

NOTES ON NANORCHESTES

V. Two new species of *Nanorchestes* (Acari: Nanorchestidae)
from the Antarctic Peninsula and South Atlantic islandsR. W. Strandtmann¹

Abstract. Two species of *Nanorchestes* are described: *N. gressitti*, n. sp., from the South Atlantic islands of South Georgia, South Sandwich, South Orkney and South Shetland and from Anvers Island on the Antarctic Peninsula; and *N. berryi*, n. sp., from Anvers Island, Antarctic Peninsula.

In 1971 Mr Dale Berry spent a year on Anvers Island, the Antarctic Peninsula, under the auspices of National Science Foundation Grant No. GV-24359 through Texas Tech University, Lubbock, Texas. During his stay he made observations on the behavior and age-distribution of the jumping mite, *Nanorchestes*, and collected and mounted some 2200 specimens. The great majority of captures were made on microscope slides that were coated on one side with a sticky substance, placed on the ground, and picked up from 6 hr to 6 days later.

I have recently studied this collection in detail, plus 2 smaller collections made in 1965-1966; one was made by Bishop Museum personnel on Anvers I, the South Orkney Is and the South Georgia Is, and the other was made by Dr Peter J. Tilbrook on the South Shetland Is and the South Sandwich Is. These collections comprised 2 new species, which are the subject of this paper. The behavioral and biological observations made by Mr Berry will be reported on in a separate paper.

It should be noted that in a previous paper on Antarctic mites (Strandtmann 1967: 77) I erroneously assigned, albeit with reservations, the specimens of the 1965-1966 Bishop Museum collection to *Nanorchestes antarcticus*. For more details see "Comments" under the species descriptions.

Disposition of types. The holotypes and some paratypes are in the Bishop Museum, Honolulu, Hawaii (BPBM). Paratypes are deposited at the Acarology Laboratory, Ohio State University, Columbus; at the U.S. Department of Agriculture Systematic Entomology Laboratory, Beltsville, Maryland; and with Dr Pieter Theron, Institute for Zoological Research, Potchefstroom University, South Africa.

Explanation of symbols. Symbols *na*, *nb*, *ne*, *nf*, *nm*, *nr* = setae of the prodorsal sensory quadrat; *naso* = the cuticular flap, or flaps, between sensory setae *na/nf*; *oc* = ocellus; *op* = ocular plate.

All measurements given in the descriptions are in micrometres.

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***Nanorchestes gressitti* Strandtmann, new species**

Fig. 1–17

Diagnosis. Naso widely separated. Cheliceral seta bifurcate. Empodial claw with 4 pairs of rays. A large species averaging over 300.

Adults. ♂ 310 (270–370), ♀ 320 (280–400). *Dorsum.* Naso separated into 2 narrow, widely separated wings. Seta *na* 80 (70–90), with appressed cilia on apical $\frac{1}{4}$. Sensillum *nb* ca. 65, slender, flexible, with sparse, branched cilia. Ratio of distance between bases of *na* and between bases of *na* and *nb* about 2 to 1. Idiosomal setae branched treelike, ca. 13 long. *Venter.* Everted genitalia show the ♂ (Fig. 17) to have a longer tube than the ♀ (Fig. 16). Coxal seta formula 3-1-2-3. *Gnathosoma.* Cheliceral seta bifurcate, the 2 arms approximately 28/22, shorter arm secondarily branched. Cheliceral shears ca. 12.5, about $\frac{1}{4}$ length of chelicera. *Legs.* Coarsely striated. Sensory line of tarsus II moderately clavate. Empodial claw large, strong, with 4 pairs of rays on legs II, III and IV and generally 5 pairs on tarsus I. Leg chaetotaxy: I, 18-6-5-4+2; II, 11-5-4-3; III, 8-3-3-3; IV, 11-3-3-2+1. Anterior seta of telofemur I without cilia except perhaps a few apically.

Tritonymph. Length 290 (250–330). Seta *na* 70 (60–75), *nb* 62 (55–68). Cheliceral seta arms average 25/20. External genital setae 6 pairs. Otherwise as adult.

Deutonymph. Length 225 (200–250). Seta *na* 60 (55–65), *nb* approximately 55. Cheliceral seta about 23/20. Dorsal body setae ca. 12 long. Leg chaetotaxy: I, 16?-6-5-4+2; II, 11-5-4-3; III, 8-3-3-3; IV, 11-3-3-2+1.

Protonymph (Fig. 4, 5, 12). Length 180 (150–190). Seta *na* 48 (45–50), *nb* 48 (43–50). Dorsal setae 10–12 long. Genitalia with 1 pair setae and 1 pair knobs. Coxal seta formula 3-1-2-2. Leg chaetotaxy: I, 16?-6-5-4+1, II, 11-5-4-3; III, 8-3-3-3; IV, 7-3-1-0.

Larva (Fig. 6). Length 155 (150–170). Seta *na* 40 (35–43), *nb* 43 (40–46). Cheliceral seta about 15/14. Dorsal setae 15 to 18 long and distinctly 2-tined. Leg chaetotaxy: I, 14-6-5-3+1; II, 11-5-4-3; III, 8-3-3-3.

Holotype ♀, ANTARCTICA: ANTARCTIC PENIN: Anvers I, Station Pt., 64°46'S-64°03'W, 8.X.1971. Dale Berry (BPBM 12,595). Paratypes: ANTARCTIC PENIN: Anvers I. Station Pt.: ca. 640 specimens collected by Dale Berry on sticky slides, as follows: 2.IX.1971, 50TN,5DN,3PN; 3.IX.1971, 8TN; 11.IX.1971, 19TN,1PN; 16.IX.1971, 2TN,1DN; 27.IX.1971, 2TN; 28.IX.1971, 4TN; 29.IX.1971, 11TN,3DN; 1.X.1971, 2TN,6DN,3PN; 8.X.1971, 4♂,2♀, 3TN,2DN; 9.X.1971, 3DN,1PN; 13.X.1971, 1TN,1DN; 14.X.1971, 2♀, 3TN,1DN,1L; 15.X.1971, 9♂,2♀, 13TN,1DN; 22.X.1971, 3AD (sex undet.), 4♂,2♀, 16TN,1DN; 27.X.1971, 25AD (sex undet.), 44♂,26♀, 15TN,3DN,1PN; 9.XI.1971, 31AD (sex undet.), 48♂,60♀, 6TN,5DN; 15.XI.1971, 46AD (sex undet.), 52♂,60♀, 7TN,3PN; 22.XI.1971, 3♂,21♀, 1DN,2PN. Bonaparte Pt.: 64°47'S-64°05'W, ca. 1400 specimens collected by Dale Berry on sticky slides, unless otherwise indicated: 6.II.1971, at interface of wet and dry humus, 1♂,2♀, 1TN,2DN; 11.II.1971, in *Polytrichum* clump, 1PN; 14.II.1971, under rocks on moss bed, 1DN,1PN; 28.II.1971, penguin feathers under 1 metre of snow, 1DN; 4.III.1971, under rock, 1TN; 29.V.1971, on a pile of moulted penguin feathers, 1TN,2PN,1L; VI.1971, under snow in penguin molt area, 1TN,4DN,3L; 5.VIII.1971–21.IX.1971 (sic), 6AD,37TN,106DN,77PN; 4.IX.1971, 77TN,38DN,15PN; 6.IX.1971, 10TN,1PN; 8.IX.1971, 13TN,4DN; 9.IX.1971, 90TN; 13.IX.1971, 7TN,7DN; 20.IX.1971, 1AD (sex undet.), 1♂, 19TN,12DN,2PN,1L; 4.X.1971, 7TN; 13.X.1971, 6TN; 14.X.1971, 5DN,5PN; 15.X.1971, 1♂,1♀; 24.X.1971, 42AD (sex undet.), 6♂,10♀, 39TN,108DN,99PN; 26.X.1971, 2TN; 27.X.1971, 4♂,6♀, 2TN; 29.X.1971, 10AD (sex undet.), 5♂,4♀, 11TN,33DN,44PN,1L; 21.X.1971, 1♀, 29TN,42DN,3PN; 1.XI.1971, 3AD (sex undet.), 23♂,18♀, 40TN,22DN,1PN; 2.XI.1971, 10♂,14♀, 1TN; 8.XI.1971, 10AD (sex undet.), 29♂,24♀, 18TN,14DN,2PN; 13.XI.1971, 11AD (sex undet.), 2♂,1♀, 2TN,35DN,18PN; 15.XI.1971, 8AD, 46♂,23♀, 22TN,24DN; 18.XI.1971, 1♀, 8DN,2PN;

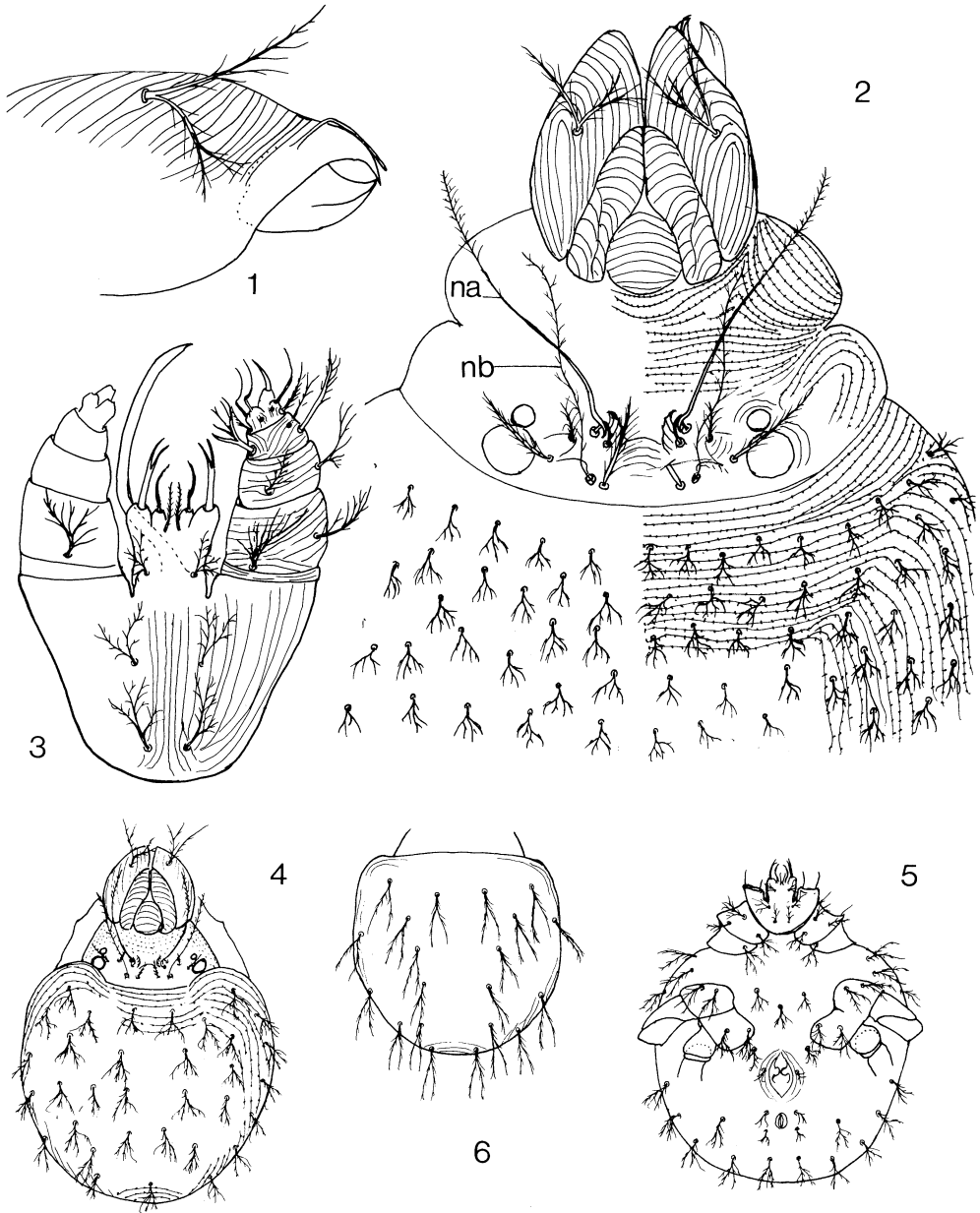


FIG. 1-6. *Nanorchestes gressitti*: 1, side view of chelicera; 2, dorsum of propodosoma; 3, ventral view of gnathosoma; 4, dorsum of protonymph; 5, venter of protonymph; 6, dorsal hysterosoma of larva.

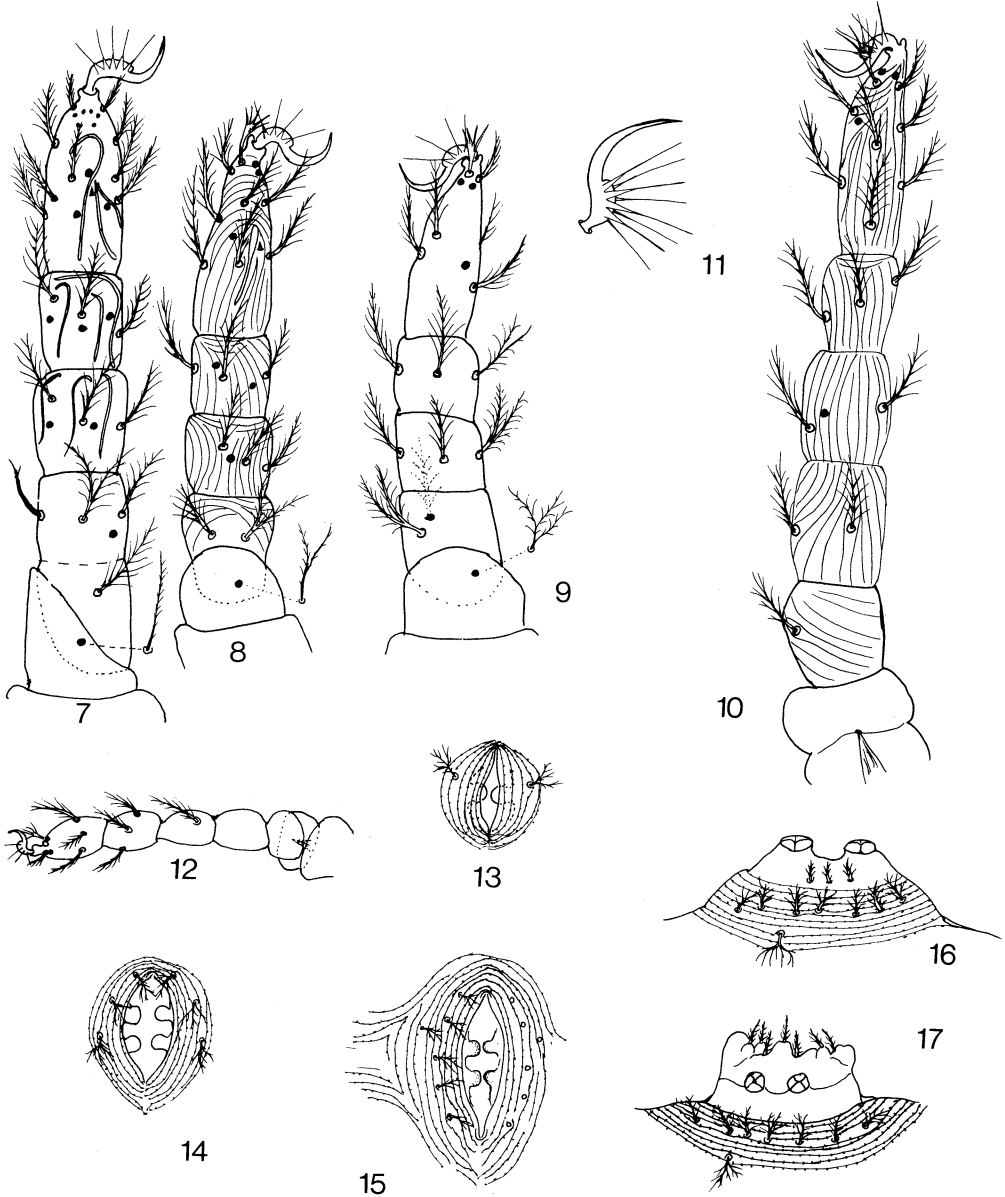


FIG. 7-17. *Nanorchestes gressitti*: 7, dorsal view of leg I; 8, dorsal view of leg II; 9, side view of leg III; 10, side view of leg IV; 11, empodial claw of leg III; 12, side view of leg IV of protonymph; 13, protonymph genitalia; 14, deutonymph genitalia; 15, tritonymph genitalia; 16, side view of everted ♀ genitalia; 17, side view of everted ♂ genitalia.

17.XI.1971, 1 ♀. One collection by J.L. Gressitt, 15.I.1966, 2 m, ex *Drepancola* (No. 6240A), 5 ♀. SOUTH ATLANTIC: South Shetland Is: Deception I, 62°57'S-60°38'W, on top of standing water, no date, Peter J. Tilbrook, 1 ♀; South Orkney Is: Monroe I, 60°36'S-46°04'W, 8.II.1966, Gressitt, 4 ♂, 6 ♀, 1 TN (previously reported as a variant of *N. antarcticus* (Strandtmann 1967: 77); South Sandwich Is: Candlemas I, 57°03'S-26°40'W, no date, Peter J. Tilbrook, 1 ♀; South Georgia Is: Grytviken, Cumberland East Bay, 50°17'S-36°26'W, 18.XI.1963, H.B. Clagg (No. SG 37B), 3 ♀.

Comments. Seta *na* increases in length by about 10 micrometres from one stage to another. In the larva it is 40, protonymph 48, deutonymph 60, tritonymph 70, and adult 80. The lengths of *na* and *nb* relative to each other change from stage to stage. In the larva, *nb* is longer than *na*, in the protonymph they are equal, and in each succeeding stage *na* becomes increasingly longer in proportion to *nb*.

The body setae of the larva are 2-tined rather than branched treelike and are almost 2× as long as in the adult.

If the collection data of Mr Berry are analyzed it will be seen that in sticky slide captures immatures greatly outnumbered the adults, except in the months of October and November when adults equalled or outnumbered immatures. This phenomenon will be discussed in greater detail in a subsequent paper.

Nanorchestes gressitti and *N. berryi* are sympatric at Station Point and Bonaparte Point, but *N. gressitti* outnumbers *N. berryi* by more than 10 to 1. Oddly enough, in spite of its abundance elsewhere, *N. gressitti* was not found on Norsel Point, the 3rd of Mr Berry's 3 collection sites.

The 3 specimens from South Georgia Is have slightly shorter setae *nm* and *nr* and the 2 arms of the cheliceral seta are a trifle shorter. Body length and lengths of *na* and *nb* are the same as in the Antarctic Peninsula specimens.

In a previous paper (Strandtmann 1967) I mentioned this species as a variant of *N. antarcticus*, suggesting it might be a new species. Now, with the better insight I have of the genus, it is clear that it is indubitably new. The 1967 paper gives an illustration of the empodial claw (Fig. 14g) and gives the locality as the South Orkney Is.

Named for the late J. Linsley Gressitt, who first introduced me to Antarctic mites.

***Nanorchestes berryi* Strandtmann, new species**

Fig. 18-27

Diagnosis. Naso consisting of 2 narrow, widely separated wings. Sensory seta *nb* branched. Cheliceral seta bifurcate. Small species, averaging 220.

Adults. ♂ 220 (200-230), ♀ 220 (200-250). *Dorsum.* Naso divided into 2 narrow wings, widely separated. Ratio of distance between bases of setae *na* and between bases of *na* and *nb* about 2.5 to 1. Seta *na* 48 (45-50) with short, close cilia on apical 1/3, sensillum *nb* 35 (30-40) with 2 or 3 branches and sparse cilia. Idiosomal setae about 7-8 long, branched treelike. *Venter.* With no unusual features other than that the genital and eugenital setae seem smaller in proportion to the ventral setae than in other species. Coxal seta formula 3-1-2-3. *Gnathosoma.* Cheliceral seta bifurcate, 1 or both arms secondarily branched. Lengths of 2 arms approximately 20 and 17. Cheliceral shears short, ca. 8. Rutella 2-tined. Basal palpcoxal seta not forked. Claw-bearing tubercle on palp tarsus prominent (Fig. 21). *Legs.* Sensory line on tarsus II only slightly clavate

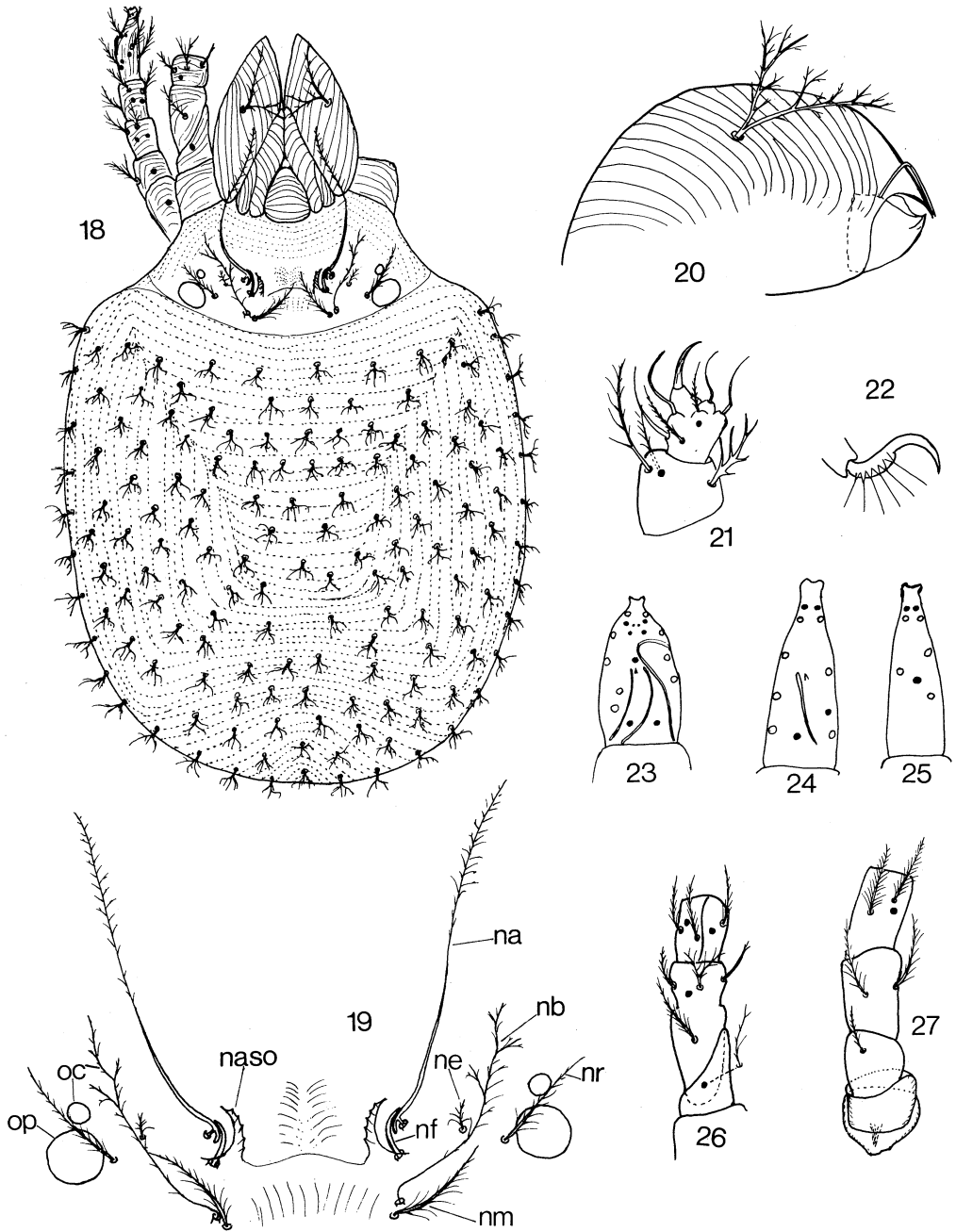


FIG. 18-27. *Nanorchestes berryi*: 18, dorsum; 19, enlarged view of prodorsal sensory quadrat; 20, side view of chelicera; 21, palp tibia and tarsus; 22, empodial claw; 23-25, dorsal views of tarsi I, II, and III, respectively, showing setal number, sensory lines, and *famuli*; 26, dorsal view of left genu, femur, and trochanter of leg I; 27, ventral view of genu, femur and trochanter of leg IV.

(Fig. 24). On telofemur I dorsal seta bifurcate and anterior seta strong and smooth with only a few small cilia apically. Empodial claw of tarsi with 6 pairs of rays basally (Fig. 22). Leg chaetotaxy: I, 18-6-5-4+2; II, 11-5-4-3; III, 8-3-3-3; IV, 11-3-3-2+1.

Tritonymph. Length 210 (180-230). Seta *na* 45, *nb* 32. Cheliceral seta 18/14. 6 pairs genital setae; no eugenital setae. Otherwise as adult.

Deutonymph. Length 180. Seta *na* 35, *nb* 25. 3 pairs genital setae, 2 pairs genital knobs, no eugenital setae. Leg chaetotaxy: I, ?-6-5-4+2; II, 11-5-4-3; III, 8-3-3-3; IV, 11-3-3-2+1.

Holotype ♀, ANTARCTICA: ANTARCTIC PENIN: Anvers Island: Norsel Pt., 64°46'S-64°06'W, 22.X.1971, Dale Berry (BPBM 12,596). The type is the middle of 3 ♀ mounted on the same slide. Paratypes. ANTARCTIC PENIN: Anvers I. Norsel Pt., ca. 90 specimens including 1 collection of 4 specimens by Jack Armstrong in March 1965 and collections between July and October 1971 by Dale Berry, as follows: 29.III.1965, ex *Stereocaulon*, Jack Armstrong, 1 ♂, 3 ♀; 23.VII.1971, ex *Polytrichum*, 5N (undet. stage); 22.X.1971, all sticky slide captures, including 2 specimens on slide with holotype, 5 ♂, 48 ♀, 5 sex undet.; 23.X.1971, ex *Polytrichum* bed, 1 ♂, 7 ♀, 2AD (undet. sex); 24.X.1971, Dunkle hilltop, areas 6 & 7, 1 ♂, 2 ♀, 9AD (sex undet.); 27.X.1971, ex rocks, mosses and grass, 2 ♀, 1N. Bonaparte Pt.: 64°47'S-64°05'W, ca. 95 specimens collected by Dale Berry between June and November 1971 as follows: 14.VI.1971, grasses and moss, 1TN, 1DN; 15.VI.1971, frozen moss, 1 ♀; 20.IX.1971, 1 ♀; 24.IX.1971, 1 ♂, 11 ♀; 15.X.1971, 1 ♂, 1 ♀; 21.X.1971, 2 ♂, 3 ♀; 23.X.1971, sticky slides on *Polytrichum* bed, 15 ♂, 26 ♀, 2TN; 28.X.1971, sticky slides on *Polytrichum*-lichen substrate, 10 ♂, 25 ♀, 30AD (sex undet.); 30.X.1971, 2 ♂, 2 ♀, 1AD (sex undet.); 8.XI.1971, 2 ♀.

Other specimens examined. Assigned provisionally to *N. berryi*, but not included as paratypes are 17 specimens from Anvers I, Station Pt., 64°46'S-64°03'W, collected by Dale Berry on sticky slides, as follows: 22.X.1971, 1 ♂; 27.X.1971, 1 ♂, 1 ♀; 2.XI.1971, 2 ♂, 10 ♀; 15.XI.1971, 2 ♀.

Comments. Specimens from Station Point are atypical in that seta *na* is 60 and *nb* 58 as opposed to *na* 50 and *nb* 48 in the typical form, and that *nb* is not so obviously branched. In all other respects they seem to conform to typical *N. berryi*.

Nanorchestes berryi is sympatric with *N. gressitti* at Station Point and Bonaparte Point, but at Norsel Point it is the sole representative of the genus. This is the species that was mentioned by Strandtmann (1967: 77, Fig. 14f) as variant No. 3 of *Nanorchestes antarcticus* from Norsel Point.

Named in honor of Dale Berry, who collected most of these mites.

LITERATURE CITED

Strandtmann, R.W. 1967. Terrestrial Prostigmata (trombidiform mites). *Antarct. Res. Ser.* 10: 51-80.