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MILLIPEDES FROM AUSTRALIA, 2: ANTICHIROPODINI FROM VICTORIA (DIPLOPODA, POLYDESMIDA, PARADOXOSOMATIDAE) [1)]

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ABSTRACT

Description of two new species and a new subspecies in the genus *Pogonosternum* Jeekel, viz. *P. laetificum* nov. spec., *P. adrianae* nov. spec., and *P. nigrovirgatum infuscum* nov. subspec. from eastern Victoria. From the same area a second Victorian genus of the tribe Antichiropodini, *Dicranogonus pix* nov. gen., nov. spec., is described, which appears to be related most closely to *Pseudostrongylosoma* Verhoeff from North Queensland.

INTRODUCTION

The known Victorian paradoxosomatid fauna consists of three species of the tribe Australiosomatini and one of the tribe Antichiropodini: *Pogonosternum nigrovirgatum* (Carl) from Melbourne. A second species of *Pogonosternum*, *P. coniferum* Jeekel, was described from 'Australia' without further data. On account of its quite close relationship to *P. nigrovirgatum* it was presumably collected also in Victoria.

The Antichiropodini treated in the present paper were obtained during a field trip by the author and his wife along the east coast of Australia in 1980 (Jeekel, 1981). Unfortunately, there was only an opportunity to travel through the coastal region of Victoria east of Melbourne during six days in November, and the entire interior of the state and the area west of Melbourne had to remain unexplored. In spite of this, the results of the trip were rewarding

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and two species and a new subspecies of *Pogonosternum* as well as a representative of a new genus, *Dicranogonus pix* nov. gen., nov. spec., were collected. Some additional species of *Pogonosternum* were obtained, but are represented by female specimens only, and these remain unattended for the time being. It is interesting to note that apparently no material of either of the previously recorded species was collected, and that most of the new taxa were taken at their type-locality only. Obviously, we are still quite remote from having even a rough insight in the Victorian fauna.

Pogonosternum Jeekel

Pogonosternum Jeekel, 1965: 7.

Remarks.-

This genus was based on two species, *P. nigrovirgatum* (Carl, 1902), the type, and *P. coniferum* Jeekel, 1965. With the discovery of the two new species it begins to manifest itself as a well-defined taxon, homogeneous and rather isolated in the tribe Antichiropodini. It is related to the genus *Antichiropus* Attems, which is well represented in Western Australia and has been recorded recently also from South Australia (Jeekel, 1982). Its relationship with the New South Wales and Queensland Antichiropodini is not yet clarified, but perhaps *Aulacoporus* Verhoeff comes nearest.

Pogonosternum apparently is the dominant antichiropodine genus in Victoria; it is not confined to that state, since it has a representative in northwestern Tasmania (unpublished record).

The examination of the new species, which are somewhat dissimilar in gonopod structure to the two previously known, gives an opportunity for a renewed attempt at a homologization of the various processes of the gonopod telopodite. The morphology of the apical part of the gonopods is quite complicated and the previous identification of the various elements is not entirely satisfactory.

Earlier (Jeekel, 1965: figs. 6-7; see also fig. 3 of the present paper) a drawing of the gonopods was given in which, besides the solenomerite (k) and the femoral process (f), three processes (a, b, and c) were distinguished which together were designated as tibiotarsal branches. It was suggested that in the course of evolution the tibiotarsus became deeply split into several branches (as is also the case in certain australiosomatine genera, like *Hoplatessara* Verhoeff, *Cladethosoma* Chamberlin, *Heterocladosoma* Jeekel, etc.), which later became isolated and dislocated. A comparison of the gonopods of the four species now known has lead to a somewhat different interpretation.

There can be little doubt that the identification of process f as femoral process is correct. The process is clearly a continuation of the femur, without any chitinous lines marking an articular discontinuity.

For the identification of processes a, b and c I have adopted the admittedly hypothetical assumption which has been used in previous homologizations in paradoxosomatid gonopods, that the relation of the base of the processes towards the course of the spermal channel is decisive. In the present case this means that only process b can be homologous to the tibiotarsus, emanating as it does medio-caudally of the course of the channel (see also the discussion on the homologization of the processes of the gonopods in the Australiosomatini in Jeekel, 1968: 21-23).

With regard to process c it is to be noted that its base is situated latero-anteriorly of the course of the spermal channel, and quite remote from that of the tibiotarsus. On account of its emanation from the part of the gonopod situated distally of the base of the femoral process and proximally of the divergence of tibiotarsus and solenomerite, it is assumed to be a postfemoral process.

Process a, which is present only in *P. nigrovirgatum* and *P. coniferum* and has the appearance of a small lobe or hump, may be more of an incidental nature. It is located at what appears to be the transition between femur and postfemur and might be identified as a swelling at the junction of the two joints. It does not appear to have any particular homolog in other paradoxosomatid gonopods.

The proposed homologization involves the assumption of an evolutionary tendency in the

antichiropodine gonopod of considerable elongation of the postfemoral section in relation to the other articular sections of the telopodite (cfr. fig. 1, p). The establishment of such a tendency, which is quite opposite to the usual reduction or disappearance of the postfemur in the paradoxosomatid gonopods, can be of much importance to the understanding of the morphology of the antichiropodine gonopod in general.

Key to the species.-

1. Dorsum with a continuous median yellow band. Femoral process of gonopods laminate, apically finely split, or a two-pronged process curving laterad. No lobe at junction between the femoral and postfemoral sections of the gonopod telopodite..... 2
-. Dorsum with two paramedian yellow bands, divided by a narrow dark stripe. Femoral process of gonopods laminate, not apically split. At the junction between the femoral and postfemoral sections of the gonopod telopodite a rounded lobe (fig. 3: a)..... 3
2. Larger species: width of male 3.0 to 3.2 mm. Femur of gonopods elongate, slender. The femoral process laminate, its margins minutely serrulate, projecting distad of postfemoral process..... ..... *P. adrianae* n.sp.
-. Smaller species: width of male 2.3 mm. Femur of gonopods not particularly elongate or slender. Femoral process rod-like, distally split into two separate acuminate prongs curving laterad. Postfemoral process projecting distad of femoral process..... *P. laetificum* n.sp.
3. Tibiotarsus of gonopods elongate and apically recurved. Sternites with strong cones at the base of the coxae, pointing ventrad..... *P. coniferum* Jeekel
-. Tibiotarsus shorter, straight. Sternites without cones at the base of the coxae.... 4
4. Groundcolour brownish, with two paramedian yellow bands. Width of male 1.6 to 2.0 mm. Anterior side of femoral process of gonopods convex..... ..... *P. nigrovirgatum infuscum* n.ssp.
-. Groundcolour yellow, with a narrow median dark stripe and two broader sublateral blackish brown longitudinal bands. Width of male 2.7 mm. Femoral process of gonopods with anterior side concave..... ..... *P. n. nigrovirgatum* (Carl)

Pogonosternum laetificum nov. spec.

Material.-

Sta. 93. Ferntree Gully National Park, 18 km NNE Dandenong, 18.XI.1980 (along nature track in temperate rainforest with ferntrees, under logs and litter and in moulded trees), ♂ holotype, 3 ♀ paratypes, 1 juv. ♀ (19 somites).

Description.-

Colour: Head brownish yellow except for the frontal and vertigial regions, which are blackish brown. Antennae dark brown, the distal margins of the antennomeres annulated with yellow, the intersegmental membranes and the tip whitish. Collum blackish brown, the extreme lateral margin dark reddish brown. A rather broad median yellow band, varying in width between one third and one half of the total width of the collum, broadest just before the posterior margin and narrowest at one third from the anterior margin. Somites blackish brown, with an almost parallel-sided yellow median band of about three fifths of the largest width of the somites, and constricted very slightly in the waist area. Sides below the pore level brownish yellow to light brown. Venter, sternites and legs also light yellowish brown to light brown. Anal somite and valves blackish brown, with yellowish margins. A yellow median band includes the entire epiproct. Underside of epiproct also yellowish. Hypoproct pale brownish. Juvenile whitish.

Width: ♂: 2.3 mm, ♀: 2.3-2.7 mm, juv. (19 s.): 2.0 mm.

Head and antennae: Antennal sockets separated by 1.75 times the diameter of a socket or by 0.8 times the length of the 2nd antennomere, Postantennal groove rather deep and wide, the wall in front moderately prominent. Beanshaped area behind the antennal sockets distinctly but finely demarcated, rather convex. Vertex transversely faintly convex in the middle, widely convex laterally, and longitudinally moderately and evenly convex. Antennomeres subcylindrical, each widening distad, the 6th antennomere faintly convex. Relative length of antennomeres 2 to 6: 1.00, 0.90, 0.85, 0.80, 0.85.

Collum: Anterior border along lateral sides almost straight, scarcely emarginate. Posterior border faintly emarginate in the middle. Surface longitudinally widely convex, a little more strongly convex towards the anterior border, and transversely weakly convex in the middle, much more strongly so laterally, with the lateral side a little incurved so that the lateral margin is invisible from above. Pre-

marginal furrow of lateral sides disappearing at the level of the antennal sockets.

Somites: Waist very narrow, the rib-sculpture dorsally present, but very weakly developed. Below the level of the pores down to the level of the stigmata the waist has a fine and rather wide longitudinal striation. Transverse furrow present from the 5th to the 17th somite, quite weakly impressed in the 17th. Its sculpture vague: only some fine and weak longitudinal wrinkles. No pleural keels.

Paranota: Paranota of 2nd somite invisible from above. Those of the 3rd and 4th somites without distinct furrow, but only indicated by some irregular longitudinal wrinkles.

Sternites and legs: Sternites of middle somites longer than wide (ratio 1.25 : 1.00). No sternal cones. Pubescence rather dense, the setae of moderate length. Sternite of 4th somite rather broad, widely concave, moderately setiferous with rather long setae. Sternite of 5th somite with a broad and rather short process between the anterior coxae, about as wide as the distance between the anterior coxae and slightly constricted at the base. Distal border widely rounded, the anterior surface apically somewhat concave and with a dense brush of short setae. Process directed a little cephalad but not projecting in front of the sternite, its posterior surface moderately pubescent with long hairs. Posterior part of sternite not or scarcely raised above the level of the metasomal ring, with two paramedian areas of long setae. Sternite of 6th somite flattened, with a wide transverse furrow and without longitudinal furrow. Coxal sockets scarcely raised. Pubescence in four areas, setae long. Sternite of 7th somite with a low rounded transverse ridge in front of the gonopod aperture. Sternite of 8th somite flattened in the anterior half, but not entirely level with the ventral side of the metasomal ring. Anterior half without longitudinal impression, the posterior half unmodified. Pubescence rather long and rather dense. Coxae of legs of the posterior pair of the 6th and 7th somites and of the anterior pair of the 8th somite a little more widely separated than of the other legs. Legs with the femora not arched, ventrally densely pubescent, dorsal pubescence unapparent, except in the apical part of the tarsi. Scopulae present on all pregonopodial legs, rather abruptly absent in the legs of the 7th and subsequent somites. Relative length of podomeres 2 to 6: 0.70, 1.00, 0.65, 0.60, 0.65. Coxae of legs of 5th somite without cones. Coxae of legs of 6th somite medially faintly produced into a thick rounded cone.

Anal somite: Upper profile of epiproct faintly convex. Epiproct with sides distally straightly converging, without distal rounding. The apex with two rounded paramedian cones, separated by a distinct emargination. Setae not on tubercles. Paraprocts with flattened setiferous tubercles. Hypoproct a little elongate parabolical, the setiferous tubercles almost obsolete.

Gonopods: (fig. 1) The femoral section not particularly elongate or slender. Femoral process distally branched into a shorter and a longer acuminate prong. No lobe at junction of femoral and postfemoral sections, the postfemur relatively elongate. Tibiotarsus longish, curved proximad of apex.

Female: Head with the clypeus not as deeply impressed as in the male. Antennal sockets separated by 1.9 times the diameter of a socket or by the length of the 2nd antennomere. Vertex transversely widely convex, not flattened in the middle. Relative length of antennomeres 2 to 6: 1.00, 0.90, 0.95, 0.80, 0.80. Collum transversely evenly convex, the sides not incurved but almost perpendicular. Lateral sides more narrowly rounded than in the male. Somites with pleural keels: in the 2nd somite a small caudally produced lappet, in the 3rd and 4th somites a rounded ridge. Sternites of middle somites a little longer than wide (ratio 1.1 : 1.0). Longitudinal impression of sternites less impressed, not furrowlike but a wide concavity. Pubescence of sternites and legs less dense than in the male but also rather long. Relative length of podomeres 2 to 6: 0.90, 1.00, 0.50, 0.50, 0.65. Coxae of 2nd pair of legs caudally expanded into a rounded, somewhat sickle-shaped lobe pointing ventrad. Margin of somite behind the coxae raised, crestlike, with two wide paramedian emarginations embracing the coxae.

In the characters not mentioned above the species follows the description of *P. nigrovirgatum* (Carl) (cfr. Jeekel, 1965).

Pogonosternum adrianae nov. spec.

Material.-

Sta. 89. Toongabbie, 18 km NNE Traralgon, 15.XI.1980 (margin of Eucalyptus forest, with grassland, under logs), ♂ holotype, 1 ♂ paratype, 1 juv. ♂ (18 somites), 1 juv. ♀ (19 somites).

Description.-

Colour: Head blackish brown, darkest in the frontal and vertigial regions. Lateral sclerites pale brown, the margins paler. Labral area and beanshaped postantennal area pale yellowish brown. Antennae black, the intersegmental membranes pale brownish, the tip whitish. Collum black, a yellow median band, about as wide as one third of the total width of the collum, and narrowing a little halfway. Somites black, with a continuous median yellow band of one third of the largest width of the somites, constricted very slightly in the waist area. Venter, sternites and legs dark reddish brown, the distal podomeres infuscate, the intersegmental membranes and the tarsal tips pale brownish. Anal somite black, the yellow median stripe includes the entire epiproct, which is also ventrally yellow. Paraprocts black, with pale brownish margins. Hypoproct pale brownish. The paratype is less strongly infuscate and has the sides of the somites below the level of the pores pale brownish. Juvenile specimens are whitish.

Width: ♂: 3.0-3.2 mm; juv. ♀ (19 s.): 2.1 mm; juv. ♂ (18 s.): 1.8 mm.

Differing otherwise from the previous species in the following characters:

Head and antennae: Antennal sockets separated by 1.5 times the diameter of a socket or by 0.75 times the length of the 2nd antennomere. Beanshaped area behind the antennal sockets hardly inflated. Vertex transversely almost flat in the middle, to become widely convex more laterally. 6th antennomere not inflated. Relative length of antennomere 2 to 6: 1.00, 1.00, 0.85, 0.85, 0.85.

Collum: Anterior border towards the lateral sides faintly concave, as in *P. coniferum* Jeekel. Posterior margin faintly concave in the middle, widely convex more laterally and widely concave towards the sides. The lateral margin rounded as in *P. coniferum*, but a little more strongly convex. Surface longitudinally rather convex in the anterior half, almost flat in the posterior half.

Somites: Waist narrow, with fine but distinct longitudinal ribs down to the level of the pores. Transverse furrow weakly impressed on the 5th, 6th and 17th somites, more distinctly impressed and with a fine sculpture of longitudinal wrinkles in somites 7 to 16. Pleural keels represented in the 2nd somite by a narrow ridge, without caudal lappet.

Paranota: Paranota of 2nd somite in lateral aspect curving upward caudally. Paranota of 3rd and 4th somites represented by low swellings, demarcated dorsally by a furrow curving upward anteriorly and posteriorly.

Sternites and legs: No sternal cones, only vague traces near the posterior coxae in the posterior somites. Pubescence dense, arranged in four quadrants, the setae on minute granules, rather long in the anterior half of the body, shorter in the posterior half. Coxae of anterior legs of the 5th somite with a small median cone, the coxae of the posterior pair with an abortive cone. Coxae of legs of 6th somite without cones. Relative length of podomeres 2 to 6: 0.75, 1.00, 0.55, 0.60, 0.65.

Anal somite: Epiproct longish, with sides concavely converging, not parallel-sided towards the apex, but a little convex. Apex rather narrow with two low terminal cones separated by a narrow emargination. Setae on flattened granules. Hypoproct with setae on weak granules.

Gonopods: (fig. 2) Characterized particularly by the long and slender femur. Femoral process laminate, apically split into two small laminae, the margins partly minutely serrulate. Postfemoral process curved, not projecting distad of femoral process. Postfemoral section of telopodite short, without lobe at the junction with the femoral section. Tibiotarsus crooked halfway, the apical half pointing distad.

Female: Unknown.

Dedication.-

P. adrianae is named after its collector, Mrs. A.M. Jeekel-Rijvers, in memory of the countless hours of millipede collecting spent together in the Australian bush, haunted by the

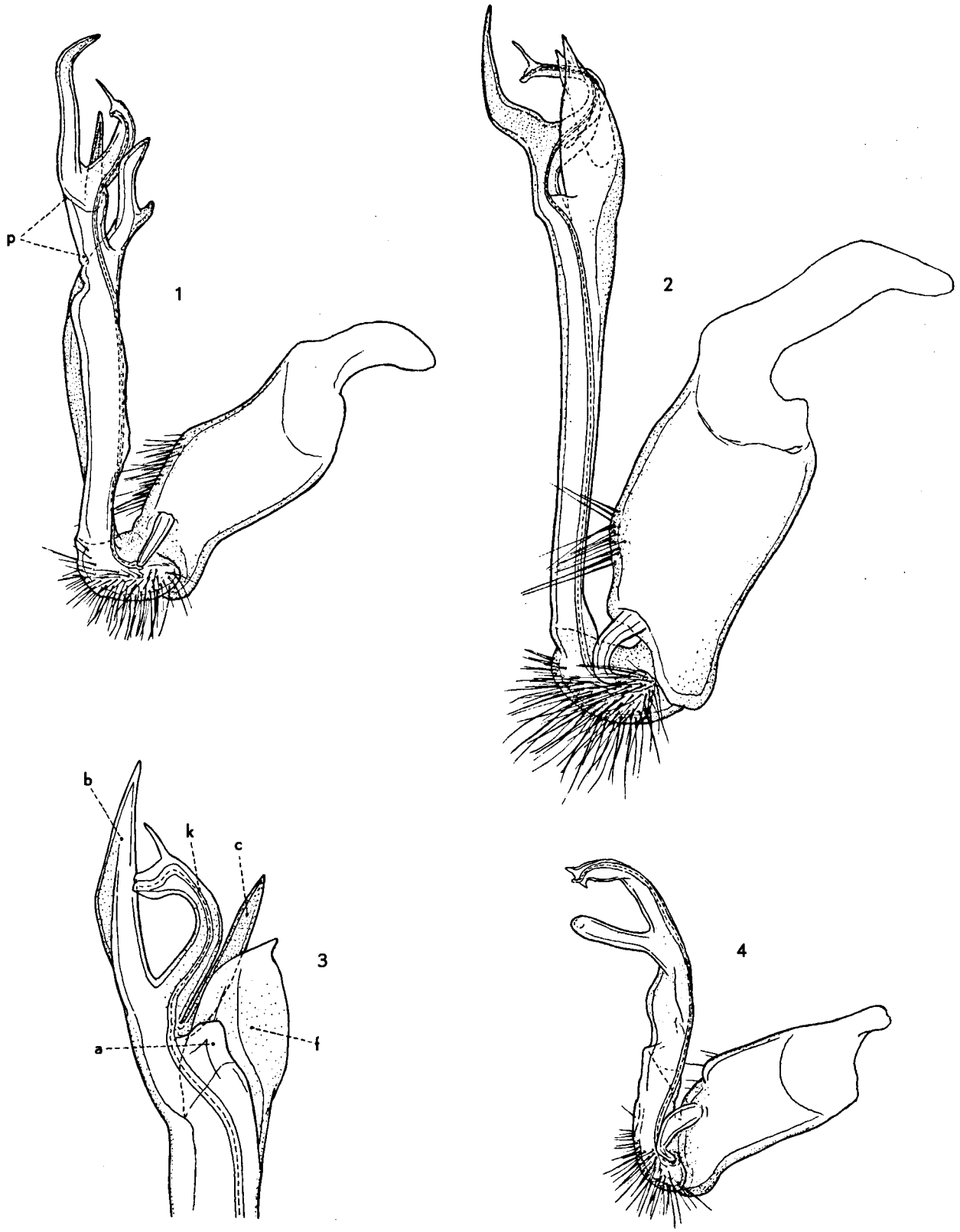

Fig. 1. *Pogonosternum laetificum* nov. spec., holotype ♂, right gonopod, medial aspect. p: postfemoral section of telopodite.- Fig. 2. *Pogonosternum adrianae* nov. spec., holotype ♂, right gonopod, medial aspect.- Fig. 3. *Pogonosternum nigrovirgatum infuscum* nov. subspec., holotype ♂, apical part of telopodite of right gonopod, medial aspect. a: lobe at junction of femoral and postfemoral sections of telopodite; b: tibiotarsus; c: postfemoral process; k: solenomerite; f: femoral process.- Fig. 4. *Dicranogonus pix* nov. gen., nov. spec., holotype ♂, right gonopod, medial aspect.

inconveniences of either heat, flies, mosquitoes, ticks or leeches, and amidst the potential hazards of the worlds deadliest snakes and spiders.

Pogonosternum nigrovirgatum (Carl)

Strongylosoma nigrovirgatum Carl, 1902: 567, pl. 10, figs. 1-2.
Akamptogonus nirgovirgatus; Attems, 1937: 254, fig. 316.
Pogonosternum nirgovirgatum; Jeekel, 1965: 9, figs. 1, 3-6: Jeekel, 1968: 30.

Previous records.-

Melbourne (Carl), Australia, probably Victoria (Jeekel, 1965).

Remarks.-

In 1965 it was remarked that Carl described this species as having pleural keels in the 2nd to 4th somites, whereas the male examined was totally lacking these keels. It has become obvious now that in *Pogonosternum* there is a sexual dimorphy with regard to this character. It seems probable that Carl described the female condition of his species.

Pogonosternum nigrovirgatum infuscum
nov. subspec.

Material.-

Sta. 87. Mt. Taylor, 11 km NNW Bairnsdale, 14.XI.1980 (fragment of Eucalyptus forest, along roadside between grassland, under logs and litter), 19 ♂, 12 ♀.

Description.-

Colour: The present material is much darker than the nominate subspecies, in which the ground colour is yellow, with dark longitudinal bands. In the most heavily infuscated specimens the colour is as follows. Head blackish brown, darkest in the frontal and vertigial regions. Lateral sclerites dark brown, the margins paler. Labral area and bean-shaped area behind the antennal sockets pale brownish. Antennae black, the intersegmental membranes pale brownish, the tip whitish. Collum blackish brown. A broad median band, widest (i.e. about half the width of the collum) at caudal margin and at anterior margin, and constricted at one third from the anterior margin to about one third of the width of the collum, yellow. Somites with a narrow dark brown median band dividing a broad yellow longitudinal band which varies in width between five and six eighths of the largest diameter of the somites, widest at posterior margin of metatergites, narrowest in the prosomites, but not constricted in waist area. Pore area of poriferous somites also yellow. Lateral sides dark brown. Venter and sternites pale brownish. Legs with dark to blackish brown upper side, paler ventrally. No pale intersegmental membranes, but tip of tarsi pale. Anal somite with a yellow median band including the epiproct entirely, but with a small dark median streak anteriorly. Ventral side of epiproct also yellow. Remainder of anal somite and paraprocts blackish brown, the margins pale brown. Hypoproct pale brownish. Less dark coloured specimens are much paler brown, with pale sides, approaching a pattern as described for the nominate subspecies. Also the poreless somites have a yellow lateral spot. Nevertheless, the groundcolour is in all cases brown.

Width: For the typical subspecies Carl gave a general width of 2 to 3 mm; the present writer described a male of 2.7 mm width. The size of the present specimens is smaller: ♂: 1.6-2.0 mm, ♀: 1.9-2.3 mm.

Differing otherwise from *P. laetificum* and *P. nigrovirgatum* in the following characters:

Head and antennae: Antennal sockets separated by 1.3 times the diameter of a socket or by 0.65 times the length of the 2nd antennomere. Beanshaped area distinct, the surface a little inflated. Vertex transversely weakly convex, laterally a little more convex. Relative length of antennomeres 2 to 6: 1.00, 0.90, 0.80, 0.80, 0.70.

Collum: As in *P. nigrovirgatum*.

Somites: Waist distinctly ribbed down to just below the level of the pores, below that level down to the level of the stigmata finely longitudinally striate. Transverse furrow of metatergites weakly impressed in the 5th and 17th somites, more distinct in the 6th to 16th somites, but without apparent sculpture.

Paranota: As in *P. nigrovirgatum*.

Sternites and legs: Sternites of middle so-

mites longer than wide (ratio 1.6 : 1.0). Pubescence of sternites long, but less dense than in *P. adrianae*. Sternite of 7th somite with on each side, latero-cephalad of gonopod aperture, a short and weakly prominent transverse rounded ridge. Relative length of podomeres 2 to 6: 0.80, 1.00, 0.70, 0.65, 0.65. Scopulae present on all pregonopodial legs; the tarsi of the legs of the 7th somite with a small distal brush. Coxae of legs of 5th somite each with a small cone on the medial side. Coxae of anterior legs of 6th somite with a low ventral cone. Coxae of legs of 8th somite medially weakly produced in a low rounded cone.

Anal somite: Epiproct with the sides towards the apex a little convex. Apex emarginate, with a pair of low cones. Paraprocts with the setiferous tubercles flattened. Hypoproct with abortive setiferous tubercles.

Gonopods: (fig. 3) Entirely similar to those of the nominate subspecies, but the femoral process with its anterior margin convex, only slightly emarginate near the apex. The lobe at the junction of femur and postfemur smaller, more widely rounded.

Female: Agreeing with the female of *P. laetificum* except in the following data: Antennal sockets separated by 1.45 times the diameter of a socket or by 0.95 times the length of the 2nd antennomere. Relative length of antennomeres 2 to 6: 1.00, 0.90, 0.85, 0.80, 0.85. Sternites of middle somites as long as wide. Relative length of podomeres 2 to 6: 0.80, 1.00, 0.60, 0.45, 0.75. Coxae of 2nd pair of legs with on the caudal side a rather acuminate conical production, pointing dorsad. Epigynal structure consisting of an emargination behind the coxae, with in the middle only a slight acuminate production pointing cephalad, the lateral productions acuminate. Surface behind the emargination somewhat excavate and a little wrinkled, laterally bordered by a ridge diverging a little caudad.

Remarks.-

This new subspecies appears to differ from the nominate form in its smaller size, darker groundcolour, and the shape of the femoral process of the gonopods. It is rather surprising that this closely similar form occurs about 200 km east of the type locality (Melbourne) of *P. n. nigrovirgatum*, especially when we take into account the restricted range of most Australian paradoxosomatids.

Pogonosternum coniferum Jeekel

Pogonosternum coniferum Jeekel, 1965: 13, figs. 2, 7; Jeekel, 1968: 30.

Previous record.-

Australia (Jeekel, 1965).

Remarks.-

No new material of this species has come to light. Considering its close relationship to *P. nigrovirgatum* and the fact that *Pogonosternum* on the Australian mainland has not been recorded outside Victoria, it has become likely that *P. coniferum* is a Victorian species also.

Dicranogonus nov. gen.

Generic diagnosis.-

Small-sized Paradoxosomatidae with 20 somites and a normal poreformula. Vertex of male normally spherical. Antennae of moderate length, clavate, the antennomeres subcylindrical to obconical.

Somites moderately constricted; the waist moderately wide, without apparent sculpture. Metatergites smooth, with a transverse row of rather long setae behind the waist. Transverse furrow present from the 5th somite onwards, well impressed. Pleural keels well developed in a number of anterior somites, visible up to the somites of the middle part of the body.

Paranota rather weakly developed.

Sternites of male longer than wide. Sternite of 5th somite of male with a process between the anterior legs. Legs of moderate length; the first leg of the male with a small femoral tubercle. Tibial and tarsal scopulae present on most legs, but only in the anterior legs well developed.

Gonopods with coxa of moderate length, rather stout. Prefemur elongate, its axis in line with that of the femorite. Femorite not particu-

larly elongate, the spermal channel following an almost straight course along the anterior surface. Femoral end marked by a slight constriction. Apical portion of telopodite consisting of a presumptive postfemoral section from which emanate two apical elements: a solenomerite and a tibiotarsus.

Type-species.-

Dicranogonus pix nov. spec.

Remarks.-

This genus, the type of which rates among the smallest of Australian paradoxosomatids, seems to stand rather isolated. It is characterized mainly by the extremely simple structure of the gonopods, which superficially suggests the condition found e.g. in the Palearctic genus *Strongylosoma* Brandt. Obviously this similarity is a matter of convergence as closer comparison immediately reveals.

It seems not improbable that the structure of the gonopods in *Dicranogonus* at least in part is the result of evolutionary tendencies of reduction, involving the loss of the femoral and postfemoral processes of other Antichiropodini. On the other hand it seems likely also that the relative proportions of the femoral, postfemoral and tibiotarsal sections and the length of the solenomerite represent primitive features.

With respect to gonopod morphology, *Dicranogonus* seems to come nearest to the other small-sized Antichiropodini, viz. *Notodesmus* Chamberlin, 1920, from Tasmania, *Tridactylogonus* Jeekel, 1982, from South Australia, and *Pseudostrongylosoma* Verhoeff, 1924, from northern Queensland. In the two first named genera the telopodite of the gonopods has a postfemoral process, lacking in *Dicranogonus*. *Notodesmus* differs furthermore in the shape of the solenomerite, which is relatively long and describes a semicircular curve in lateral direction. *Tridactylogonus* is distinct in having a very clear demarcation between the femoral and postfemoral sections of the telopodite of the gonopods and the more elongate postfemoral section.

Pseudostrongylosoma appears to agree with *Dicranogonus* in having only a tibiotarsus and a solenomerite, but the latter is triangularly expanded halfway, and the tibiotarsus is a much more substantial element, projecting a little distad of the apex of the solenomerite. Moreover, *Pseudostrongylosoma* differs in the absence of paranota, even on the 3rd and 4th somites, and the lack of a transverse furrow on the metatergites.

The presence of paranota in *Dicranogonus* distinguishes this genus immediately from the known members of the genus *Pogonosternum*.

The genus *Dicranogonus* has a second, as yet undescribed, species on the islands of the Furneaux group between Victoria and north-eastern Tasmania.

Dicranogonus pix nov. spec.

Material.-

Sta. 85. 13 km SE Buchan, 14.XI.1980 (Eucalyptus forest, State forest, under logs), 38 ♂, 29 ♀ paratypes.

Sta. 86. 4 km ESE Bruthen, 14.XI.1980 (Eucalyptus forest, State forest, under logs), ♂ holotype, 3 ♂, 6 ♀ paratypes.

Sta. 87. Mt. Taylor, 11 km NNW Bairnsdale, 14.XI.1980 (fragment of Eucalyptus forest, along roadside between grassland, under logs and litter), 46 ♂, 73 ♀ paratypes.

Description.-

Colour: Head blackish brown, the vertex darkest; postantennal beanshaped area pale brownish. Antennae blackish brown, the intersegmental membranes scarcely paler, the extreme apex whitish. Somites blackish brown, the venter and sternites paler brown. Legs blackish brown, darkest side of the distal podomeres, tip of tarsi pale brown, intersegmental membranes scarcely paler. Anal somite blackish brown, the paraprocts and the hypoproct paler brownish. In many specimens the general colour is less blackish, and the posterior third of the paranota, especially of the poriferous ones, yellowish brown. Specimens not in full colour are castaneous or brownish yellow without indication of a particular colour pattern.

Width: ♂: 1.25-1.45 mm, ♀: 1.65-1.95 mm.

Head and antennae: Labrum moderately deeply and moderately widely emarginate. Clypeus moderately impressed towards the labrum, a weak impression below the antennal sockets. Lateral border of clypeus straight, faintly concave

near labrum. Pubescence moderately dense up to the frontal region. Pubescence of lateral sclerites sparse. Setae in part rather long. Frontal region not demarcated from clypeus or vertex. Antennae separated by 1.6 times the diameter of a socket or by 0.7 times the length of the 2nd antennomere. Postantennal groove moderately deep, rather wide; the wall in front weakly prominent. Postantennal beanshaped area distinctly demarcated, distinctly inflated. Vertex longitudinally widely convex, only a little more convex near the collum, transversely widely and evenly convex. Surface smooth and polished, weakly setiferous in the lower part, upper part hairless. Vertigial sulcus quite weakly impressed, with some fine transverse wrinkles, running downward to almost the upper level of the antennal sockets. Antennae of moderate length, distinctly clavate with the 5th and 6th antennomeres thickest. 2nd to 4th antennomeres subcylindrical-obconical, the 5th obconical, the 6th subcylindrical-obconical and a little inflated. Pubescence moderate in proximal antennomeres to rather dense in the distal ones. Relative length of antennomeres 2 to 6: 1.00, 1.00, 0.95, 0.95, 0.90.

Collum: A little narrower than the head, subreniform in dorsal outline. Anterior border straight or faintly convex in the middle, widely convex towards the sides. Posterior border very faintly concave, widely convex towards the sides. Lateral sides asymmetrically rounded: widely convex anteriorly and narrowly rounded posteriorly. Surface smooth, shiny, a row of hairs parallel to the anterior margin and a transverse row at one third from the posterior margin. Surface longitudinally weakly evenly convex, transversely widely convex, slightly flattened in the middle, the sides almost perpendicular. Marginal rim of lateral side rather narrow and a little brimlike; the premarginal furrow distinct, disappearing towards the middle of the anterior border.

Somites: Constriction moderate; the waist moderately wide, distinctly demarcated from prosomite and rather well demarcated from metasomite, without distinct sculpture. Prosomites dull by a pronounced cellular structure. Metatergites smooth, polished, a transverse row of six rather long setae behind the waist, setae emanating from almost abortive granules. Transverse furrow well impressed on the 5th to 17th somites, vaguely indicated on the 4th and 18th, without distinct sculpture, disappearing laterally at a distance from the paranota equal to the dorsoventral diameter of a poriferous paranotum. Sides smooth, up to the 4th somite rugulose-granulose. Pleural keels well developed, represented by crenulate ridges, curving upward anteriorly and straight posteriorly and produced into a distinct triangular caudal lappet which projects behind the margin of the somite up to the 4th. From the 8th somite onwards the keels are restricted to a small ridge at the caudal end of the side, which towards the 12th or 13th somite has vanished.

Paranota: 2nd somite about as wide as the collum, and scarcely wider than the 3rd; 4th somite as wide as 3rd. Paranota of 2nd somite on a low level, only partly visible in dorsal aspect. Anterior margin weakly convex, a little thrust forward. Latero-anterior edge angular, with a small lateral tooth. Lateral margin faintly convex, parallel to longitudinal axis. Latero-posterior edge subangular, quite narrowly rounded, distinctly produced caudad and projecting behind the margin of the somite. Posterior margin short, convex. In lateral aspect the dorsal demarcation of the paranota is horizontal and straight or faintly concave. The paranota dorso-ventrally narrow, ridgelike. The premarginal furrow distinct on anterior, lateral and posterior sides, paralleling the posterior margin of the somite over a short distance. Paranota of 3rd somite with the lateral border widely rounded and a little diverging, latero-posterior edge angular, acuminate, distinctly produced and projecting behind the margin. Posterior margin concave. In lateral aspect the paranota are dorsoventrally narrow at posterior end and rather wide anteriorly, ventrally demarcated by a depression over almost the entire length. Dorsal demarcation widely concave, curving dorsad near the waist. Paranota of 4th somite similar to those of 3rd, but lateral margin less convex, except anteriorly. Posterior edge less acutely angular, caudally produced and projecting slightly behind the margin. Dorso-ventral width anteriorly much larger than in the 3rd somite, the caudal edge in

lateral aspect less acuminate. Paranota of 5th and subsequent somites with the lateral margin faintly convex, diverging caudad, especially in poreless somites, anteriorly briefly more rounded, and caudally near posterior edge also a little more narrowly rounded. Posterior edge angular, sligthly produced in all somites, and projecting very little caudad of posterior margin. Posterior margin concave in poreless or convex in poriferous somites, short. In poriferous paranota the posterior quarter is oblique truncate by the presence of the pore area. In lateral aspect the dorsal furrow is concave, ending anteriorly quite near the waist. Posterior edges angular in poreless, obliquely truncate in poriferous somites. Poriferous paranota somewhat thicker than the poreless, the ventral depression reaching about two thirds of the length of the paranota. Pores in an elongate oval depression, rather large, situated near ventral demarcation.

Sternites and legs: Middle sternites longer than wide (ratio 1.1: 1.0). Cross impressions rather weakly developed: the transverse impression well impressed, furrowlike between the subsequent coxae; the longitudinal impression quite shallow and wide. No sternal cones. Pubescence weak and unapparent. Sternite of 4th somite relatively wide, with a moderately deep median impression. Pubescence almost obsolete. Sternite of 5th somite with between the anterior legs a broad rounded hump, with posterior surface widely convex, the anterior surface a little concave. The process is about half as long as wide, the apex widely rounded, narrowly rounded at edges. Posterior surface with some sparse setae; the anterior surface near apex with a brush of short setae. Apex of process not or scarcely projecting in front of sternite. Transverse furrow well impressed. The posterior part of the sternite with a wide median impression but not deeply excavate. Pubescence sparse. Sternite of 6th somite with transverse furrow moderately deep. The longitudinal furrow weak, the transverse hump between the anterior legs a little higher than that between posterior legs. Pubescence sparse. Sternite of 7th somite with a large gonopod aperture, but the ambulatory legs not notably pressed aside. No callusses. Sternite of 8th somite not notably modified. Legs rather long and moderately stout. The femora straight, the prefemora dorsally rather weakly convex. Ventral pubescence moderate to rather dense, otherwise sparse except rather dense on tarsi. Scopulae distinct in anterior legs, thinning out gradually towards the second half of the body and completely absent in a few caudal legs. First pair of legs not notably incrassate and with a small ventral femoral tubercle. Coxa of 2nd leg medially produced in a short, rather acuminate cone tipped by some long hairs. Relative length of podomeres 2 to 6 of middle legs: 0.65, 1.00, 0.45, 0.45, 0.90.

Anal somite: Dorsal profile faintly convex. Sides of epiproct weakly emarginate, converging rather weakly. Epiproct moderately thick dorsoventrally, of moderate length, broad at base, just beyond half its length it abruptly narrows. Apex rather narrowly truncate, the edges narrowly rounded, the middle distinctly but not deeply emarginate. Setae rather long, not on tubercles. Paraprocts with a moderately wide and moderately high marginal rim; the setae on abortive granules. Hypoproct widely triangular, with the sides widely rounded and the apex subangular. Setae on quite weak, not projecting tubercles.

Gonopods: (fig. 4) Coxa relatively stout, narrowing towards apex, of moderate length. Prefemur a little elongate, the demarcation between prefemur and femur quite oblique. Femur relatively short, apically demarcated by a constriction. Terminal section of gonopods with a rather long, simple tibiotarsus pointing mesad and caudad, and a longer solenomerite making a wider curve in the same direction. The common base of both elements conforms probably to the postfemoral section. Spermal channel running along medio-anterior side or anterior side towards the apex of the solenomerite, which has some tiny lappets.

Female: Distinctly more robust in comparison to male. Otherwise different from male aside from the usual secual characters in having the antennae a little more widely separated: 0.9 times the length of the 2nd antennomere and 1.7 times the diameter of a socket. Distal antennomeres a little shorter: relative length of antennomeres 2 to 6: 1.00, 0.95, 0.90, 0.85,

0.85. Pleural keels as in male. Sternites wider than long (ratio 1.0 : 0.8), the sternal impressions weaker. Legs only a little more slender, relative length of podomeres 2 to 6: 0.65, 1.00, 0.45, 0.45, 0.85. Epigynal modifications nil: coxae simply embraced by emarginations, medially divided by a low triangular production. Coxae of 2nd legs without modifications.

Remarks.-

This elegant little creature was locally quite common, occurring numerously in the upper litter layer of the dry Eucalyptus forests, and, judging from the number of specimens seen, mass appearances may occasionally happen. Ecologically it has its counterpart in two other small paradoxosomatids: *Notodesmus scotius* Chamberlin in eastern Tasmania, and an as yet undescribed australiosomatine species in the Cooma region of New South Wales, which also were observed in impressive numbers in the dry Eucalyptus forests during our journey.

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