

en een gedeeltelijke albino van den gewonen spotvogel, daar ter plaatse 8 Mei 1904 verzameld."

Volgens mededeling van de kleinzoon van de verzamelaar, Ir J. Vallen, bestaat deze collectie niet meer. Wellicht zijn enkele exemplaren terecht gekomen in de kleine verzamelingen, die de zonen Jules en Hugo hebben aangelegd. De collectie van Jules Vallen (60 à 70 stuks) is later overgegaan aan de R. K. Kweekschool te Venlo en door het bombardement totaal vernield (1944).

Na deze interessante mededelingen sluit de voorzitter de vergadering.

te Heerlen op Woensdag 13 October 1954.

Aanwezig de dames: Decker en Janssen en de heren: van Rummelen, Janssen, van Loo, Vijgen, Berger, Valk, G. van Rummelen, Mulder, Adams, Dijkstra en Bruna.

De heer van Rummelen laat een afbeelding passeren van een in de pers beschreven fossiel uit Groenland, dat van verstrekkende betekenis kan zijn. Hierover worden verdere informaties ingewonnen.

Dr Dijkstra demonstreert een drietal tezamen gegroeide twee-appels (Zie Maandblad, Jrg 42, no 6-7, pag. 63).

Van de heer Janssen wordt een steenkern van een zoetwaterschelp uit het carboon, van het geslacht *Carbonicola* gedemonstreerd. Naar aanleiding hiervan geeft de heer van Rummelen een korte uiteenzetting over het voorkomen van de verschillende zoetwaterschelpen uit het carboon.

Dr Bruna informeert naar vindplaatsen van historische potscherven in de omgeving van Brunssum. De Voorzitter kan hierop antwoorden, dat in deze streek scherven gevonden zijn uit verschillende perioden der geschiedenis, vanaf de frankische tijd tot op het tegenwoordige tijdstip.

Daarna houdt Dr Bruna een interessante causerie over de oriëntering van de honingbij op plaatsen, waar deze insecten voedsel vinden, aan de hand van geschriften van von Frisch en Lindauer. Deze causerie wordt nog aangevuld door Dr Dijkstra, met zijn waarnemingen over het zwermen der bijen.

Tenslotte doet de heer Janssen een mededeling over de bruinrode wespenorchis.

Mededelingen van de Commissie inzake wetenschappelijk onderzoek van de St.-Pietersberg, no. 30.

THE THYSANURA OF THE NETHERLANDS (APTERYGOTA, INSECTA)

by
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I.

The present paper was started as a report on the *Machilidae* and *Lepismatidae* collected in the Sint Pietersberg region bij the staff of the Rijksmuseum van Natuurlijke Historie at Leiden (RNH). Various questions as to the identity of the *Thysanura* of the Netherlands arose in the course of this investigation, and when additional material became available through other sources, it was decided upon suggestion of Dr van Regteren Altena to prepare a more comprehensive paper summarizing the actual knowledge of the Dutch *Thysanura*. The assistance of Dr C. O. van Regteren Altena is gratefully acknowledged here; thanks are equally due to Dr G. Kruseman, of the Zoölogisch Museum Amsterdam (ZMA), who submitted for examination numerous interesting specimens of *Thysanura* belonging to that institution.

There are not many papers on the classification and distribution of the Dutch *Thysanura*.

In a comprehensive paper, J. Th. Oudemans (1896) mentions the following species:

Lepisma saccharina L., common in houses.

Thermobia domestica Packard, Amsterdam, in bake-houses.

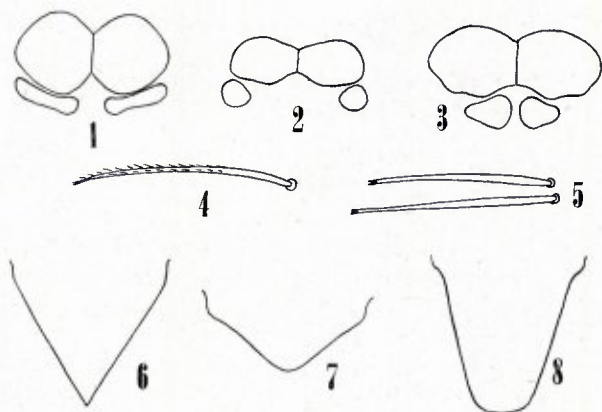
Machilis maritima Leach, in some localities near the sea.

Machilis cylindrica Geoffr., in the south of the province of Limburg and near Amsterdam.

Machilis polyпода L., recorded by Snellen van Vollenhoven as occurring near Nijmegen but not checked by Oudemans.

There is no reason to doubt the determination of the two lepismatids. *Machilis maritima* corresponds to what is called to day *Petrobius brevistylis*. The lot classified as *Machilis cylindrica* (prov. of Limburg) contains two different species, viz. *Lepismachilis? y-signata* and *Dilta hibernica*. It is quite impossible to identify the record of *Machilis polyпода*.

Kruseman (1946a) records *Machilis saltatrix themana* Verh. from Epse near Gorsel, province



Important characters for the determination of the Dutch *Thysanura*.

Fig. 1, Eyes and ocelli of *Pepismachilis* sp.; fig. 2, eyes and ocelli of *Dilta* sp.; fig. 3, eyes and ocelli of *Trigoniophthalmus* sp.; fig. 4, large seta of *Thermobia* sp.; fig. 5, large setae of *Lepisma* sp.; fig. 6, tenth tergite of *Acrotelsa collaris*; fig. 7, tenth tergite of *Thermobia domestica*; fig. 8, tenth tergite of *Lepisma saccharina*. — Wygodzinsky del.

of Gelderland. This is the species described in the present paper as *Machilis meijerei* sp.n.

In the same year Kruseman (1946b) reports on his re-examination of the specimens recorded by Oudemans (1896) as *Machilis cylindrica*; they are identified now as *Forbicina* spec. and *Lepismachilis notata* Stach.

Later (Kruseman, 1948) mention is made of *Petrobius oudemansi* Carp. and a probably new species of *Trigoniophthalmus*, both collected near Amsterdam. Specimens of this material have been examined by the author of the present note; the *Petrobius* are *brevistylis*, whilst the *Trigoniophthalmus* do not differ from *alternatus* Silvestri.

Mention must be made of a paper by J. Th. Oudemans (1890) which contains the description of *Lepisma cincta* sp.n.; the specimens were found in Holland among herbarium paper with plants received from Java. *Lepisma cincta* is a synonym of *Acrotelsa collaris* (Fabricius); as the species can now again be mentioned for the Netherlands, Oudemans (1890) must be recognized as the first author to indicate it for his country.

Upon examination of the material received

for the present study, the following species are now known to exist or to have existed in the Netherlands:

MACHILIDAE

Machilis oudemansi sp.n.

Machilis meijerei sp.n.

Lepismachilis? *y-signata* Kratochvil, 1945

Petrobius brevistylis Carpenter, 1913

Trigoniophthalmus alternatus (Silvestri, 1904)

Dilta hibernica (Carpenter, 1907)

LEPISMATIDAE

Lepisma saccharina L., 1758

* *Thermobia domestica* (Packard, 1873)

* *Acrotelsa collaris* (F., 1793)

* *Gastrotheus sumatranus* Silvestri, 1916

The species marked with * are certainly introduced; the first is probably firmly established in the country, but the two others which are much more thermophilous might prove to be only temporary residents in the country.

In order to facilitate future work in the Dutch *Thysanura* to those not familiar with the group, simple keys for the genera and species accompanied by some figures are given here prior to the locality records and descriptions of a more technical nature. For each species, there are given bibliographical citations referring to the original description, accurate redescriptions and primary synonyms. — A summary of our actual knowledge of the anatomy, physiology, morphology, biology, etc. of the European species is to be found in Denis (1949); but though the *Thysanura* are very common insects in Europe, much is still unknown about them, especially as to their biology, and a wide field for original research is open here.

Practical key for the determination of the Dutch *Machilidae*.

1. Paired ocelli strongly transverse, sole-shaped (fig. 1) 2
- Paired ocelli otherwise 5
2. Flagellum of antennae without scales; teeth of mandibles not distinct *Petrobius brevistylis* Carp.
- Flagellum of antennae scaled: mandibles with four distinct teeth 3
3. Hypodermal pigment present on legs and base of maxillary palpi (figs. 9, 13—14, 16, 18); terminal spine of abdominal stylets II—

VII less than half as long as stylet; ovipositor of females apically with fossorial spines (fig. 21) 4

— No hypodermal pigment on maxillary palpi and legs; terminal spine of abdominal stylets II—VII about half as long as stylet; ovipositor of female without fossorial spines

Lepismachilis? y-signata Kratochvil.

4. Eyes as long as wide. Last segment of maxillary palp of male sub-cylindrical, about half as long as penultimate (fig. 16)

Machilis mejerei sp.n.

— Eyes shorter than wide (0.8:1.0). Last segment of maxillary palp of male conical, about $\frac{1}{3}$ the length of penultimate (fig. 9)

Machilis oudemansi sp.n.

5. Eyes strongly transverse; ocelli subcircular, situated sub-laterally before eyes (fig. 3)

Dilta hibernica (Carp.).

— Eyes not strongly transverse; ocelli subtriangular, situated medially before eyes (fig. 2)

Trigoniophthamus alternatus (Silv.).

Machilis oudemansi sp.n.

Male.—Body length 12 mm Pattern unknown.

Eyes light coloured, with irregular dark spots. Line of contact: length = 0.7, length : width = 0.8.

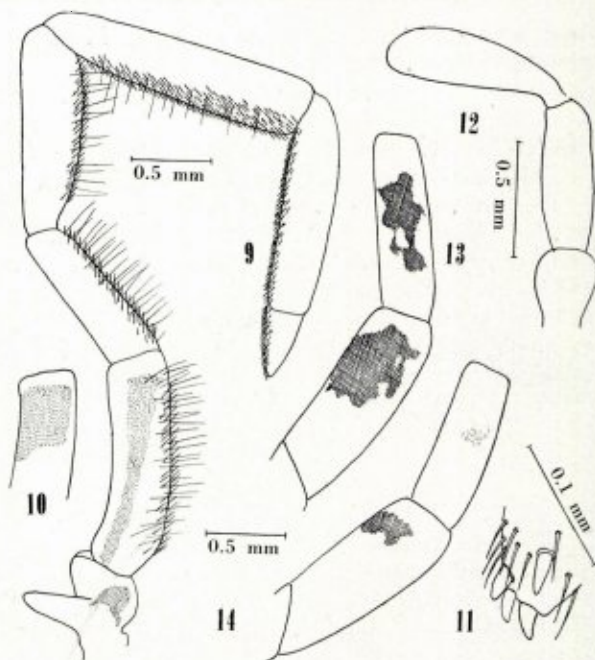
Frons strongly pigmented, with a delicate light coloured median longitudinal line.

Only the basal portion of the antennae preserved; the flagellum apparently not of uniform colour.

Mandibles with hypodermal pigment.

Shape and relative length of segments of maxillary palp as in fig. 9. Last segment pointed, conical, one third of the penultimate. Hypodermal pigments on segments II and III only, moderately intensive, distribution on external surface as in fig. 9; internal surface with a large sub-apical spot on III only (fig. 10). Cilia on segments III—VI, those on III and IV relatively numerous, their length about equal to diameter of segment, those on V less numerous and somewhat shorter, on VI few in number and very short. Tiny ventral bristles on articles III—VIII, relatively delicate, slightly pigmented, those on distal segments somewhat shorter and more numerous than those on basal articles. Spinulets of apical segments hyaline, very short (fig. 11).

Submentum and mentum of labium with hypodermal pigment. Labial palp unpigmented,



Machilis oudemansi sp.n., male holotype. — Fig. 9, maxillary palp, outer surface, ordinary bristles not shown; fig. 10, internal surface of segment III of maxillary palp; fig. 11, spinulets of apex of terminal segment of maxillary palp; fig. 12, labial palp, hairs and bristles not shown; fig. 13, pigmentation of femur and tibia of fore legs; fig. 14, pigmentation of femur and tibia and second pair of legs. — Wygodzinsky del.

shape of its segments as in fig. 12; ciliae few in number and very short, tiny ventral bristles inconspicuous.

Legs long and slender. Coxae of all pairs slightly pigmented basally. Pigmentation of femur and tibia of first and second pairs of legs as in figs. 13 and 14, third pair without pigment (coxa excepted). Cilia and tiny ventral bristles of legs inconspicuous. Spinulike setae distinct, hyaline on first and second, very slightly pigmented on third pair. Number of spinulike setae of tibia I = 6, tibiae II and III = 6—8.

Apical bristles of abdominal stylets faintly pigmented. Relation length of stylet : length of coxite, on segments

II—VII = 0.7

VIII = 0.8

IX = 1.6

Anterior parameres with 1 + 4, posterior

ones with 1 + 5 segments. Penis somewhat surpassing apex of posterior parameres.

Material examined: Sint Pieterberg, eastern slope near E.N.C.I.-factory, 7-V-1949, staff of the RNH coll. (1 male, holotype, RNH).

This species is dedicated to the memory of J. Th. Oudemans, who has done important work on the *Thysanura* of the Netherlands. *Machilis oudemansi* sp.n. would key out (Wygodzinsky, 1941) near *Machilis provincialis*, from which it differs among other characters by the less extensive pigment of the maxillary palp and the more extensive pigment on its legs. *M. oudemansi* is very much like *M. hrabei* Kratochvil, 1945, but differs in various details of the maxillary palp.

Machilis mejerei sp.n.

Male and female. Maximum body length 11.0 mm. Pattern (observed in one specimen only) much as that of *Machilis annulicornis rhenana* Verhoeff var. *fasciola* Nicolet (see Wygodzinsky, 1941, pl. I, fig. 10); other types of pattern are to be expected in the species, however.

Colour of eyes unknown. Line of contact: length = 0.5; length : width = 1.0.

Pigmentation of head as in fig. 15.

Antennae at least as long as body, brownish, intermediate joints of flagellum whitish, the articles with alternatively 1—2 or 3—5 basal subarticles whitish.

Mandibles with diffuse hypodermal pigment.

Shape of maxillary palp of male as in fig. 16. Last segment about half as long as penultimate, subcylindrical. Pigment very faint, on external surface as in fig. 16; pigment on internal surface of segment III almost imperceptible. Cilia on segments III—VI, those on IV and V relatively numerous, their length about that of diameter of segment, the remaining ones shorter and less numerous. Ventral bristles on articles III—VIII, relatively elongate and strong, slightly pigmented. Spinulets of apical segments (fig. 17) not quite as short as in foregoing species.

Shape of maxillary palp of female as in fig. 18; pigmentation much as in male, additional small but rather intense basal spots present on segments V and VI, the latter also with a very faint submedian blotch.

Submentum and base of apical segment of labial palp pigmented in both sexes; shape of

palps as in figs. 19 and 20.

Legs long and slender. Coxae of all pairs distinctly pigmented basally in female, almost imperceptibly so in male. Pigment of femur and tibia of female approximately as described and figured for male of *oudemansi*; practically absent in male. Cilia and small ventral bristles of legs of male inconspicuous. Spine-like setae distinct, hyaline or very faintly pigmented on tibiae, slightly but distinctly pigmented on tarsi; their number on tibia I = 2—4, II = 6 and III = 6—8.

Apical bristles of abdominal stylets hyaline. Relative length stylet : coxite on segments

II—VII =	♂ 0.7—0.8	♀ 0.7
VIII =	0.85	1.0
IX =	1.2	1.1

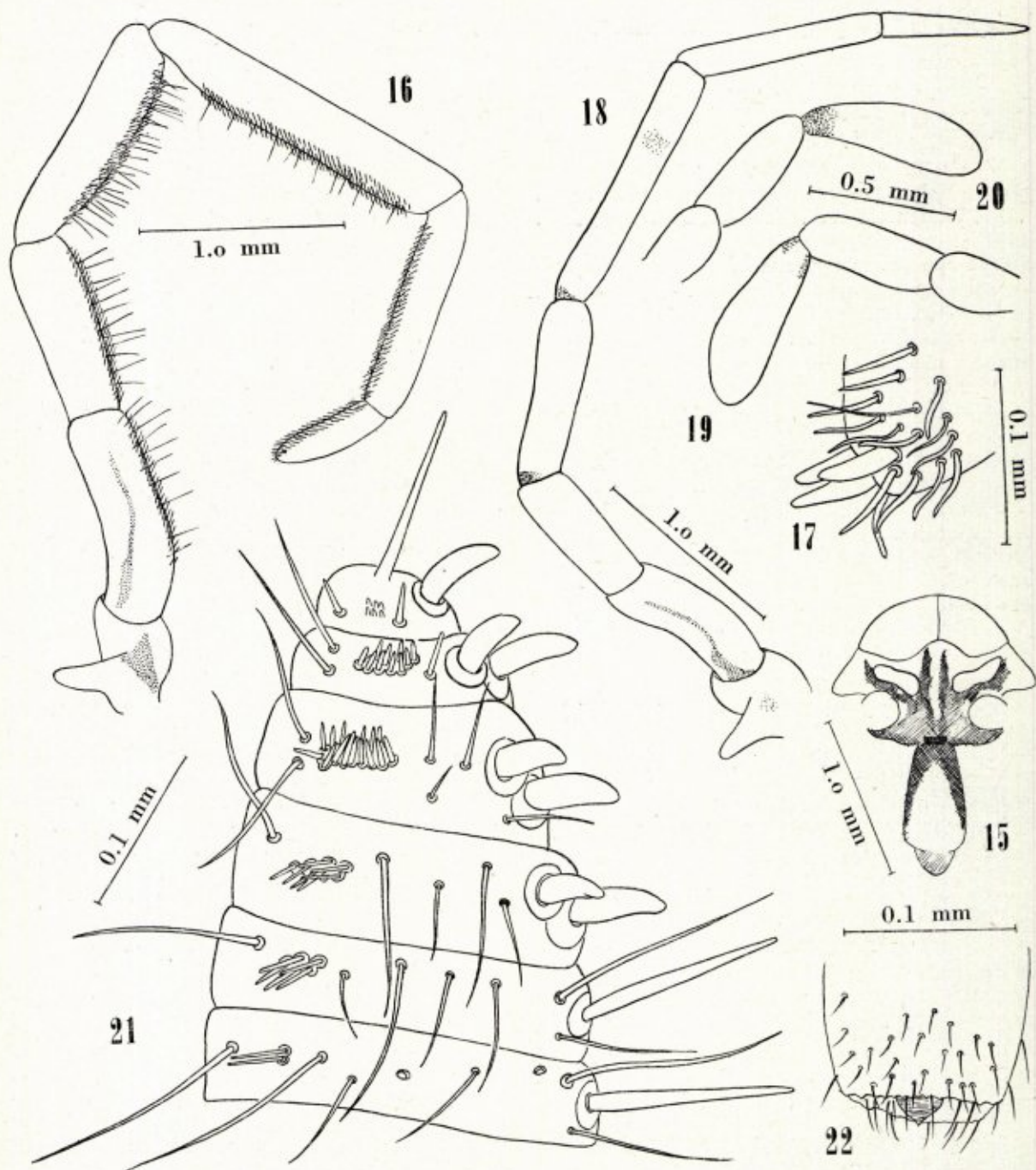
Ovipositor of secondary type, reaching somewhat beyond middle of stylets IX. Anterior gonapophyses with 32—37 segments. Fossorial spines dark brown, stout, rounded apically, their distribution: 1—2, 2—3, 2—3, 1—2. Fossorial setae moderately stout, always single. 5—6 groups of not more than 15 sensory spinulets each. Apical seta about as long as the last three segments together. Hairs rather slender, not longer than 2 segments together. Distribution of fossorial spines of posterior gonapophyses: 2, 2—3, 2—3. Fossorial setae always single.

Anterior parameres of male with 1 + 6—7, posterior parameres with 1 + 7 segments. Penis slightly surpassing tip of posterior parameres; its apex as in fig. 22.

Material examined: Epse near Gorsel, Gelderland, 17-X-1943, Dr M. F. Mörzer Bruyns coll. (1 ♂ holotype, 1 ♀ allotype, 2 ♀♀, 5 ♂♂ paratypes, 4 additional immature specimens, ZMA).

Machilis mejerei sp.n., named in honour of the late Dutch dipterologist J. C. H. de Meijere, is very nearly related to *M. oudemansi* described above. The males differ by their pigmentation, the shape and relative size of the apical segment of the maxillary palp, and the relative measurements of the eyes, shorter than wide in *oudemansi*, as long as wide in *mejerei*; the latter character most probably will hold true also for the female, not described for *oudemansi*.

There is no doubt that both species of *Machilis* here described belong to the group of species near *Machilis annulicornis* Latreille, as redescribed by Wygodzinsky (1941).



Machilis mejerei sp.n. — Fig. 15, Pigmentation of head; fig. 16, maxillary palp of male, outer surface, ordinary bristles not shown; fig. 17, spinulets of apex of terminal segment of

maxillary palp; fig. 18, maxillary palp of female; fig. 19, labial palp of male; fig. 20, labial palp of female; fig. 21, apical segments of anterior gonapophyses of female; fig. 22, apex of penis of male. — Wygodzinsky del.

Lepismachilis? y-signata Kratochvil, 1945

Lepismachilis y-signata Kratochvil, 1945, *Folia Entomologica* 8: 59, fig. 5.

Lepismachilis y-signata Janetschek, 1949, *Veröff. Mus. Ferd., Innsbruck*, 26-29: 153 figs. 2, 3 b & c, 5, 7; pl. X, fig. 3.

Material examined: Houthem near Maastricht, J. Th. Oudemans coll., VII-1893 (2 ♂♂, 1 ♀, ZMA).

The specimens agree well with the morphological data for this species given by Janetschek (1949), viz. sensory field of fore femur of male oval, slightly in contact with the distal series of bristles, distinct short spine-like setae on under surface of tarsi of mid and hind legs, and very short apical spinulets on last segment of maxillary palp. The eye pattern which can best be seen in living or freshly killed specimens, could not be observed in the present material; this character is quite essential for the definite determination of the species, and if specimens can still be found near Maastricht after 60 years have gone by since Oudemans collected there, some final conclusion might be arrived at.

The area of *L. y-signata* extends over various parts of Central Europe.

Petrobius brevistylis Carpenter, 1913

Petrobius brevistylis Carpenter, 1913, *Irish Nat.* 22: 228-233, figs. 1-8.

Petrobius oudemansi Carpenter, 1913, *Irish Nat.* 22: 228-233.

Petrobius modestus Bagnall, 1915, *J. econ. Biol.* 10 (4): 83-85.

Petrobius balticus Stach, 1921, *Odbitka Rozpraw i Wiadomosci, Mus.* 7-8, figs. 1-22.

Material examined: Amsterdam, Zeeburg, 31-VII-1944, 7-VIII-1944, G. Kruseman coll. (5 ♂♂, 2 ♀♀, ZMA); Amsterdam, Diemer-dam, 16-VII-1944, G. Kruseman coll. (2 ♂♂, 3 ♀♀, ZMA); Amsterdam, Kinselmeer, 29-VII-1944, 20-VIII-1944, G. Kruseman coll. (3 ♂♂, 6 ♀♀, ZMA); Bergen op Zoom, Oesterput aan de Waterschans, 4-X-1945, P. Korringa coll. (5 ♂♂, ZMA); Hoek van Holland, 5-VII-1923, H. C. Blöte coll. (2 ♂♂, 2 ♀♀, ZMA).

Trigoniophthalmus alternatus (Silvestri, 1904)

Machilis alternata Silvestri, 1904, *Redia* 2: 6.

Trigoniophthalmus alternatus Stach, 1939, *Bull. Ac. Pol. Sc. Lettres (ser. b)*: 241, pls. 19-21.

Trigoniophthalmus alternatus Wygodzinsky, 1941, *Denkschr. Schweiz. Naturf. Ges.* 74 (2): 152, figs. 2, 24, 79-87, 89, 90.

Material examined: Sint Pieterberg, eastern slope near the frontier, in the woods under blocks of limestone, 12-VII-1949, C. O. van Regteren Altena coll. (2 ♀♀, 1 immature specimen, RNH); near Neercanne Castle, Limburg, 19-VIII-1950, staff of the RNH coll. (4 ♀♀, RNH); Neercanne, Limburg, 12-IX-1951, L. D. Brongersma coll. (2 ♀♀, RNH); Amsterdam, Zeeburg, 31-VII-1944, 7-VIII-1944, G. Kruseman coll. (28 ♀♀, ZMA); Amsterdam, Diemer-dam, 16-VIII-1944, G. Kruseman coll. (8 ♀♀, ZMA); Amsterdam, Kinselmeer, 5-VIII-1944, G. Kruseman coll. (8 ♀♀, ZMA); dike near Kinselmeer, 29-VII-1944, G. Kruseman coll. (1 ♀, ZMA); dike near Kinselmeer, Durgerdam, 17-VII-1944, F. E. Loosjes coll. (1 ♀, ZMA); Monnikendam, southern dike, 27-VIII-1944, F. E. Loosjes & A. C. W. Loosjes van Bommel coll. (20 ♀♀, ZMA).

As far as it is possible to ascertain, the species is new for the Netherlands; its distribution in Central Europe is extensive (see Stach, 1939). No males have been found in the northern part of its area, and the reproduction of the species by parthenogenesis is highly probable in this case.

Dilta hibernica (Carpenter, 1907)

Praemachilis hibernica Carpenter, 1907, *Irish Nat.* 16: 55, pl. XVI.

Teutonia germanica Verhoeff, 1910, *Zool. Anz.* 36: 434.

Teutonia oudemansi Verhoeff, 1910, *Zool. Anz.* 36: 434.

Dilta hibernica Wygodzinsky, 1941, *Denkschr. Schweiz. Naturf. Ges.* 74(2): 147, figs. 1, 63-69, 71, 73-76.

Material examined: Houthem near Maastricht, VII-1893, J. Th. Oudemans coll. (1 ♀, ZMA); Sint Pietersberg, eastern slope, near the frontier, in the woods under blocks of limestone, 12-VII-1949, C. O. van Regteren Altena coll. (1 ♀, RNH); idem, under blocks of limestone in the forest, 14-X-1952 (2 ♂♂, 2 ♀♀, RNH).

This is a widely distributed Central and Western European species, new for the Netherlands.