Some Diamesini (Chironomidae) from the Nearctic and Palearctic

By

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Introduction

Although this paper deals with some problems of both the nearctic and palearctic Diamesini fauna, it is primarily concerned with specimens collected from northern Canada and Alaska. The system of classification used is that of Pagast (1947), with the modifications of Brundin (1956). This system has not been previously applied in interpretating the North American species, and as a result one genus, *Pseudodiamesa,* is new to this area. However several species of this genus have been previously described under *Diamesa* and *Syndiamesa.* Except for two species from Alaska, all the specimens examined readily fall into the genera as defined by Pagast. A new genus *Pagastia,* is erected for these two species, *partica* (Rob.) and *orthogonia* sp. nov., which are very interesting in having an unusual amount of long hairs on the pronotum. Pagast recognized that a Japanese species, *Syndiamesa lanceolata,* did not fit into any of the genera as he defined them and placed it in equal rank to the genera in his imago key. Since *Syndiamesa lanceolata* probably is a *Pagastia,* no revision of Pagast's key is required to accommodate this new genus, as *Pagastia* maybe inserted in place of *lanceolata.* The imagos of *Pseudodiamesa arctica* (Mall.) differ considerably from the other members of this genus, but the similarity of the immature stages make it clear that this species must remain in *Pseudodiamesa.* A new subgenus, *Pachydiamesa,* is erected for it and keys for the imagos of the known species of *Pseudodiamesa* are given.

Nine species of Diamesini have been recorded from northern Canada by Mallock (1919), Kieffer (1925), and Edwards (1933). A new description of Mallock's species, *Diamesa arctica* is given. Two of Kieffer's species, *Diamesa polaris* and *Syndiamesa polaris,* cannot be recognized with confidence, as the former is described from a female and the hypopygium of the type of the latter is lost. To the remaining seven species, five more are added at this time, bringing the total of recognizable species from northern Canada and Alaska to 12, representing four genera: *Diamesa, Pagastia, Pseudodiamesa* and *Potthastia.*

The Diamesini fauna of North America exhibit relationships with both Europe and Japan. The species under consideration here, are remarkable in their close resemblance to the European fauna, with five of them having

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a holarctic distribution. Since most of the holarctic species thus far have been found to occur only in the eastern part of Canada, an even closer relationship between the Diamesini fauna of this area and Europe is suggested. The two Alaskan species of *Pagastia* are closer to several Japanese species than to the European, which might suggest an Alaskan-Japanese affinity. It is premature to generalize however, as the knowledge of the Diamesini in North America is extremely fragmentary. Many of the species have been collected from only a few areas and the species described from the United States need to be revised with reference to the opinions of the European systematists.

Examination and Terminology

The specimens examined are either pinned or preserved in alcohol; generally the author prefers to work with alcoholic specimens. It is true that the colour of the specimens fade in alcohol, but colour in the Diamesini is for the most part not of too great importance, since most of the species are dark. Being able to easily collect long series and to examine the male hypopygium, greatly outweighs most of the disadvantages of alcohol. However an ideal collection method would be to pin a few specimens out of each series.

It has been rather common practice to separate species in the Chironomidae on the basis of small differences in the A.R. (antennal ratio) and the L.R. (leg ratio). In the author's opinion the use of these characters as specific indicators has been greatly overestimated, and a fairly long series of measurements is required before they can be used with confidence. For the purpose of identifying species, it often seems unnecessary to make a lot of these measurements when such characteristics as hypopygial structures will separate the species. However when the study of chironomids progresses to the stage of studying populations of a species from different areas, these two ratios probably will be quite important.

The term, temporal hairs is used here in the same meaning as "vertexborsten" of the German authors. With reference to Fig. 2 in Brundin (1956, p. 23), the terminology of the chaetotaxis of the mesothorax employed here is: Dm=acrostichial bristles, Dl=dorsocentral bristles, Pa=supra-alar bristles, and Sa=postalar bristles. Freeman (1955) discusses the application of Tillyard's modification of the Comstock and Needham system of naming wing veins as applied to the Chironomidae. This system is used here, and therefore m-cu becomes the base of M_{3+4} and fcu becomes the posterior fork.

The following abbreviations are used; C.N.C.=Canadian National Collection, and S.M.N.H.=Swedish Museum of National History.

Pagastia gen. nov.

♂ i m a g o. — Eyes: bare, dorsally produced around antennal bases. Temporal hairs: numerous, reaching to almost midline of head. Palps: four segmented. Antennae: 14 segmented, highly plumose, terminal segment with strong subapical hair. Pronotum: well developed, lobes divided by V-shaped incision, long hairs on at least dorsomedial and ventrolateral margins. Acrostichial bristles: long, not reaching anteriorly to pronotum. Dorsocentral

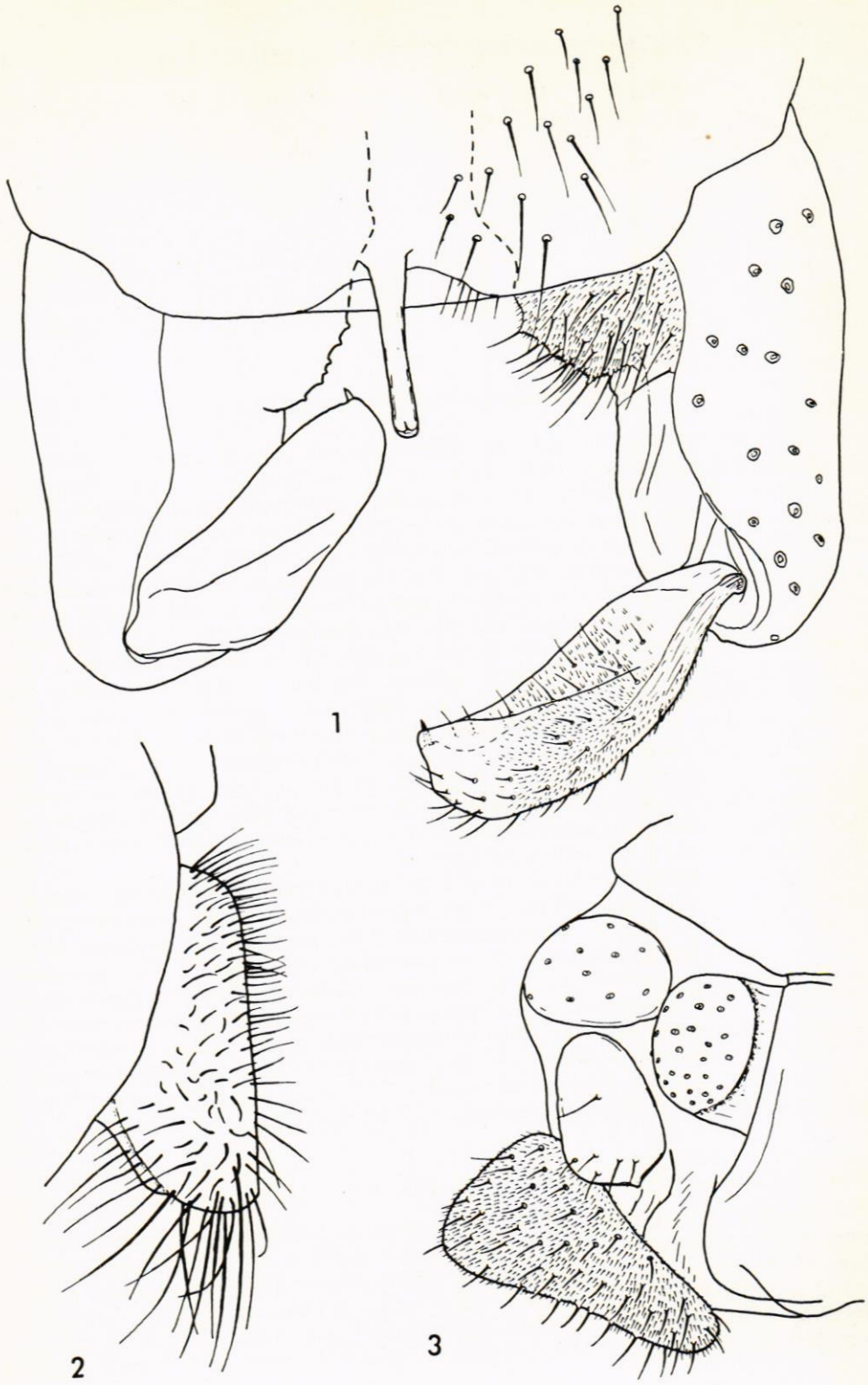


Fig. 1. Male hypopygium of *Pagastia orthogonia*, dorsal view.
Fig. 2. Lobe of pronotum of *Pagastia partica*, dorsal view.
Fig. 3. Female genitalia of *Pagastia orthogonia* ?, lateral view.

bristles: 2 to 5 irregular rows, number of rows increase posteriorly. Supra-alar bristles: extending foreward to almost humeral callus. Scutellum: well covered with hairs. Wings: surface bare or with macrotrichia on tip, microtrichia present, costa strongly produced past R_{4+5}, R_{2+3} ending in costa about midway between R_1 and R_{4+5}, distance between r-m and base of M_{3+4} greater than length of base M_{3+4}, base of M_{3+4} slightly distal to posterior fork, anal lobe somewhat produced, squama with thick fringe of hairs. Legs: fourth tarsal segments all cylindrical; foretibia with single spur, slightly longer than diametre of foretibia end; middle and hind tibia with two spines, those of middle tibia subequal, those of the hind tibia unequal, lateral about two-thirds length of medial; fore tarsal segments with or without apical spines; first two tarsal segments of middle and hind legs each with two apical spines; pulvilli absent. Hypopygium: anal point long, broad inner lobe of coxite divided by heavy chitinized band into a proximal bare (dorsally) part and hairy distal part.

Type of the genus: *orthogonia* sp. nov.

The habitus of *Pagastia* is very similar to *Pseudodiamesa,* but may be distinguished by the hairy pronotum, the base of M_{3+4} only slightly distal to the posterior fork, the less strongly produced anal lobes of the wings and the well developed acrostichial bristles. The hypopygia are especially similar, however in all species of *Pseudodiamesa* known, the terminal spine of the stylus is either long or absent, while in *Pagastia* it is short. Like *Protanypus, Pagastia* has long hairs on the dorsomedial margins of the pronotum and the wing venation, especially the position of the base of M_{3+4} is like *Diamesa.* Until the immature stages are described, the genus *Pagastia* must be regarded as tentative as it may well be a subgenus of *Pseudodiamesa.*

Two North American species, *orthogonia* sp. nov., and *partica* (Rob.) are placed in *Pagastia.* Pagast (1947) by the placing of the Japanese species *Syndiamesa lanceolata* Tok. in his key, recognized it did not fit into any of the genera of Diamesini as he defined them. *Lanceolata* which is very similar to *orthogonia,* probably can be regarded as a *Pagastia* but has a rather important difference in the absence of acrostichial bristles (Tokunaga 1936). Two other Japanese species described from females may also belong to this genus. *Syndiamesa nivis* Tokunaga (1936) is very similar to the probable female of *orthogonia. Syndiamesa crassipilosa* Tokunaga (1937) is more uncertain as the pronotum is described as "setigerous" leaving doubt as to the actual area covered by hairs. If it has a hairy pronotum characteristic of *Pagastia,* further relationship of this genus with *Pseudodiamesa* is indicated as the wing venation, cerci and spermatheceae are as in *Pseudodiamesa arctica.*

Pagastia orthogonia sp. nov.

Similar to *Syndiamesa lanceolata,* but differs in the long acrostichial hairs, long rectangular anal point (hence *orthogonia*), absence of the small projection on stylus distal to the terminal spine and presence of macrotrichia on the wing tips.

♂ i m a g o. — Entirely black, thorax heavily pruinose. Antennae: second segment with single hair whorl, segments 3 to 13 each with double hair whorl. Pronotum: long hairs on dorsomedial and ventrolateral margins. Acrostichial bristles: long, erect, beginning about one-fifth of distance along

mesonotum from pronotum. Scutellum: 5 to 6 rows of bristles medially converging to 2 to 3 laterally. Wings: tips of cells r_5 and m_2 with few macrotrichia. Dorsal abdominal chaetotaxis: uniform with small anterolateral bare areas. Hypopygium: (Fig. 1); anal point long, parallel-sided, apically bluntly rounded; coxite normal; stylus rather straight with short terminal spine.

Wing length: about 3.9 mm. A.R.: 1.37—1.95, (5 spec.). L.R.: 0.73—0.78, (5 spec.).

♀ imago. — (Single female with the same data as male paratypes from Michigan. Placed in this species as except for the usual female differences identical to males, however should be taken in copulation for positive identification). Antennae: 7 segmented. Wings: with more macrotrichia than males, extending proximally about one-third of wing length in cells r_5 and m_2. Genitalia: (Fig. 3); cerci triangular, projecting anteriorly; lobe dorsal to cerci rounded, not projecting over cerci as in *Pseudodiamesa*. Spermathecae: three, equal sized, oval.

Immature stages unknown.

Holotype: ♂ mounted in euparol, Cold Bay, Alaska, 18.VIII.52. (C.N.C., leg. W. R. Mason).

Paratypes: 1 ♂ pinned, same data as holotype. 4 ♂♂ pinned, Epoufette, Michigan, 15.V.55, (C.N.C., leg. J. R. Vockeroth).

Pagastia partica (Rob.)

Synonym: *Syndiamesa artisia* Roback 1957.

Dr. Roback has kindly arranged for me to see the types of *partica* and *artisia*. These two species were separated on small differences in characters which are very variable, especially the colour and the antennal ratio. Otherwise they appear to be identical.

The pronotum is almost entirely covered with long hairs (Fig. 2). These hairs are not shown in Fig. 5 by Roback (1957). Hypopygium: (Fig. 4, Alaska specimen); long parallel-sided anal point, apically with jointed spine; coxite normal; stylus club-shaped, slightly curved with short terminal spine.

Female and immature stages unknown.

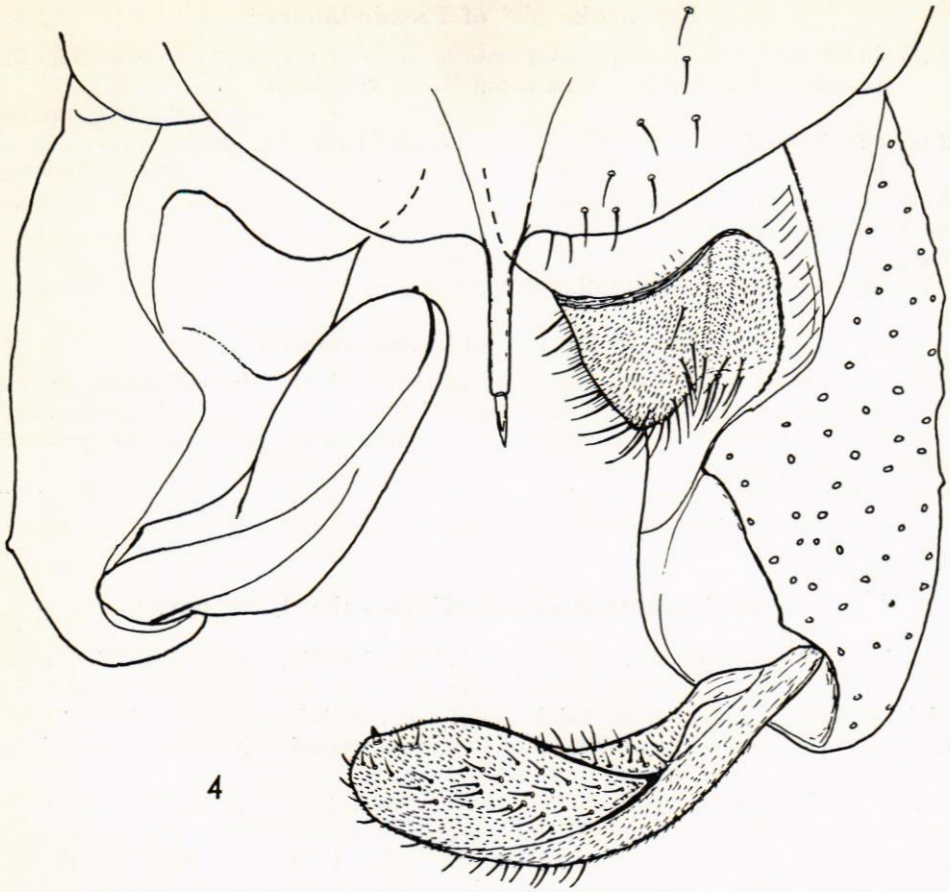
Distribution: A nearctic species thus far collected only from Utah (Roback 1957) and the Aleutian Islands.

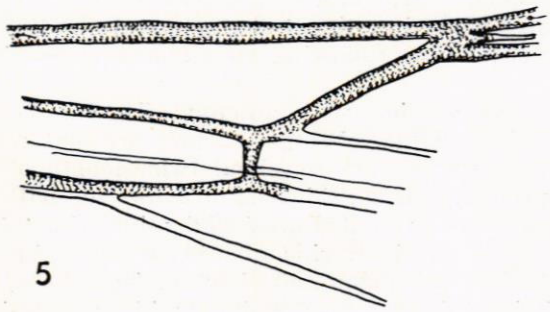
1 ♂, Cold Bay, Alaska, 18.VIII.52, (C.N.C., leg. W. R. Mason).

Pseudodiamesa Goetgh.

As more measurements become available, the A.R. range is greater than previously recorded, —2.0 to 4.4.

Four species of *Pseudodiamesa* are now known: *branickii,* holarctic in distribution; *nivosa,* palearctic; *arctica* and *pertinax,* nearctic. Previously no North American species have been placed in this genus, however Roback (1957) noted *Syndiamesa pertinax* would fall in "*Pseudodiamesa* as defined by Pagast". The robust adults of *arctica* differ from the other three species in the position of r-m, the leg length, and the spermathecae size. These characters do not seem to be of generic value as the pupae differ to a minor degree and the larvae not at all. A new subgenus, *Pachydiamesa* is erected for this species primarily on the basis of adult characters.





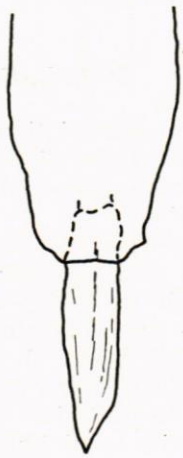


Fig. 4. Male hypopygium of *Pagastia partica,* dorsal view.
Fig. 5. Radial-medial section of wing, *Pseudodiamesa arctica.*
Fig. 6. Tip of anal point of male hypopygium, *Pseudodiamesa arctica,* dorsal view.

Key to the ♂♂ of *Pseudodiamesa*

1 (2) Junction of r-m and M_{1+2} over base of M_{3+4} or very slightly distal (Fig. 5). Length of foretibia plus tarsi about 3/4 of wing length. L.R. < 0.56. (*Pachydiamesa*) *arctica*

2 (1) r-m distinctly distal to base of M_{3+4}. Length of foretibia plus tarsi about equal to wing length. L.R. > 0.56 ..... (*Pseudodiamesa*)

3 (4) Stylus without terminal spine ..... *nivosa*

4 (3) Stylus with terminal spine.

5 (6) Stylus broad, edges with convex contours (Fig. 15) ..... *pertinax*

6 (5) Stylus narrower, edges rather straight (Fig. 16) ..... *branickii*

Key to the ♀♀ of *Pseudodiamesa*

1 (2) Spermathecae very large (Fig. 11). See 1 in ♂♂ key (*Pachydiamesa*) *arctica*

2 (1) Spermathecae normal size. See 2 in ♂♂ key ..... (*Pseudodiamesa*)

3 (4) Middle spermatheca considerable longer than lateral pair (Fig. 18) *pertinax*

4 (3) Spermathecae of equal size.

5 (6) Wing tips with macrotrichia ..... *branickii*

6 (5) Wing tips without macrotrichia ..... *nivosa*

Pseudodiamesa (Pachydiamesa) subgen. nov.

♂ imago. — A.R.: high, about 3.9. Wings: junction of r-m and M_{1+2} over base of M_{3+4} or very slightly distal (Fig. 5). L.R.: low. less than 0.56. S.V.: high, about 3.5. Legs; short; thick; length of foretibia plus tarsi about three-quarters of wing length; fourth tarsal segments cylindrical, shorter than fifth.

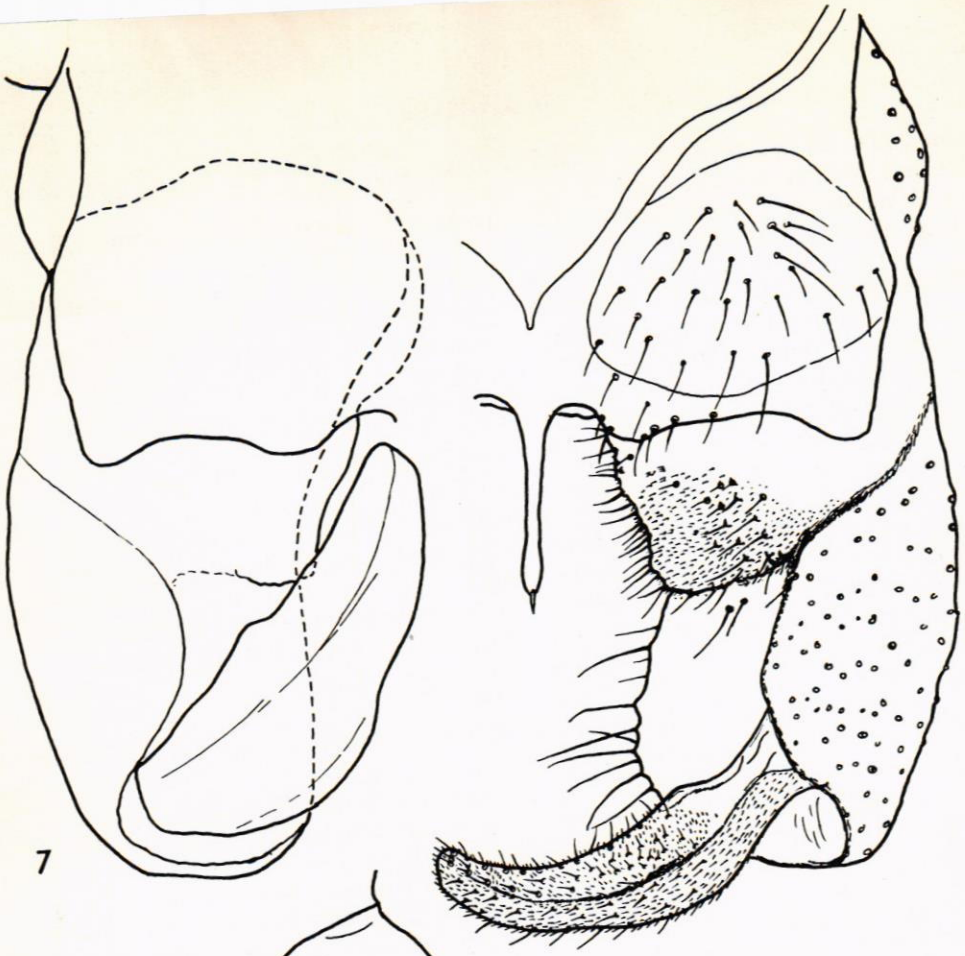
Type of the subgenus: *arctica* (Mall.).

The habitus of this subgenus is more robust than *Pseudodiamesa* (s.s.), especially evident are the short thick legs. The females have unusually large spermathecae. If the figures of spermathecae by Tokunaga (1937) are drawn to the same scale, two Japanese species, *Syndiamesa bicolor* and *S. crassipilosa* also have large spermathecae.

Pseudodiamesa (Pachydiamesa) arctica (Mall.)

Original description by Mallock (1919) based on a female as a *Diamesa*. Dr. J. R. Vockeroth has kindly checked pertinent characters on the holotype and I have examined a paratype. The following supplements the original description.

♂ imago. — Colour: black species, with antennal flagellum, palps, halteres and legs usually slightly lighter. Wings: surface without macrotrichia, base of M_{3+4} distal to posterior fork by about twice length of base of M_{3+4}, anal lobe strongly produced. Legs: third tarsi of fore leg with 5 to 10 ventral spines, short tarsal beard present. Dorsal abdominal chaetotaxis: uniform with bare anterior areas on either side of midline, these increase in size on posterior segments. Ventral abdominal chaetotaxis: anterior segments with medial area of hairs, this area progressively widens posteriorly; all segments laterally with 1 to 2 irregular rows. Hypopygium: (Fig. 7); anal point long, tip slightly bulbous with jointed spine (Fig. 6); inner lobe



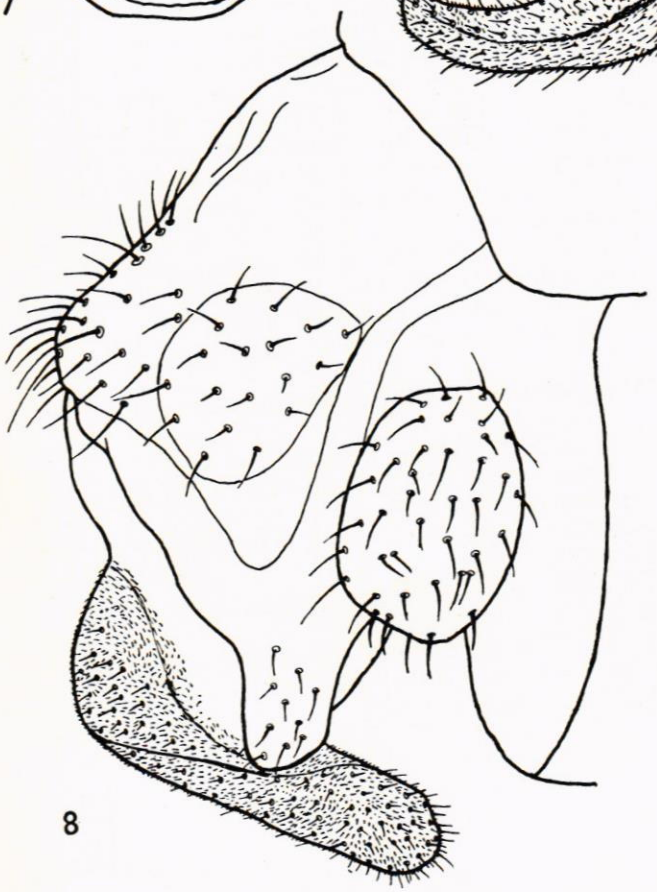


Fig. 7. Male hypopygium of *Pseudodiamesa arctica*, dorsal view. (All *Pseudodiamesa* hypopygia drawn to same scale.)

Fig. 8. Female gentalia of *Pseudodiamesa arctica*, lateral view.

of coxite broad; stylus constricted at base, slightly curved, tapers somewhat to tip, without terminal spine.

Wing length: about 4.8 mm. A.R.: 3.5—4.4, ($\bar{x}$=3.9, 17 spec.). L.R.: 0.49—0.56, ($\bar{x}$=0.53, 21 spec.).

♀ imago. — Antennae: 7 segmented. Dorsal abdominal chaetotaxis: lateral bare areas continuous anteriorly on fore segments, these areas increase in size until anterior half of distal segments bare. Genitalia: (Fig. 8); cerci broad, projecting anteriorly; lobe dorsal to cerci projecting ventrally over cerci. Spermathecae: (Fig. 11), heavily chitinized, base broadly rounded, tapering slightly anteriorly.

Wing length: about 5.6 mm. L.R.: 0.49—0.54, ($\bar{x}$=0.51, 10 spec.).

Spermathecae length (excluding duct): about 0.25 mm.

Pupa: — Colour: brown to dark brown, proximal edge of abdominal segments with black stripe. L-hairs: L_1, L_3 and L_4 ventral; L_2 usually dorsal. Dorsal-anal rim of segment VIII: smooth. Anal segment: (Fig. 9); elongate; less rounded than *Pseudodiamesa* (s.s.), (compare Fig. 10, Fittkau 1954); anal lobes from lateral view (Fig. 12) thin anteriorly, becoming progressively thicker posteriorly; area bearing terminal spines thick.

Length: ♂ 10.0—11.5 mm., ♀ 10.5—12.5 mm.

Larva. — On the basis of present characters appear to be identical with larvae of *branickii* and *nivosa*.

Eggs. — (Fig. 13). Elliptical. Laid side by side in a long string, encased in a gelatinous like substance on the water surface. String assumes a loose spiral as it slowly sinks to the bottom.

Maximum length: 2.5—3.7 mm. Maximum width: 1.4—1.5 mm.

Variation. — In the large number of imagos examined the colour varied greatly. Specimens that have just left the pupal exuvia have numerous light brown or almost whitish areas, especially noticeable are the scutellum and the areas around the hair bases. With time from emergence the imagos become darker. This process appears to proceed at different rates on the various parts of the insect body and to vary between insects. This results in a wide array of dark brown and light brown combinations. Occasionally the fore tibial spur was forked (Fig. 10). Several spurs intermediate between this condition and the normal single spur have been observed. On the pupae L_2 is usually dorsal, but frequently ventral and on a few exuviae it was dorsal on one side and ventral on the other of the same segment of the same pupa.

Distribution. — A nearctic species, so far only collected in the arctic regions of Canada.

Victoria Is., Dist. of Franklin, N.W.T., (Malloch 1919). 1 ♂ 7 ♀♀, Resolute Bay, Cornwallis Is., Dist. of Franklin, N.W.T., 5—10.VIII.56, (C.N.C., leg. A. B. Klass). 25 ♂♂ 7 ♀♀ pupae and exuviae, Hazen L., Ellesmere Is., Dist. of Franklin, N.W.T., 20—31.VII.58, (auth. coll., leg. I. McLaren). 106 ♂♂ 45 ♀♀ immature stages, Nettilling L., Baffin Is., Dist. of Franklin, N.W.T., 5.VII.—8.VIII.56, (auth. coll.). 2 ♀♀, Baker L., Dist. of Keewatin, 13,20.VIII. 47, (C.N.C., leg. T. N. Freeman).

Habitat and ecology. — The larvae live in strongly oligotrophic bodies of standing water in the arctic, occupying the habitat of Ps. *nivosa* in the palearctic. In Nettilling Lake, Baffin Island, the larvae occurred in

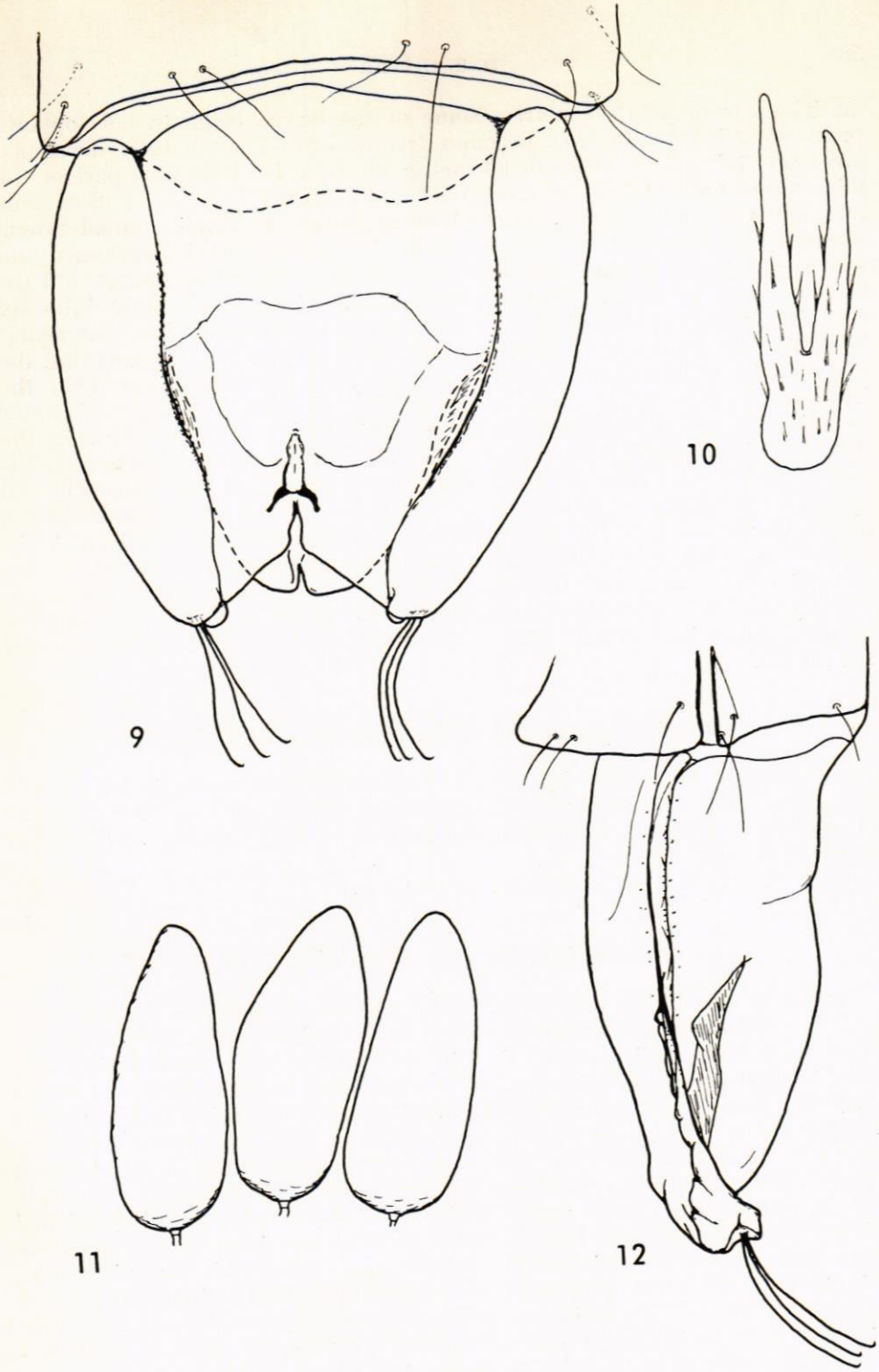


Fig. 9. Anal segment of pupa, *Pseudodiamesa arctica,* dorsal view.
Fig. 10. Fore tibial spur, *Pseudodiamesa arctica.*
Fig. 11. Spermathecae of *Pseudodiamesa arctica.*
Fig. 12. Anal segment of pupa, *Pseudodiamesa arctica,* lateral view.

dredgings from 8 to 60 metres. Some of the larvae begin to develop into pupae long before the lake becomes free of ice. A nearly fully developed pupa was taken at a depth of 24 metres on June 16, 1956 in a part of the lake which did not become free of ice until August 4. On May 29, a lone female was found crawling near a hole in the ice in which a pupal exuvia floated. This hole had been made in the ice about a week previously and was kept open by a seal. The depth of the water was eight metres and the bottom could be clearly seen. Presumably the increase in light intensity resulting from the removal of snow and ice may have triggered the emergence. The evidence from a few dredgings taken through the ice, suggests that the larvae begin to transform to pupae soon after the snow disappears from the ice surface. This results both in an increase in light intensity and water temperature below the ice, the latter maybe especially important in the deeper regions. Towards the end of July adults were emerging in large numbers from the ice free areas around the edge of the lake. The pupae showed rather a remarkable adaptation in areas still covered by ice a metre or more thick. They were able to make their way upward through small cracks in the ice and emerge in pools on the ice surface. Evidence of this adaptation were the live pupae and the exuviae found the pools on the ice surface. These pools had no major connection with the water below the ice, only the minute, water-filled cracks with which the ice was riddled at this time of the season.

Pseudodiamesa (Pseudodiamesa) subgen. nov.

The generic description by Pagast (1947) serves as a description of this subgenus. Three species *branickii, nivosa* and *pertinax* are included, characterized by a less heavy body than *Pachydiamesa,* long thin legs and normal sized spermathecae.

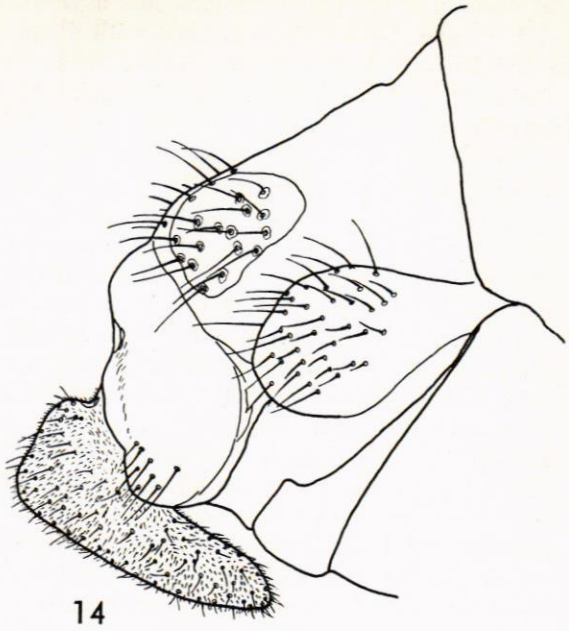
Type of the subgenus: *branickii* (Now.).

Pseudodiamesa (s.s.) ***branickii*** (Now.)

Synonym: *Pseudodiamesa belingi* Fitt. (Wülker 1959).

The specimens from British Columbia have a higher A.R., 3.3—3.6 and a lower L.R., 0.63—0.67, (4 spec.) than those from northern Scandinavia (A.R., 2.0—2.8, L.R., 0.68—0.77, 10 spec.). The lobe dorsal to the cerci in the female genitalia (Fig. 14) broadly projects over the cerci, but neither as far or as sharply as in *Pachydiamesa.* The spermathecae (Fig. 17), about 0.15 mm. long are about two-thirds the size of *Ps. arctica* and equal in size to each other. The spermathecae of *nivosa* are the same as this species.

It is questionable if the pupae of *branickii* can always be distinguished from those of *nivosa.* All the characters which have been used to separate these two species are variable. The failure to recognize this variability contributes to the different opinions expressed by Pagast (1947), Fittkau (1954), and Wülker (1959). Wülker writes regarding the material available to him "dass ein von *Pseudodiamesa* 3 klar getrennte Puppentypen gibt". These are: *branickii* — dorsal L_2, L-hairs on segments VII and VIII not forked; *nivosa* — dorsal L_2, L-hairs forked; and sp. "Monta Rosa" — ventral L_2, L-hairs



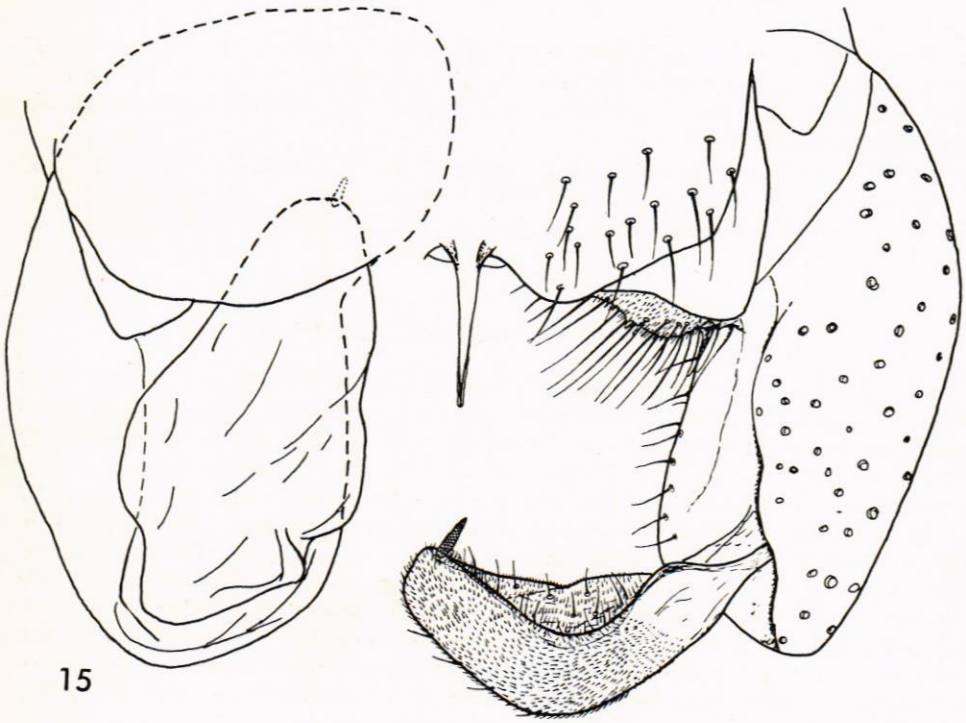


Fig. 13. Eggs of *Pseudodiamesa arctica.*
Fig. 14. Female gentalia of *Pseudodiamesa branickii,* lateral view.
Fig. 15. Male hypopygium of *Pseudodiamesa pertinax,* dorsal view.

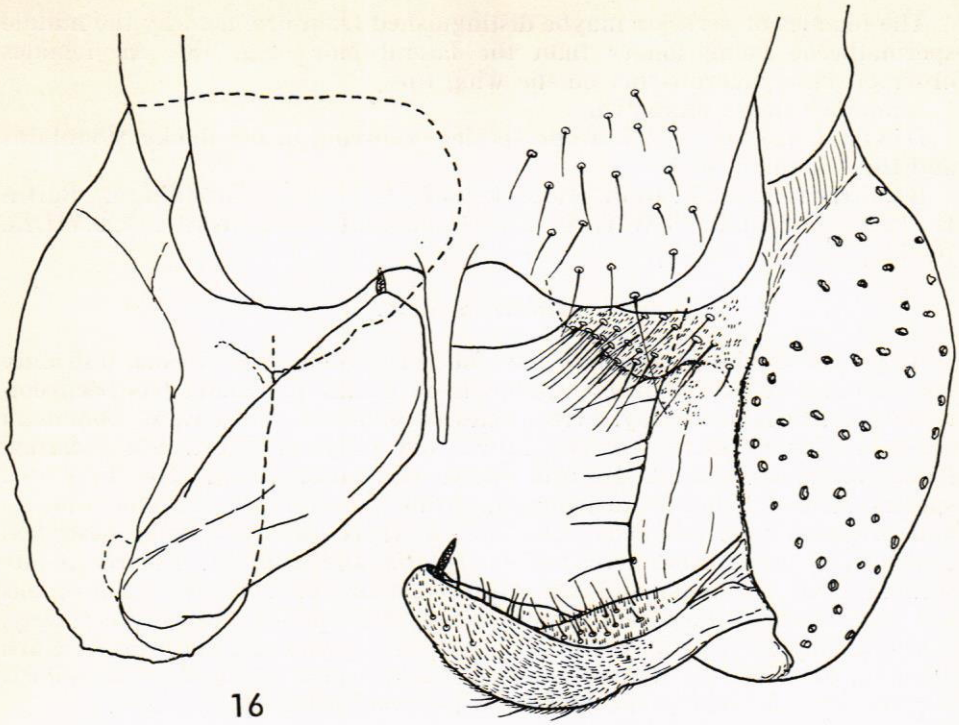
not forked. *Branickii* to Pagast has a ventral L_2 and *nivosa* dorsal. Fittkau with respect to *branickii* agrees with Pagast. The position of L_2 varies in *branickii* and *nivosa* as in *arctica*. However in *nivosa* pupal exuviae definitely connected with a *nivosa* imagos, the L_2 is usually ventral (northern Scandinavia specimens) and there is a high frequency of forked L-hairs. *Branickii* pupae usually have a dorsal L_2 and a low frequency of forked L-hairs. Wülkers opinion of the size and position of the lateral of the three terminal hairs and the sculpturing of the dorsal suture of the thorax is generally upheld, but these characters are less reliable and more variable than the L-hairs. Similarly the sculpturing of the dorsal-anal rim of the VIII segment is usually quite rough in *nivosa* while smooth in *branickii*. Based on northern Scandinavian and North American specimens, if, most of the L_2 hairs are dorsal, few of the L-hairs forked, the lateral terminal hair slightly more widely spaced from the other two than they are from each other, and the dorsal suture of the thorax and the dorsal-anal rim of segment VIII is smooth, the pupae can probably be regarded as *branickii*. While pupae with mostly ventral L_2 hairs, a high frequency of forked L-hairs, equally spaced terminal hairs, and a coarse sculpturing on the dorsal suture of the thorax and the dorsal-anal rim of segment VIII are probably *nivosa*. However many pupae will be encountered that can not be assigned to either species. With the large variation in the pupae of these two species, it is no longer plausable to postulate the existence of the hypothetical species "Monte Rosa" and from the descriptions in the literature it appears that the pupae assigned to this species belong to *nivosa*.

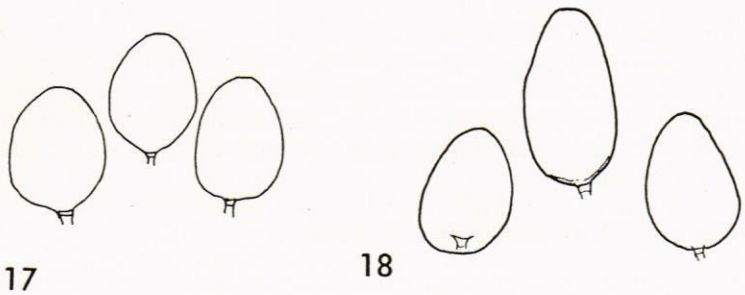
Distribution. — A widely distributed boreo-alpine species. See Pagast (1947) and Brundin (1949) for distribution in Europe, Asia and Greenland. Thus far has been only collected from the Rocky Mountain Region in British Columbia and Alberta.

4 ♂♂ 6 ♀♀ pupal exuviae, Sunwapta L., B.C., 19.VI.57, (S.M.N.H., leg. L. Brundin). 1 ♀, Hedley, B. C., 4.VII.23, (C.N.C., leg. C. B. Garrett). 3 ♀♀, Baniff, Alta., 23.VIII, 16.IX.22, (C.N.C., leg. C. B. Garrett), 3.XI.15, (C.N.C., leg. N. B. Sanson).

Pseudodiamesa (s.s.) ***pertinax*** (Garr.)

The specimens have been compared to the specimen Roback (1957) used to supplement the original description by Garrett (1925). They appear to be identical, but with respect to the hypopygium it is difficult to be completely certain as the hypopygium of Roback's specimen is mounted and somewhat crushed by the cover slip. This species is very closely related to *branickii* and can be separated only by the styli of the hypopygium. The stylus (Fig. 15) is broad with convex edges and has a convex bulge on the laterodorsal edge near the base. The stylus of *branickii* (Fig. 16) is narrower with rather straight edges and the convex bulge on the laterodorsal edge is absent. Roback's specimen and one male from Nettilling Lake have macrotrichia on the wing tips, while the wings of the other males observed are bare. A similar variation has been observed in *Heterotrissocladius subpilosus* by Brundin (1949).





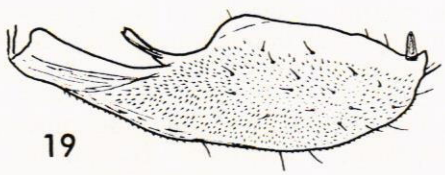


Fig. 16. Male hypopygium of *Pseudodiamesa branickii*, dorsal view.
Fig. 17. Spermathecae of *Pseudodiamesa branickii*. (Same scale as Fig. 18.)
Fig. 18. Spermathecae of *Pseudodiamesa pertinax*.
Fig. 19. Stylus of *Diamesa simplex*.

The females of *pertinax* maybe distinguished from *branickii* by the middle spermathecae being longer than the lateral pair (Fig. 18). All females observed have macrotrichia on the wing tips.

Immature stages unknown.

Distribution. — A nearctic species occurring in the Rocky Mountains and the Canadian arctic.

B.C., (Garrett, 1925). Utah, (Roback 1957). 3 ♂♂ 2 ♀♀, Nettilling L., Baffin Is., Dist. of Franklin, N.W.T., 4—13.VIII.56, (auth. coll.), also 2 ♂♂ 22.VII.25, (C.N.C., leg. J. D. Soper).

Diamesa Meig.

As yet no species of *Diamesa* have been recorded from Alaska, and only one of the seven recognizable species from northern Canada has been collected west of Hudson Bay. Five species of *Diamesa, davisi* Edw., *bohemani* Goetgh., *clavata* Edw., *furcata* Edw., and *gregsoni* Edw., are recorded from Akatpatok Island, Hudson Strait (Edwards 1933). The first two species have a holarctic distribution, while the rest are nearctic. *Clavata* and *gregsoni* have not been collected elsewhere. Kieffer (1925) described two species from Ellesmere Island, *polaris* and *simplex*. *Polaris* is described from a female and our knowledge of the *Diamesa* females has not progressed to the extent of recognizing this species with any certainty. *Simplex* may be a synonym of the holarctic species, *D. aberrata*. A third *Diamesa* described by Kieffer from Ellesmere Island as *Syndiamesa polaris* is probably the same as the specimens recorded below as *D. parva*.

Diamesa geminata Kieff.

Synonym: *Diamesa furcata* Edwards 1933.

The type of furcata has not been seen, however the type specimen of *geminata* agrees very well with the description of *furcata,* especially with the drawing of the hypopygium (Fig. C, Edwards 1933). This is a very distinctive species, with the hypopygium having a long, broad anal point and a deeply forked stylus.

Distribution. — A nearctic species, recorded from Greenland (Kieffer 1925) and Akatpatok Island (Edwards 1933).

Diamesa parva Edw.

This is the first record of this species from North America, although as pointed out above Kieffer may have described it as *Syndiamesa polaris*. The hypopygium of the type specimen of *polaris* is lost, making it impossible to check Kieffer's figure (Fig. 3, Kieffer 1925), which shows an unusual distal projection on the coxite. The remainder of the type appears to be identical to the specimens of *parva* from Baker Lake. The placing of *S. polaris* in *Diamesa* invalidates the species name as Kieffer described a *D. polaris* in the same paper. With the loss of the hypopygium and the dubius character of the figure, it therefore desirable to consider *S. polaris* as "nomen dubium".

In some characters *parva* is intermediate between the typical *Diamesa*

and *Pseudodiamesa,* in that the eyes are produced dorsally and the anal lobe of the wing is also produced, although neither to the degree found in *Pseudodiamesa.* The hypopygium (Fig. 6, Wülker 1959) simple in construction is more of the type characteristic of *Pseudodiamesa.* The A.R. of the Canadian specimens, 1.40—1.65 (5 spec.) is higher than that given by Edwards (1932), 0.90—1.0.

Distribution. — A holarctic species, which will probably be found to be much more wide spread in North America.

8 ♂♂, Baker L., Dist. of Keewatin, N.W.T., 26.VII.—5.VIII.49, (C.N.C., leg. J. R. Vockeroth).

Diamesa simplex Kieff.

Andersen (1937) places *simplex* as a synonym of *Diamesa aberrata* Lundbeck. Although the hypopygium of the type is badly damaged, with the anal point area missing, it agrees very well with Wülker's figure of the hypopygium of *aberrata* (Fig. 5, 1959). The stylus is distinctive with a strongly constricted basal part (Fig. 19), which is seen when it is placed in the position used to illustrate other styli in this paper. The remainder of the type also agrees with *aberrata,* but the antennae and most of the tarsi are missing. No specimens of *aberrata* have been seen, but it is quite likely that Andersen's synonymy is correct and examination of the stylus of *aberrata* should finally determine the validity of his action. It is quite certain that *simplex* is what Andersen (1937) recorded from Greeland as *aberrata.*

Potthastia Kieff.

Freeman (1955) regards *Potthastia* as a subgenus or a synonym of *Diamesa,* but gives no reasons for his opinion. The immature stages of these two genera are distinctive and the adults can be separated by the characters given by Pagast (1947), thus it seems desirable to continue to use these genera as defined by Pagast, awaiting further revision of the Diamesini.

Potthastia longimanus Kieff.

The single male is identical to european specimens, except the L.R., 0.76, is lower than that given by Pagast (1947), 0.84.

Distribution. — A holarctic species. Roback (1953) records a single *Potthastia* larva from the Savannah River which he believes maybe *longimanus.*

1 ♂, Lac Aigneau, Que., 15.VI.55, (auth. coll.).

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