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POLYCHAETA FROM SOUTHEASTERN AUSTRALIA. 1. ACROCIRRIDAE BANSE, 1969, FROM VICTORIA AND NEW SOUTH WALES

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SUMMARY

Acrocirrus aciculigerus n. sp. and *Macrochaeta australiensis* n. sp. (Acrocirridae) are described, and keys to all known species of each genus are given. This is the first record of *Macrochaeta* in Australia.

INTRODUCTION

The Acrocirridae was established by Banse (1969). It contains two genera, *Acrocirrus* Grube, 1872, and *Macrochaeta* Grube, 1850, which were previously included in the Cirratulidae (see Day, 1967). Acrocirrids are separable from cirratulids because they have multiarticulate notosetae and simple or composite falcigers in the neuropodia. Cirratulids have simple capillary setae and acicular spines. Acrocirrids are further characterised in having ventrally grooved palpi, the prostomium situated on top of the peristomium and branchiae generally restricted to four anterior segments. Distinct parapodial lobes may be present. The Acrocirridae shares a number of similar characteristics with the Flabelligeridae. For example, both families have a buccal bulb, composite setae, acicula and the blood pigment, chlorocruorin (Mesnil, 1899; Banse, 1969).

Acrocirrids have been reported from numerous localities in the northern hemisphere, and are known from New Zealand and Antarctica in the southern hemisphere. This paper describes a new species each of *Acrocirrus* and *Macrochaeta*. Although Bennett (1966) records the former genus from New South Wales, this is the first record of the latter genus in Australia. Specimens of *Acrocirrus* were obtained from the Australian Museum, Sydney, New South Wales; specimens of *Macrochaeta* were obtained from Western Port (Westernport Bay Environmental Survey (WBES), Fisheries and Wildlife Division, Melbourne, Victoria), and from Point Gellibrand, Port Phillip Bay, Victoria. Type material has been deposited in the National Museum of Victoria, Melbourne (N.M.V.); the Australian Museum, Sydney (A.M.); and the Allan Hancock Foundation, University of Southern California, Los Angeles, California, USA (AHF).

SYSTEMATICS

Family **Acrocirridae** Banse, 1969Genus **Acrocirrus** Grube, 1872**Acrocirrus aciculigerus** n. sp.

MATERIAL EXAMINED: New South Wales, Long Reef, Collaroy, Sydney, April 1962, I. Bennett, collector-HOLOTYPE (AM W. 4908); Long Reef, Collaroy, Sydney, mid-tide level, in sand under stones, January 1964, I. Bennett, collector-PARATYPES (AM W. 4907).

DIAGNOSIS: A large *Acrocirrus* species with segments 1-4 ventrally fused; neurosetae from segment 4; notosetae from segment 6; a raised transverse annulus present between the parapodia of each segment.

DESCRIPTION: One specimen complete; 4 incomplete posteriorly. One of latter specimens an anterior fragment, and not included in following determinations. The remaining 3 worms lack pygidia and probably 10-15 posterior segments. Average length of 4 specimens 66 mm; width 5.1 mm. Average number of segments 107; complete specimen has 114. Holotype 66 mm long and 5.5 mm wide; with 104 segments of which 101 setigerous. Body semi-circular in cross section. Ventrums flat and midventrally grooved. A raised transverse annulus connects parapodia of each segment; annulus midventrally incomplete. A few minute epidermal papillae located on each segmental annulus. The body colour of specimens in alcohol grayish to chocolate brown.

Prostomium pentagonal in shape, and 1.2 times longer than wide (figs 1a and b). Anterior median margin pointed. This projection continuous with an anterior dorsoventral median ridge. Ridge located between each palp; ventrally it forms midventral upper lip of mouth. Palpi probably midventrally grooved; all have become detached and lost from this material. Prostomium divided into an anterior and posterior lobe by a transverse ridge (fig. 1a). Eyes not observed in anterior lobe. Three pairs of eyes present on posterior lobe (fig. 1a). Two pair present on anterolateral margin; the other more medially placed. Posterior pair of anterolateral eyes largest. Each eye of this pair elliptical. Anterior pair of anterolateral eyes and medial pair about same size. Each eye of these pairs circular, about one-fifth the size of a large eye. A middorsal cap present on posterior prostomial lobe (figs 1a and b). Cap divided into 2 parts by transverse furrow. Posterior region further divided by a middorsal longitudinal groove. A transparent rim not observed along the posterior prostomial margin.

Peristomium dorsally complete (fig. 1a), but divided into 7 "scutes" that appear to imbricate with one another. Three lateral and a single dorsal scutes present. Peristomium terminates at base of each palp, but is continuous with the anterolateral and posterior lips of the mouth. Mouth a transverse slit. A pair of U-shaped, cushion-like ridges present on anterolateral lips (figs 1a and b). The posterior lip crenulate; lacks papillar swellings.

Proboscis a smooth eversible ventral sac consisting of a buccal mass and pharynx.

All thoracic and abdominal segments wider than long. Twelve thoracic segments present; 10 setigerous. Segment 1 (=peristomium) ventrally fused with segments 2-4. These 4 segments ventrally distinguishable from segment 5 by an intersegmental groove. A distinct cirrus present below each branchia of segment 3. These cirri conical, distally blunt.

Inflated parapodial lobes present on thoracic and abdominal segments. These lobes located at ventrolateral terminations of each segmental annulus (fig. 1b). Notopodial and neuropodial cirri absent. All parapodia after first 2 biramous. First 2 setigers (segments 4-5) contain neurosetae only.

With exception of segment 14, thoracic and abdominal parapodia basically similar (figs 2a through e). Anterior thoracic segments differ from posterior thoracic segments in

placement of papillae (figs 1b and 2a). Segments 4-6 have 18-20 small digitate interramal papillae per parapodium (fig. 1b); segments 10-12 have around 15. Segments 4-9 lack a large conical interramal papilla that is present on segments 10-12 (fig. 2a). Inferior neuropodial papillae absent from segments 4-5; a single inferior papilla present on each parapodium of segments 6-9; two present on segments 10-12. The parapodia of segments 7-9 differ from other thoracic parapodia because each has a single postsetal neuropodial papilla (fig. 2a).

Segment 14 modified (figs 2b and c). A pair of smooth ventrolateral ridges present at anterior margin of this segment (fig. 2b). A transverse depression located behind each ridge (fig. 2c). Each depression gives way to an inflated neuropodial lobe containing well developed acicula. A single interramal and inferior papilla present.

The parapodia of segment 50 resemble those of the posterior thorax (fig. 2d). About 10-14 interramal papillae present. The large interramal papilla blunt and ovoid. Two inferior neuropodial papillae present; the inferiormost smallest.

The parapodia of segment 100 reduced in size (fig. 2e). About 5-8 small interramal papillae present. The single interramal papilla stout and hemispherical. A single large, flattened, glandular inferior neuropodial papilla present.

The pygidium terminal (fig. 2f). Anal papillae appear to be absent. The epidermal tissue of caudal segments highly glandular and areolate.

Notosetal fascicles laterally positioned in all thoracic and abdominal setigers. They are embedded into parapodial lobes, and are arranged in dorsoventral rami (figs 2a, d and e). Twelve notosetae per fascicle present in segment 9; 16 in segment 14; 25 in segment 50; 8 in segment 100. Notosetae 3 mm long, cylindrical and taper to sharp distal points. Superior notosetae longest, basally smooth and distally partitioned (fig. 2g). Inferior setae smaller, distinctly partitioned. Transverse partitions 1-1.5 μ m apart. Setal margins serrated (fig. 2g).

Thoracic and abdominal neurosetal fascicles ventrolaterally positioned (figs 2a, d and e). All neurosetae except those of segment 14 composite and distally falcate (figs 2h and i). Appendages of thoracic neurosetae long and face posteriorly; those of abdomen shorter and face anteriorly. Five neurosetae per fascicle present in segment 9; 4-6 in segment 50; 4 in segment 100.

From 15-20 acicula per notopodium and 9 per neuropodium present (figs 2j and k). All spindle shaped. Neuroacicula longer than notoacicula. Latter project through body wall; neuroacicula do not.

From 3-6, usually 4-5 falcate acicula present in each neuropodium of segment 14. All face anteriorly, cylindrical in cross section, tapering to sharp points (fig. 2l).

Branchiae number 4 pairs; present on segments 2-5 (fig. 1b). All branchiae detached from these specimens, but their locations revealed by branchial scars. Each branchia about 10 mm long and 1 mm wide, basally elliptical in cross section, and circular distally. All attenuate to blunt tips.

RELATIONSHIPS: *Acrocirrus aciculigerus* resembles *A. frontilis* Grube, 1872, *A. heterochaetus* Annenkova, 1934, *A. okotensis* Imajima, 1963 and *A. incisa* Kudenov, 1975, because acicular hooks are present on segment 14. *A. aciculigerus* differs from these species because three to six acicula per fascicle are present, and the acicula are not distally enlarged. *A. frontilis*, *A. heterochaetus*, *A. okotensis* and *A. incisa* have one distally enlarged, beaked aciculum per fascicle. All of these species have 4 pairs of branchiae distributed from segments 2 through 5, and not 6 as described by Kudenov (1975) for *A. incisa*.

DISTRIBUTION: *Acrocirrus aciculigerus* has been collected from one locality in New South Wales; it occurs in sand under stones.

KEY TO SPECIES OF *Acrocirrus*
(modified from Banse, 1969, p. 2599)

- | | | |
|----|---|---|
| 1. | Segment 14 with acicular hooks | 2 |
| — | Segment 14 without acicular hooks | 6 |
| 2. | Three to six acicula per parapodium of segment 14 <i>A. aciculigerus</i> n. sp. | |
| — | One aciculum per parapodium of segment 14 | 3 |
| 3. | Abdominal neurosetae as simple falcigers <i>A. okotensis</i> Imajima, 1963 | |
| — | Abdominal neurosetae as composite falcigers..... | 4 |
| 4. | Notopodial cirri present | <i>A. frontilis</i> (Grube, 1860) |
| — | Notopodial cirri absent | 5 |
| 5. | Parapodial lobes incised | <i>A. incisa</i> Kudenov, 1975 |
| — | Parapodial lobes entire | <i>A. heterochaetus</i> Annenkova, 1934 |
| 6. | Abdominal neurosetae as simple falcigers | <i>A. trisectus</i> Banse, 1969 |
| — | Abdominal neurosetae as composite falcigers..... | 7 |
| 7. | Neurosetae from fourth branchiferous segment. <i>A. crassifilis</i> Moore, 1923 | |
| — | Neurosetae from third branchiferous segment | 8 |
| 8. | Notosetae from setiger 2 | <i>A. uchidai</i> Okuda, 1934 |
| — | Notosetae from setiger 3 | 9 |
| 9. | Upper face of prostomium smooth | <i>A. muroranesis</i> Okuda, 1934 |
| — | Upper face of prostomium ridged | <i>A. validus</i> von Marenzeller, 1879 |

Genus **Macrochaeta** Grube, 1850

Macrochaeta australiensis n. sp.

figs. 3-5

MATERIAL EXAMINED: Victoria, Point Gellibrand, Port Phillip Bay, approx. 37°52.4'S, 144°54.25'E, low midintertidal tidepool, attached to bottom of basalt boulders, boulders in silt, September 1974, J. D. and K. A. Kudenov, collectors-HOLOTYPE (NMV G2521) and PARATYPES (NMV G2522; AM W. 6969; AHF Poly 1125). Westernport, the following PARATYPES from WBES Stations: 1725, 9 m, sand, November 1973, R.V. *Capitella* (NMV G2525); 1729, 23 m, sand, November 1973 (NMV G2523); 1737, 12 m, silty-sandy-clay, November 1973 (NMV G2524); 1740, 8 m, silt, November 1973 (NMV G2526); 1702, low intertidal zone, silty clay, January 1974, R.V. William Buckland (AM W. 6967); 1708, low intertidal zone, silty clay, January 1974 (AM W. 6968); 1709, low intertidal zone, sandy clay, January 1974 (AHF Poly 1122); 1716, low intertidal zone, mud, January 1974 (AHF Poly 1123); 1719, low intertidal zone, clay, January 1974 (AHF Poly 1124).

DIAGNOSIS: *A. Macrochaeta* species up to 20 mm long and 50 segments. Segment 1 not dorsally visible. Four pairs of gills. One or two notosetae and generally one composite falciger each per notopodium and neuropodium. Reversal of neurosetal hooks generally from segment 13 (sometimes from segments 11 or 12). Eleven continuous transverse rows of epidermal papillae per segment.

DESCRIPTION: A total of 41 specimens examined. Observations made on live specimens from Point Gellibrand; Westernport material preserved. Average length of 10 complete specimens 10.8 mm; width 0.7 mm. Smallest 5 mm long, 0.3 mm wide. Largest specimen designated as holotype, and is 20 mm by 1.1 mm. Generally 40 segments in complete specimens; holotype has 50 segments, of which 47 setigerous. Body surface papillate. All papillae present in continuous transverse rows that encircle body (fig. 3). About 11 such rows per segment. Papillae in the row connecting each pair of parapodia particularly well defined. Body surface generally obscured by silt trapped between

epidermal papillae. In life body colour pinkish-orange; palpi translucent brown; branchiae reddish orange. The body greenish-yellow when preserved in Bouin's fixative; palpi and branchiae brown.

The prostomium broadly petaloid in shape, 1.1 times longer than wide (figs 4a and b). The anterior margin pointed. This projection continuous with a narrow anterior dorsoventral median ridge (fig. 5a). This ridge lies between each palp; ventrally it forms midventral anterior lip of mouth. Palpi emerge from anterolateral positions just in front of mouth (figs 3 and 5a). Each palp has a midventral, ciliated longitudinal groove, and is 1.5 mm long and 0.2 mm wide. Distance separating two palps equals thickness of anterior dorsoventral ridge. Proximal inner margins of each palp touch one another. Surface of prostomium divided into an anterior and posterior lobe by a transverse ciliated ridge (figs 4a and b). A single pair of eyes present on anterior lobe of holotype. Each eye small, circular, and embedded into body wall. Two pair of eyes present on posterior lobe (figs 4a and b). The anterior pair largest, lies just behind transverse ridge. Each eye elliptical, and located at lateral prostomial margin. The posterior pair about one-half the size of anterior pair of this lobe. Each eye circular and more medially placed. Not all specimens have three pairs of eyes. Most have two pair on posterior lobe. Posterior lobe middorsally divided by a wide, shallow depression (fig. 4a). A middorsal pigment spot present at posterior margin of this depression (figs 4a and 5a). Depression and pigment spot not visible in all specimens. Posterior margin of prostomium circumscribed by a narrow transparent rim that is middorsally incomplete (fig. 4a).

Peristomium reduced to a low collar; dorsally incomplete (figs 4a and 5a). Laterally well defined, wider (fig. 4b). Peristomium terminates at base of each palp, but is continuous with anterolateral and posterior lips of mouth. Mouth a ventral transverse slit. A pair of U-shaped ridges present on anterolateral lips (fig. 5a). Each ridge resembles a cushion; and is located just below each palp. A pair of large circular papillae present on posterior lip. Each papilla located just opposite each cushion-like elevation of anterolateral lips.

Proboscis not fully everted in these specimens. Ventral margin of lip crenulate, and its inner surface folded (fig. 5a).

All segments of thorax and anterior half of abdomen wider than long; those of posterior abdomen longer than wide. Generally 12 thoracic segments present; 9 setigerous. Two specimens differ: one has 10 and other has 11 thoracic segments. Segment 1 (=peristomium) fused ventrally with segment 2. These two segments distinguishable from segment 3 by a segmental groove. A row of spherical epidermal papillae present on anterior margin of segment 2. A distinct cirrus present just below each branchia of segment 3 (figs 4a, b and 5a). Cirri conical and distally blunt.

All parapodia biramous. Notosetae and neurosetae begin from segment 4. The positions of parapodia gradually change along body axis. Parapodia of thoracic segments 4-7 on anterior half of each segment; those of remaining thoracic segments and abdominal segments 13-19 on the middle of each segment; parapodia on posterior half of segments 20-50. Notopodial and neuropodial cirri absent. Notopodial lobes absent. All notosetal fascicles surrounded by raised collars (figs 5b, c and d). Neuropodial lobes present on thoracic setigers 1-9 (segments 4-12); entire and mound shaped (figs 4a and 5b). Neuropodial lobes absent from abdominal setigers. Distinct neuropodial collars present on abdominal segments 13-17. They are present, but sometimes indistinct, on the remaining abdominal segments (figs 5c and d). Conspicuous interramal papillae present on all setigerous segments. About 5 elliptical interramal papillae per parapodium present on setigers 1-3 (segments 4-6) (figs 3 and 4a). Distally inflated interramal papillae present thereafter. All cylindrical in cross section. Four such papillae present on setigers 4-12

(segments 7-15) (fig. 5b); 3 on setigers 13-17 (segments 16-20); 2 to 3 on setigers 18-35 (segments 21-38) (fig. 5c); 1 to 2 from setiger 36 (segment 39) to end of body (fig. 5d).

Pygidium truncate, and anus terminal (figs 5e and f). Pygidium consists of 8-10 flattened papillae. Anal appendages absent; a row of epidermal papillae present on lateral and dorsal surfaces of pygidium.

All setal fascicles deeply embedded into body wall. Notosetal fascicles laterally positioned in all thoracic and abdominal setigers (figs 5b, c and d). Notosetae cylindrical in cross section, and taper to fine points. They are longitudinally striated; basal striae are weakly defined. Transverse partitions $1.5\ \mu\text{m}$ to $2\ \mu\text{m}$ apart (fig. 5g). These partitions almost absent basally; best developed distally. Serrated margins inconspicuous (fig. 5g). Notosetae of setigers 1-4 $1.2\ \text{mm}$ long; posteriorly they increase to $2\ \text{mm}$. Generally 1-2 notosetae per fascicle present in all thoracic and abdominal notopodia.

Neurosetal fascicles ventrolaterally positioned in all thoracic and abdominal setigers (figs 5b, c and d). All neurosetae composite falcigers. Appendages of thoracic neurosetae long and face posteriorly (fig. 5h); those of the abdomen shorter and face anteriorly (fig. 5i). Generally one (occasionally 2) setae per neuropodium present in all thoracic and abdominal setigers. Three specimens differ because a single neuroseta present on left side of segment 3, but absent from right side. Notosetae absent from segment 3.

There are 2-3 acicula per notopodium, and 3-4 per neuropodium (figs 5j and k). All spindle shaped. Notoacicula project through body wall; neuroacicula do not.

Branchiae number 4 pairs; present on segment 2-5 (figs 3, 4a and b). Each branchia elliptical in cross section, elongate, distally blunt. Three longitudinal ciliary bands present on inner surface of each branchia (fig. 3). An additional ciliary patch present on outer basal surface (fig. 3). Small dome shaped papillae $3\ \mu\text{m}$ wide and $2\ \mu\text{m}$ high present on each branchia.

There are 4 types of epidermal papillae: digitate; distally inflated; elliptical; and dome shaped. Digitate papillae the most abundant; found primarily on continuous transverse rows that encircle body (fig. 3). They are about $20\ \mu\text{m}$ long and $5\ \mu\text{m}$ wide (fig. 5a). Distally inflated papillae found in rows that connect pairs of parapodia, and as interramal papillae (figs 3 and 5c). They are the largest kind of papilla, measuring from $30\text{-}50\ \mu\text{m}$ long and $10\ \mu\text{m}$ wide. Elliptical papillae occur on anterior segments, and are $5\text{-}8\ \mu\text{m}$ high and $5\ \mu\text{m}$ wide (fig. 5a). As noted above, dome shaped papillae occur on branchiae.

Specimens collected in January contained gametes. Sperm platelets, morulae and spermatozoa were found in male specimens. Headpiece spherical, and measures $2\ \mu\text{m}$ in diameter. Acrosome appears flattened. Polygonal primary oocytes with large germinal vesicles present in females. Oocytes $125\ \mu\text{m}$ in diameter; germinal vesicles about $40\ \mu\text{m}$; nucleoli around $8\ \mu\text{m}$. The thin outer membrane of oocytes sculptured.

RELATIONSHIPS: *Macrochaeta australiensis* resembles *M. clavicornis* (Sars, 1835), *M. papillosa* Ehlers, 1913, and *M. pege* Banse, 1969, because all have four pairs of branchiae, and composite neurosetae in all setigers. The most distinctive feature of *M. australiensis* is the arrangement of epidermal papillae into transverse rows. The papillae of the other three species appear to be randomly distributed. The spermatozoa are primitive (Franzen, 1956).

An important systematic criterion in this genus is the degree to which anterior segments are reduced (Banse, 1969). Within the above subgroup of four species, *M. clavicornis* is the only one in which segment 1 is dorsally complete. *M. papillosa* differs because both segments 1 and 2 are not dorsally visible. *M. australiensis* and *M. pege* are similar because segment 1 is dorsally incomplete. This segment is laterally visible in both

species. *M. pege* has 55 segments; *M. australiensis* has around 50. The prostomium of *M. australiensis* is broadly petaloid; it is circular in *M. pege*. The latter species lacks parapodial lobes; *M. australiensis* has distinct neuropodial lobes in the thorax. Interramal papillae are present in *M. australiensis*; they are absent in *M. pege*. There are generally 2 notosetae and 2-3 acicula per notosetal fascicle in *M. australiensis*; there are one notoseta and 3-4 acicula in *M. pege*. *M. australiensis* has 3-4 neuroacicula per neuropodium; *M. pege* has 1-2.

The segment from which setal fascicles begin is variable in both *M. australiensis* and *M. clavicornis*. Neurosetae generally begin from segment 4 in the former species, and have been found in segment 3. The notosetae of *M. clavicornis* can begin from setigers 1, 2 or 3. The significance of this variability is not known, and these characters must be given little emphasis (Banse, 1969).

M. australiensis and *M. papillosa* are similar because the palpi are very close together, cushion-like elevations are present on the anterolateral lips of the mouth and conspicuous interramal papillae are present. Segments 2 and 3 of *M. papillosa*, and segments 1 and 2 of *M. australiensis* are ventrally fused.

M. australiensis and *M. papillosa* appear to bridge a gap between *Acrocirrus* and *Macrochaeta* because the palpi are very close together, and cushion-like ridges are present on the anterior lips. In addition, *M. australiensis* has orderly rows of epidermal papillae, and thoracic neuropodial lobes. Transverse rows of epidermal papillae have previously been characteristic of *Acrocirrus* (i.e. *A. crassifilis* Moore, 1923). *M. australiensis* and *M. papillosa*, however, lack inferior neuropodial papillae. It might be possible to establish a new genus for *M. australiensis*, but I believe this should not be done until morphological variation in *Macrochaeta* spp. is understood, and more information on the biology of this family is available.

DISTRIBUTION: *M. australiensis* has been found in Victoria.

KEY TO SPECIES OF *Macrochaeta*
(modified from Banse, 1969, p. 2610)

- | | | | |
|----|---|---|---|
| 1. | Three or more neurosetae per fascicle | <i>M. polyonyx</i> Eliason, 1962 | |
| — | Only one or two neurosetae per fascicle | | 2 |
| 2. | More than four pairs of branchiae present | <i>M. sexoculata</i> (Webster & Benedict, 1887) | |
| — | Four pairs of branchiae present | | 3 |
| 3. | Abdominal neurosetae as simple falcigers | <i>M. helgolandica</i> Friedrich, 1937 | |
| — | Abdominal neurosetae as composite falcigers | | 4 |
| 4. | Cushion-like elevations present on anterolateral lips of mouth | | 5 |
| — | Cushion-like elevations absent from anterolateral lips of mouth | | 6 |
| 5. | Segment 1 not dorsally visible | <i>M. australiensis</i> n. sp. | |
| — | Segments 1 and 2 not dorsally visible | <i>M. papillosa</i> Ehlers, 1913 | |
| 6. | Segment 1 dorsally visible | <i>M. clavicornis</i> (Sars, 1835) | |
| — | Segment 1 not dorsally visible | <i>M. pege</i> Banse, 1969 | |

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REFERENCES

- Annenkova, N., 1934. Kurze Übersicht der Polychaeten der Litoralzone der Bering-Insel (Kommandor-Inseln) nebst Beschreibung neuer Arten. *Zool. Anz.* 106: 322-331.
- Banse, K., 1969. Acrocirridae n. fam. (Polychaeta Sedentaria). *J. Fish. Res. Bd. Canada* 26: 2595-2620.
- Bennett, I., 1966. *The fringe of the sea*. Rigby, Adelaide, South Australia. pp. 261, 179 figs.
- Day, J. H., 1967. *A Monograph on the Polychaeta of Southern Africa. Part II*. Brit. Museum (Nat. Hist.), London. Publ. no. 656: 459-878.
- Eliason, A., 1962. Die Polychaeten der Skagerrak-Expedition 1933. *Zool. Bidrag Uppsala* 33: 207-293.
- Ehlers, E., 1913. Die Polychaeten-Sammlungen der deutschen Südpolar-Expedition 1901-1903. *Deutsche Südpolar Expedition* 13: 397-598.
- Franzen, A., 1956. On spermiogenesis, morphology of the spermatozoon and biology of fertilization among invertebrates. *Zool. Bidrag Uppsala* 31: 355-482.
- Friedrich, H., 1937. Polychaetenstudien. I-III. *Kiel Meeresforsch.* 1: 343-351.
- Grube, A.-E., 1850. Die Familie der Anneliden. *Arch. Naturgesch.* 16: 249-364.
- Grube, A.-E., 1860. Ein Ausflug nach Triest und dem Quarnero. *Arch. Naturgesch.* 26: 71-118.
- Grube, A.-E., 1872. Die Familie der Cirratuliden. *Jber. schles. Ges. Vaterl. Kult.* 50: 59-66.
- Imajima, M., 1963. Polychaetous annelids collected off the west coast of Kamchatka. II. Notes on some species found in the collection of 1959. *Publ. Seto Marine Biol. Lab.* 11: 345-372.
- Kudenov, J. D., 1975. Sedentary polychaetes from the Gulf of California, Mexico. *J. nat. Hist., London* 9: 205-231.
- Marenzeller, E. von., 1879. Sudjapanische Anneliden. I. *Denkschr. Akad. Wiss. Wien.* 41: 109-154.
- Mesnil, F., 1899. La position systématique des Flabelligériens St. Joseph (Chlorémiens Quatrefoies) et les Sternapiens. *Zool Anz.* 22: 81-85.
- Moore, J. P., 1923. The polychaetous annelids dredged by the U.S.S. *Albatross* off the coast of southern California in 1904. IV. Spionidae to Sabellariidae. *Proc. Acad. nat. Sci. Philad.* 75: 179-259.
- Okuda, S., 1934. The polychaete genus, *Acrocirrus*, from Japanese waters. *J. Fac. Sci. Hokkaido Imp. Univ., ser. 4* 2: 197-209.
- Sars, M., 1835. Beskrivelser og Bergenske Kyst levende Dyr af Polypernes, Acalephernes, Radiaternes, Annelidernes og Molluskernes classer, med en kort oversigt over de hidtil af Fortterren sammesteds fundne Arter og deres Foredommen. Bergen. p. 81.
- Webster, H. E. & Benedict, J. E., 1887. The Annelida Chaetopoda from Eastport, Maine. *Rept. U.S. Comm. Fish.* 1887: 707-755.
- Manuscript received 6th March, 1975.

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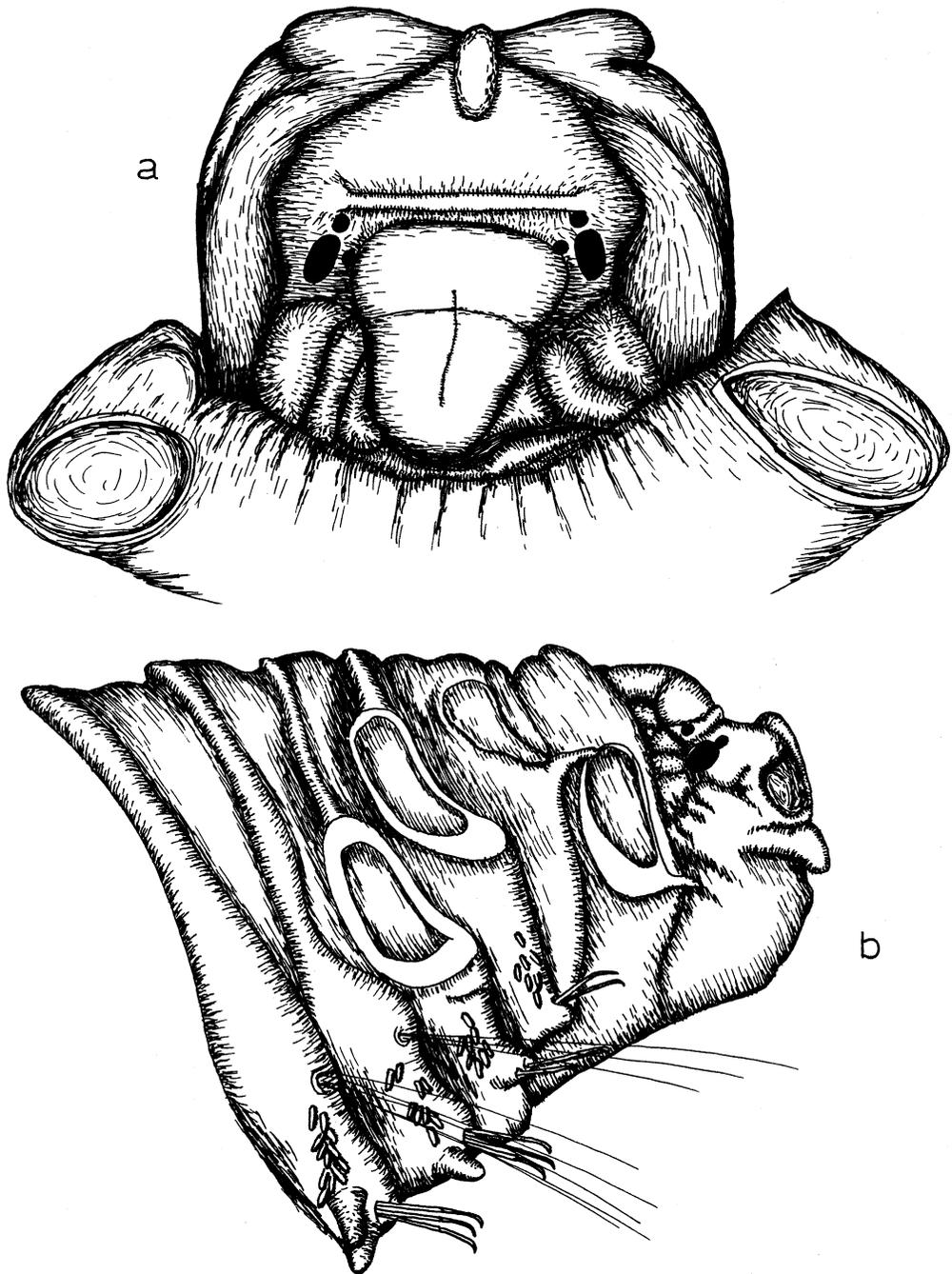


Fig. 1. *Acrocirrus aciculigerus* n. sp., Holotype. a, anterior segments, dorsal view, $\times 56$; b, anterior segments, right lateral view, $\times 28$.

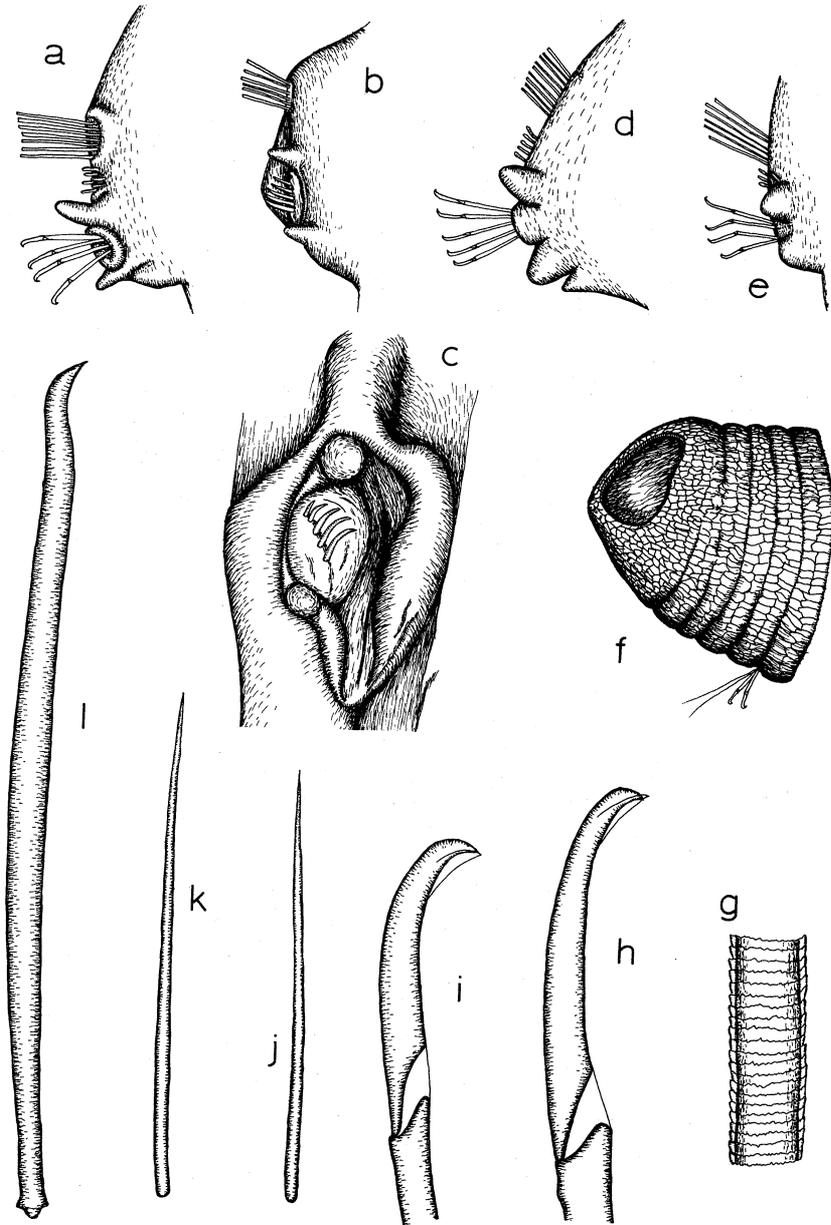


Fig. 2. *Acrocirrus aciculigerus* n. sp., Holotype, a right parapodium of segment 9, anterior view, $\times 19$; b, right parapodium of segment 14, posterior view, $\times 19$; c, right neuropodium of segment 14, ventrolateral view, $\times 38$; d, right parapodium of segment 50, anterior view, $\times 19$; e, right parapodium of segment 100, anterior view, $\times 19$; f, pygidium of Paratype, right posterolateral view, $\times 38$; g, distal region of notoseta, dorsal view, $\times 3065$; h, thoracic neuroseta, lateral view, $\times 184$; i, abdominal neuroseta, lateral view, $\times 184$; j, notoaciculum, lateral view, $\times 121$; k, neuroaciculum, lateral view, $\times 121$; l, entire acicular hook from segment 14, lateral view, $\times 121$.

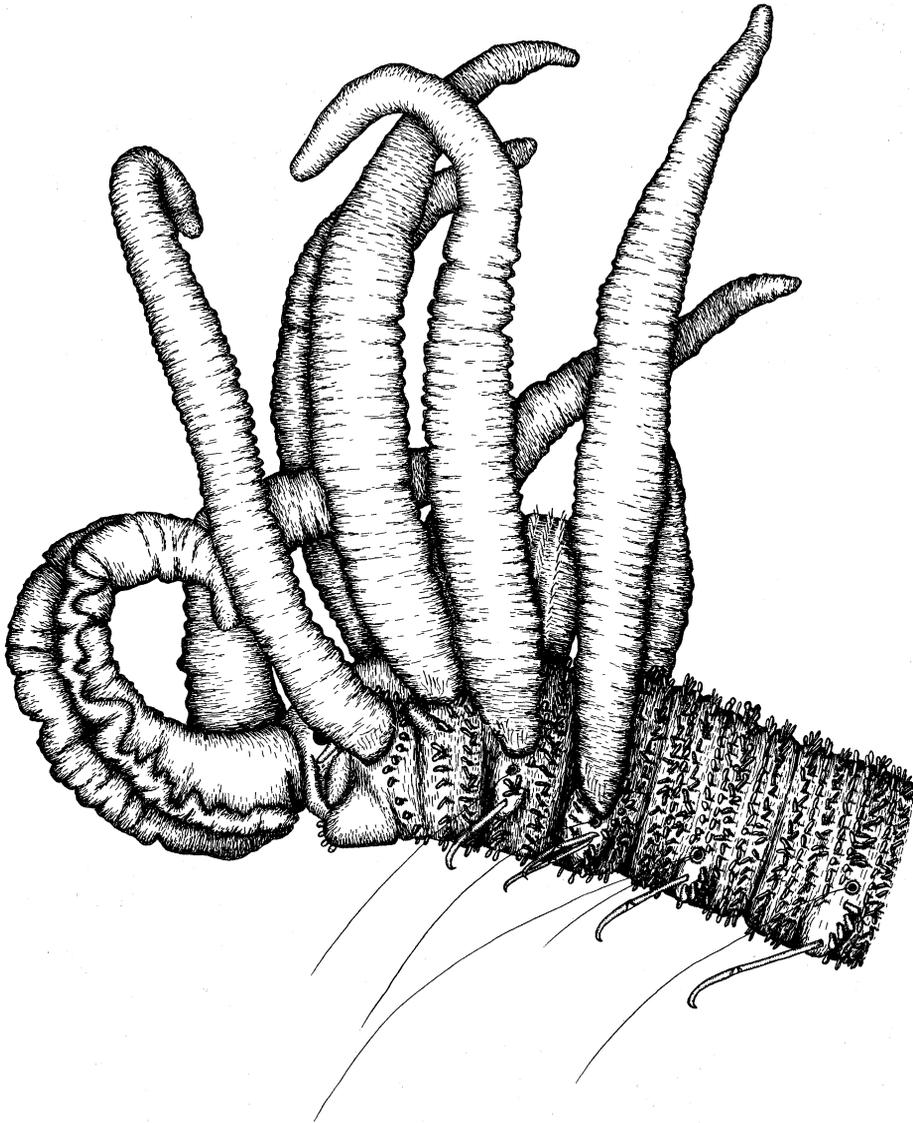


Fig. 3. *Macrochaeta australiensis* n. sp., Holotype. Anterior segments with intact palpi and branchiae, left lateral view, $\times 60$.

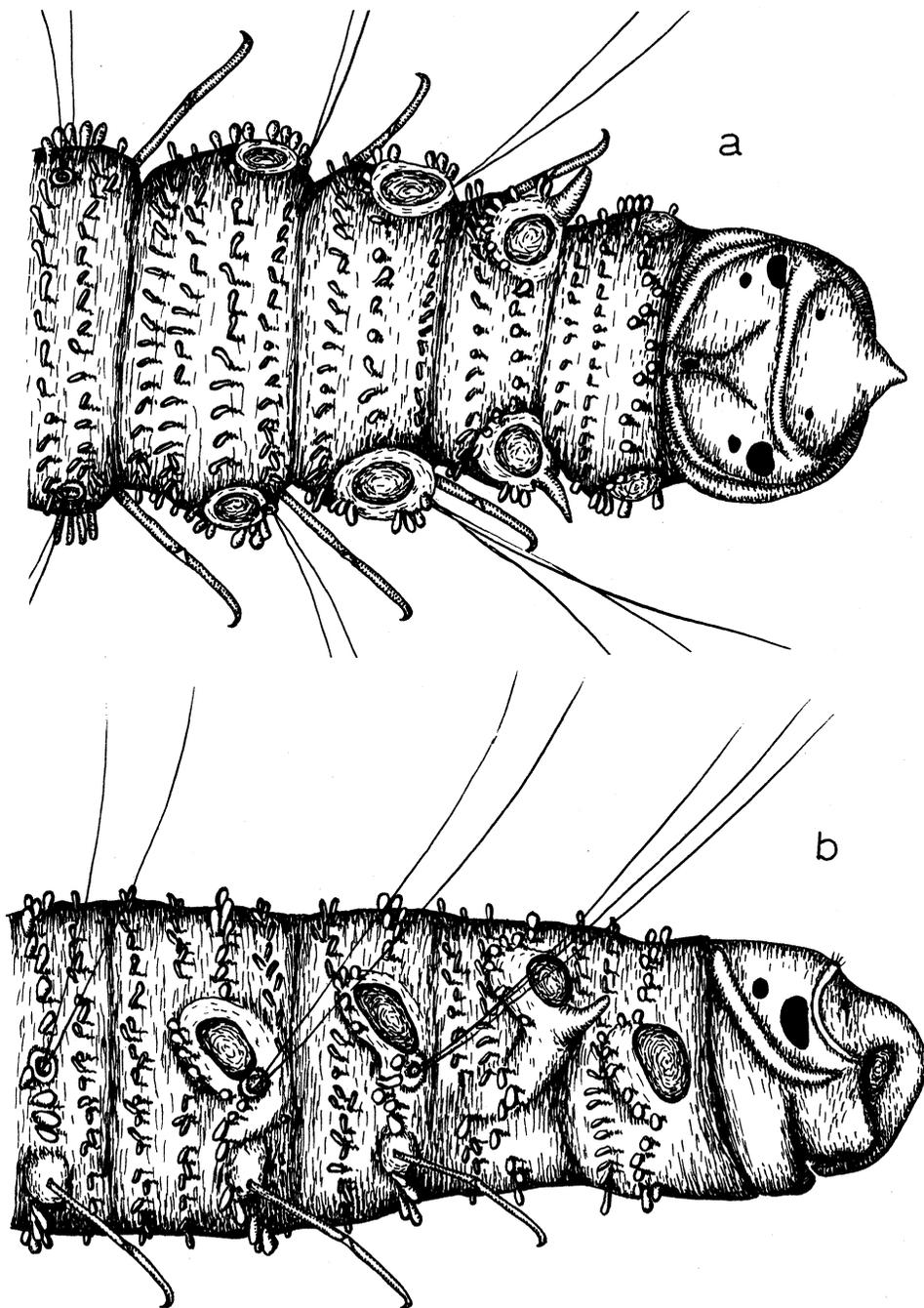


Fig. 4. *Macrochaeta australiensis* n. sp., Paratype. a, anterior segments, dorsal view, $\times 94$; b, anterior segments, right lateral view, $\times 94$ (branchial scars indicate positions of detached branchiae).

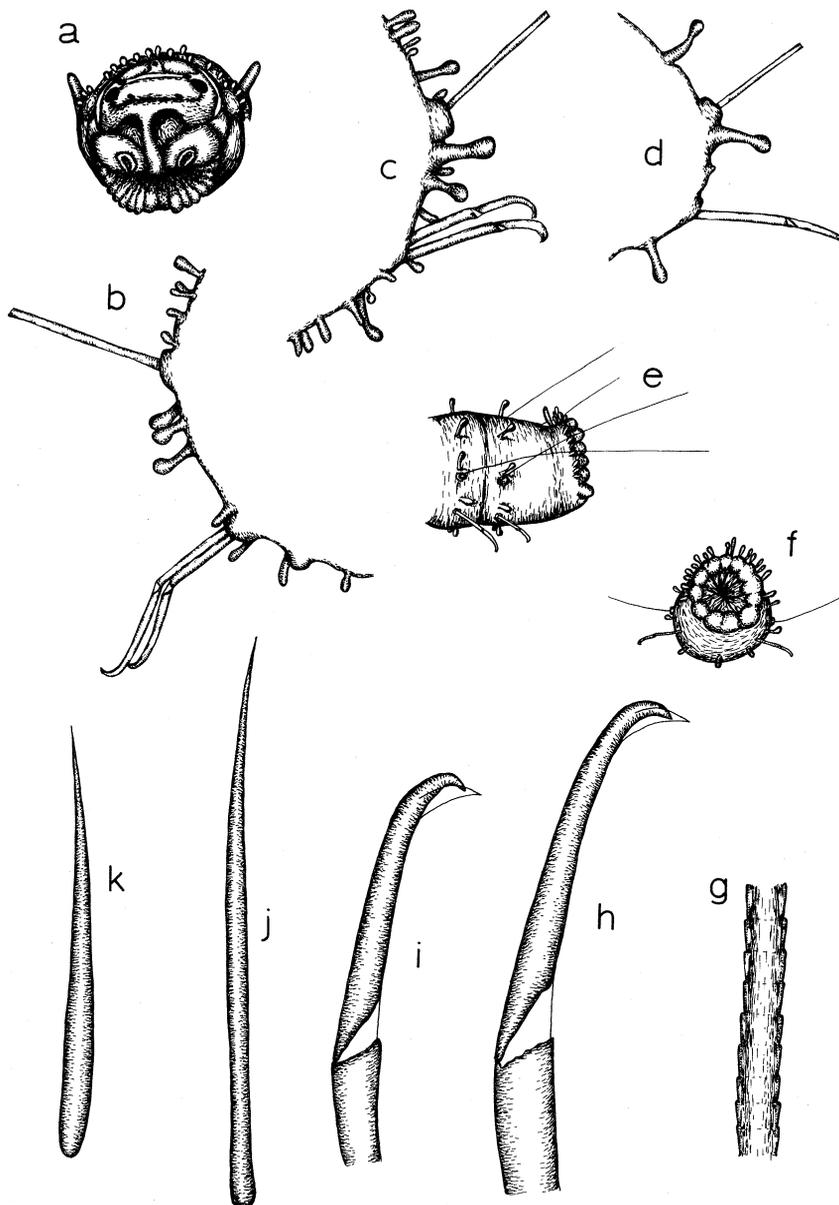


Fig. 5. *Macrochaeta australiensis* n. sp., Paratype. a, prostomium and mouth, anterior frontal view, $\times 63$; Holotype. b, right parapodium of segment 12, anterior view, $\times 179$; c, left parapodium of segment 22, anterior view, $\times 179$; d, left parapodium of segment 41, anterior view, $\times 179$; e, pygidium, left lateral view, $\times 63$; f, pygidium, posterofrontal view, $\times 63$; g, distal region of notoseta, dorsal view, $\times 3417$; h, thoracic neuroseta, lateral view, $\times 452$; i, abdominal neuroseta, lateral view, $\times 452$; j, notoaciculum, lateral view, $\times 452$; k, neuroaciculum, lateral view, $\times 452$.