

## A NEW GENUS AND SPECIES OF FLEA FROM ANTARCTICA (Siphonaptera: Ceratophyllidae)

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*Abstract:* A new genus and species of flea, *Glaciopsyllus antarcticus*, is described, the first record of Siphonaptera from Antarctica proper.

Although about half a dozen species of fleas are known from sea-birds in the subantarctic region, none had hitherto been reported from the Antarctic continent. It came therefore as a pleasant surprise when one of us (G.M.D.) received some fleas collected from nests of the silver-grey petrel and the snow petrel on two small islands just off the coast of the Antarctic mainland. Most of the bird-fleas of the southern oceans belong to the family Rhopalopsyllidae (*Parapsyllus* and *Listronius*) and two to Pygiopsyllidae (*Notiopsylla*), but the specimens described below represent a new genus belonging to the family Ceratophyllidae which has a predominantly Holarctic distribution, with relatively few representatives in the Neotropical, Ethiopian and Oriental Regions.

Taxonomically the family Ceratophyllidae presents numerous problems which have not been solved satisfactorily. As we and others want to be able to refer to the new flea in forthcoming publications, it was desirable to publish its description without delay and therefore time has not permitted us to study the problems of the relationships of the new genus to other Ceratophyllid genera. At least superficially the nearest extant relative of the considerably unmodified (in certain respects) and rather Vermipsyllid-looking new flea appears to be the South American bird-flea *Dasypsyllus comatus* Jordan; the former has possibly been derived from the same ancestral stock as members of *Dasypsyllus*. Although *Mioctenopsylla* is an Arctic counterpart of the Antarctic flea, there seems to be no close relationship between the two; *Mioctenopsylla* is clearly a derivative of *Megabothris* (Holarctic rodent-fleas). As the pronotal ctenidium is very poorly developed in *Mioctenopsylla* and only represented by pseudosetae in the new species, there may conceivably be a partial correlation between temperature and the development of ctenidia. It is relevant to mention here that the nesting-places of the hosts of the Antarctic flea, *i. e.* the biotope where the immature stages of this flea develop, are buried under a meter or more of snow for most of the year.

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**Glaciopsyllus** n. gen.

Without developed ctenidia, but slender spinelets or pseudosetae present on all nota and on terga I-V or VI<sup>3</sup>. Intercalary setae absent<sup>3</sup>. Head integricipit; with a frontal tubercle. Eye well developed. Antennal fossa open. Genal process with several small setae<sup>3</sup>. A vestige of the anterior end of the tentorial rod visible well in front of the eye<sup>4</sup>. Trabecula centralis present. Labial palp 5-segmented. Laciniae and epipharynx slender. Inner side of mid and hind coxae with only a few setae near the anterior margin. Mid coxa with an interrupted oblique pale suture on outer side. Fore femur with about a dozen lateral setae on outer surface. None of the lateral plantar setae displaced mesad. Sternum VIII of ♂ reduced to a long and narrow sclerite. Fixed process of clasper with two acetabular setae. Movable process with several very stout setae. Distal arm of sternum IX of ♂ with a differentiated apical half. Two (occasionally one) strong and 2-5 small antesensilial setae in ♂, 5-8 strong setae in ♀<sup>3</sup>. Sensillum with a straight dorsal margin and 40-50 trichobothria on each side. Anal stylet of ♀ with one long apical seta, a shorter preapical one and two minute lateral setae. Ductus obturatus present; ductus spermathecae short. Hilla of spermatheca well demarcated from bulga.

Type of genus: *Glaciopsyllus antarcticus* n. sp.

**Glaciopsyllus antarcticus** Smit and Dunnet, n. sp. Figs. 1-10.

*Type material*: Ardery Island, 66°22' S. 110°26' E., off Wilkes Station, Antarctica, N. Orton: ♂ holotype and 3♀ paratypes from the silver-grey petrel *Fulmarus glacialoides*, 21. II. 1961; 1♂, 1♀ paratypes from nest and down of chicks of *Fulmarus glacialoides*, 21. II. 1961; ♀ allotype from under rock at site of an old nest of *Fulmarus glacialoides*, 9. XII. 1961. Anchorage Island, ±68°S. 77°E., off Davis Base, Antarctica, D. A. Brown: 1♂, 3♀ paratypes and one pupa<sup>5</sup> from a nest of the snow petrel *Pagodroma nivea*, 28. XII. 1961.

The holotype, allotype and one pair of paratypes are in the collection of the Commonwealth Scientific and Industrial Research Organisation (C.S.I.R.O.), Canberra, Australia; one pair of paratypes is in the British Museum collection of fleas at Tring and other paratypes are in the collection of G. M. Dunnet and Bishop Museum.

*Head* (fig. 1): Fronto-clypeal margin smoothly convex. Oral margin shallowly concave. Anterior wall of frons rather narrow and of uniform width throughout. Frontal tubercle small but quite distinct. Frontal row consisting of 4 or 5 slender setae in ♂, 2 or 3 setae in ♀. Ocular row of 4 long setae, the interspace between the lower 2 larger than between the other setae of this row; sometimes with an additional long seta between this row and the eye. Along the genal margin with 3-5 short setae. Margins of the bluntly pointed genal process strongly sclerotized. Eye well developed, dark, with an internal sinus; 2 or 3 short setae behind and below the eye bordering the antennal fossa. A fairly large anterior vestige of the tentorial rod visible near the 3rd seta of the ocular row

3. Characters marked thus are unique in the Ceratophyllidae.
4. A vestige of this rod is also present in the rodent-fleas *Aenigmopsylla* (eastern Palaearctic Region) and *Malaraeus neotomae* (Fox, 1940) (North America).
5. The pupa has a pair of so-called wing buds which are known to occur in some species of Ceratophyllidae and Leptopsyllidae (Shvanvich, 1935, Priroda **11**; Sharif, 1935, Parasitology **27**: 461-64).

(counted from above). Antennal scape with a number of small setae laterally, along the dorso-posterior margin and with a row of setae along the apical margin; pedicel with a fringe of numerous long and slender setae, several of which reach to near the apex of the clava in the ♂ and beyond this apex in the ♀. Antennal fossa open; in the ♂ the clava

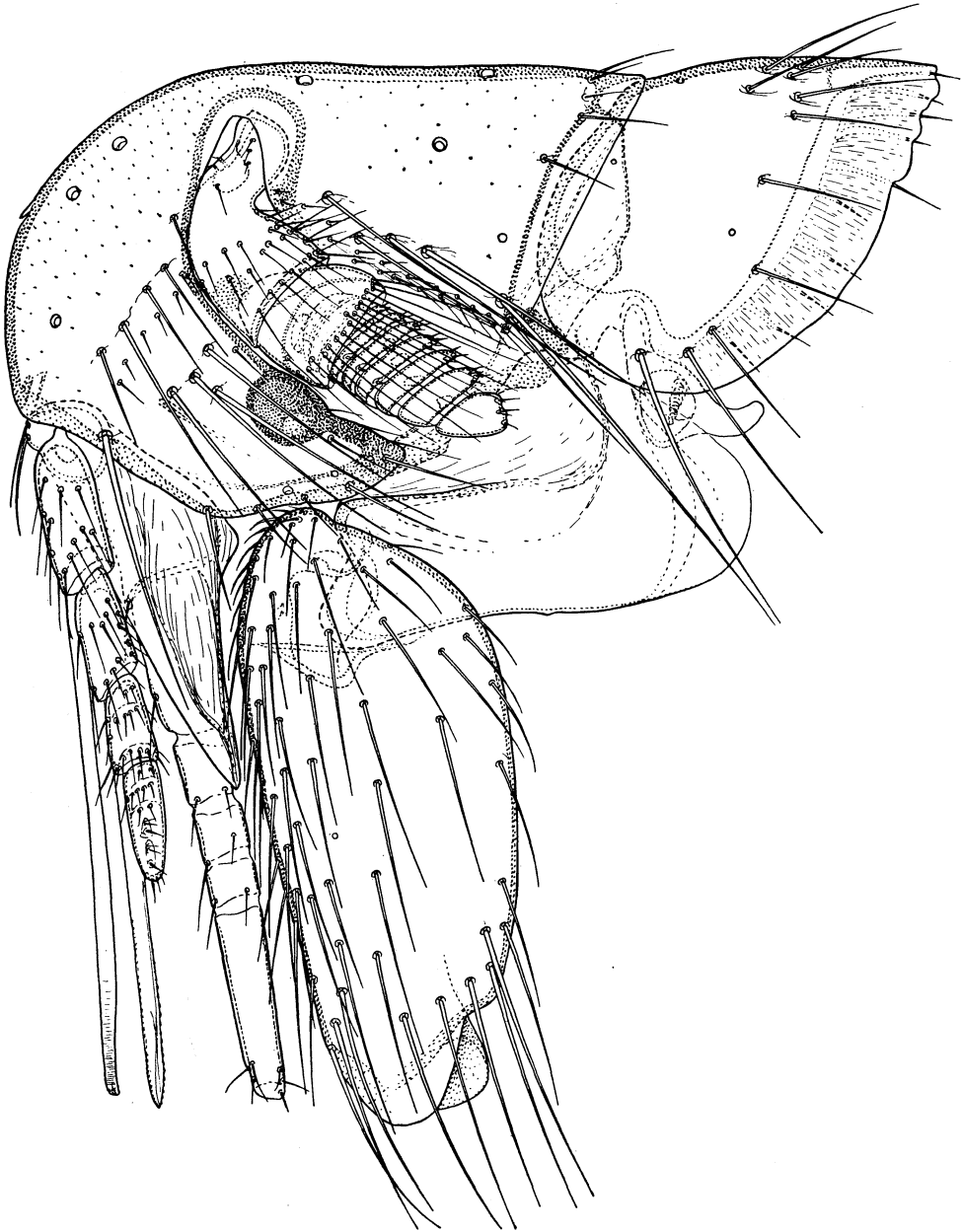


Fig. 1. *Glaciopsyllus antarcticus* n. sp. Head, prothorax and fore coxa of ♂ holotype.

extends a little on to the prosternosome. Antennal fossa dorsally bordered by a row of numerous short setae. Postantennal region of head with 5 long setae near the antennal fossa in ♂ and 5-7 in ♀. The occipital groove in ♂ is very shallow. The apex of the maxillary palp reaches to just beyond the middle of the fore coxa while the tips of the epipharynx, the finely serrated laciniae, and of the 5-segmented labial palps reach to nearly the apex of the fore coxa.

*Thorax* (figs. 1, 2): Pronotum very broad, with an irregular main row of about 8-10 slender setae on each side and anterior to this row there may be some additional dorsal setae. Pronotal ctenidium absent but instead a row of about 10 short pseudosetae under the collar; one or a few of the dorsal pseudosetae marginal or almost so and causing a scalloping of the margin. Ventral margin of pronotum not bilobed. Prosternosome with a sinus for the reception of one end of the first link-plate. Mesonotum with a chaetotaxy very similar to that of the pronotum, but in addition a number of short setae anteriorly; 10-12 short pseudosetae on each side under the collar. Mesepisternum with 2 or 3 short setae, mesepimeron with 9-11 slender setae in ♂ and 10-12 in ♀. Metanotum with a main row of about 10 longish setae, preceded by 1 or 2 rather irregular rows of short setae; collar membranous, with 1 or 2 pseudosetae on each side; metasternum with or without a squamulum and with 1 or 2 lateral setae; the small metepisternum with one seta in ♂ but

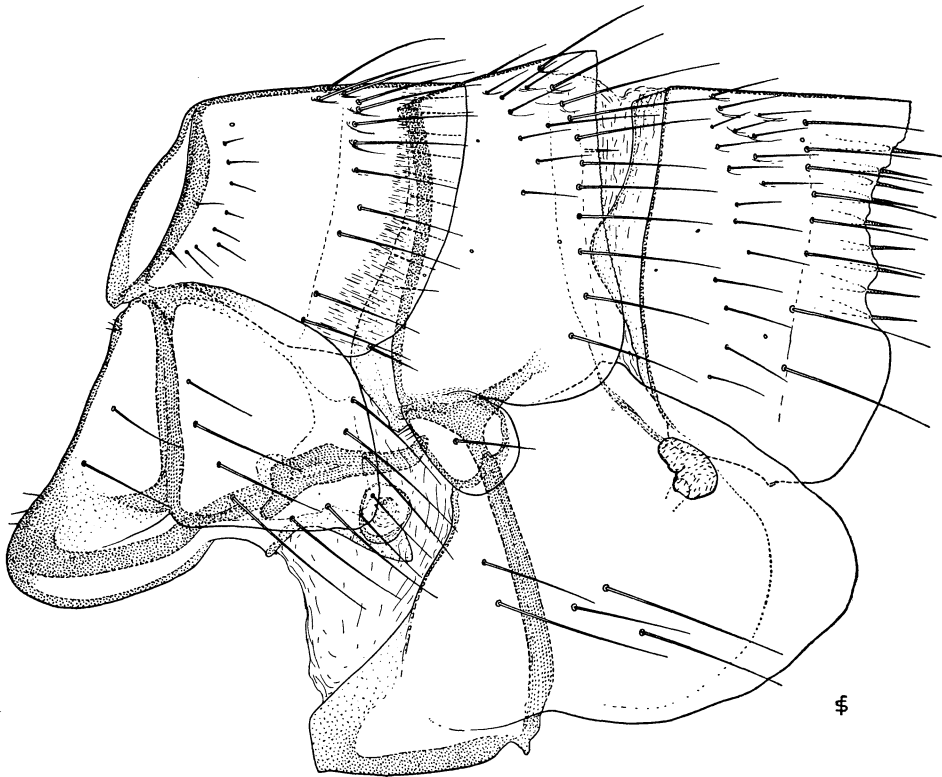
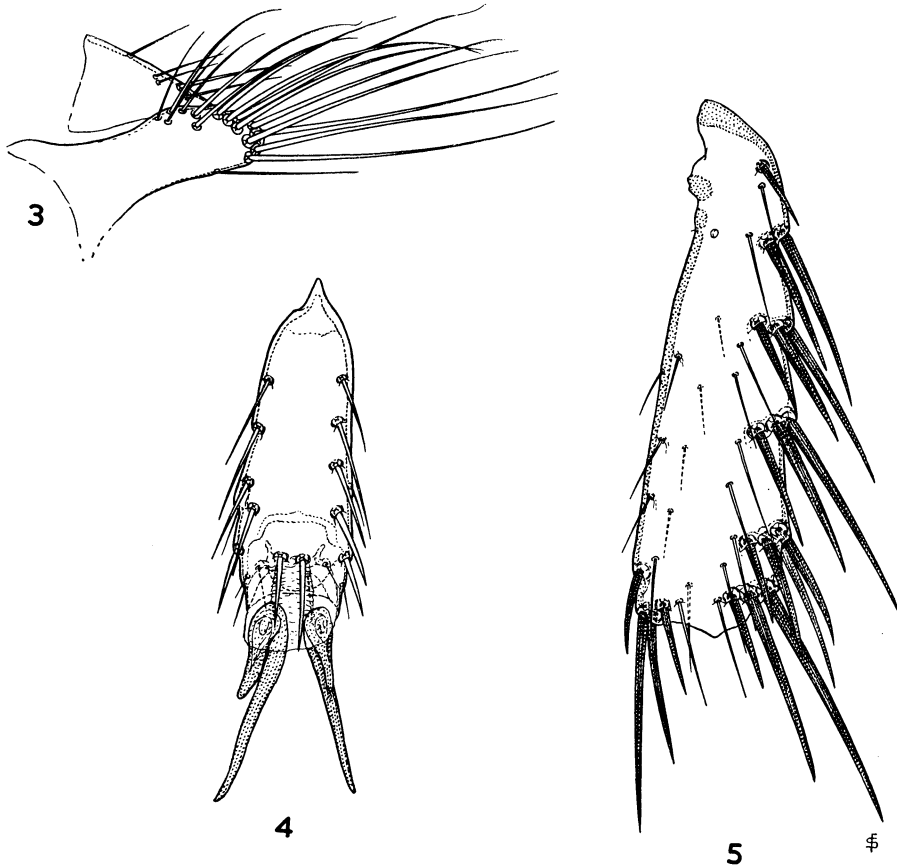


Fig. 2. *Glaciopsyllus antarcticus* n. sp. Mesothorax, metathorax and tergum I of ♂ holotype.



Figs. 3-5. *Glaciopsyllus antarcticus* n. sp. 3, anal segment of ♂ holotype; 4, fifth hind tarsal segment of ♂ holotype; 5, hind tibia of ♀ allotype.

normally without setae in ♀; metepimeron with 3-5 setae. Pleural arch of metathorax absent; this indicates that the flea is a poor jumper.

*Legs* (figs. 1, 4, 5): Fore coxa as shown in fig. 1. Mid coxa with an interrupted oblique pale suture on the outer side. Mid and hind coxae with a few setae ventro-anteriorly on the inner side and with a number of setae near and along the anterior margin. Fore femur on outer side with about a dozen lateral setae and 2 larger setae near the ventral margin at proximal 1/4; on the inner side with 2-4 small lateral setae. Mid femur with a lateral row of 8-10 small setae and 2 smaller ones near the apex. Hind femur with a lateral row of about a dozen setae. Tibiae with 5 notches in the dorso-posterior margin, each usually bearing 3 strong setae; between the upper notch and the base one short stout submarginal seta (fig. 5); on outer lateral surface of hind tibia 9-12 slender setae. Tarsal setae usually at most reaching to the apex of the following segment. Fifth tarsal segment (fig. 4) of all legs with 4 (occasionally 5 on mid or hind tarsus) pairs of rather thin and straight lateral plantar setae and 2 strong subapical plantar setae; plantar surface without setae; tarsal claws smooth.

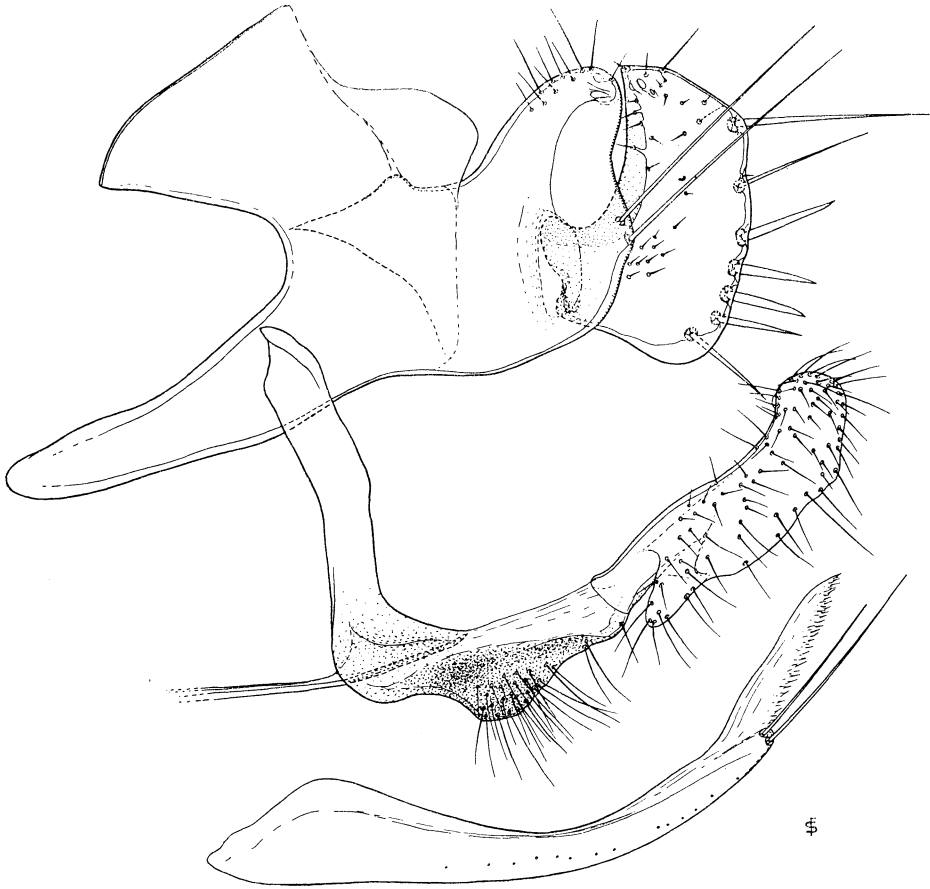


Fig. 6. *Glaciopsyllus antarcticus* n. sp. Sternum VIII and segment IX of ♂ holotype.

*Abdomen*: Terga and sterna heavily sclerotized (figs. 9, 10). Main row of setae on terga I-VII in ♂ with 7-8, 11-14, 10-13, 12-14, 11-13, 12-13 and 10-12 setae respectively on each side; in ♀ with 5-10, 9-16, 11-16, 11-14, 13-14, 10-13 and 8-13 setae. These rows are preceded by numerous smaller setae which may form one or more irregular rows. The most ventral seta of the main row on terga II-VII is inserted below the level of the spiracle. Intercalary setae absent but rarely there may be 1 or 2 such setae present in one of the tergal rows. Terga I-VI in ♂ with 5-9, 7-10, 5-6, 3-4, 1-2 and 0-2 long and slender marginal spinelets on each side; in ♀ the number of spinelets on each side of terga I-VI are 8-11, 7-11, 5-9, 5-6, 1-5 and 0-4 respectively. Tergum VII in ♂ with 2 (sometimes one) large antesensilial setae and 2-5 small ones, in ♀ with 5-8 large ones on each side. Sterna II-VII in ♂ on each side respectively with 2, 0, 1-0, 1-0, 1 and 1 seta; in ♀ the basal abdominal sternum bears a lateral patch of 11-14 setae and the main rows of sterna III-VII consist of 8-10, 9-12, 8-11, 6-12 and 6-8 setae respectively; these rather irregular rows are preceded by numerous small setae.

*Male* (figs. 3, 6, 8): Tergum VIII large, with a sclerotized narrow rim along the an-

terior margin and a rounded posterior margin; with a dorsal group of about a dozen setae and 2 or 3 pre-ventral setae. Sternum VIII (fig. 6) long, narrow, curved upwards and with two long apical setae per side and an oblique elongate dorso-apical membranous lobe. Manubrium fairly narrow and straight, sometimes a little curved upwards. Fixed process of clasper (fig. 6) somewhat longer than broad, with a rounded apex and a group of about 10 short setae; 2 long acetabular setae. Movable process of clasper (fig. 6) large, rectangular, length: width ratio varying from 1.75:1 to 2:1; one long and stout dorso-apical seta and a shorter slender one some distance below it; on the lower 1/2 of the posterior margin of this process a row of 4 or 5 short and very stout setae; on the outer and inner

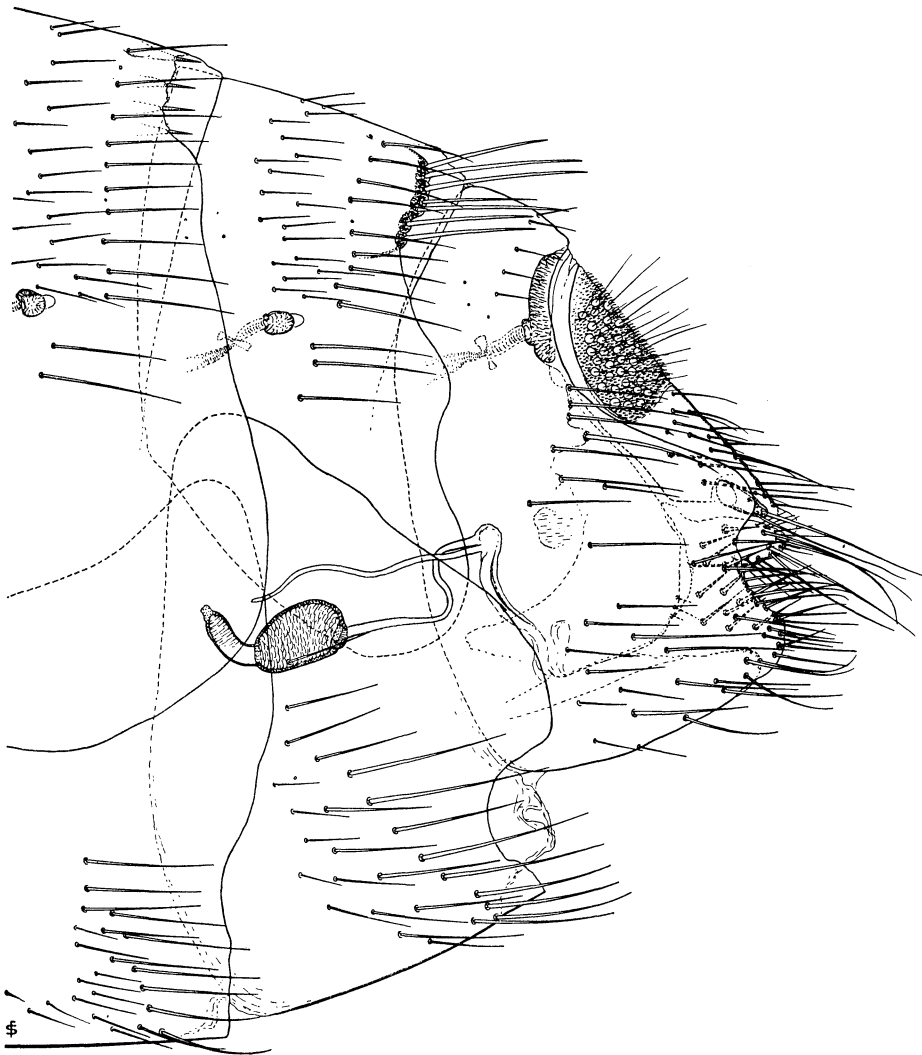
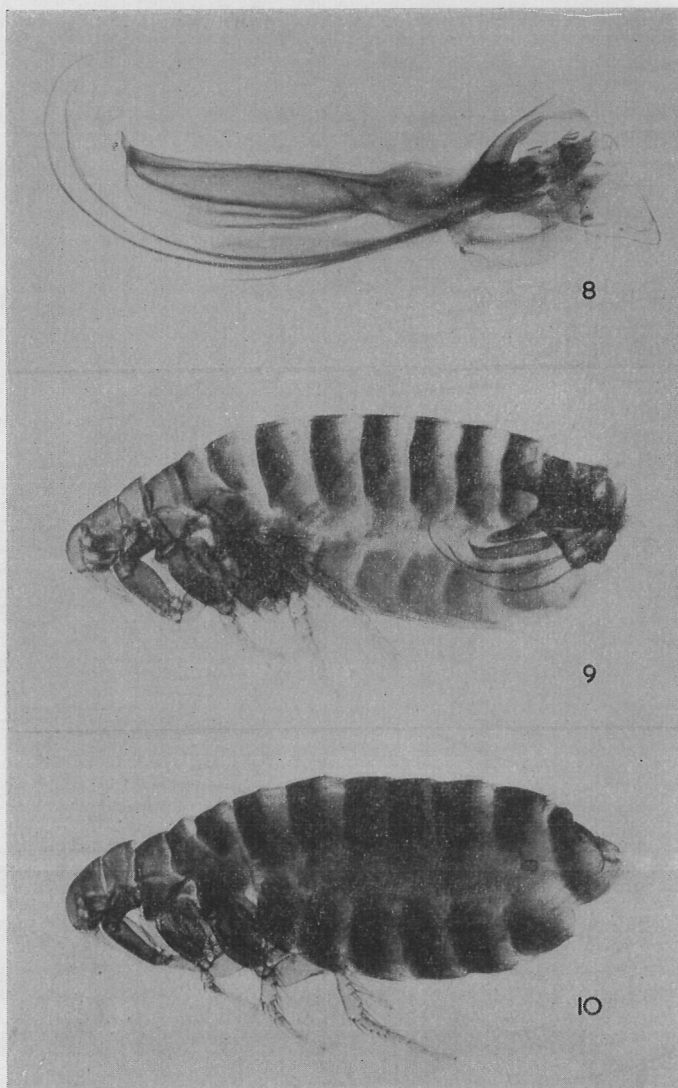


Fig. 7. *Glaciopsyllus antarcticus* n. sp. Terminal abdominal segments and genitalia of ♀ allotype.

surface a number of minute setae as shown in fig. 6. Proximal arm of sternum IX (fig. 6) with subparallel margins and only slightly curved; anterior part of distal arm ventrally with a heavily sclerotized and densely setose bulge. Apical lobe of proximal arm with an upturned apex, quite densely clad with slender setae; in one of the males the apex is somewhat expanded. Apodemal rod of sternum IX as long as the distal arm. Sensilium with about 40 trichobothria on each side. Anal tergum unmodified but anal sternum forming a blunt lobe with numerous long setae along the apical margin (fig. 3). Aedeagal tubus interior (fig. 8) quite short and wide; hamulus fairly large, triangular; aedeagal apodeme



Figs. 8-10. *Glaciopsyllus antarcticus* n. sp. 8, phallosome of paratype; 9, ♂ holotype; 10, ♀ paratype.



straight and fairly narrow, with an upturned tip; penis rods short, making at most 1/2 a convolution.

*Female* (fig. 7): Posterior margin of sternum VII with a large ventral sinus. Upper portion of tergum VIII with 5–12 short setae anterior to the narrow and elongate spiracular fossa; laterally tergum VIII bears a number of slender setae down to the ventral margin; posterior margin sinuate; about a dozen genital setae. Sternum VIII not strongly sclerotized, with at most a few apical microsetae. Sensillum with a straight dorsal margin and about 40–50 trichobothria on each side. Anal tergum with a number of slender setae; anal stylet about 2.5× longer than broad, with one long apical seta and a subapical ventral seta which may be fairly short or almost as long as the apical one; anal sternum as shown in fig. 7. Ductus bursae curved, with a well-sclerotized posterior margin; ductus obturatus about as long as the relatively short ductus spermathecae. Bulga of spermatheca longer than broad, with squamoid (not linear) internal striation; the well demarcated hilla bears apically a papilla.

*Length*: ♂ 3 mm, ♀ 4 mm.

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## RECENT LITERATURE ON PACIFIC INSECTS

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(Continued from page 886)

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