

in colour evident from the above description there are no long erect dark hairs on thoracic dorsum as in that species.

Length, 2-3 mm.

Type locality: Hood river, Arctic sound, Northwest Territories, August 28, 1915 (R. M. Anderson). Paratypes, Bathurst inlet, Northwest Territories, September 1, 1915 (R. M. Anderson).

This species is closely related to *arcticum* Malloch, described from British Columbia, but the points mentioned in the description should serve to separate the species.

#### **Simulium, sp. 2.**

PUPA.—This species is similar to *johannseni* Hart in having the thoracic respiratory organs each four-branched (Pl. VI, fig. 4). There is also a European species with this characteristic. From *johannseni* the present species differs in the armature of the abdomen. The third and fourth dorsal segments each have eight stout anteriorly directed thorns near the posterior margin, in a transverse series, four on each side, the space between each series of four about three times as wide as the space between the thorns of each series; dorsal segments five to eight inclusive, each with a transverse series of weak, backwardly directed spines near anterior margin, the series of fifth segment much shorter than that on sixth, those on other segments becoming progressively longer and stronger as they near apex; apical segment with two short spines; fourth, fifth, and sixth ventral segments each with two short spines on each side.

Length, 3 mm.

Locality: Bernard harbour, Dolphin and Union strait, Northwest Territories, August 16, 1915, in bed of river (F. Johansen).

#### **Simulium, sp. 3.**

PUPA.—Differs from the foregoing in having the thoracic respiratory organs each with twelve or thirteen branches (Pl. VI, fig. 13) and the armature of the abdomen as follows. Third and fourth dorsal segments each with eight very small recurved thorns arranged as in the previous species, fifth segment with the anterior transverse armature almost imperceptible, that on sixth, seventh, and eighth consisting of a series of very small, closely placed spinules that extends entirely across the surface from side to side; apical segment with two very conspicuous upwardly curved thorn-like processes, fifth ventral segment with a pair of small thorns on each side near posterior margin, sixth and seventh each with one such thorn similarly located.

Length, 3-5 mm.

Locality: Bernard harbour, Dolphin and Union strait, Northwest Territories, July 10, 1916 (F. Johansen).

#### **Simulium, sp. 4.**

PUPA.—Differs from the previous species in having sixteen-branched thoracic respiratory organs (Pl. VI, fig. 12). The abdominal armature is as follows: second dorsal segment with eight minute spines on each side—three in a submedian transverse group, three in a sublateral similarly disposed group, and two midway between these groups; third and fourth segments each with the same number of spines as second, but they are stronger, more appreciably recurved apically, and the submedian and intermediate series are not so distinctly separated and appear as a single rather irregular series of five thorns; fifth and sixth segments without well-developed spinules anteriorly; seventh and eighth each with a complete series of spinules near anterior margin; apical segment with two to three small spines on each side; third ventral segment with two thorns on each side, fourth with three, fifth with two, and sixth with one.