinella scabrosa (O. P.-C.).

Marienlyst Skov near Vordingborg [39a] 18.v.1970: 1 ♂ in beech and oak litter a few metres from the sea slope (OB).
Tystofte [41] 8.vi.1957: 1 ♀ on a tree trunk (OB).
Recorded from Rø [47] by Brændegaard (1928); his query probably indicates that the collector is unknown.

Walckenaera acuminata Bl.

Fosdal [5] 28.iii.1968: 1 ♀ in moss near the brook (OB).
Ertebølle [10] 29.x.1969: 1 ♂ (PL).
Kelddals Mølle, Ejdrup [10] 5.ix.1968: 1 ♂ beneath dense grass on moist soil near the millpond (OB).
Rold Skov [11] 10.x.1967: 1 ♀ (PL).
Øster Hurup [11] 27.viii.1967: 1 ♀ from a heath with *Calluna* and *Empetrum*, 2.5 km north of the town (OB).
Rude Skov [45b] 17.iii.1965: 2 ♀♀ (PL).
Gribskov [45b] 3.x.1965: 1 ♀; 23.x.1965: 1 ♀; 28.v.1966: 1 ♀; 30.v.1966: 1 ♀ (PL).
Salene Bugt [47] 16.x.1967: 1 ♂ in moss in the wood, near Storefos (OB).
Nørreskov, Als [53] 11.—15.iv.1968: 6 ♀♀ (PL).
Previous records: 2 ♀♀ from Tranum Klit [5] (Bøggild 1961) and 1 ♀ from Fortunen [45a] (Brændegaard 1928).

Wideria antica (Wider).

Byrum [3] 15.x.1968: 2 ♀♀; 17.x.1968: 2 ♀♀, 2 ♂♂ (PL).
Skoven, Læsø [3] 16.x.1968: 1 ♂ in leaf litter below birch and oak (OB); 1 ♂ (PL).
Svinkløv [6] 15.v.1969: 2 ♀♀ in a dune with *Calluna* and *Empetrum* (OB).

Søndbjerg Strand [7] 23.ix.1969: 1 ♀ beneath *Empetrum* (OB).
Øster Hurup [11] 2.vi.1969: 6 ♀♀ in marram grass, with low dense grass in it, on the west side of the low dunes, 2.5 km north of the town (OB).
Kongenshus Hede [15] 1.vi.1969: 1 ♀ in moss among heather tussocks in the western, lower part of the heath (OB).
Marienlyst Skov near Vordingborg [39a] 1.iv.1961: 1 ♀ in litter below young beeches (OB).
Kobæk Strand [41] 5.vii.1966: 1 ♀ in a small moss cushion below white spruce in the north wood (OB).
Gribskov [45b] 27.iii.1965: 1 ♂; 12.iii.1966: 1 ♂ (PL).
Horserød Hegn [45b] 24.iii.1961: 1 ♀ in moss (OB).
Melby Overdrev [45b] 4.v.1968: 2 ♀♀ (PL).
Tisvilde Hegn [45b] 24.iii.1961: 1 ♂ in moss (OB).
Tinkerup [45b] 6.viii.1966: 1 ♀ (PL).
Frøslev Mose [51] 23.viii.1955: 1 ♂ (OB).
Nørreskov, Als [53] 11.iv.1968: 1 ♀; 12.iv.1968: 1 ♀ (PL).
The only previous record is from Tranum Klit [5] (Bøggild 1961).

Wideria melanocephala (O. P.-C.).

Læsø [3] 24.vii.1946: 1 ♀ from a heath south of Byrum (Ove Ørsnes leg., OB det., ZM).
Fosdal [5] 29.vi.1956: 1 ♀ (OB).
Hansted-Reservatet [6] 26.vi.1963: 2 ♂♂ in moss (OB).
Kobæk Strand [41] 3.vii.1966: 1 ♀ in a small moss cushion on the sunny floor of a Scots pine stand in the south wood (OB).
The only previous record is from Tranum Klit [5] (Bøggild 1961).

Wideria fugax (O. P.-C.).

Byrum [3] 16.x.1968: 1 ♂ (PL).
Rude Skov [45b] 6.iii.1965: 1 ♂ (PL).
Gribskov [45b] 13.ii.1965: 1 ♂; 3.xii.1965: 2 ♀♀; 6.iii.1966: 2 ♂♂; 26.iii.1966: 1 ♂ (PL).
Melby Overdrev [45b] 4.v.1968: 1 ♂ (PL).
Nørreskov, Als [53] 12.iv.1968: 1 ♂ (PL).
Only previous record: 1 ♀ from Grib Skov [45b] (Nielsen 1932).

Trachynella nudipalpis (Westr.).

Near Foldgaard Sø, Læsø [3] 15.x.1968: 1 ♂ in grass with birch litter (OB).

Svinkløv [6] 23.viii.1965: 1 ♀ (PL).
Vorsø [24] 20.iv.1946: 1 ♂ at Vesterdam (Ove Ørsnes leg., OB det., ZM).
Tystofte [41] 7.vii.1966: 1 ♀ beneath low vegetation by the water's edge in a bog south of Korsagergaard (OB).
Gribskov [45b] 13.ii.1965: 1 ♀ (PL).
Utterslev Mose [46] 21.i.1968: 1 ♂; 27.v.1968: 1 ♀ (PL).
The only previous record is from Lyngby Mose [45a] (Brændegaard 1928).

Trachynella obtusa (Bl.).

Rold Skov [11] 8.x.1967: 1 ♀ (PL).
Denderup Vænge [39a] 9.vi.1968: 1 ♀ (PL).
Hareskoven [45a] 20.ii.1965: 1 ♀; 27.ii.1965: 1 ♀; 4.iv.1965: 1 ♀; 8.v.1965: 1 ♀ (PL).
Gribskov [45b] 3.x.1965: 1 ♂; 26.iii.1966: 1 ♀ (PL).
Rude Skov [45b] 17.iii.1965: 1 ♀ (PL).
Gudhjem Pl. [47] 20.x.1967: 1 ♂ in leaf litter (Jørn Viborg Christensen leg., OB).
Previous records: 1 ♀ from Stampeskov [45a] and 1 ♀ from Horserød Hegn [45b] (Nielsen 1932).

Prosopotheca monoceros (Wider).

Danzigmand [3] 15.x.1968: 1 ♀ beneath *Empetrum* south of the dune (OB).
By Vesterø søndre Kirke, Læsø [3] 18.x.1968: 2 ♀♀ (PL).
Anholt [12] 10.viii.1946: 1 ♂ picked up north of the harbour (Ove Ørsnes leg., OB det., ZM).
First Danish records.

Prosopotheca corniculans (O. P.-C.).

Marienlyst Skov near Vordingborg [39a] 13.vii.1964: 2 ♀♀; 10.vii. 1966: 2 ♀♀; all found in beech litter on shaded and moist forest floor (OB).
First Danish record.

Cornicularia unicornis (O. P.-C.).

Danzigmand [3] 15.x.1968: 2 ♀♀ (PL); 1 ♂ beneath *Empetrum* south of the dune (OB).
Øster Foldgaard, Læsø [3] 15.x.1968: 1 ♀, 1 ♂ (PL).
Nordmarken, Læsø [3] 16.x.1968: 1 ♀ (PL).
By Værebro, Læsø [3] 18.x.1968: 1 ♂ (PL).

Faarupklit [5] 21.vi.1970: 1 ♀ in a hollow with lyme grass and *Hippophaë* in dunes (OB).

Øster Hurup [11] 12.iv.1968: 1 ♂ in marram grass, with dense low grass in it, on the west side of the low dunes, 2.5 km north of the town (OB).

Vorsø [24] 20.iv.1946: 1 ♀; 8.vii.1946: 1 ♀ (Ove Ørsnes leg., OB det., ZM).

Horreby Lyng [37] 20.v.1966: 3 ♀♀, 5 ♂♂ (PL).

At Masnedsund Bridge, Sealand [39a] 2.iv.1961: 1 ♀ in sea wrack (OB).

Kobæk Strand [41] 5.vii.1966: 1 ♀ in lyme grass (OB).

Gribskov [45b] 30.v.1966: 1 ♀ (PL).

First Danish records.

Cornicularia kochi (O. P.-C.).

By Branden Ferry Berth [9] 5.ix.1966: 1 ♂ in lyme grass (OB).

Kelddals Mølle, Ejdrup [10] 5.ix.1968: 1 ♀ beneath dense grass on moist soil near the millpond (OB).

Vejrholt Mose, Arden [11] 1.vii.1968: 1 ♀ (PL).

Luknam by Furesø [45a] 4.x.1953: 1 ♀ (OB).

Utterslev Mose [46] 21.i.—2.vi.1968: 19 ♀♀, 1 ♂ (PL).

First Danish records.

Cornicularia cuspidata (Bl.).

Vester Thorup Pl. [6] in moss below mountain pine; 8.vii.1963: 1 ♀; 9.viii.1963: 1 ♂-juv.; 6.x.1963: 1 ♂; 23.x.1964: 1 ♂; 20.v. 1966: 5 ♀♀; 25.vi.1966: 1 ♀; 23.ix.1966: 3 ♀♀, 2 ♂♂, 1 ♂-juv. (OB).

Søndbjerg Strand [7] 22.—25.ix.1969: 2 ♀♀, 4 ♂♂ in moss and beneath dense grass in the pine forest; 1 ♂ in raw humus beneath dense grass on very moist soil in a bog (OB).

Rold Skov [11] 2.—8.x.1967: 1 ♀, 2 ♂♂ (PL).

Hesselholt Skov [11] 29.vi.1968: 1 ♀ (PL).

Jægerspris Nordskov [44] 15.iv.1965: 4 ♀♀; 5.vi. 1968: 1 ♀; 15.vi. 1968: 2 ♀♀ (PL).

Hareskoven [45a] 14.v.1966: 1 ♀ (PL).

Nørreskov, Als [53] 11.—12.iv.1968: 5 ♀♀, 3 ♂♂ (PL).

Previously recorded from Lyngby Mose [45a] (Brændegaard 1928) and Grib Skov [45b] (Nielsen 1932).

Cornicularia vigilax (Bl.).

By Værebro, Læsø [3] 18.x.1968: 2 ♀♀, 3 ♂♂ (PL).

Utterslev Mose [46] 1.vi.1968: 1 ♀ (PL).

Only one previous record: 1 ♀ from Bommerlund Pl. [52] (Bøggild 1962).

Dicymbium tibiale (Bl.).

Rold Skov [11] 1.—10.x.1967: 15 ♀♀, 10♂♂ (PL).
Hesselholt Skov [11] 29.vi.—1.vii.1968: 9 ♀♀, 5 ♂♂ (PL).
Denderup Vænge [39a] 9.vi.1968: 7 ♀♀, 4 ♂♂ (PL).
Jægerspris Nordskov [44] 15.iv.1968: 5 ♀♀, 1 ♂ (PL).
Utterslev Mose [46] 1.vi.1968: 1 ♀ (PL).
Nørreskov, Als [53] 11.—14.iv.1968: 5 ♀♀, 2 ♂♂ (PL).

Previously recorded from Rude Skov [45b] and Grib Skov [45b] (Nielsen 1932).

Entelecara media Kulcz.

This species should be deleted from the Danish list. The specimens from Bommerlund Pl. (Bøggild 1962) are, in fact, *E.erythropus* (Westr.) (cf. Locket & Millidge 1963).

Tmeticus affinis (Bl.).

Utterslev Mose [46] 21.i.1968: 5 ♀♀, 2 ♂♂; 6.iv.1968: 12 ♀♀; 7.iv.1968: 1 ♂; 5.v.1968: 1 ♀, 1 ♂; 18.v.1968: 2 ♀♀ (PL); 9.vi. 1970: 2 ♀♀ beneath dead plant residues on moist soil (OB).

First Danish record.

Dismodicus bifrons (Bl).

Hulsig [1] 3.vii.1968: 1 ♀ in wilted grass in a ditch (OB).
Bunken Klitplantage [1] 4.vii.1968: 1 ♀ from a deep ditch (OB).
Fosdal [5] 29.vi.1956: 3 ♀♀ (OB).
Marienlyst Skov near Vordingborg [39a] 15.v.1958: 2 ♀♀, 4 ♂♂ on moist soil (OB).
Kobæk Strand [41] 9.vi.1957: 1 ♀ in the wood; 8. vii.1958: 1 ♀ in a dried-up *Phragmites* swamp (OB).
Stigsnæs [41] 6.vi.1954: 1 ♀ (OB).
Uggeløse Skov [45b] 8.vi. 1958: 1 ♀ (OB).
Freerslev Hegn [45b] 22.v.1960: 1 ♂ (OB).
The rampart by Husum [46] 13.v.1950: 1 ♀ (OB).

Recorded from Fredericia [25] and Spellinge Mose [47] by Nielsen (1932), and from Bommerlund Pl. [52] (Bøggild 1962).

Dismodicus elevatus (C.L.K.).

Thorupstrand [6] 27.vi.1970: 1 ♂ on the top of a concrete post, and so probably an aeronaut from the nearby plantation (OB).

Hansted-Reservatet [6] 27.vi.1963: 2 ♀♀ swept from pine in Klitskov (OB).

Anholt [12] 8.viii.1946: 1 ♀ from the plantation (Ove Ørsnes leg., OB det., ZM).

Venø [16] 2.vi.1968: 1 ♀-juv. from conifers on Forstov Bakke, its epigyne visible through the cuticle (OB).

Jægersborg Dyrehave [45a] 10.vii.1955: 1 ♀ from Præstesletten (OB).

Store Dyrehave [45b] 5.vi.1960: 1 ♂ (Svend Olav Andersen leg., OB).

Frøslev Pl. [51] 9.x.1954: 1 ♀ (OB).

Previously recorded from Tranum Klit [5] (Bøggild 1961), Ulvshale [38] (Brændegaard 1928), Draved Skov [51] (Cloudsley-Thompson 1955), and Bommerlund Pl. [52] (Bøggild 1962).

Hypomma fulvum Bös.

Donnemose [37] 18.v.1966: 1 ♀ (PL).

Nyord [38] 6.vii.1969: 1 ♂ (PL).

Feddet [39b] 5.vi.1969: 1 ♂ (PL).

Tystofte [41] 8.vi.1954: 3 ♀♀ from a bog south of Korsagergaard, one had laid 29 eggs, another 30 eggs; 7.vii.1966: 3 ♀♀ found on the wet soil beneath low vegetation by the water's edge in the same bog (OB).

Glænø [41] 27.vi.1969: 3 ♀♀ in the heads of *Phragmites* (OB).

Frederiksdal [45a] 3.x.1953: 1 ♀ by Store Hulsø (OB).

Utterslev Mose [46] 5.v.1968: 1 ♀, 1 ♂ (PL).

First Danish records.

Metopobactrus prominulus (O.P.-C.).

Højsande, Læsø [3] 27.vi.1968: 1 ♀, 2 ♂♂, 1 ♀-juv. in dead leaves of marram grass (OB).

Faarupklit [5] 21.vi.1970: 1 ♂, 1 juv. in a hollow with lyme grass and *Hippophaë* in dunes (OB).

Svinkløv [6] 15.v.1969: 1 ♀, 1 ♂-juv. in a dune with *Calluna* and *Empetrum* (OB).

Bulbjerg [6] 28.vii.1969: 2 ♀♀ beneath an old *Calluna* plant and 3 ♀♀ in dead leaves of marram grass (OB).

Store Hareskov [45a] 28.vi.1970: 1 ♀ (PL).

Ravnsholt [45b] 19.vi.1966: 1 ♀, 1 ♂ (PL).

Previously recorded: 2 ♂♂ from Svinkløv Pl. [6] (Brændegaard 1928).

Baryphyma pratense (Bl.).

Utterslev Mose [46] 5.v.1968: 1 ♀; 27.v.1968: 3 ♀♀; 1.vi.1968: 4 ♀♀; 2.vi.1968: 1 ♀ (PL).

Previous records: Lyngby [45a] and Helsingør [45b] (Brændegaard 1928).

Lasiargus hirsutus (Menge).

Maglehøj Strand [35] 12.vii.1951: 1 ♀ (OB).

First Danish record. This specimen has only one spine on each tibia, as also the Swedish specimens (Tullgren 1955). It is the specimen referred to by Locket (1967).

Minyrioloides trifrons (O.P.-C.).

Dueodde [47] 22.vii.1950: 1 ♀ from a dune; 18.x.1967: 13 ♀-juv., 4 ♂-juv. in marram grass in dunes near the new lighthouse (OB).

The only other record is from Vedersø Klit [17] (Nielsen 1932).

Maso sundevalli (Westr.).

The Sealand localities mentioned in a previous paper (Bøggild 1962),with reference to the present paper, will be published later, together with other Danish records of this species.

Pocadicnemis pumila (Bl).

Hulsig [1] 3.vii.1968: 2 ♀♀ in wilted grass in a ditch (OB).

Bunken Klitplantage [1] 4.vii.1968: 1 ♀ in *Polytrichum* in a ditch (OB).

Højsande, Læsø [3] 27.vi.1968: 1 ♀ in dead leaves of marram grass (OB).

Faarupklit [5] 21.vi.1970: 2 ♀♀ in marram grass (OB).

Fosdal [5] 29.vi.1956: 2 ♀♀; 7.viii.1966: 2 ♀♀ (OB).

Bulbjerg [6] 23.ix.1966: 1 ♀ in a dune; 28.vii.1969: 4 ♀♀ in *Calluna,* in *Empetrum,* and in dead leaves of marram grass (OB).

Tved Pl. [6] 26.vi.1963: 1 ♂ in moss below mountain pine (OB).

Hansted-Reservatet [6] 26.vi.1963: 1 ♀ in moss in a wheel track (OB).

Rævemosen near Aars [10] 16.vii.1965: 1 ♀ in Calluna (OB).

Rævemosen near Aars [10] 16.vii.1965: 1 ♀ in *Calluna* (OB).

Øster Hurup [11] 2.vi.1969: 1 ♂ in marram grass in the dunes 2,5 km north of the town (OB).

Venø [16] 2.vi.1968: 1 ♂ in *Empetrum* on Forstov Bakke (OB).

Maglehøj Strand [35] 15.—17.vii.1967: 3 ♀♀ in herbaceous vegetation on the dike (OB).

Kobæk Strand [41] 5.vii.1966: 5 ♀♀ in lyme grass (OB).

Near Jyderup Skov [43] 5.vii.1960: 1 ♀ from a small dried-up bog east of Bolbjerg (OB).

Springforbi [45a] 20.vi.1955: 1 ♂-juv. on the beach, moulted into an adult male on the same day (OB).

Previously recorded from Tranum Klit [5] and Bommerlund Pl. [52] (Bøggild 1961, 1962).

Peponocranium ludicrum (O.P.-C.).

Tornbakke Rimme near Hulsig [1] 3.vii.1968: 1 ♀ in reindeer moss (OB).

Bratten Strand [1] 19.vii.1960: 1 ♀ (Svend Olav Andersen leg., OB).

Byrum [3] 27.—28.vii.1964: 6 ♀♀ in heather and in moss beneath heather (OB).

Heath 3 km north of Byrum [3] 26.vi.1968: 2 ♀♀ (OB).

Faarupklit [5] 21.vi.1970: 1 ♀ in marram grass (OB).

Svinkløv [6] 15.v.1969: 1 ♀, 2 ♂♂ in a dune with *Calluna* and *Empetrum* (OB).

Tved Pl. [6] 26.vi.1963: 1 ♀ in moss (OB).

Hansted-Reservatet [6] 26.vi.1963: 1 ♀ in moss (OB).

Rævemosen near Aars [10] 16.vii.1965: 8 ♀♀ swept from heather on a dry hill; 1 ♀ swept from grass (OB).

Hesselholt Skov [11] 29.vi.1968: 2 ♀♀; 1.vii.1968: 1 ♀ (PL).

Vejrholt Mose, Arden [11] 30.v.1965: 5 ♀♀, 3 ♂♂; 1.vii.1968: 3 ♀♀ (PL).

Øster Hurup [11] 2.vi.1969: 1 ♀ in marram grass, with dense low grass in it, on the west side of the low dunes, 2.5 km north of the town (OB).

Kongenshus Hede [15] 1.vi.1969: 3 ♀♀ in moss and in reindeer moss in the western, lower part of the heath (OB).

Melby Overdrev [45b] 4.v.1968: 1 ♀ (PL).

Previously recorded are 1 ♀ from Fjellerup Strand [22b] and 2 ♀♀ from Mejlgaard Nederskov [22b] (Brændegaard 1928).

Hypselistes jacksoni (O.P.-C.).

The beach by Frejlev Skov [36] 19.v.1969: 2 ♂♂; 14.vi.1969: 2 ♀♀, 1 ♂ (PL).

First Danish record.

Oedothorax gibbosus (Bl.).

Svinkløv [6] 16.—24.viii.1965: 5 ♀♀ (PL).

Rold Skov [11] 25.—28.v.1965: 3 ♀♀, 2 ♂♂ (PL).
Vejrholt Mose, Arden [11] 1.vii.1968: 12 ♀♀ (PL).
Jægerspris Nordskov [44] 5.vi.1968: 1 ♂ (PL).
Freerslev Hegn [45b] 22.v.1960: 6 ♀♀ from a little dried-up bog (OB).
Gribskov [45b] 30.iv.1966: 1 ♀ (PL).
Ravnsholt [45b] 2.vii.1966: 1 ♀ (PL).
Utterslev Mose [46] 5.v.—2.vi.1968: 24 ♀♀, 17 ♂♂, 1 ♂-juv. (PL).
Previous record: The bog by Ryget Skov [45a] (Brændegaard 1928).

Oedothorax gibbosus forma **tuberosus** (Bl.).

Rold Skov [11] 6.x.1967: 1 ♂ (PL).
Gribskov [45b] 25.ix.1965: 1 ♂ (PL).
Freerslev Hegn [45b] 22.v.1960: 1 ♂ from a little dried-up bog (OB).
Utterslev Mose [46] 5.v.—2.vi.1968: 13 ♂♂ (PL).
Previous record: Tranekær [34] (Brændegaard 1928).

Trichopterna thorelli (Westr.).

Saltholm [46] 1.vi.1968: 1 ♀ (PL).
Previous record: Tranum Klit [5] (Bøggild 1961).

Trichopterna cito (O.P.-C.).

Vesterø Hede, Læsø [3] 23.vii.1946: 1 ♂ (Ove Ørsnes leg., OB det., ZM).
Byrum [3] 30.vii.1964: 1 ♀ in moss among heather tussocks (OB).
Maglehøj Strand [35] in lyme grass and in marram grass on the dike; 9.—10.vii.1958: 6 ♀♀; 11.vii.1966: 1 ♀; 14.vii.1967: 2 ♀♀; 24.vii.1968: 2 ♀♀ (OB).
Kongensmark by Gudhjem [47] 26.v.1970: 1 ♂ (PL).
First Danish records. Having obtained Dr Eric Duffey's kind permission we can adduce the locality of Strandkjær in Mols [22a] where in 1966 Dr Duffey found some hundreds of specimens of this species within an area of 6.25 m².

Silometopus ambiguus (O.P.-C.).

By Værebro, Læsø [3] 18.x.1968: 3 ♀♀, 9 ♂♂ (PL).
Bulbjerg [6] 23.ix.1966: 1 ♀ in a dune at the western foot of the cliff (OB).
The beach by Hvalpsund Ferry Berth [10] 14.vi.1964: 4 ♀♀ in sea wrack (OB).

Øster Hurup [11] in marram grass, with dense low grass in it, on the west side of the low dunes, 2.5 km north of the town; 12.iv. 1968: 1 ♀; 2. vi.1969: 5 ♀♀ (OB)

Vorsø [24] 18.iv.1946: 3 ♀♀ (Ove Ørsnes leg., OB det., ZM).

Kobæk Strand [41] in sea wrack; 17.vii.1955: 1 ♂; 9.vi.1957: 1 ♀; 4.vii.1958: 1 ♀ (OB).

Jægerspris Nordskov [44] 5.vi.1968: 1 ♀; 15.vi.1968: 2 ♀♀ (PL). First Danish records.

Silometopus reussi (Th.).

By Værebro, Læsø [3] 18.x.1968: 1 ♂ (PL).

Vorsø [24] 18.iv.1946: 1 ♀; 6.vii.1946: 2 ♀♀ (Ove Ørsnes leg., OB det., ZM).

By Donnemose [37] 21.v.1966: 1 ♀ (PL).

Feddet [39b] 9.vi.1968: 10 ♀♀, 4 ♂♂ (PL).

Tystofte [41] 8.vi.1957: 1 ♂ on a tree trunk (OB).

Kobæk Strand [41] 6.vi.1960: 1 ♀ (OB).

The beach by Jyderup Lyng [43] 8.vii.1960: 1 ♀ in sea wrack (OB).

Fortunbyen, Lyngby [45a] 26.x.1958: 1 ♀ (OB).

Højbakkegaard, Taastrup [45a] 6.ix.1960: 1 ♀ (OB).
Previous record: Tisvilde [45b] (Brændegaard 1928).

Cnephalocotes obscurus (Bl.).

Hulsig [1] 3.vii.1968: 1 ♀ in wilted grass in a ditch (OB).

Poulstrup by Vrejlev Kloster [2] 23.vii.1960: 1 ♂ (Svend Olav Andersen leg., OB).

Bulbjerg [6] 28.vii.1969: 1 ♀ beneath *Empetrum* at the western foot of the cliff (OB).

Fur [9] 5.ix.1966: 1 ♀ beneath heather near Lille Jens Høj (OB).

Rold Skov [11] 5.—9.x.1967: 2 ♀♀, 3 ♂♂ (PL).

Hesselholt Skov [11] 29.vi.1968: 1 ♂ (PL).

Øster Hurup [11] 2.vi.1969: 1 ♀ in marram grass, with dense low grass in it, on the west side of the low dunes, 2.5 km north of the town (OB).

Horserød Hegn [45b] 24.iii.1961: 1 ♀ in moss (OB).

Ravnsholt [45b] 25.vi.—10.vii.1966: 2 ♀♀, 10 ♂♂ (PL).

Hammeren [47] 17.x.1967: 1 ♀ in moss in a wood (OB).

Slotslyngen [47] 17.x.1967: 4 ♀♀, 2 ♂♂ in mossy ditch in a coniferous forest (OB).
First Danish records.

Trichoncus hackmani Millidge.

Tornbakke Rimme near Hulsig [1] 3.vii.1968: 1 ♀, 1 ♂ in reindeer moss (OB).

Højsande, Læsø [3] 17.x.1968: 1 ♀ (PL).

First Danish records.

Tiso vagans (Bl).

Museumsgaarden, Læsø [3] 30.vii.1964: 1 ♀ in grass (OB).

Øster Hurup [11] 2.vi.1969: 1 ♀ in marram grass, with dense low grass in it, on the west side of the low dunes, 2.5 km north of the town (OB).

Vindeholme Skov [35] 14.vii.1967: 1 ♀ in herbaceous vegetation in a wood of beech and oak (OB).

Jungshoved Slotsbakke [39a] 12.vii.1964: 1 ♀ in the dried-up moat (OB).

Vordingborg [39a] 5.viii.1950: 1 ♂ (OB).

Tystofte [41] 21.vi.1961: 1 ♀ (OB).

Recorded from four localities in N.E.-Sealand [45a] and [45b] (Brændegaard 1928, Nielsen 1932) and from Bommerlund Pl. [52] (Bøggild 1962).

Anacotyle stativa (Simon).

The beach by Tofte Skov [11] 31.vii.1969: 5 ♀♀, 2 ♂♂; 4.viii. 1969: 1 ♀. All specimens were found among dry grass and low herbage close to the coast (PL).

First Danish record.

Troxochrus scabriculus (Westr.).

Bratten Strand [1] 19.vii.1960: 1 ♂ (Svend Olav Andersen leg., OB).

By Vesterø søndre Kirke, Læsø [3] 18.x.1968: 1 ♂ (PL).

Faarupklit [5] 21.vi.1970: 1 ♀ in marram grass (OB).

Svinkløv [6] 18.viii.1965: 1 ♂; 21.viii.1965: 1 ♀, 1 ♂ (forma *cirrifrons*) (PL).

Øster Hurup [11] in marram grass, on the low dunes, 2.5 km north of the town; 9.viii.1967: 8 ♀♀; 27.viii.1967: 11 ♀♀, 1 ♂ (forma *cirrifrons*), 1 ♀-juv.; 12.iv.1968: 3 ♀♀; 19.x.1968: 1 ♀; 2.vi.1969: 16 ♀♀, 4 ♂♂ (two of which are forma *cirrifrons*) (OB).

Nørre Lyngvig [17] 31.vii.1958: 1 ♀ near the lighthouse (Ivar Gøthgen leg., OB).

Feddet [39b] 9.vi.1968: 1 ♀ (PL).

Lyngby [45a] 23.v.1959: 1 ♀ (OB).

The dunes by Asserbo Pl. [45b] 30.viii.1969; 1 ♂ (forma *cirrifrons*) (PL).

Previously recorded are 1 ♀ from Saltholm [46] (Nielsen 1932) and 1 ♀ from Bommerlund Pl. [52] (Bøggild 1962).

Tapinocyba praecox (O.P.-C.).

Byrum [3] 15.—17.x.1968: 7 ♀♀, 3 ♂♂ (PL).

Vester Thorup Pl. [6] 23.ix.1966: 1 ♂ in moss below mountain pine (OB).

Svinkløv [6] 15.v.1969; 1 ♂ in a dune with *Calluna* and *Empetrum* (OB).

Øster Hurup [11] 2. iv.1969: 1 ♀ in marram grass mixed with grass, on the west side of the low dunes, 2.5 km north of the town (OB).

Kobæk Strand [41] 3.vii.1966: 4 ♀♀ in small moss cushions on the sunny floor of a Scots pine stand (OB).

Glænø [41] 1.viii.1968: 3 ♀♀, 1 ♂ in oak and beech litter in the south fringe of the wood (Peder Sejr Jensen leg., OB).

First Danish records.

Tapinocyba biscissa (O.P.-C.).

Stenstrup, Jungshoved [39a] 11.vii.1964: 1 ♀ in mouldy straw remains of an old haystack in a field (OB).

Utterslev Mose [46] 18.v.1968: 1 ♂; 1.vi.1968: 1 ♀ (PL).

Recorded from Denmark 'without any locality' (Brændegaard 1928).

Aulacocyba subitanea (O.P.-C.).

Tystofte [41] 3.vii.1966: 1 ♀ in the garden of a farm (OB).

First Danish record.

Perimones britteni (Jackson).

The beach by Frejlev Skov [36] 19.v.1969: 1 ♂ (PL).

First Danish record.

Thyreosthenius parasiticus (Westr.)

Jægerspris Nordskov [44] 15.iv.1968: 1 ♀ (PL).

Gribskov [45b] 13.iii.1965: 1 ♀, 1 ♂; 27.iii.1965: 1 ♀; 3.xii.1965: 1 ♀; 16.ii.1966: 2 ♀♀ (PL).

Rude Skov [45b] 6.iii.1965: 3 ♂♂; 17.iii.1965: 1 ♀, 2 ♂♂ (PL).

Nørreskov, Als [53] 12.iv.1968: 1 ♀ (PL).

Previous records: Fortunens Indelukke [45a] (Brændegaard 1928) and Fortunen [45a] (Nielsen 1932).

Thyreosthenius biovatus (O.P.-C).

Kobæk Strand [41] 5.vii.1966: 1 ♀ swept from oak foliage in the northern wood (OB).

Geel Skov [45a] 5.ii.1956: 2 ♀♀ from a *Formica rufa* nest (Uffe Kornerup leg., OB).

Rude Skov [45b] 26.ii.1956: 1 ♂-juv. deep in a *Formica rufa* nest (Uffe Kornerup leg., OB).

First Danish records.

Monocephalus castaneipes (Simon).

Paradisbakkerne [47] 18.x.1967: 1 ♀ in moss below mountain pine, on the eastern uppermost edge of the Kodal ravine (OB).

First Danish record.

Lophomma punctatum (Bl.).

Svinkløv [6] 19.viii.1965: 1 ♀ (PL).

Kaas, Salling [9] 26.v.1963: 5 ♀♀ in *Equisetum* by the edge of the lake (OB).

Kelddals Mølle, Ejdrup [10] 5.ix.1968: 1 ♀ beneath dense grass on moist soil near the millpond (OB).

Rold Skov [11] 26.v.1965: 1 ♀; 10.x.1967: 2 ♀♀ (PL).

Hesselholt Skov [11] 30.vi.—1.vii.1968: 4 ♀♀ (PL).

Freerslev Hegn [45b] 22.v.1960: 1 ♀ in a small dried-up bog (OB).

Gribskov [45b] 5.vi.1966: 2 ♂♂ (PL).

Ravnsholt [45b] 2.vii.1966: 1 ♀ (PL).

Rude Skov [45b] 1.v.1956: 1 ♀ on moist soil (OB).

Utterslev Mose [46] 21.i.—2.vi.1968: 21 ♀♀, 9 ♂♂ (PL).

Recorded from Denmark 'without any locality' by Brændegaard (1928).

Mioxena blanda (Simon).

Søndbjerg Strand [7] 23.ix.1969: 1 ♂ in *Empetrum* (OB).

Previously recorded from Bommerlund Pl. [52] (Bøggild 1962).

Saloca diceros (O.P.-C.).

Fosdal [5] 28.iii.1968: 1 ♂ in moss close to the brook (OB).

Stagsrode Skov [24] 6.viii.1965: 1 ♀ in litter from the bottom of a hollow in old beech forest (OB).

Marienlyst Skov near Vordingborg [39a] 1.iv.1961: 1 ♂ in reed litter by the edge of a bog (OB).

Denderup Vænge [39a] 9.vi.1968: 1 ♀ (PL).

Jægerspris Nordskov [44] 15.iv.1965: 1 ♀, 1 ♂; 15.vi.1968: 2 ♀♀ (PL).

Hareskoven [45a] 20.ii.1965: 1 ♀, 1 ♂; 27.ii.1965: 1 ♀; 19.xii.1965: 1 ♀, 1 ♂; 26.iv.1966: 4 ♀♀, 7 ♂♂; 4.v.1966: 3 ♀♀, 1 ♂ (PL).

Lille Hareskov [45a] 24.iv.1965: 1 ♀, 1 ♂ (PL).

Rude Skov [45b] 1.v.1956: 1 ♀ from a moist glade in the wood (OB); 6.iii.1965: 2 ♀♀; 17.iii.1965: 2 ♀♀, 4 ♂♂ (PL).

Ravnsholt [45b] 10.vii.1966: 1 ♀ (PL).

Gribskov [45b] 25.ix.1965: 1 ♂; 23.x.1965: 3 ♀♀, 3 ♂♂, 1 juv.; 12.iii.1966: 1 ♀ (PL).

Nørreskov, Als [53] 11.—15.iv.1968: 5 ♀♀, 1 ♂ (PL).

First Danish records.

Gongylidiellum vivum (O.P.-C.).

Bunken Klitplantage [1] 4.vii.1968: 4 ♀♀ from *Sphagnum* and *Polytrichum* in a ditch (OB).

Byrum [3] 17.x.1968: 2 ♀♀, 2 ♂♂ (PL).

Øster Foldgaard, Læsø [3] 15.x.1968: 1 ♀ (PL).

Hansted-Reservatet [6] 28.vi.1963: 1 ♀ in *Polytrichum* (OB).

Tved Pl. [6] 26.vi.1963: 2 ♀♀ in moss below pine (OB).

Vester Thorup Pl. [6] in moss below mountain pine; 8.vii.1963: 2 ♀♀, 1 ♂; 9.viii.1963: 1 ♂; 6.x.1963: 1 ♀; 16.v.1965: 1 ♀; 20.v.1966: 17 ♀♀, 1 ♂; 25.vi.1966: 3 ♀♀, 2 ♂♂; 23.ix.1966: 6 ♀♀, 3 ♂♂ (OB).

Rold Skov [11] 25.v.1965: 1 ♂; 5.x.1967: 1 ♂ (PL).

Madum Sø [11] 16.vi.1966: 1 ♀ in a *Sphagnum* cushion among grass tussocks (OB).

Previous records: Tranum Klit [5] and Bommerlund Pl. [52] (Bøggild 1961, 1962).

Gongylidiellum latebricola (O.P.-C.).

Jægersborg Skov [11] 1.viii.1969: 2 ♂♂ (PL).

Kongenshus Hede [15] 1.vi.1969: 3 ♀♀ in heather and in reindeer moss, in the western, lower part of the heath (OB).

Jægerspris Nordskov [44] 15.vi.1968: 2 ♀♀, 2 ♂♂ (PL).

Gribskov [45b] 12.iii.1966: 4 ♀♀, 1 ♂; 26.iii.1966: 2 ♀♀, 1 ♂; 30.iv.1966: 2 ♀♀; 30.v.1966: 2 ♂♂ (PL).

First Danish records.

Gongylidiellum murcidum Simon.

Lyngmose, north of Horreby Lyng [37] 15.vi.1958: 1 ♀, 1 ♂ (OB).

Kobæk Strand [41] 5.vii.1966: 1 ♂ (OB).

Store Hareskov [45a] 22.vi.1969: 1 ♀, 1 ♂ (PL).
Freerslev Hegn [45b] 22.v.1960: 1 ♀ in a small, dried-up bog (OB).
Ravnsholt [45b] 19.vi.1966: 1 ♀ (PL).
Utterslev Mose [46] 21.i.1968: 1 ♂; 27.v.1968: 1 ♂; 1.—2.vi.1968: 2 ♂♂ (PL).
First Danish records.

Micrargus subaequalis (Westr.)

Øster Hurup [11] 27.viii.1967: 1 ♀ in marram grass, with dense low grass in it, on the west side of the low coastal dunes, 2.5 km north of the town (OB).
Maglehøj Strand [35] on the dike; 11.vii.1966: 2 ♀♀ in lyme grass; 15. and 17.vii.1967 and 23.vii.1968: 1 ♀ each day from mixed, herbaceous vegetation; 24.vii.1968: 1 ♀ from lyme grass (OB).
Glænø [41] 28.vi.1959: 1 ♂ from a low sea slope south of Grønholt Gaard (OB).
First Danish records.

Notioscopus sarcinatus (O.P.-C.).

Store Hareskov [45a] 18.vi.1969: 3 ♀♀; 20.—22.vi.1969: 16 ♀♀ (PL).
First Danish record.

Erigonella hiemalis (Bl.).

Byrum [3] 16.x.1968: 3 ♀♀, 2 ♂♂ (PL).
Rold Skov [11] 27.v.1965: 1 ♂; 7.x.1967: 1 ♂ (PL).
Gribskov [45b] 12.iii.1966: 1 ♂ (PL).
Slotslyngen [47] 17.x.1967: 2 ♀♀, 1 ♂ in a mossy ditch in a coniferous forest (OB).
First Danish records.

Erigonella ignobilis (O.P.-C.).

A bog by Ertebølle [10] 30.x.1969: 1 ♂ (PL).
Hesselholt Skov [11] 1.vii.1968: 1 ♀ (PL).
Recorded from Denmark only once, but without any information of locality (Brændegaard 1928).

Diplocephalus permixtus (O.P.-C.).

Hansted-Reservatet [6] 26.vi.1963: 1 ♂ on very moist soil by the shore of Blegsø (OB).
Fur [9] 11.v.1965: 1 ♀ beneath heather near Lille Jens Høj (OB).
A bog by Ertebølle [10] 29.x.1969: 2 ♂♂ (PL).
Borremose [11] 14.—15.x.1962: 10 ♀♀, 5 ♂♂ in *Polytrichum* in Borremosefæstningen (OB).

Rold Skov [11] 6.x.1967: 3 ♂♂ (PL).
Hesselholt Skov [11] 29.vi.—1.vii.1968: 5 ♀♀ (PL).
Ravnsholt [45b] 2.vii.1966: 1 ♀ (PL).
Gribskov [45b] 5.vi.1966: 1 ♀ (PL).
First Danish records.

Araeoncus crassiceps (Westr.)

Raabjerg Mile [1] 4.vii.1968: 6 ♀♀ in drift along the edge of a shallow lake on the deflation plane left by the migrating dune (OB).
Syrodde, Læsø [3] 17.x.1968: 4 ♀♀, 1 ♂ (PL).
Nors Sø [6] 26.vi.1963: 3 ♀♀ in drift along the edge of the lake (OB).
Madum Sø [11] 16.vi.1966: 8 ♀♀ in drift along the edge of the lake (OB).
Vorsø [24] 6.—8.vii.1946: 2 ♀♀, 1 ♂ (Ove Ørsnes leg., OB det., ZM).
Maglehøj Strand [35] in lyme grass; 16.vii.1967: 1 ♀; 24.vii.1968: 1 ♀ (OB).
The beach a little north of Pomlenakke [37] 15.vi.1958: 1 ♀ (OB).
At Masnedsund Bridge, Sealand [39a] 2.iv.1961: 11 ♀♀, 14 ♂♂ in sea wrack (OB).
Feddet [39b] 9.vi.1968: 1 ♀ (PL).
Kobæk Strand [41] 9.vi.1957: 1 ♀ in sea wrack (OB).
Springforbi [45a] 15.v.1954: 1 ♂ on the shore (OB).
Nørreskov, Als [53] 13.iv.1968: 6 ♂♂ (PL).
Only one previous record: 2 ♂♂ from Kobæk [41] (Brændegaard 1928).

Asthenargus paganus (Simon).

Tisvilde Hegn [45b] 29.iii.1969: 4 ♀♀ (PL).
First Danish record.

Typhochrestus digitatus (O.P.-C.).

Højsande, Læsø [3] 17.x.1968: 1 ♀ (PL).
Bulbjerg [6] 23.ix.1966: 1 ♀ in a dune at the foot of the western slope of the cliff (OB).
Aars [10] 6.vi.1964: 1 ♀ in a fallow field (OB).
The beach by Jyderup Lyng [43] 26.ix.1954: 2 ♀♀, 3 ♂♂ in a small dune (OB).
First Danish records.

Erigone longipalpis (Sund.).

Bratten Strand [1] 20.vii.1960: 1 ♀ (Svend Olav Andersen leg., OB).
The coast by Vesterø søndre Kirke, Læsø [3] 18.x.1968: 1 ♂ in marram grass (OB).
Værebro, Læsø [3] 18.x.1968: 2 ♀♀ (PL).
Maglehøj Strand [35] 12.vii.1951: 1 ♀ (OB).
The beach by Sanddobberne [43] 19.vii.1961: 1 ♀, 1 ♂ (OB).
Jægerspris Nordskov [44] 5.vi.1968: 14 ♀♀, 1 ♂; 15.vi.1968: 2 ♀♀ (PL).
Bognæs [45a] 20.v.1951: 1 ♀ by a littoral puddle at Egehoved (OB).
Saltholm [46] 1.vi.1968: 6 ♀♀, 1 ♂ (PL).

The only other Danish record is from Mols [22a] (Schjøtz-Christensen 1966). Brændegård (1958) mentioned the occurrence in Denmark on the basis of a personal communication concerning the two finds from 1951.

LINYPHIIDAE

Donacochara speciosa (Th.).

Utterslev Mose [46] 1.x.1968: 1 ♀ (PL).
First Danish record.

Phaulothrix hardyi (Bl.).

Øster Hurup [11] 19.x.1968: 1 ♂ in marram grass, with dense low grass in it, on the west side of the low dunes, 2.5 km north of the town (OB).
Strandkjær, Mols [22a] 19.ix.1966: 1 ♂ under a stone (OB).
Dueodde [47] 18.x.1967: 6 ♀♀, 2 ♂♂ in marram grass (OB).
The only previous record: Bommerlund Pl. [52] (Bøggild 1962).

Hilaira excisa (O.P.-C.).

Fosdal [5] 28.iii.1968: 5 ♀♀ in moss near the brook (OB).
Rold Skov [11] 10.x.1967: 1 ♀ (PL).
Hesselholt Skov [11] 30.vi.—1.vii.1968: 11 ♀♀, 2 ♂♂ (PL).
Denderup Vænge [39a] 9.vi.1968: 1 ♀ (PL).
Gribskov [45b] 5.vi.1966: 2 ♀♀ (PL).
Nørreskov, Als [53] 11.iv.1968: 1 ♀ (PL).
First Danish records.

Hillhousia misera (O.P.-C.).

A bog west of Munkemose, Læsø [3] 28.vii.1964: 1 ♀ in slimy,

rotten grass at the bottom of dense, high grass on an islet in the bog (OB).

Near Foldgaard Sø, Læsø [3] 15.x.1968: 1 ♀, 1 juv. in grass with birch litter (OB).

Hesselholt Skov [11] 3.viii.1969: 1 ♀ (PL).

Jægerspris Nordskov [44] 5.vi.1968: 3 ♀♀; 15.vi.1968: 1 ♀ (PL).

Store Hareskov [45a] 20.—22.vi.1969: 7 ♀♀, 3 ♂♂ (PL).

Malmmose, Holte [45a] 31.v.1955: 1 ♂ (OB).

Frøslev Pl. [51] 9.x.1954: 1 ♂ (OB).

First Danish records.

Porrhomma convexum (Westr.).

Tinkerup by Smidstrup [45b] 6.viii.1966: 1 ♀ (PL).

Nørreskov, Als [53] 13.iv.1968: 1 ♀, 1 ♂ (PL).

First Danish records.

Porrhomma pallidum Jackson.

Tved Pl. [6] 26.vi.1963: 1 ♂ in moss below pine (OB).

Vester Thorup Pl. [6] in moss below mountain pine; 8.vii.1963: 1 ♀; 9.viii.1963: 1 ♀; 6.x.1963: 7 ♀♀, 1 ♂; 23.x.1964: 16 ♀♀, 6 ♂♂; 16.v.1965: 11 ♀♀, 4 ♂♂; 20.v.1966: 11 ♀♀, 4 ♂♂; 25.vi.1966: 11 ♀♀; 23.ix.1966: 19 ♀♀, 14 ♂♂, 1 ♀-juv. (OB).

Skat Skov [10] 25.x.1969: 1 ♀ in oak litter (OB).

Rold Skov [11] 2.—9.x.1967: 6 ♀♀, 2 ♂♂ (PL).

Hareskoven [45a] 30.i.1965: 1 ♀; 20.ii.1965: 1 ♀; 4.iv.1965: 6 ♀♀; 5.xi.1967: 4 ♀♀, 1 ♂ (PL).

Lille Hareskov [45a] 24.iv.1965: 1 ♀ (PL).

Rude Skov [45b] 6.iii.1965: 1 ♀; 17.iii.1965: 2 ♀♀ (PL).

Ravnsholt [45b] 25.vi.1966: 1 ♀; 10.vii.1966: 1 ♀ (PL).

Gribskov [45b] 27.iii.1965: 1 ♀; 25.ix.1965: 10 ♀♀, 7 ♂♂; 3.x.1965: 8 ♀♀, 4 ♂♂; 23.x.1965: 13 ♀♀, 2 ♂♂; 3.xii.1965: 7 ♀♀, 2 ♂♂; 6.iii.1966: 1 ♂ (PL).

First Danish records.

Porrhomma oblitum (O.P.-C.).

Ravnsholt [45b] 10.vii.1966: 1 ♀ (PL).

Gribskov [45b] 3.x.1965: 3 ♀♀ (PL).

Nørreskov, Als [53] 11.iv.1968: 1 ♀ (PL).

First Danish records.

Porrhomma montanum Jackson.

Stagsrode Skov [24] 6.viii.1965: 3 ♀♀ in leaf litter below old beeches (OB).

Denderup Vænge [39a] 9.vi.1968: 1 ♀ (PL).
Nørreskov, Als [53] 11.iv.1968: 1 ♀; 12.iv.1968: 1 ♂ (PL).
First Danish records.

Syedrula innotabilis (O.P.-C.).

Kobæk Strand [41] 17.vii.1955: 1 ♀ on a tree trunk (OB).
Jyderup Skov [43] 3.vii.1960: 1 ♀, 1 ♂ on tree trunks (OB).
Jægerspris Nordskov [44] 15.vi.1968: 1 ♂ (PL).
Fortunen [45a] 22.vi.1958: 2 ♂♂, 4 juv. on tree trunks (OB).
Jægersborg Dyrehave [45a] 3.ix.1961: 1 ♀ under the bark of a *Crataegus* (OB).
First Danish records.

Agyneta subtilis (O.P.-C.).

Faarupklit [5] 21.vi.1970: 1 ♀ in a hollow with lyme grass and *Hippophaë* in dunes (OB).
Paradisbakkerne [47] 18.x.1967: 1 ♀ in moss below mountain pine on the eastern, uppermost edge of the Kodal ravine (OB).
Previously recorded from Tranum Klit [5] (Bøggild 1961).

Agyneta conigera (O.P.-C.).

Vester Thorup Pl. [6] in a mountain pine stand; 8.vii.1963: 1 ♂ in moss; 25.vi.1966: 3 ♀♀ in moss, and 1 ♀, 1 ♂ in reindeer moss. None of these specimens have the trichobothria bent (OB).
Vejrholt Mose, Arden [11] 1.vii.1968: 1 ♀ (PL).
Rold Skov [11] 29.v.1965: 1 ♂ (PL).
Hesselholt Skov [11] 29.vi.—1.vii.1968: 3 ♀♀, 2 ♂♂ (PL).
Jægersborg Skov [11] 1.viii.1969: 4 ♀♀, 1 ♂ (PL).
Kongenshus Hede [15] 1.vi.1969: 1 ♀ in moss among heather (OB).
Horreby Lyng [37] 20.v.1966: 1 ♀ (PL).
Allindelille Fredskov [40] 21.v.1966: 2 ♂♂ (PL).
Kobæk Strand [41] 3.vii.1966: 3 ♀♀ in needle litter on the sunny floor of a Scots pine stand (OB).
Jægersborg Dyrehave [45a] 10.vii.1955: 1 ♀ from Præstesletten (OB).
Ravnsholt [45b] 19.vi.—10.vii.1966: 8 ♀♀, 4 ♂♂ (PL).
Melby Overdrev [45b] 4.v.1968: 1 ♀ (PL).
Tinkerup by Smidstrup [45b] 6.viii.1966: 1 ♀ (PL).
Previously recorded from Tranum Klit [5] and Bommerlund Pl. [52] (Bøggild 1961, 1962).

Agyneta cauta (O.P.-C.).

Jægerspris Nordskov [44] 15.iv.1968: 4 ♀♀, 3 ♂♂ (PL).
First Danish record.

Agyneta ramosa Jackson.

Horreby Lyng [37] 15.vi.1969: 1 ♀ (PL).
Denderup Vænge [39a] 9.vi.1968: 2 ♀♀, 2 ♂♂ (PL).
Jægerspris Nordskov [44] 5.vi.1968: 1 ♀; 15.vi.1968: 4 ♀♀, 1 ♂ (PL).
Ravnsholt [45b] 5.vi.1966: 1 ♀, 1 ♂; 12.vi.1966: 6 ♀♀, 2 ♂♂ (PL).
First Danish records.

Meioneta saxatilis (Bl.).

Hesselholt Skov [11] 30.vi.1968: 4 ♀♀ (PL).
The beach by Tofte Skov [11] 31.vii. 1969: 1 ♀ (PL).
Ravnsholt [45b] 15.vi.1966: 1 ♂ (PL).
Gribskov [45b] 26.iii.1966: 2 ♀♀ (PL).
First Danish records.

Meioneta beata (O.P.-C.).

Bratten Strand [1] 20.vii.1960: 2 ♀♀ (Svend Olav Andersen leg., OB).
Hesselholt Skov [11] 29.—30.vi.1968: 2 ♀♀, 2 ♂♂ (PL).
The beach by Tofte Skov [11] 31.vii.1969: 1 ♀; 4.viii.1969: 1 ♀ (PL).
Feddet [39b] 9.vi.1968: 1 ♀ (PL).
Store Hareskov [45a] 3.vii.1969: 1 ♀ (PL).
Ravnsholt [45b] 2.vii.1966: 1 ♂ (PL).
First Danish records.

Maro lepidus Casemir.

Madum Sø [11] 16.vi.1966: 1 ♀ in a cushion of *Sphagnum* among grass tussocks (OB).
First Danish record. Known distribution: Eifel in West-Germany (Casemir 1961, 1963), and three localities in Britain (Parker & Duffey 1963).

Centromerus expertus (O.P.-C.).

Near Foldgaard Sø, Læsø [3] 15.x.1968: 4 ♀♀, 5 ♂♂ in grass with birch litter (OB), and 3 ♀♀, 1 ♂ (PL).
Nordmarken, Læsø [3] 16.x.1968: 3 ♀♀ (PL).
Danzigmand [3] 15.x.1968: 3 ♀♀, 3 ♂♂ (PL).
Syrodde, Læsø [3] 17.x.1968: 1 ♀, 3 ♂♂ (PL).

Kelddals Mølle, Ejdrup [10] 5.ix.1968: 1 ♀ beneath dense grass on moist soil near the millpond (OB).
Jægerspris Nordskov [44] 5.vi.1968: 1 ♀ (PL).
Lyngby Aamose [45a] 20.ix.1959: 1 ♀ in *Sphagnum* (OB).
Gribskov [45b] 11.ix.1965: 1 ♂; 3.x.1965: 1 ♀; 26.iii.1966: 1 ♀; 30.iv.1966: 1 ♀ (PL).
Utterslev Mose [46] 21.i.1968: 1 ♀, 4 ♂♂; 6.—7.iv.1968: 5 ♀♀, 2 ♂♂; 5.—27.v.1968: 8 ♀♀; 1.—2.vi.1968: 4 ♀♀ (PL).
Frøslev Pl. [51] 9.x.1954: 1 ♀ (OB).
The only previous record is 1 ♂ from Bommerlund Pl. [52] (Bøggild 1962).

Centromerus arcanus (O.P.-C.).

Søndbjerg Strand [7] 22.ix.1969: 4 ♀♀, 4 ♂♂ in moss in the pine forest on Dødbjerg (OB).
Rold Skov [11] 2.—10.x.1967: 8 ♀♀, 14 ♂♂ (PL).
Hesselholt Skov [11] 29.vi.—1.vii.1968: 29 ♀♀ (PL).
Tofte Skov [11] 17.xi.1963: 2 ♀♀, 1 ♂ in moss below mountain pine (OB).
Kongenshus Hede [15] 1.vi.1969: 1 ♀ in reindeer moss (OB).
Hammeren [47] 17.x.1967: 7 ♀♀, 2 ♂♂ in moss in a wood (OB).
Salene Bugt [47] 16.x.1967: 7 ♀♀, 1 ♂ in moss in the wood (OB).
Paradisbakkerne [47] 18.x.1967: 8 ♀♀, 3 ♂♂ in moss below mountain pine (OB).
The only previous record is from Horserød Hegn [45b] (Nielsen 1932).

Centromerus laevitarsis (Simon).

Jægerspris Nordskov [44] 5.vi.1968: 1 ♀ (PL).
First Danish record.

Centromerus dilutus (O.P.-C.).

Hansted-Reservatet [6] 26.vi.1963: 3 ♀♀ in moss (OB).
Vester Thorup Pl. [6] in moss below mountain pine; 8.vii.1963: 3 ♀♀; 9.viii.1963: 3 ♀♀; 6.x.1963: 10 ♀♀, 8 ♂♂; 23.x.1964: 8 ♀♀, 5 ♂♂; 16.v.1965: 2 ♀♀; 20.v.1966: 8 ♀♀; 25.vi.1966: 10 ♀♀ (and 1 ♀ in reindeer moss); 23.ix.1966: 7 ♀♀, 5 ♂♂, 4 ♀-juv. (OB).
Svinkløv [6] 15.v.1969: 1 ♀ in a dune with *Calluna* and *Empetrum* (OB).
Kongenshus Hede [15] 1.vi.1969: 1 ♀ in reindeer moss (OB).

Strandkjær, Mols [22a] 30.viii.1970: 1 ♀ in beech and oak litter in the wood west of Langemosen (OB).

Stagsrode Skov [24] 6.viii.1965: 1 ♀ in leaf litter in old beech forest (OB).

Recorded from Skærbæk Pl. [20] (Nielsen 1932) and Bommerlund Pl. [52] (Bøggild 1962).

Centromerus pabulator (O.P.-C.).

Gudhjem Pl. [47] 16.x.1967: 1 ♀ in pine needle litter (OB).

Frøslev Pl. [51] 9.x.1954: 2 ♀♀ (OB).

First Danish records.

Centromerita concinna (Th.).

Byrum [3] 15.—17.x.1968: 3 ♀♀, 3 ♂♂ (PL).

Øster Foldgaard, Læsø [3] 15.x.1968: 1 ♀ (PL).

Højsande, Læsø [3] 17.x.1968: 1 ♀, 3 ♂♂ (PL).

Danzigmand [3] 15.x.1968: 1 ♂ (PL), and 2 ♀♀, 2 ♂♂ beneath *Empetrum* south of the dune (OB).

Hansted-Reservatet [6] 28.vi.1963: 2 ♀♀ in *Polytrichum* (OB).

Bulbjerg [6] 4.x.1962: 5 ♀♀, 2 ♂♂ in *Empetrum* at the western foot of the cliff (OB).

Vester Thorup Pl. [6] in moss below mountain pine; 23.x.1964: 4 ♀♀, 2 ♂♂; 16.v.1965: 1 ♀; 23.ix.1966: 5 ♀♀, 2 ♂♂, 1 ♀-juv. (OB).

Søndbjerg Strand [7] 22.ix.1969: 1 ♂ in moss in the pine wood on Dødbjerg (OB); 23.ix.1969: 1 ♂ beneath *Empetrum* (OB); 26.ix.1969: 1 ♂ in *Calluna* (Eva Hecquet leg., OB).

Øster Oustrup Pl. near Aars [10] 20.x.1962: 1 ♂ in moss (OB).

Borremose [11] 14.—15.x.1962: 2 ♀♀, 1 ♂ in *Calluna* and in *Polytrichum* in Borremosefæstningen (OB).

Rold Skov [11] 6.—7.x.1967: 3 ♂♂ (PL).

The beach by Jyderup Lyng [43] 26.ix.1954: 1 ♂ in a dune (OB).

Holbæk Amts Sandflugtsplantage [43] 4.v.1968: 1 ♀ (PL).

Rude Skov [45b] 17.iii.1965: 1 ♀ (PL).

Dueodde [47] 18.x.1967: 3 ♀♀, 6 ♂♂ in marram grass in dunes (OB).

Previously recorded: 2 ♀♀ from Bommerlund Pl. [52] (Bøggild 1962).

Oreonetides abnormis (Bl.).

Vester Thorup Pl. [6] in moss below mountain pine; 20.v.1966:

1 ♀, 2 ♀-juv., 1 ♂-juv.; 25.vi.1966: 1 ♀, 1 ♂; 23.ix.1966: 1 ♀ (OB).

A wood south of Grønbæk [14] 24.ix.1967: 1 ♀ in moss (OB).

Stagsrode Skov [24] 6.viii.1965: 3 ♀♀ in litter below old beeches (OB).

Glænø [41] 23.vii.1967: 1 ♂ swept from herbaceous vegetation in the wood (OB).

Jægerspris Nordskov [44] 15.vi.1968: 1 ♀ (PL).

Hareskoven [45a] 31.viii.1964: 1 ♂; 19.xii.1965: 1 ♀ (PL).

Frederiksdal Storskov [45a] 9.ix.1961: 1 ♀, 1 ♂ in beech litter near Store Hulsø (OB).

Fortunens Indelukke [45a] 19.ii.1961: 1 ♀ in leaf litter (OB).

Rude Skov [45b] 17.iii.1965: 2 ♀♀ (PL).

Helvedesbakkerne [47] 19.vii.1950: 1 ♀ (OB).

Recorded from Denmark 'without any locality' (Brændegaard 1928).

Bathyphantes approximatus (O.P.-C.).

Near Foldgaard Sø, Læsø [3] 15.x.1968: 1 ♂ in grass with birch litter (OB), and 1 ♂ (PL).

Svinkløv [6] 22.—23.viii.1965: 1 ♀, 2 ♂♂ (PL).

Kelddals Mølle, Ejdrup [10] 5.ix.1968: 8 ♀♀, 4 ♂♂ beneath dense grass on moist soil near the millpond (OB).

Rold Skov [11] 25.v.1965: 1 ♀; 1.x.1967: 1 ♂ (PL).

Hesselholt Skov [11] 30.vi.—1.vii.1968: 3 ♀♀, 1 ♂ (PL).

Vejrholt Mose, Arden [11] 30.vi.—1.vii.1968: 5 ♀♀, 2 ♂♂ (PL).

Vindeholme Skov [35] 10.vii.1958: 1 ♀ (OB).

Luknam by Furesø [45a] 4.x.1953: 1 ♀ (OB).

Frederikslund Skov, Holte [45a] 11.x.1953: 3 ♀♀, 2 ♂♂ (OB).

Bøllemosen [45a] 19.vi.1955: 1 ♀ in *Sphagnum;* 21.vi.1955: 1 ♀ (OB).

Grønholt Vang [45b] 28.viii.1955: 1 ♀ (OB).

Utterslev Mose [46] 21.i.—2.vi.1968: 131 ♀♀, 99 ♂♂ (PL).

Nørreskov, Als [53] 11.iv.1968: 6 ♀♀, 6 ♂♂; 15.iv.1968: 1 ♂ (PL).

The only previous record it 1 ♀ from Bremerholmskæret by Tisvilde Hegn [45b] (Brændegaard 1928).

Bathyphantes pullatus (O.P.-C.).

Svinkløv [6] 16.—24.viii.1965: 4 ♀♀ (PL).

Frøslev Mose [51] 23.viii.1955: 1 ♀ (OB).

The only previous record is from Store Hulsø in Frederiksdal Storskov [45a] (Brændegaard 1928).

Bathyphantes setiger F.O.P.-C.

The west side of Bløden, Læsø [3] 20.vii.1946: 1 ♂ (Ove Ørsnes leg., OB det., ZM).
Øster Foldgaard, Læsø [3] 15.x.1968: 4 ♀♀, 4 ♂♂ (PL).
Rold Skov [11] 23.v.1965: 1 ♂; 1.x.1967: 1 ♂; 6.x.1967: 1 ♀ (PL).
Hesselholt Skov [11] 29.vi.1968: 1 ♀ (PL).
Rude Skov [45b] 1.v.1956: 1 ♂ from a moist glade (OB).
First Danish records.

Taranucnus setosus (O.P.-C.).

Horreby Lyng [37] 20.v.1966: 1 ♀, 2 ♂♂ (PL).
Gribskov [45b] 1.v.1965: 1 ♀ (PL).
First Danish records.

Lepthyphantes cristatus (Menge).

Syr Odde, Læsø [3] 17.x.1968: 1 ♀ in marram grass (OB).
Rold Skov [11] 29.v.1965: 1 ♀; 1.—10.x.1967: 28 ♀♀, 81 ♂♂ (PL).
Madum Sø [11] in cushions of *Sphagnum* among grass tussocks; 29.v.1966: 1 ♀; 16.vi.1966: 1 ♀ (OB).
Denderup Vænge [39a] 9.vi.1968: 6 ♀♀ (PL).
Allindelille Fredskov [40] 21.v.1966: 2 ♀♀ (PL).
Jægerspris Nordskov [44] 15.iv.1965: 2 ♀♀; 5.vi.1968: 2 ♀♀; 15.vi.1968: 1 ♀ (PL).
Hareskoven [45a] 20.ii.1965: 1 ♂; 19.xii.1965: 1 ♀; 26.iv.1966: 4 ♀♀, 1 ♂; 14.v.1966: 3 ♀♀, 2 ♂♂ (PL).
Fortunens Indelukke [45a] 19.ii.1961: 1 ♂ in leaf litter (OB).
Ravnsholt [45b] 12.vi.1966: 1 ♀; 29.x.1966: 2 ♂♂ (PL).
Gribskov [45b] 1.v.—3.xii.1965: 8 ♀♀, 19 ♂♂; 12.iii.—30.v.1966: 16 ♀♀, 4 ♂♂ (PL).
Gudhjem Pl. [47] 16.—20.x.1967: 7 ♀♀, 5 ♂♂ in leaf litter (OB).
Nørreskov, Als [53] 11.—15.iv.1968: 26 ♀♀, 4 ♂♂ (PL).
Previously known from Denmark 'without any locality' (Brændegaard 1928).

Lepthyphantes zebrinus (Menge).

The dunes near Vesterø søndre Kirke, Læsø [3] 18.x.1968: 1 ♀ in marram grass (OB).
Syr Odde, Læsø [3] 17.x.1968: 2 ♀♀ in marram grass with grass in it (OB).

In January 1956 Dr Brændegård went through the available Danish material labelled *L. zebrinus,* both his own collections and the material belonging to the Zoological Museum, Copenhagen. He found none of this species, but a variety of other species (personal communication). *L. zebrinus* was redescribed by Moritz in 1968, and so it appeared worth while to have a look at the same material once more. We have gone through the part of it belonging to the Zoological Museum, with the same result. So it seems probable that the three females from Læsø are the only true *L. zebrinus* specimens hitherto found in Denmark.

Lepthyphantes ericaeus (Bl.).

Hulsig [1] 3.vii.1968: 1 ♀ in wilted grass in a ditch (OB).
Danzigmand [3] 15.x.1968: 4 ♀♀, 5 ♂♂ (PL).
Svinkløv [6] 19.viii.1965: 1 ♀ (PL).
Rold Skov [11] 3.—10.x.1967: 6 ♂♂ (PL).
Feddet [39b] 9.vi.1968: 1 ♀ (PL).
Holbæk Amts Sandflugtsplantage [43] 4.v.1968: 3 ♀♀ (PL).
Jægerspris Nordskov [44] 15.vi.1968: 1 ♀ (PL).
Hareskoven [45a] 4.v.1966: 2 ♂♂ (PL).
Ravnsholt [45b] 2.vii.1966: 1 ♀ (PL).
Gribskov [45b] 30.iv.1966: 4 ♀♀, 2 ♂♂ (PL).
Gudhjem Pl. [47] 16.x.1967: 1 ♀ in leaf litter (OB).
Vraaby, Rømø [50] 23.vii.1961: 1 ♀ from a consolidated sand dune (Niels Haarløv leg., OB).

The only previous record is 1 ♂ from Skærbæk Pl. [20] (Nielsen 1932).

Lepthyphantes pallidus (O.P.-C.).

Rold Skov [11] 7.x.1967: 1 ♀ (PL).
Denderup Vænge [39a] 9.vi.1968: 2 ♂♂ (PL).
Stigsnæs Skov [41] 4.vii.1966: 1 ♂ in a thin layer of leaf litter on the sunny floor of rather old beech wood (OB).
Hareskoven [45a] 8.viii.1965: 1 ♀ (PL).
Lille Hareskov [45a] 24.iv.1965: 1 ♀ (PL).
Malmmose, Holte [45a] 11.v.1956: 1 ♀ in a young, dense, dark wood (OB).
Gribskov [45b] 23.x.1965: 1 ♂ (PL).

First Danish records.

Lepthyphantes insignis O.P.-C., 1913 = *L. pillichi* Kulcz., 1915, *syn. nov.*

Tystofte [41] 31.viii.1957: 1 ♂ in an outhouse (OB).

First Danish record. Outside Denmark this species has been found in England (Locket & Millidge 1953), Germany: the west coast of Schleswig (Wiehle 1963) and Greifswald (Moritz 1964), Czechoslovakia (Miller & Kratochvíl 1948), and Hungary: Simontornya, 46°45'N., 18°33'E. (Kulczynski 1915).

The synonymy here established is based on a comparison of the male specimen mentioned above and three figures of male palps, viz. Kulczynski's Fig. 64 (1915), Miller & Kratochvíl's Fig. 1k (1948), and Locket & Millidge's Fig. 233C (1953). **Prof. Frant. Miller in Brno kindly** confirmed my opinion (in litt. 1961). O.B.

Lepthyphantes angulatus (O.P.-C.).

Jægersborg Dyrehave [45a] 25.iv.1970: 1 ♂ (PL).

First Danish record.

Lepthyphantes angulipalpis (Westr.).

Danzigmand [3] 15.x.1968: 1 ♀ (PL).

Marienlyst Skov near Vordingborg [39a] 18.v.1970: 1 ♀ in beech and oak litter a few metres from the sea slope (OB).

Holbæk Amts Sandflugtsplantage [43] 4.v.1968: 1 ♀ (PL).

Jægerspris Nordskov [44] 15.iv.1965: 1 ♀ (PL).

Hareskoven [45a] 19.xii.1965: 1 ♀, 1 ♂ (PL).

Rude Skov [45b] 6.iii.1965: 5 ♀♀ (PL).

Gribskov [45b] 13.ii.1965: 1 ♀; 3.x.1965: 1 ♂ (PL).

First Danish records.

Lepthyphantes complicatus (Emerton) = *L. audax* Sørensen.

Svinkløv [6] 24.viii.1965: 1 ♂ (PL).

The dunes by Asserbo Pl. [45b] 23.viii.1969: 16 ♂♂ (PL).

First Danish records.

Allomengea scopigera (Grube).

Fosdal [5] 7.viii.1966: 1 ♀ in grass (OB).

Svinkløv [6] 16.—24.viii.1965: 11 ♀♀, 18 ♂♂ (PL).

Aars [10] 12.ix.1967: 4 ♀♀, 3 ♂♂ in grass in a young wood; 23.x.1968: 1 ♀ in grass in a ditch along the wood (OB).

Rold Skov [11] 2.x.1967: 1 ♀ (PL).

The beach by Tofte Skov [11] 4.viii.1969: 6 ♀♀, 9 ♂♂ (PL).

Recorded from Denmark 'without any locality' (Brændegaard 1928).

Allomengea warburtoni (O.P.-C.).

Svinkløv [6] 23.viii.1965: 1 ♀, 2 ♂♂ (PL).

Kelddals Mølle, Ejdrup [10] 5.ix.1968: 1 ♀ beneath dense grass on moist soil near the millpond (OB).

Grønholt Vang [45b] 28.viii.1955: 1 ♀ (OB).

First Danish records.

Acknowledgements.

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Summary.

The literature on Danish spiders since 1928 is surveyed in respect of faunistic data. New Danish records are given for 152 species, 73 of which are new to Denmark. *Entelecara media* is deleted from the Danish list. A new synonymy, *Lepthyphantes insignis* O.P.-C. 1913 = *L. pillichi* Kulcz. 1915, is established.

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Oversigt over Entomologisk Forenings møder og ekskursioner 1969-1970.

Møder.

1. okt. 1969. Klubaften. 14 medlemmer til stede.

15. okt. Adjunkt Knud Th. Holst: De danske græshoppers udbredelse, belyst bl. a. ved deres stemmer. Diskussion: M. Schröder. S. L. Tuxen, H. Enghoff, Jens Olesen, O. Bakkendorf, A. M. Hemmingsen, N. Haarløv, Ole Karsholt, Peter Esbjerg. 38 medlemmer til stede.

Som nye medlemmer proponeredes Th. Munk og Ib Kreutzer.

29. okt. Auktion over bøger og samler-rekvisitter. 36 medlemmer til stede.

Som nyt medlem proponeredes Max Torbensen.

5. nov. Dr. phil. S. L. Tuxen talte om den meget sjældne tropiske spindlerorden Ricinulei og foreviste levende eksemplarer. Derefter talte prof. N. Haarløv om en opdukken af nye blodsugende mider i vor fauna. Diskussion: Børge Petersen, W. van Deurs, L. Lyneborg, A. M. Hemmingsen, A. Nørrevang, O. Winding, A. Nielsen. 37 medlemmer til stede.

Som nyt medlem proponeredes Vagn Blut Lauridsen.

12. nov. Mag. scient. Tom Normann: Hormonale funktioner hos insekter; specielle forhold har vist sig af særlig værdi for studiet af almene cellebiologiske problemer. Diskussion: A. Nielsen, Ellen Thomsen, N. Møller Andersen, M. Thomsen, Børge Petersen, S. L. Tuxen, A. M. Hemmingsen. 39 medlemmer og 8 gæster til stede.

26. nov. Cand. mag. Henning Petersen: Undersøgelser over Kalø Hestehaves collembol-populationer som led i en analyse af et bøgeskovs-økosystem. Diskussion: S. L. Tuxen, N. Haarløv. 36 medlemmer til stede.

3. dec. Klubaften 10 medlemmer til stede.

13. dec. Julemøde. Dr. phil. E. Tetens Nielsen talte om: Motiverende faktorer for "Grylle"-sang og anden adfærd. 61 deltagere. Entomologiska Sällskapet i Lund var indbudt til dette møde.

Som nyt medlem proponeredes O. Ryberg.

14. jan. 1970. Klubaften 11 medlemmer til stede.

21. jan. Skovbrugets, landbrugets og havebrugets skadedyr i 1969 ved lektor B. Bejer-Petersen og assistent, cand. agro. Th. Thygesen. 32 medlemmer til stede.

Som nye medlemmer proponeredes Niels Knudsen og Jørgen Frederiksen.

4. febr. Mag. scient. N. P. Kristensen talte om: Insektordnernes fylogeni — en oversigt over gængse anskuelser. Diskussion: A. Nielsen, S. L. Tuxen, H. Enghoff. 37 medlemmer til stede.

18. febr. Dr. phil. Torben Wolff holdt lysbilledforedrag om Nepal. 59 medlemmer og gæster til stede. Efter foredraget blev foreningens 102. fødselsdag fejret med fællesspisning.

4. marts. Meddelelser om fund af nye og sjældne biller og andre insekter i 1969. 35 medlemmer til stede.

Som nye medlemmer proponeredes Sussi Esbjerg og Bent Mogensen.

18. marts. Auktion over entomologiske bøger. 47 medlemmer til stede.

Som nyt medlem proponeredes Kristian Bruus-Jensen,

1. april. Mag. scient. Pétur M. Jónasson: Forureningen af vore søer. Diskussion: Flere deltagere. 54 medlemmer til stede.

Som nyt medlem proponeredes Mogens Andersen.

8. april. Klubaften. 8 medlemmer til stede

15. april. Meddelelser om fund af nye og sjældne sommerfugle i 1969 blev givet af en lang række medlemmer. 41 medlemmer til stede.

Som nye medlemmer proponeredes Hans-Henrik Jørgensen, C. H. Aastrup og Mogens Christensen.

29. april. Ordinær generalforsamling. — 1. Højesteretsdommer Victor Hansen valgtes til dirigent. — 2. Formanden aflagde beretning og gav herunder en oversigt over mødeaktiviteten i det forløbne år. L. Lyneborg fremlagde i tilslutning til formandens beretning udkast til foreningens nye faunistiske Danmarks-kort. — 3. Kassereren forelagde de reviderede regnskaber for foreningen og fondene — enstemmig godkendelse og decharge. — 4. Beslutning om at også den anden halvdel af renterne af Entomologisk Fond skal lægges til kapitalen. — 5. Børge Petersen ønskede at fratræde som redaktør og Leif Lyneborg nyvalgtes. F. Bangsholt og Preben Bjørn genvalgtes som bestyrelsesmedlemmer. — 6. Fhv. regnskabsfører O. Schaltz ønskede efter 48 år at trække sig tilbage som revisor. I hans sted blev overlærer H. Friis-Jensen nyvalgt. W. van Deurs genvalgtes som revisor og Børge Petersen som revisorsuppleant. — 7. Prof. N. Haarløv aflagde beretning om fredningsudvalgets arbejde. Der havde i det forløbne år været 6 møder og 23 sager var behandlet. — 8. Under eventuelt fremlagde den nye redaktør, Leif Lyneborg sine planer for Entomologiske Meddelelsers fremtidige form og indhold. Dette medførte en større debat, der mundede ud i en beslutning om at afholde et ekstraordinært medlemsmøde til drøftelse af tidsskriftsproblemet. 38 medlemmer til stede.

Som nye medlemmer proponeredes Ebbe Lilliendal Jørgensen og Martin Hjortsø.

14. maj. Extraordinært møde til diskussion af Entomologiske Meddelelsers form og indhold under den nye redaktion. Efter flere indlæg mundede diskussionen ud i en foreløbig godkendelse af bestyrelsens planer for omlægningen af "Entomologiske Meddelelser" til et danskproget, mere lokalt præget tidsskrift. 21 medlemmer til stede.

Ekskursioner.

7. juni 1970. Foreningens medlemmer var af Entomologiska Sällskapet i Lund inviteret til at deltage i en ekskursion til Kullaberg.

7. *sept.* Ekskursion til I.B.P. forsøgsområdet i Hestehaven ved Kalø. Cand. mag. Boy Overgaard Nielsen m.fl. redegjorde for den zoologiske forskning i forsøgsområdet incl. feltstationen Hestehavegård. 28 medlemmer og gæster deltog.

Regnskab for Entomologisk Forening 1969.

Indtægt

Kassebeholdning pr. $^{1}/_{1}$ 1969	kr.	2.859,44
Renter (legat 200,00, bank 217,46, giro 73,52)	-	490,98
Kontingenter 10.340,00 + abonnementer 2.764,40	-	13.104,40
Statstilskud	-	4.000,00
Rask-Ørsted Fond	-	12.000,00
Statens alm. videnskabsfond (Noona Dan)	-	9.867,10
Salg af hefter og særtryk af Ent. Medd.	-	6.805,13
Universitetsbibl. for bytteforbindelser	-	2.600,00
Salg af plastikæsker	-	450,60
Solgt på auktion (bøger skænket foreningen)	-	269,00
Auktionshonorar	-	1.555,34
	kr.	54.001,99

Udgift

Trykning af Entomologiske Meddelelser	kr.	32.731,05
Trykning af særtryk	-	3.590,30
Meddelelser om møder samt porto	-	5.528,58
Møder og ekskursioner	-	3.079,36
Repræsentation og diverse	-	1.608,52
Overført til kongresfondet	-	3.000,00
Kassebeholdning pr. $^{31}/_{12}$ 1969	-	4.464,18
	kr.	54.001,99

Status.

Aktiver

Girokonto	kr.	4.809,64
Bankkonto	-	6.053,79
Kontant beholdning	-	666,29
	kr.	11.529,72
Kontingentrestancer	kr.	210,00

Passiver

Tilhørende Kongresfondet m. m.	kr.	5.751,64
„ Entomologisk Fond	-	1.313,90
„ foreningens driftskonto	-	4.464,18
	kr.	11.529,72

Regnskab for Kongresfondet m. m. 1969.

Indtægt

Kassebeholdning pr. $^{1}/_{1}$ 1969	kr.	2.001,04
Overført fra foreningens driftskonto	-	3.000,00
Renter	-	762,00
	kr.	5.763,04

Udgift

Depotafgift	kr.	11,40
Kassebeholdning pr. $^{31}/_{12}$ 1969	-	5.751,64
	kr.	5.763,04

Status.

Aktiver

Obligationsbeholdning nom.	kr.	11.400,00
Kassebeholdning pr. $^{31}/_{12}$ 1969	-	5.7516,4
	kr.	17.151,64

Passiver

Kongresfondet m. m.	kr.	17.151,64

Regnskab for Entomologisk Fond 1969.

Indtægt

Kassebeholdning pr. $^{1}/_{1}$ 1968	kr.	685,04
Renter 638,00, aktieudbytte 3,06	-	641,06
Overført til Entomologisk Fond (disposition 1968)	-	311,37
	kr.	1.637,47

Udgift

Depotafgift		kr.	12,20
Overført til Entomologisk Fond (disposition 1969)		-	311,37
Til disposition (320,53 ÷ 12,20)	kr. 308,33		
Fondets kapital tilhørende	- 1.005,57		
Kassebeholdning pr. $^{31}/_{12}$ 1969	kr. 1.313,90	-	1.313 ,90
		kr.	1.637,47

Status.

Aktiver

Obligationsbeholdning nom.	kr.	12.100,00
Aktie pålydende	-	20,00
Obligation testamenteret Entomologisk Fond	-	12.000,00
Kassebeholdning pr. $^{31}/_{12}$ 1969	-	1.313,90
	kr.	25.433,90

Passiver

Entomologisk Fond	kr.	25.125,57
Til disposition	-	308 ,33
	kr.	25.433,90

Regnskab for Oluf Jacobsens Legat 1969.

Indtægt

Renter	kr.	205,00

Udgift

Depotafgift	kr.	5,00
Overført til foreningens driftskonto	-	200,00
	kr.	205,00

Status.

Aktiver

Obligationsbeholdning nom.	kr.	5.000,00

Passiver

Legatet	kr.	5.000,00

København, 20. marts 1970

F. Bangsholt
kasserer.

Regnskabet revideret og befundet rigtigt. Bank- og girokonti samt kasse- og obligationsbeholdningens tilstedeværelse konstateret.

København, 6. april 1970

O. Schaltz. *Wilhelm van Deurs.*

Entomologisk Forenings medlemmer

15. december 1970.

Æresmedlemmer.	Medl. siden	Speciale
Bakkendorf, O., vidensk. ass., Bogtrykkervej 26, NV.	1921	Hym.
van Deurs, W., lektor, civilingeniør, Frugtparken 7, Gentofte.	1981	Lep.
Hansen, Victor, højesteretsdommer, dr. phil., I. E. Ohlsensgade 4, Ø.	1905	Col.
Hornung, S., fhv. fabrikant, Solskrænten 16, Valby.	1910	Lep.
Wolff, Niels L., ing., cand. polyt., Hellerupvej 12, Hellerup.	1918	Lep.

Medlemmer med adresse i Danmark.		
Andersen, Arne, kontorassistent, Kvædehaven 6, Glostrup.	1944	Col.
Andersen, Annemarie Møller, lærerinde, Rundforbivej 265, II C, Nærum.	1964	
Andersen, Egede, faginspektør, Håbets Allé 5, Brønshøj.	1945	
Andersen, F. Søgaard, dr. phil., Kornagervej 85, Lyngby.	1937	
Andersen, Michael, typografl., Stavnstrupvej 3, Brønshøj.	1968	Lep.
Andersen, Mogens, stud. scient., Marienlyst Allé 11, Helsingør.	1970	
Andersen, Nils Møller, mag. scient., Rundforbivej 265, II C, Nærum.	1961	Het.
Anthon, Henning, tegner, Kronprinsessegade 44 I, K.	1937	
Arevad, Kristian, cand. mag., Bellisbakken 71, Birkerød.	1955	
Askgaard, Stig, cand. mag., Særslevgård, Særslev.	1956	
Bach-Pedersen, Morten, Maglekildevej 16 st. h., V.	1965	Col.
Bager, Marius, stud. scient., Rughavevej 29 th., Viborg.	1967	
Bangsholt, Frits, fuldmægtig, Gåseholmvej 19, Herlev.	1952	Col.
Behrendt, Ove, lic. agro., Duevej 44 IV tv., F.	1965	
Bejer-Petersen, B., lektor, Zoologisk Laboratorium, Bülowsvej 13, V.	1953	
Bendtsen, Inge, exam. pharm., Stationsvej 9, Humlebæk.	1957	
Bendtsen, Ole, Stationsvej 9, Humlebæk.	1956	Col.
Berg, Kaj, professor, dr. phil., Ferskvandsbiologisk Laboratorium, Hillerød.	1931	
Bering, V., læge, Saltum.	1964	
Bindel, Bo, konservator, Peter Bangsvej 84, F.	1961	Lep.
Birket-Smith, Jørgen, prof., Sandbjerg, Hørsholm.	1942	
Bisgaard, Charles, overlærer, St. Kongensgade 96, K.	1941	Hym.
Bjørn, Preben, tekstforfatter, Finlandsvej 8 A, Lyugby	1942	Lep.

Bloch, Erling, professor, kgl. kapelmusicus, Gl. Strand 52, K. 1950 Lep.
Bloch, Michael, arkitekt, Gl. Strand 52, K. 1950 Lep.
Bolwig, Niels, dr. phil., Sygehjemmet Sarepta, I, stue 7, Peter Bangsvej 8, F. 1935
Borcher, Ellis, lærerinde, Lindevej 3, Fensmark pr. Holme Olstrup. 1965
Brodersen, Poul, bogholder, Roskildevænge 21 II tv., Roskilde. 1945 Lep.
Bruus-Jensen, Kristian, skoleelev, Mosehøjvej 45, Charl. 1970
Brændegaard, Jens, lektor, dr. phil., Lions Park, Blok B 7, Hellerup. 1920 Aran.
Bræstrup, F. W., afdelingsleder, dr. phil., Zoologisk Museum, Universitetsparken 15, Ø. 1964
Buch, William, konservator, Nørregårdsvej 73, Rødovre. 1952
Böcher, Jens, mag. scient., Enghavegårdsvej 25, Nr. Herlev. 1960
Bøggild, Ole, mag. scient., Søndre Boulevard 45, Års. 1948 Aran.
Christensen, Anne Else Almgren, lærerinde, Kamstrup-sti 148, Roskilde. 1959
Christensen, Bent, prof., dr. phil., Møllevej 8, Kokkedal. 1963
Christensen, Bjørn Eggert, stud. scient., Dronninggårds Allé 32, Holte. 1968
Christensen, Georg, manuduktør, Stænget 2, Gentofte. 1946 Lep.
Christensen, Jørgen, revisor, Carit Etlarsvej 20, Åbyhøj. 1962 Lep.
Christensen, P. Holst, dr. phil., Soph. Schandorphsvej 16. Lyngby. 1921
Christensen, Ole, stud. scient., Randersvej 343, Århus N. 1969
Christiansen, Ole, stud. med., Vesterbrogade 22, V. 1968
Christoffersen, Kai, gartner, Østergade 27, Nykøbing F. 1963 Lep.
Christophersen, Erik, fabrikant, Trondhjemsgade 10, Ø. 1943 Lep.
Dahl, Jørgen, mag. scient., Nørrevej 17, Ballerup. 1945
Danielsen, Marianne, stud. scient., Lågegyden, Kokkedal. 1968
Degerbøl, Birgit, mag. scient., Fuglevadsvej 8, Lyngby. 1954
van Deurs, Bo, stud scient, P. O. Pedersens Koll., vær. 20, Haraldlundsvej 38, Lyngby. 1963
Dohn, Thomas, skoleelev, Bov, pr. Padborg. 1967
Edelmann, Jan, konservator, Nørrekær 157 III tv. Rødovre. 1959 Col.
Enggren, Willy, fuldmægtig, Gavlhusvej 11, Brønshøj. 1960
Enghoff, Henrik, stud. scient., Kærmindevej 36, Gentofte. 1965 Het.
Esbjerg, Peter, stud scient., Værebrovej 44 II th., Bagsværd. 1961 Orth.
Esbjerg, Sussi, stud. scient., Værebrovej 44 II, th., Bagsværd. 1970
Eriksen, Knud Riewertz, afdelingsleder, cand. med., Høvænget 6, Gentofte. 1933
Fibiger, Michael, Kathrinevej 15 II, Hellerup. 1961 Lep.
Flindt, Niels, stud. med., Exnersvej 33, Klampenborg. 1967 Lep.
Fog, Asger, kommunelærer, Svend Gøngesvej 5, Brønshøj. 1946 Hym.
Fogh, P., skovrider, Syrenvænget 35, Virum. 1917
Formann, Finn, stud. mag., Rosenhøj, blok 1, opg. 3, Viby, Århus. 1960

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