APPENDIX 1

Description of *Diacyclops kaupi* n. sp.

Female (based on holotype and three paratypes). Total body length, measured from tip of rostrum to posterior margin of caudal rami (excluding caudal setae), from 1.1 to 1.25 mm. Preserved specimens yellowish; live specimens bright red-orange. Integument weakly sclerotized, smooth, without cuticular pits or cuticular windows. Surface ornamentation of somites consisting of 80 pairs and eight unpaired (mid-dorsal) pores and sensilla (numbered with Arabic numerals consecutively from anterior to posterior end of body, and from dorsal to ventral side in Figs 2 B, C, D, 3A, B, C, D; but illustrated in more detail for male specimens, see Figs 8, 9); no spinules except on anal somite, caudal rami, and appendages. Habitus (Fig. 2A) relatively slender, not dorso-ventrally compressed, with prosome/urosome ratio 1.2 and greatest width in dorsal view at mid-length of cephalothorax. Body length/width ratio about 3.2 (dorsal view); cephalothorax 2.2 times as wide as genital double-somite. Free pedigerous somites without lateral or dorsal expansions, all connected with well developed arthroidal membranes, and with narrow and smooth hyaline fringes. Pleural areas of cephalothorax and free pedigerous somites relatively well developed, covering insertions of cephalic appendages and praecoxae and partly coxae of swimming legs in lateral view.

Rostrum (Fig. 2B) well developed, membranous, not demarcated at base, broadly rounded and furnished with two large sensilla frontally (pair no. 1) and two pairs of pores at its base (nos. 2, 3); latter marking boundary between cephalothorax and rostrum.

Cephalothorax (Fig. 2A) almost 1.2 times as long as greatest width (dorsal view), much narrower at anterior part and nicely oval; representing 37% of total body length. Surface of cephalic shield ornamented with one unpaired dorsal sensillum (no. 47), two unpaired dorsal pores (nos. 15 & 48), and 51 pairs of long sensilla and small cuticular pores (nos. 4-14, 16-46, 49-54); pores and sensilla 42-54 belong to first pedigerous somite, incorporated into cephalothorax. Second pedigerous somite (first free) ornamented with one unpaired dorsal pore (no. 55), one pair of large dorsal sensilla (no. 56), and one pair of dorso-lateral pores (no. 57); dorsal pair of sensilla probably serially homologous to pair no. 46 on first pedigerous somite, as well as dorsal pores nos. 48 and 55. Third pedigerous somite slightly longer than second and

narrower in dorsal view, ornamented with one dorsal unpaired pore (no. 58), four pairs of large sensilla (nos. 59, 60, 62, 63) and two pairs of pores (nos. 61, 64); recognising serially homologous pairs not easy. Fourth pedigerous somite (Fig. 2C) significantly shorter and narrower than third, but ornamented also with one dorsal unpaired pore (no. 65), four pairs of large sensilla (nos. 66, 67, 69, 71) and two pairs of pores (nos. 68, 70); recognising serially homologous pairs much easier than with two previous somites (65 = 58, 66 = 59, 67 = 60, 68 = 61, 69 = 62, 70 = 64, 71 = 63).

Fifth pedigerous (first urosomal) somite (Fig. 3A, B) short, narrower than fourth pedigerous somite and about as wide as genital double-somite in dorsal view, ornamented with one unpaired dorsal pore (no. 72) and two pairs of large dorsal sensilla (nos. 73, 74); recognising serially homologous pairs not as easy as with two previous somites, but probably 72 = 65, 73 = 66, 74 = 69; hyaline fringe smooth and very narrow.

Genital double-somite (Figs 3A, B, 12A) large, with deep lateral recesses at level of sixth legs and swollen antero-ventrally, widest at first third of its length and gradually tapering posteriorly, about 1.1 times as wide as long (dorsal view), ornamented with one unpaired central dorsal pore (no. 75), two pairs of central dorsal sensilla (nos. 76, 77), one pair of ventro-lateral central pores (no. 78), two pairs of posterior sensilla (nos. 79, 80), and one pair of ventral posterior pores (no. 81); central dorsal pores and sensilla serially homologous to those on fifth pedigerous somite (75 = 72, 76 = 73, 77 = 74), but recognising serial homologies of posterior sensilla and pores much harder (perhaps 79 = 77, 81 = 78); hyaline fringe deeply and irregularly serrated. Copulatory pore small, ovoid, situated at about midlength of double-somite ventrally; copulatory duct narrow, siphon-shaped, well sclerotized. Seminal receptacle with relatively small anterior expansion and slightly shorter but wider posterior expansion, representing 40% of double-somite's length; oviducts broad and weakly sclerotized. Ovipores situated dorsolaterally, covered with reduced sixth legs.

Third (ancestral fourth) urosomite (Fig. 3A, B) relatively short, about 1.5 times as wide as long and only 0.36 times as long as genital double-somite in dorsal view, with also deeply and irregularly serrated hyaline fringe (although deeper incisions at regular intervals), ornamented only with one pair of ventral posterior pores (no. 83), which probably serially homologous to pores no. 81 on genital double-somite.

Fourth (preanal) urosomite (Fig. 3A, B) slightly narrower and shorter than third, with also deeply and irregularly serrated hyaline fringe, without any ornamentation.

Anal somite (Fig. 2D) slightly narrower but longer than preanal, with short medial cleft, ornamented with one pair of large dorsal sensilla (no. 84), two pairs of small dorsal pores (nos. 85, 86), one pair of small ventral pores (no. 87), transverse row of large spinules along posterior margin, and several short rows of minute spinules dorsally at base of anal operculum. Anal sinus with two diagonal rows of long but slender spinules. Anal operculum small, short, slightly convex, not reaching posterior margin of anal somite, representing from 45 to 50% of anal somite's width.

Caudal rami (Figs 2D, 3A, C, D) cylindrical, parallel, very close, approximately 4.7 times as long as wide and 2.4 times as long as anal somite; armed with six setae (one dorsal, one lateral, and four terminal); ornamented with one lateral cuticular pore at anterior part (no. 88), one pore on tip of protuberance on distal margin ventrally between two terminal setae (no. 89), rows of small spinules at base of lateral setae, row of minute spinules along ventral posterior margin, and several short rows of spinules of various sizes (some very long and slender) along inner margin and on ventral surface. Dorsal seta about 0.85 times as long as ramus, inserted at 7/8 of ramus' length, biarticulate at base (inserted on small pseudo-joint) and pinnate at distal part. Lateral seta inserted at 2/3 of ramus' length, 0.4 times as long as dorsal seta, unipinnate laterally and uniarticulate at base. Outermost terminal seta stout, spiniform, 0.7 times as long as ramus, bipinnate. Innermost terminal (accessory) seta long and slender, bipinnate, 1.2 times as long as outermost terminal seta. Principal terminal setae without breaking planes, bipinnate; inner principal terminal seta about 1.7 times as long as outer one and 4.4 times as long as caudal rami.

Antennula (Figs 4A, 11B) 11-segmented, slightly curved along caudal margin, directed posteriorly, reaching slightly beyond posterior margin of cephalothoracic shield, ornamented just with arched proximity-ventral row of spinules on first segment (no pits or other integumental structures), with armature formula as follows (ae = aesthetasc): 8.4.8.4.2.2.3.2 + ae.2.3.7 + ae. Third segment in holotype with antero-ventral suture, probably indicating ancestral segmentation. No setae biarticulating on basal part and most setae either smooth or sparsely pinnate at distal end; both aesthetascs very slender; aesthetasc on eight segment reaching posterior margin in length. One seta on fifth segment spiniform and short; all other setae slender;

one apical seta on eleventh segment fused basally with aesthetasc; fourth, tenth and eleventh segments with one short seta, all other setae well developed. Length ratio of antennular segments, from proximal end and along caudal margin, 1 : 0.3 : 0.6 : 0.3 : 0.2 : 0.5 : 0.9 : 0.8 : 0.4 : 0.6 : 0.7.

Antenna (Fig. 4B) five-segmented, strongly curved along caudal margin, comprising very short coxa, much longer basis and three-segmented endopod. Coxa without armature or ornamentation, about half as long as wide. Basis cylindrical, 2.2 times as long as wide, ornamented with eight rows of spinules of different sizes on all sides, armed with three pinnate setae close to distal margin; outer distal seta longest, probably represents exopod, 1.7 times as long as basis, and nearly twice as long as two subequal disto-medial setae. First endopodal segment narrower at basal part but also generally cyclindrical, twice as long as wide and 0.8 times as long as basis, with inner smooth seta at 2/3 and patch of spinules along caudal margin. Second endopodal segment also with narrow basal part and twice as long as wide, about as long as first endopodal, bearing nine setae along inner margin (which progressively longer from proximal to distal part), ornamented with one spinular row on lateral margin. Third endopodal segment cylindrical, 3.4 times as long as wide and 1.2 times as long as second endopodal segment, ornamented with two rows of slender spinules on lateral margin, armed with seven smooth apical setae (four of them strong and geniculate).

Labrum (Fig. 4C, D) relatively large trapezoidal plate, with mascular base and strongly sclerotised distal margin (cutting edge), ornamented with two diagonal, short rows of 14 to 18 long and slender spinules on anterior surface, and two round fields of small spinules on posterior surface. Cutting edge slightly concave, with 12 to 16 large and sharp teeth between produced rounded lateral corners.

Mandibula (Fig. 4E, F) composed of coxa and small palp. Coxal gnathobase cutting edge with eight slender spinules on anterior surface, eight apical teeth, and dorsalmost bipinnate seta; ventralmost tooth (Fig. 4F) strongest and quadricuspidate, second and fourth teeth from ventral side bicuspidate, all other teeth unicuspidate; three dorsalmost simple teeth partly fused basally. Palp 1.5 times as wide as long, unornamented, armed with three apical setae: two long and plumose and one short and smooth; plumose setae subequal in length, directed posteriorly, nearly reaching posterior margin of cephalic shield.

Maxillula (Fig. 5A) composed of praecoxa and two-segmented palp, unornamented. Praecoxal arthrite bearing four very strong distal spines (three smooth, blunt and fused at base; one distinct at base, sharp and with three proximal spinules) and seven medial elements (longest one plumose, two distal-most ones with several slender proximal spinules, four small ones smooth). Palp composed of coxobasis and endopod. Coxobasis with slender proximal seta (probably representing exopod) and three medial setae (two slender and one strong and bipinnate); endopod with three slender setae; all coxobasal and endopodal setae pinnate.

Maxilla (Figs 5B, 11C) 5-segmented but praecoxa partly fused to coxa on anterior surface, unornamented. Proximal endite of praecoxa robust, armed with two subequal, plumose setae; distal endite small, unarmed. Proximal endite of coxa with one bipinnate seta; distal endite highly mobile, elongated and armed apically with two pinnate setae, proximal one longer and much stronger. Basis expanded into robust claw, and claw furnished with longitudinal rows of strong and dense spinules, armed with two setae; strong seta about as long as claw, pinnate. Endopod two-segmented, but segmentation not easily discernable; proximal segment armed with two robust, unipinnate setae; distal segment with one robust, unipinnate apical seta and two slender and much shorter subapical setae. Longest seta on distal endopodal segment as long as longer seta on proximal endopodal segment. All strong setae on basis and endopod, as well as basal claw, unguiculate.

Maxilliped (Fig. 5C) four-segmented, composed of syncoxa, basis and two-segmented endopod. Ornamentation consisting of three rows of long and slender spinules on basis (two on posterior surface close to outer margin and one on anterior surface close to inner margin), as well as one row of long spinules on anterior surface of first endopodal segment. Armature formula: 3.2.1.3. All setae, except outer-most seta on second endopodal segment, pinnate, and most very strong and unguiculate.

All swimming legs (Figs 6A, B, 7A, B) relatively large, composed of minute and triangular praecoxa, large and rectangular coxa, short basis, three-segmented exopod and three-segmented endopod. Endopods and exopods of about same length. Third exopodal segment spine formula 2.3.3.3 and setal formula 4.4.4.4. All setae on endopods and exopods slender and plumose, except apical seta on exopod of first leg, which pinnate along outer margin and plumose along inner; no modified setae observed. All spines strong and bipinnate. Intercoxal

sclerite of all swimming legs with slightly concave distal margin and without any surface ornamentation, except on posterior margin of fourth leg.

First swimming leg (Fig. 6A) shorter than other swimming legs; praecoxa unarmed and unornamented; coxa twice as wide as long, ornamented with short transverse row of spinules on posterior surface close to outer margin, armed with long and plumose seta on inner-distal corner; basis almost pentagonal in shape, 0.7 times as long as coxa, armed with outer long and slender seta, and inner-distal strong and bipinnate element (latter almost reaching distal margin of endopod in length), ornamented with several parallel rows of slender spinules along inner margin, two posterior rows of shorter and stronger spinules on anterior surface (one at base of inner seta, other at base of endopod), and one cuticular pore on anterior surface close to outer margin; exopod with single outer spine and single inner seta on first and second segment, with two outer spines and four setae (two inner, two apical) on third segment, ornamented with distal rows of spinules on both anterior and posterior surfaces of first and second segment, row of slender inner spinules on first and second segment, row of minute outer spinules on first segment, and minute spinules as base of almost all setae and spines on anterior surface; endopod armed only with inner seta on first and second segment, third segment with three inner setae, one apical seta, one apical spine, and one outer seta, ornamented with slender spinules along inner margins of all three segments, with shorter spinules along distal margins of first and second segment on both anterior and posterior surfaces, and minute spinules at base of most setae and apical spine on anterior surface; apical spine on third endopodal segment 1.1 times as long as segment and only half as long as apical seta; third endopodal segment about 1.5 times as long as wide and 1.3 times as long as second endopodal segment.

Second swimming leg (Figs 6B, 11D) generally larger and more slender than first swimming leg; coxa 1.6 times as wide as long, armed with short and bipinnate inner seta, ornamented with outer row of strong spinules, in addition to transverse row of spinules on posterior margin; basis with shorter outer seta than in first leg, and without inner seta, with sharp spiniform process instaed; exopod with longer third segment than in first leg, with three outer spines, additionally ornamented with pore on anterior surface; endopod with two inner setae on second segment, with longer third segment than in first leg, ornamented additionally with pore on anterior surface close to distal margin; apical spine on third endopodal segment as long as

segment and 0.6 times as long as apical seta; third endopodal segment about 2.5 times as long as wide and 1.4 times as long as second endopodal segment.

Third swimming leg (Fig. 7A) extremely similar to second leg, except no pores visible on anterior surface of third exopodal or endopodal segments, and apical spine on third endopodal segment proportionately longer; apical spine on third endopodal segment 1.2 times as long as segment and 0.7 times as long as apical seta; third endopodal segment about 2.8 times as long as wide and 1.6 times as long as second endopodal segment.

Fourth swimming leg (Fig. 7B), generally similar to third swimming leg, but slightly shorter and more slender, with longer and more sparsely plumose setae, with transverse row of long spinules on posterior margin of intercoxal sclerite and two long transverse rows of spinules on posterior margin of coxa, and with third endopodal segment armed with two inner setae, two apical spines and one outer seta; third endopodal segment about 2.3 times as long as wide and 1.4 times as long as second endopodal segment; inner apical spine on third endopodal segment 1.24 times as long as outer apical spine, as long as segment, and less than 0.4 times as long as distal inner seta.

Fifth leg (Figs 3B, 7C, 11A) inserted ventro-laterally, relatively small, two-segmented. First segment (possibly protopod) much narrower at base than at distal part, almost trapezoidal in shape, as long as greatest width, ornamented with single pore on anterior surface close to proximal margin, armed with single outer slender seta (probably ancestral outer basal), inserted on substantial outer protopodal protrusion (enlarged setophore) and bipinnate distally. Second segment (probably exopod) cylindrical, 1.2 times as long as first segment and 2.4 times as long as wide, unornamented, armed with apical long seta and subapical inner spine; apical exopodal seta also bipinnate distally, 1.3 times as long as basal seta, 3.6 times as long as exopod, and more than 10 times as long as subapical spine, almost reaching posterior margin of genital double-somite in length; subapical exopodal spine strong and bipinnate, 0.7 times as long as exopod and 1.6 times as long as exopod's greatest width.

Sixth leg (Fig. 7D) small, semicircular cuticular plate, armed with two short and smooth spines and outermost much longer and distally bipinnate seta; inner spine fused to plate, outer articulated basally; outermost seta directed posteriorly.

Male (based on allotype and four paratypes). Total body length from 0.94 to 1.03 mm. Urosome with free genital somite. Habitus (Figs 8A, 9A) slightly less slender than in female,

with prosome/urosome ratio about 1.8 and greatest width at posterior end of cephalothorax. Body length/width ratio 3.1; cephalothorax about 2.1 times as wide as genital somite. Cephalothorax 1.2 times as long as wide (dorsal view); representing 39% of total body length. Ornamentation of cephalothorax (Figs 8B, 9B), free prosomites (Figs 8A,C, 9A) and most urosomites (Figs 8A, D, 9A, 10A, 11E, F, 12A, B) with same number and distribution of sensilla and pores as in female. One paratype male has unpaired pore (no. 65) on fourth pedigerous somite (Fig. 8C) moved more anteriorly than in other specimens, as well as third urosomite (Fig. 8D) without dorsal-most pair of sensilla (no. 79), but instead with new pair of sensilla on fourth urosomite (no. 82).

Genital somite (Figs 8A, D, 9A, 10A) almost 1.6 times as wide as long, with finely serrated hyaline fringe dorsally, ornamented with one unpaired dorsal pore (no. 75) and two pairs of dorsal sensilla (nos. 76, 77); two relatively small, ovoid spermatophores visible inside; pair of pores on sixth legs (no. 78) probably homologous to lateral central pores on female genital double-somite. Third urosomite homologous to posterior part of female genital double-somite, also ornamented with two pairs of posterior dorsal sensilla (nos. 79, 80) and one pair of posterior ventral pores (no. 81); one paratype male (Fig. 8D) with sensilla no. 79 either missing or moved to fourth urosomite (as no. 82). Fourth and fifth urosomite without any ornamentation, except dorsal pair of sensilla (no. 82) in one aberrant paratype (Fig. 8D). Anal somite (Figs 8A, 9A, 10A, 11E, 12A) as in female, except operculum slightly narrower and more convex.

Caudal rami (Figs 8A, 10A, 11E, F, 12B) slightly more slender than in female, about three times as long as anal somite, but with very similar ornamentation and same armature as in female.

Antennula (Figs 8A, 9A, 10B) strongly prehensile and digeniculate, 17-segmented (but sixteenth and seventeenth segments partly fused on ventral side), ornamented with spinules only on first segment (as in female), with anvil-shaped cuticular ridges on anterior margin of fourteenth and fifteenth segments (distal geniculation). Armature formula as follows: 8 + 3ae.4.2.2 + ae.2.2.2.2.2 + ae.2.2.2.2 + ae.2.1.3.8 + ae. All aesthetascs linguiform and short; most setae slender and smooth; larger setae sparsely unipinnate distally; short smooth elements on eighth (one), ninth (one), and twelfth (two) segments; shot pinnate elements on eleventh (one), thirteenth (one) and fourteenth (one) segments; several setae on last three segments biarticulate distally or with breaking plane.

Antenna, labrum, mandibula, maxillula, maxilla (Fig. 12D), maxilliped (Fig. 12D), first swimming leg, second swimming leg, and third swimming leg as in female.

Fourth swimming leg (Figs 7E, 12C) also with similar armature and ornamentation as in female, as well as with similar proportions of spines and setae on third endopodal segment.

Fifth leg (Fig. 10A) similar to female, but with slightly shorter apical exopodal seta.

Sixth leg (Fig. 10A) large cuticular plate, ornamented with single pore (no. 78) and several rows of spinules, armed with inner spine and two setae on outer distal corner; outermost seta twice as long as inner seta and 3.2 times as long as innermost spine.

Description of *Diacyclops walkeri* n. sp.

Female (based on holotype). Total body length 1.05 mm. Preserved specimen yellowish; live specimens almost colourless. Integument weakly sclerotized but not as weakly as in *D. kaupi*, also smooth and without cuticular pits or cuticular windows. Surface ornamentation of somites markedly different from that in *D. kaupi* and many pore and sensilla pairs difficult to homologise, consisting of 62 pairs and three unpaired (mid-dorsal) pores and sensilla (those probably homologous with *D. kaupi* indicated with same Arabic numerals; presumably novel pairs indicated with Roman numbers and numbered consecutively from anterior to posterior end of body, and from dorsal to ventral side in Figs 13A, B, C; but illustrated in more detail for male specimens, see Fig. 16); no spinules except on anal somite, caudal rami, and appendages. Habitus (Fig. 13A) much more robust than in *Diacyclops kaupi*, also not dorso-ventrally compressed, with prosome/urosome ratio 1.5 and greatest width in dorsal view at first third of cephalothorax. Body length/width ratio about 2.9 (dorsal view); cephalothorax 2.1 times as wide as genital double-somite. Free pedigerous somites without lateral or dorsal expansions, all connected with well developed arthroidal membranes, and with narrow and smooth hyaline fringes. Pleural areas of cephalothorax and free pedigerous somites relatively well developed, covering insertions of cephalic appendages and praecoxae and partly coxae of swimming legs in lateral view.

Rostrum as in *D. kaupi*, ornamented with one pair of frontal sensilla and (pair no. 1) and two pairs of pores at its base (nos. 2, 3).

Cephalothorax (Fig. 13A) 1.2 times as long as greatest width (dorsal view), much wider

anteriorly and narrower posteriorly than in *D. kaupi* (arrowed in Fig. 13A); representing 41% of total body length. Surface of cephalic shield ornamented with one unpaired dorsal sensillum (no. 47), one unpaired dorsal pore (no. 48), and 40 pairs of long sensilla and small cuticular pores (missing sensilla and pores nos. 7, 8, 12, 15, 16, 17, 21, 22, 27, 30, 31, 33, 39, 41, 49, 51; novel sensilla and pores nos. I, II, III, IV). Second pedigerous somite ornamented with one pair of large dorsal sensilla (no. 56), and one pair of dorso-lateral pores (no. 57); unpaired dorsal pore no. 55 missing. Third pedigerous somite ornamented with one dorsal unpaired pore (no. 58), four pairs of large sensilla (nos. 59, 60, 62, 63) and one pair of pores (no. 61); pair of pores no. 64 missing. Fourth pedigerous somite ornamented only with four pairs of large sensilla (nos. 66, 67, 69, 71); unpaired pore no. 65 and two pairs of pores (nos. 68, 70) missing.

Fifth pedigerous somite (Fig. 13A, B, C) shorter than in *D. kaupi*, ornamented only with two pairs of large dorsal sensilla (nos. 73, 74); unpaired pore no. 72 missing.

Genital double-somite (Fig. 13A, B, C) very large, proportionately larger and wider than in *D. kaupi* although of same general shape, about 1.2 times as wide as long (dorsal view), ornamented only with two pairs of dorsal sensilla (nos. 77, 79); sensilla and pores nos. 75, 76, 78, 80, 81 missing; hyaline fringe serrated as in *D. kaupi*. Copulatory pore very small, ovoid, situated at about midlength of double-somite ventrally; copulatory duct narrow, siphon-shaped, well sclerotized. Seminal receptacle larger than in *D. kaupi* (arrowed in Fig. 13B), with relatively large anterior expansion and slightly shorter but equally wide posterior expansion, representing 60% of double-somite's length; oviducts broad and weakly sclerotized. Ovipores situated dorsolaterally, covered with reduced sixth legs.

Third and fourth urosomites (Fig. 13A, B, C) without any ornamentation (pair of ventral pores no. 83 missing), but otherwise similar to those in *D. kaupi*.

Anal somite (Fig. 13A, B, C) size, shape and ornamentation as in *D. kaupi*.

Caudal rami (Fig. 13A, B, C) armature, size, shape and ornamentation similar to *D. kaupi*, except dorsal seta proportionately longer (arrowed in Fig. 13A), outer principal terminal seta considerably shorter (arrowed in Fig. 13A), and rows of spinules along inner margin and on ventral surface denser and spinules longer. Dorsal seta about 1.2 times as long as ramus; lateral seta 0.36 times as long as dorsal seta; outermost terminal seta 0.6 times as long as ramus; innermost terminal smooth and 1.2 times as long as outermost apical seta; principal terminal

setae without breaking planes but outer principal terminal seta with small outer nob; inner principal terminal seta almost 3.5 times as long as outer one and 4.8 times as long as caudal rami.

Antennula (Fig. 14A) without any discernible difference from that of *D. kaupi*, except all setae appear smooth.

Antenna (Fig. 13D) segmentation, proportions, and armature same as in *D. kaupi.* Basis ornamented with fewer and larger spinules, both on dorsal and ventral surfaces.

Labrum (Fig. 14B) ornamented with two diagonal rows of 14 long and slender spinules on anterior surface, and two round fields of small spinules on posterior surface. Cutting edge slightly concave, with 20 small and sharp teeth between weakly produced and rounded lateral corners.

Mandibula (Fig. 13E) very similar to that of *D. kaupi*, except cutting edge with only five slender spinules on anterior surface (arrowed in Fig. 13E).

Maxillula (Fig. 14C) also very similar to that of *D. kaupi*, except small differences in proportions of four distal seven medial elements on praecoxa.

Maxilla (Fig. 14D) with proximal basal seta longer than basal claw (arrowed in Fig. 14D). Other armature very similar to that of *D. kaupi.*

Maxilliped (Fig. 14E) very similar to that of *D. kaupi*, down to minute details of segmental proportions and ornamentation. Anterior row of spinules on basis more arched but also consists of 11 spinules

All swimming legs (Figs 14F, G, 15A, B, C) relatively large, composed of minute and triangular praecoxa, large and rectangular coxa, short basis, three-segmented exopod and three-segmented endopod. Endopods and exopods of about same length. Third exopodal segment spine formula 2.3.3.3 and setal formula 4.4.4.4. All setae on endopods and exopods slender and plumose, except apical seta on exopod of first leg (Fig. 14F), which pinnate along outer margin and plumose along inner; no modified setae observed. All spines strong and bipinnate; those on exopod of first leg with slender and wavy tips. Intercoxal sclerite of all swimming legs with slightly concave distal margin and without any surface ornamentation, except on posterior margin of fourth leg (Fig. 15B). Armature formula as that of *Diacyclops kaupi*, except third endopodal segment of right fourth leg with only one apical spine (arrowed in Fig. 15C). Apical spine on third endopodal segment of third leg (Fig. 14G) proportionately slightly shorter and inner setae proportionately longer.

Fourth swimming leg (Fig. 15A, B, C), with two (normal) or one (abnormal, arrowed in Fig. 15C) apical spines; transverse row of long spinules on posterior margin of intercoxal sclerite and two long transverse rows of spinules on posterior margin of coxa as in *D. kaupi*; third endopodal segment about 2.5 times as long as wide and 1.35 times as long as second endopodal segment; inner apical spine on third endopodal segment 1.23 times as long as outer apical spine, slightly longer than segment, and 0.45 times as long as distal inner seta.

Fifth leg (Fig. 13B, C) very similar to that of *D. kaupi.*

Sixth leg (Fig. 13A, B, C) shorter than that of *D. kaupi*, with outermost seta longer and directed laterally (arrowed in Fig. 13A), but also with two short and smooth spines of which inner spine fused to plate and outer articulated basally.

Male (based on allotype and three paratypes). Total body length from 0.92 to 0.96 mm. Urosome with free genital somite. Habitus (Fig. 16A) similarly robust as in female, with prosome/urosome ratio about 1.6 and greatest width at midlength of cephalothorax (arrowed in Fig. 16A). Body length/width ratio 3.1; cephalothorax about 2.1 times as wide as genital somite. Cephalothorax 1.25 times as long as wide (dorsal view); representing 40% of total body length. Ornamentation cephalothorax (Fig. 16A) with sensilla and pores without any difference from female but very different from that of *D. kaupi*. Second pedigerous somite (Fig. 16B) ornamented only with one pair of dorsal pores (no. 56); dorsolateral pair of pores no. 57 missing. Third pedigerous somite (Fig. 16C) with unpaired dorsal pore (no. 58) positioned more anteriorly than in female, other ornamentation same. Fourth pedigerous somite (Fig. 16D) as in female, with only four pairs of sensilla (nos. 66, 67, 69, 71).

Genital somite (Figs 16A, 17A) about 1.6 times as wide as long, with finely serrated hyaline fringe dorsally, ornamented with one pair of dorsal sensilla (no. 77) and pair of pores on sixth legs (no. 78); unpaired dorsal pore no. 75 and dorsal pair of sensilla no. 76 missing; two relatively large spermatophores visible inside. Third, fourth, and fifth urosomites without any ornamentation (sensilla and pores nos. 79, 80, 81, 82 missing), all with shallowly serrated hyaline fringes.

Anal somite (Figs 16A, 17A, 18B) as in female, differ from those of *D. kaupi* by an additional short row of ventral spinules (arrowed in Fig. 17A).

Caudal rami (Figs 16A, 17A, 18A) with slightly longer outer principal terminal seta than in female, which still significantly shorter than in males of *D. kaupi* (arrowed in Fig. 16A);

dorsal seta also longer than in males of *D. kaupi* (arrowed in Fig. 16A); innermost terminal seta proportionately longer than in female.

Antennula (Figs 16E, 17B, 18D, E, F) with last two segments almost completely fused; other segmentation, geniculation, as well as all armature formula same as in *D. kaupi*; aesthetascs on ninth and thirteenth segments much longer (both arrowed in Fig. 16E).

Antenna, labrum, mandibula, maxillula, maxilla, maxilliped, first swimming leg, second swimming leg, and third swimming leg as in female.

Fourth swimming leg (Fig. 17C, D) also with similar armature and ornamentation as in female, as well as with similar proportions of spines and setae on third endopodal segment; one paratype with only one apical spine on third endopodal segment of one leg (arrowed in Fig. 17D), with other leg normal.

Fifth leg (Fig. 17E, F) similar to female, except one paratype with absent subapical spine on one leg (arrowed in Fig. 17F) with other leg normal.

Sixth leg (Fig. 17A, G) large cuticular plate, ornamented with single pore (no. 78) and one row of spinules, armed with inner spine and two setae on outer distal corner; outermost seta 2.3 times as long as inner seta and 2.7 times as long as innermost spine.

Description of *Diacyclops joycei* n. sp.

Female (based on holotype and six paratypes). Total body length from 0.88 to 0.93 mm. Preserved specimen yellowish; live specimens colourless or nearly so. Integument weakly sclerotized but not as weakly as in *D. kaupi*, also smooth and without cuticular pits or cuticular windows. Surface ornamentation of somites markedly different from that in *D. kaupi* and many pore and sensilla pairs difficult to homologise, consisting of 53 pairs of pores and sensilla (those probably homologous with *D. kaupi* indicated with same Arabic numerals; presumably novel pairs indicated with Greek letters consecutively from anterior to posterior end of body, and from dorsal to ventral side in Figs 19B, C, 20A, B; but illustrated in more detail for male specimens, see Figs 24, 25, 26); no spinules except on anal somite, caudal rami, and appendages. Habitus (Fig. 19A) very different from *D. kaupi* or *D. walkeri*, dorso-ventrally compressed, with cephalothoracic shield and pleurons of free prosomites flared laterally (arrowed in Fig. 19A); prosome/urosome ratio 1.5 and greatest width in dorsal view at posterior end of cephalothorax.

Body length/width ratio about 2.8 (dorsal view); cephalothorax 2.3 times as wide as genital double-somite. Free pedigerous somites, all connected with well developed arthroidal membranes, with relatively wide and smooth hyaline fringes. Pleural areas of cephalothorax and free pedigerous somites well developed, and even though flared out laterally well covering insertions of cephalic appendages and praecoxae and coxae of swimming legs in lateral view.

Rostrum as in *D. kaupi*, ornamented with one pair of frontal sensilla and (pair no. 1) and two pairs of pores at its base (nos. 2, 3).

Cephalothorax (Fig. 19A) only slightly longer than its greatest width (dorsal view), almost perfectly oval, widest at posterior end, with plural part of cephalothoracic shield flared out laterally (arrowed in Fig. 19A); representing 36% of total body length. Surface of cephalic shield without unpaired dorsal sensilla or pores, ornamented with 31 pairs of long sensilla and small cuticular pores (missing sensilla and pores nos. 5, 7, 9, 12, 15, 16, 17, 22, 24, 26, 27, 28, 31, 32, 33, 34, 45, 47, 48, 49, 51, 52, 53, 54; novel sensilla pair α). Second pedigerous somite (Fig. 19B) ornamented with only one pair of large dorsal sensilla (no. 56); unpaired dorsal pore no. 55 and pair of dorso-lateral pores no. 57 missing. Third pedigerous somite (Fig. 19B) ornamented with six pairs of large sensilla (nos. 59, γ, 60, 62, 63, δ) and one pair of pores (β); dorsal unpaired pore no. 58 and pairs of pores nos. 61 and 64 missing. Fourth pedigerous somite (Fig. 19B) ornamented with four pairs of large sensilla (nos. 66, 69, 71, ε); unpaired pore no. 65 and two pairs of pores (nos. 68, 70) and pair of sensilla no. 67 missing.

Fifth pedigerous somite (Fig. 20A, B) with longer lateral wings than in *D. kaupi*, ornamented only with one pairs of large dorsal sensilla (no. 74); unpaired pore no. 72 missing and dorsal pair of sensilla no. 73 missing.

Genital double-somite (Fig. 19C, 20A, B, 27B, E) very large, similar in size and shape to that in *D. kaupi* but with prominent central dorsal fringe (arrowed in Fig. 20A) which probably marks ancestral segmentation, about 1.1 times as wide as long (dorsal view), ornamented only with one pair of central dorsal sensilla (no. 77) and one pair of ventral posterior pores (no. 81); sensilla and pores nos. 75, 76, 78, 79, 80 missing; hyaline fringe serrated as in *D. kaupi*. Additional minute lateral pore observed in one paratype male, below sixth leg (Fig. 27E). Copulatory pore very small, ovoid, situated at about 3/5 of double-somite ventrally; copulatory duct narrow, siphon-shaped, well sclerotized. Seminal receptacle larger than in *D. kaupi*, butterfly-shaped (arrowed in Fig. 19C), with relatively short but wide anterior expansion and

slightly longer but medially more constricted posterior expansion, representing 52% of double-somite's length; oviducts broad and relatively well sclerotized. Ovipores situated dorsolaterally, covered with reduced sixth legs.

Third urosomite (Figs 19C, 20A, B) relatively short, about 1.5 times as wide as long and only 0.34 times as long as genital double-somite in dorsal view, with also shallowly and irregularly serrated hyaline fringe, ornamented only with one pair of ventral posterior pores (no. 83), which probably serially homologous to pores no. 81 on genital double-somite.

Fourth urosomite (Figs 19C, 20A, B) slightly narrower and only 0.7 times as long as third, with also shallowly and irregularly serrated hyaline fringe, without any ornamentation.

Anal somite (Figs 19C, 20A, B, 27A) size, shape and ornamentation with sensilla and pores as in *D. kaupi*, but short rows of minute spinules absent and anal operculum more convex (arrowed in Fig. 20A).

Caudal rami (Fig. 19A, 20A, B, 27A, C) armature, size, shape and ornamentation with pores similar to *D. kaupi*, except all setae more sparsely pinnate, principal terminal setae with breaking planes, dorsal seta proportionately shorter, and caudal rami only about four times as long as wide; inner margin and ventral surface completely smooth, i.e. without rows of spinules (arrowed in Fig. 19C). Dorsal seta about 0.85 times as long as ramus; lateral seta 0.3 times as long as dorsal seta and only about as long as the width of the ramus; outermost terminal seta 0.7 times as long as ramus; innermost terminal 1.5 times as long as outermost terminal seta; inner principal terminal seta almost 1.9 times as long as outer one and 4.1 times as long as caudal rami.

Antennula (Fig. 21A) segmentation and armature as in *D. kaupi*, except eighth segment proportionately shorter and aesthetasc on eighth segment and small seta on tenth segment proportionately longer (all arrowed in Fig. 21A).

Antenna (Fig. 22A) segmentation, proportions, and armature same as in *D. kaupi*, except second endopodal segment proportionately shorter; spinules pattern on basis also generally very similar.

Labrum similar to that of *D. kaupi*, ornamented with two diagonal rows of 16 long and slender spinules on anterior surface, and two round fields of small spinules on posterior surface. Cutting edge slightly concave, with 14 sharp teeth between well produced and rounded lateral corners.

Mandibula (Fig. 19D) very similar to that of *D. kaupi*, except cutting edge narrower and with only six slender spinules on anterior surface.

Maxillula (Fig. 19E) also very similar to that of *D. kaupi*, except small differences in proportions of four distal seven medial elements on praecoxa.

Maxilla (Fig. 19F) with proportionately shorter basal claw (arrowed in Fig. 19F), which also smooth (not pinnate) distally. Other armature very similar to that of *D. kaupi.*

Maxilliped (Fig. 20C) very similar to that of *D. kaupi*, but with an additional row of minute spinules on syncoxa and with fewer spinules on first endopodal segment.

All swimming legs (Figs 21B, 22B, C, 23A, 27D) relatively large, composed of small and triangular praecoxa, large and rectangular coxa, short basis, three-segmented exopod and three-segmented endopod. Endopods and exopods of about same length. Third exopodal segment spine formula 2.3.3.3 and setal formula 4.4.4.4. All setae on endopods and exopods slender and plumose, except apical seta on exopod of first leg (Fig. 21B), which pinnate along outer margin and plumose along inner; no modified setae observed. All spines strong and bipinnate; those on exopod of first leg with slender and wavy tips. Intercoxal sclerite of all swimming legs with slightly concave distal margin and without any surface ornamentation, except two parallel rows on posterior margin of fourth leg (Fig. 23A). Armature formula of first three legs similar to that of *D. kaupi*, except one aberrant third leg in holotype which without outer spines on first and second endopodal segments (arrowed in Fig. 22B). Third exopodal segment of second swimming leg without pore on anterior surface (Fig. 27D), while pore present on anterior surface of third endopodal segment of third leg (Fig. 22B). Apical spine on third endopodal segment of second and third legs (Fig. 22B) proportionately shorter, as well as all endopodal setae.

Fourth swimming leg (Fig. 23A) relatively similar to that of *D. kaupi*, but inner seta on first exopodal segment absent (arrowed in Fig. 23A), inner-distal process on basis differently shaped (arrowed in Fig. 23A), third endopodal segment much wider proximally (arrowed in Fig. 23A), and setae on third endopodal segment much shorter (arrowed in Fig. 23A), only slightly reaching beyond distal tips of apical spines; proximal transverse row of long spinules on posterior margin of coxa much shorter than in *D. kaupi* and anterior pores present on anterior surface of third endopodal and exopodal segments; third endopodal segment about 1.7 times as long as wide and 1.5 times as long as second endopodal segment; inner apical spine on third

endopodal segment 1.24 times as long as outer apical spine, as long as segment, and nearly 0.7 times as long as distal inner seta.

Fifth leg (Fig. 23B) segmentation and armature generally similar to that of *D. kaupi*, but basal segment proportionately larger, terminal segment proportionately shorter, row of minute spinules present on anterior surface of basal segment (arrowed in Fig. 23A) at base of terminal segment, and both setae much shorter, hardly reaching middle of genital double-somite (see also Fig. 20B).

Sixth leg (Figs 20A, B, 27B, E) very similar to that of *D. kaupi*, with outermost seta slightly shorter but also directed posteriorly.

Male (based on allotype and four paratypes). Total body length from 0.75 to 0.87 mm. Urosome with free genital somite. Habitus (Fig. 24A) similar to female, with laterally flared pleurons of prosomites and dorso-ventrally compressed, prosome/urosome ratio about 1.6 and greatest width at posterior end of cephalothorax. Ornamentation cephalothorax (Figs 24B, 26) and free prosomites (Figs 24B, 25A, B) with sensilla and pores without any difference from female but very different from that of *D. kaupi* and *D. walkeri*. Fifth pedigerous somite (Fig. 25C) also ornamented with single pair or large sensilla (no. 74).

Genital somite (Fig. 25A) ornamented with unpaired dorsal pore (no. 75) and dorsal pair of sensilla (no. 76) (both absent in female), in addition to dorso-lateral pair of sensilla (no. 77); about 1.5 times as wide as long, with serrated hyaline fringe dorsally; two relatively small spermatophores visible inside. Third urosomite without any ornamentation, i.e. ventral pair of pores no. 81 absent (present in female). Fourth urosomite with ventral pair of pores (no. 83) present, as in female. Fifth urosomite without any ornamentation.

Anal somite (Figs 24C, 25C) as in female, differs from that of *D. kaupi* by absence of short rows of minute spinules, and more convex anal operculum.

Caudal rami (Figs 24D, 25C, 27F) as in female, also without any rows of spinules along inner margin and on ventral surface (arrowed in Fig. 24D); lateral seta proportionately longer.

Antennula (Fig. 23D) with last two segments completely fused (arrowed in Fig. 23D) and fifteenth segment much shorter (arrowed in Fig. 23D) than in *D. kaupi*, but armature and ornamentation very similar; other (smaller) differences include additional minute seta on ultimate segment, proportionately longer aesthetascs on all segments, smaller spiniform element on eleventh segment, and stronger spiniform element on twelfth segment.

Antenna, labrum, mandibula, maxillula, maxilla, maxilliped, first swimming leg, second swimming leg, and third swimming leg as in female.

Fourth swimming leg (Fig. 25D) also with short inner setae on third endopodal segment (arrowed in Fig. 25D).

Fifth leg (Fig. 25E) similar to female, with wide basal segment and row of spinules at base of terminal segment (arrowed in Fig. 25E).

Sixth leg (Fig. 25F) large cuticular plate, ornamented with single pore (no. 78) but without spinules, armed as in *D. kaupi* with inner spine and two setae on outer distal corner; outermost seta 1.75 times as long as inner seta and twice as long as innermost spine.

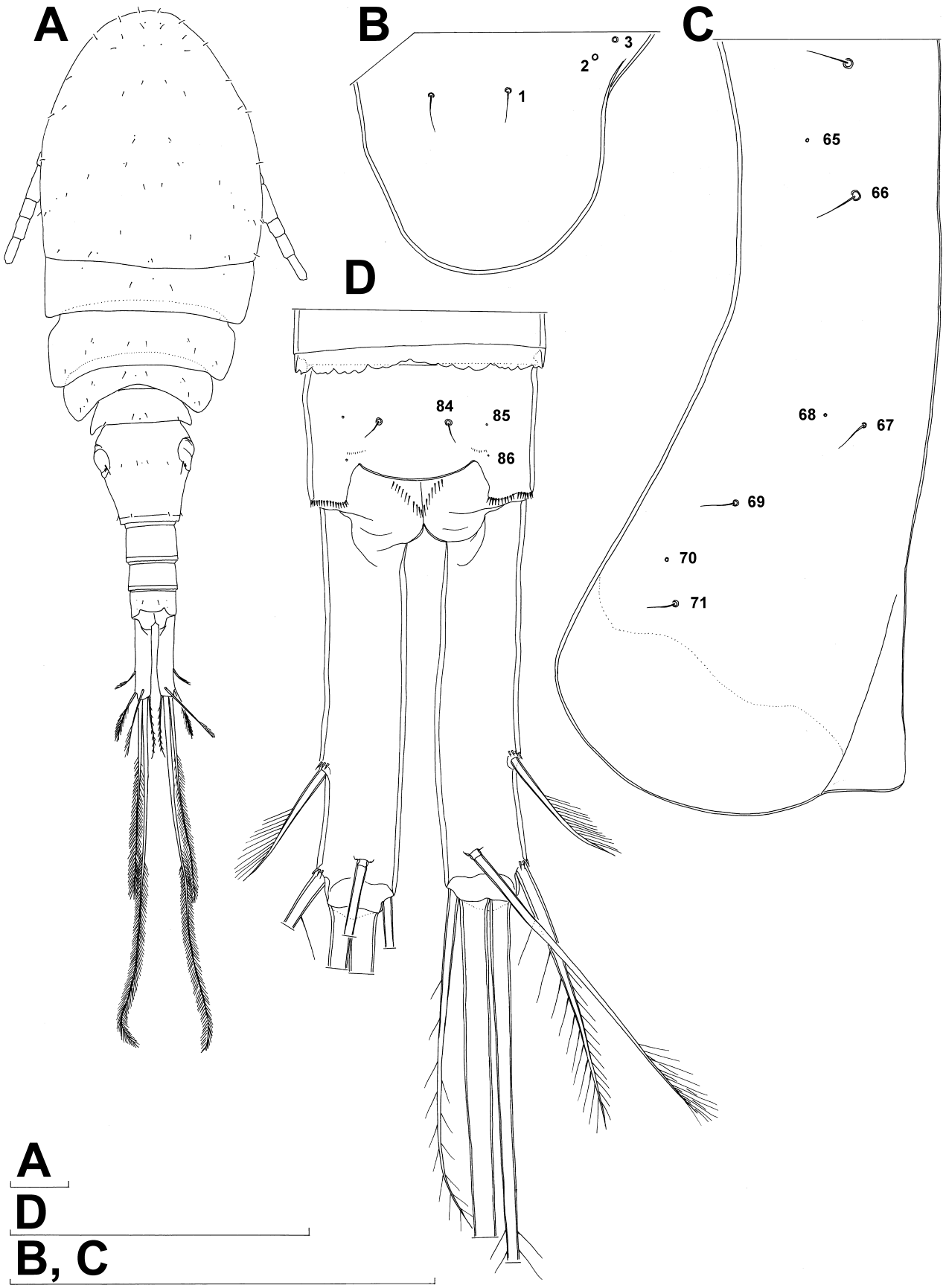

Fig. 2. *Diacyclops kaupi* n. sp., line drawings, holotype female: A, habitus, dorsal view; B, rostrum, anterior view; C, pleuron of fourth pedigerous somite, dissected and flattened; D, anal somite and caudal rami, dorsal view. Arabic numerals number consecutive sensilla and pores from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Scale bars 100 μm.

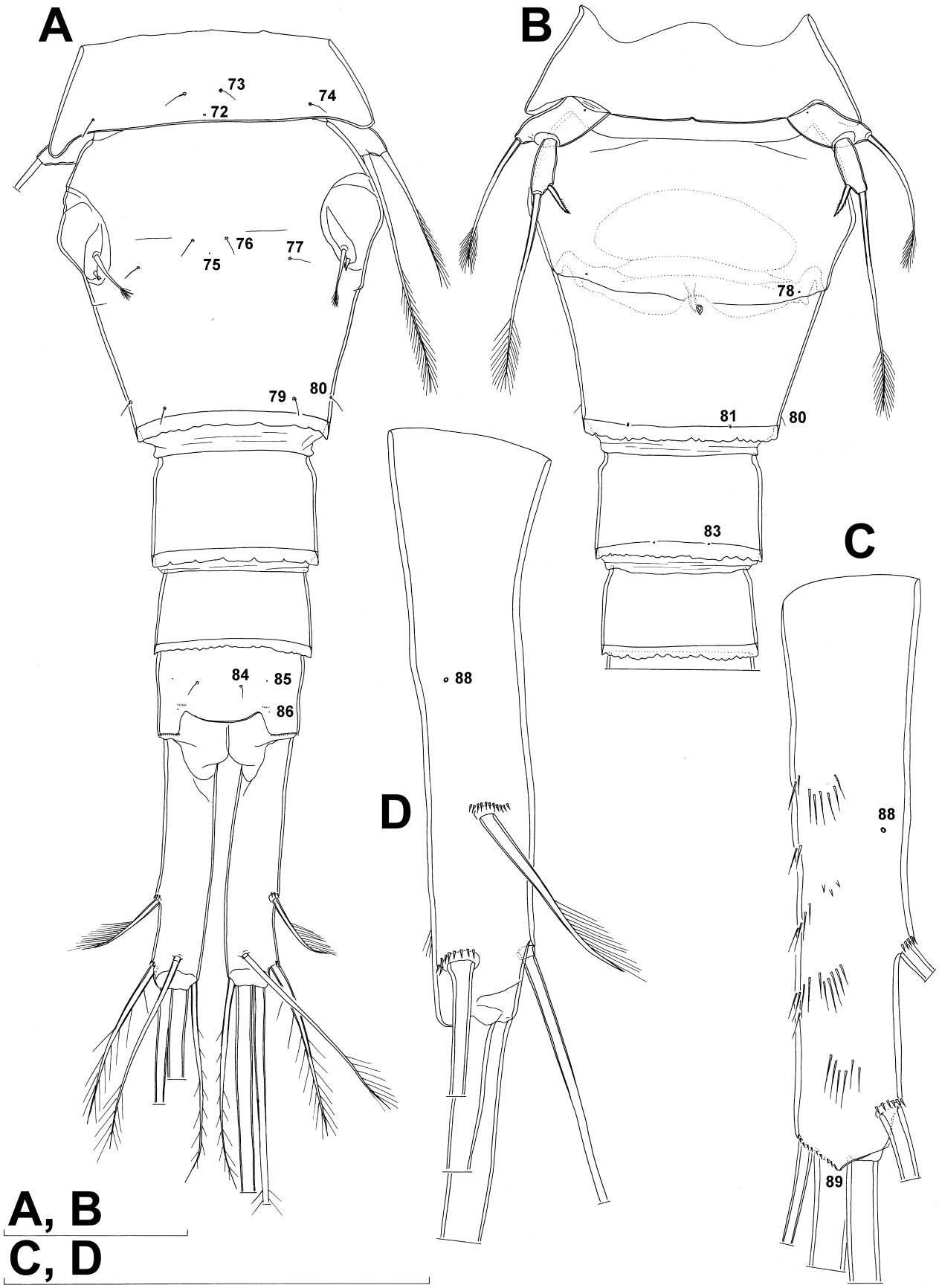

Fig. 3. *Diacyclops kaupi* n. sp., line drawings, holotype female: A, urosome, dorsal view; B, first four urosomites, ventral view; C, left caudal ramus, ventral view; D, left caudal ramus, lateral view. Arabic numerals number consecutive sensilla and pores from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Scale bars 100 µm.

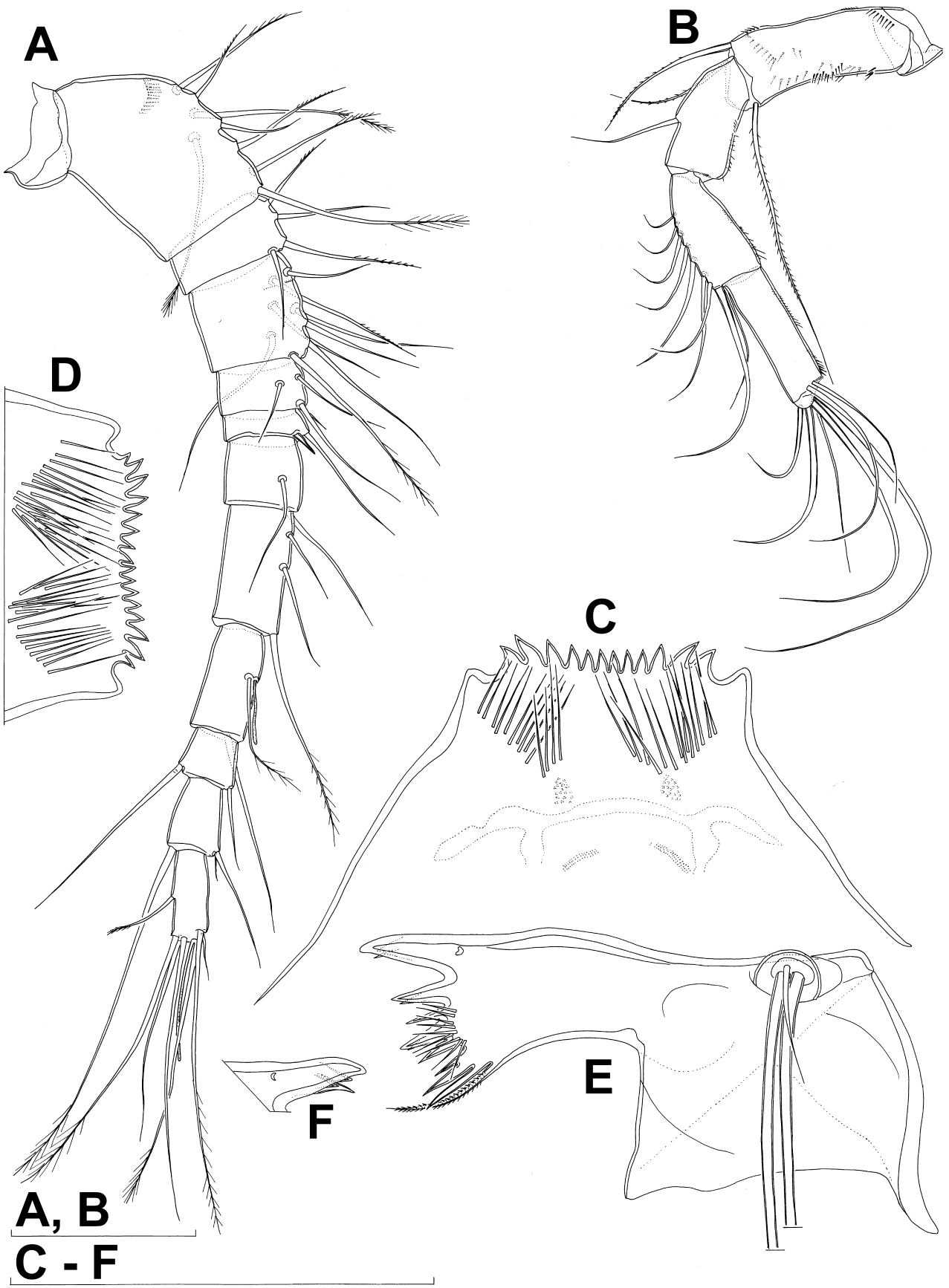

Fig. 4. *Diacyclops kaupi* n. sp., line drawings, A-C, E & F, holotype female; D, paratype female 1: A, antennula, dorsal view; B, antenna, dorsal view; C, labrum, anterior view; D, distal part of labrum, anterior view; E, mandibula, anterior view; F, quadricuspidate (ventral-most) tooth of mandibula, antero-dorsal view. Scale bars 100 µm.

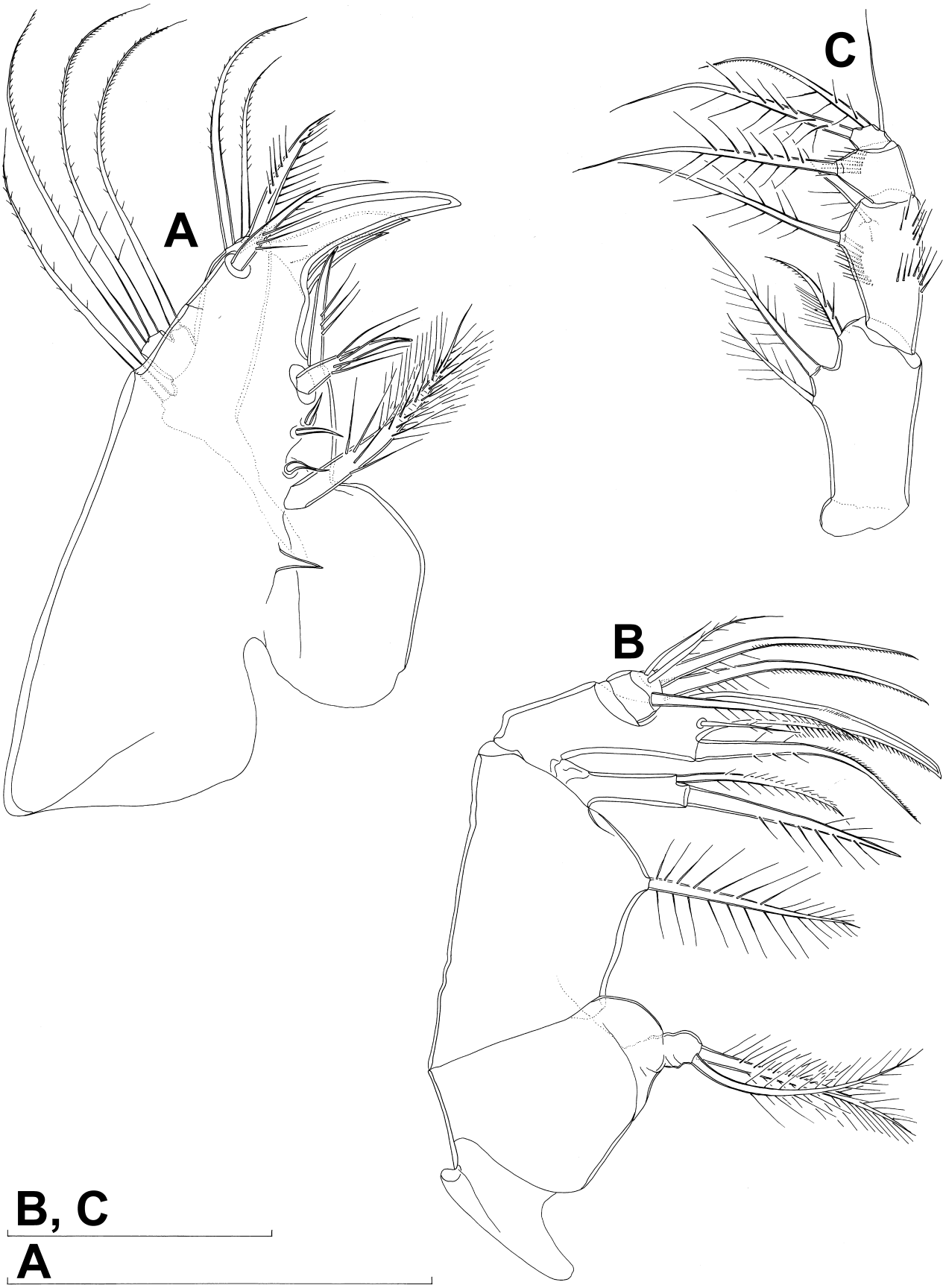

Fig. 5. *Diacyclops kaupi* n. sp., line drawings, holotype female: A, maxillula, posterior view; B, maxilla, posterior view; C, maxilliped, posterior view. Scale bars 100 µm.

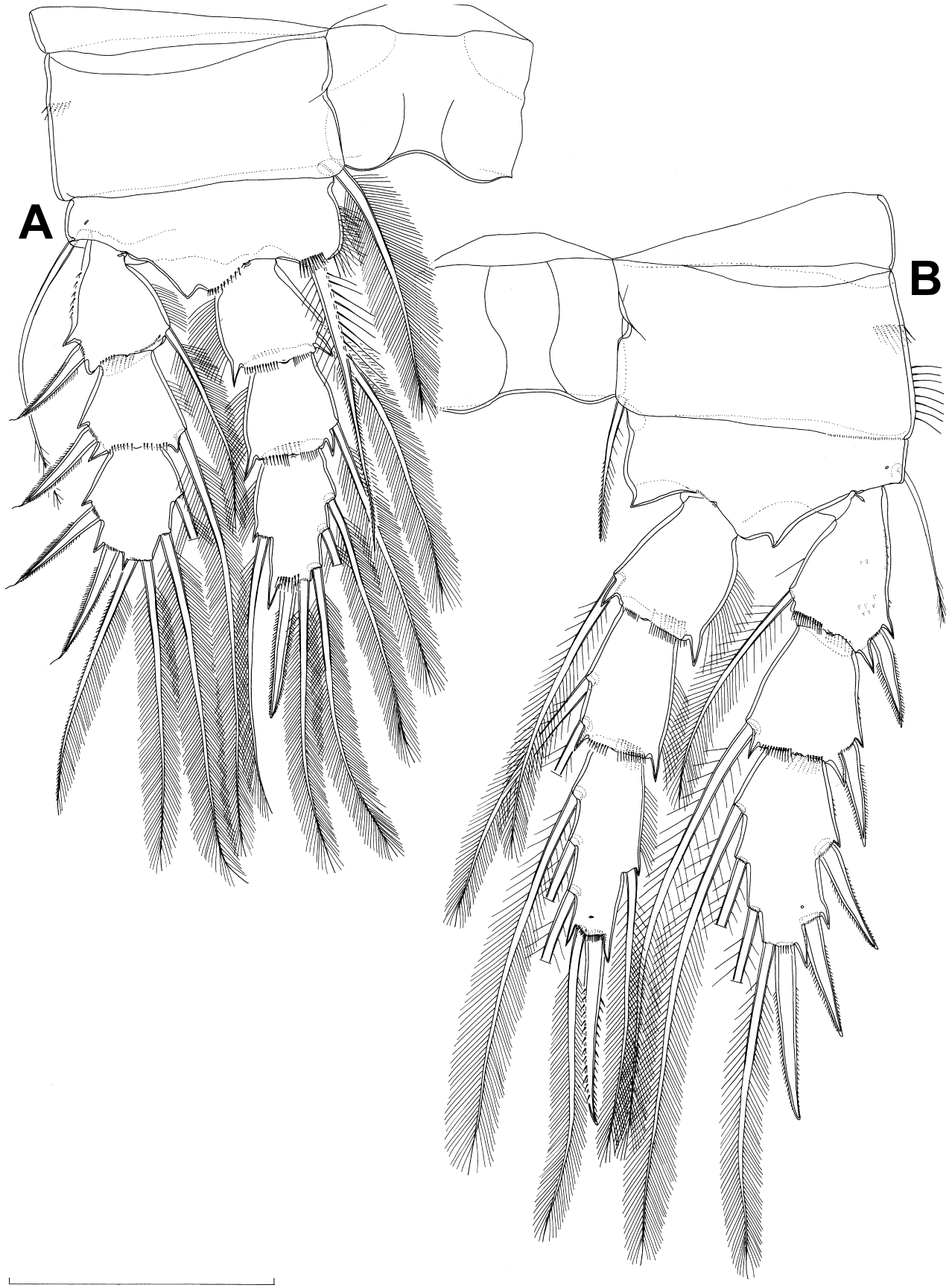

Fig. 6. *Diacyclops kaupi* n. sp., line drawings, holotype female: A, first swimming leg, anterior view; B, second swimming leg, anterior view. Scale bar 100 µm.

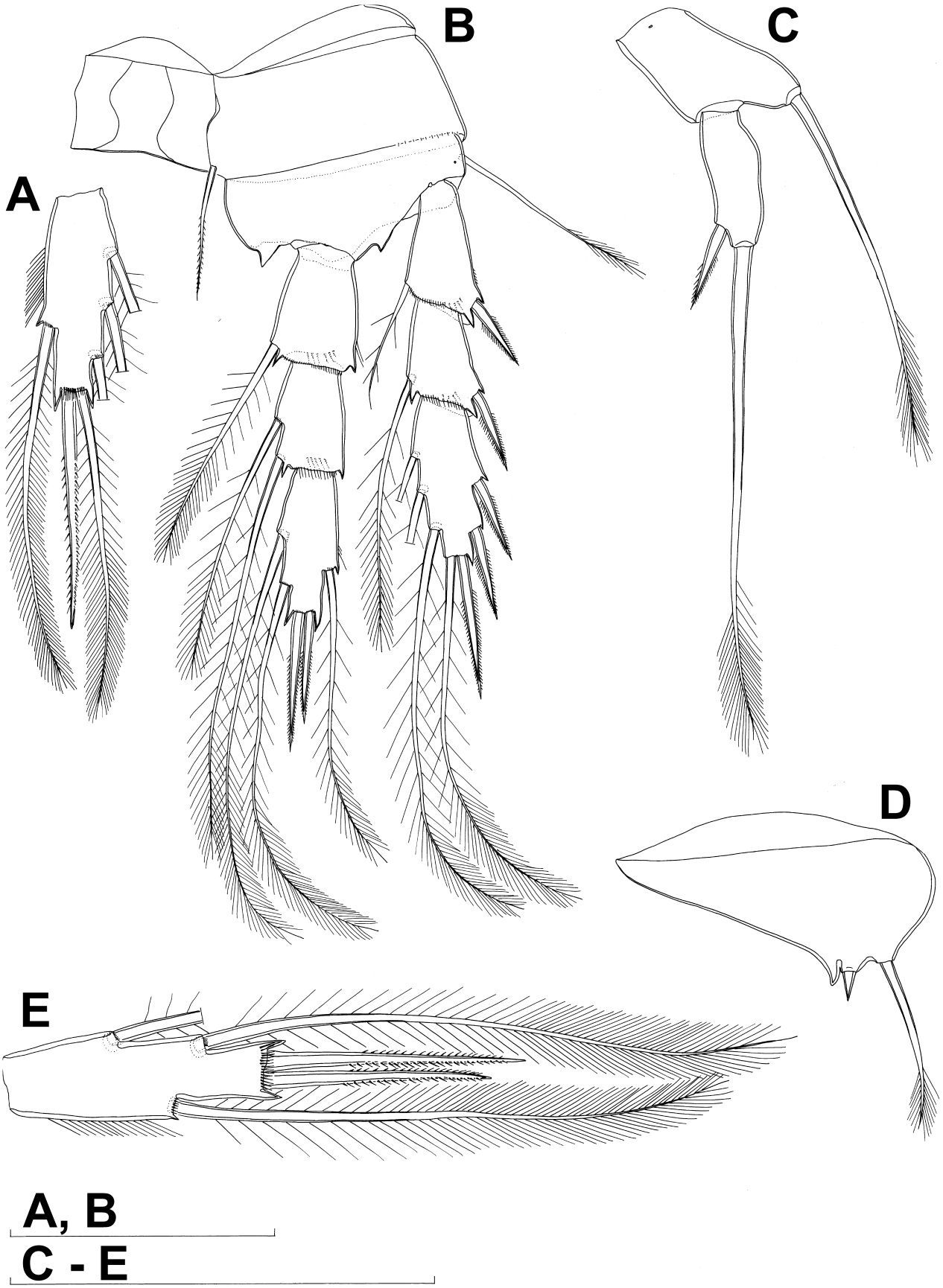

Fig. 7. *Diacyclops kaupi* n. sp., line drawings, A-D, holotype female; E, allotype male: A, third endopodal segment of third swimming leg, anterior view; B, fourth swimming leg, anterior view; C, fifth leg, anterior view (= ventro-lateral); D, sixth leg, lateral view; E, third endopodal segment of fourth swimming leg, anterior view. Scale bars 100 µm.

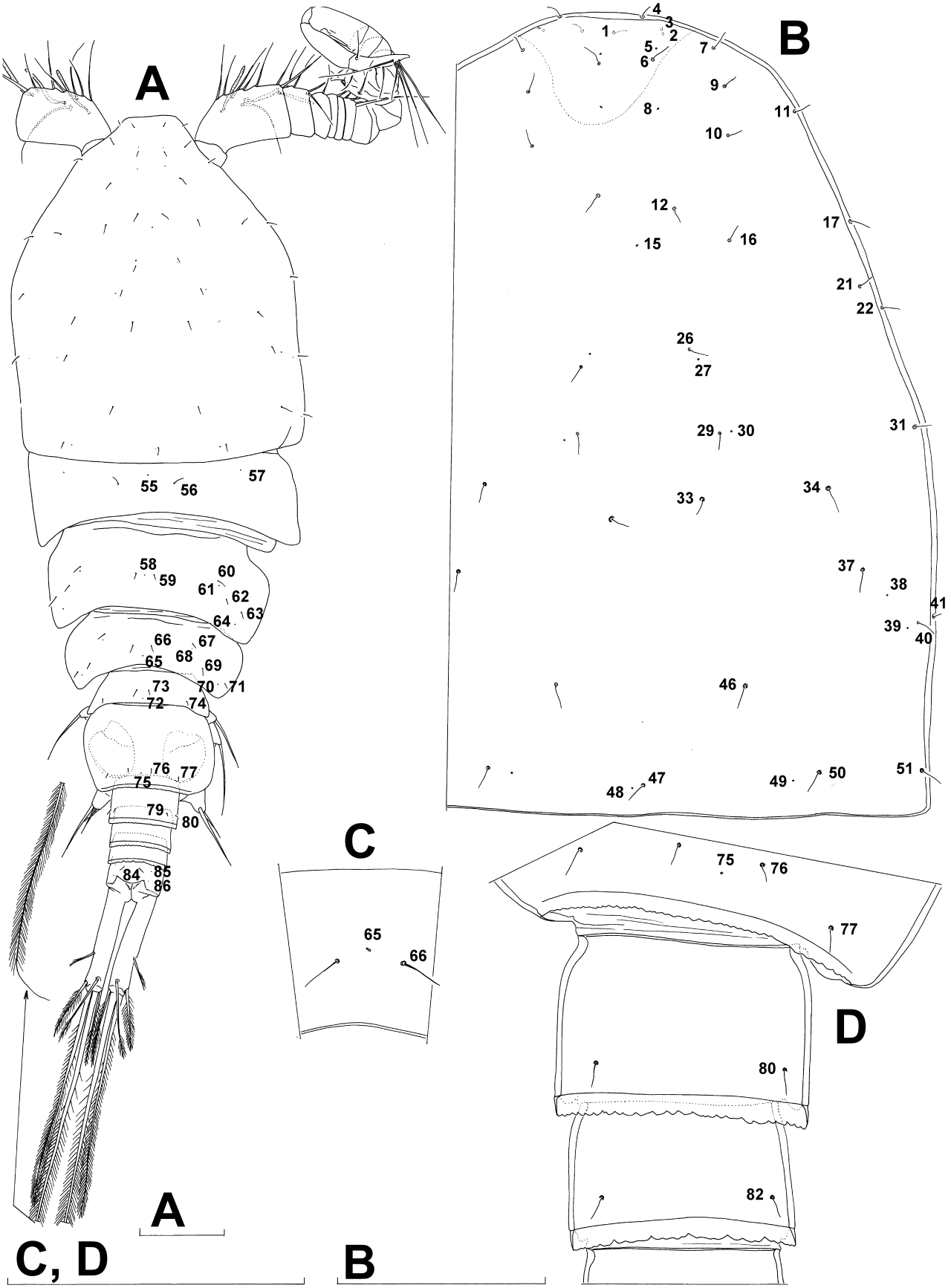

Fig. 8. *Diacyclops kaupi* n. sp., line drawings, A & B, allotype male; C & D, paratype male 1: A, habitus, dorsal view; B, cephalic shield, dorsal view; C, dorsal part of pleuron of fourth pedigerous somite, dissected and flattened; D, posterior part of genital somite and two subsequent urosomites, dorsal view. Arabic numerals number consectutive sensilla and pores from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Scale bars 100 µm.

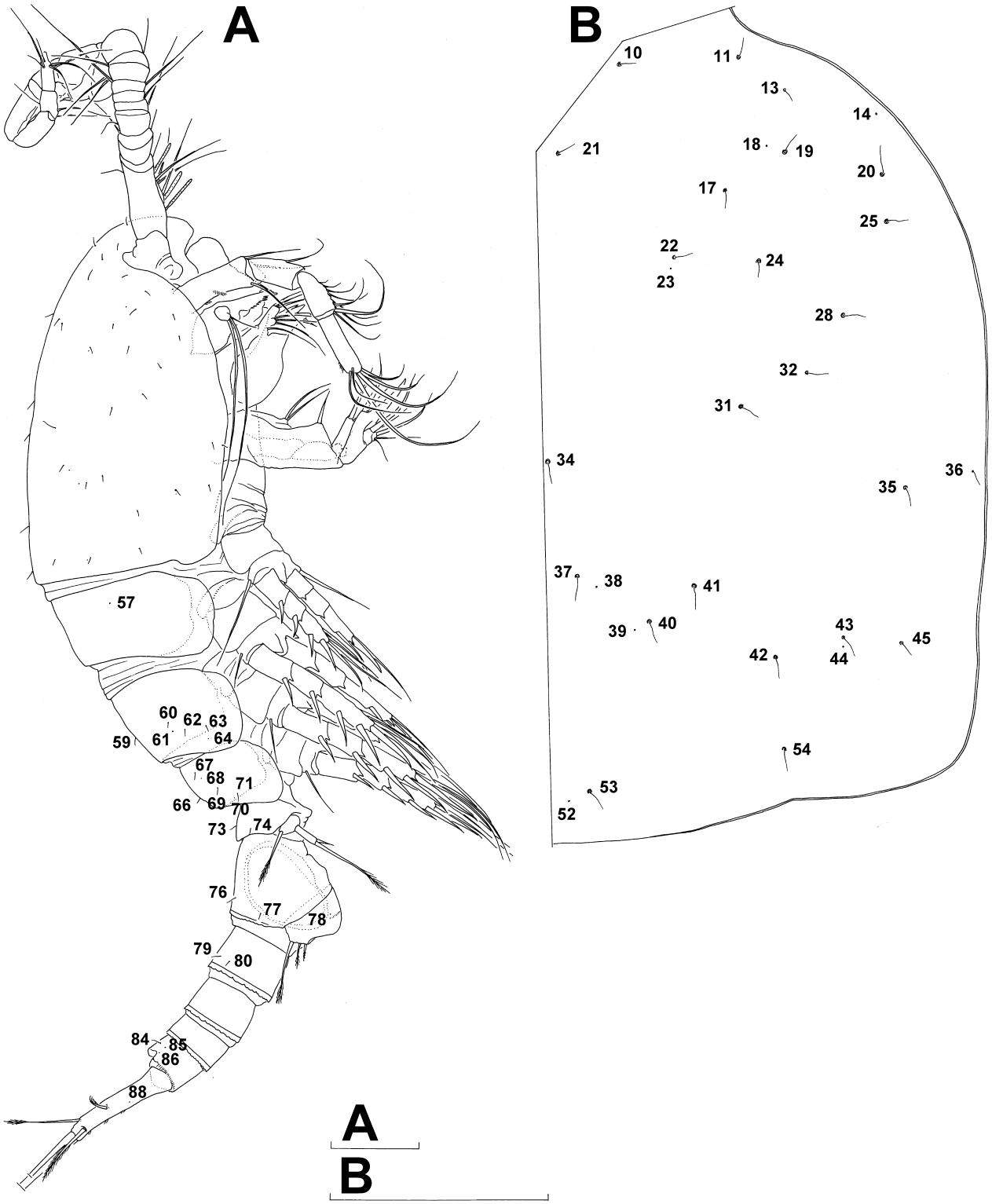

Fig. 9. *Diacyclops kaupi* n. sp., line drawings, allotype male: A, habitus, lateral view; B, part of cephalic shield, lateral view. Arabic numerals number consectutive sensilla and pores from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Scale bars 100 μm.

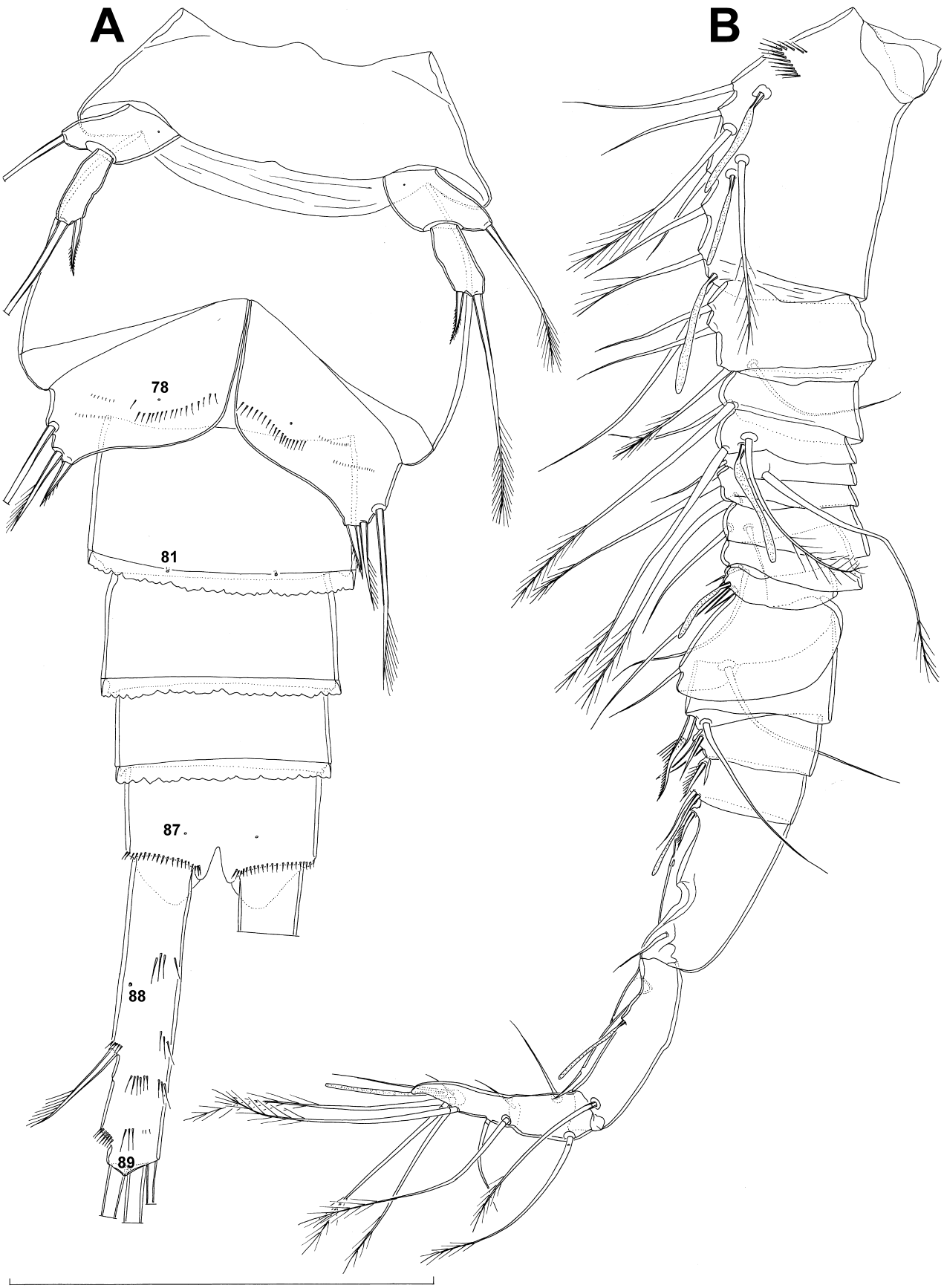

Fig. 10. *Diacyclops kaupi* n. sp., line drawings, allotype male: A, urosome, ventral view; B, antennula, ventral view. Arabic numerals number consectutive sensilla and pores from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Scale bar 100 µm.

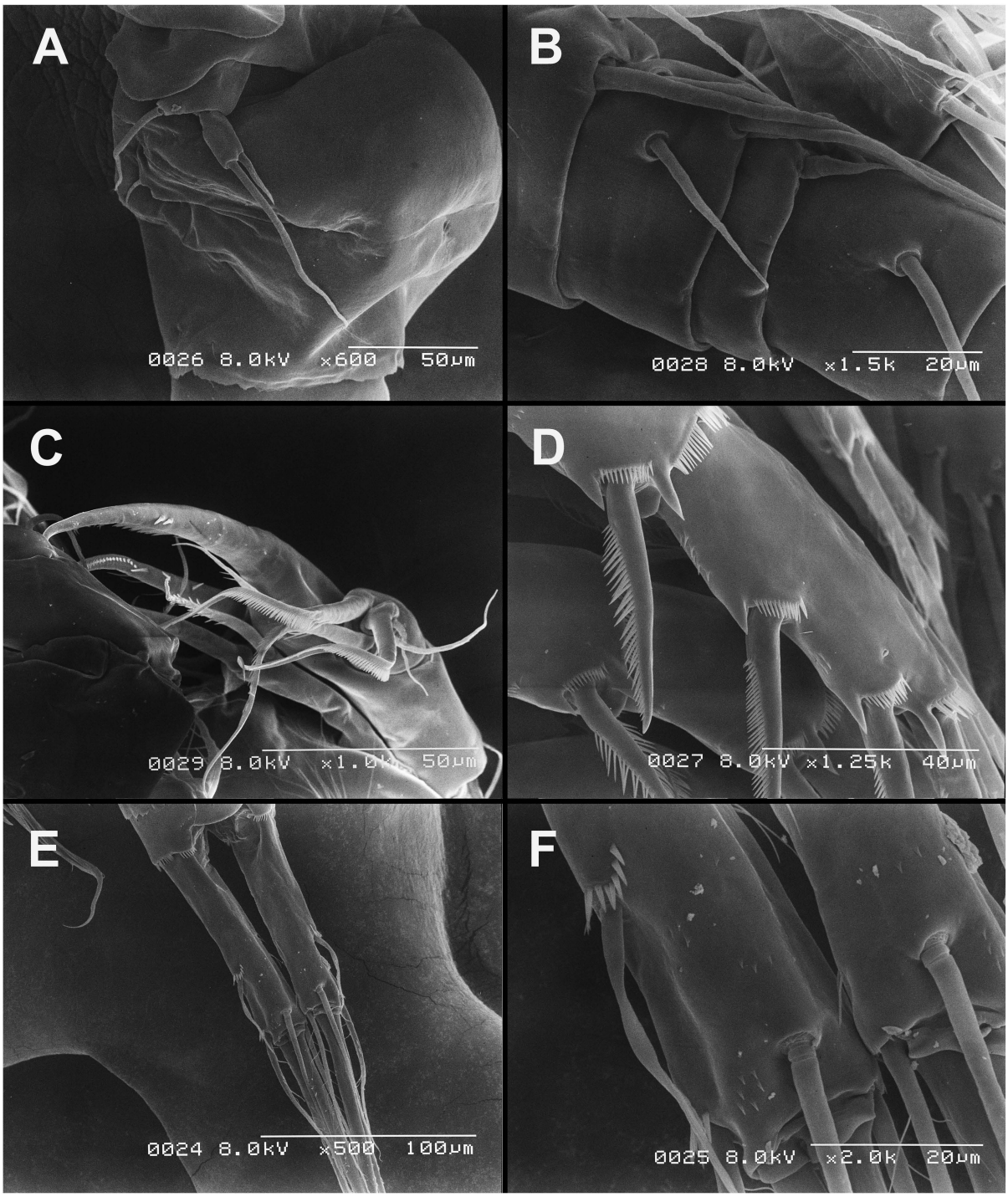

Fig. 11. *Diacyclops kaupi* n. sp., scanning electron micrographs, A-D, paratype female 2 ; E & F, paratype male 2: A, genital double somite and fifth leg, ventro-lateral view; B, antennula, fourth to sixth segments, dorsal view; C, maxilla, distal view; D, last two exopodal segments of second swimming leg, latero-anterior view; E, caudal rami, dorsal view; F, posterior part of caudal rami, dorsal view. Scale bars 100 µm (E), 50 µm (A, C), 40 µm (D), and 20 µm (B).

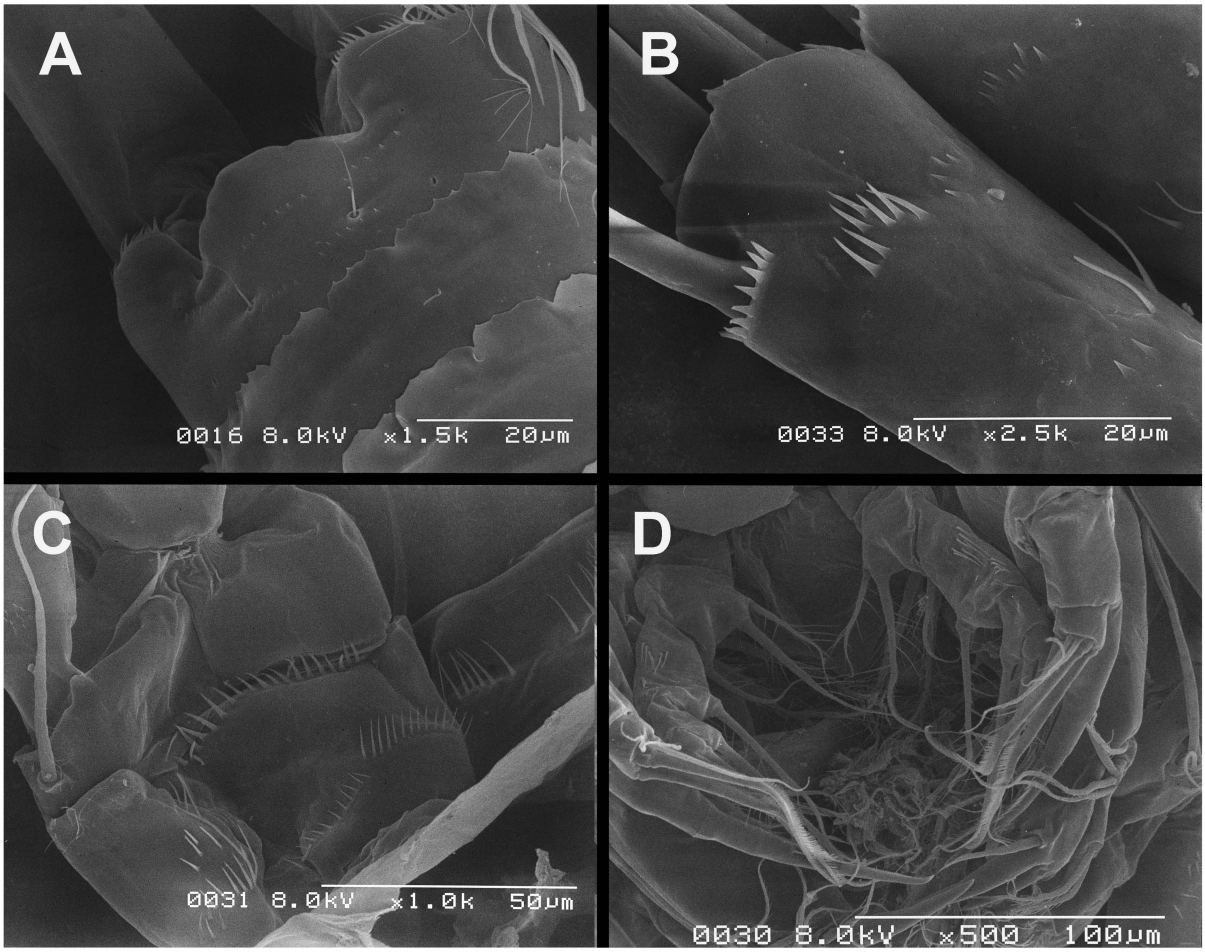

Fig. 12. *Diacyclops kaupi* n. sp., scanning electron micrographs, A, paratype male 2; B, paratype male 3: A, preanal and anal somites, dorsal view; B, posterior part of caudal rami, ventral view; C, coxa and basis of fourth swimming leg, posterior view; D, mouth appendages, posterior view. Scale bars 100 µm (D), 50 µm (C), and 20 µm (A, B).

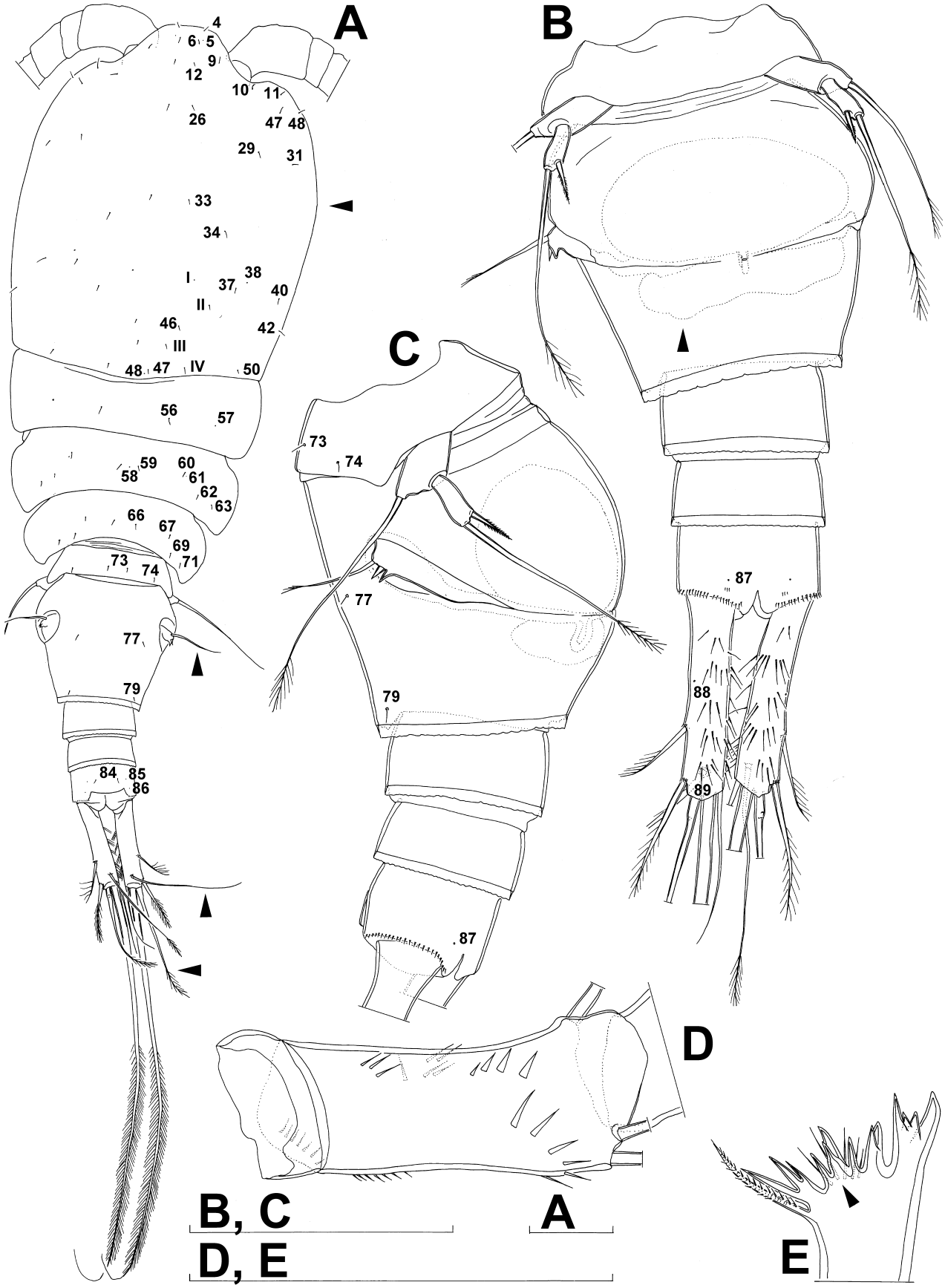

Fig. 13. *Diacyclops walkeri* n. sp., line drawings, holotype female: A, habitus, dorsal view; B, urosome, ventral view; C, urosome, lateral view; D, coxa and basis of antenna, ventral view; E, cutting edge of mandibula, posterior view. Arabic numerals indicating sensilla and pores presumably homologous to those in D. kaupi n. sp.; Roman numerals indicating sensilla and pores not present in D. kaupi; both consecutive from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Arrows pointing most prominent specific features. Scale bars 100 µm.

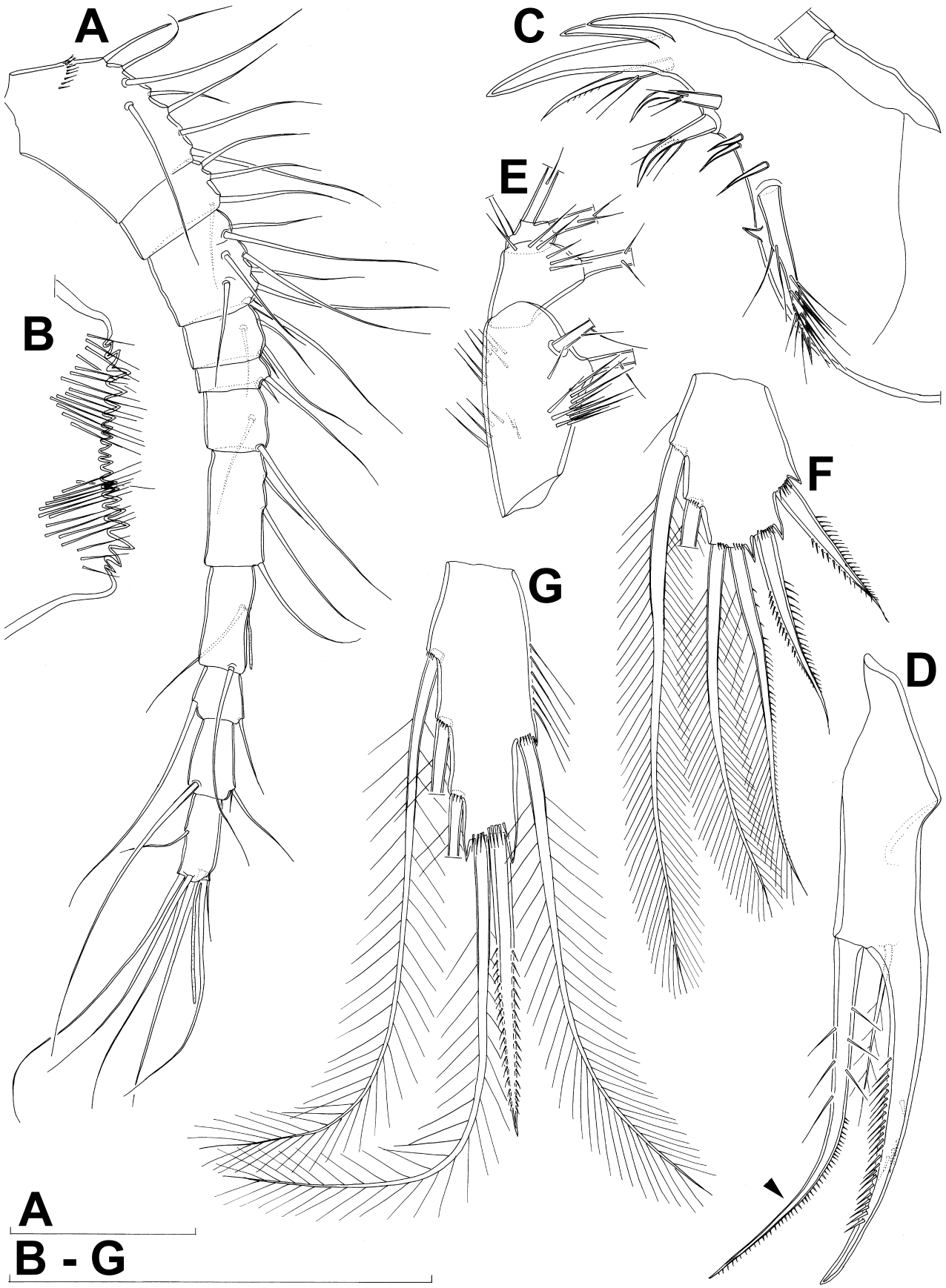

Fig. 14. *Diacyclops walkeri* n. sp., line drawings, holotype female: A, antennula, ventral view; B, distal part of labrum, anterior view; C, maxillula, posterior view; D, basis of maxilla, anterior view; E, three distal segments of maxilliped, anterior view; F, third exopodal segment of first swimming leg, anterior view; G, third endopodal segment of third swimming leg, anterior view . Arrow pointing prominent specific feature. Scale bars 100 µm.

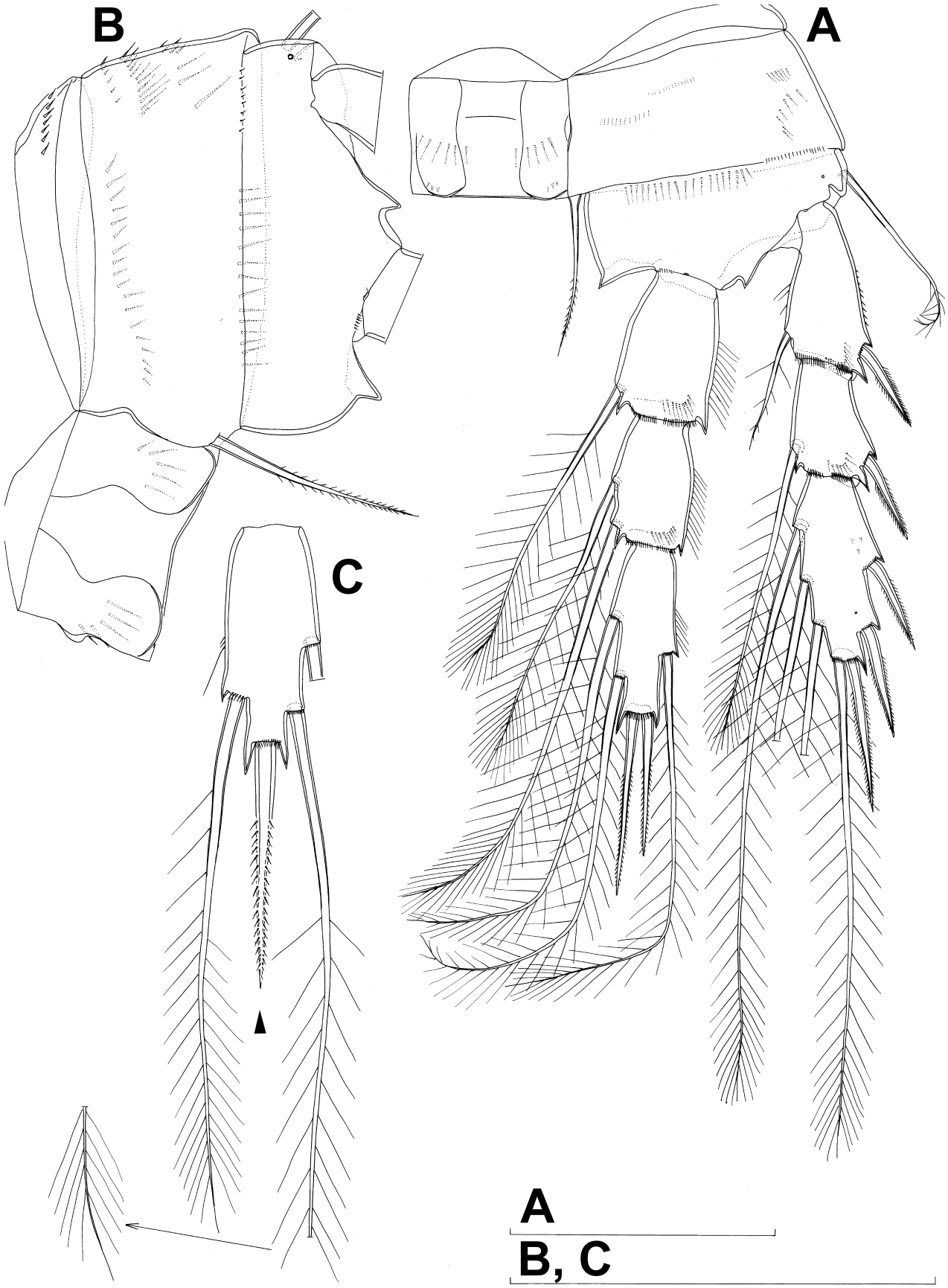

Fig. 15. *Diacyclops walkeri* n. sp., line drawings, holotype female: A, left fourth swimming leg, anterior view; B, coxa, basis, and intercoxal sclerite of left fourth swimming leg, anterior view; C, third endopodal segment of right fourth swimming leg, anterior view. Arrow pointing variable feature. Scale bars 100 µm.

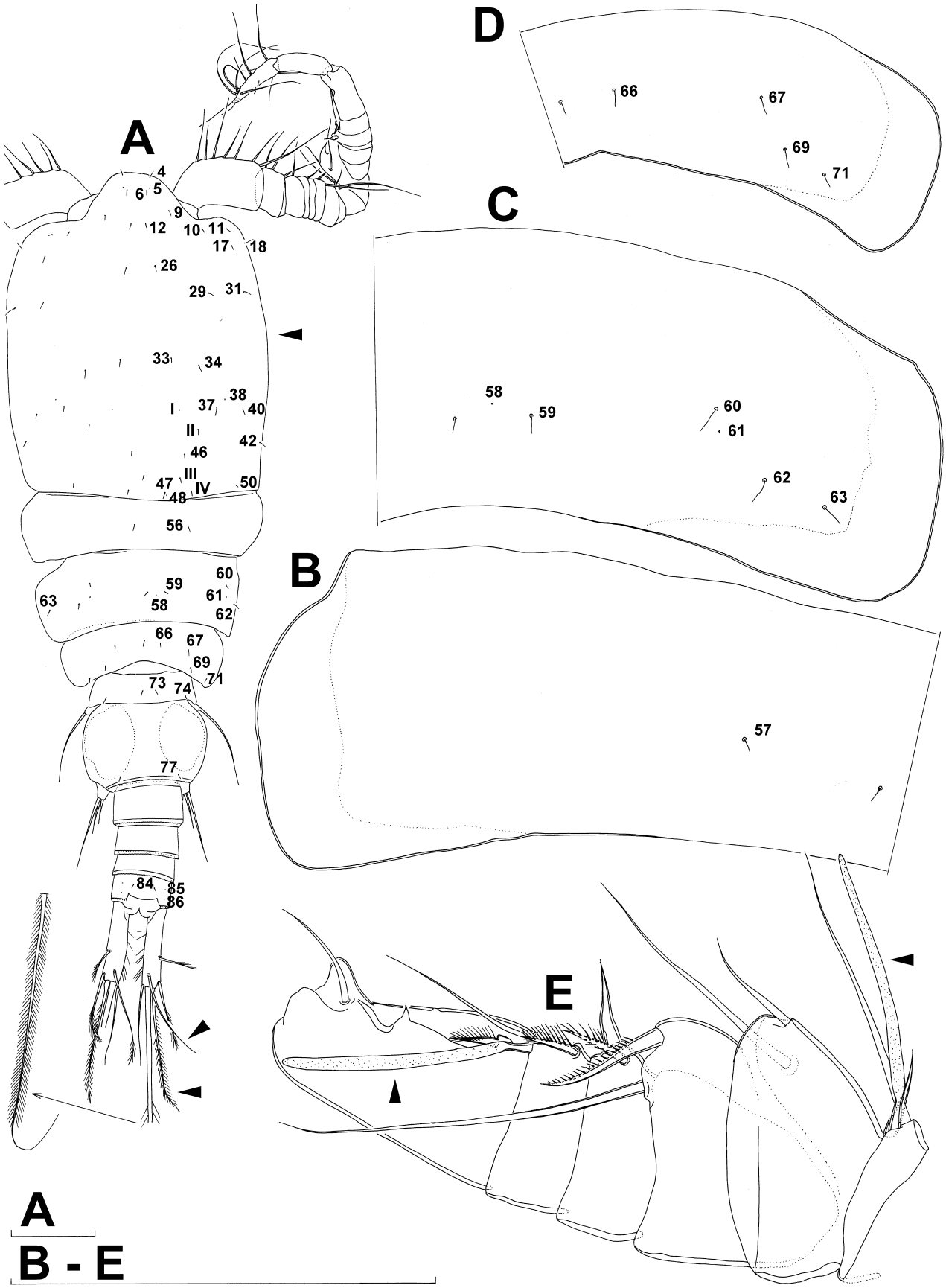

Fig. 16. *Diacyclops walkeri* n. sp., line drawings, allotype male: A, habitus, dorsal view; B, left part of pleuron of second pedigerous somite, dissected and flattened; C, right part of pleuron of third pedigerous somite, dissected and flattened; D, right part of pleuron of fourth pedigerous somite, dissected and flattened; E, middle part of antennula, ventral view. Arabic numerals indicating sensilla and pores presumably homologous to those in D. kaupi n. sp.; Roman numerals indicating sensilla and pores not present in D. kaupi; both consecutive from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Arrows pointing most prominent specific features. Scale bars 100 µm.

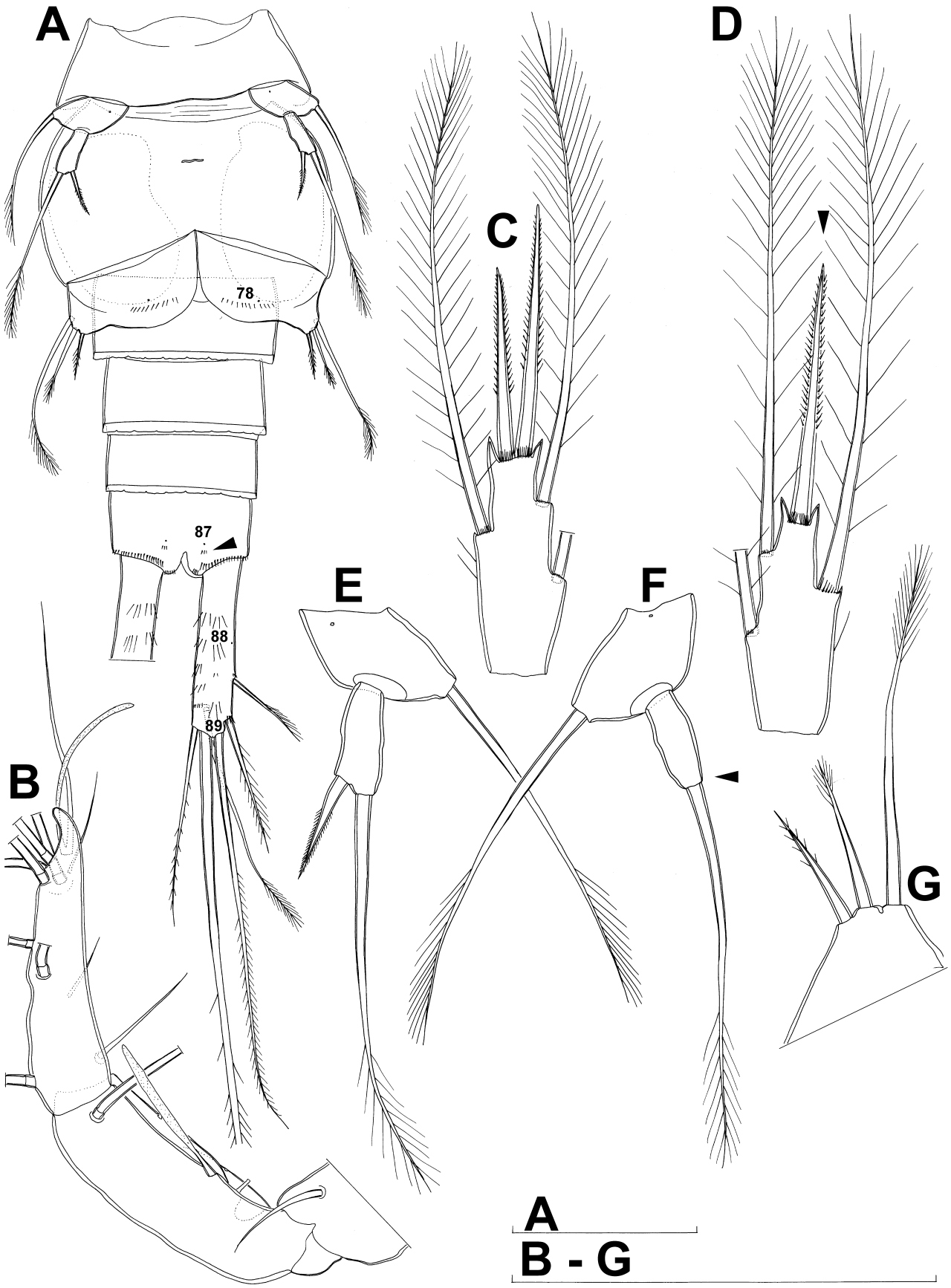

Fig. 17. *Diacyclops walkeri* n. sp., line drawings, A, C, B & G, allotype male; D-F, paratype male 1: A, urosome, ventral view; B, distal part of antennula, ventral view; C, third endopodal segment of fourth swimming leg, anterior view; D, third endopodal segment of fourth swimming leg, anterior view; E, fifth leg, anterior view; F, fifth leg, anterior view; G, part of sixth leg, lateral view. Arabic numerals indicating sensilla and pores presumably homologous to those in D. kaupi n. sp. Arrows pointing variable (in D and F) and prominent specific features (in A). Scale bars 100 µm.

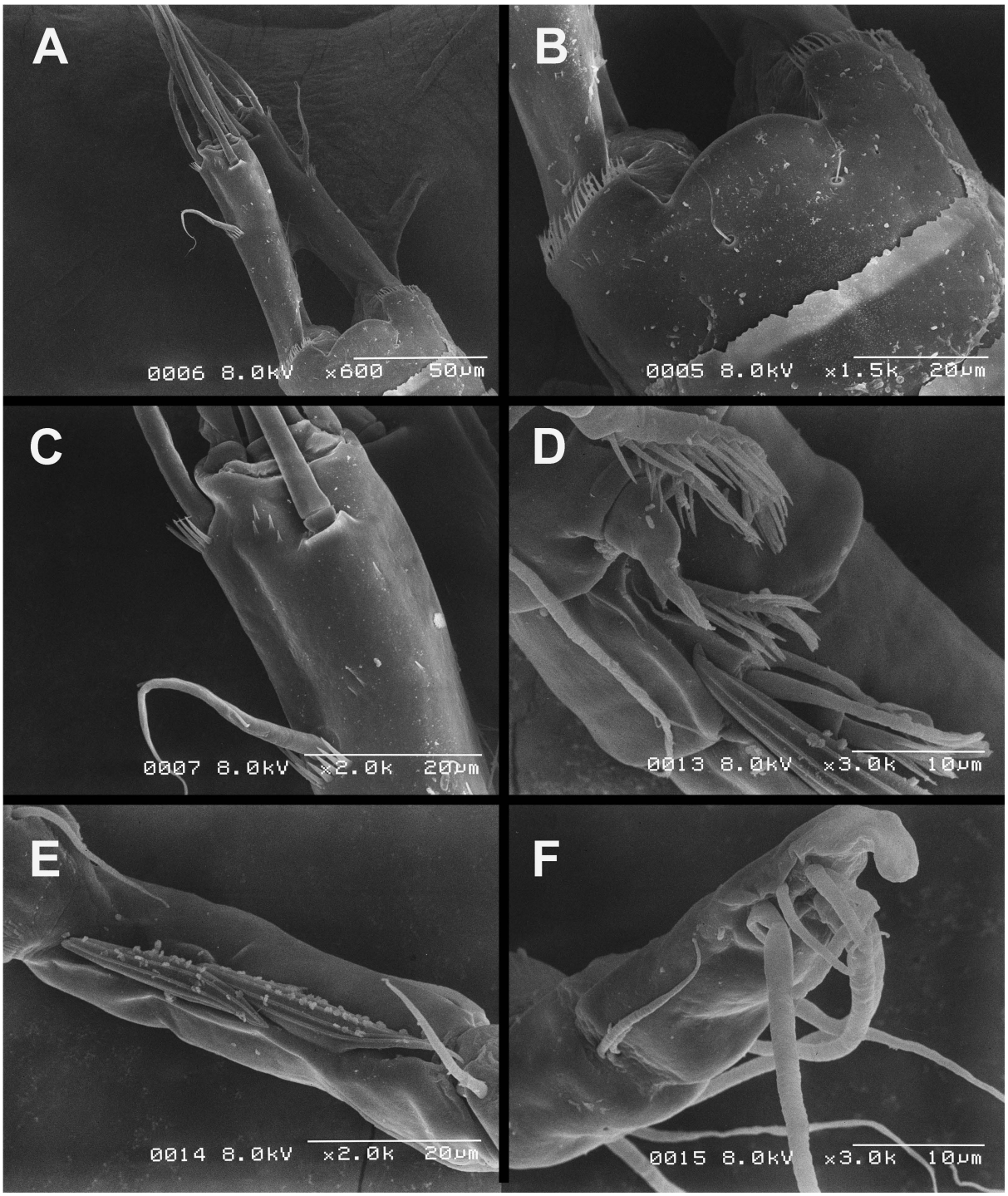

Fig. 18. *Diacyclops walkeri* n. sp., scanning electron micrographs, paratype male 2: A, caudal rami, dorsal view; B, anal somite, dorsal view; C, distal part of caudal rami, dorsal view; D, antennula, segments twelve to fourteen, anterior view; E, antennula, segment fifteen, anterior view; F, antennula, two distal segments, dorso-distal view. Scale bars 50 µm (A), 20 µm (B, C, E), and 10 µm (D, F).

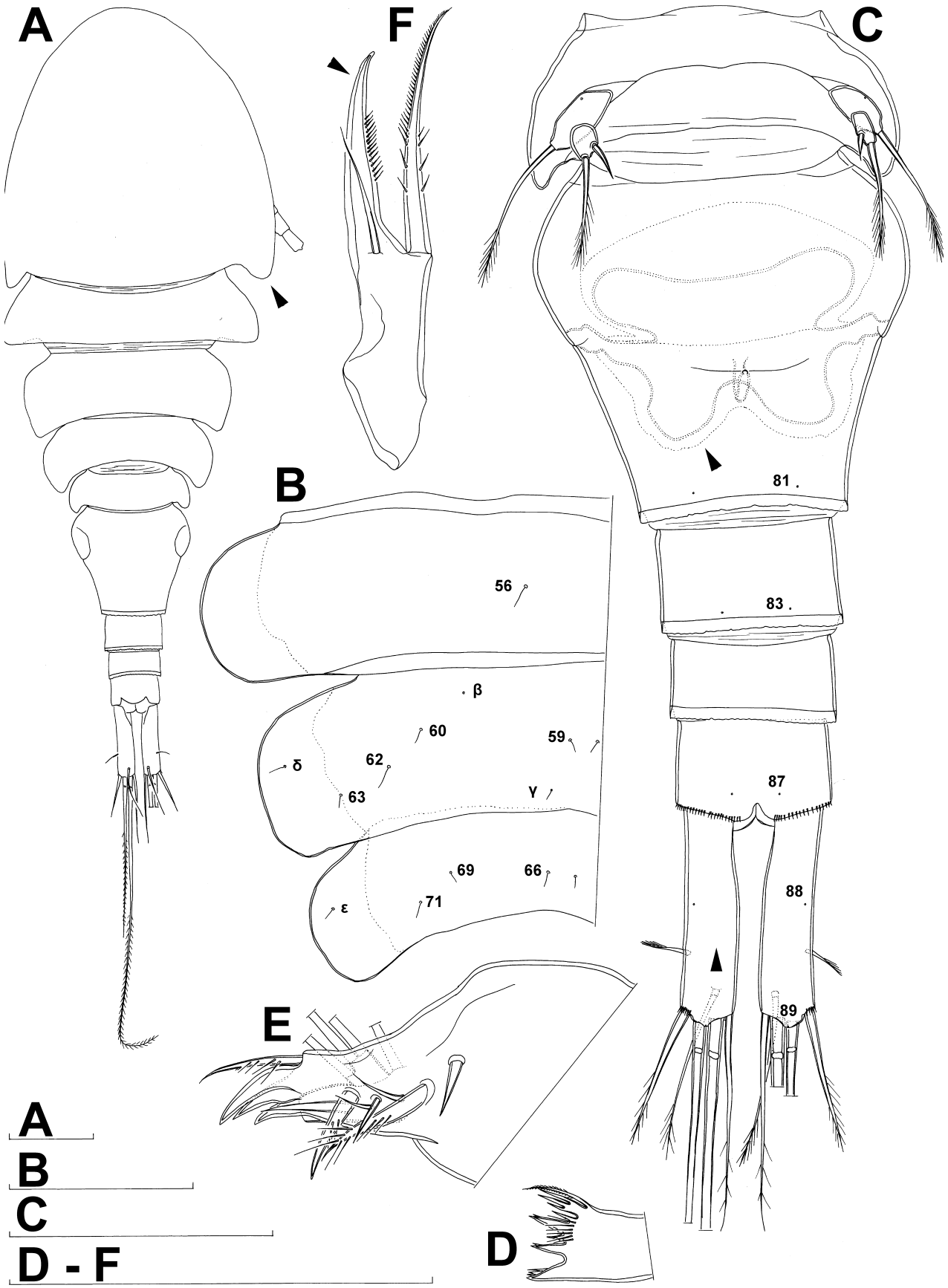

Fig. 19. *Diacyclops joycei* n. sp., line drawings, holotype female: A, habitus, dorsal view; B, pleurons of second, third and fourth pedigerous somites, dissected and flattened; C, urosome, ventral view; D, cutting edge of mandibular, anterior view; E, maxillula, posterior view; F, basis of maxilla, posterior view. Arabic numerals indicating sensilla and pores presumably homologous to those in D. kaupi n. sp.; Greek letters indicating unique sensilla and pores; both consecutive from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Arrows pointing most prominent specific features. Scale bars 100 µm.

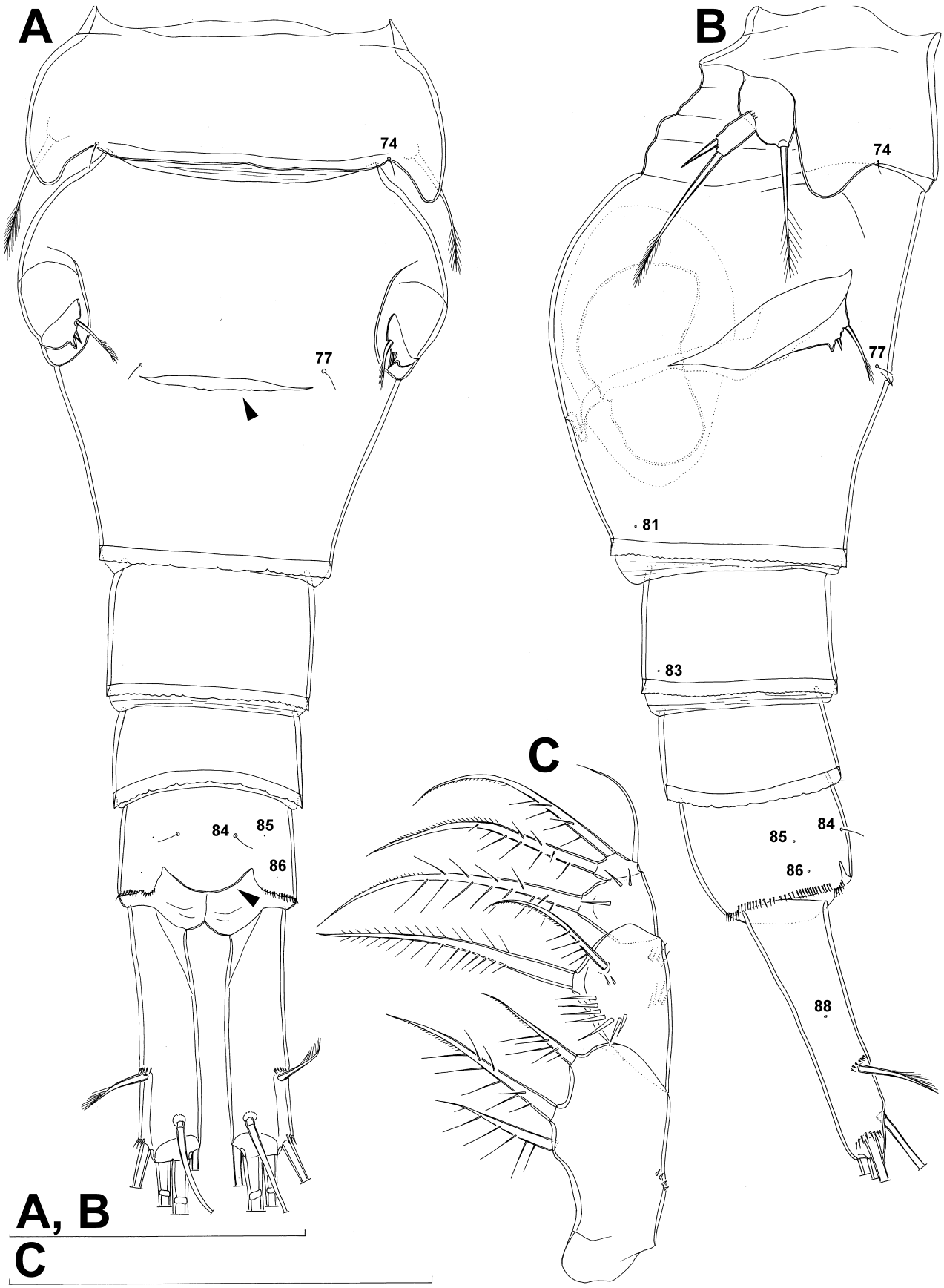

Fig. 20. *Diacyclops joycei* n. sp., line drawings, holotype female: A, urosome, dorsal view; B, urosome, lateral view; C, maxilliped, anterior view. Arabic numerals indicating sensilla and pores presumably homologous to those in D. kaupi n. sp. Arrows pointing most prominent specific features. Scale bars 100 µm.

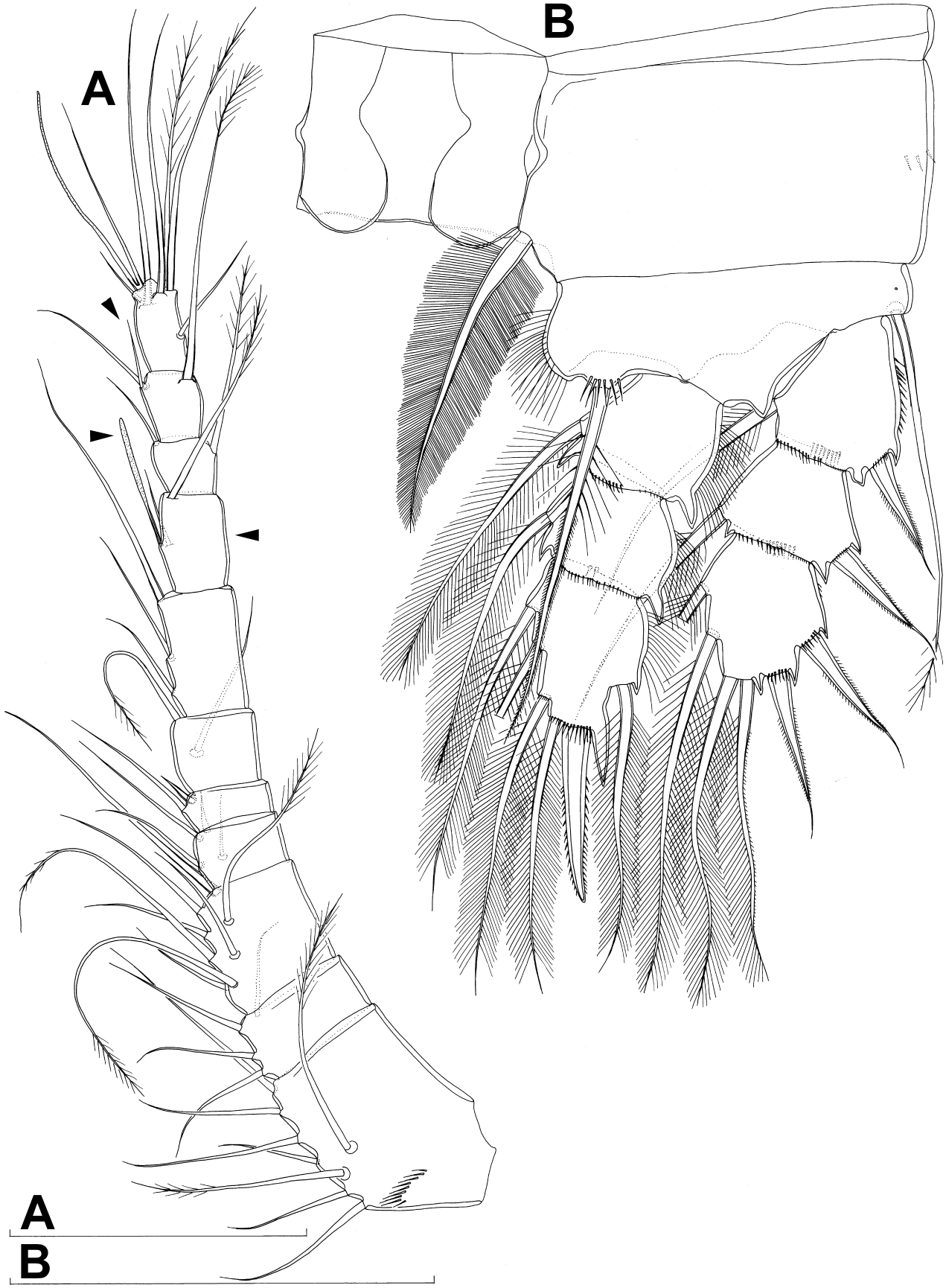

Fig. 21. *Diacyclops joycei* n. sp., holotype female: A, antennula, ventral view; B, first swimming leg, anterior view. Arrows pointing most prominent specific features. Scale bars 100 µm.

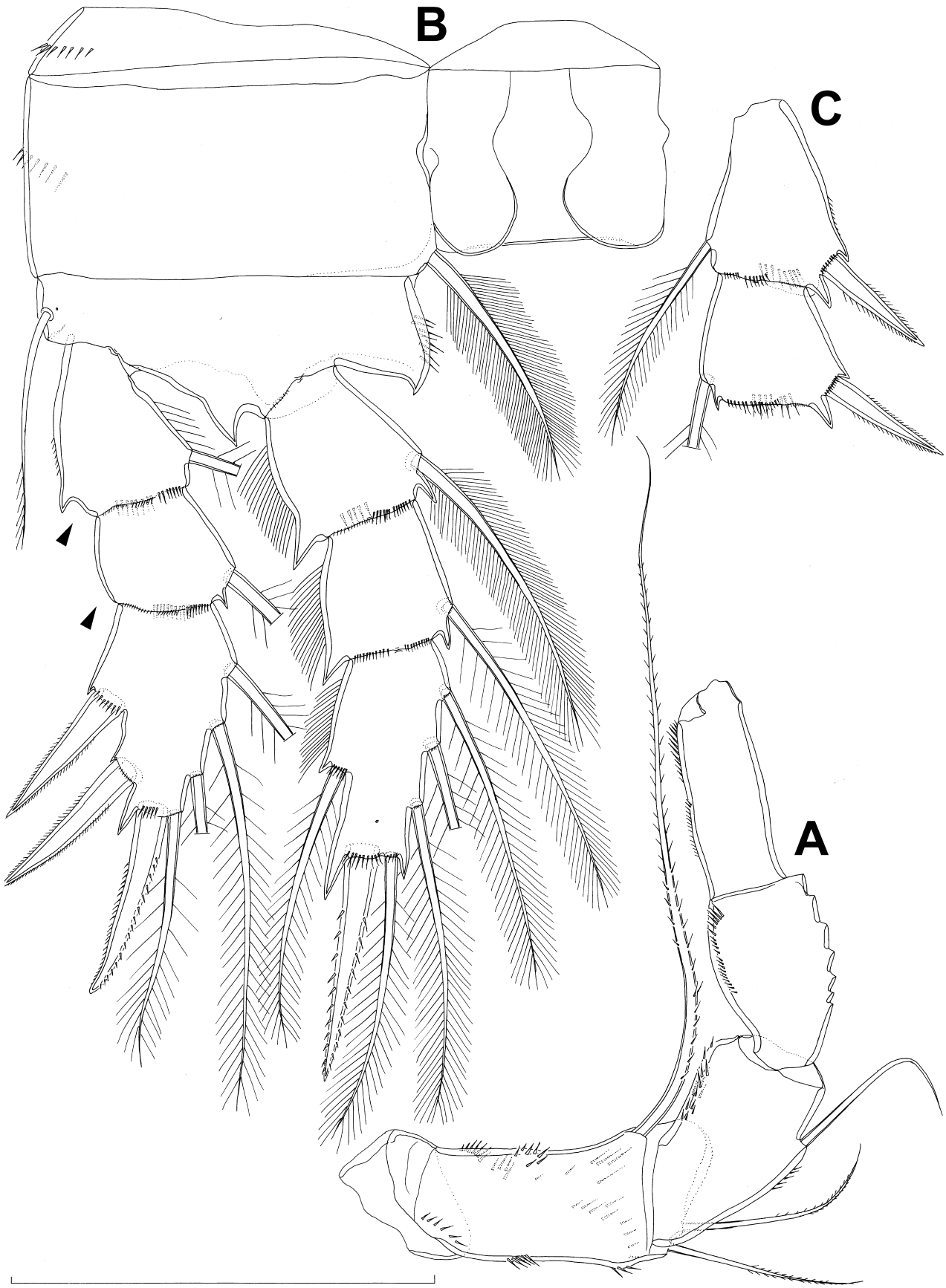

Fig. 22. *Diacyclops joycei* n. sp., line drawings, holotype female: A, antenna with armature on last two segments omitted, dorsal view; B, right third swimming leg, anterior view; C, first two exopodal segments of left third swimming leg, anterior view. Arrows pointing abnormal features. Scale bar 100 µm.

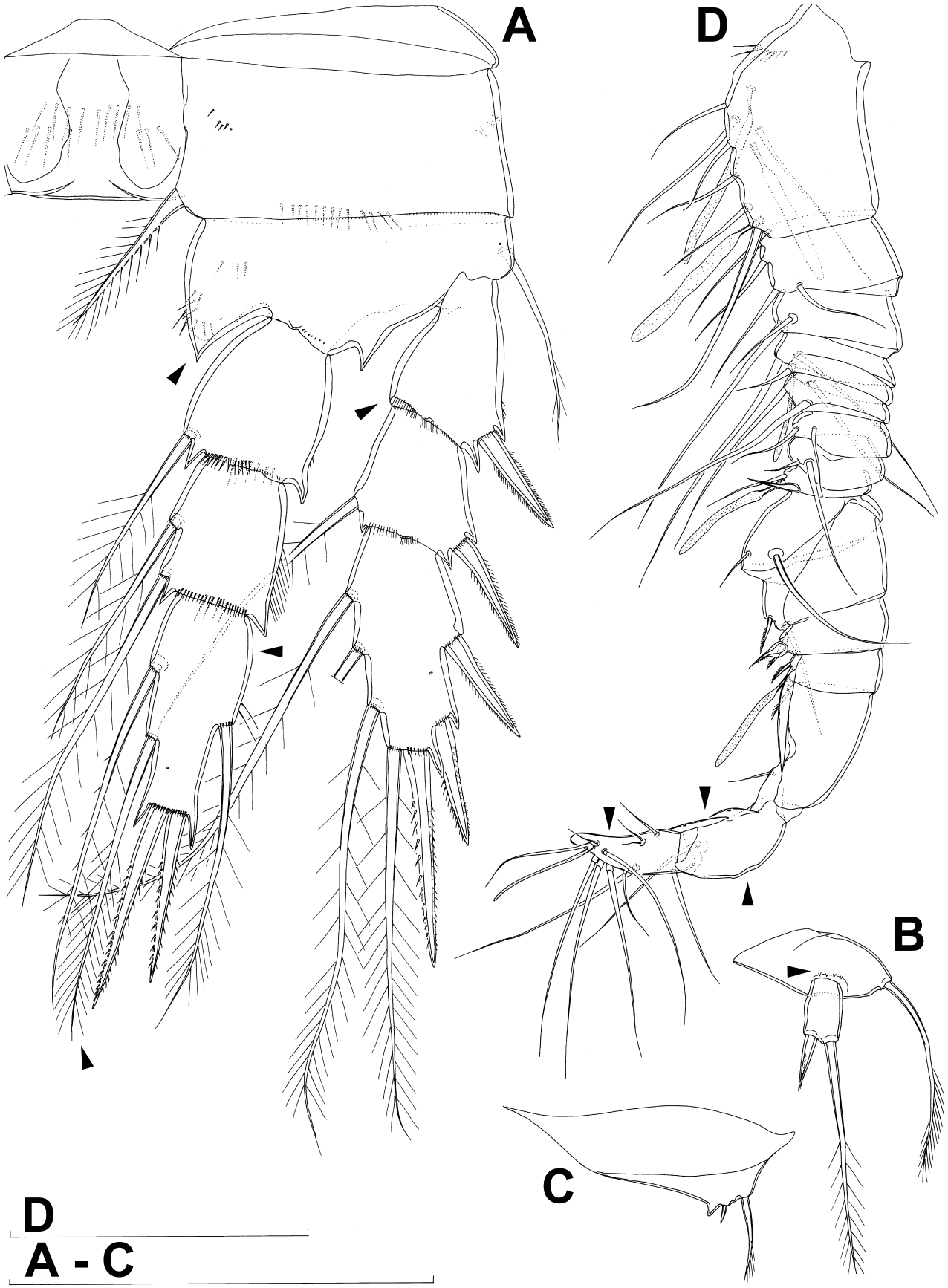

Fig. 23. *Diacyclops joycei* n. sp., line drawings, A-C, holotype female; D, allotype male: A, fourth swimming leg, anterior view; B, fifth leg, anterior view; C, sixth leg, lateral view; D, antennula, dorsal. Arrows pointing most prominent specific features. Scale bars 100 µm.

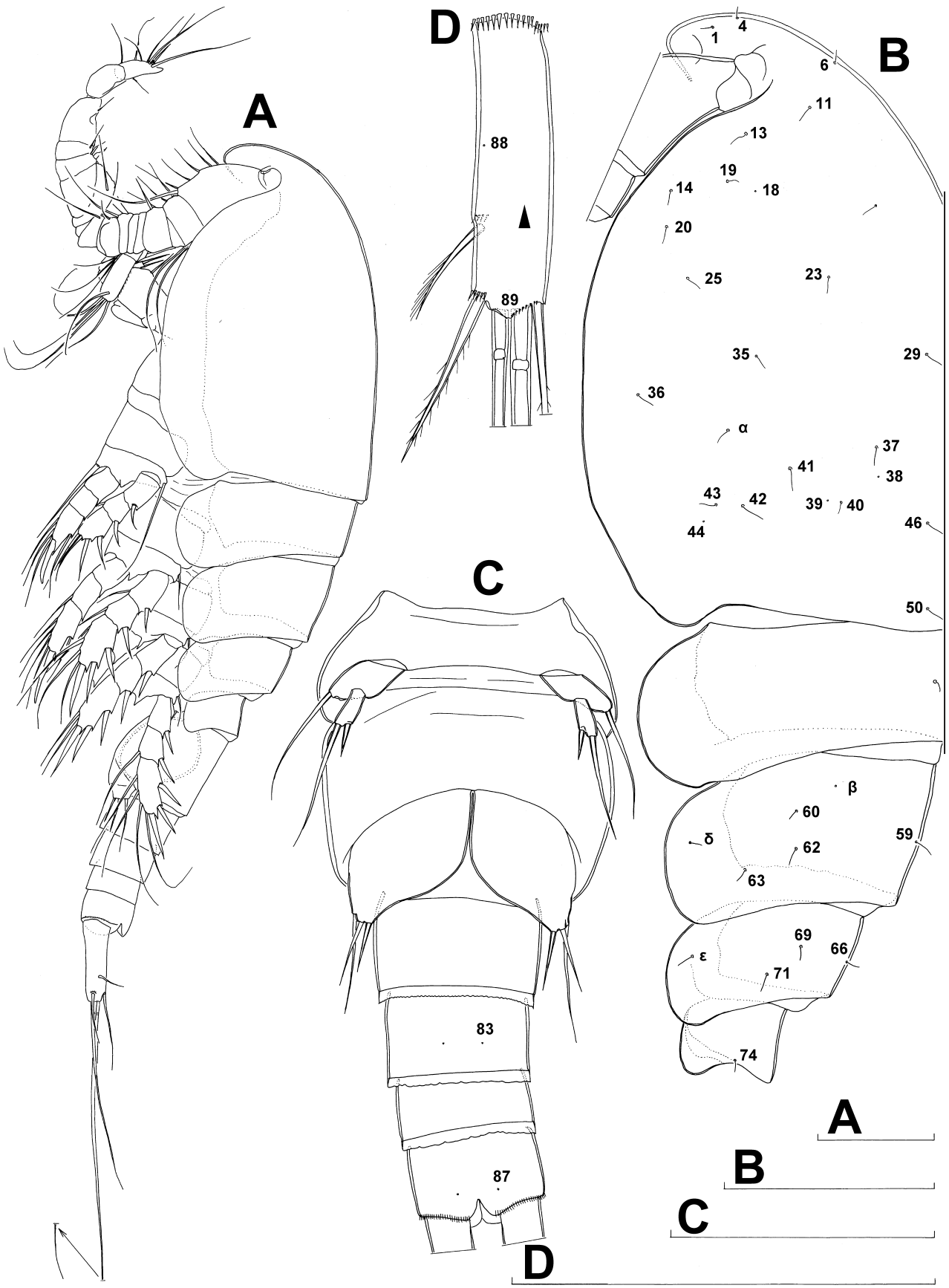

Fig. 24. *Diacyclops joycei* n. sp., line drawings, allotype male: A, habitus, lateral view; B, prosomal pleurons, lateral view; C, urosome, ventral view; D, right caudal ramus, ventral view. Arabic numerals indicating sensilla and pores presumably homologous to those in D. kaupi n. sp.; Greek letters indicating unique sensilla and pores; both consecutive from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Arrow pointing prominent specific feature. Scale bars 100 µm.

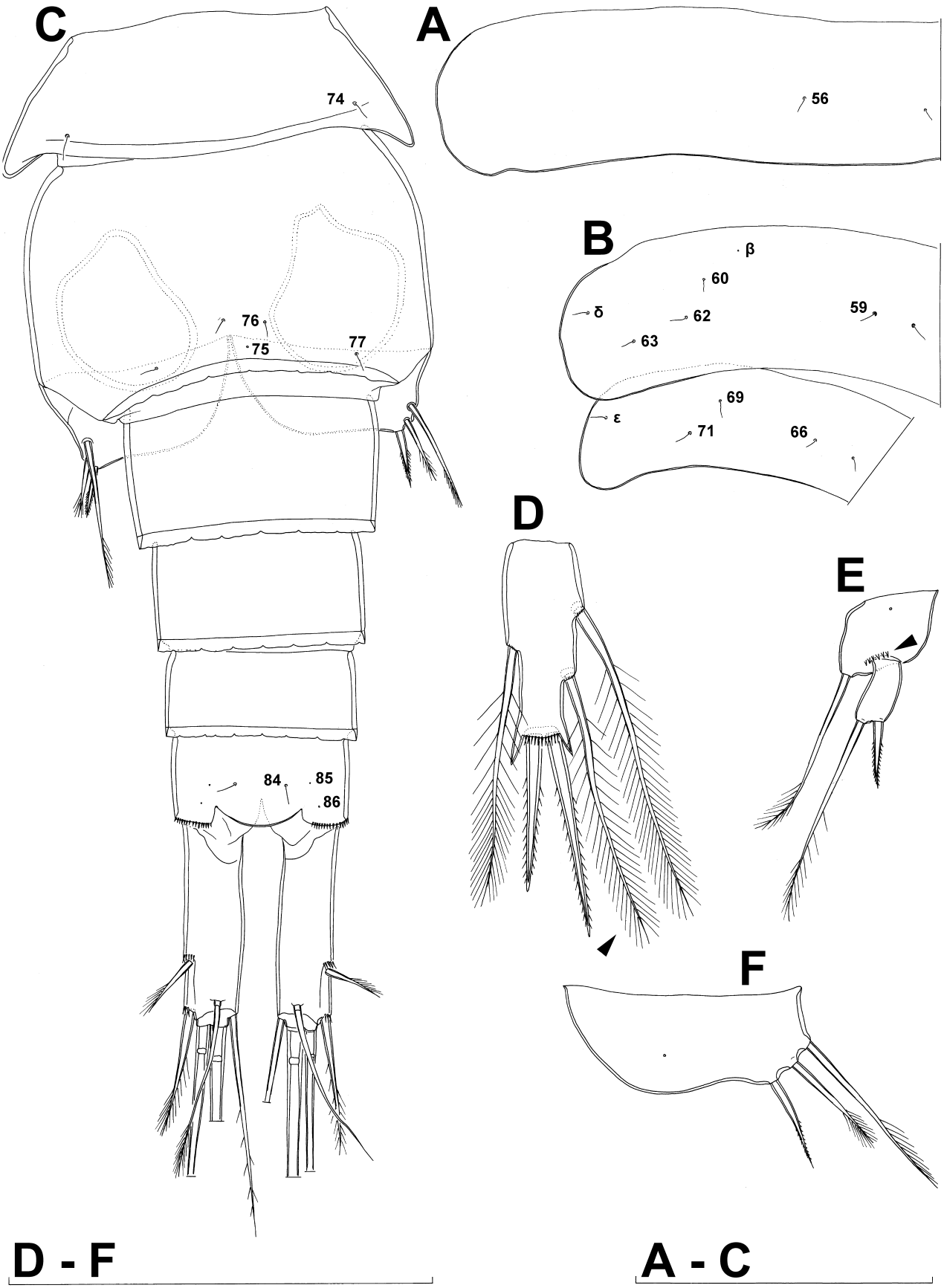

Fig. 25. *Diacyclops joycei* n. sp., line drawings, allotype male: A, pleuron of second pedigerous somite, dissected and flattened; B, pleurons of third and fourth pedigerous somites, dissected and flattened; C, urosome, dorsal view; D, third endopodal segment of fourth swimming leg, anterior view; E, fifth leg, anterior view; F, sixth leg, ventro-lateral view. Arabic numerals indicating sensilla and pores presumably homologous to those in D. kaupi n. sp.; Greek letters indicating unique sensilla and pores; both consecutive from anterior to posterior end of body, and from dorsal to ventral side (excluding appendages). Arrows pointing most prominent specific features. Scale bars 100 µm.

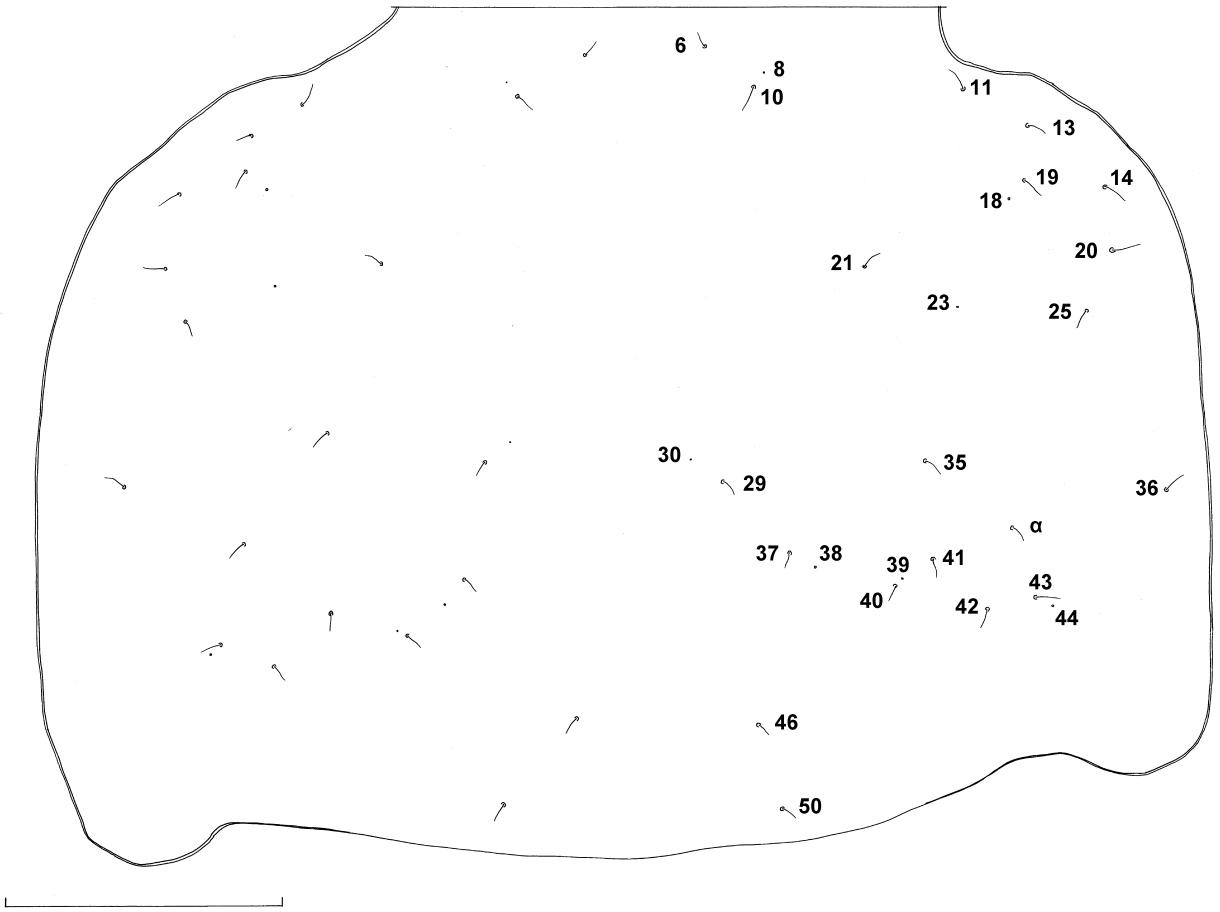

Fig. 26. *Diacyclops joycei* n. sp., line drawing, allotype male, cephalic shield, dissected and flattened. Arabic numerals indicating sensilla and pores presumably homologous to those in D. kaupi n. sp.; Greek letter indicating unique sensilla; both consecutive from anterior to posterior end of body, and from dorsal to ventral side. Scale bar 100 µm.

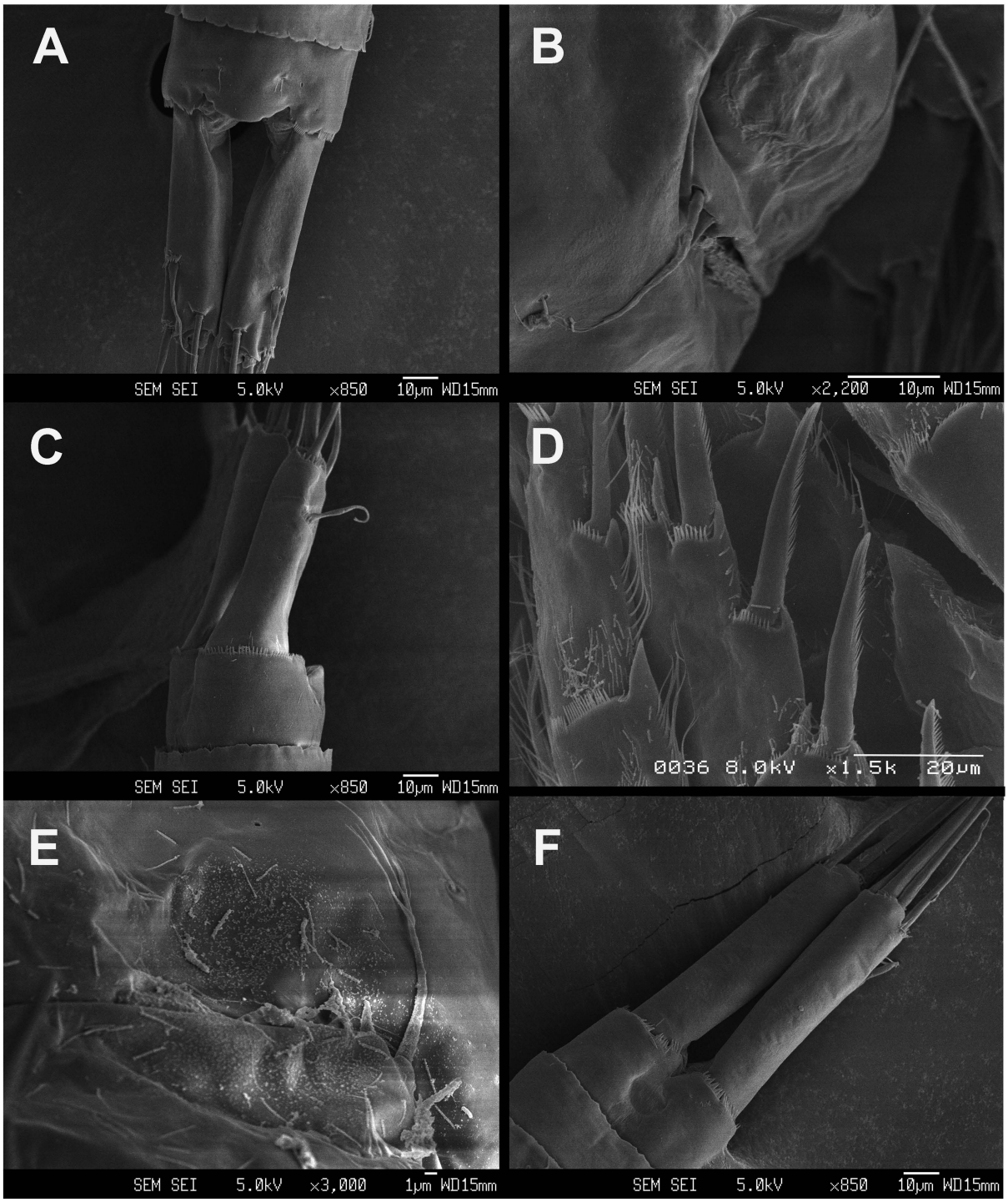

Fig. 27. *Diacyclops joycei* n. sp., scanning electron micrographs, A & B, paratype female 1; C-E, paratype female 2; F, paratype male: A, caudal rami, dorsal view; B, sixth leg, dorsal view; C, anal somite and caudal rami, lateral view; D, distal part of second swimming leg, latero-anterior view; E, sixth leg, lateral view; F, anal somite and caudal rami, ventral view. Scale bars 20 µm (D), 10 µm (A, B, C, F) and 1 µm (E).