

MEDDELELSER OM GRØNLAND

UDGIVNE AF

KOMMISSIONEN FOR VIDENSKABELIGE UNDERSØGELSER I GRØNLAND

Bd. 125 · Nr. 8

I. SPIDERS (ARANEINA)
FROM NORTHEAST GREENLAND BETWEEN
LATS. $70^{\circ}25'$ AND $76^{\circ}50'$ N.

II. ON THE POSSIBILITY OF
A RELIABLE DETERMINATION OF SPECIES
OF THE FEMALES OF THE GENUS ERIGONE

BY

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WITH 26 FIGURES IN THE TEXT

KØBENHAVN

C. A. REITZELS FORLAG

BIANCO LUNOS BOGTRYKKERI A/S

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INTRODUCTION

The greater part of the material for this list is collected on the Three-Years' Expedition of Dr. LAUGE KOCH by F. SØGAARD ANDERSEN M. sc. (1933—34), JENS BRÆNDEGAARD M. sc. (1932), HOLGER MADSEN M. sc. (1932—33) and G. THORSON Ph. D. (1931—32). A few finds from LAUGE KOCH's former expeditions to these regions are also included here. The collectors of these were R. BØGVAD M. sc. (1930), B. LØPPENTHIN M. sc. (1930), NOE-NYGAARD Ph. D. (1929) and G. SEIDENFADEN (1929). Further, a few animals were collected by ALWIN PEDERSEN as a member of the Scoresby Sound Committee's 1st Expedition (1925), and these which are previously unpublished have also been included here.

Finally, I am going to publish the greater part of the material of spiders collected by the Danmark-Expedition. The spiders which in the course of this expedition were collected by FRITS JOHANSEN have already been published by J. H. EMERTON (1919), but only 3 species were dealt with, whereas the finds comprise 7 species, thus making a valuable increase of our knowledge of the spider-fauna of East Greenland, as spiders have never before nor since been brought back from so northerly regions of East Greenland.

I tender my most sincere thanks to Dr. S. C. BISHOP, Rochester, to ÅKE HOLM fil. lic., Uppsala, Dr. A. RANDELL JACKSON, Chester, Dr. SCHENKEL, Basel, and Professor W. REDIKORTZEW, Leningrad, for valuable assistance in the work of determination and for the gift or loan of material for comparison.

Apart from a number of young animals, which I have not been able to determine with certainty, the material of the list consists of about 460 individuals, which belong to 16 different species.

While working with the Greenland *Erigone* species I have arrived at the conclusion that it is possible to determine the females of these species with greater certainty than heretofore. Therefore Part II of this publication naturally belongs to Part I.

The terms used in the list are: pull = very small young; juv. = greater young, the largest of which it is possible to determine as to sex; jun. = young which are practically adults, but for the final moult; ad = sexually mature individuals.

I. SPIDERS (ARANEINA)
FROM NORTHEAST GREENLAND BETWEEN
LATS. 70°25' AND 76°50'N.

RECORD OF THE SPECIES

FAMILY LYCOSIDAE

1. *Pardosa glacialis* THORELL 1872.

- 70°25' Kap Hope, June 3, 1925: 1 ♀ jun; June 10, 1925: 1 ♂ ad (just after moulting), 3 ♂ jun. 3 ♀ jun. 6 juv; June 27, 1933: 4 ♂ ad. 3 ♀ ad. 1 ♀ jun. 1 ♂ juv. 1 ♀ juv. 1 juv.
- 72°25' Kap Petersen in Kong Oskars Fjord, June 1, 1934: 1 ♂ jun. 1 juv.
- 72°30' Kongeborgen at Kong Oskars Fjord, June 10, 1934: 1 ♀ jun. 1 juv.
- 72°50' Ella Ø, August 17, 1930: 2 ♀ ad. (after the laying of eggs); (Berlèse sample from herb vegetation), May 19, 1932: 1 juv; (Berlèse sample from *Dryas*-heath), June 19, 1932: 2 pull; (under stone), August 23, 1932: 1 ♀ jun; August 25, 1932: 1 ♀ jun. (just after moulting); (in loose moor soil), August 26, 1932: 1 ♀ juv; (the tidal zone in Tømmerbugten), July 29, 1933: 1 ♀ juv; (the delta), August 12, 1933: 2 ♀ ad. 1 juv; west of Langsø (under stone), May 10, 1934: 1 ♂ jun. 6 ♀ jun. 1 slough of ♀ jun. 1 juv; Kap Oswald (under stone), May 11, 1934: 1 ♀ jun. 2 juv; Elvdalen, May 12, 1934: 1 ♀ jun. 2 ♀ juv. 2 juv; June 21, 1934: 1 ♀ ad; Bastionen (800 m above sea level), July 28, 1934: 2 ♀ jun. 1 juv; Elvdalen, August 21, 1934: 1 ♂ jun.
- 72°50' Narhvalsund, between the two southernmost glaciers, July 27, 1934: 1 ♀ ad. (with egg cocoon).
- 72°50' Kap Alfred in Kempes Fjord, August 5, 1934: 1 ♀ juv.
- 72°50' Fulach Dal in Dicksons Fjord, August 9, 1934: 2 ♀ jun; at Langdal Bræ in Dicksons Fjord, August 8, 1934, 1 ♀ juv.
- 73°05' Kap Humbolt on Ymer Ø, June 18, 1934: 1 ♀ ad; K. Jakobsens Bugt on Ymer Ø (Berlèse sample from *Chamaephyte*-vegetation), September 18, 1933: 1 juv.

- 73°25' Renbugten, August 25, 1933: 2 ♀ jun. 1 juv.
- 73°45' At Moskusokse Fjord on Gauss Halvø, August 13, 1929: 2 ♀ ad. (with egg cocoon), 1 ♂ jun. 1 ♀ jun. 1 juv; August 13, 1930: 1 ♀ ad. 1 ♂ jun. 1 ♀ jun. 1 ♀ juv; August 15, 1930: 1 ♂ juv. 1 ♀ juv.
- 73°45' Brogede Dal on Strindbergs Halvø at Nordfjord, August 30, 1929: 1 ♀ jun. 1 ♀ juv; July 28, 1932: 3 ♀ ad. (with egg cocoon), 2 ♀ jun. 1 ♀ juv. 2 juv; (*Dryas*-heath), July 30, 1932: 1 ♀ jun. 2 juv; (the meadow at the river), July 31, 1932: 1 ♀ ad. 1 ♀ jun. 2 ♀ juv; August 4, 1932: 1 ♂ jun. (just after moulting).
- 73°50' The east coast of Nordfjord south of Waltherhausen Gletscher, July 29, 1932: 2 ♀ ad. 1 ♂ jun. (just after moulting), 1 ♀ jun. about 74° Loch Fyne (in a meadow), July 24, 1930: 1 ♀ jun; (dry river bed), July 27, 1930: 2 ♀ juv; July 28, 1930: 2 ♂ jun; July 30, 1930: 1 ♀ ad. (with egg cocoon), 1 ♂ jun.
- 74°05' Kap Stosch (under stone), July 19, 1932: 1 ♀ ad. (with egg cocoon), 3 ♂ jun; (at a river), July 20, 1932: 1 ♀ jun.
- 74°05' Eskimonæs (southern slope with *Dryas*- and *Carex*-vegetation, 50 m above sea level), June 4, 1933: 1 ♂ jun. 1 ♀ juv; (under stone in grass vegetation), June 10, 1933: 2 ♀ jun. 1 ♀ juv. 1 juv; Elvdalen, August 14, 1932: 1 juv; (*Cassiope*-heath 50 m above sea level), August 14, 1932: 1 ♀ ad.
- 74°10' Kap Mary, July 21, 1929: 1 ♀ ad. (with egg cocoon), 1 ♂ juv; (300 m above sea level), July 10, 1930: 2 ♀ ad (with egg cocoon); (100 m above sea level), July 12, 1930: 2 ♀ ad. (with egg cocoon).
- 75°10' Hochstetter Forland west of Kap Rink, June 19, 1930: 1 ♂ ad. 1 ♀ jun. 5 ♂ juv. 6 ♀ juv. 2 juv.
- 76°50' Danmarks Havn, Thermometerfjældet, June 5, 1907: 1 ♂ juv; Stormkap, June 11, 1907: 3 ♀ jun. *ibid.* June 15, 1907: 1 ♂ jun. 5 ♀ jun. *ibid.*, June 17, 1907: 3 ♂ ad. 1 ♀ jun; Snenæs, June 15, 1908: 3 ♀ ad. (with egg cocoon); Rypefjældet, end of June 1908: 2 ♀ ad. (1 with egg cocoon); Hvalrosodden, August 6, 1907: 1 ♀ ad. 1 ♂ jun; the plain above the harbour, August 12, 1907: 4 juv; the plain at 2. camping site, August 23, 1906: 4 ♀ ad. (all having laid eggs, but without egg cocoons), 1 ♂ jun. 4 ♂ juv. 2 ♀ juv; *ibid.* August 24, 1907: 1 ♀ ad. (with 18 pull.).

2. *Pardosa groenlandica* THORELL 1872.

- 70°25' Rosenvinges Bugt, July 24, 1925: 1 ♂ ad.
- 72°30' Kongeborgen at Kong Oskars Fjord (400 m above sea level), June 11, 1934: 1 ♀ ad.

- 72°40' Trail Ø at Vega Sund east of Scott-Keltie Øer, June 12, 1932: 1 ♂ ad.
- 72°50' Ella Ø (Berlèse sample), May 1932: 1 ♂ ad. (just after moulting), 1 ♂ jun; May 21, 1932: 1 juv. 3 pull; August 26, 1932: 1 ♂ jun; Kap Oswald, May 11, 1934: 1 ♀ jun; ibid. June 2, 1934: 1 ♂ ad; June 20, 1934: 1 ♀ jun; between Rundsø og Tømmerbugten, August 5, 1933: 1 ♂ jun; Elvdalen, August 21, 1934: 2 ♀ ad.

FAMILY DICTYNIDAE

3. *Dictyna hamifera* THORELL 1872.

- 72°30' Kong Oskars Fjord at Kongeborgen, August 5, 1934: 1 juv; June 26, 1934: 1 ♂ ad.
- 72°50' Fulach Dal in Dicksons Fjord, August 9, 1934: 1 ♀ ad. 2 ♀ juv. 1 juv.
- 72°50' Ella Ø, May 21, 1932: 1 juv; May 23, 1932: 1 ♀ jun; (275 m above sea level), May 24, 1932: 1 ♀ juv; (250 m above sea level), May 28, 1932: 1 juv; June 18, 1932: 1 juv. 1 pull; June 19, 1932: 2 ♀ ad. 1 ♀ juv. 1 juv. 4 pull; August 16, 1932: 1 ♀ ad; August 26, 1932: 1 ♀ juv. (all the above-mentioned finds on Ella Ø being from Berlèse samples); August 23, 1932: 2 juv; (sifted from moor soil under *Dryas*- and *Betula*-vegetation), August 26, 1932: 2 ♀ ad. 1 ♂ jun. 3 ♂ juv. 11 ♀ juv. 1 juv. 4 pull; house of the Expedition, October 20, 1933: 1 ♂ juv; (Berlèse sample under 0,5 m snow), January 13, 1934: 1 jun; (Berlèse sample under 1 cm snow), February 4, 1934: 1 juv; (Berlèse sample, snow-bare), 1934: 1 juv; (in a tube for hatching butterflies), April 27, 1934: 1 ♂ juv; May 11, 1934: 1 ♀ ad. 1 juv; May 13, 1934: 1 ♀ jun; Kap Oswald (under dry *Dryas*), May 17, 1934: 1 ♀ juv; ibid. (under very moist *Dryas*), May 17, 1934: 1 ♀ jun; (in *Dryas* flowers), June 20, 1934: 2 juv; Rundsø ("gossamer"), July 15, 1934: 1 ♀ jun; (Berlèse sample), July 17, 1934: 1 juv.
- 73°25' Renbugten, August 25, 1933: 1 ♀ juv.
- 73°45' Brogede Dal at Nordfjord, July 30, 1932: 4 ♀ ad. 1 ♂ jun. 2 ♂ juv; August 1, 1932: 8 ♀ ad; (Berlèse sample), August 3, 1932: 1 ♀ ad; August 3, 1932: 1 ♂ jun. 1 ♂ juv. 2 ♀ juv; August 4, 1932: 4 juv.
- 73°50' Alluvial cone on eastern side of Nordfjord in front of Waltherhausen Gletscher (on *Epilobium latifolium*), July 29, 1932: 6 ♀ ad. 3 ♂ jun. 4 ♀ jun. 1 ♂ juv. 2 ♀ juv. 6 juv.
- 74°05' Kap Stosch (under stone at the river 120 m above sea level), July 18, 1932: 1 ♀ juv.

74°05' Eskimonæs (abundant grass vegetation), May 30, 1933: 1 ♀ juv.
74°15' Sandø in Tyrolerfjord, July 15, 1930: 1 ♀ jun.

Three species of the family *Dictyna* have been described from Greenland viz. *D. hamifera* TH. 1872, *D. borealis* CB. 1877 and *D. groenlandica* LENZ 1897.

When WILL. SØRENSEN (1898) had prepared the rather considerable number of Greenland *Dictyna* individuals, which were found in our Zoological Museum, he arrived at the result that there was only one

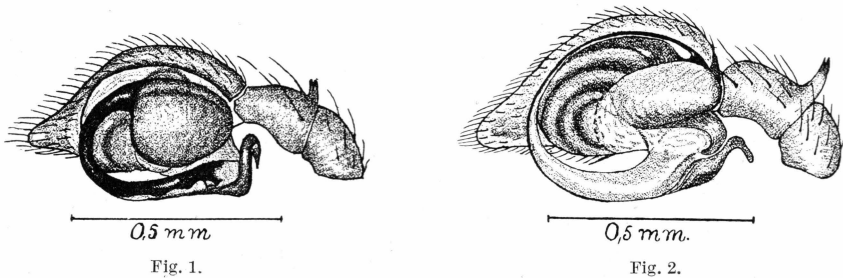


Fig. 1. *Dictyna hamifera* (syn. *D. borealis*) ♂. Right palpus seen from the inner side.

Fig. 2. *Dictyna major* ♂. Right palpus seen from the inner side.

species of the family *Dictyna* in Greenland. The three species should thus be synonymous and are called *D. hamifera*.

In the meantime E. SIMON had had some Greenland individuals subjected to him for examination. SØRENSEN had determined them as *D. hamifera*, and by comparing them with *D. arenicola* CB. and *D. major* MENGE he arrived at the result that also these three species were synonymous (SIMON 1914, p. 65). Therefore, it was now the term *D. major* (MENGE 1869) which had the priority.

As the material collected in East Greenland after 1898 was given to me to prepare, I soon realized that there were two species of the genus *Dictyna* in Greenland. This appeared very distinctly from the palpi of the males (figs. 1 and 2). In SØRENSEN'S material there had, however, only been adult males of the one species, and as it is difficult to determine the females of this species with any degree of certainty, his mistake is easily understood.

When comparing these species with Danish individuals, the one might easily be referred to *D. major*, and the individuals of the other species agreed so well with *D. borealis* that they might without hesitation be referred to them. The correctness of this hypothesis was soon corroborated, when Dr. R. JACKSON sent me two East-Greenland females, which he doubted belonged to *D. major*, and therefore he asked me to compare them with the material of the Zoological Museum. I was, however,

convinced that the two latter belonged to *D. borealis*, and I consequently asked JACKSON himself to compare them with CAMBRIDGE's type, which is kept in the Zoological Museum of Oxford. He did so, and this examination corroborated the correctness of my determination.

As to *D. groenlandica*, LENZ writes: "Die Art steht jedoch der *D. borealis* CAMBR. sehr nahe, zu welcher sie vielleicht als ♂ gehören könnte." I do not doubt that the supposition of LENZ is correct. The difference in colour and maculation, which LENZ calls attention to, is due to the fact that his type is a young male, whereas CAMBRIDGE's type is an adult female. The maculation of LENZ (1897, fig. 7, p. 75)

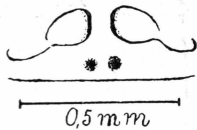


Fig. 3.

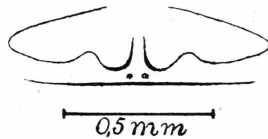


Fig. 4.

Fig. 3. *Dictyna hamifera* (syn. *D. borealis*) ♀. Epigynum.Fig. 4. *Dictyna major* ♀. Epigynum.

only agrees with that of the Greenland species, which has been described as *D. borealis*.

CAMBRIDGE writes of *D. borealis*: "It is closely allied to, but, I think, distinct from *Dictyna hamifera*, another Arctic spider, described by Dr. T. THORELL in 1872." In this I do not, however, think that he is right.

It cannot be decided with certainty by means of THORELL's diagnosis alone to which of the two Greenland species his types belonged; but when THORELL writes of the dorsal process on the tibia of the palpus: "et qui dimidiam diametrum internodii cui insistit, longitudine æquat", and of the basal strongly curved process on the bulb which is shaped like a crook: "aculeo forti, acuminato, deorsum et foras curvato armatus", then it agrees best with the palpus delineated in fig. 1.

THORELL's types of *D. hamifera* have presumably been kept at the Naturhistoriska Riksmuseet in Stockholm, but here they are no longer to be found, any more than in the museums of Uppsala, Göteborg or Lund, and so they must unfortunately be looked upon as having been lost. On the Riksmuseet there are, however, the two "pulluli ad Quanser-soit", which are mentioned by THORELL (1874, p. 156), and those I have examined. They are a ♂ juv. and a smaller juv., the former being synonymous with *D. borealis*, and the smaller juv. presumably belongs to the same species; but here the definition is not quite reliable, as the dorsal maculation of the abdomen in this individual is somewhat effaced.

THORELL refers them both to *D. hamifera*, and this decidedly points in the direction of *D. hamifera* and *D. borealis* being synonymous.

In East Greenland *D. major* has not been found farther north than 65°50', Atingat in Ikerasagssuaq at Angmagssalik (BRÆNDEGAARD 1937), but on the west coast it is found as far up as 68°45', Egedesminde. CAMBRIDGE's type is from the region at Ilordlek Bræ (69°25'), LENZ' from Umanaq Fjord (70°40'), and in the collection of the museum there are seven individuals belonging to the same species from Ritenbenk (69°45') and Taserssuak (at Ritenbenk). A single ♂ juv. from the latter locality can, however, not be determined with certainty, but it seems as if *D. major* does not occur, or at least is very rare north of 69° lat. N. THORELL's types are from Disko Ø (69°10'—70°20') which is also in favour of the fact that both THORELL, CAMBRIDGE and LENZ have described the same species.

Everything considered, it must be regarded as practically certain that THORELL, CAMBRIDGE and LENZ have all described the same species, as was maintained by SØRENSEN. There are, nevertheless, two species in Greenland, for which reason the lists of synonymy of these must be as follows:

Dictyna major.

- Dictyna major* MENGE 1869.
Dictyna cognata CAMBRIDGE 1885.
Dictyna arenicola CAMBRIDGE 1894.
Dictyna hamifera SØRENSEN 1898 (ad max. part).
Dictyna major SIMON 1914.
Dictyna major JACKSON 1930.
Dictyna major BRÆNDEGAARD 1934.
Dictyna major BRÆNDEGAARD 1937.

Dictyna hamifera.

- Dictyna hamifera* THORELL 1872.
Dictyna borealis CAMBRIDGE 1877.
Dictyna groenlandica LENZ 1897.
Dictyna hamifera SØRENSEN 1898 (ad part).
Dictyna hamifera EMERTON 1919.
Dictyna major JACKSON 1933.
Dictyna borealis BRÆNDEGAARD 1934.
Dictyna borealis JACKSON 1934.
Dictyna borealis BRÆNDEGAARD 1935.

The epigynes of the females of this family are generally not very characteristic, and consequently it is often difficult to determine the females as to species. In this respect the two Greenland species make

no exception. Their epigynes generally look like figs. 3 and 4. The only real point of support is, however, the fact that the central ridge is narrow in *D. major*, but broad in *D. hamifera*. The dorsal maculation of the abdomen (figs. 5 and 6) are, however, such a great help towards the determination that even quite young animals can generally be determined with certainty. It is in particular the shape of the heart spot which is characteristic of each species. That this can be said with such a degree of certainty is due to the fact that the material from the northern part of East Greenland exclusively consisted of the one species (*D. hamifera*) and was besides very numerous.

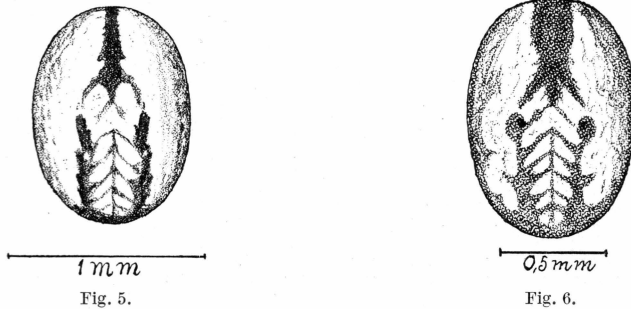


Fig. 5. *Dictyna hamifera* (syn. *D. borealis*) ♀. Dorsal view of the abdomen.
 Fig. 6. *Dictyna major* ♀. Dorsal view of the abdomen.

FAMILY LINYPHIIDAE

4. *Micryphantes nigripes* SIMON 1884.

- 70°50' Hurry Fjord east of Fame Øer (under seaweed on beach), August 15, 1933: 1 ♀ ad.
 72°50' Ella Ø (at a lagoon near Solitærbugten), June 4, 1933: 1 ♂ ad. 1 ♀ ad; (on gravel in the tidal zone at Tømmerbugten), July 29, 1933: 3 ♂ ad.
 73°45' Brogede Dal at Nordfjord (in a tuft of *Arctostaphylos alpina* on sandy lake shore), August 1, 1932: 2 ♀ ad.
 73°50' Eastern shore of Nordfjord (on sandy alluvial cone at Waltherhausen Gletscher), July 29, 1932: 1 ♀ ad.
 76°50' Danmarks Havn (Termometerfjældet), June 5, 1907: 1 ♀ ad.

5. *Cornicularia karpinski* CAMBRIDGE 1873.

- 72°50' Ella Ø (Berlèse sample from *Betula*-vegetation in moving soil), July 4, 1932: 1 ♂ ad. (directly after moulting); (under stone), September 9, 1933: 1 ♂ ad.
 73°45' Brogede Dal at Nordfjord (fell-field), July 28, 1932: 1 ♀ ad.

6. *Hilaira curvitaris* SOERENSEN 1898.

- 70°25' Kap Hope, Scoresbysund, June 3, 1925: 1 ♂ ad. 1 ♀ ad; June 10, 1925: 1 ♀ ad.
- 72°30' Trail Ø (Berlèse sample 250 m above sea level), July 3, 1932: 1 ♂ ad.
- 72°50' Ella Ø, May 20, 1932: 1 ♀ ad; (Berlèse sample), August 25, 1932: 1 ♀ juv; (shore ridge consisting of stones and decaying fucus), May 11, 1934: 2 ♂ ad. 8 ♀ ad; (under stones in moist soil at Rundsø), June 5, 1934: 1 ♀ ad.
The following finds in Ella Ø are all from Berlèse samples: (lake shore at Rundsø), September 5, 1933: 1 ♂ juv; (moor under 5 cm snow at Ulvesø), April 12, 1934: 1 ♂ ad; (under 25 cm snow at the shore of Ulvesø), April 12, 1934: 2 ♀ ad; (shore ridge consisting of stone and decaying fucus), May 11, 1934: 1 ♀ ad; (moist soil under betula and mosses in Ulvedalen), May 14, 1934: 1 ♀ ad; (under *Cassiope* and mosses in Ulvedalen), May 14, 1934: 1 ♀ ad; (moor at brook of melting water), May 16, 1934: 1 ♀ ad.
- 72°50' Kap Alfred in Kempes Fjord, August 5, 1934: 4 ♀ ad. 1 juv.
- 72°50' Mineralbugten on Suess Land (Berlèse sample), August 15, 1932: 1 ♀ ad. 1 ♀ juv.
- 73°45' Brogede Dal on Strindbergs Halvø at Nordfjord (meadow by the river), August 1, 1932: 1 ♀ ad; (slope covered with *Cassiope*), August 3, 1932: 1 ♂ ad. 1 ♀ juv. 1 juv; (vegetation consisting of *Vaccinium*, *Dryas* and *Carex*), August 3, 1932: 1 ♂ juv. 1 ♀ juv.
- 74°05' Eskimonæs (abundant grass vegetation), May 30, 1933: 1 ♀ ad.
- 74°10' Kap Mary, July 12, 1930: 1 ♀ ad.
- 75°10' Hochstetter Forland west of Kap Rink (plain with tufts of plants and pools of melting water), July 19, 1930: 1 ♀ ad.
- 76°50' Danmarks Havn, July 5, 1907: 1 ♀ ad; September 1, 1907: 2 ♀ ad.

In 1933 R. JACKSON described 1 ♂ and 2 ♀ ♀ from Akpatok as a new species, calling it by the name of *H. whymperei*. He calls attention to its being identical with a hitherto undefined individual, which must have been collected by EDWARD WHYMPER in the neighbourhood of Jakobshavn (69°10') in West Greenland. By comparing the type of WILL. SØRENSEN (*Notioscopus? curvitaris*) with the careful diagnosis of JACKSON, it was easy to establish the synonymy of the two species (BRÉNDEGAARD 1934). JACKSON writes of *H. whymperei*: "This species is closely related to *H. glacialis* TH. from Spitzbergen. — The species redescribed and figured as *H. glacialis* by KULCZYNSKI from Sibiria

seems nearer the Spitzbergen form, but I am not quite sure that it is identical.”

ÅKE HOLM took up this question anew in 1937, possibly stimulated by this statement. Based upon an examination of L. KOCH's spiders

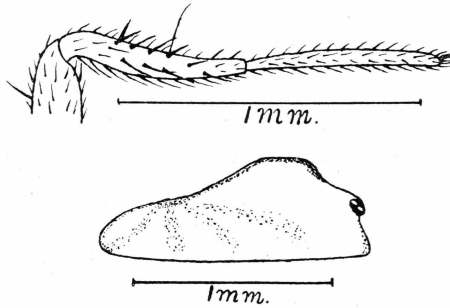


Fig. 7. *Hilaria curvitaris* ♂. Tarsus and metatarsus of right foreleg and cephalothorax.

from Siberia (1878) and individuals from Spitzbergen and Ymer Ø in Kejsler Franz Josephs Fjord, he has proved the existence of three closely related species, which live in a nearctic area, in Spitzbergen and in Siberia, terming them *H. vexatrix* CAMBR., *H. glacialis* THORELL and *H. nivalis* HOLM, respectively. It is possible that he is right in considering both *H. whymperei* JACKSON and *H. curvitaris* SOERENSEN as being synonymous with *H. vexatrix* CAMBRIDGE; but on the basis of CAMBRIDGE's diagnosis nothing can be established with certainty in this respect, both because the diagnosis is not sufficiently well prepared,

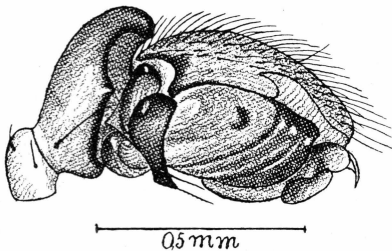


Fig. 8.

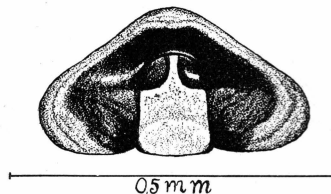


Fig. 9.

Fig. 8. *Hilaria curvitaris* ♂. Right palpus seen from the outer side.

Fig. 9. *Hilaria curvitaris* ♀. Posterior plate of the epigynum.

and particularly because CAMBRIDGE's type is a female, it being only possible to distinguish the three species from each other, when dealing with adult males. HOLM himself writes: "Diese drei Arten sind einander sehr ähnlich, und die Weibchen scheinen überhaupt nicht unterschiedlich zu sein."

The type of *H. vexatrix* is from Discovery Bay at Robeson Channel on Grant Land (81°40'), and from Grant Land, as well as from northernmost Greenland, no adult males of this species have as yet been brought back. As long as this has not taken place one ought to stick to what it has been possible to establish with certainty, *viz.* that *H. whymperei* JACKSON and *H. curvitaris* SOERENSEN are synonymous, and of these the latter have the priority.

The female found by the "II. Fram-Expedition" on Ellesmere Land is hardly identical with *H. curvitaris*, for which reason I have referred it to *H. glacialis* (1936, p. 129). Besides there are in our Zoological Museum two females which WILL. SØRENSEN (1898, p. 210) described as belonging to a n. sp., *Areaoncus ruderalis*, and which possibly belong to *H. glacialis*. (JACKSON 1933 Pl. II. Fig. 5 & 6). This points towards the fact of CAMBRIDGE's type from Discovery Bay being rather synonymous with *H. glacialis* TH. 1871.

7. *Hilaira frigida* THORELL 1872.

72°50' Kap Alfred in Kempes Fjord, August 5, 1934: 1 ♀ ad.

8. *Coryphaeolana holmgreni* THORELL 1871.

70°50' Charcots Havn on Milne Land (beach), August 24, 1933: 1 ♀ ad.
74°05' Kap Stosch River (under stone 120 m above sea level), July 18, 1932: 3 ♀ ad.

This species, like so many others, has had the fate of having been described more than once. The first time THORELL described it (1871) from Bjørne Ø, terming it *Erigone holmgreni*. Later on it was described by L. KOCH (1878) from northern Sibiria and Novaya Zemlya, and it was now called *Erigone mendica*. Finally STRAND found it (1901) in northern Norway, but he called it *Lophomma nivicola*. STRAND's very careful diagnosis with designs of the palpus of the male and the epigynum of the female corresponds entirely with *C. holmgreni*, so there can be no doubt as to the synonymy. STRAND has had his attention directed to *Erigone groenlandica* LENZ (1897), but is not of opinion that the latter and *L. nivicola* are synonymous. On Spitzbergen the species was identified by STRAND (1911), and on that occasion he suggested that *L. nivicola* was perhaps a variety of *C. holmgreni*. Afterwards it was identified in Scotland (JACKSON 1914), on Jan Mayen (BRISTOWE 1925), in the Faroes (BRÉNDEGAARD 1928) and on Iceland (BRÉNDEGAARD 1932). It was now only natural also to find it in Greenland, and an examination of WILL. SØRENSEN's material from Green-

land showed that *Walckenaëra similis* SOERENSEN was synonymous with *C. holmgreni*. As to *Erigone groenlandica* LENZ, SØRENSEN writes that the description is so brief that he has not been able to recognize the species. The diagnosis of LENZ is, it must be admitted, extremely incomplete, but it is accompanied by a diagram of the epigynum of the female (LENZ 1897, fig. 6), which bears a striking resemblance to *C. holmgrenis*. LENZ's type was found at Umanaq Fjord ($70^{\circ}35'$) in West Greenland, SØRENSEN's types a little farther south, viz. Taserssuak at Ritenbenk ($69^{\circ}45'$)¹ and Egedesminde ($68^{\circ}45'$) which must also support the

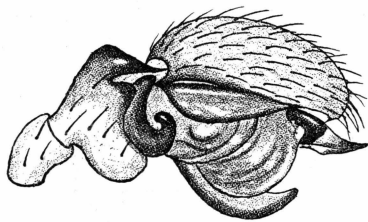


Fig. 10.

Fig. 10. *Coryphaeolana holmgreni* ♂. Right palp seen from the outer side.

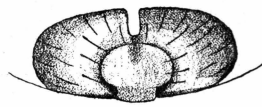


Fig. 11.

Fig. 11. *Coryphaeolana holmgreni* ♀. Epigynum.

supposition of the synonymy. In East Greenland the species was finally demonstrated by JACKSON (1934), and it has later been identified in Southeast Greenland (BRÆNDEGAARD 1937).

The list of synonymy thus becomes as follows:

Coryphaeolana holmgreni.

Erigone holmgreni THORELL 1871.

Erigone mendica L. KOCH 1878.

Erigone groenlandica LENZ 1897.

Walckenaëra similis SØRENSEN 1898.

Lophomma nivicola STRAND 1901.

Lophomma holmgreni STRAND 1911.

Coryphaeus mendicus JACKSON 1914.

Coryphaeus holmgreni BRISTOWE 1925.

Coryphaeolana mendica BRÆNDEGAARD 1928.

Coryphaeolana holmgreni BRÆNDEGAARD 1932, 1934, 1937.

Coryphaeolanus holmgreni JACKSON 1934.

¹) SØRENSEN (1898 p. 210) gives the position of Taserssuak as $65^{\circ}05'$; but the excursion diary of W. LUNDBECH shows that SØRENSEN has mistaken the locality for another of the same name.

Brachycentrum similis STRAND (1907), on the other hand, is not, as STRAND himself supposed, synonymous with *W. similis* SOERENSEN (BRÆNDEGAARD 1936).

9. *Coryphaeolana thulensis* JACKSON 1934.

74°05' Kap Stosch (near a brook), July 20, 1932: 2 ♂ ad. 1 ♀ ad; (stony ground near the shore), July 22, 1932: 1 ♀ ad. (just after the last moulting).

76°50' Danmarks Havn (the plain above the harbour), September 1, 1907: 2 ♀ ad.

The JACKSON types were found on Jameson Land and Fame Øer by the CAMBRIDGE Expedition to East Greenland in August 1933, but as appears from the above records, Danish expeditions have the honour of first having found and brought home individuals of this species. HOLGER MADSEN M. sc. who took part in LAUGE KOCH's Three-Years'

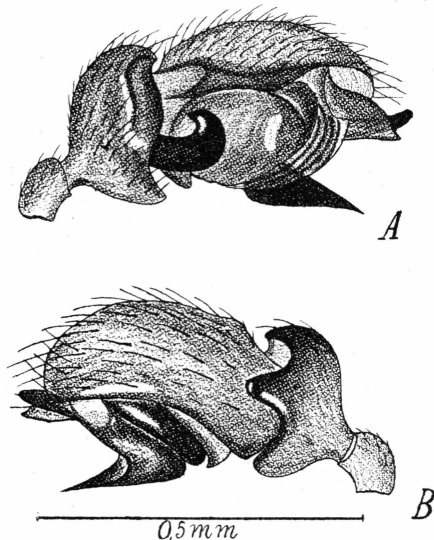


Fig. 12. *Coryphaeolana thulensis* ♂. Right palpus (A) seen from the outer and (B) the inner side.

Expedition to Christian X's Land found two males and two females at Kap Stosch, more than a year before the types of JACKSON were found near Scoresby Sound; but already twenty-five years before that time the Danmark-Expedition had found two females at Danmarks Havn. I had already examined the individuals from Kap Stosch and was of

opinion that it was possible to refer them to a new species of the genus *Coryphaeolana*, when JACKSON sent me his types and informed me that he intended to describe the species as n. sp., if it was also unknown to me.

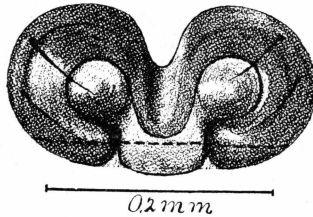


Fig. 13. *Coryphaeolana thulensis* ♀. Epigynum. The part below the stippled line hidden in the epigastral furrow.

10. *Erigone psychrophila* THORELL 1871.

76°50' Danmarks Havn (Thermometerfjældet), June 5, 1907: 1 ♂ ad;
(the plain above the harbour), August 12, 1907: 2 ♂ ad. 2 ♀
ad. 1 ♂ jun. 2 ♀ jun. 2 juv.

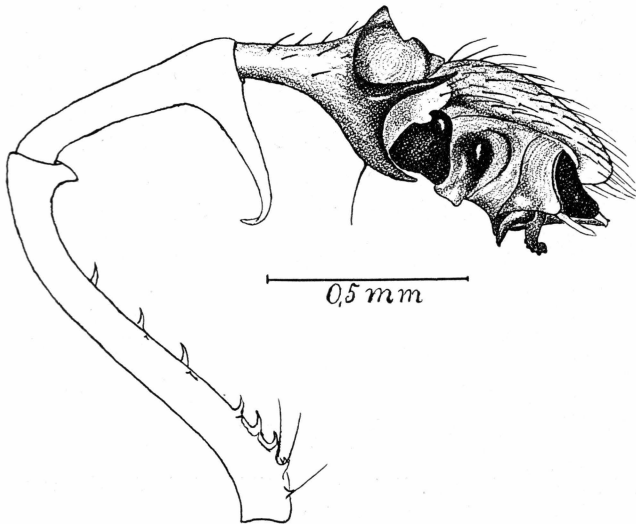


Fig. 14. *Erigone psychrophila* ♂. Right palpus seen from the outer side.

11. *Erigone sibirica orientalis* n. subsp.
(*E. arctica* BRAENDEGAARD 1934).

70°25' Scoresbysund (the bay to the west of Røde Ø), August 22, 1933:
1 ♀ ad. (with egg cocoon), 1 ♀ juv.

70°50' Hurry Fjord (the anchorage east of Fame Øer), August 15,
1933: 1 ♀ juv.

72°50' Ella Ø (Berlèse sample under 25 cm snow at the shore of Ulvesø), April 12, 1934: 1 ♂ ad; (Berlèse sample from moor at Langsø), October 12, 1933: 1 ♂ ad.

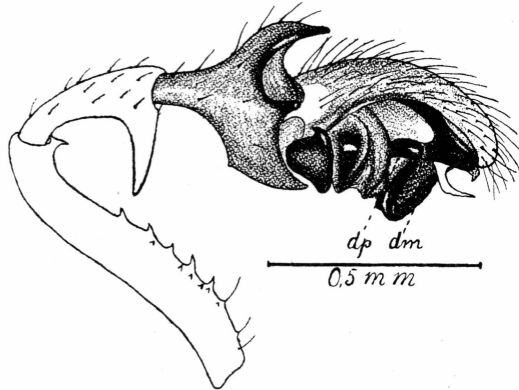


Fig. 15. *Erigone sibirica orientalis* ♂. Right palp seen from the outer side.

73°45' Brogede Dal on Strindbergs Land at Nordfjord (meadow along the river), July 31, 1932: 1 ♀ ad, 1 ♀ jun; (meadow along the river), August 1, 1932: 2 ♂ ad.

75°10' Hochstetter Forland (west of Kap Rink), June 19, 1930: 1 ♂ ad.

76°50' Danmarks Havn (Thermometerfjædet), June 5, 1907: 1 ♂ ad; (Stormkap), June 15, 1907: 1 ♂ ad. 1 ♀ jun.

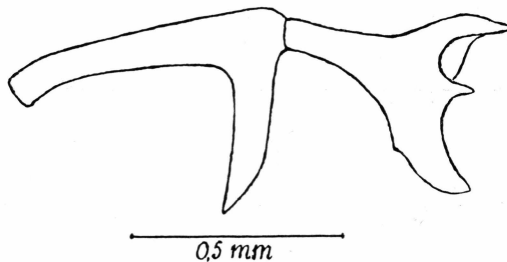


Fig. 16. *Erigone sibirica* ♂. Patella and tibia of right palp seen from the outer side.

After having examined the above-mentioned individuals for the first time (1934) I felt convinced that this species, which is very closely related to *E. arctica* (WHITE) KULCZYNSKI, must be the *E. arctica* WHITE proper. *E. arctica* KULCZYNSKI I, therefore, termed *E. palaeartica*, but after having examined a good deal of material from nearctic area, which Dr. A. RANDELL JACKSON and Professor C. A. CROSBY had been kind enough to place at my disposal, I realized that I had made a mistake (BRENDEGAARD 1936).

Dr. JACKSON, however, had called my attention to the species *E. sibirica* KULCZYNSKI (1908) which had many points of similarity with these East Greenland individuals, and after having had the occasion to compare them directly with the types of KULCZYNSKI, I feel convinced that they belong to this species, but must be considered a special race, seeing that they deviate in several respects from the typical species.

	length of cephalothorax	Ratio of ¹⁾		
		height and length of the tibia of the palpus	length of patella and tibia	length of the processus of patella and patella
♂ typica	1.5 mm	0.9	1.4	0.7
1. ♂ from Ella Ø	1.1 -	1.2	1.0	0.9
2. - — —	1.2 -	1.2	1.2	0.8
3. - — Brogede Dal	1.1 -	1.2	1.0	0.9
4. - — —	1.3 -	1.0	1.2	0.9
5. - — Hochstetter Forland	1.2 -	1.2	1.2	0.8
6. - — Danmarks Havn ...	1.3 -	1.0	1.2	0.9
7. - — — — ...	1.2 -	1.1	1.1	0.8

¹⁾ In columns 2 and 3 the length of tibia and in column 4 the length of patella are used as standard of measurement.

As appears from the table (column 1) the typical *E. sibirica* ♂ is much larger than the East Greenland individuals. Also the palpi are somewhat deviating. When the height of tibia is measured from the upper margin of the dorsal to the lower margin of the ventral process, and the length is measured from the base of tibia to the tip of the lateral process, it appears (2 column) that the height of tibia in the type is only nine tenths the length, whereas the height is the same (Nos 4 and 6) or greater (Nos 1, 2, 3, 5, 7) than the length of the individuals from East Greenland. Whereas patella in the type (fig. 16) is 1.4 times longer than tibia, it is comparatively short in the East Greenland individuals (fig. 15). In two individuals patella and tibia are of equal length (column 3, Nos 1 and 3), whereas patella in the others is only a little longer than tibia. The insignificant length of patella becomes particularly striking, when comparing it with the length of the downwardly projected process, measured from the tip to the upper side of the joint. Although this process is also less developed in the East Greenland individuals, its length is, however, nearly the same as that of patella (column 4), whereas in the type it is only seven tenths of the length of the joint.

As to the shape and appointment of the genital bulbus I have not been able to find any characteristic deviation from that of the type.

In the females the length of cephalothorax is in the type 1.4 mm, and in the two East Greenland females 1.4 and 1.3 mm. The proportion of size thus seems to be equal in the female sex. Fig. 26 shows the outer and inner surface of the epigynum, and these have been described on p. 28.

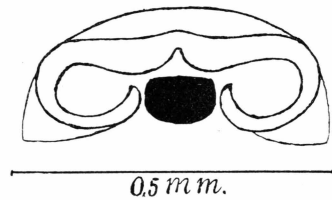


Fig. 17. *Erigone sibirica*. ♀. Inner surface of the epigynum.

In the type the outer surface is, as distinct from this, greatly chitinized and modelled, so as to remind one of the epigynum in *E. arctica*. The inner surface, on the other hand, has the same characteristically shaped chitinized posterior margin in both forms (figs. 17 and 26 B), whereas the median plate is much greater and of a different shape from that of *E. s. orientalis*.

As the East Greenland individuals in a similar manner deviate from the type, it must at least be considered justifiable to regard them as belonging to a special subspecies, which perhaps forms a separate geographical race.

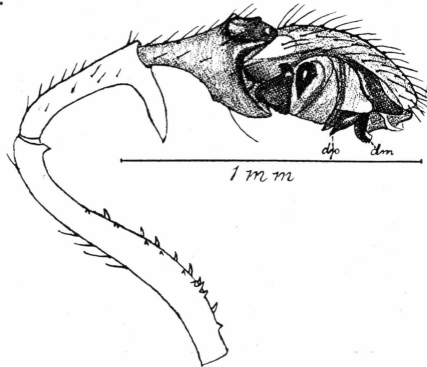


Fig. 18. *Erigone tirolensis* ♂. Right palp seen from the outer side.

12. *Erigone tirolensis* L. KOCH 1872.

70°25' Kap Hope, June 3, 1925: 1 ♂ ad.

70°50' Charcots Havn on Milne Land, August 24, 1933: 1 ♂ ad.

The males of this and the following species greatly resemble each other. As besides the above-mentioned male, the find from Charcots

Havn further consisted of two females *E. whymperi*, I became doubtful as to the definition and consequently sent a male and a female *E. whymperi* to Dr. SCHENKEL, who compared them with *E. tirolensis* from the Alps, and so was able to demonstrate the characteristic difference between the males of the two species. From Dr. SCHENKEL I received a male and a female of *E. tirolensis* from the Alps, so that I could also myself make the comparison. Thus I was able to determine with certainty a female in the material of WILL. SØRENSEN from Kap Stewart

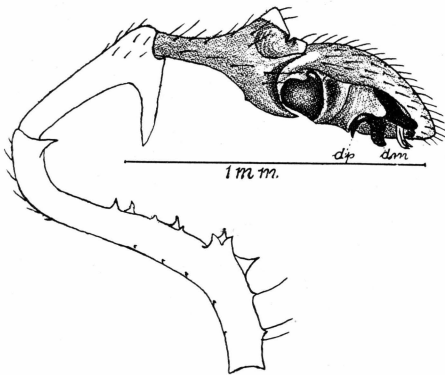


Fig. 19. *Erigone whymperi* ♂. Right palpus seen from the outer side.

as belonging to this species, whereas SØRENSEN had referred it to *E. psychrophila* (SØRENSEN 1898, p. 200).

Adult females of the two species cannot very well be mistaken on account of the difference in the epigynum (figs. 22 and 24). The palpi of the males (figs. 18 and 19) also offer characteristic differences. *E. whymperi* is distinguished from *E. tirolensis* by having a stronger and more S-curved femur, armed with robust teeth. Tibia is also longer in *E. whymperi* and the dorsal apophysis differently shaped. In the embolic division of the bulbus there is also a smaller, but characteristic difference between the shape and position of the two apophyses (dp. and dm.).

13. *Erigone whymperi* CAMBRIDGE 1877.

70°50' Charcots Havn on Milne Land, August 24, 1933: 2 ♀ ad.

14. *Islandiana alata* EMERTON 1919.

72°50' Fulach Dal at Dicksons Fjord, August 9, 1934: 1 ♀ ad.

74°05' Kap Stosch Flod (under stone, 120 m above sea level), July 18, 1933: 1 ♀ ad.

15. *Typhocraestus borealis* JACKSON 1930.

- 70°25' At the Scoresbysund settlement (Berlèse sample), July, 1933: 1 ♀ ad.
- 72°50' Ella Ø. All the finds here are from Berlèse samples, taken in 1932: May 20: 1 ♀ ad; (dry vegetation), May 21: 1 ♀ ad; (fell-field), May 22: 1 ♂ ad; (*Dryas*-heath), May 23: 3 ♀ ad; (dry birch vegetation 275 m above sea level), May 24: 1 ♂ ad; (birch and grass vegetation 100 m above sea level), June 25: 1 ♀ ad; (dry birch vegetation 100 m above sea level), June 26: 1 ♀ ad; (herb field), August 25: 1 ♂ ad; (moor), August 26: 2 ♀ ad; (*Dryas*-heath), August 26: 1 ♀ ad. 1 ♂ jun. 1 ♀ juv.
- 73°45' Brogede Dal at Nordfjord (slope with fertile *Cassiope*-vegetation), August 3, 1932: 1 ♂ ad. 2 ♀ ad.
- 74°05' Eskimonæs (fertile grassvegetation), May 30, 1933: 1 ♂ ad. 2 ♀ ad.
- 75°10' Hochstetter Forland west of Kap Rink, June 19, 1930: 1 ♀ juv.

FAMILY THOMISIDAE

16 *Xysticus deichmanni* SOERENSEN 1898.

- 70°25' Kap Hope, June 10, 1925: 1 ♀ ad.
- 72°30' Kongeborgen at Kong Oskars Fjord, June 10, 1934: 1 ♂ jun. 1 ♀ juv.
- 72°50' Ella Ø (Berlèse sample), June 19, 1932: 1 ♂ jun; August 16, 1932: 1 juv; June 20, 1934: 1 ♂ jun; (at Langsø), June 24, 1934: 1 ♂ jun.

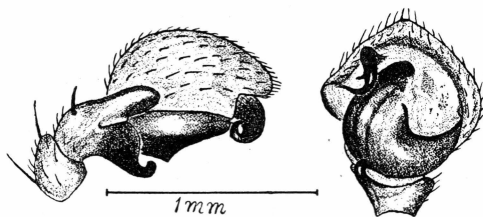


Fig. 20. *Xysticus deichmanni* ♂. Right palpus seen from the outer side and from beneath.

- 72°50' Fulach Dal at Dicksons Fjord, August 9, 1934: 1 ♂ jun.
- 73°45' Brogede Dal at Nordfjord (fell-field), July 30, 1932: 1 ♀ ad.
- 73°45' At Moskusokse Fjord, July 10, 1930: 1 ♀ juv.
- 74°05' Kap Stosch (under stone at a house ruin), July 19, 1932: 1 ♂ jun.

74°05' Eskimonæs (grass vegetation under stone), June 10, 1933: 1 ♀ jun.
 76°50' Danmarks Havn (Rypefjældet), June 1908: 1 ♀ ad.

This species is synonymous with *X. bimaculatus* EMERTON (1894). I published this in 1934, and I therefore called the species *X. bima-*

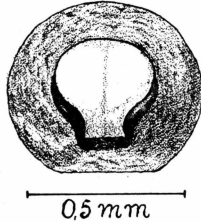


Fig. 21. *Xysticus deichmanni* ♀. Epigynum.

culatus. Dr. W. J. GERTSCH must, however, have taken up this question of synonymity about the same time; for a few months before then he published a treatise in which he arrived at the same result, while stating at the same time that the name *X. bimaculatus* was preoccupied. At the time of the appearance of our respective publications neither of us had any idea whatsoever of the work done by the other as regards this question.

Postscriptum.

After this article had gone to print Dr. W. J. GERTSCH has published an important work: "A Revision of the Crab-Spider of America North of Mexico", in which he states that *Xysticus deichmanni* is synonymous with *X. labradorensis* KEYSERLING 1887. This name thus has the priority of that of SØRENSEN.

II. ON THE POSSIBILITY OF A RELIABLE DETERMINATION OF THE FEMALES OF THE GENUS ERIGONE

Until quite recently there have been great difficulties in the way of determining the species belonging to the genus *Erigone* AUDOUIN, but these difficulties were, to a certain extent, overcome by L. KULCZYNSKI in 1902. In his work on *Erigonae Europaeae*, a work which forms the basis of subsequent investigations in this respect, he demonstrated that the morphological peculiarity of the palpi of the males supplies a definite foundation of their determination. In 1928 C. R. CROSBY and S. C. BISHOP, according to the same principles, established a similar foundation for the determination of the males of the nearctic species (Revision of the Spider Genera *Erigone*). The possibility of a reliable determination of males belonging to this species must thus be said to have been solved in a satisfactory manner.

Conditions are, however, quite different as regards the females. As late as in 1934 C. R. CROSBY writes: "It is impossible to determine females in this genus with any degree of certainty." The difficulty in the way of this determination is that the females greatly resemble one another, and that as distinguished from what is generally the case they have only faintly chitinized and therefore not very characteristic epigynum plates. This, however, does not seem to apply as much to the inner as to the outer surfaces of the epigynum, a fact to which sufficient attention has not hitherto been given.

The procedure used for the determination is the following: The animal is placed on its back in a bowl with alcohol. The spinnerets must be turned towards the experimentator, who with a needle lifts the posterior margin of the epigynum so much as to make it possible to examine the inner surface by means of a magnifying glass or a microscope with a slight magnifying power. On the inner surface is then seen (fig. 22) the strongly chitinized median plate and the broad chitinized posterior margin with the median furrow. These seem to be of a characteristic shape in each species.

Erigone psychrophila TH. and *Erigone whymperi* CB.: The likeness of the outer surfaces of the epigynes is so great that one ought be tempted to think that *E. whymperi* owing to the faint chitinizing is

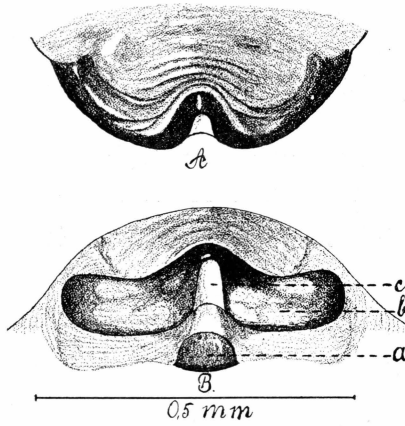


Fig. 22. *Erigone psychrophila* ♀. Epigynum (A) outer surface, (B) inner surface with (a) median plate (b) the chitinized hind edge and (c) the median furrow.

a *E. psychrophila*, which has just moulted (figs. 22 A and 23 A). *E. psychrophila* has, however, always a dark and greatly chitinized

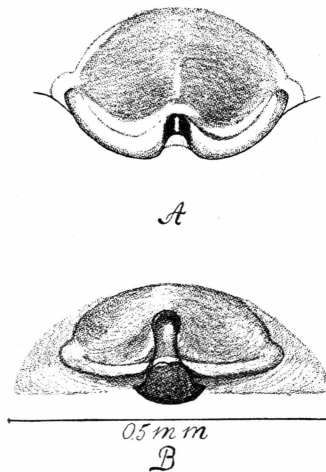


Fig. 23. *Erigone whymperi* ♀. Epigynum (A) outer surface, (B) inner surface.

posterior margin, whereas in *E. whymperi* the latter is only dark and greatly chitinized right in the centre, where the posterior margin bounds the semicircular termination of the median furrow. On the inner surface (figs. 22 B and 23 B) the median plate is somewhat

differently shaped in the two species, and this also applies to the crenelated median furrow. The two species are, however, most easily distinguished from each other in that the posterior margin of *E. whymperei* is not at all chitinized on the inner surface, whereas it is highly chitinized in *E. psychrophila*.

Erigone tirolensis L. K.: In this species the outer surface of the spigynum (fig. 24 A) is entirely different from those of the two preceding species. The two impressions are, however, in some individuals rather indistinct, but there is never any incision in the centre of the posterior margin. The broad, greatly chitinized posterior margin of the inner

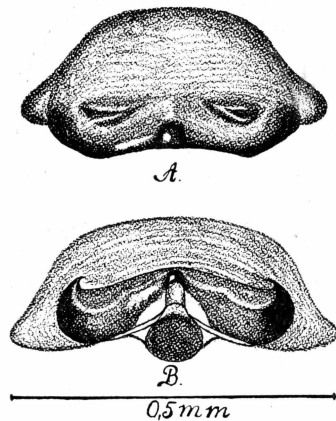


Fig. 24. *Erigone tirolensis* ♀. Epigynum (A) outer surface, (B) inner surface.

surface (fig. 24 B) reminds one a good deal of the inner surface of *E. psychrophila*. The median furrow is also crenelated, but very small, and its semicircular termination is covered by a cupola-shaped concavity, which is also visible on the outer surface. The median plate, on the other hand, is comparatively large and nearly circular, being thus clearly distinguished from both of the two preceding species. Fig. 24 is designed after a female from the Alps (see p. 21).

Erigone arctica WHITE: In this species the outer surface of the epigynum (fig. 25 A) may vary so much that it is sometimes difficult to distinguish it from *E. tirolensis*. In the typical *E. arctica* the chitinizing is, however, much stronger and the two impressions greater, but almost entirely filled, each with its own large arched protuberance. The inner surface of the epigynum is, however, far more characteristic (fig. 25 B). The median plate is very nearly rectangular, and on either side of the median furrow the greatly chitinized posterior margin extends forwards (downwards on fig. 25B) with two triangular tips. Between the posterior margin and the median plate the epigynum is greatly hollowed.

Fig. 25 is designed after an individual from Denmark, only a single male of this species having been found in Greenland.

Erigone sibirica orientalis BRGD.: The surface of the epigynum of this species is practically quite smooth, and only the posterior margin

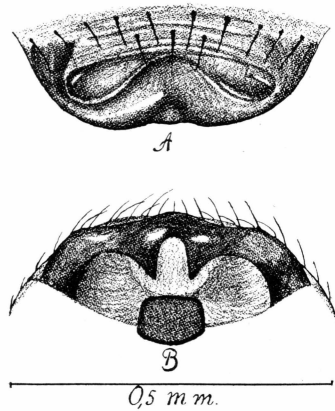


Fig. 25. *Erigone arctica* ♀. Epigynum (A) outer surface, (B) inner surface.

is a little more chitinized than the remainder of the ventral surface of the abdomen (fig. 26 A). The inner surface of the epigynum (fig. 26 B)

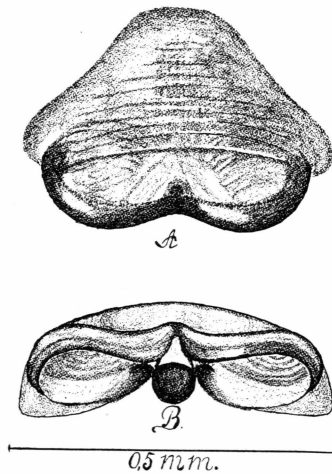


Fig. 26. *Erigone sibirica orientalis* ♀. Epigynum (A) outer surface, (B) inner surface.

is, on the other hand, rather characteristic. The median plate is small, rounded and as long as it is broad. The median furrow deviates from all the preceding ones by being triangular, and the shape of the chitinized posterior margin is also very characteristic. As in *E. arctica* there is

on either side of the median plate a large cavity, which laterally and caudally (upwards on fig.) is limited by the chitinized posterior margin.

Already while working with the spiders of Iceland (1932) I discovered that the inner surface of the epigynum had a characteristic shape; but as there were frequently several species from the same locality, I could not establish, by means of this material, that the morphological peculiarity was fit to be used as a reliable foundation of the determination of species of the females. When working with the East Greenland *Erigone* species, where there was rarely more than one species from the same locality, I was at last convinced that the morphology of the inner side was a definite mark of distinction between the Greenland species. Future investigations will probably show that this technique of determination can also be used for other species of the family.

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