

Polychaeta Polynoïdæ : Scaleworms of the Chesterfield Islands and Fairway Reefs, Coral Sea.

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ABSTRACT

Twenty five species of polynoid scaleworms were collected from the waters in and around the Chesterfields and Fairway Atolls during the cruise CORAIL 2 of the R/V "Coriolis" in July 1988. Two new genera, *Verrucapelma*, and *Heteralentia*, and nine new species, *Subadyte chesterfieldensis*, *Harmothoe turbinata*, *Harmothoe vesicudenta*, *Harmothoe spongicola*,

Verrucapelma retusa, *Iphione coriolis*, *Lepidonotus scanlandi*, *Lepidonotus spinosus* and *Lepidonotus permixturus* are described. Keys to the polynoid scaleworm fauna of the Chesterfields and Fairways are provided, and all twenty five species are described and illustrated.

RÉSUMÉ

Polychaeta Polynoïdæ : Polynoïdes des îles Chesterfield et des récifs Fairway, en mer du Corail

Vingt-cinq espèces de Polynoïdes ont été récoltées dans les eaux des îles Chesterfield et des récifs Fairway, pendant la campagne CORAIL 2 du "Coriolis" en juillet 1988. Deux genres nouveaux, *Verrucapelma* et *Heteralentia*, et neuf espèces nouvelles, *Subadyte chesterfieldensis*, *Harmothoe*

turbinata, *Harmothoe vesicudenta*, *Harmothoe spongicola*, *Verrucapelma retusa*, *Iphione coriolis*, *Lepidonotus scanlandi*, *Lepidonotus spinosus* and *Lepidonotus permixturus* sont décrits. Des clés d'identification pour la faune des Polynoïdes des Chesterfield et des Fairway sont proposées, et les vingt-cinq espèces examinées sont décrites et illustrées.

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INTRODUCTION

During July 1988, the senior author was fortunate to be invited to participate in the ORSTOM sponsored cruise CORAIL 2 of the R/V "Coriolis" to the Chesterfields and Fairway Reefs, Coral Sea. A series of dredge and trawl stations were undertaken at both localities but the major collecting effort took place at the Chesterfields. A large number of taxa were collected, including several hundred lots of polychaetes from the dredge stations. Most of the polychaete material was obtained by hammering apart blocks of coral rubble and live coral. Unfortunately, the time taken to process material from each dredge station was too great to allow a separate record of the polychaetes from each station to be maintained. Therefore most of the stations we refer to here (RH) are composite, usually including at least several of the dredge stations completed on any particular day of sampling. Table 1 presents the relevant data for each station.

A large number of polychaete species were collected and we have chosen here to concentrate on one family, the Polynoidae, and intend to cover other families in subsequent papers.

The polynoid scaleworm fauna of the Chesterfields was previously unknown. There are several publications describing the polychaetes of New Caledonia (FAUVEL, 1930, 1947; PRUVOT, 1930; RULLIER, 1972), and a considerable number of publications dealing with the polychaete fauna of

Australia (see DAY & HUTCHINGS, 1979). However, there has been no comprehensive treatment of species of the family Polynoidae from the region and it is not surprising that a relatively large proportion of the polynoid scaleworms collected at the Chesterfields proved to be undescribed species. In our view the polychaete fauna of Indo-Pacific atolls is still poorly known, and much work remains to be done. We suspect that in addition to species that are also known from continental shelves throughout the region there is a sizable endemic component among the polychaetes of atolls in the tropical Indo-Pacific.

We have provided keys to the subfamilies, genera and species of polynoid scaleworms from the Chesterfields and Fairway reefs to aid fellow workers in the region. However it must be stressed that in no circumstance can these keys be thought of as comprehensive, rather they are intended as a guide and reference to additional literature sources is recommended.

Type material of the new taxa described here are deposited in the Muséum national d'Histoire naturelle (MNHN), and Northern Territory Museum (NTM). Comparative material was obtained on loan from the Zoological Museum, Amsterdam (ZMA), the Museum für Naturkunde der Humboldt-Universität, Berlin (MNB), the Museum of Natural History of Wrocław University (MPW), and the National Museum of Natural History, Washington (USNM).

TABLE 1. — Collection data for stations at Fairway Reefs and Chesterfield Islands. All material was collected by dredge and polychaetes were removed from coral rubble by R. HANLEY.

Station	Lat/Long.	Location	Depth (m)	Date
RH 88/40	20°55'S, 161°41'E	Fairway	58	19.VII.1988
RH 88/41	20°51'S, 161°37'E	"	62	20.VII.1988
RH 88/42	20°51'S, 161°34'E	"	58	"
RH 88/43	20°51'S, 161°30'E	"	60	"
RH 88/44	20°52'S, 161°36'E	"	64	"
RH 88/45	20°53'S, 161°35'E	"	63	"
RH 88/46	20°53'S, 161°41'E	"	60	"

RH 88/47	20°50'S, 161°40'E	"	58	"
RH 88/48	21°02'S, 160°55'E	"	720	21.VII.1988
RH 88/49	21°01'S, 160°57'E	"	650	"
RH 88/50	20°51'S, 160°56'E	"	580	"
RH 88/51	20°48'S, 160°58'E	"	500	"
RH 88/52	20°44'S, 160°58'E	"	69	"
RH 88/53	20°42'S, 161°00'E	"	77	"
RH 88/54	20°37'S, 161°01'E	"	88	22.VII.1988
RH 88/55	20°33'S, 161°01'E	"	86	"
RH 88/56	19°21'S, 158°50'E	Chesterfields	55	23.VII.1988
RH 88/57	19°21'S, 158°58'E	"	60	"
RH 88/58	19°18'S, 158°27'E	"	44	"
RH 88/59	19°18.5'S, 158°33'E	"	50	"
RH 88/60	19°17'S, 158°56'E	"	55-65	24.VII.1988
RH 88/61	19°14'S, 158°30'E	"	30-52	25.VII.1988
RH 88/62	19°12'S, 158°56'E	"	16-26	"
RH 88/63	19°12'S, 158°56'E	"	1-2	26.VII.1988
RH 88/64	19°03'S, 158°56'E	"	8-48	"
RH 88/65	19°06'S, 158°53'-26'E	"	32-60	27.VII.1988
RH 88/66	19°08'-25'S, 158°24'-55'E	"	40-74	28.VII.1988
RH 88/67	19°24'S, 58°37'E	"	217	"
RH 88/68	19°24'-28'S, 158°17'-34'E	"	32-56	29.VII.1988
RH 88/69	19°27'S, 158°34'E	"	220	"
RH 88/70	19°27'S, 158°35'E	"	200	"
RH 88/71	19°32'-37'S, 158°13'-27'E	"	25-95	30.VII.1988
RH 88/72	19°46'-57'S, 158°13'-27'E	"	28-52	1.VIII.1988
RH 88/73	19°44'S, 158°21'E	"	23-56	2.VIII.1988
DW 82	19°13.5'S, 158°49.9'E	"	62	25.VIII.1988
DW 94	19°6.3'5'S, 158°49.3'E	"	36	27.VIII.1988
DW 96	19°6.3', 158°42.1'E	"	41	"
DW 99	19°6.3'S, 158°31.1'E	"	52	"
DW 104	19°9.6'S, 158°36.8'E	"	49	"
DW 110	19°9.6'S, 158°55.9'E	"	40	26.VIII.1988
DW 113	19°25.4'S, 158°41.8'E	"	47	"
DW114	19°23.6'S, 158°39.8'E	"	217	"
DW 118	19°25.1'S, 158°28.7'E	"	52	"
DW 133	19°31.7'S, 158°25.4'E	"	45	30.VIII.1988
DW 144	19°38.9'S, 158°23.6'E	"	50	"

SYSTEMATIC ACCOUNT

Family POLYNOIDAE Malmgren, 1867

Key to the subfamilies of POLYNOIDAE from the Chesterfields and Fairways

- 1a. Median antenna usually absent, sometimes present as a small occipital papilla..... **Iphioninae**
- 1b. Median antenna well-developed 2
- 2a. Lateral antennae inserted ventrally or terminoventrally on distinct ceratophores 3
- 2b. Lateral antennae inserted terminally on anterior extensions of prostomium; no distinct ceratophores..... 4
- 3a. Lateral antennae inserted terminoventrally; tentaculophores without setae; parapodia subbiramous, neuropodia deeply notched dorsally and ventrally **Arctonoinae**
- 3b. Lateral antennae inserted ventrally; tentaculophores usually with setae; parapodia biramous, neuropodia not deeply notched **Harmothoinae**
- 4a. Neuropodia deeply notched dorsally and ventrally; dorsal tubercles absent; parapodia subbiramous, elytra without fringe of papillae or microtubercles; usually long bodied with numerous segments **Lepidastheniinae**
- 4b. Neuropodia not deeply notched dorsally or ventrally; with prominent dorsal tubercles; parapodia usually biramous; elytra usually with microtubercles; usually short bodied with fixed number of segments. **Lepidonotinae**

Subfamily ARCTONOINAE Hanley, 1989

DIAGNOSIS. — Body usually elongated, with numerous segments. Elytra usually numerous pairs on segments 2,4,5,7, then variable in arrangement. Dorsal cirri on non-elytragerous segments, with cylindrical cirrophores posterodorsal to notopodia and distal styles; dorsal tubercles usually inconspicuous. Prostomium bilobed, with three antennae, paired palps, and two pairs of eyes on posterior half of prostomium. Anterior lobes of prostomium rounded, with or without cephalic peaks; median antenna with large ceratophore in anterior notch; lateral antennae with distinct ceratophores inserted terminoventrally or ventrally, converging midventrally. Tentacular (first) segment not visible dorsally, tentaculophores lateral to prostomium, with acicula, asetig-

erous, with two pairs of dorsal and ventral tentacular cirri resembling antennae. Second or buccal segment with or without nuchal lobe, with first pair of elytra, subbiramous parapodia, with ventral buccal cirri longer than following ventral cirri. Pharynx usually with 9-11 pairs of papillae and 2 pairs of jaws. Parapodia subbiramous. Notopodia small, subconical, sometimes vestigial, on anterodorsal side of larger neuropodia, with notoacacula, notosetae usually few in number or absent. Neuropodia deeply notched dorsally and ventrally, with rounded to pointed presetal lobes and shorter, rounded, postsetal lobes. Neurosetae relatively few, variable. Pygidium usually with pair of anal cirri. Often commensal.

Key to the genera of ARCTONOINAE from the Chesterfields.

- 1a. Notosetae stouter than neurosetae, curved, sabre-like, smooth except for few spines along convex margin (Fig. 1E) *Paradyte*
 1b. Notosetae subequal to neurosetae in width, with spinous pouches and blunt tips (Fig. 2F, 3E) *Subadyte*

Genus *PARADYTE* Pettibone, 1969

Paradyte Pettibone, 1969a : 12, 13.

TYPE SPECIES. — *Polynoe crinoidicola* Potts, 1910 : 337, pl. 18, fig. 10, pl. 20, fig. 30, pl. 21, figs 39-41.

DIAGNOSIS. — Body flattened, elongate, tapering gradually posteriorly, fragile, up to 48 segments. Head and anterior body completely covered by elytra, posterior exposed. Elytra large, soft, almost transparent, smooth, without microtubercles or fringes of papillae, sometimes with scattered sensory papillae. Elytra 15 pairs on segments 2,4,5,7, alternate segments to 21,23,26,29 and 32. Elytra overlap posteriorly and medially. Dorsal cirri with cylindrical cirrophores, bulbous basally, and long smooth tapering styles. Dorsal tubercles inconspicuous. Prostomium bilobed, with rounded lobes, wider than long, with or without cephalic peaks, with two palps and three antennae with smooth styles. Median antenna with ceratophore large, truncate, inserted in anterior notch; ceratophores of lateral antennae distinct, inserted ventrally. Eyes, two pairs, anterior pair lying dorsolaterally at widest part of prostomium, posterior pair lying close behind, closer to midline. First segment not visible dorsally, asetigerous, tentaculophores lateral to prostomium, with two pairs of smooth tentacular cirri; without facial tubercle. Segment 2 without nuchal fold, with first pair of elytra on prominent elytriphores, and long buccal cirri. Pharynx with 11 pairs of soft papillae, and two pairs of chitinous jaws. Parapodia subbiramous, notopodia shorter and smaller than neuropodia, with short conical acicular lobes. Neuropodium deeply cut dorsally and ventrally, presetal lobe longer, subtriangular, postsetal lobe shorter, rounded. Ventral cirri short, gently tapering. Nephridial papillae distinct, from segment 6-8

onwards. Notosetae stouter than neurosetae, curved, sabre-like, with a few spines along convex edge below notched or entire tips. Upper neurosetae long, slender, with subdistal semilunar pockets and elongate spinous regions below slightly hooked bifid tips; lower ones shorter, much stouter, with subdistal semilunar pockets and a shorter smooth or faintly spinous region below lightly to strongly hooked entire tips. Pygidium with pair of anal cirri, anus terminal.

REMARKS. — There has been some debate in recent times over the status of this genus. MUIR (1982 :167) and HANLEY (1984) synonymised *Paradyte* with *Adyte* because the differences cited by PETTIBONE 1969a, were not considered sufficient to warrant generic status for *Paradyte*. However, if *Paradyte* is synonymised with *Adyte* then, as MUIR (1982 :167) suggests, the group of species referred to *Paradyte* by PETTIBONE represent a discrete group within *Adyte* and perhaps should be given subgeneric status. We consider the assignment of subgeneric status to groups of species is unnecessary and see no reason why such a group of species should not be elevated to generic rank, particularly when the grouping is believed to reflect a monophyletic relationship. Consequently, here and elsewhere (HANLEY & BURKE, 1990) we have followed PETTIBONE (1969a) and recognise the generic status of *Paradyte* and *Subadyte*.

Paradyte crinoidicola (Potts, 1910)

Fig. 1A-E

Polynoe crinoidicola Potts, 1910 : 337, pl. 18, fig. 10, pl. 20, fig. 30, pl. 21, figs 39-41.
Scalisetosus crinoidicola - HORST, 1915 : 17; 1917 : 98, pl. 16, figs 6-8, pl. 21, fig. 1. — OKUDA, 1936 : 564, fig. 3.

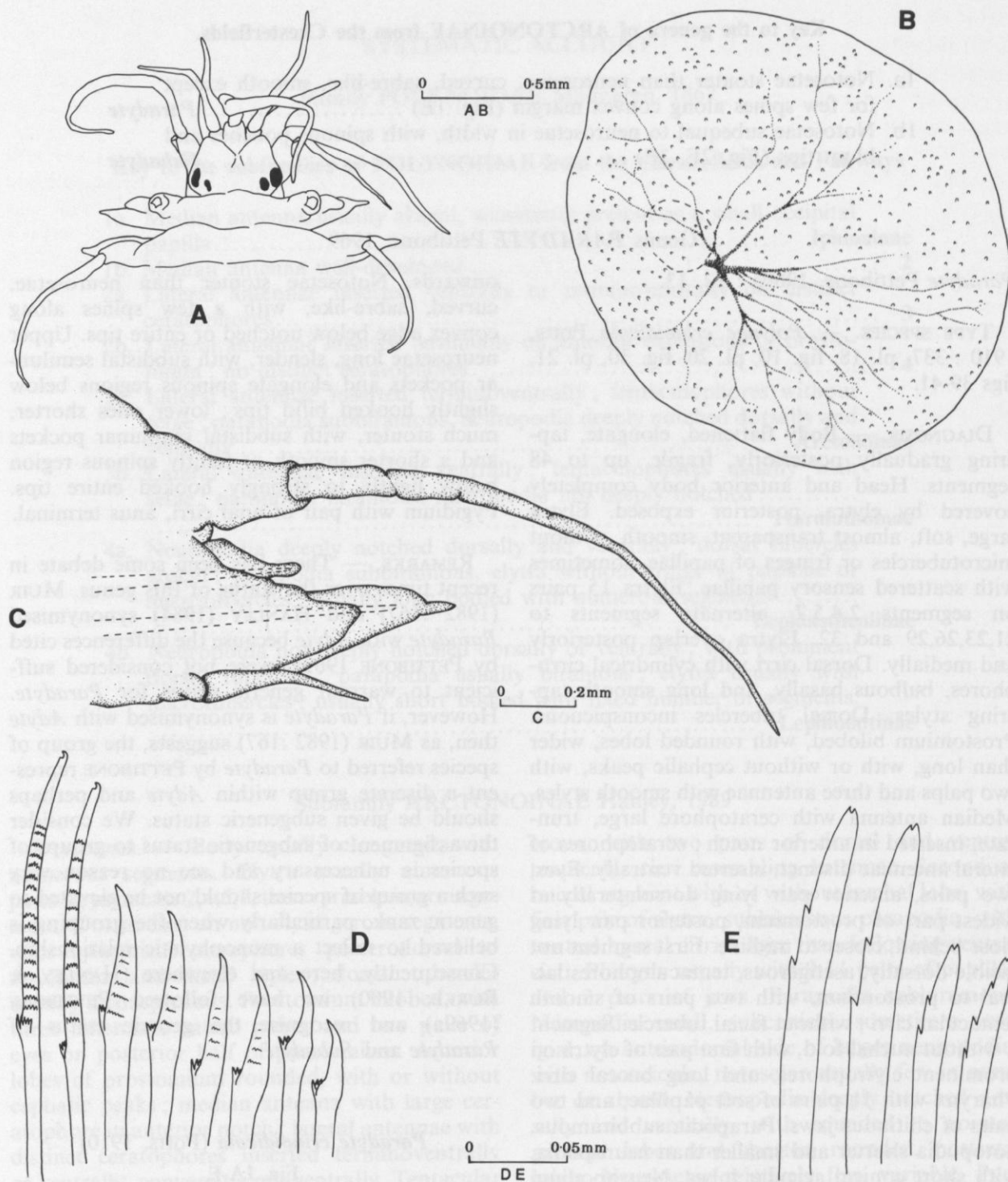


FIG. 1. — *Paradyte crinoidicola* (Potts, 1910) (NTM W5518) : A, anterior end, dorsal view ; B, elytron from unknown segment ; C, cirriferous parapodium from segment 14, posterior view ; D, neurosetae from segment 14 showing semilunar pockets ; E, flattened, sabre-like notosetae from segment 14.

Paradyte crinoidicola - PETTIBONE, 1969a : 13, 16, fig. 7a-g. — GIBBS, 1971 : 126. — JAE *et al.*, 1985 : 72.
Adyte crinoidicola - HANLEY, 1984 : 87-92, fig. 1A-L.
Scalissetosus longicirrus Fauvel, 1953 : 50, fig. 22a-c. — DAY, 1962 : 631 ; 1967 : 58, 59, fig. 1.7a-f. — GIBBS, 1969 : 452. — IMAJIMA & HARTMAN, 1964 : 38, 39.

MATERIAL EXAMINED. — Fairway Reefs : stn RH 88-54, 88 m, dredge (NTM W5518)

Chesterfield Islands : stn RH 88-72, 28-52 m (MNH UC182).

DESCRIPTION. — Body flattened, very fragile, elongate, tapering gradually posteriorly. Length 8-22mm, width including parapodia 1-5mm ; 36-48 segments. Body darkly pigmented dorsally, forming two longitudinal bands on either side of a lighter, unpigmented midline. Ventral surface of body usually pale. Colour of specimens dependent on colour pattern of host.

Elytra 15 pairs on segments 2,4,5,7, alternate segments to 21,23,26,29 and 32. Elytra delicate, smooth, almost transparent except for many small darkly pigmented patches ; without microtubercles or fringe of papillae, with numerous micropapillae (Fig. 1B). Elytra overlap medially and posteriorly, covering most of dorsum, last few segments often exposed.

Dorsal cirri with cirrophores large, cylindrical, bulbous basally ; styles long, smooth, tapering gently to tip. Dorsal tubercles not present.

Prostomium bilobed, wider than long, cephalic peaks absent (Fig. 1A). Eyes two pairs, anterior pair small lying laterally at widest part of prostomium, posterior pair close behind first pair and closer to midline. Palps short, slender, appearing smooth at 40x magnification. Median antenna with ceratophore large truncate, inserted in anterior notch ; style long, smooth, slender, gradually tapering to fine tip. Lateral antennae with distinct ceratophores, inserted ventrally on prostomium ; styles similar to median antenna but much shorter.

Tentacular segment not visible dorsally, tentaculophores lateral to prostomium, asetigerous,

with two pairs of tentacular cirri, styles similar to median antenna ; facial tubercle weakly developed. Segment 2 with first pair of elytra, subbiramous parapodia, and smooth ventral buccal cirri of similar length to following ventral cirri ; without nuchal fold. Pharynx with distal border of soft papillae, 9 dorsally and 11 ventrally, lateral pair small.

Parapodia subbiramous (Fig. 1C), notopodium smaller than neuropodium, short, conical. Neuropodium with much longer, sharply pointed, presetal lobe and short, bluntly rounded postsetal lobe. Lobes of neuropodium deeply cut dorsally and ventrally. Ventral cirri relatively long, usually longer than postsetal lobe of neuropodium, cirriform, smooth. Nephridial papillae short, distinct, from segment 8 onwards.

Notosetae stouter than neurosetae, curved, sabre-like, with 1-8 widely spaced spines along the curved border, tips notched (Fig. 1E). Upper neurosetae long, slender, curved distally, with subdistal semilunar pocket and many rows of serrations below slightly hooked bifid tips ; lower ones shorter, stouter, with subdistal semilunar pocket and bare or faintly serrated region below weak to strongly hooked unidentate tips (Fig. 1D).

Pygidium small, with pair of long anal cirri, anus terminal.

REMARKS. — The description is based on the two specimens from the Chesterfields and the material examined by HANLEY (1984), including the type material. This is one of the more common and widespread Indo-West Pacific polynoid scaleworms. It has been recorded from Mozambique, the Maldives, Malay Archipelago, Hong Kong, northern Australia, Caroline Islands, Marshall Islands, Solomon Islands and Japan. The species appears to be an obligate commensal on crinoids and has been recorded from 17 species of host (HANLEY, 1984).

Genus *SUBADYTE* Pettibone, 1969

Subadyte Pettibone, 1969a : 8.

TYPE SPECIES. — *Polynoe pellucida* Ehlers, 1864 : 105, pl. 2, fig. 10, pl. 3, figs 5, 7-13, pl. 4, figs 1-3.

DIAGNOSIS. — Body flattened, elongate, tapered posteriorly, segments about 40. Head and body covered by elytra. Elytra large, delicate, transparent, with large vesicular soft papillae, without microtubercles or fringe of papillae.

Fifteen or 16 pairs on segments 2,4,5,7, alternate segments to 23,26,29 and 32, and sometimes on 34. Elytra overlap medially and posteriorly. Dorsal cirri with cirrophores large, cylindrical, bulbous basally; with long, tapering, papillated styles. Dorsal tubercles weakly developed. Prostomium bilobed, wider than long, with or without cephalic peaks, with two palps, three antennae (usually papillated). Median antenna on large ceratophore inserted in anterior notch, lateral antennae on distinct ceratophores inserted ventrally on prostomium. Eyes two pairs, anterior pair lying laterally at widest part of prostomium, posterior pair lying close behind first pair, and closer to midline.

First (tentacular) segment not visible dorsally, without setae, tentaculophores lateral to prostomium, with two pairs of tentacular cirri; without facial tubercle. Second segment with or without nuchal fold, with first pair of elytra, with ventral (buccal) cirri much longer than following ventral cirri. Parapodia subbiramous: notopodium conical with acicular lobe; neuropodium deeply cut dorsally, presetal lobe longer, with or without distal cirriform appendage, postsetal lobe shorter, rounded. Ventral cirri short, subulate. Nephridial papillae distinct.

Notosetae similar thickness to neurosetae, with spinous pouches and blunt tips (often notched). Neurosetae all similar, with subdistal semilunar pockets and spinous pouches below bidentate tips; upper setae with more spinous pouches.

Pygidium with pair of anal cirri, similar to dorsal cirri, and terminal anus.

REMARKS. — PETTIBONE (1969a) erected this genus for several species formerly referred to *Scalisetosus* McIntosh, 1885. TEBBLE and CHAMBERS (1982) synonymised *Subadyte* with *Adyte* Saint-Joseph, 1899, because they did not consider the differences cited by PETTIBONE warranted the erection of a separate genus. Species referred to *Subadyte* by various authors (PETTIBONE, 1969a; FAUCHALD, 1972; HANLEY & BURKE, 1990), form a discrete group with several features which distinguish them from species referred to *Adyte* or *Paradyte*. The notosetae of *Subadyte* species have spinous pouches, while those of *Adyte* and *Paradyte* are smooth except for a row of spines along the convex edge. The neurosetae of *Subadyte* species are all similar while species of *Paradyte* have two kinds. The species of *Subadyte* are all short-bodied while the single species of *Adyte* is long-bodied.

Key to the species of *Subadyte* from the Chesterfields

- 1a. Elytra with large ovoid vesicles; surface of vesicles with numerous small nodules/papillae and several larger papillae on apex (Fig. 2C, E); Neuropodial presetal lobe with short cirriform appendage... *S. papillifera*
 1b. Elytra with row of micropapillae near outer edge and scattered large papillae, each with a subdistal constriction (Fig. 3A, G); Neuropodial presetal lobe sharply pointed..... *S. chesterfieldensis* sp. nov.

Subadyte papillifera (Horst, 1915)

Fig. 2A-F

Scalisetosus papilliferous Horst, 1915 : 17; 1917 : 99, pl. 21, figs 2-4. — MONRO 1928b : 469.

Subadyte papillifera - PETTIBONE, 1969a : 10, 12, fig. 5a-f.

MATERIAL EXAMINED. — **Chesterfield Islands** : stn RH 88-62, 16-26 m (NTM W5449, MNHN UC184).

DESCRIPTION. — Body flattened, very fragile, slender, tapering gradually posteriorly. One of the specimens examined was 8 mm long, 2.7 mm

wide (including parapodia) with 36 segments; the other was 11 mm long, 4.8 mm wide with 39 segments. Body light tan in colour with darker mottling on dorsum. Prostomium also light tan, antennae with slight mottling of darker pigment on subterminal inflation.

Elytra 15 to 16 pairs, sometimes an extra elytron on one side of segment 35. Elytra on segments 2,4,5,7, alternate segments to 21,23, 26,29,32, sometimes on 34, and rarely ? asymmetrical on segment 35. Elytra overlapping medially and posteriorly on anterior part of body, posteriorly, midline of dorsum may be exposed.

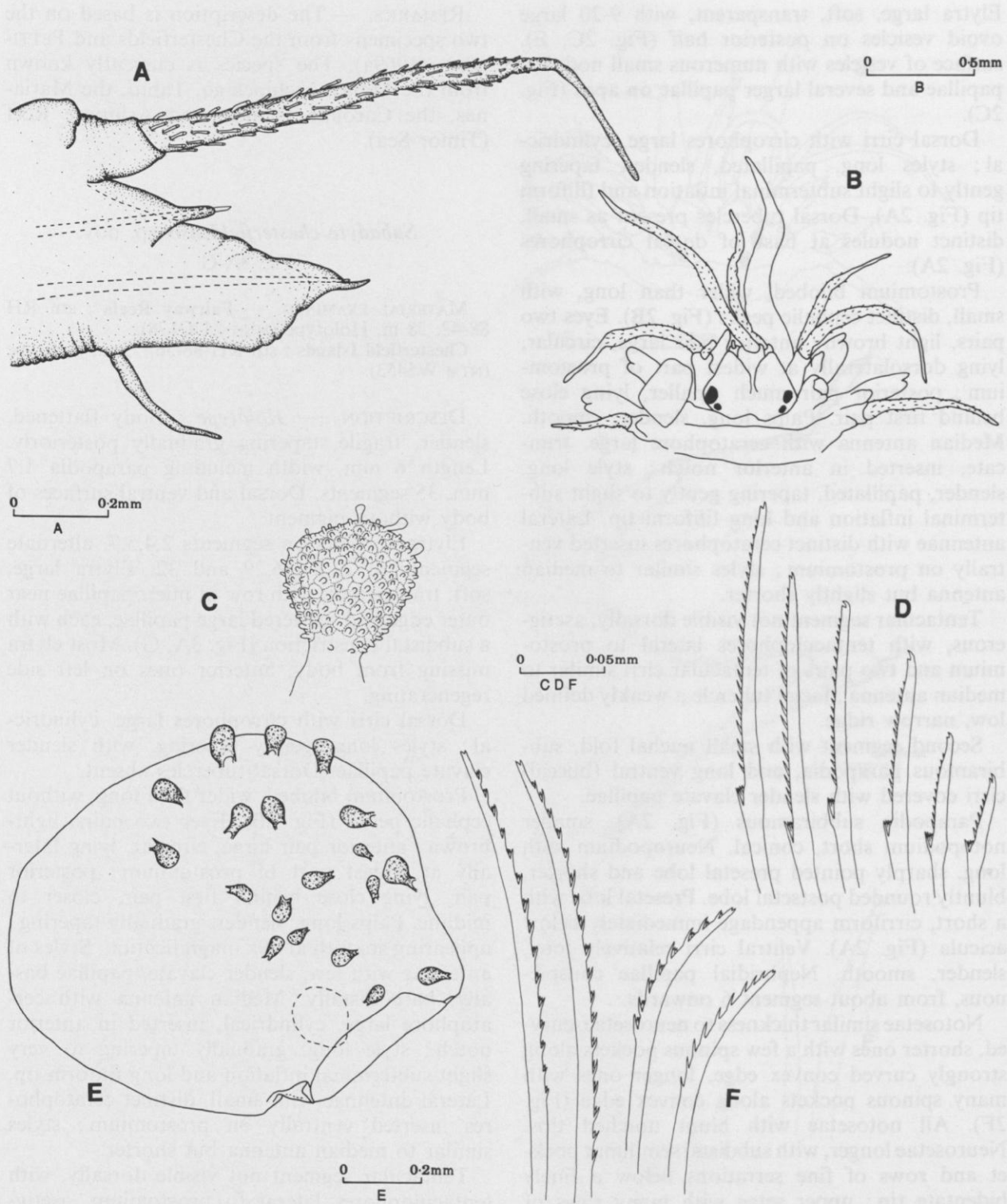


FIG. 2. — *Subadyte papillifera* (Horst, 1915) (NTM W5449) : A, cirriferous parapodium from segment 12, anterior view ; B, anterior end, dorsal view ; left palp, left lateral antenna and upper left tentacular cirrus regenerating ; C, detail of vesicle from elytron ; D, neurosetae from segment 12 ; E, elytron from unknown segment ; F, notosetae from segment 12.

Elytra large, soft, transparent, with 9-20 large ovoid vesicles on posterior half (Fig. 2C, E), surface of vesicles with numerous small nodules/papillae and several larger papillae on apex (Fig. 2C).

Dorsal cirri with cirrophores large, cylindrical; styles long, papillated, slender, tapering gently to slight subterminal inflation and filiform tip (Fig. 2A). Dorsal tubercles present as small, distinct nodules at base of dorsal cirrophores (Fig. 2A).

Prostomium bilobed, wider than long, with small, distinct cephalic peaks (Fig. 2B). Eyes two pairs, light brown; anterior pair large, circular, lying dorsolaterally at widest part of prostomium; posterior pair much smaller, lying close behind first pair. Palps long, slender, smooth. Median antenna with ceratophore large, truncate, inserted in anterior notch; style long, slender, papillated, tapering gently to slight subterminal inflation and long filiform tip. Lateral antennae with distinct ceratophores inserted ventrally on prostomium; styles similar to median antenna but slightly shorter.

Tentacular segment not visible dorsally, asetigerous, with tentaculophores lateral to prostomium and two pairs of tentacular cirri similar to median antenna; facial tubercle a weakly defined low, narrow ridge.

Second segment with small nuchal fold, sub-biramous parapodia, and long ventral (buccal) cirri covered with slender clavate papillae.

Parapodia subbiramous (Fig. 2A), smaller notopodium short, conical. Neuropodium with long, sharply pointed presetal lobe and shorter, bluntly rounded postsetal lobe. Presetal lobe with a short, cirriform appendage immediately below acicula (Fig. 2A). Ventral cirri relatively long, slender, smooth. Nephridial papillae conspicuous, from about segment 6 onwards.

Notosetae similar thickness to neurosetae, curved, shorter ones with a few spinous pockets along strongly curved convex edge, longer ones with many spinous pockets along convex edge (Fig. 2F). All notosetae with blunt notched tips. Neurosetae longer, with subdistal semilunar pocket and rows of fine serrations below a finely bidentate tip; upper setae with many rows of fine serrations, lower setae with few rows (Fig. 2D).

Pygidium without evidence of anal cirri, anus terminal.

REMARKS. — The description is based on the two specimens from the Chesterfields and PETTIBONE (1969a). The species is currently known from the Malay Archipelago, Tahiti, the Marianas, the Caroline Islands, and Ashmore Reef (Timor Sea).

Subadyte chesterfieldensis sp. nov.

Fig. 3A-G

MATERIAL EXAMINED. — **Fairway Reefs**: stn RH 88-42, 58 m, Holotype (MNHN UC178).

Chesterfield Islands: stn RH 88-56, 55 m, Paratype (NTM W5453).

DESCRIPTION. — *Holotype*: Body flattened, slender, fragile, tapering gradually posteriorly. Length 6 mm, width including parapodia 1.7 mm, 35 segments. Dorsal and ventral surfaces of body without pigment.

Elytra 15 pairs on segments 2,4,5,7, alternate segments to 21,23,26,29 and 32. Elytra large, soft, transparent, with row of micropapillae near outer edge and scattered large papillae, each with a subdistal constriction (Fig. 3A, G). Most elytra missing from body, anterior ones on left side regenerating.

Dorsal cirri with cirrophores large, cylindrical; styles long, gently tapering, with slender clavate papillae. Dorsal tubercles absent.

Prostomium bilobed, wider than long, without cephalic peaks (Fig. 3B). Eyes two pairs, light-brown; anterior pair large, circular, lying laterally at widest part of prostomium; posterior pair, lying close behind first pair, closer to midline. Palps long, slender, gradually tapering; appearing smooth at 40x magnification. Styles of antennae with few, slender clavate, papillae basally, bare distally. Median antenna with ceratophore large, cylindrical, inserted in anterior notch; style long, gradually tapering to very slight subterminal inflation and long filiform tip. Lateral antennae with small, distinct ceratophores inserted ventrally on prostomium; styles similar to median antenna but shorter.

Tentacular segment not visible dorsally, with tentaculophores lateral to prostomium, asetigerous, with two pairs of tentacular cirri similar in length, shape and ornamentation to median antenna; facial tubercle a low narrow ridge.

Second (buccal) segment with small nuchal

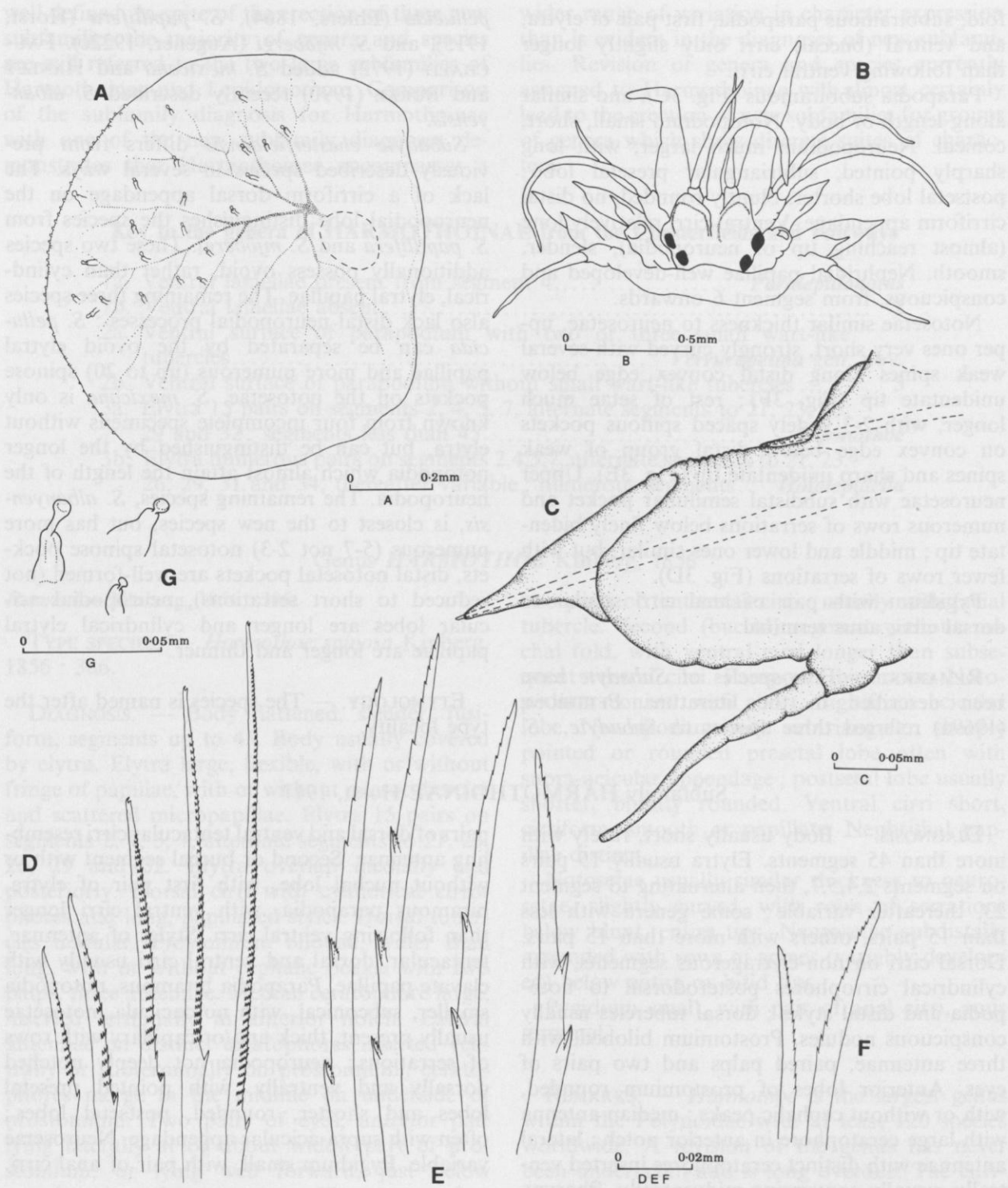


FIG. 3. — *Subadyte chesterfieldensis* sp. nov., holotype (MNHN UC178) : A, elytron from mid-body region ; B, anterior end, dorsal view ; C, cirriferous parapodium from unknown segment, posterior view ; D, neurosetae from unknown segment ; E, notosetae from unknown segment ; F, upper notosetae ; G, clytral papillae.

fold, subbiramous parapodia, first pair of elytra, and ventral (buccal) cirri only slightly longer than following ventral cirri.

Parapodia subbiramous (Fig. 3C), and similar along length of body. Notopodium small, short, conical. Neuropodium much larger, with long sharply pointed, subtriangular presetal lobe; postsetal lobe shorter, bluntly rounded, no distal cirriform appendage. Ventral cirri relatively long (almost reaching tip of neuropodia), slender, smooth. Nephridial papillae well-developed and conspicuous, from segment 6 onwards.

Notosetae similar thickness to neurosetae, upper ones very short, strongly curved with several weak spines along distal convex edge below unidentate tip (Fig. 3F); rest of setae much longer, with 2-3 widely spaced spinous pockets on convex edge below distal group of weak spines and sharp unidentate tip (Fig. 3E). Upper neurosetae with subdistal semilunar pocket and numerous rows of serrations below finely bidentate tip; middle and lower ones similar, but with fewer rows of serrations (Fig. 3D).

Pygidium with pair of anal cirri similar to dorsal cirri, anus terminal.

REMARKS. — Five species of *Subadyte* have been described in the literature. PETTIBONE (1969a) referred three species to *Subadyte*: *S.*

pellucida (Ehlers, 1864), *S. papillifera* (Horst, 1915), and *S. mjobergi* (Augener, 1922c). FAUCHALD (1972) added *S. mexicana* and HANLEY and BURKE (1990) recently described *S. albanyensis*.

Subadyte chesterfieldensis differs from previously described species in several ways. The lack of a cirriform dorsal appendage on the neuropodial lobe distinguishes the species from *S. papillifera* and *S. mjobergi*. These two species additionally possess ovoid, rather than cylindrical, elytral papillae. The remaining three species also lack distal neuropodial processes: *S. pellucida* can be separated by the ovoid elytral papillae and more numerous (up to 20) spinous pockets on the notosetae. *S. mexicana* is only known from four incomplete specimens without elytra, but can be distinguished by the longer notopodia which almost attain the length of the neuropodia. The remaining species, *S. albanyensis*, is closest to the new species, but has more numerous (5-7 not 2-3) notosetal spinous pockets, distal notosetal pockets are well-formed (not reduced to short serrations), neuropodial acicular lobes are longer and cylindrical elytral papillae are longer and thinner.

ETYMOLOGY. — The species is named after the type locality.

Subfamily HARMOTHAINAE Horst, 1917

DIAGNOSIS. — Body usually short, rarely with more than 45 segments. Elytra usually 15 pairs on segments 2,4,5,7, then alternating to segment 23, thereafter variable; some genera with less than 15 pairs, others with more than 15 pairs. Dorsal cirri on non-elytragerous segments, with cylindrical cirrophores posterodorsal to notopodia and distal styles; dorsal tubercles usually conspicuous nodules. Prostomium bilobed, with three antennae, paired palps and two pairs of eyes. Anterior lobes of prostomium rounded, with or without cephalic peaks; median antenna with large ceratophore in anterior notch; lateral antennae with distinct ceratophores inserted ventrally, usually converging midventrally. Pharynx with distal circlet of soft papillae and two pairs of jaws. Tentacular (first) segment not visible dorsally, tentaculophores lateral to prostomium, with acicula, with or without setae, with two

pairs of dorsal and ventral tentacular cirri resembling antennae. Second or buccal segment with or without nuchal lobe, with first pair of elytra, biramous parapodia, with ventral cirri longer than following ventral cirri. Styles of antennae, tentacular, dorsal and ventral cirri usually with clavate papillae. Parapodia biramous, notopodia smaller, subconical, with notoacacula, notosetae usually present, thick and/or capillary with rows of serrations; neuropodia not deeply notched dorsally and ventrally, with pointed presetal lobes and shorter, rounded, postsetal lobes; often with supra-acicular appendage. Neurosetae variable. Pygidium small, with pair of anal cirri.

REMARKS. — There are now 18 subfamilies within the Polynoidae (HANLEY, 1989). The majority of these subfamilies have been erected since 1971 and consequently their characteristics are

well defined. In spite of the erection of these new subfamilies the majority of genera and species are still referred to the two large subfamilies of Harmothoinae and Lepidonotinae. Comparison of the subfamily diagnosis for Harmothoinae with one of the new subfamily diagnoses demonstrates that Harmothoinae encompasses a

wider range of variation in character expression than is evident in the diagnoses of new subfamilies. Revision of genera and species currently assigned to Harmothoinae will almost certainly lead to the erection of new subfamilies for groups of genera which show discrete suites of characters.

Key to the genera of HARMOTHOINAE from the Chesterfields and Fairways

- 1a. Ventral lamellae present from segment 4..... *Paralepidonotus*
 1b. Ventral lamellae absent..... 2
 2a. Ventral surface of parapodium with two or three small wart-like tubercles..... *Verrucapelma* gen. nov.
 2b. Ventral surface of parapodium without small wart-like tubercles 3
 3a. Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32; segments less than 45 *Harmothoe*
 3b. Elytra numerous pairs on segments 2,4,5,7, alternate segments to 21, 23, 26, 29, 31 and 34, thereafter variable; numerous segments.. *Hololepidella*

Genus *HARMOTHOE* Kinberg, 1856

Harmothoe Kinberg, 1856 : 386.

TYPE SPECIES. — *Harmothoe spinosa* Kinberg, 1856 : 386.

DIAGNOSIS. — Body flattened, slender, fusiform, segments up to 45. Body usually covered by elytra. Elytra large, flexible, with or without fringe of papillae, with or without microtubercles and scattered micropapillae. Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32. Elytra overlap medially and posteriorly. Dorsal cirri with cylindrical cirrophores and long, papillated styles. Dorsal tubercles nodular. Prostomium bilobed, wider than long, with or without cephalic peaks, with two palps, three antennae. Median ceratophore large, inserted terminally in anterior notch. Lateral antennae on distinct ceratophores inserted ventrally or subterminally on prostomium; ceratophores merge in the midline on underside of prostomium. Two pairs of eyes, anterior pair lying laterally at or about widest part of prostomium, or lying well forward, just below anterior tips of prostomium. First (tentacular) segment not visible dorsally, with tentaculophores lateral to prostomium, with setae, with

two pairs of tentacular cirri; usually with facial tubercle. Second (buccal) segment without nuchal fold, with ventral cirri longer than subsequent ventral cirri. Parapodia biramous. Notopodium conical with short, digitiform acicular lobe, Neuropodium with subtriangular, sharply pointed or rounded presetal lobe often with supra-acicular appendage; postsetal lobe usually shorter, bluntly rounded. Ventral cirri short, cirriform, smooth or papillate. Nephridial papillae distinct.

Notosetae usually similar thickness to neurosetae, slightly curved, with rows of serrations below blunt, entire tips. Neurosetae subdistally expanded with rows of spines (variably developed) below entire or bifid tips.

Pygidium small, with pair of anal cirri, anus terminal.

REMARKS. — *Harmothoe* is the largest genus within the Polynoidae with at least 120 species worldwide. A revision of the genus has never been undertaken and is long overdue. The current generic diagnosis encompasses a range of variation that elsewhere in the family has been used to differentiate genera.

Key to the species of *Harmothoe* from the Chesterfields and Fairways

- 1a Elytra with large mamilliform vesicles and dense fringe of slender clavate papillae (Fig. 4B)..... *H. turbinata* sp. nov.
 1b Elytra with large balloon-shaped vesicles each with a distal row of blunt teeth and sparse fringe of slender clavate papillae.....
 *H. vesicudenta* sp. nov.
 1c Elytra with occasional large ovoid vesicle and without fringe of papillae.....
 *H. spongicola* sp. nov.

***Harmothoe turbinata* sp. nov.**

Fig. 4A-H

MATERIAL EXAMINED. — **Fairway Reefs** : stn RH 88-52, 69 m, Holotype (MNHN UC183).

Chesterfield Islands : stn RH 88-57, 60 m, Paratypes (NTM W5450, W5451). — Stn RH 88-71, 25-95 m, Paratype (NTM W5452).

DESCRIPTION. — *Holotype* : Body flattened, slender, fusiform, 36 segments. Length 12.6 mm, width including parapodia 3.2 mm. Dorsal and ventral surfaces of body and prostomium without pigment, except for a light tinge of grey around facial tubercle.

Elytra 15 pairs, on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32. Elytra large, flexible, covering dorsum entirely. Elytra with dense fringe of long, slender, clavate papillae along posterior and outer borders (Fig. 4B). Surface of elytron with small chisel-shaped microtubercles near anterior border, becoming larger, mamilliform, near centre and posterior border. On each elytron, two or three very large mamilliform tubercles occur, each on large raised dome near posterior border (Fig. 4B). Slender clavate papillae scattered across elytral surface. Much of elytral surface covered with debris, giving elytra whitish appearance.

Dorsal cirri with cirrophores large, cylindrical, with slight basal swelling; styles long, slender, tapering gently, profusely papillated (Fig. 4A); dorsal tubercles well-formed nodules (Fig. 4C).

Prostomium bilobed, wider than long, with cephalic peaks (Fig. 4C). Eyes two pairs; anterior pair large, circular, lying laterally at widest part of prostomium; posterior pair slightly larger, closer to midline. Palps short, slender, appearing smooth at 40x magnification. Median antenna with ceratophore large, truncate, inserted in anterior notch; style long, slender, tapering gently to tip, covered with long, clavate papillae. Lateral antennae ceratophores short, distinct,

inserted ventrally on prostomium; styles short, bulbous basally, with fine filiform tips and covered with fine clavate papillae.

Tentacular segment not visible dorsally, with tentaculophores lateral to prostomium, each with single seta, and pair of long, slender, gently tapering, profusely papillated styles; facial tubercle present as low, weakly developed ridge. Second segment without nuchal fold, with first pair of elytra, biramous parapodia and long, papillated, ventral (buccal) cirri.

Parapodia biramous, (Fig. 4A) and similar along length of body. Notopodium smaller than neuropodium, short, conical. Neuropodium with longer, subtriangular presetal lobe; postsetal lobe shorter, bluntly rounded. Ventral cirri short, cirriform, smooth. Nephridial papillae well-developed, from segment 9 onwards.

Notosetae similar thickness to neurosetae, slightly curved; outer ones in palisade, short, stout, with a few rows of serrations along convex edge (Fig. 4E), inner ones much larger, with many rows of strong serrations below stout blunt tips (Fig. 4D). Neurosetae long, straight, upper ones subdistally expanded with many alternating rows of strong serrations below fine, bidentate tips; middle ones similar, but with fewer, smaller rows of serrations; lower ones with very few rows of fine serrations below blunt unidentate tips (Fig. 4F). Lower neurosetae on last four segments (32-36) thinner, with fine rows of serrations below unidentate tips (Fig. 4G). Upper neurosetae on last four segments very different, long, slender, with numerous spines arranged in groups of four along most of each seta below fine unidentate tip (Fig. 4H).

Pygidium indistinct, with pair of long anal cirri resembling dorsal cirri, anus terminal.

Paratypes : Only one paratype complete (NTM W5451), 12.5 mm long, 3.5 mm wide including parapodia, 36 segments. Other two both incomplete with 26 and 27 segments respect-

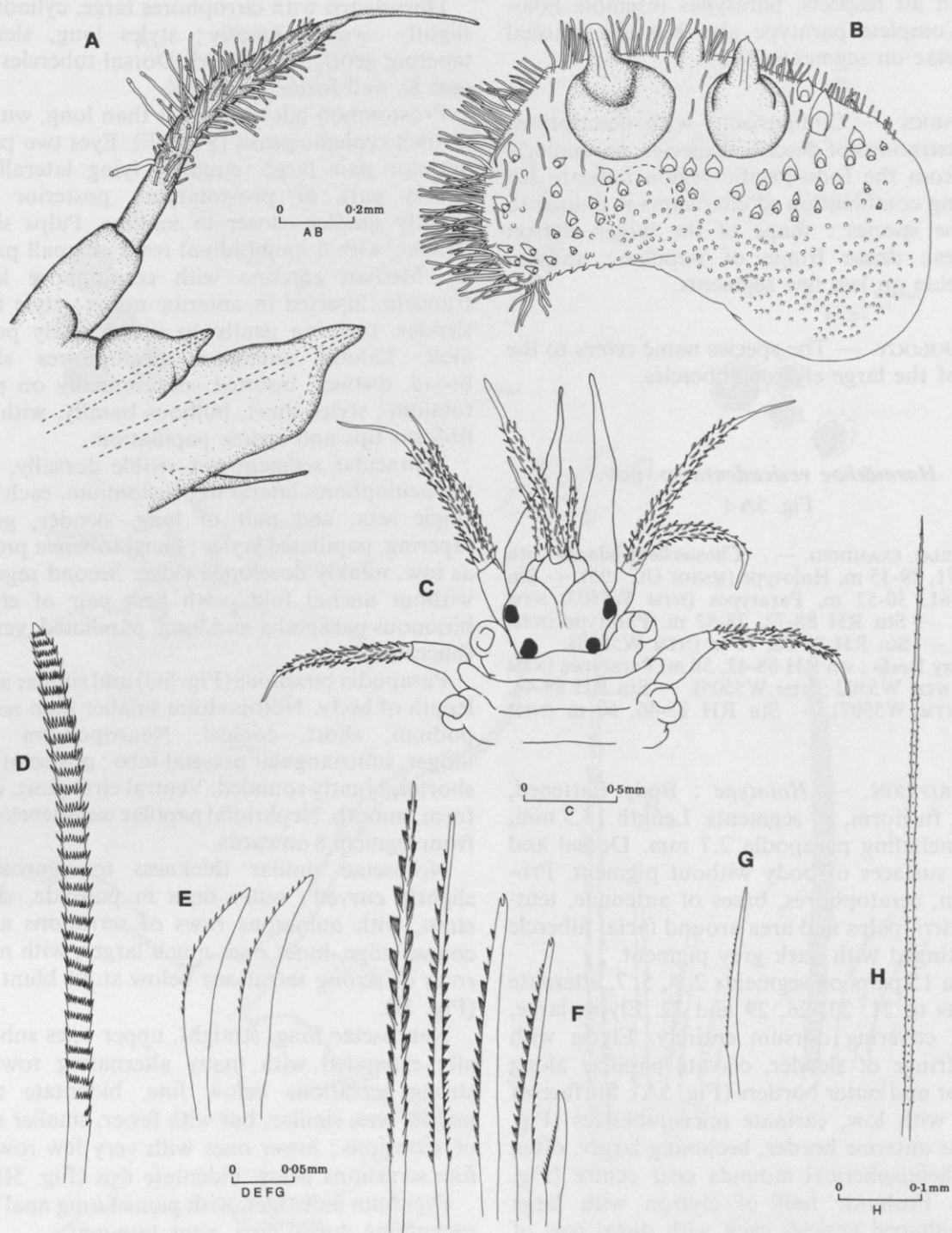


FIG. 4. — *Harmothoe turbinata* sp. nov., holotype (MNH UC183): A, cirriferous parapodium from segment 10, anterior view; B, elytron from unknown segment showing peculiar, large, turban-like tubercles; C, anterior end, dorsal view (parapodia of segments 2-4 omitted); D, superior notoseta from segment 10; E, inferior notosetae from segment 10; F, neurosetae from segment 10; G, inferior neuroseta from posterior segment; H, superior neuroseta from posterior segment.

ively. In all respects, paratypes resemble holotype. Complete paratype also has the unusual neurosetae on segments 32-36.

REMARKS. — Comparisons with descriptions and illustrations of described species, particularly those from the Indo-Pacific region indicate the following combination of characters is unique to this new species: shape of the larger elytron tubercles; dense fringe of papillae; unusual neurosetae on last few segments.

ETYMOLOGY. — The species name refers to the shape of the large elytron tubercles.

Harmothoe vesicudenta sp. nov.

Fig. 5A-I

MATERIAL EXAMINED. — **Chesterfield Islands**: stn RH 88-71, 29-35 m, Holotype (MNHN UC 195). — Stn RH 88-61, 30-52 m, Paratypes (NTM W5503, NTM W5509). — Stn RH 88-72, 28-52 m, Paratype (NTM W5504). — Stn RH 88-62, 16 m (NTM W5508).

Fairway Reefs: stn RH 88-42, 58 m, Paratypes (NTM W5501, NTM W5502; NTM W5505). — Stn RH 88-44, 64 m (NTM W5507). — Stn RH 88-46, 60 m (NTM W5506).

DESCRIPTION. — *Holotype*: Body flattened, slender, fusiform, 37 segments. Length 13.5 mm, width including parapodia 2.7 mm. Dorsal and ventral surfaces of body without pigment. Prostomium, ceratophores, bases of antennae, tentacular cirri, palps and area around facial tubercle lightly tinged with dark grey pigment.

Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32. Elytra large, flexible, covering dorsum entirely. Elytra with sparse fringe of slender, clavate papillae along posterior and outer borders (Fig. 5A). Surface of elytron with low, carinate microtubercles (Fig. 5D) near anterior border, becoming larger, often brown hemispherical mounds near centre (Fig. 5B, E). Posterior half of elytron with large balloon-shaped vesicles each with distal row of blunt teeth (Fig. 5C). Several slender clavate papillae sparsely scattered across elytral surface. Much of elytral surface covered with debris, but large, brown tubercles visible against whitish appearance of each elytron.

Dorsal cirri with cirrophores large, cylindrical, slightly swollen basally; styles long, slender, tapering gently, papillated. Dorsal tubercles present as well-formed nodules.

Prostomium bilobed, wider than long, without distinct cephalic peaks (Fig. 5F). Eyes two pairs; anterior pair large, circular, lying laterally at widest part of prostomium; posterior pair slightly smaller, closer to midline. Palps short, slender, with 6 longitudinal rows of small papillae. Median antenna with ceratophore large, truncate, inserted in anterior notch; style long, slender, tapering gently to tip, sparsely papillated. Lateral antennae ceratophores short, broad, distinct, inserted subterminally on prostomium; styles short, bulbous basally, with fine filiform tips and sparse papillation.

Tentacular segment not visible dorsally, with tentaculophores lateral to prostomium, each with single seta, and pair of long, slender, gently tapering, papillated styles; facial tubercle present as low, weakly developed ridge. Second segment without nuchal fold, with first pair of elytra, biramous parapodia and long, papillated, ventral (buccal) cirri.

Parapodia biramous (Fig. 5G) and similar along length of body. Notopodium smaller than neuropodium, short, conical. Neuropodium with longer, subtriangular presetal lobe; postsetal lobe shorter, bluntly rounded. Ventral cirri short, cirri-form, smooth. Nephridial papillae well-developed, from segment 8 onwards.

Notosetae similar thickness to neurosetae, slightly curved; outer ones in palisade, short, stout, with numerous rows of serrations along convex edge, inner ones much larger, with many rows of strong serrations below stout blunt tips (Fig. 5I).

Neurosetae long, straight, upper ones subdistally expanded with many alternating rows of strong serrations below fine, bidentate tips; middle ones similar, but with fewer, smaller rows of serrations; lower ones with very few rows of fine serrations below bidentate tips (Fig. 5H).

Pygidium indistinct, with pair of long anal cirri resembling dorsal cirri, anus terminal.

Paratypes: Four complete specimens have been designated as paratypes. Length 7-10 mm, width including parapodia 1.6-2.8 mm, 35-37 segments. Paratypes closely resemble holotype in all respects.

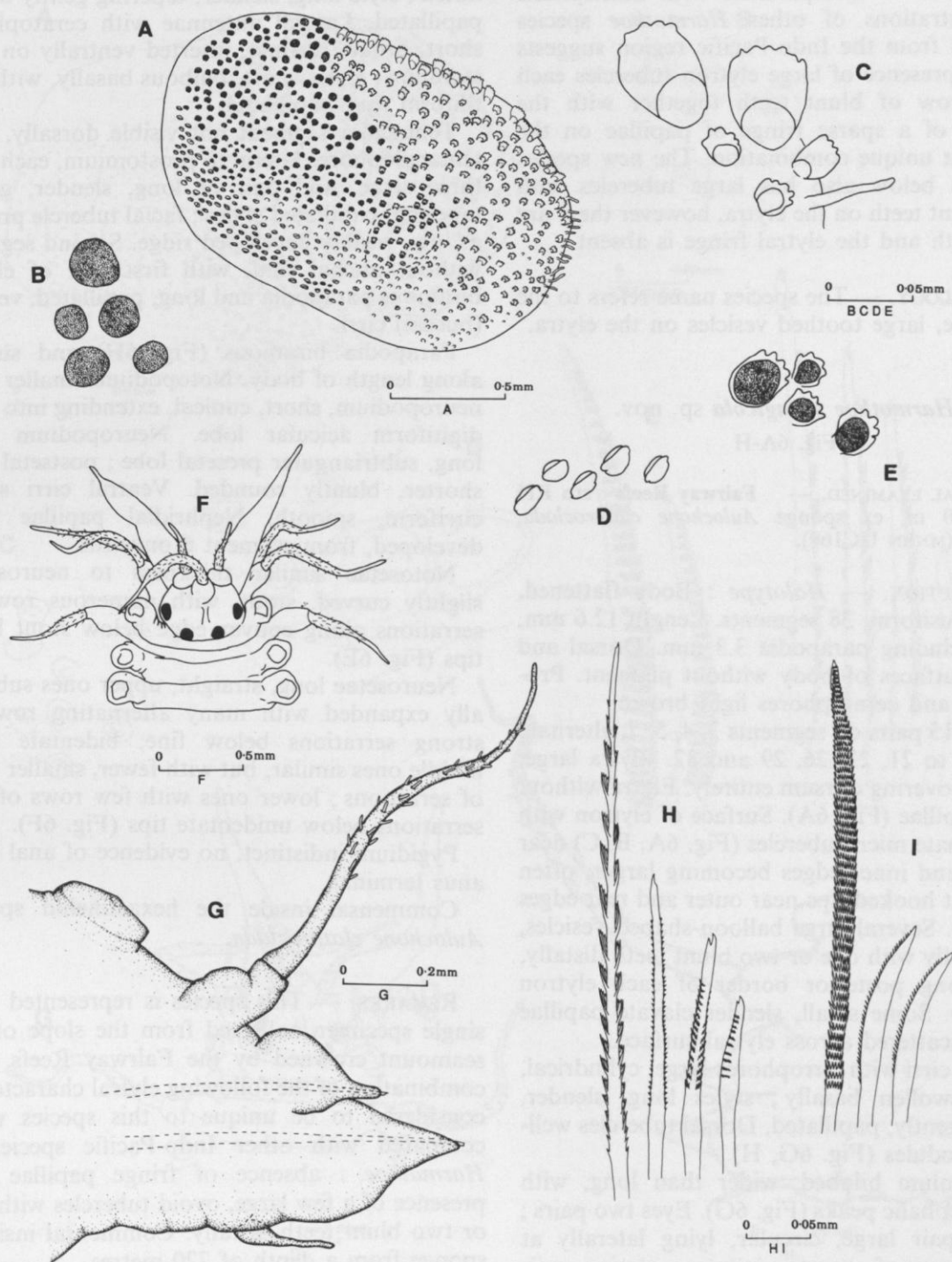


FIG. 5. — *Harmothoe vesicudenta* sp. nov., holotype (MNH UC195) : A, elytron from unknown segment ; B-E, details of tubercles from elytron ; F, anterior end, dorsal view (parapodia of segments 2-5 omitted) ; G, cirriferous parapodium from segment 14, anterior view ; H, neurosetae from segment 14 ; I, notosetae, from segment 14, including palisade notosetae.

REMARKS. — Comparisons with descriptions and illustrations of other *Harmothoe* species described from the Indo-Pacific region suggests that the presence of large elytron tubercles each with a row of blunt teeth together with the presence of a sparse fringe of papillae on the elytra is a unique combination. The new species described below also has large tubercles with distal blunt teeth on the elytra, however there are fewer teeth and the elytral fringe is absent.

ETYMOLOGY. — The species name refers to the distinctive, large toothed vesicles on the elytra.

Harmothoe spongiicola sp. nov.

Fig. 6A-H

MATERIAL EXAMINED. — Fairway Reefs : stn RH 88-48, 720 m, ex sponge *Aulochone clathroclada*, Holotype (MNHN UC169).

DESCRIPTION. — *Holotype* : Body flattened, slender, fusiform, 38 segments. Length 12.6 mm, width including parapodia 3.3 mm. Dorsal and ventral surfaces of body without pigment. Prostomium and ceratophores light brown.

Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32. Elytra large, flexible, covering dorsum entirely. Elytra without fringe papillae (Fig. 6A). Surface of elytron with low, carinate microtubercles (Fig. 6A, B, C) near anterior and inner edges becoming larger, often with blunt hooked tips near outer and rear edges (Fig. 6D). Several large balloon-shaped vesicles, occasionally with one or two blunt teeth distally, occur along posterior border of each elytron (Fig. 6D). Some small, slender clavate papillae sparsely scattered across elytral surface.

Dorsal cirri with cirrophores large, cylindrical, slightly swollen basally ; styles long, slender, tapering gently, papillated. Dorsal tubercles well-formed nodules (Fig. 6G, H).

Prostomium bilobed, wider than long, with distinct cephalic peaks (Fig. 6G). Eyes two pairs ; anterior pair large, circular, lying laterally at widest part of prostomium ; posterior pair slightly smaller, closer to midline. Palps slender, gently tapering to tip. Median antenna with ceratophore large, truncate, inserted in anterior

notch ; style long, slender, tapering gently to tip, papillated. Lateral antennae with ceratophores short, broad, distinct, inserted ventrally on prostomium ; styles short, bulbous basally, with fine filiform tips, papillated.

Tentacular segment not visible dorsally, with tentaculophores lateral to prostomium, each with three setae, and pair of long, slender, gently tapering, papillated styles ; facial tubercle present as low, weakly developed ridge. Second segment without nuchal fold, with first pair of elytra, biramous parapodia and long, papillated, ventral (buccal) cirri.

Parapodia biramous (Fig. 6H) and similar along length of body. Notopodium smaller than neuropodium, short, conical, extending into thin, digitiform acicular lobe. Neuropodium with long, subtriangular presetal lobe ; postsetal lobe shorter, bluntly rounded. Ventral cirri short, cirriform, smooth. Nephridial papillae well-developed, from segment 6 onwards.

Notosetae similar thickness to neurosetae, slightly curved, stout, with numerous rows of serrations along convex edge below stout blunt tips (Fig. 6E).

Neurosetae long, straight, upper ones subdistally expanded with many alternating rows of strong serrations below fine, bidentate tips ; middle ones similar, but with fewer, smaller rows of serrations ; lower ones with few rows of fine serrations below unidentate tips (Fig. 6F).

Pygidium indistinct, no evidence of anal cirri, anus terminal.

Commensal inside the hexactinellid sponge *Aulochone clathroclada*.

REMARKS. — This species is represented by a single specimen collected from the slope of the seamount crowned by the Fairway Reefs. The combination of the following elytral characters is considered to be unique to this species when compared with other Indo-Pacific species of *Harmothoe* : absence of fringe papillae and presence of a few large, ovoid tubercles with one or two blunt teeth distally. Commensal inside a sponge from a depth of 720 metres.

ETYMOLOGY. — The species name reflects the association with a sponge.

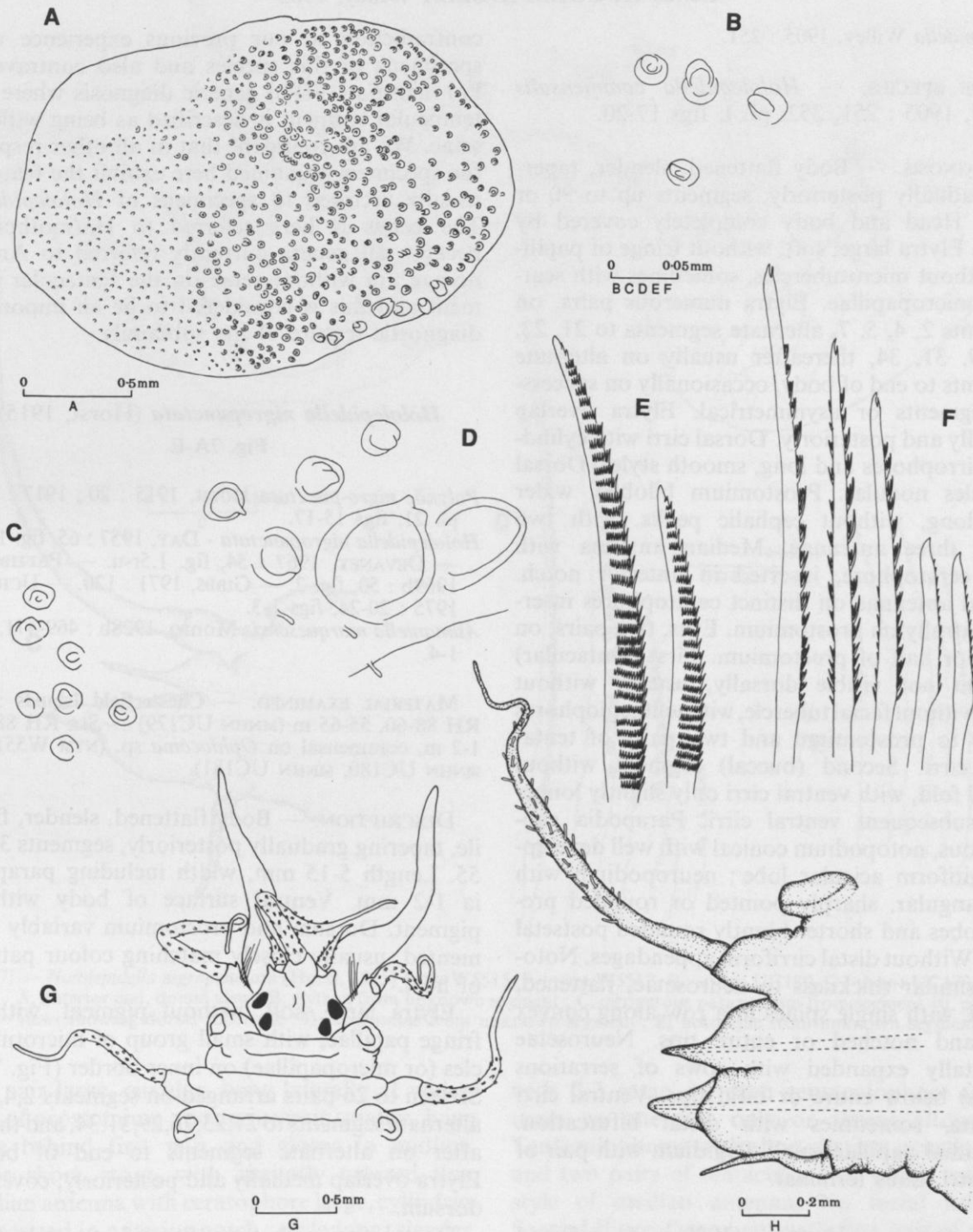


FIG. 6. — *Harmothoe spongicola* sp. nov., holotype (MNHN UC169) : A, elytron from unknown segment ; B-D, details of tubercles on elytron ; E, notosetae from segment 10 ; F, neurosetae from segment 10 ; G, anterior end, dorsal view (parapodia of segments 2-4 omitted) ; H, cirriferous parapodium from segment 10, posterior view, showing position of dorsal tubercle.

Genus *HOLELEPIDELLA* Willey, 1905

Hololepidella Willey, 1905 : 251.

TYPE SPECIES. — *Hololepidella commensalis* Willey, 1905 : 251, 252, pl. I, figs 17-20.

DIAGNOSIS. — Body flattened, slender, tapering gradually posteriorly, segments up to 90 or more. Head and body completely covered by elytra. Elytra large, soft, without fringe of papillae, without microtubercles, sometimes with scattered micropapillae. Elytra numerous pairs, on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29, 31, 34, thereafter usually on alternate segments to end of body, occasionally on successive segments or asymmetrical. Elytra overlap medially and posteriorly. Dorsal cirri with cylindrical cirrophores and long, smooth styles. Dorsal tubercles nodular. Prostomium bilobed, wider than long, without cephalic peaks, with two palps, three antennae. Median antenna with large ceratophore, inserted in anterior notch. Lateral antennae on distinct ceratophores inserted ventrally on prostomium. Eyes, two pairs, on posterior half of prostomium. First (tentacular) segment not visible dorsally, usually without setae, without facial tubercle, with tentaculophores lateral to prostomium and two pairs of tentacular cirri. Second (buccal) segment without nuchal fold, with ventral cirri only slightly longer than subsequent ventral cirri. Parapodia subbiramous, notopodium conical with well developed digitiform acicular lobe; neuropodium with subtriangular, sharply pointed or rounded pre-setal lobes and shorter bluntly rounded postsetal lobes. Without distal cirriform appendages. Noto-setae similar thickness to neurosetae, flattened, curved, with single spines in a row along convex edge and notched or entire tips. Neurosetae subdistally expanded with rows of serrations (spines) below entire or bifid tips. Ventral cirri subulate, sometimes with distal bifurcation. Nephridial papillae small. Pygidium with pair of anal cirri, anus terminal.

REMARKS. — HANLEY (1989 : 3) referred *Hololepidella* to the new subfamily Arctonoinae. However, examination of specimens from the Chesterfields which have been referred to *Hololepidella nigropunctata* revealed that some had setae on the tentacular (first) segment. This is in

contradiction to our previous experience with specimens of this species and also contravenes PETTIBONE's (1969b) generic diagnosis where the tentacular segment is described as being without setae. We are confident that in all other respects the specimens examined here exhibit the features usually ascribed to specimens of *Hololepidella*. The genus is here referred to Harmothoinae because all genera currently referred to Arctonoinae are without setae on the tentacular segment and this is considered to be an important diagnostic feature of the subfamily.

Hololepidella nigropunctata (Horst, 1915)

Fig. 7A-E

Polynöe nigro-punctata Horst, 1915 : 20; 1917 : 104, pl. 21, figs 15-17.

Hololepidella nigropunctata - DAY, 1957 : 65, fig. 1 a-f. — DEVANEY, 1967 : 54, fig. 1.5r-u. — PETTIBONE, 1969b : 50, fig. 2. — GIBBS, 1971 : 120. — UCHIDA, 1975 : 20-24, figs 1-3.

Allmaniella marquesensis Monro, 1928b : 469-471, figs 1-4.

MATERIAL EXAMINED. — **Chesterfield Islands** : stn RH 88-60, 55-65 m (MNHN UC179) — Stn RH 88-63, 1-2 m, commensal on *Ophiocoma* sp. (NTM W5512-5, MNHN UC180, MNHN UC181).

DESCRIPTION. — Body flattened, slender, fragile, tapering gradually posteriorly, segments 34 to 55. Length 5-15 mm, width including parapodia 1-2 mm. Ventral surface of body without pigment. Dorsum and prostomium variably pigmented, usually closely matching colour pattern of host.

Elytra large, soft, without pigment, without fringe papillae, with small group of microtubercles (or micropapillae) on inner border (Fig. 7B). Sixteen to 26 pairs arranged on segments 2,4,5,7, alternate segments to 21,23,26,29,31,34, and thereafter on alternate segments to end of body. Elytra overlap medially and posteriorly, covering dorsum.

Dorsal cirri with cirrophores large, cylindrical; styles long, smooth, slender, gently tapering to tip. Dorsal tubercles small, distinct nodules medial to dorsal cirrophores (Fig. 7C).

Prostomium bilobed, wider than long, without cephalic peaks (Fig. 7A). Eyes two pairs; anter-

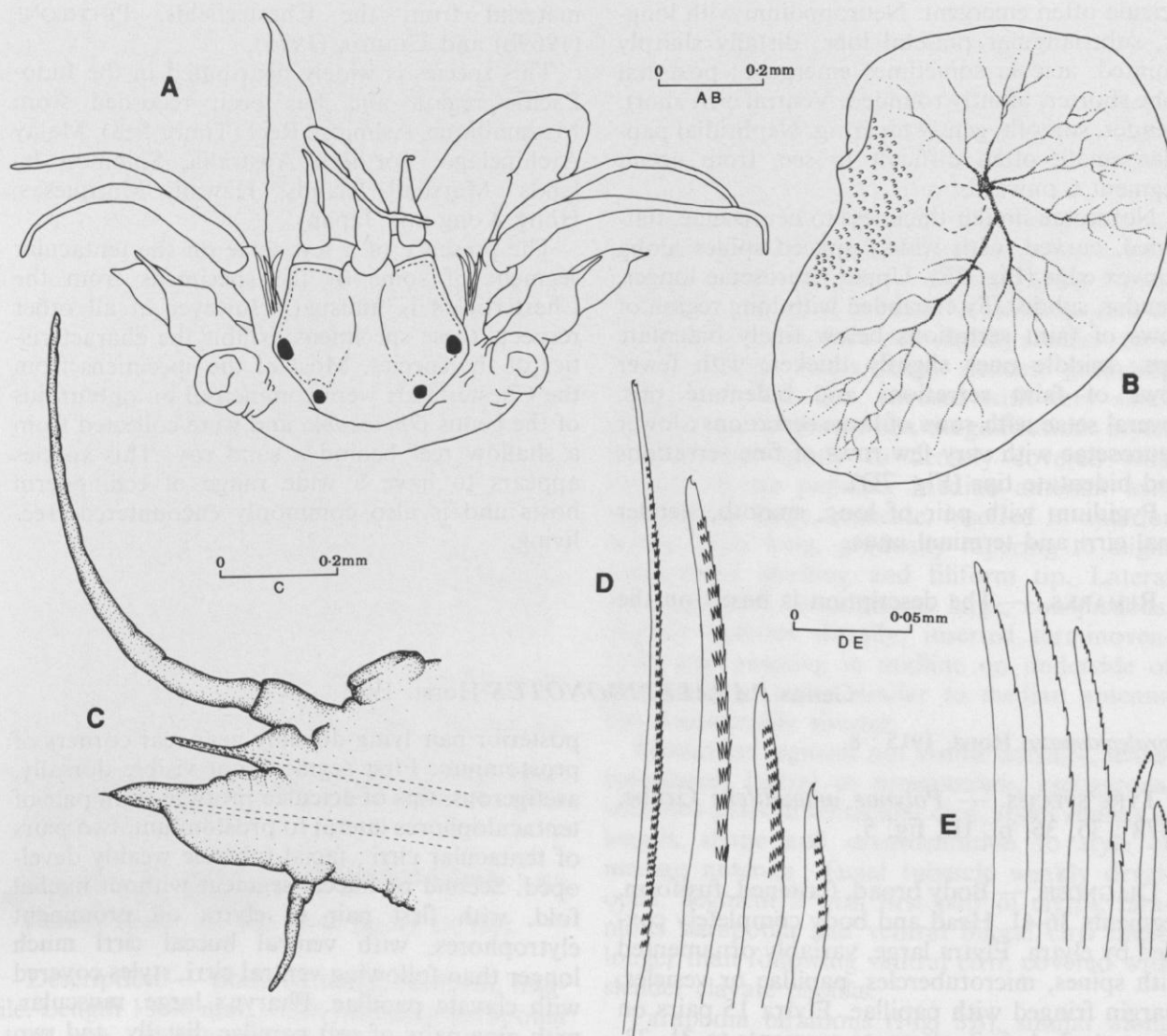


FIG. 7. — *Hololepidella nigropunctata* (Horst, 1915) (NTM W5515, A; NTM W5512, B; MNHN UC180, C; MNHN UC179, D-E): A, anterior end, dorsal view; B, elytron from unknown segment; C, cirriferous parapodium from segment 10, posterior view, showing dorsal tubercle; D, neurosetae from unknown segment; E, notosetae from unknown segment.

rior pair large, circular, lying laterally at widest part of prostomium; posterior pair smaller, lying close behind first pair and closer to midline. Palps short, stout, with abruptly tapered tips. Median antenna with ceratophore large, cylindrical, inserted in anterior notch; style long, slender, smooth, gently tapering. Lateral antennae on short, broad ceratophores, inserted ventrally on prostomium; styles short, smooth, bulbous basally and filiform tips.

Tentacular (first) segment not visible dorsally,

with 2-3 setae on each tentaculophore (sometimes on one side only or absent altogether). Tentaculophores with short distinct acicular lobe and two pairs of tentacular cirri which resemble style of median antenna. No facial tubercle. Second (buccal) segment with first pair of elytra, subbiramous, without nuchal fold, with long ventral buccal cirri.

Parapodia subbiramous (Fig. 7C), similar along length of body. Smaller notopodium conical, with long cylindrical acicular lobe; tip of

acicula often emergent. Neuropodium with longer, subtriangular presetal lobe, distally sharply pointed, acicula sometimes emergent; postsetal lobe shorter, bluntly rounded. Ventral cirri short, slender, smooth, gently tapering. Nephridial papillae small, often difficult to see, from about segment 6 onwards.

Notosetae similar thickness to neurosetae, flattened, curved, with widely spaced spines along convex edge (Fig. 7E). Upper neurosetae longer, slender, subdistally expanded with long region of rows of faint serrations below finely bidentate tips; middle ones slightly thicker, with fewer rows of faint serrations and bidentate tips, several setae with rows of large serrations; lower neurosetae with very few rows of fine serrations and bidentate tips (Fig. 7D).

Pygidium with pair of long, smooth, slender anal cirri and terminal anus.

REMARKS. — The description is based on the

material from the Chesterfields, PETTIBONE (1969b) and UCHIDA (1975).

This species is widely distributed in the Indo-Pacific region and has been recorded from Mozambique, Ashmore Reef (Timor Sea), Malay Archipelago, northern Australia, Solomon Islands, Marshall Islands, Hawaii, Marquesas, Hong Kong and Japan.

The presence of a few setae on the tentacular segment of some of the specimens from the Chesterfields is unusual. However in all other respects these specimens exhibit the characteristics of the species. Most of the specimens from the Chesterfields were commensal on ophiuroids of the genus *Ophiocoma* and were collected from a shallow reef behind a sand cay. This species appears to have a wide range of echinoderm hosts and is also commonly encountered free-living.

Genus *PARALEPIDONOTUS* Horst, 1915

Paralepidonotus Horst, 1915 : 8.

TYPE SPECIES. — *Polynoe ampullifera* Grube, 1878 : 35, 36, pl. III, fig. 5.

DIAGNOSIS. — Body broad, flattened, fusiform, segments 36-41. Head and body completely covered by elytra. Elytra large, variably ornamented with spines, microtubercles, papillae or vesicles, margin fringed with papillae. Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29, and 32. Elytra overlap medially and posteriorly. Dorsal cirri with large cylindrical ceratophores, and distal styles. Cirriferous segments with prominent dorsal tubercles. Prostomium bilobed, hexagonal, broader than long, cephalic peaks absent, with two palps, three antennae. Clavate papillae on styles of antennae; density and length of papillae variable. Median antenna with ceratophore large, inserted in anterior notch. Lateral antennae on distinct ceratophores inserted terminoventrally (subterminal) on prostomium lateral to, and lower than, median ceratophore; bases of lateral ceratophores merge in midline on ventral surface of prostomium. Eyes two pairs; anterior pair lying dorsolaterally at widest part of prostomium;

posterior pair lying dorsally near rear corners of prostomium. First segment not visible dorsally, asetigerous, tips of aciculae protude from pair of tentaculophores lateral to prostomium, two pairs of tentacular cirri; facial tubercle weakly developed. Second or buccal segment without nuchal fold, with first pair of elytra on prominent elytraphores, with ventral buccal cirri much longer than following ventral cirri, styles covered with clavate papillae. Pharynx large, muscular, with nine pairs of soft papillae distally, and two pairs of chitinous jaws. Parapodia biramous, notopodia shorter and smaller than neuropodia. Neuropodium with presetal lobe slightly longer than postsetal lobe, presetal lobe with or without short supraacicular lobe. Ventral cirri short, smooth. Nephridial papillae distinct from segment 6 onwards. Ventral lamellae present and prominent, from segment 4 onwards.

Notosetae slightly curved with rows of serrations below blunt tips. Neurosetae generally longer and slightly thinner than notosetae, with rows of serrations below bi- or unidentate tips, lower neurosetae shorter, with few spinous rows and unidentate tips drawn out into fine, hair-like points.

Pygidium with pair of anal cirri, anus terminal.

REMARKS. — The subfamily status of the genus has been the subject of considerable debate in the literature. HANLEY (1991) has published a revision of the genus which includes a discussion of the confused subfamily status and provides the rationale behind the referral of the genus to subfamily Harmothoinae.

Paralepidonotus indicus (Kinberg, 1856)

Fig. 8A-G

- Lepidonotus indicus* Kinberg, 1856 : 384. — BAIRD, 1865 : 183. — GRUBE, 1876 : 61. — EHLERS, 1920 : 3, 17, 18. — HARTMAN, 1950 : 24, 25.
Polynoe bohollensis Grube, 1878 : 41, pl. III, fig. 4. (synonym).
Lagisca indica Potts, 1910 : 338-339, pl. 19, fig. 13, pl. 21, figs 46-47 (junior homonym).
Harmothoe bohollensis - FAUVEL, 1911 : 369; 1919 : 332-334; 1927 : 415, 416; 1939 : 258. — FISHELSON & RULLIER, 1969 : 51, 52. — BEN-ELIAHU, 1972 : 196.
Paralepidonotus bohollensis - HORST, 1915 : 8; 1917 : 77, pl. XVIII, figs 1, 2.
Harmothoe indica - AUGENER, 1922b : 6-11, fig. 2, 2a. — BUZHINSKAJA *et al.*, 1980 : 228.
Malmgrenia bohollensis - MONRO, 1928a : 313-314, fig. 2.
Paralepidonotus indicus - DAY, 1957 : 62, fig. 1g-k; 1967 : 48, fig. 1.4g-k; 1973 : 338. — HANLEY, 1991 : 1068-1073, figs 10-11.

MATERIAL EXAMINED. — **Chesterfield Islands** : stn RH 88-72, (NTM W5444).

Fairway Reefs : stn RH 88-46 (MNHN UC189).

Description. — Body flattened, fusiform, fragile. Length 13-40 mm, width including parapodia 4-9.5 mm, 38-40 segments. Dorsal and ventral surfaces of body without pigment. Prostomium often tinted pale to dark grey, ceratophores and styles of antennae similarly pigmented.

Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32. Elytra cover dorsum, overlapping medially and posteriorly. Elytra lightly to densely fringed with slender, clavate papillae; surface of elytra lightly to densely covered with similar papillae. Greater part of dorsal surface of each elytron covered with microtubercles ranging from small, blunt knobs near anterior margins to larger, well-defined spines near posterior margin (Fig. 8C). Elytra usually straw coloured, some specimens with dark pigment patches forming an hourglass (or Maltese cross) pattern on each elytron (Fig.

8A). Elytra on segment 2 circular, subsequent pairs markedly reniform, gradually becoming oval near end of body.

Dorsal cirri with cirrophores large, truncate; styles long, slender, papillated, tapering to slight subterminal swelling and filiform tip. Dorsal tubercles well-formed nodules.

Prostomium bilobed, wider than long, without cephalic peaks (Fig. 8A). Eyes two pairs; anterior pair large, circular to elliptical, lying dorso-laterally at, or just forward of, widest part of prostomium; posterior pair slightly smaller, closer to midline. Palps, long, slender, gradually tapering to fine tips, covered with very small papillae just visible at 80x magnification. Styles of antennae lightly to densely covered with slender clavate papillae. Median antenna with ceratophore large, truncate, inserted in anterior notch; style long, gradually tapering to slight subterminal swelling and filiform tip. Lateral antennae with ceratophores large, conspicuous, slightly bulbous distally, inserted terminoventrally and meeting in midline on underside of prostomium; styles similar to median antenna but considerably shorter.

Tentacular segment not visible dorsally, tentaculophores lateral to prostomium, asetigerous, with two pairs of tentacular cirri, styles similar in length, shape and ornamentation to style of median antenna; facial tubercle weakly developed. Segment 2 with first pair of elytra, biramous parapodia and ventral buccal cirri much longer than following ventral cirri, covered with slender clavate papillae.

Parapodia biramous (Fig. 8B), similar along length of body. Notopodium smaller than neuropodium, short, conical. Neuropodium with longer, subtriangular presetal lobe; postsetal lobe shorter, rounded distally. Ventral cirri much shorter than neuropodium, cirriform, smooth. Nephridial papillae well developed (especially on larger specimens) from segment 6 onwards. Well developed ventral lamellae from segment 4 onwards.

Notosetae slightly thicker than neurosetae, slightly curved; upper ones shorter, with spinous rows along convex border, lower ones much longer, with many rows of spines (Fig. 8F, G). Neurosetae long, straight, subdistally expanded. Upper neurosetae with long spinous region below unidentate tips; middle neurosetae with shorter spinous region and bidentate tips (Fig.

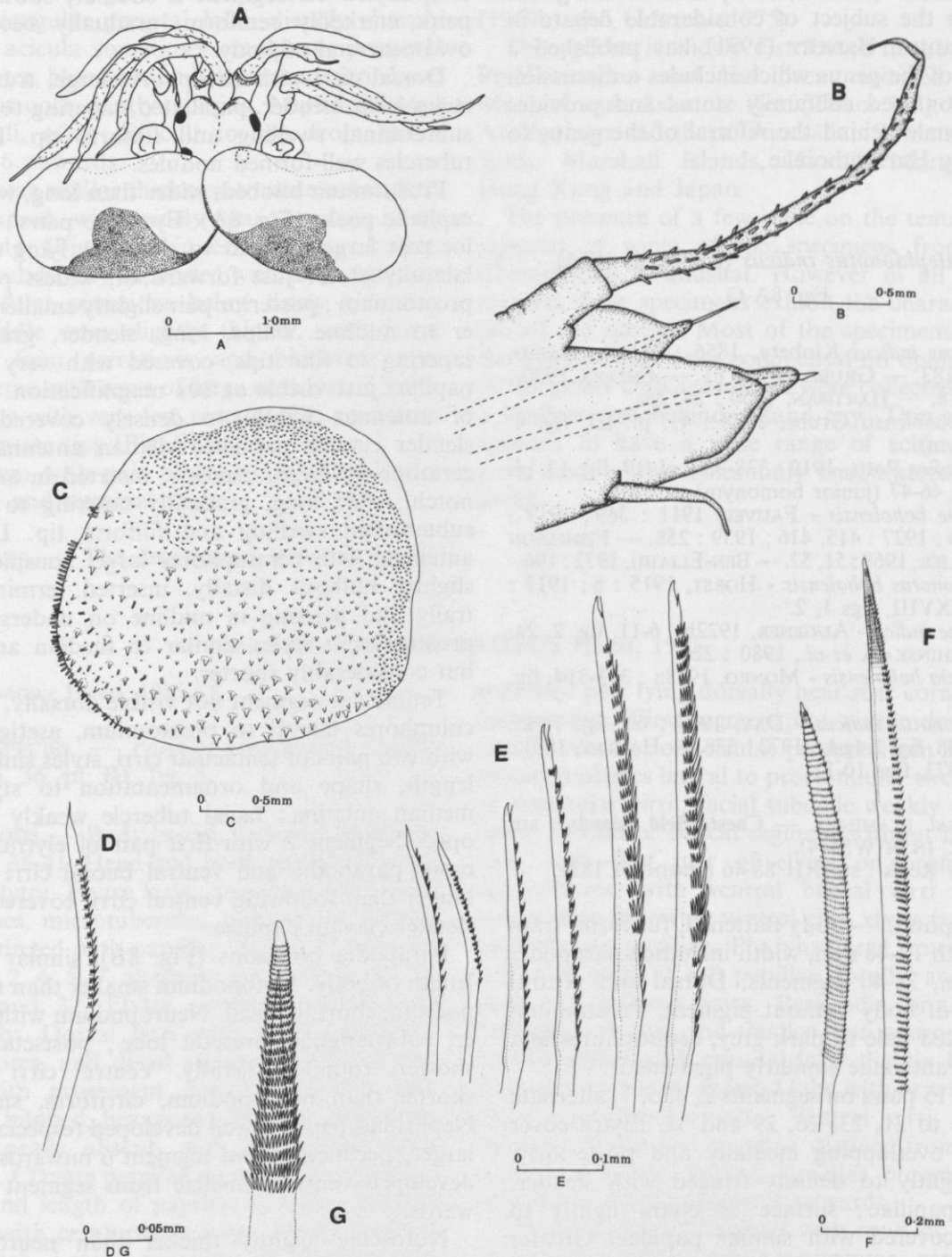


FIG. 8. — *Paralepidonotus indicus* (Kinberg, 1856) (MNHN UC189): A, anterior end, dorsal view (second pair of elytra attached, parapodia omitted); B, cirrigerous parapodium from segment 14, posterior view; C, elytron from an unknown segment; D, inferior neuroseta from segment 14; E, neurosetae from segment 14; F, notosetae from segment 14; G, detail of tip of notoseta from segment 14.

8E); lower neurosetae shorter, with fewer spinous rows below fine hair-like tips (Fig. 8D, E).

Pygidium small, anal cirri very similar to styles of dorsal cirri.

REMARKS. — The description is based on the two specimens from the Chesterfields, and the material examined by HANLEY (1991), including the type material.

For a discussion of this species taxonomic

status, and particularly the synonymy of *P. boholensis* with *P. indicus* see HANLEY (1991). The species has been recorded from widely scattered localities in the Indo-West Pacific including East Africa, Red Sea, Salomon Islands, the Malay Archipelago, northern Australia and the Solomon Islands. *Paralepidonotus indicus* appears to be restricted to tropical habitats characterised by clear water and corals.

Genus *VERRUCAPELMA* nov.

TYPE SPECIES. — *Harmothoe nigricans* Horst, 1915 : 14.

Pygidium small, with pair of anal cirri, anus terminal.

DIAGNOSIS. — Body flattened, slender, fusiform, segments up to 38. Body usually covered by elytra. Elytra large, flexible, with fringe of papillae, with microtubercles and scattered papillae. Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32. Elytra overlap medially and posteriorly, covering whole body. Dorsal cirri with cylindrical cirrophores and long, papillated styles; dorsal tubercles nodular. Prostomium bilobed, wider than long, with cephalic peaks, with two palps, three antennae. Median antenna with ceratophore large, inserted in anterior notch. Lateral antennae on distinct ceratophores inserted ventrally on prostomium. Eyes two pairs; first pair lying anteriorly, just below cephalic peaks. First (tentacular) segment not visible dorsally, with tentaculophores lateral to prostomium, with setae, with two pairs of tentacular cirri; with facial tubercle. Second (buccal) segment with nuchal fold, with ventral buccal cirri longer than subsequent ventral cirri. Parapodia biramous, notopodium conical, bulbous, neuropodium with subtriangular presetal lobe, with supraacicular appendage; postsetal lobe shorter, bluntly rounded. Ventral surface of parapodium with two or three small wart-like tubercles between ventral cirrus and body wall; sometimes absent from posterior segments. Ventral cirri short, cirriform, papillated. Nephridial papillae distinct, long in middle of body. Notosetae similar thickness to neurosetae, slightly curved, with rows of serrations below blunt, notched or entire tips. Neurosetae subdistally expanded with rows of spines below strongly bidentate tips.

REMARKS. — HORST (1915) described *Harmothoe nigricans* from material collected by the Siboga Expedition. The species has subsequently been recorded from the Solomon Islands by GIBBS (1971). Examination of specimens from the Chesterfields which fit the original description of *H. nigricans* revealed the presence of two or three warty tubercles on the underside of most parapodia. Similar tubercles were found on the holotype of *H. nigricans*. Elsewhere the presence of such tubercles has been considered an important generic character (PETTIBONE, 1961; HANLEY, 1987). The determination that another very similar species was present in the Chesterfields material also supports the erection of a separate genus.

PETTIBONE (1961) described a new genus *Phyllohartmania* which has paired foliose appendages, but these lie on the venter, not on the parapodia. *Phyllosheila* (PETTIBONE, 1961) has papillae on the ventral surface of the parapodia but the ventral cirri are foliose, a condition not found in the new genus.

Lobopelma (HANLEY, 1987) also has tubercles on the ventral surface of the parapodia, however, the large lobe is tripalmate. In addition the single species of *Lobopelma* has 16-18 pairs of elytra. Features of the prostomium, parapodia and setae suggest that *Lobopelma* and *Verrucapelma* may be closely related.

ETYMOLOGY. — The name of the new genus refers to the presence of wart-like tubercles on the underside of the parapodia.

Key to the species of *Verrucapelma* from the Chesterfields and Fairways.

- 1a. Notosetae with sharp tips (Fig. 9D); larger elytral microtubercles spinous (Fig. 9B) *V. nigricans*
 1b. Notosetae with notched tips (Fig. 10G); larger elytral microtubercles blunt, ovoid (Fig. 10E) *V. retusa* sp. nov.

***Verrucapelma nigricans* (Horst, 1915)**

Fig. 9A-F

Harmothoe nigricans Horst, 1915 : 14; 1917 : 90, 91, pl. XX, figs 3, 4. — GIBBS, 1971 : 120.

MATERIAL EXAMINED. — **Indonesia** : ZMA V.Pol.402, holotype of *Harmothoe nigricans*, Horst, 1915.

Chesterfield Islands : stn RH 88-57 (MNHN UC175). — Stn RH 88-61, 30-52 m (NTM W5458). — Stn RH 88-64, 8-48 m (NTM W5459). — Stn RH 88-71, 25-95 m (MNHN UC174). — Stn RH 88-72, 28-52 m, (NTM W5460).

DESCRIPTION. — Body flattened, slender, fusiform, 37-39 segments. Length 12-18 mm, width including parapodia 2.7-4.2 mm. Dorsum with bands of brown-grey pigment, becoming faint posteriorly. Prostomium colourless, ceratophores and styles of antennae, tentacular cirri, brown-grey. Bases of tentaculophores with broad patch of brown pigment. Facial tubercle and surrounding area also brown.

Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32. Elytra large, flexible, covering dorsum entirely. Elytra with fringe of papillae (Fig. 9B). Surface of elytron with low, carinate microtubercles near anterior and inner edges; with large, blunt or sharp-tipped spines on posterior half (Fig. 9B). Surface of elytron with scattered clavate papillae and large, dark brown patch of pigment, becoming fainter posteriorly.

Dorsal cirri with cirrophores large, cylindrical, slightly swollen basally; styles long, tapering gently, papillated. Dorsal tubercles present as well formed nodules.

Prostomium bilobed, wider than long, with distinct, strongly developed cephalic peaks (Fig. 9A). Eyes two pairs, first pair large, circular, lying anteriorly immediately beneath cephalic peaks; posterior pair much smaller, lying dorsally, near rear edge of prostomium. Palps slender, gently tapering to tip. Median antenna with ceratophore large, truncate, inserted in

anterior notch; style long, tapering gently to tip, profusely papillated. Lateral antennae with ceratophores short, broad, distinct, inserted ventrally on prostomium; styles short, bulbous basally, with fine filiform tips, papillated.

Tentacular segment not visible dorsally, with tentaculophores lateral to prostomium, with setae, and two pairs of long, gently tapering, papillated styles; facial tubercle present as a low, weakly developed ridge. Second segment with small semicircular nuchal fold, with first pair of elytra, biramous parapodia and long, papillated, ventral (buccal) cirri.

Parapodia biramous, (Fig. 9B) and similar along length of body. Notopodium smaller than neuropodium, conical, bulbous. Neuropodium with longer, subtriangular presetal lobe, with supra-acicular lobe; postsetal lobe shorter, bluntly rounded. Ventral surface of parapodium with two or three small wart-like tubercles between ventral cirrus and body wall (Fig. 9C, F); sometimes absent from posterior segments. Ventral cirri short, cirriform, papillated. Nephridial papillae well-developed, from segment 6-9 onward.

Notosetae similar thickness to neurosetae, slightly curved, stout, with numerous rows of serrations along convex edge below long, bare, entire tips (Fig. 9A).

Neurosetae long, straight, upper ones subdistally expanded with many alternating rows of strong serrations below strongly bidentate tips; middle and lower ones similar, but with fewer rows of serrations (Fig. 9E). Neurosetae of segments 2 and 3 with slender bidentate and unidentate tips.

Pygidium indistinct, with pair of anal cirri resembling dorsal cirri, anus terminal.

REMARKS. — Examination of the type of *Harmothoe nigricans* Horst 1915 revealed that it possessed the unusual warty tubercles on the underside of most parapodia. This character has been overlooked in the past. According to the

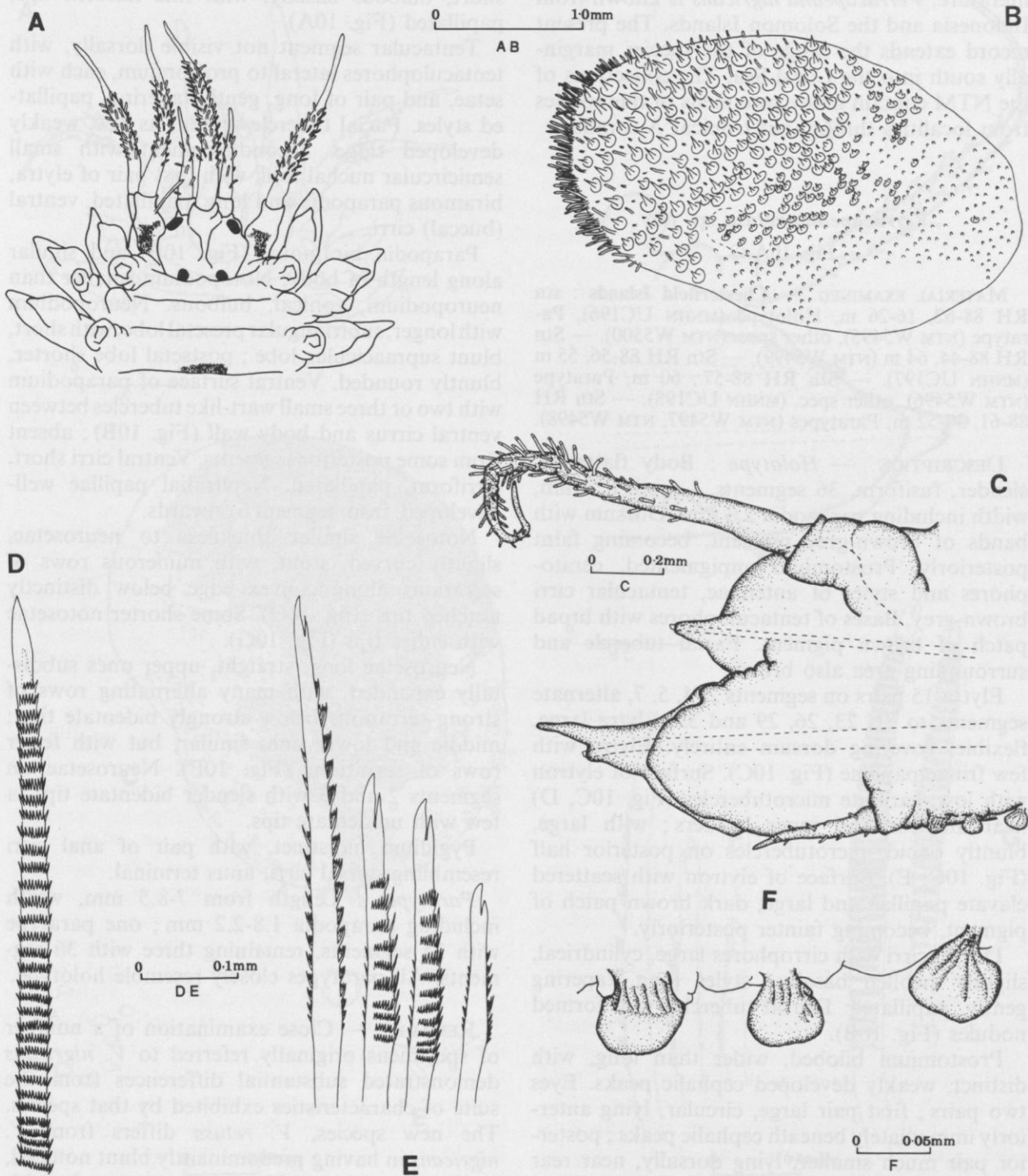


FIG. 9. — *Verrucapelma nigricans* (Horst, 1915) (NTM W5458) : A, anterior end, dorsal view (palps missing, setae of segments 2-4 omitted) ; B, elytron from unknown segment ; C, cirriferous parapodium from segment 12, posterior view ; D, notoseta from segment 12 ; E, neurosetae from segment 12 ; F, ventral parapodial tubercles.

literature, *Verrucapelma nigricans* is known from Indonesia and the Solomon Islands. The present record extends the range of the species marginally south into the Coral Sea. The collections of the NTM contain many specimens of this species from localities throughout tropical Australia.

Verrucapelma retusa sp. nov.

Fig. 10A-G

MATERIAL EXAMINED. — **Chesterfield Islands** : stn RH 88-62, 16-26 m, Holotype (MNHN UC196), Paratype (NTM W5495), other spec. (NTM W5500). — Stn RH 88-44, 64 m (NTM W5499). — Stn RH 88-56, 55 m (MNHN UC197). — Stn RH 88-57; 60 m, Paratype (NTM W5496), other spec. (MNHN UC198). — Stn RH 88-61, 30-52 m, Paratypes (NTM W5497, NTM W5498).

DESCRIPTION. — *Holotype* : Body flattened, slender, fusiform, 36 segments. Length 8.5 mm, width including parapodia 2.3 mm. Dorsum with bands of brown-grey pigment, becoming faint posteriorly. Prostomium unpigmented, ceratophores and styles of antennae, tentacular cirri brown-grey. Bases of tentaculophores with broad patch of brown pigment. Facial tubercle and surrounding area also brown.

Elytra 15 pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29 and 32. Elytra large, flexible, covering dorsum entirely. Elytra with few fringe papillae (Fig. 10C). Surface of elytron with low, carinate microtubercles (Fig. 10C, D) near anterior and inner borders; with large, bluntly ovoid microtubercles on posterior half (Fig. 10C, E). Surface of elytron with scattered clavate papillae and large, dark brown patch of pigment, becoming fainter posteriorly.

Dorsal cirri with cirrophores large, cylindrical, slightly swollen basally; styles long, tapering gently, papillated. Dorsal tubercles well formed nodules (Fig. 10B).

Prostomium bilobed, wider than long, with distinct, weakly developed cephalic peaks. Eyes two pairs; first pair large, circular, lying anteriorly immediately beneath cephalic peaks; posterior pair much smaller, lying dorsally, near rear edge of prostomium. Palps slender, gently tapering to tip. Median antenna with ceratophore large, truncate, inserted in anterior notch; style long, tapering gently to tip, profusely papillated. Lateral antennae with ceratophores short, broad, distinct, inserted ventrally on prostomium; styles

short, bulbous basally, with fine filiform tips, papillated (Fig. 10A).

Tentacular segment not visible dorsally, with tentaculophores lateral to prostomium, each with setae, and pair of long, gently tapering, papillated styles. Facial tubercle present as low, weakly developed ridge. Second segment with small semicircular nuchal fold, with first pair of elytra, biramous parapodia and long, papillated, ventral (buccal) cirri.

Parapodia biramous, (Fig. 10B) and similar along length of body. Notopodium smaller than neuropodium, conical, bulbous. Neuropodium with longer, subtriangular presetal lobe, with short, blunt supraacicular lobe; postsetal lobe shorter, bluntly rounded. Ventral surface of parapodium with two or three small wart-like tubercles between ventral cirrus and body wall (Fig. 10B); absent from some posterior segments. Ventral cirri short, cirriform, papillated. Nephridial papillae well-developed, from segment 6 onwards.

Notosetae similar thickness to neurosetae, slightly curved, stout, with numerous rows of serrations along convex edge below distinctly notched tips (Fig. 10G). Some shorter notosetae with entire tips (Fig. 10G).

Neurosetae long, straight, upper ones subdistally expanded, with many alternating rows of strong serrations below strongly bidentate tips; middle and lower ones similar, but with fewer rows of serrations (Fig. 10F). Neurosetae on segments 2 and 3 with slender bidentate tips, a few with unidentate tips.

Pygidium indistinct, with pair of anal cirri resembling dorsal cirri, anus terminal.

Paratypes : Length from 7-8.5 mm, width including parapodia 1.8-2.2 mm; one paratype with 35 segments, remaining three with 36 segments. All paratypes closely resemble holotype.

REMARKS. — Close examination of a number of specimens originally referred to *V. nigricans* demonstrated substantial differences from the suite of characteristics exhibited by that species. The new species, *V. retusa* differs from *V. nigricans* in having predominantly blunt notched, rather than sharp unidentate, notosetae. In addition, the microtubercles on the elytra of *V. retusa* are bluntly ovoid, not sharply pointed.

ETYMOLOGY. — The species name refers to the distinctively blunt, notched notosetae.

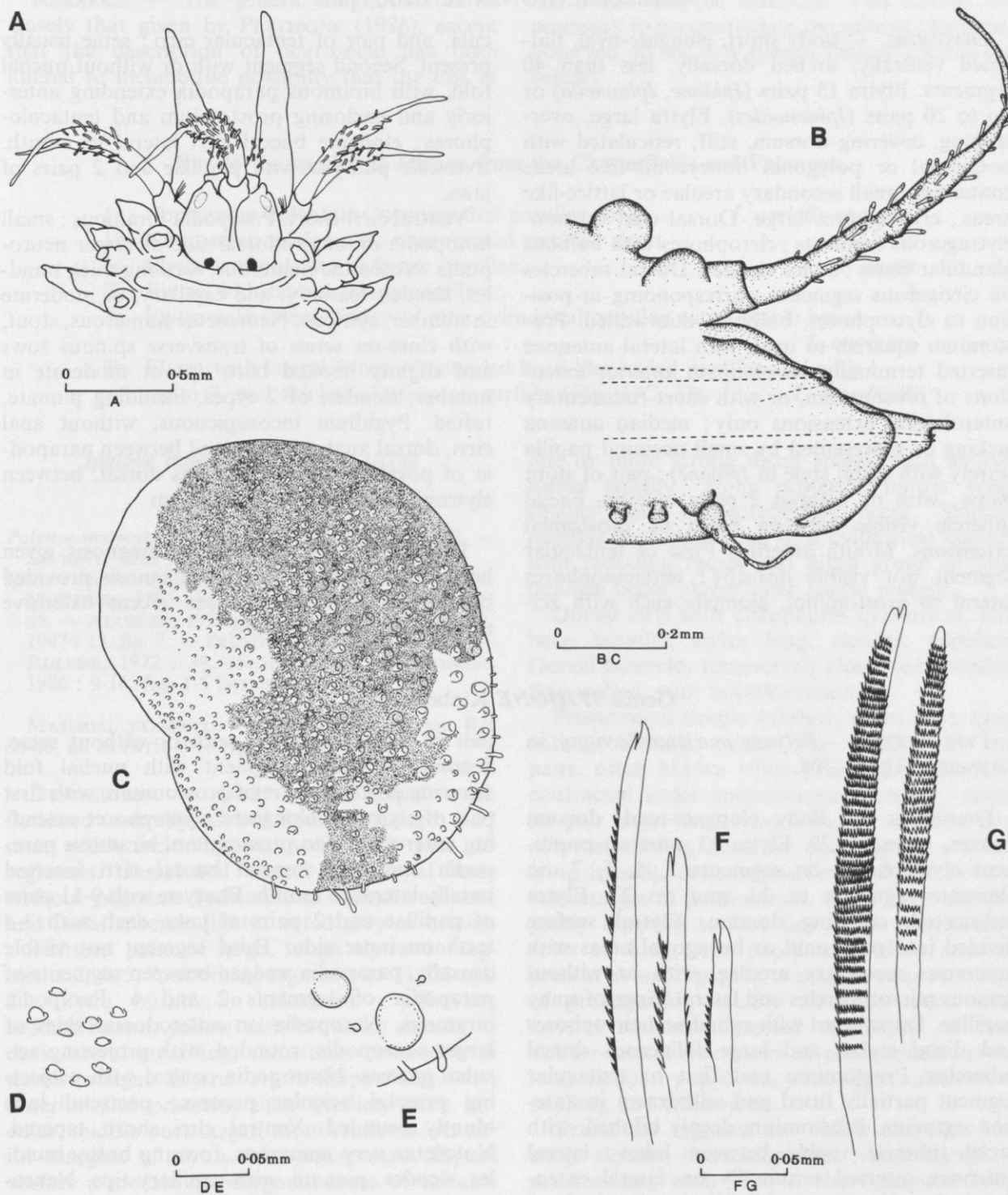


FIG. 10. — *Verrucapelma retusa* sp. nov., holotype (MNHN UC196): A, anterior end, dorsal view (setae of segments 2-4 omitted); B, cirriferous parapodium from unknown segment, posterior view; C, elytron from unknown segment; D-E, tubercles of elytron; F, neurosetae; G, notosetae.

Subfamily IPHIONINAE Baird, 1865

DIAGNOSIS. — Body short, elongate-oval, flattened ventrally, arched dorsally, less than 40 segments. Elytra 13 pairs (*Iphione*, *Iphionella*) or up to 20 pairs (*Iphionoides*). Elytra large, overlapping, covering dorsum, stiff, reticulated with hexagonal or polygonal honeycomb-like areas containing small secondary areolae or lattice-like areas; elytriphores large. Dorsal cirri on non-elytragerous segments; cirrophores with bulbous glandular bases; styles slender. Dorsal tubercles on cirriferous segments, corresponding in position to elytriphores, bulbous, thin-walled. Prostomium squarish to oval, with lateral antennae inserted terminally on elongate anterior extensions of prostomium, or with short rudimentary anterolateral extensions only; median antenna lacking or represented by small occipital papilla (rarely with distal style in *Iphione*); pair of stout palps; with or without 2 pairs of eyes. Facial tubercle visible between bases of prostomial extensions. Mouth anterior. First or tentacular segment not visible dorsally; tentaculophores lateral to prostomium, elongate each with aci-

cula, and pair of tentacular cirri; setae usually present. Second segment with or without nuchal fold, with biramous parapodia extending anteriorly and enclosing prostomium and tentaculophores; elongate buccal cirri lateral to mouth. Eversible pharynx with papillae and 2 pairs of jaws.

Ventral cirri short. Parapodia biramous; small notopodia on anterodorsal side of larger neuropodia. Notosetae numerous, forming thick bundles, slender, feathery, and capillary, or moderate in number, spinous. Neurosetae numerous, stout, with close-set series of transverse spinous rows and slightly hooked bare tips or moderate in number, slender, of 2 types, including pinnate, tufted. Pygidium inconspicuous, without anal cirri, dorsal anal ridge wedged between parapodia of posterior segments; anus dorsal, between elytriphores of posterior segment.

REMARKS. — The subfamily diagnosis given here follows very closely the diagnosis provided by PETTIBONE (1986) in her recent extensive revision of this subfamily.

Genus *IPHIONE* Kinberg, 1856

TYPE SPECIES. — *Polynoe muricata* Savigny, in LAMARCK, 1818 : 308.

DIAGNOSIS. — Body elongate-oval, dorsum convex, segments 29. Elytra 13 pairs on prominent elytriphores on segments 2, 4, 5, 7, on alternate segments to 23, and on 27. Elytra imbricated, covering dorsum, Elytral surface divided into polygonal or hexagonal areas with numerous secondary areolae, with or without spinous microtubercles and lateral fringe of spiny papillae. Dorsal cirri with cylindrical cirrophores and distal styles, and large foliaceous dorsal tubercles. Prostomium and first or tentacular segment partially fused and withdrawn in anterior segments. Prostomium deeply bilobed, with facial tubercle visible between lobes; lateral antennae inserted terminally on lateral extensions of prostomium, with distal styles; pair of stout palps and two pairs of eyes, with or without occipital papilla (rarely with style). Tentacular segment with elongated tentaculophores lateral and ventral to palps each with acicula and

pair of tentacular cirri; with or without setae. Second or buccal segment with nuchal fold covering posterior part of prostomium, with first pair of elytra on elongated elytriphores extending anterolateral to prostomium, biramous parapodia and long ventral buccal cirri inserted basally lateral to mouth. Pharynx with 9-11 pairs of papillae and 2 pairs of jaws, each with 3-4 teeth on inner side. Third segment not visible dorsally, parapodia wedged between segments of parapodia of segments 2 and 4. Parapodia biramous. Notopodia on anterodorsal sides of larger neuropodia, rounded, with projecting acicular process. Neuropodia conical with projecting presetal acicular process; postsetal lobe bluntly rounded. Ventral cirri short, tapered. Notosetae very numerous, forming bushy bundles, slender, pinnate, with capillary tips. Neurosetae numerous, stout, with spinous rows and slightly hooked smooth, entire or bidentate tips. Dorsal anal ridge on segments 23-29, with anus bordered by last pair of elytriphores; without anal cirri.

REMARKS. — The generic diagnosis follows closely that given by PETTIBONE (1986), except that the description of neurosetae has been altered to include the possibility that the tips of

neurosetae may be bidentate. This change was necessary to accommodate the suite of characters observed on the new species *Iphione coriolis* (see below).

Key to the species of *Iphione* from the Chesterfields and Fairways.

- 1a. Neurosetae bidentate; neuropodial papillae long..... *I. coriolis* sp. nov.
 1b. Neurosetae unidentate; neuropodial papillae short..... 2
 2a. Elytra without lateral fringe papillae..... *I. ovata*
 2b. Elytra with lateral fringe papillae..... 3
 3a. Elytra with lateral fringe of long cylindrical papillae with flexible bases
 *I. muricata*
 3b. Elytra with lateral fringe of rounded bead-like scaled papillae and with
 up to 7 oval thickened areas on surface (Fig. 13C, D)..... *I. treadwelli*

***Iphione muricata* (Savigny, 1818)**

Fig. 11A-F

Polynoe muricata Savigny in LAMARCK, 1818 : 308. — SAVIGNY, 1820 : 22, pl. 3, fig. 1.
Iphione muricata - KINBERG, 1856 : 383 ; 1858 : 8. — MCINTOSH, 1885 : 61, pl. 9, fig. 7. — HORST, 1917 : 65. — AUGENER, 1922b : 5. — FAUVEL, 1930 : 509 ; 1947 : 13, fig. 7. — PRUVOT, 1930 : 3-5, fig. 1a-d. — RULLIER, 1972 : 34, 35, fig. 2A-F. — PETTIBONE, 1986 : 9-16, figs 1-5 [synonymy].

MATERIAL EXAMINED. — Fairway Reefs : stn RH 88-46, 60 m (NTM W5511).

DESCRIPTION. — Body short, broad, oval, flattened ventrally, arched dorsally. Length 8-32 mm, width including parapodia 6-16 mm, 29 segments. Dorsal and ventral surfaces of body without pigment. Prostomium, lateral antennae and facial tubercle lightly tinted grey or brown.

Thirteen pairs of large, tough elytra on segments 2, 4, 5, 7, alternate segments to 21, 23 and 27. Elytra variable in coloration : yellowish, reddish-brown, yellow with brownish streaks or dark lateral streaking, sometimes covered with debris or algae. Elytra vary in shape along body, anterior and posterior ones smaller, more circular, middle ones larger, more reniform. Anterior margins of elytra thin, transparent. Elytral surface a mosaic of polygonal areas of variable size, each with numerous secondary areolae (Fig. 11A) ; polygonal areas become smaller near rear and outer margins where several diagonal rows of larger conical spinous tubercles occupy some of smaller areas. Larger conical tubercles have

one or more strong distal spines, with shorter spines basally ; along posterior border some smaller spiny microtubercles occur. Spinous papillae each consisting of a cylindrical column with radiating spines and distal group of long papillae occur along outer lateral margin.

Dorsal cirri with cirrophores cylindrical, bulbous basally ; styles long, slender, papillate. Dorsal tubercles transversely elongated, swollen, thin walled, with lateral extensions.

Prostomium deeply bilobed, wider than long, without cephalic peaks (Fig. 11D). Eyes two pairs, often hidden when prostomium partially contracted under anteriormost segments ; anterior pair large, oval, lying laterally at widest part of prostomium ; posterior pair slightly smaller, lying dorsally, close behind first pair and close to rear margin of prostomium. Palps long, slender, gently tapering to fine tips ; with longitudinal rows of long, fine papillae. Median antenna present as small papilla in midline near rear edge of prostomium, usually obscured from view. Lateral antennae inserted terminally on long slender lateral extensions of prostomium ; styles long, slender, papillated, with slight subterminal swelling and filiform tip.

Tentacular segment not visible dorsally, with long, slender tentaculophores ventrolateral to prostomium, each with a short acicular lobe, several setae, and pair of long, slender, gently tapering, papillated styles ; tentaculophores usually obscured from view by second segment. Facial tubercle clearly visible as low, broad ridge between lateral extensions of prostomium.

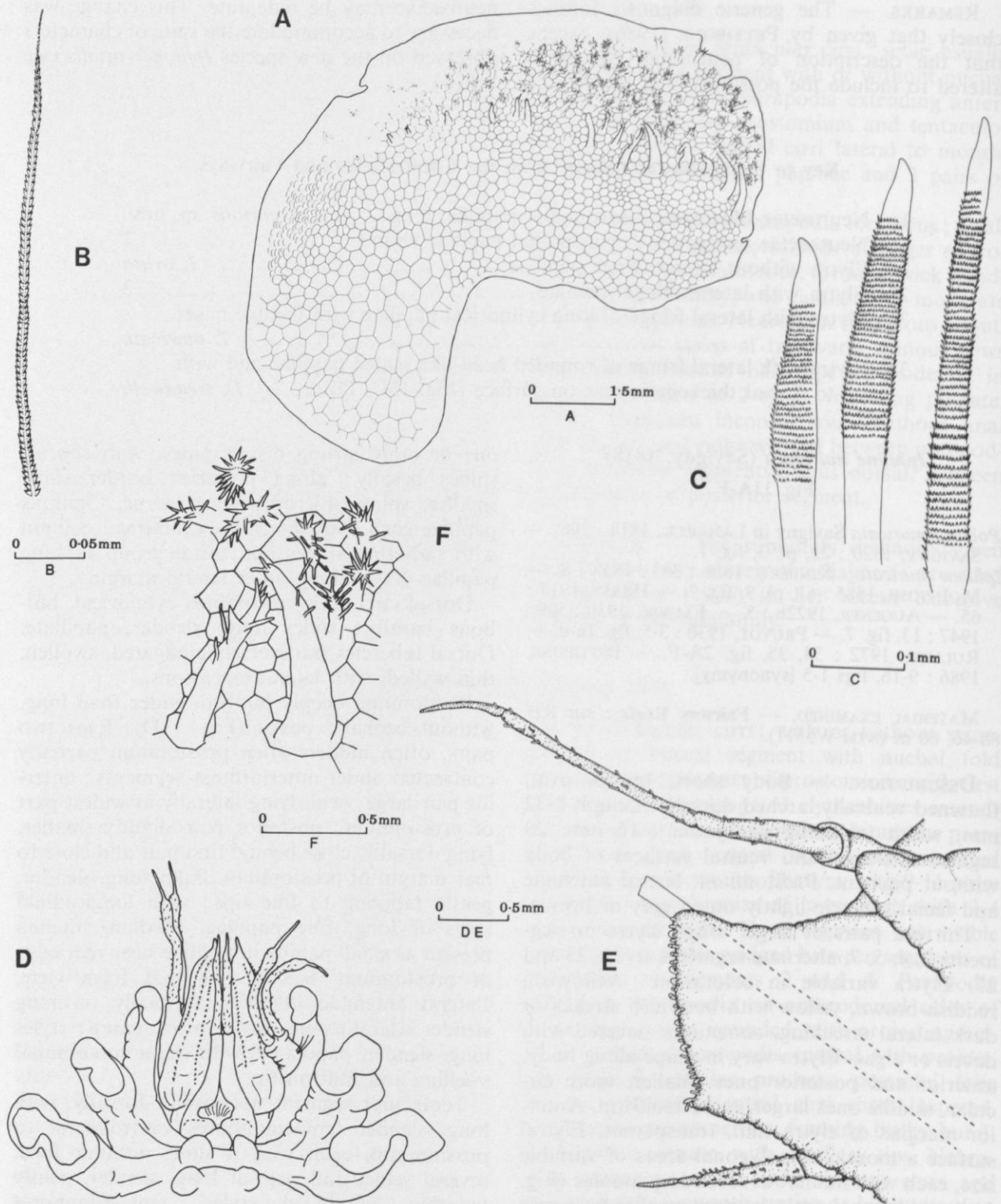


FIG. 11. — *Iphione muricata* (Savigny, 1818) (NTM W5511): A, elytron from anterior segment; B, notoseta from segment 14; C, neurosetae from segment 14; D, anterior end, dorsal view; E, cirriferous parapodium from segment 14, posterior view; F, elytral surface and tubercles.

Second segment with nuchal fold, and large, elongated, broad elytophores; with long ventral (buccal) cirri.

Third segment not visible dorsally. Segments 4 and 5 with paired dorsal nodules (Fig. 11D), sometimes nodules also occur on subsequent segments. Delicate transverse crests, extending between dorsal tubercles, on segments 6 and 8.

Parapodia biramous. Notopodia smaller, rounded with long digitiform cylindrical lobe. Neuropodium larger, presetal lobe conical, postsetal lobe slightly shorter, bluntly rounded. Both presetal and postsetal lobes with small digitiform papillae distally. Ventral cirri short, gently tapering, papillated. Nephridial papillae well developed, from about segment 6 onwards.

Notosetae numerous, fine, pinnate, capillary (Fig. 11B). Neurosetae stout, copper-coloured, subdistally expanded, covered with close set spinous rows below entire, sometimes slightly hooked tips (Fig. 11C). Upper neurosetae with most spinous rows, lower neurosetae with least. Neurosetae of segment 2 and lower neurosetae of segments 3 and 4 slender, tapering to sharp tips, with long region of close set spinous rows.

No distinct pygidium, anal cirri absent. Anus dorsal on segments 27-29.

REMARKS. — The description is based on the material examined and PETTIBONE (1986). The paired dorsal nodules seen on segments 4 and 5 are outgrowths of the dorsum, and are similar to nodular structures seen on the dorsum of anterior segments in some *Lepidonotus* species. These nodules are not dorsal tubercles which are found only on cirriferous segments. On some specimens of this species, dorsal nodules also occur on segment 6, where they lie closer to the dorsal midline than the dorsal tubercles which are always present on this segment.

PETTIBONE (1986) cites the presence of papillae with flexible bases as a major diagnostic feature of this species. We have followed PETTIBONE in using this character to distinguish between the two species *I. muricata* and *I. ovata*. However, in all other respects the two species are very similar. In our view whether or not the papillae near the border are flexible at their bases may depend on the degree of chitinization of the outer edge of the elytron. Further investigation of this possibility may add weight to the synonymy of *I. ovata* with *I. muricata*.

This is one of the more common species recorded in the literature. The species is widely distributed in the tropical Indo-Pacific. PETTIBONE (1986) suggests the species is associated with coral reefs. Our experience of this species in northern Australia suggests that although the species is encountered on coral reefs it is more common on rocky shore reefs that are subject to siltation.

Iphione ovata Kinberg, 1856

Fig. 12A-E

Iphione ovata Kinberg, 1856 : 383 ; 1858 : 8, pl. 3, fig. 8, pl. 10, fig. 45. — PETTIBONE, 1986 : 16-19, fig. 6 [synonymy].

MATERIAL EXAMINED. — **Chesterfield Islands** : stn RH 88-62, 16-26 m, coral in shallow water near sandy cay (NTM W5445). — Stn RH 88-73, 23-56 m, coral rubble and sand from lagoon floor (NTM W5446).

DESCRIPTION. — Body short, broad, oval, flattened ventrally, arched dorsally. Length 7-22 mm, width including parapodia 4.5-12 mm, 29 segments. Dorsal and ventral surfaces of body without pigment. Prostomium and facial tubercle lightly tinted grey. Lateral extensions of prostomium brown.

Thirteen pairs of large, tough elytra on segments 2, 4, 5, 7, alternate segments to 21, 23, and 27. Elytra red-brown in colour, variable in shape along body, anterior and posterior ones smaller, more circular, middle ones larger, more reniform. Anterior margins of elytra thin, transparent. Elytral surface with mosaic of polygonal areas of variable size, each with numerous secondary areolae (Fig. 12B); polygonal areas become smaller near lateral and posterior borders where several rows of large spinous microtubercles occur. Some polygonal areas raised into low conical spines along posterior elytral border. No fringe papillae.

Dorsal cirri with cirrophores cylindrical, bulbous basally; with long, slender, papillate styles. Dorsal tubercles transversely elongated, swollen, thin walled, with lateral extensions.

Prostomium deeply bilobed, wider than long, without cephalic peaks. Eyes two pairs, usually hidden when prostomium partially retracted; anterior pair large, oval, lying laterally at widest

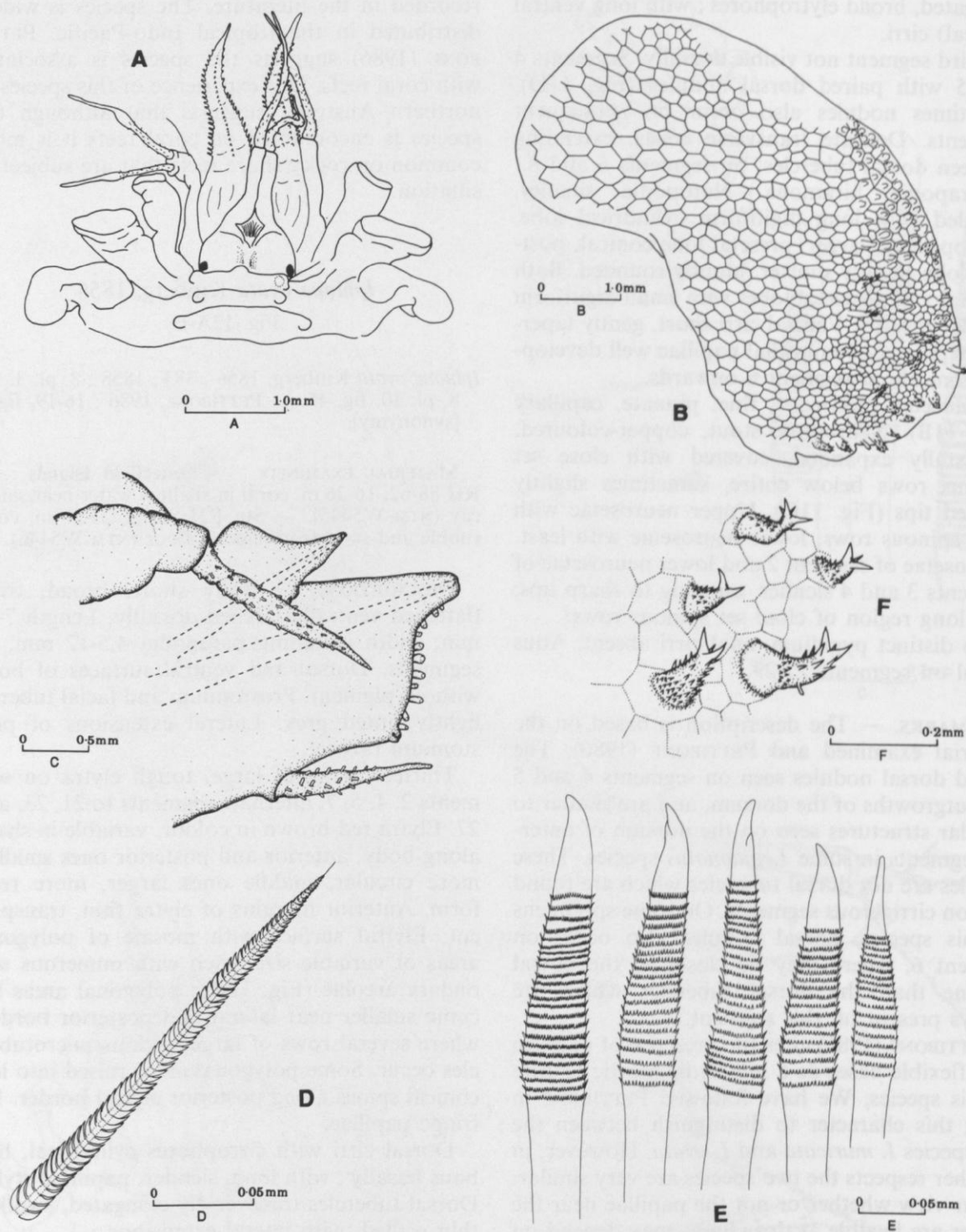


FIG. 12. — *Iphione ovata* Kinberg, 1856 (NTM W5446) : A, anterior end, dorsal view ; B, elytron from unknown segment ; C, cirriferous parapodium from unknown segment, anterior view ; D, tip of notoseta from segment 13 ; E, neurosetae from segment 13.

part of prostomium; posterior pair slightly smaller, lying dorsally, close behind first pair and close to rear margin. Palps long, slender, gently tapering to fine tips; with longitudinal rows of long, fine papillae. Median antenna a well-formed papilla in midline near rear edge of prostomium. Lateral antennae inserted terminally on long slender lateral extensions of prostomium; styles long, slender, papillated, with subterminal swelling and filiform tip (Fig. 12A).

Tentacular segment not visible dorsally, with long, slender tentaculophores ventrolateral to prostomium, each with short acicular lobe, several fine setae, and pair of long, slender, gently tapering papillated styles. Tentaculophores usually obscured from view by second segment. Facial tubercle clearly visible as low, broad ridge between lateral extensions of prostomium.

Second segment with nuchal fold, and large, elongated, broad elytraphores; with long ventral (buccal) cirri. Third segment not visible dorsally. Segments 4 and 5 with paired dorsal nodules (Fig. 12A). Delicate transverse crests extending between dorsal tubercles on segments 6 and 8.

Parapodia biramous (Fig. 12C); notopodium small, conical. Neuropodium with bluntly conical presetal lobe with short acicular lobe; postsetal lobe slightly shorter, bluntly rounded. Both presetal and postsetal lobes with small digitiform papillae distally. Ventral cirri short, gently tapering, papillated. Nephridial papillae well-developed, from segment 6 onwards.

Notosetae numerous, fine, pinnate, capillary (Fig. 12D). Neurosetae stout, copper-coloured, subdistally expanded, covered with close set spinous rows below entire, sometimes slightly hooked tips. Tips of neurosetae sometimes split (Fig. 12E). Upper neurosetae with most spinous rows, lower neurosetae with least. Neurosetae of segments 2, 3 and 4 different, slender, with long regions of close set spinous rows below sharp tips.

No distinct pygidium, anal cirri absent. Anus dorsal on segments 27-29.

REMARKS. — The description is based on the material examined and PETTIBONE (1986). This species is widely distributed in the Indo-Pacific region and appears to be closely associated with coral reefs.

Iphione treadwelli Pettibone, 1986

Fig. 13A-F

Iphione treadwelli Pettibone, 1986 : 19-21, fig. 7.

MATERIAL EXAMINED. — **Chesterfield Islands** : stn DW 94, 36 m, near coral atoll (NTM W5456).

Fairway Reefs : stn DW 26, 88 m, coarse coral and sand (NTM W5457).

DESCRIPTION. — Body short, broad, oval, flattened ventrally, arched dorsally. Length 7-22 mm, width including parapodia 4.5-12 mm, 29 segments. Dorsal and ventral surfaces of body without pigment. Prostomium and facial tubercle lightly tinted grey. Lateral extensions of prostomium brown.

Thirteen pairs of large, tough elytra on segments 2, 4, 5, 7, alternate segments to 21, 23, and 27. Elytra red-brown in colour, variable in shape along body, anterior and posterior ones smaller, more circular, middle ones larger, more reniform. Anterior margins of elytra thin, transparent. Elytral surface a mosaic of polygonal areas of variable size, each with numerous secondary areolae (Fig. 13C); polygonal areas become smaller near lateral and posterior borders where some polygonal areas have low conical spines. Large spinose fringe papillae (Fig. 13D) occur along lateral border.

Dorsal cirri with cirrophores cylindrical, bulbous basally; with long, slender, papillate styles. Dorsal tubercles transversely elongated, swollen, thin walled, with lateral extensions.

Prostomium deeply bilobed, wider than long, without cephalic peaks. Eyes two pairs, usually hidden when prostomium partially retracted; anterior pair large, oval lying laterally at widest part of prostomium; posterior pair slightly smaller, lying dorsally, close behind first pair and close to rear margin. Palps long, slender, gently tapering to fine tips; with longitudinal rows of long, fine papillae. Median antenna a well-formed papilla in midline near rear edge of prostomium. Lateral antennae inserted terminally on long slender lateral extensions of prostomium; styles long, slender, papillated, with subterminal swelling and filiform tip (Fig. 13A).

Tentacular segment not visible dorsally, with long, slender tentaculophores ventrolateral to prostomium, each with short acicular lobe, several fine setae, and pair of long, slender, gently tapering papillated styles. Tentaculophores usu-

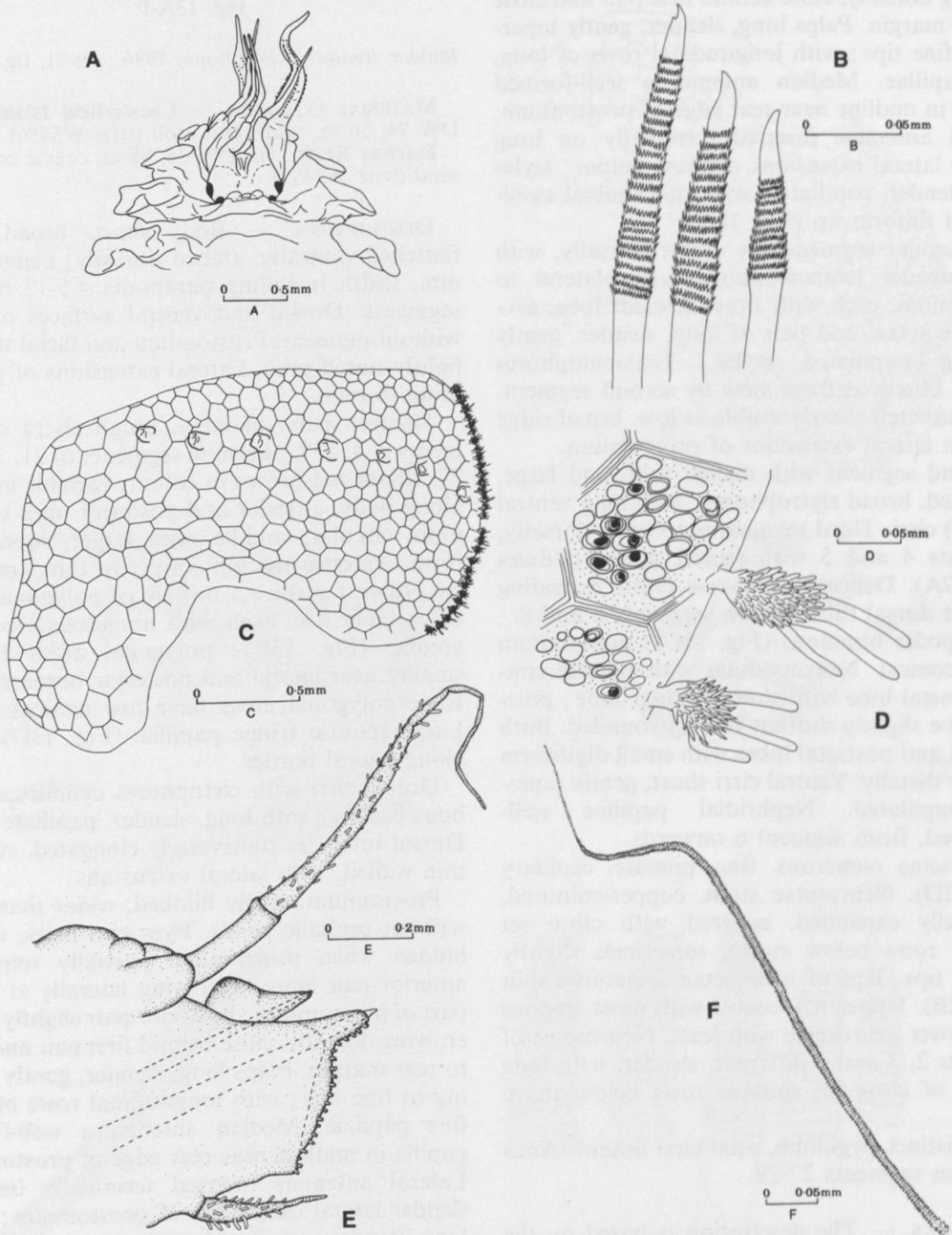


FIG. 13. — *Iphione treadwelli* Pettibone, 1986 (NTM W5456) : A, anterior end, dorsal view ; B, neurosetae from unknown segment ; C, elytron from unknown segment ; D, elytral margin ; E, cirriferous parapodium from unknown segment, anterior end ; F, notoseta from unknown segment.

ally obscured from view by second segment. Facial tubercle clearly visible as low, broad ridge between lateral extensions of prostomium.

Second segment with nuchal fold, and large, elongated, broad elytraphores; with long ventral (buccal) cirri. Third segment not visible dorsally. Segments 4 and 5 with paired dorsal nodules (Fig. 13A). Delicate transverse crests extending between dorsal tubercles on segments 6 and 8.

Parapodia biramous (Fig. 13E); notopodia small, conical. Neuropodium with longer conical, presetal lobe; postsetal lobe shorter, bluntly rounded. Both presetal and postsetal lobes with small digitiform papillae distally. Ventral cirri short, gently tapering, papillated. Nephridial papillae well developed, from segment 6 onwards.

Notosetae numerous, fine, pinnate, capillary (Fig. 13F). Neurosetae stout, copper-coloured, subdistally expanded covered with close set spinous rows below entire, sometimes slightly hooked tips (Fig. 13B). Upper neurosetae with most spinous rows, lower neurosetae with least. Neurosetae of segments 2, 3 and 4 different, slender, with long regions of close set spinous rows below sharp tips.

No distinct pygidium, anal cirri absent. Anus dorsal on segments 27-29.

REMARKS. — The description is based on the material examined and PETTIBONE (1986). This is the first record of this species outside the Hawaiian islands and represents a significant range extension.

Iphione coriolis sp. nov.

Fig. 14A-E

MATERIAL EXAMINED. — **Chesterfield Islands**: stn RH 88-65, 32-60 m, coral, coral rubble and coral sand with some *Halimeda*, Holotype (MNHN UC170).

DESCRIPTION. — *Holotype*: Body short, broad, oval, flattened ventrally, arched dorsally. Length 10.5 mm, width including parapodia 6 mm, 29 segments. Dorsal and ventral surfaces of body without pigment. Prostomium and facial tubercle lightly tinted grey. Lateral extensions of prostomium grey.

Thirteen pairs of large, tough elytra on seg-

ments 2, 4, 5, 7, alternate segments to 21, 23, and 27. Elytra yellow in colour, variable in shape along body, anterior and posterior ones smaller, more circular, middle ones larger, more reniform. Anterior margins of elytra thin, transparent. Elytral surface a mosaic of polygonal areas of variable size, each with numerous secondary areolae (Fig. 14E); areas in between areolae with short micropapillae. Polygonal areas become smaller near lateral and posterior borders; some containing a low blunt tubercle, sometimes tipped with a large offset spine and/or papillae. Near outer edge of each elytron, some short, clavate papillae occur. No fringe papillae.

Dorsal cirri with cirrophores cylindrical, bulbous basally; with long, slender, papillate styles. Dorsal tubercles transversely elongated, swollen, thin walled, with lateral extensions.

Prostomium deeply bilobed, wider than long, without cephalic peaks (Fig. 14A). Two pairs of eyes, usually hidden when prostomium partially retracted; anterior pair large, oval lying laterally at widest part of prostomium; posterior pair slightly smaller, lying dorsally, close behind first pair and close to rear margin. Palps long, slender, gently tapering to fine tips; with longitudinal rows of fine papillae. Median antenna a well-formed papilla in midline near rear edge of prostomium. Lateral antennae inserted terminally on long slender lateral extensions of prostomium; styles long, slender, papillated, with subterminal inflation and filiform tip.

Tentacular segment not visible dorsally, with long, slender tentaculophores ventrolateral to prostomium, each with short acicular lobe, and pair of long, slender, gently tapering papillated styles; without setae. Tentaculophores usually obscured from view by second segment. Facial tubercle clearly visible as low, broad ridge between lateral extensions of prostomium.

Second segment with nuchal fold, and large, elongated, broad elytraphores; with long ventral (buccal) cirri. Third segment not visible dorsally. Segments 4 and 5 without paired dorsal nodules. Delicate transverse crests absent from segments 6 and 8.

Parapodia biramous; notopodia small, conical. Neuropodium with longer, conical presetal lobe, postsetal lobe shorter, bluntly rounded. Both presetal and postsetal lobes with digitiform papillae distally; papillae long and slender near base of acicular lobe (Fig. 14D). Ventral cirri

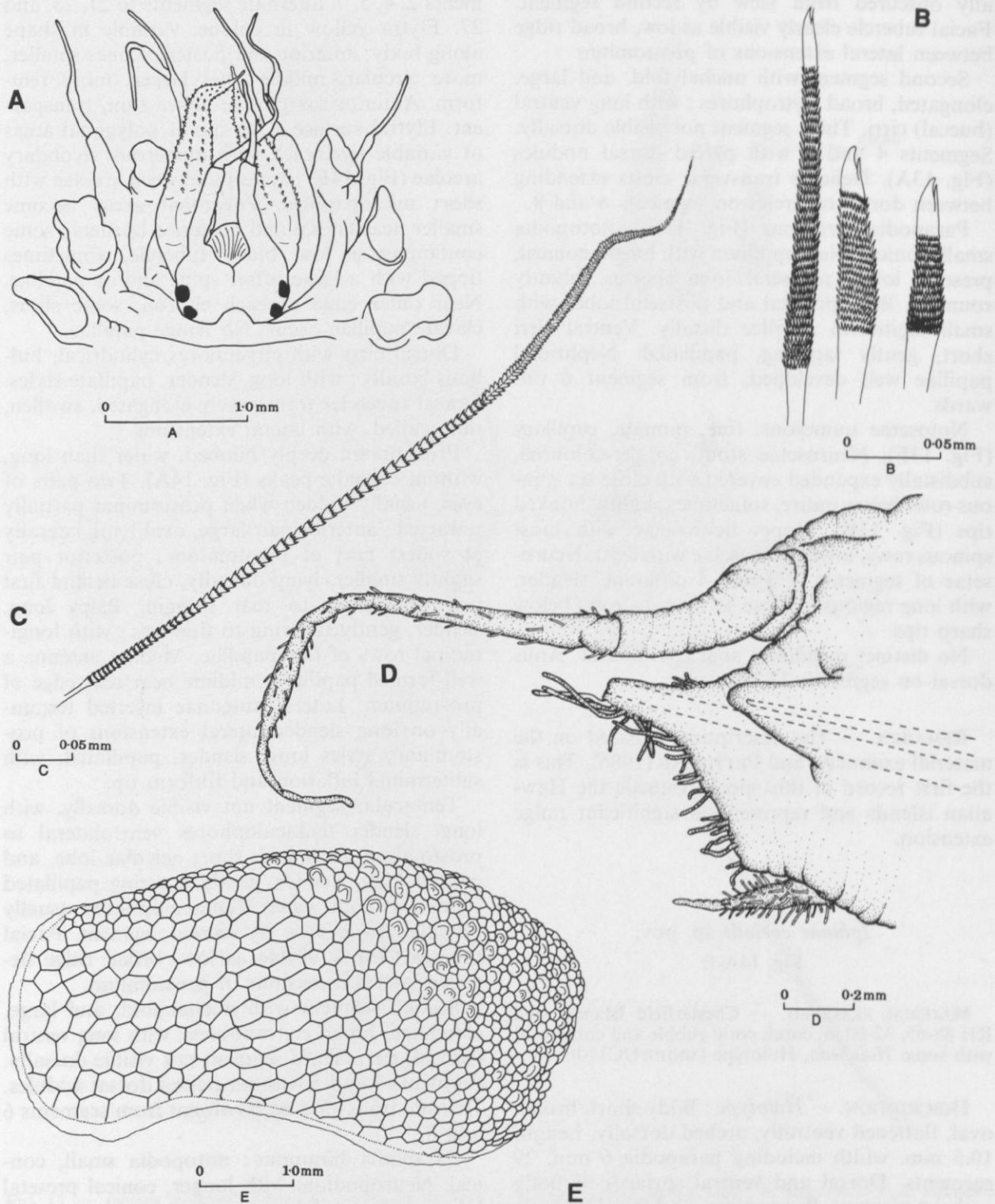


FIG. 14. — *Iphione coriolis* sp. nov., holotype (MNHN UC170) : A, anterior end, dorsal view ; B, neurosetae from segment 12 ; C, notoseta from segment 12 ; D, cirriferous parapodium from segment 12, anterior view ; E, elytron from unknown segment.

short, gently tapering, papillated. Nephridial papillae well developed, particularly in mid-body region where they are long and deflected upwards between segments; from segment 7 onwards.

Notosetae numerous, fine, flexible, pinnate, capillary (Fig. 14C). Neurosetae stout, copper-coloured, subdistally expanded, covered with close set spinous rows below bidentate tips (Fig. 14B). Upper neurosetae with most spinous rows, lower neurosetae with least. Neurosetae of segments 2, 3 and 4 different, slender, with long regions of close set spinous rows below sharp tips.

No distinct pygidium, anal cirri absent. Anus dorsal on segments 27-29.

REMARKS. — The new species can be easily distinguished from all the other species in the genus by the presence of bidentate neurosetae. There are no elytral fringe papillae on the elytra, and only a few poorly developed tubercles on the elytral surface. In addition, the papillae on the distal extremity of the neuropodium are very long compared to those of other species.

ETYMOLOGY. — The species is named after the Research Vessel “*Coriolis*”.

Subfamily LEPIDASTHENIINAE Pettibone, 1989

DIAGNOSIS. — Body usually elongated, with numerous segments. Elytra usually numerous pairs on segments 2, 4, 5, 7, then variable in arrangement. Elytra smooth, without fringe papillae, with or without scattered micropapillae. Dorsal cirri on non-elytragerous segments, with basal cirrophores and distal styles, dorsal tubercles absent. Prostomium bilobed, with three antennae and two palps; ceratophore inserted in anterior notch, lateral antennae inserted terminally on anterior extensions of prostomium, on same level as median antenna (or slightly subterminally); two pairs of eyes on posterior half of prostomium. Tentacular segment not visible

dorsally; tentaculophores lateral to prostomium, each with acicula and pair of dorsal and ventral tentacular cirri, asetigerous. Second or buccal segment with first pair of elytraphores and elytra, setigerous parapodia and ventral (buccal) cirri lateral to ventral mouth. Pharynx with 9-13 pairs of soft border papillae and two pairs of chitinous jaws. Parapodia subbiramous, with small notopodium, with notoacicula and without or with few notosetae. Neuropodia with presetal and postsetal lobes deeply cut dorsally and ventrally, without projecting acicular lobes. Pygidium with pair of anal cirri. Often commensal.

Key to the genera of LEPIDASTHENIINAE from the Chesterfields and Fairways

- 1a. Elytra 22 pairs on segments 2,4,5,7, alternate segments to 39, 41, and 42 *Hyperhalosydna*
- 1b. Elytra variable number of pairs on segments 2, 4, 5, 7, alternate segments to 23, 26, and 29, then single elytragerous segments alternating with two cirriferous segments..... *Lepidasthenia*
- 1c. Elytra variable number of pairs on segments 2, 4, 5, 7, alternate segments to 15, then variable arrangement with either long posterior region without elytra or elytra arranged irregularly *Benhamipolynoe*

Genus *BENHAMIPOLYNOE* Pettibone & Augener, 1970

Benhamipolynoe Pettibone & Augener, 1970 : 201.

TYPE SPECIES. — *Lepidasthenia antipathicola* Benham, 1927 : 64-67, pl. A, figs 11-13.

DIAGNOSIS. — Body flattened, elongate, slender, numerous segments (50 to 200 or more). Elytra 10 or more pairs on segments 2, 4, 5, 7, alternate segments to 15, then variable arrangement with either long posterior region without elytra or with elytra continuing posteriorly. Elytra without fringe papillae, smooth except for scattered micropapillae. Prostomium bilobed, with two palps and three antennae. Ceratophore of median antenna inserted in anterior notch of prostomium, lateral antennae inserted terminally on anterior extensions of prostomium, lateral to median antenna. Two pairs of eyes on posterior half of prostomium. Tentaculophores of tentacular segment lateral to prostomium, without setae, with two pairs of dorsal and ventral cirri. Second or buccal segment with first pair of elytra and long ventral buccal cirri; without nuchal lobe. Parapodia subbiramous, with small conical notopodia on anterodorsal faces of neuropodia, without notosetae. Neuropodia deeply cut dorsally and ventrally, with anterior and posterior subequal rounded lobes, without projecting acicular lobes. Neurosetae relatively few in number (5-12), of single type, stout, smooth or with faint spinous rows below falcate, entire tips. Dorsal cirri with short cylindrical cirrophores and long, smooth, tapering styles; dorsal tubercles absent. Ventral cirri short, subulate. Pygidium with pair of long anal cirri. Nephridial papillae short, cylindrical, beginning on segment 8.

REMARKS. — The diagnosis is based on the specimens examined and PETTIBONE (1989). Only two species are currently included in *Benhamipolynoe*. Both are commensals, *B. antipathicola* is associated with antipatharians and *B. cairnsi* with stylasterid corals.

Benhamipolynoe cairnsi Pettibone, 1989

Fig. 15A-I

Benhamipolynoe cairnsi Pettibone, 1989 : 301-304, figs 1A-H, 2A-E.

MATERIAL EXAMINED. — **Australie (Queensland)** : Marion Plateau off Mackay, 20°46.2'S, 152°51.8'E, ex *Conopora adeta*, 398-399 m, F.R.V. "Soela", 22.XI.1985, A. BRUCE coll., Holotype (NTM W4900).

Fairway Reefs : stn RH 88-51, 500 m, deep slope of submerged atoll (NTM W5454, NTM W5455).

DESCRIPTION. — Body elongate, flattened ventrally, arched dorsally, widest in anterior half, tapering gradually posteriorly. Unpigmented.

Elytra 10 pairs attached to prominent elytophores on segments 2, 4, 5, 7, 9, 11, 13, 15, 19, and last pair on 23 or 25. All posterior segments from 26 on have dorsal cirri. Elytra soft, transparent, oval, attached near outer edge (Fig. 15C), with scattered micropapillae on surface (Fig. 15C, D).

Cirrophores of dorsal cirri large, cylindrical, with long smooth styles, each with a short, basal triangular extension (Fig. 15B, F, G).

Prostomium (Fig. 15 H, I) bilobed, with two smooth palps and three antennae. Ceratophore of median antenna, large, cylindrical, inserted in anterior notch, style long, smooth, slender, gradually tapering. Lateral antennae inserted terminally on anterior extensions of prostomium (Fig. 15E, H, I), lateral to median antenna, with slender tapering styles much shorter than median antenna. Two pairs of eyes; anterior pair circular, lying laterally well behind widest part of prostomium; posterior pair smaller, lying close behind first pair, closer to midline. First or tentacular segment not visible dorsally. Tentaculophores short, stout, lateral to prostomium, aseptigerous, each with pair of tentacular cirri; dorsal ones similar length to median antenna, ventral ones similar to lateral antennae. Facial tubercle weakly developed (Fig. 15E). Second segment (buccal) without nuchal lobe, with first pair of elytophores, subbiramous parapodia with few neurosetae, and ventrally with long buccal cirri. Segment 3 with first pair of dorsal cirri; cirrophores large, cylindrical, styles long, smooth, with shorter, digitiform lobe basally (Fig. 15F, H).

Parapodia subbiramous (Fig. 15F, G). Notopodia on anterodorsal faces of larger neuropodia; anterior ones small, conical, posterior ones low ridges; notoacaculae present, notosetae absent. Neuropodia deeply cut dorsally and ventrally, with bluntly rounded presetal and postsetal lobes of similar length. Ventral cirri short,

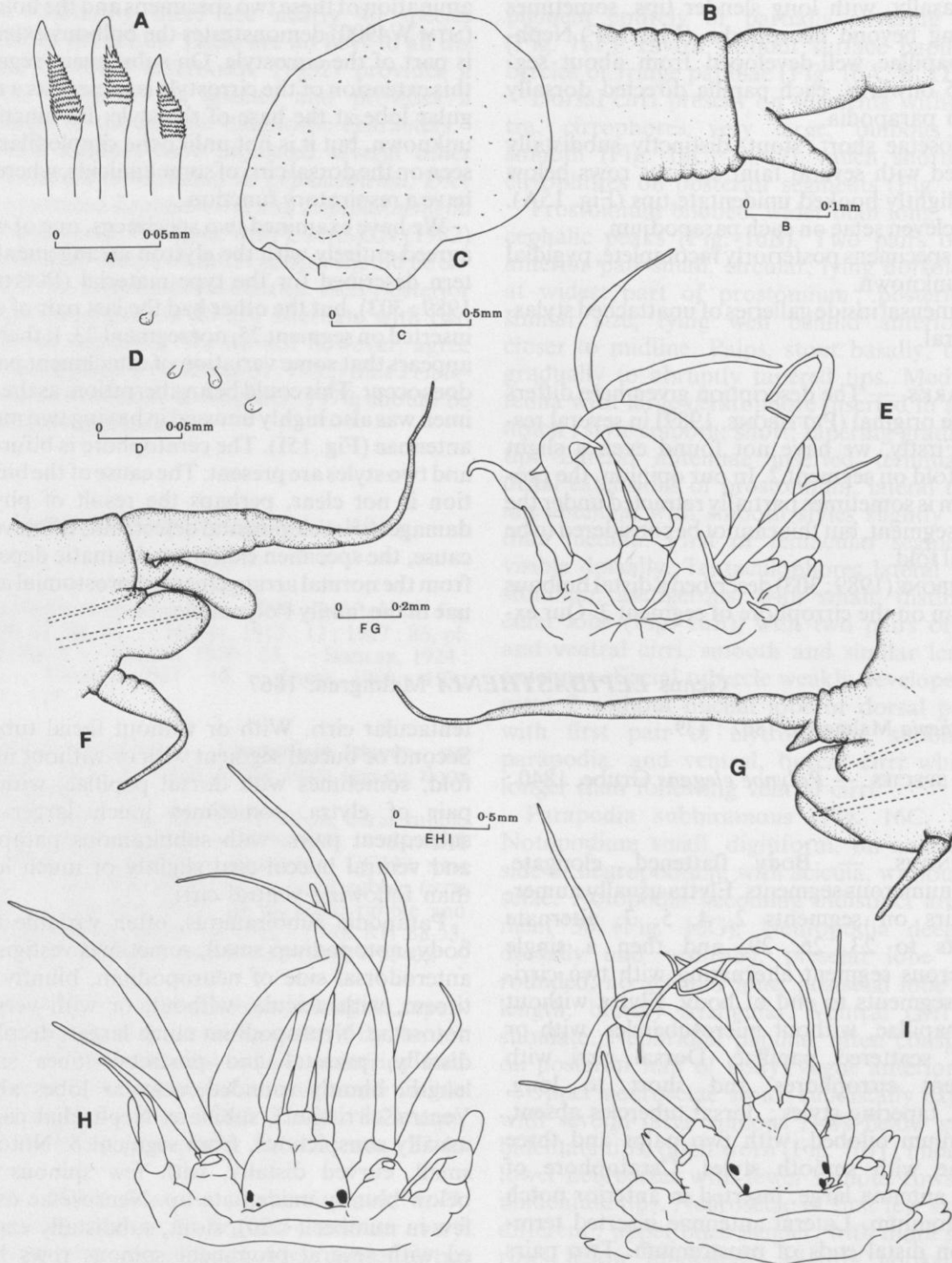


FIG. 15. — *Benhamipolynoë cairnsi* Pettibone, 1989 (NTM W5455, A-H ; NTM W5454, I) : A, neurosetae from posterior segment ; B, short, digitiform lobe at base of cirrostyle ; C, elytron from unknown segment ; D, elytral papillae ; E, anterior end, ventral view ; F, cirrigerous parapodium from segment 3, anterior view ; G, cirrigerous parapodium from posterior segment, anterior view ; H, anterior end, dorsal view (parapodia of segments 2 and 3 omitted) ; I, anterior end, dorsal view, showing unusual pair of median antennae.

stout basally, with long slender tips, sometimes extending beyond neuropodia (Fig. 15F). Nephridial papillae well-developed from about segment 15 onwards, each papilla directed dorsally between parapodia.

Neurosetae short, stout, distinctly subdistally expanded with several faint spinous rows below worn, slightly hooked unidentate tips (Fig. 15A). Five to eleven setae on each parapodium.

Both specimens posteriorly incomplete, pygidial region unknown.

Commensal inside galleries of unattached stylasterid coral.

REMARKS. — The description given here differs from the original (PETTIBONE, 1989) in several respects. Firstly, we have not found even a slight nuchal fold on segment 2. In our opinion, the prostomium is sometimes partially retracted under the second segment, but this cannot be considered to be a nuchal fold.

PETTIBONE (1989: 303) described a distal bulbous extension on the cirrophore of segment 3. Our ex-

amination of these two specimens and the holotype (NTM W4900) demonstrates the bulbous extension is part of the cirrostyle. On subsequent segments this extension of the cirrostyle is present as a triangular lobe at the base of the style. Its function is unknown, but it is not unlike the simple filaments seen on the dorsal cirri of some eunicids, where they have a respiratory function.

We have examined two specimens, one of which agreed entirely with the elytron arrangement pattern described for the type material (PETTIBONE, 1989: 303), but the other had the last pair of elytra inserted on segment 25, not segment 23. It therefore appears that some variation of attachment pattern does occur. This could be an aberration, as the specimen was also highly unusual in having two median antennae (Fig. 15I). The ceratophore is bifurcated and two styles are present. The cause of the bifurcation is not clear, perhaps the result of physical damage or developmental defect, but, whatever the cause, the specimen exhibits a dramatic departure from the normal arrangement of prostomial antennae in the family Polynoidae.

Genus *LEPIDASTHENIA* Malmgren, 1867

Lepidasthenia Malmgren, 1867: 139.

TYPE SPECIES. — *Polynoe elegans* Grube, 1840: 85.

DIAGNOSIS. — Body flattened, elongate, usually numerous segments. Elytra usually numerous pairs on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, and then a single elytragerous segment alternating with two cirriferous segments to end of body. Elytra without fringe papillae, without microtubercles, with or without scattered papillae. Dorsal cirri with prominent cirrophores and short to long, smooth, tapering styles; dorsal tubercles absent. Prostomium bilobed, with two palps and three antennae with smooth styles. Ceratophore of median antenna large, inserted in anterior notch of prostomium. Lateral antennae inserted terminally on distal ends of prostomium. Two pairs of eyes on posterior half of prostomium. First or tentacular segment not visible dorsally, sometimes visible lateral to prostomium, sometimes with papillae either side of prostomium. Tentaculophores lateral to prostomium, asetigerous, with two pairs of smooth dorsal and ventral

tentacular cirri. With or without facial tubercle. Second or buccal segment with or without nuchal fold, sometimes with dorsal papillae, with first pair of elytra, sometimes much larger than subsequent pairs, with subbiramous parapodia, and ventral buccal cirri slightly or much longer than following ventral cirri.

Parapodia subbiramous, often variable along body, notopodium small, sometimes vestigial, on anterodorsal side of neuropodium, bluntly digitiform, with acicula, without, or with very few notosetae. Neuropodium much larger, deeply cut distally, presetal and postsetal lobes similar length, bluntly rounded, acicular lobes absent. Ventral cirri short, subulate. Nephridial papillae usually conspicuous, from segment 8. Notosetae small, curved distally, with few spinous rows below bluntly unidentate tip. Neurosetae usually few in number (<20), stout, subdistally expanded with several prominent spinous rows below unidentate or bidentate tips. Pygidium with pair of anal cirri.

REMARKS. — The majority of species referred to this genus are long bodied (100 or more segments), with a variable number of pairs of

elytra. Currently there are nearly 40 species referred to the genus. There are no keys to all the species, however USCHAKOV (1982) provides a key for eight of the species and provides a discussion of the generic diagnostic characters.

Several authors have indicated several other genera should be included in *Lepidasthenia*. DAY (1967) included *Lepidametria* and *Lepidastheniella* in *Lepidasthenia*. We agree with USCHAKOV (1982) that species of these two latter genera should be excluded from *Lepidasthenia* because their posterior elytragerous segments do not alternate with two cirriferous segments. We do not however, agree with the suggestion (USCHAKOV, 1982) that *Telolepidasthenia* Pettibone & Augener, 1970, should be included in *Lepidasthenia*.

Lepidasthenia microlepis Potts, 1910

Fig. 16A-J

Lepidasthenia microlepis Potts, 1910 : 343, pl. 19, fig. 17, pl. 21, fig. 52. — HORST, 1915 : 12 ; 1917 : 86, pl. XIX, fig. 9. — EHLERS, 1920 : 23. — SEIDLER, 1924 : 154. — FAUVEL, 1947 : 18. — GIBBS, 1969 : 453 ; 1971 : 125.

MATERIAL EXAMINED. — **Chesterfield Islands** : stn RH 88-71, 25-95 m, coral rubble from lagoon floor (NTM W5539).

Fairway Reefs : stn RH 88-41, 62 m, coral rubble and coarse shell and sand (NTM W5535). — Stn RH 88-42, 58 m, coral rubble in sand (MNHN UC192, NTM W5536). — Stn RH 88-45, 63 m, coral rubble (NTM W5537). — Stn RH 88-52, 69 m, coral rubble and sand (NTM W5538, MNHN UC193). — Stn RH 88-53, 77 m, coral rubble and coarse sand (NTM W5540).

DESCRIPTION. — Body flattened, elongate, tapering rapidly anteriorly, gradually posteriorly. Anterior half of body opaque white, posterior half transparent with prominent lateral caecae visible in each segment (Fig. 16H). Length 8-21 mm, width including parapodia 2.3-4.2 mm, 27-46 segments.

Elytra 13-19 pairs on segments 2, 4, 5, 7, alternate segments to 23, 26, and thereafter every third segment to end of body. First pair of elytra moderate size, soft, partially overlapping prostomium, transparent except for thin border of reddish-brown pigment (Fig. 16B, D). Subsequent pairs becoming smaller, after sixth pair about twice diameter of elytraphores (Fig. 16A, H), second to sixth pairs with reddish-brown

pigment entirely or partially covering surface (Fig. 16F). Elytra without surface papillae, tubercles or fringe papillae (Fig. 16A, B, D, F, H).

Dorsal cirri present on segments without elytra, cirrophores very large, bulbous; styles smooth (Fig. 16C, E, G), much shorter than cirrophores on posterior segments (Fig. 16G).

Prostomium bilobed, wider than long, without cephalic peaks (Fig. 16B). Two pairs of eyes; anterior pair small, circular, lying dorsolaterally at widest part of prostomium; posterior pair similar size, lying well behind anterior pair, closer to midline. Palps, stout basally, tapering gradually to abruptly tapered tips. Median antenna with large ceratophore inserted in anterior notch; style smooth, short, tapering gradually to tip. Lateral antennae inserted terminally on distal extensions of prostomium, lateral to median antenna, with smooth styles slightly shorter than median. First or tentacular segment not visible dorsally. Tentaculophores lateral to prostomium, asetigerous, with small, distinct acicular lobe (Fig. 16B), with two pairs of dorsal and ventral cirri, smooth and similar length to antennae. Facial tubercle weakly developed. Segment 2 without nuchal lobe or dorsal papillae, with first pair of elytraphores, subbiramous parapodia, and ventral, buccal cirri which are longer than following ventral cirri.

Parapodia subbiramous (Fig. 16C, E, G). Notopodium small, digitiform, on anterodorsal side of neuropodium, with acicula, without notosetae. Notopodia becoming indistinct after segment 30 (Fig. 16G). Neuropodia deeply cut dorsally and ventrally, presetal lobe bluntly rounded, no acicular lobe, postsetal lobe similar length, bluntly triangular. Ventral cirri short, subulate. Nephridial papillae often conspicuous on posterior half of body, vague anteriorly.

Upper neurosetae stout, subdistally expanded with several large spinous rows below strongly bidentate tips, often worn (Fig. 16J); middle and lower neurosetae with fewer spinous rows below unidentate tips. Neurosetae of first few segments different: upper ones slender, with more spinous rows below unidentate, slightly hooked tips; lower ones with numerous rows of fine spines below a slender, capillary tip (Fig. 16I).

Anus terminal, pair of anal cirri similar to dorsal cirri.

Commensal with several species of coral boring sipunculans.

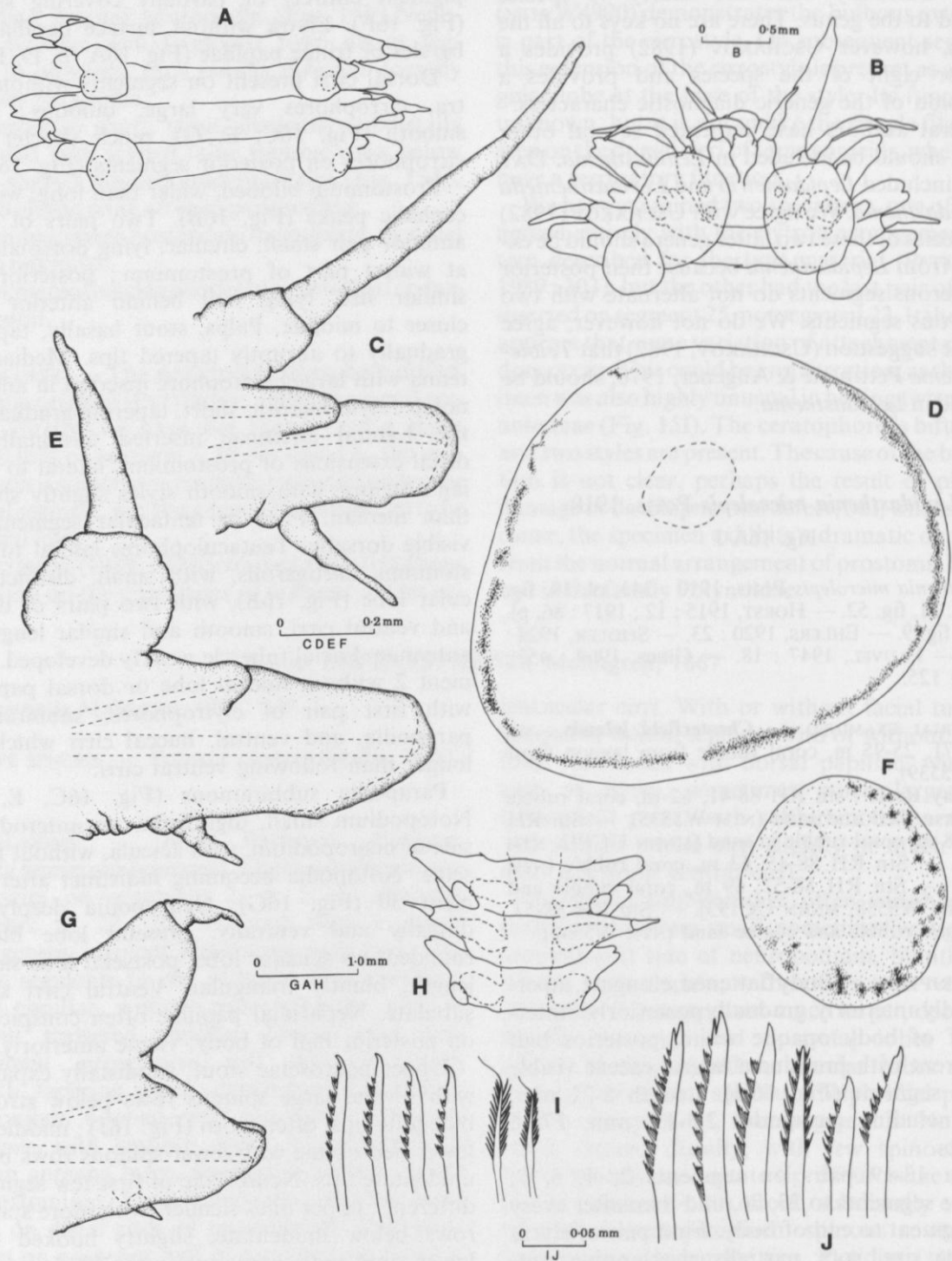


FIG. 16. — *Lepidasthenia microlepis* Potts, 1910 (NTM W5539, A,G ; NTM W5540, B,D-F,J ; NTM W5538, C,I ; NTM W5536, H) : A, middle segments, dorsal view showing attachment of elytra ; B, anterior end, dorsal view ; C, cirriferous parapodium from segment 3, anterior view ; D, elytron from first segment ; E, cirriferous parapodium from segment 16, anterior view ; F, elytron from segment 6 ; G, cirriferous parapodium from segment 33, anterior view ; H, posterior segments, dorsal view, caeca showing through body wall ; I, neurosetae from segment 3 ; J, neurosetae from segment 16.

REMARKS. — The original description of the species is brief, but does mention there are 19 pairs of elytra and that the elytra are very small with the exception of the first pair. POTTS also described the neurosetae and stated that the dorsal cirri were stumpy. HORST (1917) described the dorsal cirrophores as long, with styles a similar length, on a specimen from Indonesia. This apparent discrepancy between the two authors on the form of the dorsal cirri may simply be the result of each examining parapodia from different regions of the body. The specimens we have examined all showed a change in the relative proportions of dorsal cirrophores and styles along the body. Anterior segments had relatively long dorsal cirri on short cirrophores, however, in the mid-body region the cirri and

cirrophores were of similar length and posteriorly the cirrophores were the larger.

Although the species has been recorded from a range of localities throughout the tropical Indo-West Pacific, GIBBS (1969, 1971) appears to be the first author to note that the species is commensal with sipunculids.

All the specimens of *L. microlepis* collected from the Chesterfields were found with sipunculids boring through coral. The sipunculids were inside cylindrical burrows in the coral and the scaleworms were closely adpressed to their hosts, wedged between the host and the wall of the burrow.

The species has been recorded from Natal, Mozambique, the Maldives, Andamans, Malay Archipelago, Solomon Islands, and New Caledonia.

Genus *HYPERHALOSYDNA* Augener, 1922b

Hyperhalosydna Augener, 1922b : 6.
Lucopia Pillai, 1965 : 115.

TYPE SPECIES. — *Lepidonotus striatus* Kinberg, 1856 : 384.

DIAGNOSIS. — Body flattened, slender, 46-48 segments. Elytra 22 pairs on segments 2, 4, 5, 7, alternate segments to 39, 41 and 42. Elytra without fringe papillae. Dorsal cirri present on segments without elytra, cirrophores large, flattened dorso-ventrally; with styles smooth, flattened dorso-ventrally, with slight subterminal swelling and filiform tip; dorsal tubercles conspicuous. Prostomium lepidasthenoid, bilobed, with two palps and three antennae. Ceratophore of median antenna large, inserted in anterior notch of prostomium. Lateral antennae inserted terminally on distal ends of prostomium. Two pairs of eyes, anterior pair at widest part of prostomium, posterior pair lying closer to midline near rear edge of prostomium. First or tentacular segment not visible dorsally; tentaculophores lateral to prostomium, asetigerous, with two pairs of dorsal and ventral tentacular cirri. Second or buccal segment without nuchal fold, with first pair of elytra on prominent elytraphores, subbiramous parapodia, and very long ventral buccal cirri. Parapodia subbiramous, notopodium small, on anterodorsal side of neuropodium, digitiform with curled spatulate tip; neuropodium much larger, deeply cut dorsally and ventrally, with

bluntly rounded presetal and postsetal lobes of similar length. Ventral cirri short, subulate, smooth. Nephridial papillae well developed on middle and posterior segments, begin on segments 8-15.

Notosetae few in number (0-3), very small, curved distally, with rows of fine serrations below blunt or fine tips. Neurosetae much stouter, most subdistally expanded with several rows of serrations below strongly bidentate tips, some anterior segments in adults with fine-tipped neurosetae which resemble notosetae. Juveniles may have fine-tipped and slender unidentate neurosetae on any segment.

Anus dorsal on last two segments. Pygidium with pair of anal cirri similar to dorsal cirri.

REMARKS. — The original description of this genus (AUGENER, 1922b), and several subsequent diagnoses (FAUCHALD, 1977; USCHAKOV, 1982) did not state a precise number of elytron pairs. AUGENER examined several specimens of the type species which were incomplete, and one complete animal which had 22 pairs of elytra and consequently described the genus as having more than 18 pairs of elytra. FAUCHALD (1977 : 62) states there 21-22 pairs, USCHAKOV (1982 : 96) considers there are up to 24 pairs, and DAY (1967 : 88) places the genus as a subgenus within *Halosydna* Kinberg, 1856, and states there are 20-24 pairs of elytra. Examination of the various

descriptions of specimens of the type species (synonymy) reveals a considerable variation (18-24 pairs) in the observed numbers of pairs of elytra.

We consider these estimates to be doubtful, as in this study we have been able to examine 15 complete specimens of the type species *H. striata* from the Chesterfields. Two of these specimens were juveniles, they were smaller, and had fewer body segments and pairs of elytra than the others. The remaining 13 specimens all had 22 pairs of elytra, arranged in the same pattern, with 4-6 cirrigerous segments after the last elytragerous segment. Consequently we believe 22 is the maximum number of elytral pairs exhibited by the type species of this genus. This is in agreement with the generic diagnosis provided by SEIDLER (1924 : 136). The genus currently has three species : *H. striata*, *H. alleni* Day, 1934, and *H. bicornis* Averincev, 1978. The descriptions of *H. alleni* (DAY, 1967 : 88) and *H. bicornis* (AVERINCEV, 1978 : 68) do not give elytral arrangement patterns and, without this information, their generic assignments are speculative.

PILLAI (1965 : 115) erected a new genus and species, *Lucopia magnicirra*, for a single posteriorly incomplete polynoid. Although the specimen had only 27 segments, and therefore only 14 pairs of elytra, the figures and description exhibit the characteristics of *H. striata*, and we follow USCHAKOV (1982) in considering *Lucopia* a synonym of *Hyperhalosydna*.

We have also followed PETTIBONE (1989) in placing *Hyperhalosydna* in the new family Lepidastheniinae.

Hyperhalosydna striata (Kinberg, 1856)

Fig. 17A-M

Lepidonotus striatus Kinberg, 1856 : 384. — HASWELL 1883 : 281, 282.

Polynoe fulvovittata Grube, 1876 : 63 ; 1878 : 33, 34, pl. III, fig. 1. — WIKTOR, 1980 : 270.

Halosydna fulvovittata - MARENZELLER, 1902 : 569. — HORST, 1917 : 80, 81.

Polynoe platycirrus McIntosh, 1885 : 111-114, pl. III, fig. 4, pl. XVI, fig. 2, pl. XIX, fig. 3, pl. VIIIA, figs 14-15, pl. IXA fig. 1. — KNOX, 1951 : 62. — POTTS 1910 : 336, pl. XVIII, fig. 8, pl. XX, fig. 28.

Hylosynda carinata Moore, 1903 : 417-419, pl. XXIII, figs 16-17.

Hyperhalosydna striata - AUGENER, 1922b : 4-6 ; 1927 : 105, 106. — FAUVEL, 1932 : 26 ; 1939 : 260. —

HARTMAN, 1938 : 113 ; 1954 : 622 ; 1975 : 194. — IMAJIMA & HARTMAN, 1964 : 21. — KNOX, 1960 : 93. — RULLIER, 1965 : 168, 169, fig. 2A-F. — WESENBERG-LUND, 1949 : 257. — USCHAKOV, 1982 : 96-98, pl. XXV, 1-5.

Lucopia magnicirra Pillai, 1965 : 117, fig. 2G-H, fig. 3A-C.

MATERIAL EXAMINED. — **Philippines** : Pandanon, Holotype of *Polynoe fulvovittata* Grube, 1876, (MPW 353).

Chesterfield Islands : stn RH 88-56, 55 m, coral rubble from lagoon (NTM W5533). — Stn RH 88-61, 30-52 m, block of coral rubble with a covering of algae on one side (NTM W5529). — Stn RH 88-62, 16-26 m, coral in shallow water near cay (NTM W5526). — Stn RH 88-65, 32-60 m, coral rubble, coral and coral sand with some *Halimeda* (MNHN UC171, NTM W5527, NTM W5528). — Stn RH 88-66, 40-74 m, coral rubble and sand (MNHN UC172, NTM W5525). — Stn RH 88-71, 25-95 m, coral rubble from lagoon floor (NTM W5523, NTM W5524, MNHN UC200).

Fairway Reefs : stn RH 88-41, 62 m, coral rubble and coarse shell and sand (NTM W5531, NTM W5532) ; — Stn RH 88-42, 58 m, coral rubble in sand (NTM W5530). — Stn RH 88-46, 60 m, coral rubble (MNHN UC173).

DESCRIPTION. — Body flattened, elongate, tapering abruptly anteriorly and posteriorly. Length 4-22 mm, width including parapodia 1-6 mm, up to 48 segments. Body with patches or tinge of reddish-brown pigment on ceratophores, cirro-phores, styles of antennae and cirri, peristomium, facial tubercle, and on ventral surface where parapodia meet body.

Elytra up to 22 pairs on segments 2, 4, 5, 7, alternate segments to 39, 41 and 42. Elytra large, flexible, overlapping medially and posteriorly, covering dorsum. Elytra usually with two ridges (keels) running posteriorly from either side of elytraphore scar (Fig. 17H). Surface of elytron smooth except for scattered, very small papillae and band (variable width) of low, carinate micro-tubercles along outer edge (Fig. 17G, H, M). Outer part of each elytron almost transparent with clusters of opaque globules, which appear white under microscope illumination (Fig. 17F, H). Five bands of reddish-brown pigment (Fig. 17H, M) run parallel to midline of body, each band matching closely the position of the bands on subsequent elytra so dorsum appears striped.

Dorsal cirri on segments without elytra, cirro-phores large, with glandular (?) lobes ; styles smooth, flattened dorso-ventrally, with very

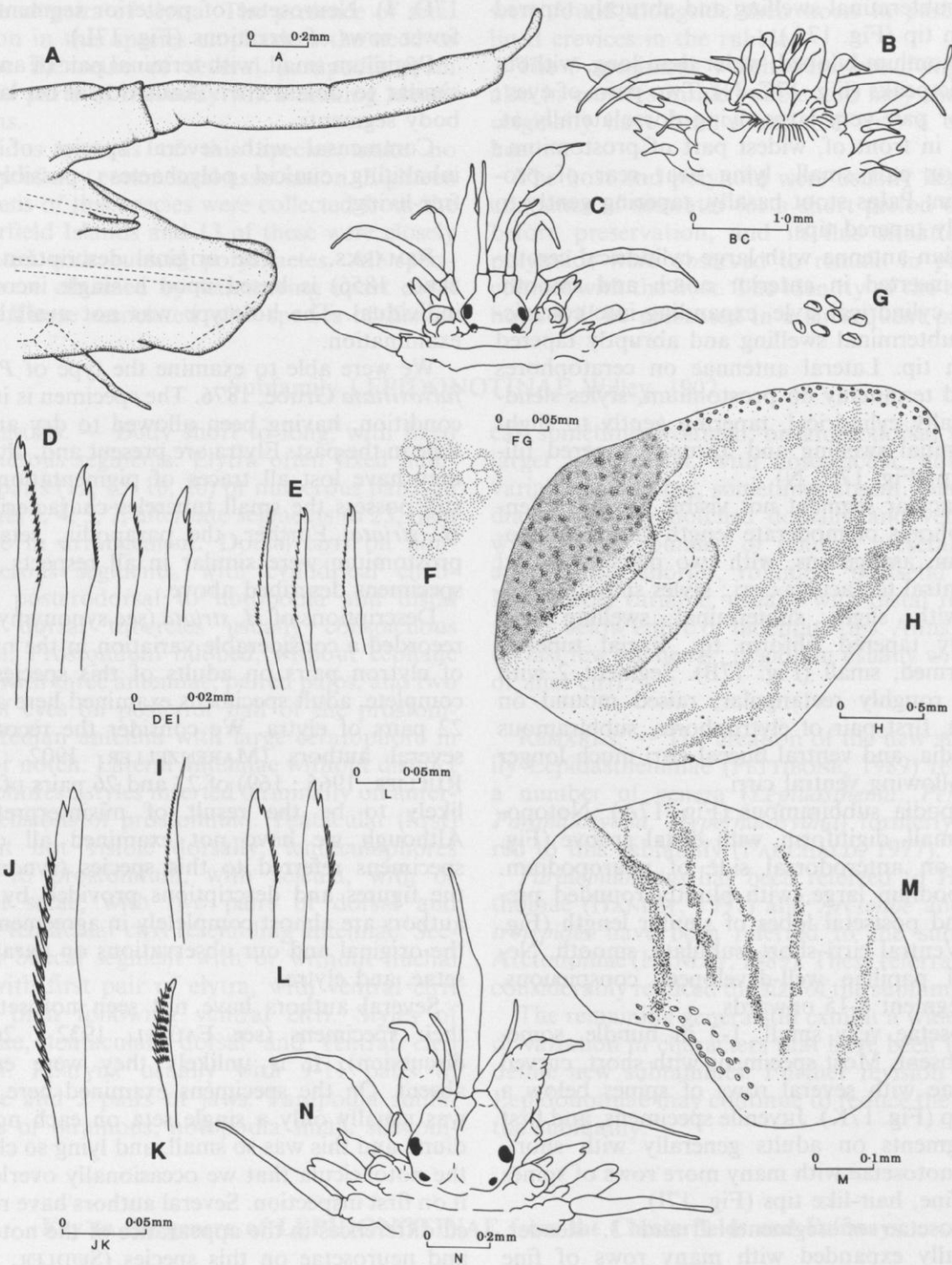


FIG. 17. — *Hyperhalosydna striata* (Kinberg, 1856) (NTM W5531, A,F-H,J,K; NTM W5527, B,C; NTM W5532, L; MNHN UC171, E,D,I,M,N): A, cirriferous parapodium from segment 12, anterior view; B, anterior end, ventral view; C, anterior end, dorsal view; D, neurosetae from middle segment; E, neurosetae from second segment; F-G, tubercles on posterior elytron; H, posterior elytron; I, notoseta from middle segment; J, neuroseta from segment 12; K, notoseta from segment 12; L, neurosetae from posterior segment; M, elytron from middle segment; N, anterior end, dorsal view.

slight subterminal swelling and abruptly tapered filiform tip (Fig. 17A).

Prostomium bilobed, wider than long, without cephalic peaks (Fig. 17C, N). Two pairs of eyes; anterior pair very large, lying dorsolaterally at, or just in front of, widest part of prostomium; posterior pair small, lying near rear of prostomium. Palps stout basally, tapering gently to abruptly tapered tips.

Median antenna with large cylindrical ceratophore inserted in anterior notch and smooth, basally cylindrical style, expanding into conspicuous subterminal swelling and abruptly tapered filiform tip. Lateral antennae on ceratophores inserted terminally on prostomium, styles slender, basally cylindrical, tapering gently to slight subterminal swelling and abruptly tapered filiform tip (Fig. 17C, N).

Tentacular segment not visible dorsally. Tentaculophores of moderate length lateral to prostomium, asetigerous, with two pairs of dorsal and ventral tentacular cirri; styles smooth, slender, with slight subterminal swelling and abruptly tapered filiform tip. Facial tubercle well-formed, small (Fig. 17B). Segment 2 with broad, roughly rectangular, raised mound on dorsum, first pair of elytriphores, subbiramous parapodia, and ventral buccal cirri much longer than following ventral cirri.

Parapodia subbiramous (Fig. 17A). Notopodium small, digitiform, with distal groove (Fig. 17A); on anterodorsal side of neuropodium. Neuropodium large, with bluntly rounded pre-setal and postsetal lobes of similar length (Fig. 17A). Ventral cirri short, subulate, smooth. Nephridial papillae well-developed, conspicuous, from segment 8-15 onwards.

Notosetae very small, 1-3 in bundle, sometimes absent. Most specimens with short, curved notosetae with several rows of spines below a blunt tip (Fig. 17K). Juvenile specimens, and first few segments on adults generally with short, curved notosetae with many more rows of spines below fine, hair-like tips (Fig. 17I).

Neurosetae of segments 2 and 3, slender, subdistally expanded with many rows of fine serrations below fine hair-like tips; others slightly thicker, with rows of serrations below minutely bifid tips (Fig. 17E).

Neurosetae of remaining segments much stouter, subdistally expanded with several rows of serrations below strongly bidentate tips (Fig.

17D, J). Neurosetae of posterior segments with fewer rows of serrations (Fig. 17L).

Pygidium small, with terminal pair of anal cirri similar to dorsal cirri. Anus dorsal on last two body segments.

Commensal with several species of coral-inhabiting eunicid polychaetes; possibly also free-living.

REMARKS. — The original description (KINBERG, 1856) is based upon a single incomplete individual. The holotype was not available for examination.

We were able to examine the type of *Polynoe fulvovittata* Grube, 1876. The specimen is in poor condition, having been allowed to dry at some time in the past. Elytra are present and, although they have lost all traces of pigmentation, they still possess the small tubercles characteristic of *H. striata*. Further, the parapodia, setae and prostomium were similar in all respects to the specimens described above.

Descriptions of *H. striata* (see synonymy) have recorded a considerable variation in the number of elytron pairs on adults of this species. The complete, adult specimens examined here all had 22 pairs of elytra. We consider the records by several authors (MARENZELLER, 1902 : 569; RULLIER, 1965 : 169) of 23 and 26 pairs of elytra likely to be the result of misinterpretation. Although we have not examined all of the specimens referred to this species (synonymy), the figures and descriptions provided by other authors are almost completely in agreement with the original and our observations on parapodia, setae, and elytra.

Several authors have not seen notosetae on their specimens (see FAUVEL, 1932 : 26, for discussion). It is unlikely they were entirely absent. On the specimens examined here, there was usually only a single seta on each notopodium, and this was so small, and lying so close to the notoacacula that we occasionally overlooked it on first inspection. Several authors have reported differences in the appearance of the notosetae and neurosetae on this species (SEIDLER, 1924; MONRO, 1924). Our examinations have shown that the notosetae, and often the majority of the neurosetae on the first two setigers, are different from those on the rest of the body. Juveniles examined here exhibited these setal types in the majority of setigers, and had fewer body seg-

ments and pairs of elytra. The presence of setal variation in this species emphasizes the need to examine the setae of several parapodia from different parts of the body when making identifications.

Previous records of this species make no mention of any commensal association. Eighteen specimens of this species were collected from the Chesterfield Islands and 13 of these were closely associated with eunicid polychaetes. All specimens were obtained by hammering apart coral rubble. Those associated with species of *Eunice*

were found alongside their hosts in parchment lined crevices in the rubble.

The 5 specimens which were free living were also in crevices inside rubble and may therefore originally have been associated with a eunicid host.

The host and polynoid were usually kept in a container of seawater for a short period of time before preservation, and in this situation the polynoids were observed to remain in physical contact with the host. The identity of the eunicid hosts will be presented in a subsequent paper.

Subfamily LEPIDONOTINAE Willey, 1902

DIAGNOSIS. — Body short to long, with fixed to numerous segments. Elytra often fixed number of pairs (12, 15, 18, 20) or numerous pairs on segments 2, 4, 5, 7, alternate segments to 23, then variable in arrangement. Dorsal cirri on non-elytragerous segments, with cylindrical cirrophores posterodorsal to notopodia and distal styles; dorsal tubercles usually conspicuous nodules. Prostomium bilobed, without cephalic peaks, with three antennae, paired palps, and two pairs of eyes on posterior half of the prostomium. Median antenna with large ceratophore in anterior notch. Lateral antennae without distinct ceratophores; styles inserted terminally on anterior extensions of prostomium. Tentacular (first) segment not visible dorsally, tentaculophores lateral to prostomium, with acicula, with or without setae, with two pairs of dorsal and ventral tentacular cirri resembling antennae. Second or buccal segment with or without nuchal lobe, with first pair of elytra, with ventral cirri longer than following ventral cirri. Styles of antennae, tentacular, dorsal and ventral cirri smooth. Pharynx usually with 9-11 pairs of papillae and 2 pairs of jaws. Parapodia subbiramous or biramous, notopodia small, subconical,

sometimes vestigial, on anterodorsal side of larger neuropodia, with notoacacula, notosetae variable in number, sometimes absent. Neuropodia not deeply notched dorsally and ventrally, with bluntly rounded or pointed presetal lobes and slightly shorter, rounded, postsetal lobes. Neurosetae variable, usually with distal rows of spines below entire or bidentate tips. Anus dorsal on last few segments; pygidium usually with pair of anal cirri.

REMARKS. — The creation of the new subfamily Lepidastheniinae (PETTIBONE, 1989) removed a number of genera (*Lepidasthenia*, *Perolepis*, *Parahalosydna*, *Hyperhalosydna*) formerly referred to this subfamily (FAUCHALD, 1977).

Paralepidonotus has been referred to Harmothoinae (HANLEY, 1991) and *Arctonoe* and *Gastrolepidia* have been referred to the subfamily Arctonoinae (HANLEY, 1989). These referrals have considerably reduced the size of the subfamily.

The remaining genera still exhibit a wide range of variation in characters that have been used to define new subfamilies. Further revision of the Lepidonotinae may continue to reduce the size of the subfamily.

Key to the genera of LEPIDONOTINAE from the Chesterfields and Fairways.

- 1a. Elytra 18 or more pairs on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29, 32, 35, 38, thereafter variable *Heteralentia* gen. nov.
- 1b. Elytra 12 pairs on segments 2, 4, 5, 7, alternate segments to 21 and 23. 2
- 2a. Notosetae of two kinds, some short, stout, curved, with rows of serrations below a blunt tip; others long, fine, smooth, with lancet shaped tips *Thormora*

- 2b. Notosetae all serrated or absent 3
 3a. Integument tuberculate and/or papillate *Hermenia*
 3b. Integument without, or with very few, tubercles and papillae. *Lepidonotus*

Genus *HETERALENTIA* nov.

TYPE SPECIES. — *Polynoe ptycholepis* Grube, 1878 : 39, 40.

DIAGNOSIS. — Body flattened, elongate, robust, 43-46 segments. Elytra 18 or more pairs, on segments 2, 4, 5, 7, alternate segments to 21, 23, 26, 29, 32, 35, 38, variable in arrangement thereafter. Elytra large, soft, gelatinous, without fringes of papillae, with scattered microtubercles (with trifid apex). Dorsal cirri with cylindrical cirrophores and long styles; dorsal tubercles weakly developed. Prostomium bilobed, with lateral antennae inserted terminally on anterior prolongations of prostomium, slightly ventral to median antennae; two palps; two pairs of eyes. Tentacular (first) segment not visible dorsally; tentaculophores anterolateral to prostomium, aseptigerous, with aciculae, with two pairs of dorsal and ventral tentacular cirri; small, conspicuous facial tubercle. Segment 2 with prominent semicircular nuchal flap covering posterior part of prostomium, biramous parapodia and long ventral buccal cirri. Pharynx with 13 pairs of papillae and two pairs of jaws. Parapodia biramous and similar along body. Notopodium on anterior face of neuropodium; small, conical, with long, thin acicular process. Neuropodium with prominent conical presetal acicular lobe and shorter, rounded postsetal lobe. Ventral cirri short, subulate. Nephridial papillae conspicuous, from segment 6-8 onwards. Notosetae slightly stouter than neurosetae, smooth or finely striated, tapering to blunt tips; neurosetae numerous, with slightly enlarged distal regions and faint spinous rows, upper neurosetae with tips minutely split; middle and lower ones with longer split bifid tips. Pygidium small, anus dorsal with pair of large anal cirri.

REMARKS. — The new genus is very similar to two other genera, *Alentia* Malmgren, 1865, and *Paralentia* Uschakov, 1982. The new genus *Heteralentia* is distinguished from both of these genera by the presence of 18 or more pairs of elytra with a variable attachment pattern.

Alentia has 18 pairs of elytra which are always arranged on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 32, 35, 38 and 39. There are usually 4-7 cirriferous segments on the rear of the body of *Alentia*. The genus *Paralentia* also has 18 pairs of elytra arranged in the same pattern as that seen in *Alentia*.

In *Paralentia* the lateral antennae are inserted ventrally on the prostomium; the anterior pair of eyes lies on the frontal peaks of the prostomium; there is no semicircular nuchal fold; and the notosetae are weakly serrated, fine tipped capillaries.

In *Alentia* the lateral antennae are inserted terminally on the prostomium; the anterior pair of eyes lies laterally on the widest part of the prostomium; there is a large semicircular nuchal fold; and the notosetae are weakly serrated fine tipped capillaries.

In *Heteralentia* the lateral antennae are inserted subterminally on the prostomium; the anterior pair of eyes lies laterally at the widest part of the prostomium; there is a large semicircular nuchal fold; and the notosetae are thicker than the neurosetae, smooth or finely serrated with blunt tips.

PETTIBONE (pers. comm.) has suggested that these three genera and several others constitute a discrete subfamily within the Polynoidae.

ETYMOLOGY. — The name of the new genus alludes to the similarities with *Alentia* but acknowledges that there are significant differences.

Heteralentia ptycholepis
(Grube, 1878) comb. nov.

Fig. 18A-G

- Polynoe ptycholepis* Grube, 1878 : 39, 40, pl. 2, fig. 6.
Allmaniella ptycholepis-HORST, 1917 : 79, pl. 18, figs 6-9. — FAUVEL, 1932 : 26.
Halosydna oculata Treadwell, 1926 : 8-10, figs 9-13 (new synonym).
Halosydnella oculata - HARTMAN, 1938 : 112, 113, fig. 36a-c.

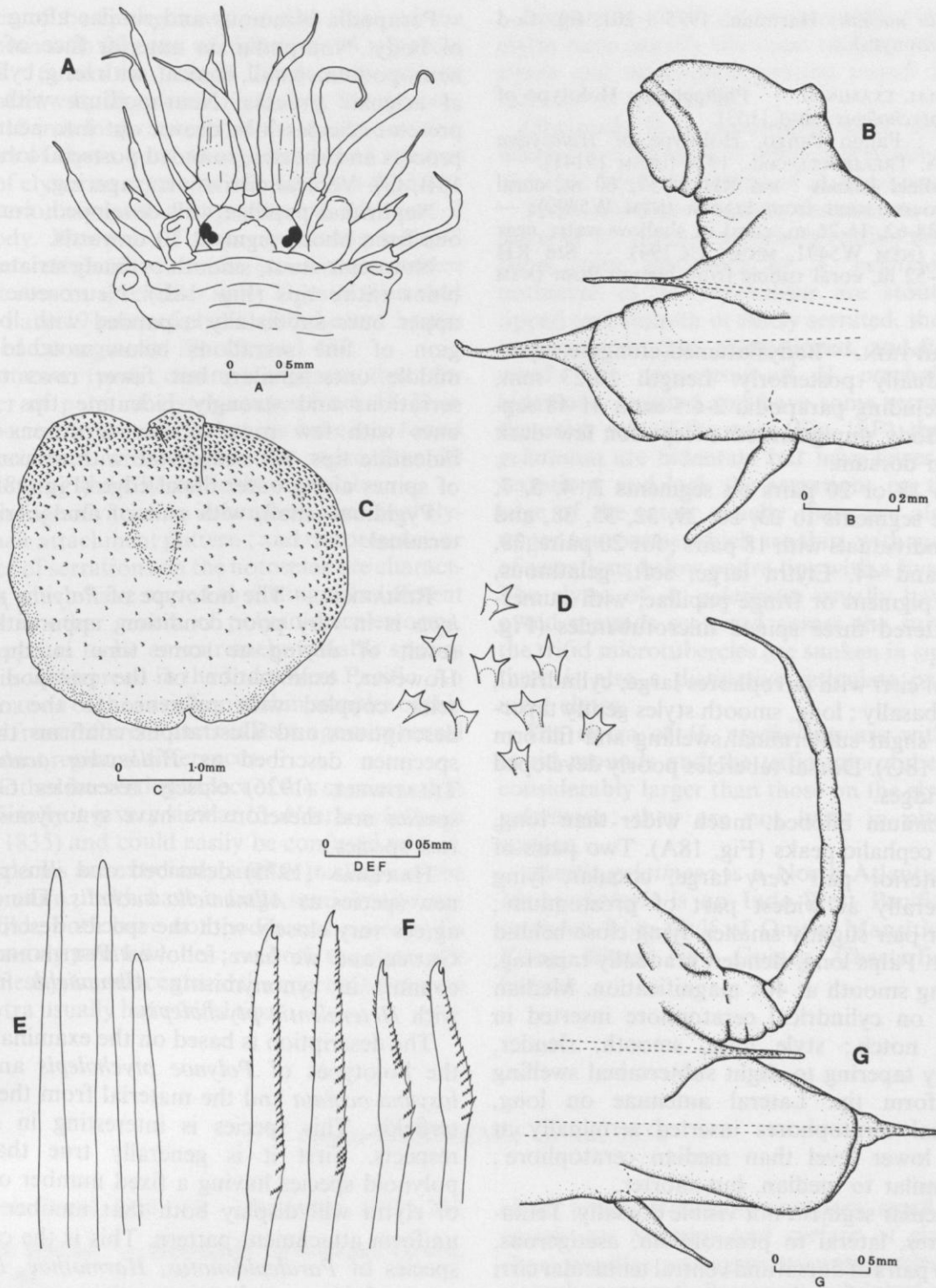


FIG. 18. — *Heteralenticia ptycholepis* (Treadwell, 1926) (NTM W5491, A,C,D,G; MNHN UC194, B,E,F) : A, anterior end, dorsal view; B, elytragerous parapodium from segment 15, posterior view; C, elytron from posterior segment; D, surface of elytron from posterior segment; E, notosetae from segment 15; F, neurosetae from segment 15; G, cirriferous parapodium from posterior segment, posterior view.

Allmaniella nuchalis Hartman, 1975 : 201, fig. 1a-d (new synonym).

MATERIAL EXAMINED. — **Philippines** : Holotype of *Polynoe ptycholepis* (MNB 1153).

Samoa : Pango Pango, Holotype of *Halosydna oculata*, A. TREADWELL coll., 1920 (USNM 19141).

Chesterfield Islands : stn RH 88-57, 60 m, coral rubble, coarse sand from lagoon (NTM W5490). — Stn RH 88-62, 16-26 m, coral in shallow water near sand cay (NTM W5491, MNHN UC194). — Stn RH 88-72, 28-52 m, coral rubble from lagoon floor (NTM W5489).

DESCRIPTION. — Body flattened, elongate, tapering gradually posteriorly. Length 10-23 mm, width including parapodia 2-6.5 mm, 41-48 segments. Body unpigmented except for few dark flecks on dorsum.

Elytra 18 or 20 pairs on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 32, 35, 38, and 39, for individuals with 18 pairs; for 20 pairs, 38, 40, 43 and 44. Elytra large, soft, gelatinous, without pigment or fringe papillae, with numerous scattered three spined microtubercles (Fig. 18C, D).

Dorsal cirri with cirrophores large, cylindrical, swollen basally; long, smooth styles gently tapering to a slight subterminal swelling and filiform tip (Fig. 18G). Dorsal tubercles poorly developed as low ridges.

Prostomium bilobed, much wider than long, without cephalic peaks (Fig. 18A). Two pairs of eyes, anterior pair very large, circular, lying dorsolaterally at widest part of prostomium; posterior pair slightly smaller, lying close behind first pair. Palps long, slender, gradually tapering, appearing smooth at 40x magnification. Median antenna on cylindrical ceratophore inserted in anterior notch; style long, smooth, slender, gradually tapering to slight subterminal swelling and filiform tip. Lateral antennae on long, cylindrical ceratophores inserted terminally at slightly lower level than median ceratophore; styles similar to median, but shorter.

Tentacular segment not visible dorsally. Tentaculophores, lateral to prostomium, asetigerous, with two pairs of dorsal and ventral tentacular cirri similar in length and shape to median antenna. Facial tubercle present as low ridge (Fig. 18A). Segment 2 with prominent subtriangular nuchal fold; with long, forward projecting elytraphores, biramous parapodia, and ventral (buccal) cirri longer than following cirri (Fig. 18A).

Parapodia biramous and similar along length of body. Notopodia on anterior face of larger neuropodium, small, conical, with long, cylindrical acicular process. Neuropodium with long, presetal acicular lobe drawn out into acuminate process and shorter, rounded postsetal lobe (Fig. 18B, G). Ventral cirri short, tapering.

Nephridial papillae well developed, conspicuous from about segment 10 onwards.

Notosetae stout, smooth or finely striated with blunt entire tips (Fig. 18E). Neurosetae stout, upper ones subdistally expanded with long region of fine serrations below notched tips; middle ones similar, but fewer rows of fine serrations and strongly bidentate tips; lower ones with few rows of fine serrations below bidentate tips. All neurosetae with unusual row of spines along outer distal edge (Fig. 18F).

Pygidium small, with pair of anal cirri, anus terminal.

REMARKS. — The holotype of *Polynoe ptycholepis* is in very poor condition, apparently as a result of drying at some time in the past. However, examination of the parapodia and setae coupled with reference to the original descriptions and illustrations confirms that the specimen described as *Halosydna oculata* by TREADWELL (1926) closely resembles GRUBE's species and therefore we have synonymised the two species.

HARTMAN (1975) described and illustrated a new species as *Allmaniella nuchalis*. The species agrees very closely with the species described by GRUBE and we have followed PETTIBONE (pers. comm.) in synonymising *Allmaniella nuchalis* with *Heteralentia ptycholepis*.

The description is based on the examination of the holotypes of *Polynoe ptycholepis* and *Halosydna oculata* and the material from the Chesterfields. This species is interesting in several respects. First it is generally true that any polynoid species having a fixed number of pairs of elytra will display both that number and a uniform attachment pattern. This is the case for species of *Paralepidonotus*, *Harmothoe*, *Lepidonotus*, *Iphione* and many other genera. The material of *H. ptycholepis* we have examined (including the holotype of *Halosydna oculata* which has 20 pairs of elytra) can be separated into two groups, one with 18 pairs of elytra, the other with 20. This not due to differences in

number of body segments or size. One of the specimens with 20 pairs of elytra has 45 segments and is 16 mm in length, while one of the specimens with 18 pairs of elytra has 48 segments and is 18 mm long. Several of the specimens with 18 pairs of elytra have 43 segments, with the last pairs of elytra on segments 38 and 39 so there are 4 posterior cirriferous segments on the rear of the body. However, if these specimens with 43 segments exhibited the same attachment pattern as that seen in specimens with 20 pairs then they would have 19 pairs of elytra with the last 3 pairs attached on segments 38, 40, and 43.

PETTIBONE (pers. comm.) suggests that the number of pairs of elytra ranges from 18-23 in this species. It is curious that we have not found any specimens with 19 pairs, or more than 20 pairs among the Chesterfields material.

The range of variation in numbers of pairs of elytra ; their attachment pattern ; and the presence or absence of serrations on the notosetae are characteristics which have served to distinguish different species in other genera of polynoid scaleworms. This appears to be an extremely variable species which is widespread in the Indo-West Pacific. An examination of the variation within samples of this species from different parts of its range may reveal significant regional differences.

The other interesting aspect of this species is that superficially it is very similar to *Alentia gelatinosa* (Sars, 1835) and could easily be confused with it. Both species are extremely similar in shape of the prostomium ; both have a large semicircular nuchal fold ; both have notopodia and neuropodia with acutely pointed lobes ; on both the elytra are large, fleshy, translucent and the microtubercles on the elytra usually have trifold tips.

Specimens of *H. ptycholepis* with 18 pairs of elytra have exactly the same number of pairs of elytra and attachment pattern found on specimens of *A. gelatinosa*.

Obviously those specimens of *H. ptycholepis* which have 20 pairs of elytra are readily distinguishable from specimens of *A. gelatinosa*.

There are other features common to all specimens of *H. ptycholepis* which readily distinguish them from specimens of *A. gelatinosa*. The notosetae of *H. ptycholepis* are stout, blunt-tipped and smooth or finely serrated, those of *A. gelatinosa* are thin, sharp-tipped, and finely serrated. The neurosetae of *H. ptycholepis* are bidentate, serrated and have some serrations on the outer part of the setae (Fig. 18F), those of *A. gelatinosa* are bidentate but have fewer rows of serrations and lack the serrations on the outer edge of the setae, usually there are also a few upper neurosetae which are thin, with many rows of serrations below entire tips with a hyaline cap. The elytra of *A. gelatinosa* usually have a few ovoid mounds scattered across the surface and the trifold microtubercles are sunken in small pits ; there is also a distinctive reticulate pattern on most elytra.

The elytra of *H. ptycholepis* are without the ovoid mounds and the trifold microtubercles are considerably larger than those on the elytra of *A. gelatinosa* ; they are not lying in pits in the surface.

Alentia gelatinosa is a North Atlantic species, *H. ptycholepis* is an Indo-West Pacific species recorded from Gulf of Oman, Mauritius, Hong Kong, Papua New Guinea, Chesterfields and Samoa.

Genus *HERMENIA* Grube, 1856

Hermenia Grube, 1856 : 44. — PETTIBONE, 1975 : 234.

TYPE SPECIES. — *Hermenia verruculosa* Grube, 1856 : 44.

DIAGNOSIS. — Body short, subrectangular, 26 segments. Integument tuberculate and/or papillate. Elytra 12 pairs on segments 2, 4, 5, 7, and on alternate segments to 23. Elytra firmly attached to indistinct elytophores. First three pairs of

elytra larger, remaining ones very small to moderately so. Margins and surface of elytra with short papillae and spiny microtubercles. Dorsal cirrophores small. Prostomium bilobed, with two pairs of eyes, two palps, three antennae. Median antenna on large ceratophore inserted in anterior notch, lateral antennae inserted terminally on anterior extensions of prostomium. Tentacular (first) segment not visible dorsally, with tent-

aculophores lateral to prostomium, with setae, with two pairs of tentacular cirri and bulbous facial tubercle. Segment two with buccal cirri longer than following ventral cirri, without nuchal fold. Pharynx with 11 pairs of soft papillae and two pairs of jaws.

Parapodia subbiramous; notopodia small on anterodorsal faces of stout neuropodia; neuropodia truncate and papillate distally. Ventral cirri short, subulate. Nephridial papillae short, from segments 6, 7, or 8. Notosetae few or absent, slender, with fine spines. Neurosetae stout, with falcate tips and 1 or 2 stout teeth. Pygidium with pair of anal cirri.

REMARKS. — The diagnosis is largely taken from the revision by PETTIBONE (1975). There are currently three species in the genus.

Hermenia acantholepis (Grube, 1876)

Fig. 19A-G

Polynoe acantholepis Grube, 1876 : 61.

Polynoe (Lepidonotus) acantholepis - GRUBE, 1878 : 24, pl. 2, fig. 1.

Lepidonotus acantholepis - MICHAELSEN, 1892 : 95. — HORST 1917 : 67, pl. 15, figs 3-4.

Hermenia acantholepis - SEIDLER, 1923 : 262 ; 1924 : 94. — MONRO, 1924 : 39, figs 2-3. — PRUVOT, 1930 : 11, pl. 1, figs 27-32. — FAUVEL, 1947 : 16, 17, fig. 12a-d. — PETTIBONE, 1975 : 239-241, figs 3-4.

MATERIAL EXAMINED. — **Chesterfield Islands** : stn DW 82, 62 m, coral in shallow water (NTM W5481). — Stn DW 94, 36 m, coral rubble, coral sand, *Halimeda*, (NTM W5482). — Stn DW 96, 41 m, coral rubble, coral sand, *Halimeda* (NTM W5483). — Stn DW 99, 52 m, coral rubble, coral sand, *Halimeda*, (NTM W5484). — Stn DW 110, 40 m, coral rubble and sand from lagoon floor (NTM W5485). — Stn DW 118, 52 m, coral rubble and sand from lagoon floor (NTM W5486). — Stn DW 133, 50 m, coral rubble and coral sand from lagoon floor (NTM W5487). — Stn DW 144, 50 m, coral rubble and sand from lagoon floor (NTM W5488). — Stn RH 88-56, 55 m, coral rubble from lagoon (NTM W5472, NTM W5473). — Stn RH 88-57, 60 m, coral rubble and coarse sand from lagoon (NTM W5474). — Stn RH 88-59, 50 m, coral rubble and coarse sand from lagoon (MNHN UC 168). — Stn RH 88-61, 30-52 m, coral rubble blocks (NTM W5470, NTM W5471). — Stn RH 88-62, 16-26 m, coral in shallow water (NTM W5480, MNHN UC164). — Stn RH 88-65, 32-60 m, coral, coral rubble and coral sand (NTM W5461-5463, MNHN UC 167). — Stn RH 88-66, 40-74 m, coral rubble and sand from lagoon floor (NTM W5464). — Stn RH 88-71, 25-95 m, coral rubble from lagoon floor (NTM W5465

- 5467, MNHN UC166); — Stn RH 88-72 28-52 m, coral rubble from lagoon floor (NTM W5468, NTM W5469, MNHN UC165).

Fairway Reefs : stn RH 88-40, 58 m, coral rubble and coarse sand (NTM W5476). — Stn RH 88-41, 62 m, coral rubble and coarse shellwith sand (NTM W5477). — Stn RH 88-42, 58 m, coral rubble in sand (NTM W5478). — Stn RH 88-45, 63 m, coral rubble (NTM W5479). — Stn RH 88-52, 69 m, coral rubble and sand (NTM W5475).

DESCRIPTION. — Body robust, subrectangular, ventrally flattened, dorsally arched. Parapodial (Fig. 19B), dorsal and ventral surfaces papillate. Length 8-22 mm, width including parapodia 2.5-6 mm, 26 segments. Dorsal and ventral surfaces of body without pigment. Distal part of prostomium, ceratophores and bases of styles lightly to heavily pigmented reddish-brown; styles of antennae, tentacular and dorsal cirri with small reddish-brown band below subterminal swelling. Palps with reddish-brown longitudinal bands.

Elytra 12 pairs on segments 2, 4, 5, 7, alternate segments to 21, and 23. First 3 pairs of elytra larger, overlapping each other medially and posteriorly, covering prostomium. Subsequent pairs of elytra much smaller, not overlapping, exposing dorsum. Last 2 pairs of elytra larger, covering dorsum medially. Margins and surface of elytra with short cylindrical papillae and globular to oval spinous microtubercles of varying size (Fig. 19C, D, E). Most microtubercles on elytra usually reddish-brown, others colourless. Surface of elytra often covered with debris - producing whitish appearance.

Dorsal cirri with cirrophores small, inconspicuous with short papillae; styles very slender, smooth, tapering to subterminal swelling and filiform tip (Fig. 19B).

Prostomium bilobed, longer than wide, without cephalic peaks (Fig. 19A). Two pairs of eyes; anterior pair larger, circular, lying dorsolaterally at widest part of prostomium; posterior pair lying near rear edge of prostomium, slightly closer to midline. Prostomium often slightly retracted under second segment, hiding second pair of eyes. Palps, short, stout with abruptly tapered tips; each palp with 6 longitudinal rows of short, stout papillae (Fig. 19A). Median antenna with large, truncate, ceratophore inserted in anterior notch; style long, slender, smooth, tapering to subterminal swelling and

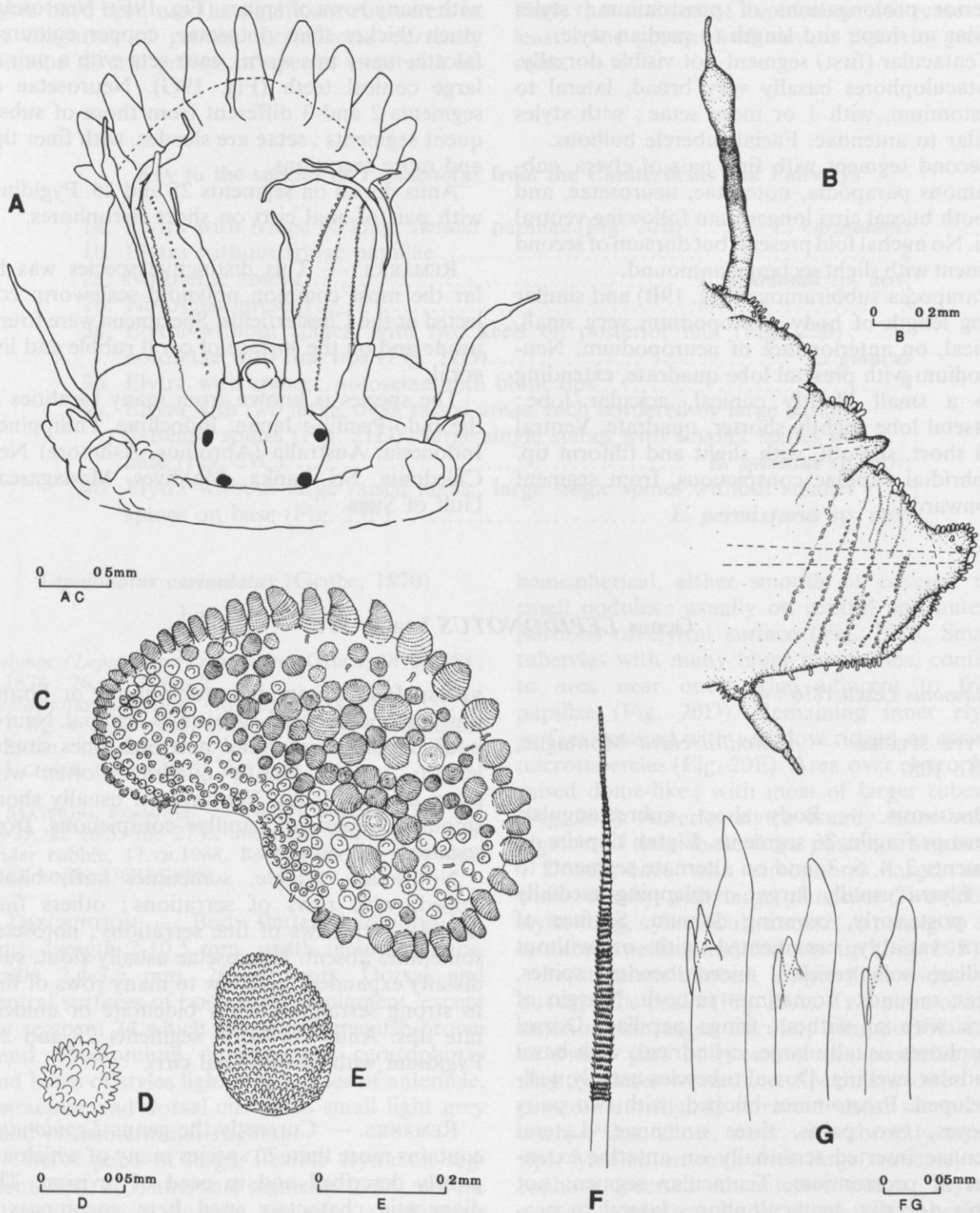


FIG. 19. — *Hermenia acantholepis* Grube, 1876 (NTM W5470) : A, anterior end, dorsal view ; B, cirrigerous parapodium from segment 14, anterior view ; C, elytron from middle segment ; D, smaller tubercles on elytron from middle segment ; E, larger tubercles on elytron from middle segment ; F, notoseta from segment 14 ; G, neurosetae from segment 14.

filiform tip. Lateral antennae attached distally to anterior prolongations of prostomium; styles similar in shape and length to median style.

Tentacular (first) segment not visible dorsally. Tentaculophores basally very broad, lateral to prostomium, with 1 or more setae; with styles similar to antennae. Facial tubercle bulbous.

Second segment with first pair of elytra, sub-biramous parapodia, notosetae, neurosetae, and smooth buccal cirri longer than following ventral cirri. No nuchal fold present, but dorsum of second segment with slight rectangular mound.

Parapodia subbiramous (Fig. 19B) and similar along length of body. Notopodium very small, conical, on anterior face of neuropodium. Neuropodium with presetal lobe quadrate, extending into a small bluntly conical, acicular lobe; postsetal lobe slightly shorter, quadrate. Ventral cirri short, smooth, with slight and filiform tip. Nephridial papillae conspicuous, from segment 8, onwards.

Notosetae few, long, thin, fine-tipped flexible, with many rows of spines (Fig. 19F). Neurosetae much thicker than notosetae, copper coloured, falcate, many tips worn; each seta with a pair of large conical teeth (Fig. 19G). Neurosetae of segments 2 and 3 different from those of subsequent segments; setae are slender, with finer tips and more serrations.

Anus dorsal on segments 25 and 26. Pygidium with pair of anal cirri on short cirrophores.

REMARKS. — This distinctive species was by far the most common polynoid scaleworm collected at the Chesterfields. Specimens were found inside and on the surface of coral rubble and live coral.

The species is known from many localities in the Indo-Pacific: Japan, Indochina, Philippines, Indonesia, Australia (Abrolhos, Ashmore) New Caledonia, Sri Lanka, Maldives, Madagascar, Gulf of Suez.

Genus *LEPIDONOTUS* Leach, 1816

Lepidonotus Leach 1816 : 451.

TYPE SPECIES. — *Aphrodita clava* Montague, 1808 : 108.

DIAGNOSIS. — Body short, subrectangular, robust or fragile, 26 segments. Elytra 12 pairs on segments 2, 4, 5, 7, and on alternate segments to 23. Elytra usually large, overlapping medially and posteriorly, covering dorsum. Surface of elytra variably ornamented with or without papillae, soft vesicles, microtubercles, spines, ridges, mounds; sometimes smooth. Margin of elytra with or without fringe papillae. Dorsal cirrophores usually large, cylindrical, with basal glandular swelling. Dorsal tubercles usually well-developed. Prostomium bilobed, with two pairs of eyes, two palps, three antennae. Lateral antennae inserted terminally on anterior extensions of prostomium. Tentacular segment not visible dorsally, tentaculophores lateral to prostomium, with or without setae, with two pairs of tentacular cirri; facial tubercle usually well-developed. Segment two with buccal cirri longer than following ventral cirri; with or without

nuchal fold. Parapodia subbiramous or biramous. Notopodia small, sometimes vestigial. Neuropodia large, presetal and postsetal lobes similar lengths, usually bluntly quadrate; often with short acicular lobes. Ventral cirri usually short, smooth. Nephridial papillae conspicuous, from segments 6-8 onwards.

Notosetae variable, sometimes stiff, blunt-tipped, with rows of serrations; others fine, flexible, with rows of fine serrations; notosetae sometimes absent. Neurosetae usually stout, subdistally expanded, with few to many rows of fine to strong serrations below bidentate or unidentate tips. Anus dorsal on segments 25 and 26. Pygidium with pair of anal cirri.

REMARKS. — Currently the genus *Lepidonotus* contains more than 70 species many of which are poorly described and in need of revision. The diagnostic characters used here encompass a range of variation that elsewhere has been used to distinguish genera. Characters such as the presence or absence of setae on the tentaculophores, the presence or absence of notosetae and

the presence or absence of ornamentation on the elytra have been used as significant characters in the diagnosis of genera. *Lepidonotus* currently contains several groups of species each with its

own set of the abovementioned characters. It is likely that revision of *Lepidonotus* will remove at least some groups and elevate them to generic rank.

Key to the species of *Lepidonotus* from the Chesterfields and Fairways

- 1a. Elytra with fringe of long, slender papillae.(Fig. 20B)..... *L. carinulatus*
 1b. Elytra without fringe papillae 2
 2a. Notosetae absent..... *L. scanlandi* sp. nov.
 2b. Notosetae present 3
 3a. Elytra without spines, with two keels on posterior half (Fig. 22B);
 notosetae with fine tips (Fig. 22D)..... *L. glaucus*
 3b. Elytra with spines; notosetae with blunt tips 4
 4a. Elytra with two large, oval, raised areas, each bordered by large basally
 flattened spines (Fig. 21D); large single spines with smaller spines on
 base (Fig. 21C)..... *L. spinosus* sp. nov.
 4b. Elytra without large raised areas; large single spines without smaller
 spines on base (Fig. 23F)..... *L. permixturus* sp. nov.

Lepidonotus carinulatus (Grube, 1870)

Fig. 20A-H

Polynoe (*Lepidonotus*) *carinulatus* Grube, 1870 : 488 ;
 1878 : 26, pl. 3, fig. 2.

Lepidonotus carinulatus - MARENZELLER, 1902 : 571, pl.
 I, fig. 4. — WILLEY, 1905 : 248, 249. — AUGENER,
 1922a : 8, textfig. 3a-b. — SEIDLER, 1924 : 72, 73. —
 UCHIDA, 1980 : 15-20, figs 1-6.

MATERIAL EXAMINED. — **New Caledonia** : stn RH
 88-39, 22°16'S, 166°27'E, intertidal, small shore reef,
 under rubble, 17.vii.1988, R. HANLEY (NTM W5441-
 5443, MNHN UC185-188).

DESCRIPTION. — Body flattened, oblong, robust. Length 7-10.5 mm, width including parapodia 2.4-3.5 mm, 26 segments. Dorsal and ventral surfaces of body without pigment, except for segment 24 which has dorsal greenish-brown band. Prostomium unpigmented, ceratophores and bases of styles light grey; styles of antennae, tentacular and dorsal cirri with small light grey band on subterminal swelling.

Twelve pairs of large, flexible elytra on segments 2, 4, 5, 7, alternate segments to 21, and 23. Elytra covering dorsum entirely, overlapping medially and posteriorly. Elytra with long slender, cylindrical fringe papillae along rear and outer edges, surface covered with weakly chitinised microtubercles (Fig. 20B). Larger tubercles

hemispherical, either smooth or covered with small nodules; usually on central and anterior portions of elytral surface (Fig. 20C). Smaller tubercles with many blunt projections, confined to area near outer edge adjacent to fringe papillae (Fig. 20D). Remaining inner elytral surface covered with very low ridged or carinate microtubercles (Fig. 20E). Area over elytrephore raised dome-like; with most of larger tubercles (Fig. 20B). Anterior elytra usually more heavily pigmented than those from posterior segments.

Dorsal cirri with cirrophores large, much wider basally with large glandular (?) swelling; styles long, cylindrical, smooth, tapering to subterminal swelling and filiform tip (Fig. 20F).

Prostomium bilobed, longer than wide, without cephalic peaks (Fig. 20A). Two pairs of eyes; anterior pair larger, circular, lying dorsolaterally at widest part of prostomium; posterior pair, slightly closer to midline. Specimens often with prostomium slightly retracted under second segment. Palps, short, stout with abruptly tapered tips. Median antenna with large truncate, ceratophore inserted in anterior notch; style of moderate length, cylindrical, smooth, tapering to subterminal swelling and filiform tip. Lateral antennae inserted terminally on anterior prolongations of prostomium; styles similar in shape and length to median style.

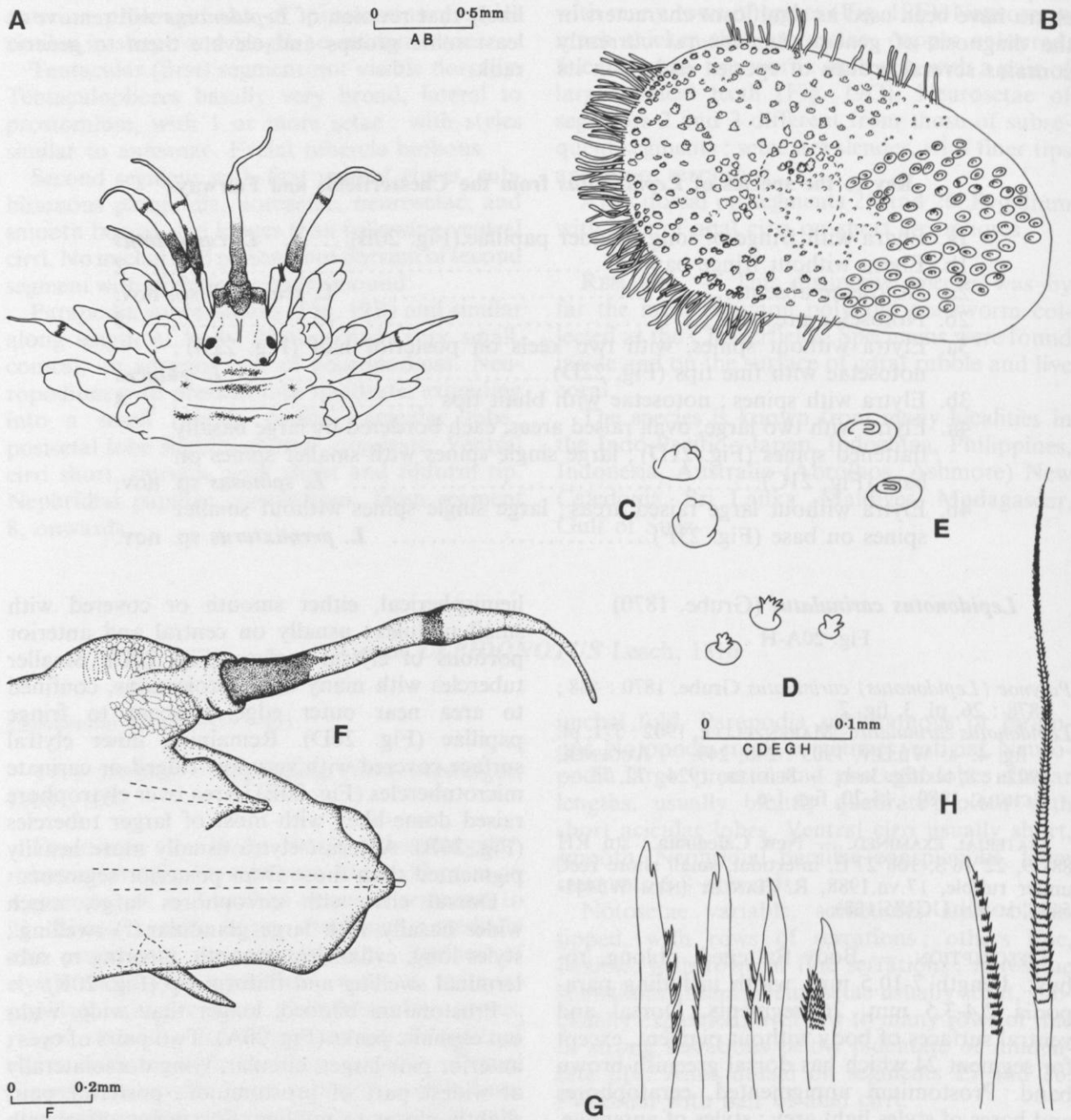


FIG. 20. — *Lepidonotus carinulatus* (Grube, 1870) (NTM W5443) : A, anterior end, dorsal view ; B, elytron from unknown segment ; C-E, tubercles on elytron from unknown segment ; F, cirriferous parapodium from unknown segment, anterior view ; G, neurosetae ; H, notosetae.

Tentacular (first) segment not visible dorsally. Tentaculophores long, slender, lateral to prostomium, with 1 or 2 setae (Fig. 20A), with two pairs of styles similar to antennae. Facial tubercle

well-developed, conspicuous. Second segment with first pair of elytra, biramous parapodia, and smooth ventral buccal cirri longer than following ventral cirri. Anterior dorsal edge of the second

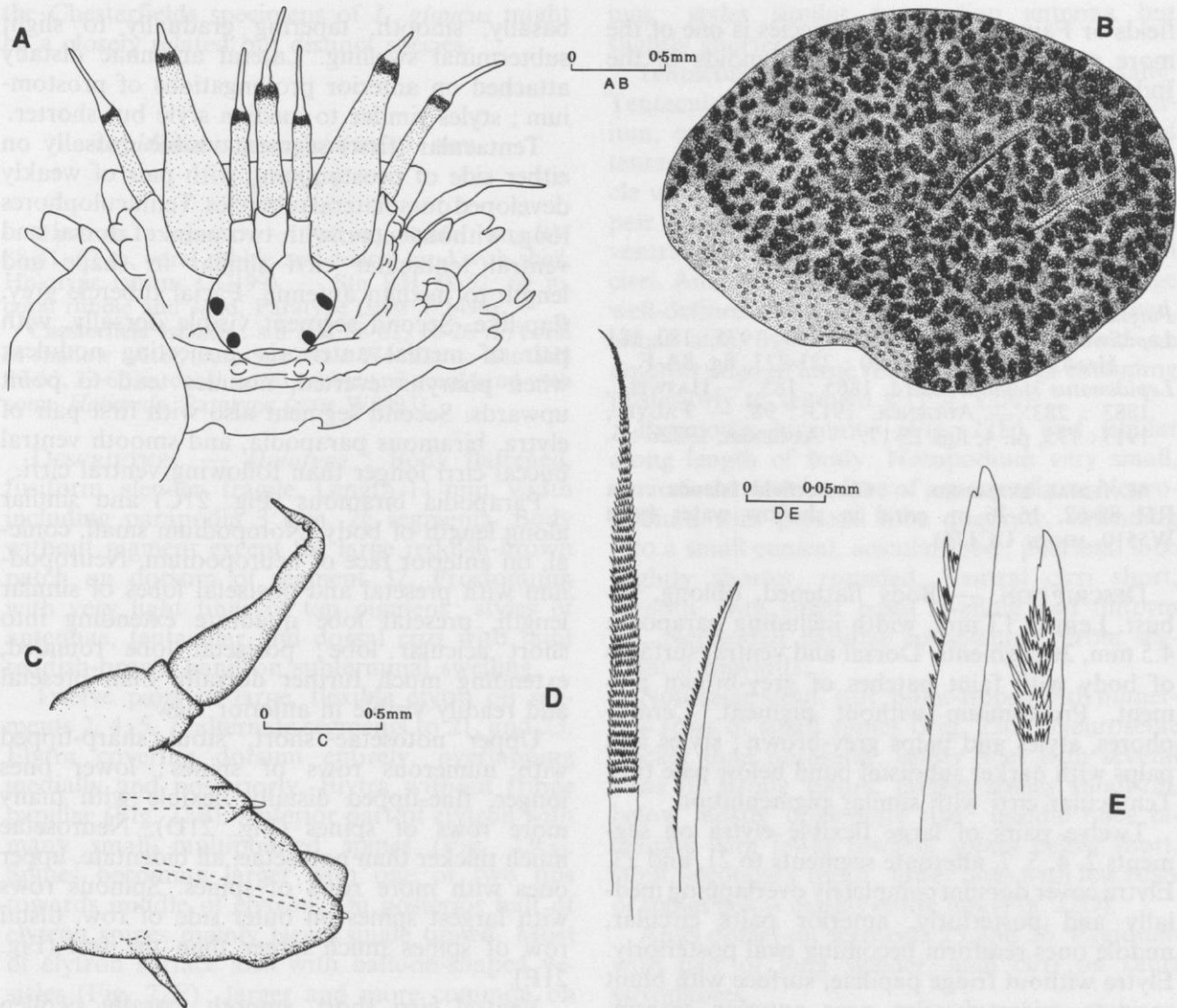


FIG. 21. — *Lepidonotus glaucus* (Peters, 1854) (MNHN UC176) : A, anterior end, dorsal view ; B, elytron from unknown segment ; C, cirriferous parapodium from segment 16, anterior view ; D, notosetae from segment 16 ; E, neurosetae from segment 16.

segment with two small protuberances (Fig. 20A).

Parapodia biramous (Fig. 20F) and similar along length of body. Notopodium small, conical, on anterior face of neuropodium. Neuropodium with presetal lobe quadrate, extending into a small conical, acicular lobe; postsetal lobe shorter, rounded. Ventral cirri short, smooth, slightly swollen basally with filiform tip. Nephridial papillae conspicuous, from segment 8, onwards.

Notosetae of two kinds; upper row of short, stiff, blunt-tipped setae with numerous rows of small spines, and lower group of longer, thinner,

fine-tipped flexible setae with many rows of spines (Fig. 20H). Neurosetae much thicker than notosetae, mainly bidentate, many with worn tips, upper and middle setae with more rows of spines; lower setae with fewer rows of spines below mainly entire tips. Rows of spines with largest, stout spines on outer side of row, and smaller, finer spines medially (Fig. 20G).

Anus dorsal on segments 25 and 26. Pygidium with pair of anal cirri on short cirrophores.

REMARKS. — This species was collected from an intertidal reef at Noumea, New Caledonia. No specimens were collected from the Chester-

fields or Fairway Reefs. The species is one of the more commonly encountered polynoids in the Indo-Pacific region.

Lepidonotus glaucus (Peters, 1854)

Fig. 21A-E

Polynoe glauca Peters, 1854 : 610.

Lepidonotus glaucus - DAY, 1957 : 60 ; 1975 : 180, 181
— HANLEY & BURKE, 1990 : 221-223, fig. 8A-F.

Lepidonotus stellatus Baird, 1865 : 185. — HASWELL,
1883 : 283. — AUGENER, 1913 : 98. — FAUVEL,
1917 : 175, pl. 4, figs 15-17. — AUGENER, 1922b : 6.

MATERIAL EXAMINED. — **Chesterfield Islands** : stn
RH 88-62, 16-26 m, coral in shallow water (NTM
W5510, MNHN UC176).

DESCRIPTION. — Body flattened, oblong, robust. Length 13 mm, width including parapodia 4.5 mm, 26 segments. Dorsal and ventral surfaces of body with faint patches of grey-brown pigment. Prostomium without pigment. Ceratophores, styles and palps grey-brown ; styles and palps with darker subdistal band below pale tips. Tentacular cirri with similar pigmentation.

Twelve pairs of large flexible elytra on segments 2, 4, 5, 7, alternate segments to 21, and 23. Elytra cover dorsum completely overlapping medially and posteriorly, anterior pairs circular, middle ones reniform becoming oval posteriorly. Elytra without fringe papillae, surface with blunt carinate microtubercles near anterior margin. Two divergent, weakly developed keels run from centre towards rear margin. Periphery of elytron variably pigmented light grey, darkly pigmented cells in clusters among lighter cells ; centrally, dark cells predominate (Fig. 21B).

Dorsal cirri with cirrophores large, dorsally flattened, much wider basally ; styles short, dorsally flattened (oval in section) tapering gradually to subterminal swelling and filiform tip (Fig. 21C).

Prostomium hexagonal, bilobed, wider than long, without cephalic peaks (Fig. 21A). Two pairs of eyes ; anterior pair larger, circular, lying dorsally at widest part of prostomium ; posterior pair lying dorsally near rear corners of prostomium. Palps, short, stout with abruptly tapered tips. Median antenna with large cylindrical ceratophore inserted in anterior notch ; style thick

basally, smooth, tapering gradually to slight subterminal swelling. Lateral antennae distally attached on anterior prolongations of prostomium ; styles similar to median style but shorter.

Tentacular (first) segment visible dorsally on either side of prostomium ; with pair of weakly developed dorsolateral tubercles. Tentaculophores long, without setae, with two pairs of dorsal and ventral tentacular cirri similar in shape and length to median antenna. Facial tubercle grey, flap-like. Second segment visible dorsally, with pair of medial anteriorly projecting nodules ; when pharynx everted, nodules tend to point upwards. Second segment also with first pair of elytra, biramous parapodia, and smooth ventral buccal cirri longer than following ventral cirri.

Parapodia biramous (Fig. 21C) and similar along length of body. Notopodium small, conical, on anterior face of neuropodium. Neuropodium with presetal and postsetal lobes of similar length, presetal lobe quadrate extending into short acicular lobe ; postsetal lobe rounded, extending much further dorsally than presetal and readily visible in anterior view.

Upper notosetae short, stout sharp-tipped with numerous rows of spines ; lower ones longer, fine-tipped distally flexible with many more rows of spines (Fig. 21D). Neurosetae much thicker than notosetae, all bidentate, upper ones with more rows of spines. Spinous rows with largest spines on outer side of row, distal row of spines much larger than the rest (Fig. 21E).

Ventral cirri short, smooth, basally swollen and distally tapering. Nephridial papillae conspicuous, from segment 8 onwards.

Anus dorsal on segments 25 and 26. Pygidium with two anal cirri on prominent cirrophores.

REMARKS. — HANLEY and BURKE (1990) describe a number of specimens of this species from Western Australia. The material examined here differs slightly from the Western Australian material in that they lack setae on the tentaculophores, are lighter coloured, and lack the few small microtubercles on their elytra. Apart from these differences the Chesterfields specimens show good general agreement with other descriptions of *L. glaucus*. Like so many other species of polynoid scaleworms, the extent and nature of regional variation in this widespread species is unknown. The possibility therefore exists that

the Chesterfields specimens of *L. glaucus* might be a closely related but distinct species.

Lepidonotus permixturus sp. nov.

Fig. 22A-E

MATERIAL EXAMINED. — **Fairway Reefs** : stn RH 88-41, 62 m, coral rubble and coarse sand with shell, Holotype (MNHN UC199). — Stn RH 88-52, 69 m, coral rubble and sand, Paratype (NTM W5494).

Chesterfield Islands : stn RH 88-62, 16-26 m, coral in shallow water, Paratype (NTM W5492). — Stn RH 88-65, 32-60 m, coral, coral rubble and coral sand with some *Halimeda*, Paratype (NTM W5493).

DESCRIPTION. — *Holotype* : Body flattened, fusiform, slender, fragile. Length 11 mm, width including parapodia 3 mm, 26 segments. Body without pigment except for large reddish-brown patch on dorsum of segment 32. Prostomium with very light tinge of tan pigment; styles of antennae, tentacular and dorsal cirri with faint reddish-brown band on subterminal swelling.

Twelve pairs of large, flexible elytra on segments 2, 4, 5, 7, alternate segments to 21, and 23. Elytra covering dorsum entirely, overlapping medially and posteriorly. Elytra without fringe papillae (Fig. 22B). Anterior part of elytron with many small multipointed spines (Fig. 22G). Spines becoming larger with one or two tips towards middle of elytron. On posterior half of elytron spines mainly large, single tipped. Most of elytron surface also with balloon-shaped vesicles (Fig. 22F); larger and more common on posterior half of elytron. Elytra almost transparent, unpigmented except for faint reddish-brown tinge.

Dorsal cirri with cirrophores large, slightly swollen basally; styles slender, cylindrical, smooth, tapering to subterminal swelling and filiform tip (Fig. 22E).

Prostomium bilobed, longer than wide, without cephalic peaks (Fig. 22A). Two pairs of reddish-brown eyes; anterior pair larger, circular, lying dorsolaterally on widest part of prostomium; posterior pair closer to midline. Palps stout basally, gently tapering to tips. Median antenna with large cylindrical ceratophore inserted in anterior notch; style long, slender, gently tapering to subterminal swelling and long filiform tip. Lateral antennae attached distally on anterior prolongations of prostom-

ium; styles similar to median antenna but slightly shorter.

Tentacular (first) segment not visible dorsally. Tentaculophores long, slender, lateral to prostomium, each with single seta, with two pairs of tentacular cirri similar to antennae. Facial tubercle weakly developed. Second segment with first pair of elytra, biramous parapodia, and smooth ventral buccal cirri larger than following ventral cirri. Anterior edge of second segment with large well-defined semicircular nuchal fold flanked, either side, by smaller lobe. Nuchal fold on anterior edge of large rectangular ridge extending posteriorly to segment 4 (Fig. 22A).

Parapodia biramous (Fig. 22E) and similar along length of body. Notopodium very small, conical, on anterior face of neuropodium. Neuro-podium with presetal lobe quadrate, extending into a small conical, acicular lobe; postsetal lobe slightly shorter, rounded. Ventral cirri short, smooth, with slight basal swelling and filiform tip. Nephridial papillae conspicuous, from segment 8 onwards.

Notosetae stout, stiff, blunt-tipped with numerous rows of small spines (Fig. 22C). Neurosetae thicker than notosetae, upper ones with several rows of strong spines, largest spines subdistal, below mostly unidentate tips; middle ones bidentate with fewer rows of spines below short, stout, secondary tooth; lower ones with few rows of spines below mainly entire tips (Fig. 22D).

Anus dorsal on segments 25 and 26. Pygidium with pair of long slender, anal cirri on short cirrophores.

Paratypes : All complete with 26 segments, slightly shorter than holotype, two 9 mm in length, the third 10mm. Paratypes resemble holotype closely in all respects. On one paratype elytra differ slightly in having small patch of reddish-brown pigment over elytriphore scar.

REMARKS. — There are more than 70 species of *Lepidonotus* described in the literature. Unfortunately there are as yet no keys to all of the species and many species have never been adequately described. Reference to the literature, particularly SEIDLER (1924), suggests the material described here represents an undescribed species. There are no unusual features of the species which allow it to be distinguished immediately from all others. Rather it is the unique combination of characters such as two mid-dorsal

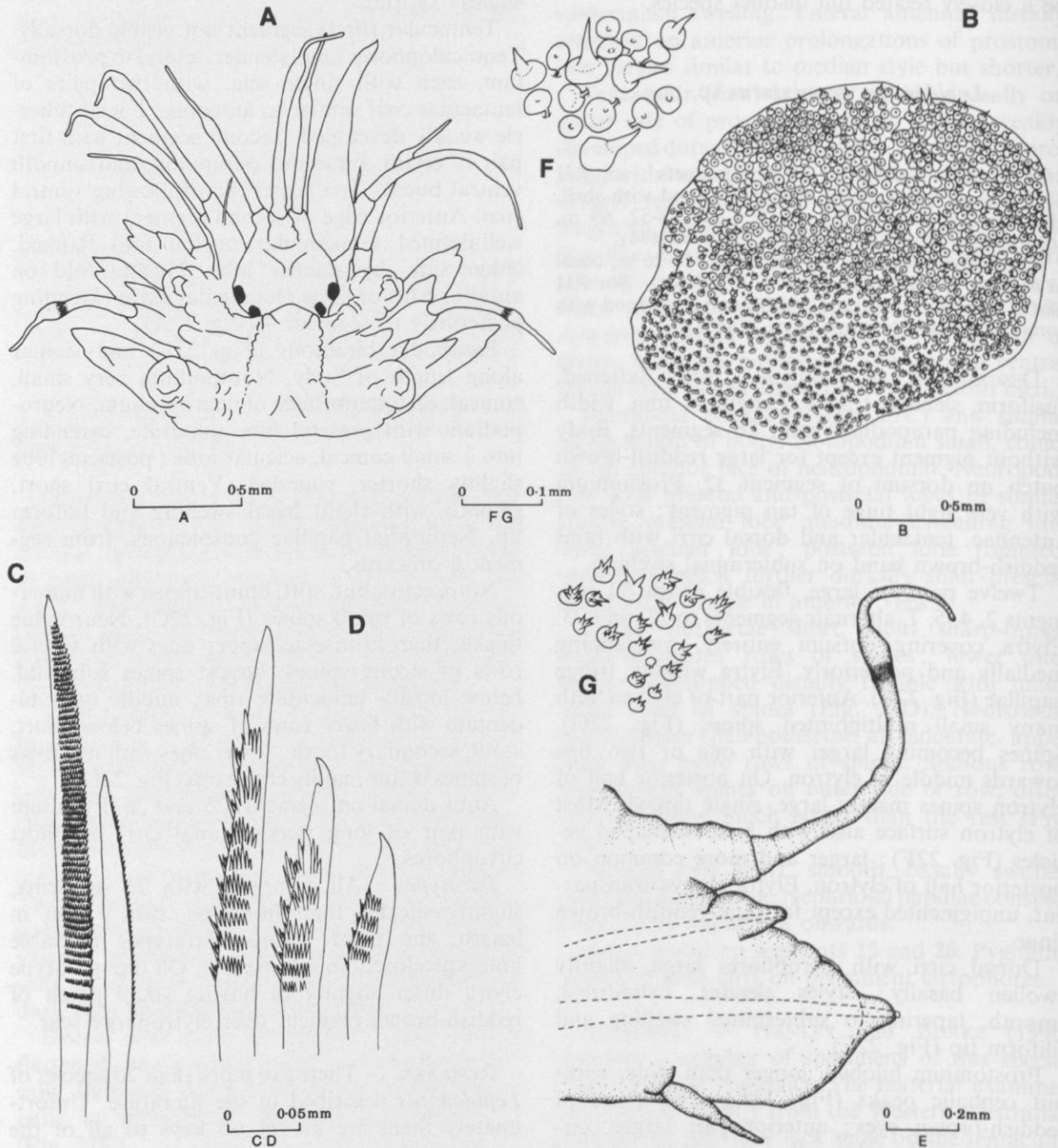


FIG. 22. — *Lepidonotus permixturus* sp. nov., holotype (MNHN UC199): A, anterior end, dorsal view; B, elytron from unknown segment; C, notosetae from segment 10; D, neurosetae from segment 10; E, cirriferous parapodium from segment 10, anterior view; F-G, elytral papillae.

nodules on segment 2, bidentate neurosetae, elytra without fringes, and the presence of spines, spinous microtubercles, and spherical long stalked vesicles on the elytra.

ETYMOLOGY. — The species name *permixturus* refers to the combination of taxonomic characters used to define the new species.

Lepidonotus scanlandi sp. nov.

Fig. 23A-D

MATERIAL EXAMINED. — **Chesterfield Islands** : stn RH 88-61, 30-52 m, blocks of coral rubble with algae on one side, Holotype (MNHN UC177).

DESCRIPTION. — *Holotype* : Body flattened, fusiform, robust. Length 12.3 mm, width including parapodia 3.75 mm, 26 segments. Dorsum without pigment, ventral surface with distinctive patches of black pigment on each segment. Prostomium and ceratophores of antennae without pigment; styles distally with broad black band on subterminal swellings. Palps and ventral cirri black except for tips. Tentaculophores without pigment; tentacular cirri and dorsal cirri with black bands basally and on subterminal swellings. Facial tubercle and most of buccal region black.

Twelve pairs of large, flexible elytra on segments 2, 4, 5, 7, alternate segments to 21, and 23. Elytra overlapping posteriorly, but not medially, leaving dorsum medially exposed. Elytra without fringe papillae, surface without microtubercles, micropapillae or spines. Area over elytriphore raised into large soft mound, smaller mound near rear edge of elytron. Larger mound with patch of yellow pigment. Border of elytron and area between mounds pigmented black. In life, pigmentation of elytron reminiscent of two eggs in frying pan (Fig. 23D).

Dorsal cirri with cirrophores short, broad; styles slender, cylindrical, smooth, tapering to subterminal swelling and filiform tip (Fig. 23C). Prostomium bilobed, longer than wide, without cephalic peaks (Fig. 23A). Two pairs of eyes; anterior pair larger, circular, lying dorsolaterally on widest part of prostomium; posterior pair dorsal slightly closer to midline. Palps, short, stout with abruptly tapered tips. Median antenna with large cylindrical ceratophore inserted in

anterior notch; style smooth, cylindrical basally, gently tapering to subterminal swelling and filiform tip. Lateral antennae distally attached on anterior prolongations of prostomium; styles long, slender, smooth, tapering gently to slight subterminal swelling and filiform tip.

Tentacular (first) segment not visible dorsally. Tentaculophores lateral to prostomium, without setae (Fig. 23A), styles similar to antennae. Facial tubercle weakly developed.

Second segment with first pair of elytra, subbiramous parapodia, neurosetae, and smooth buccal cirri only slightly longer than following ventral cirri. Anterior edge of second segment with weakly developed, rectangular, nuchal lobe (Fig. 23A).

Parapodia subbiramous (Fig. 23C) and similar along length of body. Notopodium very small, on anterior face of neuropodium, thin basally, becoming thicker distally. Neuropodium with presetal lobe quadrate, with small notch distally, postsetal lobe slightly shorter, rounded. Ventral cirri short, smooth. Nephridial papillae conspicuous, from segment 8 onwards.

Notosetae absent. Neurosetae few, stout, with slight subdistal expansion and few rows of fine spines below unidentate tips (Fig. 23B).

Anus dorsal on segments 25 and 26. Pygidium with pair of anal cirri on short cirrophores.

REMARKS. — This species is very similar in appearance to the endemic Australian species *L. melanogrammus* Haswell, 1883. Both species have smooth, fringeless elytra with crescentic black pigmentation, and are heavily pigmented with bands of black pigment on the venter, palps, antennae and cirri. The two species can be separated on a number of features.

The elytra of the new species have distinct central mounds which bear a spot of yellow pigment, whereas those of *L. melanogrammus* are flat and without such pigment. The neurosetae of the new species are all unidentate with very few rows of spines, not strongly bidentate with well-formed rows of spines.

Most specimens of *L. melanogrammus* have a few small notosetae from distally thin notopodia, while *L. scanlandi* completely lacks notosetae and has distally expanded notopodia.

ETYMOLOGY. — The species is named after the late Dr Tom SCANLAND in recognition of his

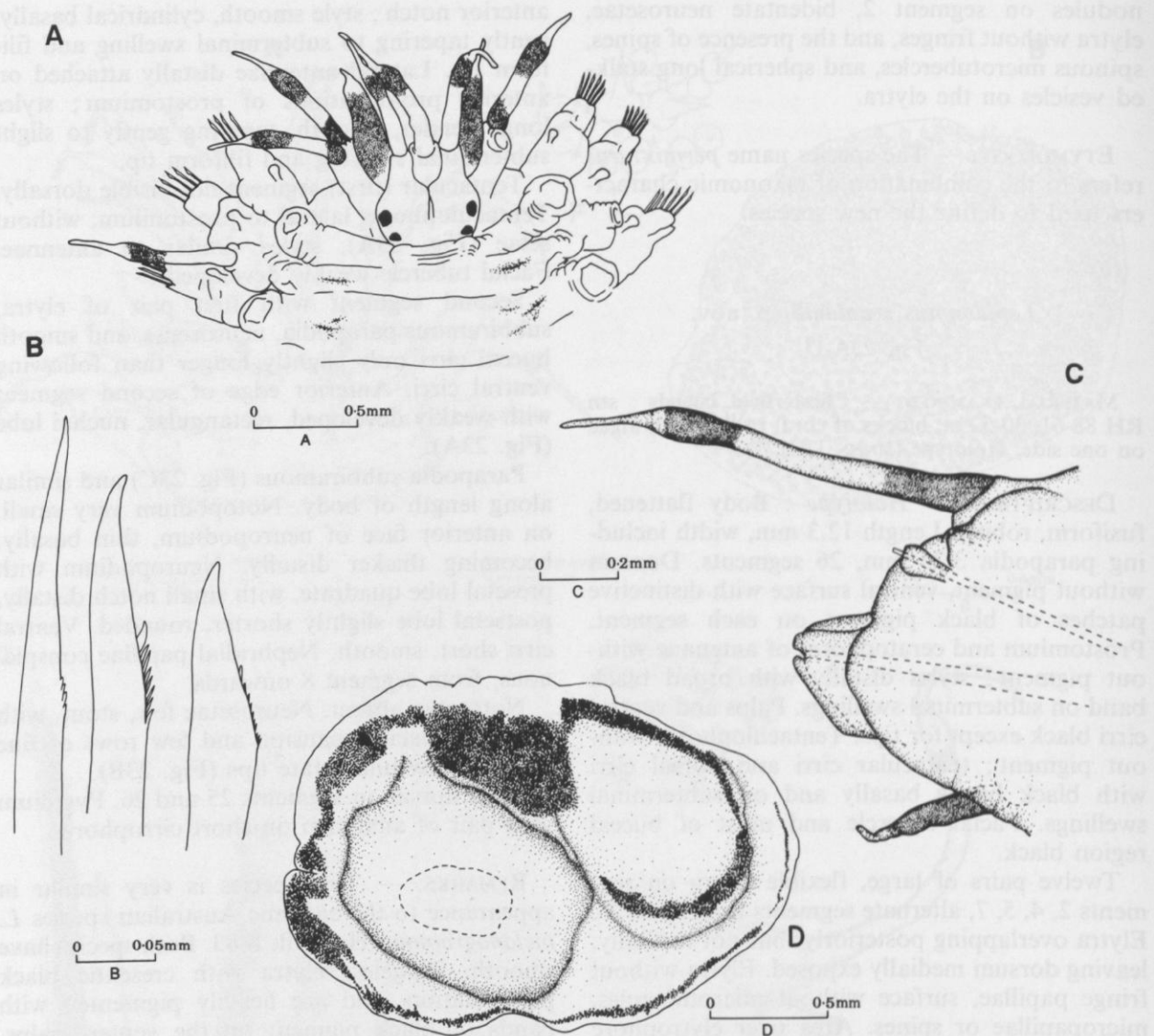


FIG. 23. — *Lepidonotus scanlandi* sp. nov., holotype (MNHN UC177): **A**, anterior end, dorsal view; **B**, neurosetae from segment 12; **C**, cirriferous parapodium from segment 12, anterior view, showing position of vestigial notopodium; **D**, clytron from unknown segment.

contributions to marine biology in the Pacific region.

Lepidonotus spinosus sp. nov.

Fig. 24A-F

Lepidonotus cristatus var. *echinata* Potts, 1910 : 334, pl. 18, figs 4-5.

Lepidonotus oculatus var. *echinata* - SEIDLER 1924 : 47.

MATERIAL EXAMINED. — **Chesterfield Islands** : stn DW 104, 49 m, Holotype (NTM W5448). — Stn RH 88-71, 25-95 m, Paratype (NTM W5447).

DESCRIPTION. — *Holotype* : Body flattened, fusiform, robust. Length 12 mm, width including parapodia 4.5 mm, with 26 segments. Dorsum with several faint reddish-brown bands on anterior and posterior segments, and dark patch of red on segment 32. Ventral surface without pigment. Prostomium unpigmented, ceratophores

and bases of styles light reddish-brown; styles of antennae, tentacular and dorsal cirri with small reddish-brown band on subterminal swelling.

Twelve pairs of large, flexible elytra on segments 2, 4, 5, 7, alternate segments to 21, and 23. Elytra covering dorsum entirely, overlapping medially and posteriorly. Elytra without fringe papillae. Posterior half of each elytron with two large, oval, raised areas, each bordered by large, reddish-brown, basally flattened spines (Fig. 24C, D). Anterior part of elytron with many small multipointed spines, becoming larger towards elytral centre. On posterior half of elytron similar multipointed spines occur interspersed with many very large, sharply pointed spines; latter with several smaller basal spines. Elytral surface also with spherical vesicles on long stalks; most abundant on posterior half. Elytra with whitish patches due to adhering coral debris; patches of pink-red pigment also visible, particularly on anterior pairs.

Dorsal cirri with cirrophores large, slightly swollen basally; styles slender, cylindrical, smooth, tapering to subterminal swelling and filiform tip (Fig. 24B). Prostomium bilobed, longer than wide, without cephalic peaks (Fig. 24A). Two pairs of eyes; anterior pair larger, circular, lying dorsolaterally at widest part of prostomium; posterior pair, slightly closer to midline. Prostomium partially retracted under second segment. Palps, short, stout with abruptly tapered tips. Median antenna with large cylindrical ceratophore inserted in anterior notch; style long, slender, smooth, tapering gently to slight subterminal swelling and filiform tip. Lateral antennae attached distally on anterior prolongations of prostomium; styles similar to median but shorter.

Tentacular (first) segment not visible dorsally. Tentaculophores long, slender, lateral to prostomium, with 1 or 2 setae (Fig. 24A); with two pairs of tentacular cirri similar to antennae. Facial tubercle weakly developed.

Second segment with first pair of elytra, biramous parapodia, and smooth ventral buccal cirri larger than following ventral cirri. Anterior edge of second segment with large well-defined, rectangular nuchal lobe (Fig. 24A).

Parapodia biramous (Fig. 24B) and similar along length of body. Notopodium very small, conical, on anterior face of neuropodium. Neuro-

podium with presetal lobe quadrate, extending into a small conical, acicular lobe; postsetal lobe slightly shorter, rounded. Ventral cirri short, smooth, slightly swollen basally with filiform tip. Nephridial papillae conspicuous, from segment 8 onwards.

Notosetae stout, stiff, with numerous rows of small spines (Fig. 24F). Neurosetae much thicker than notosetae, upper and middle ones bidentate with several rows of strong spines; the largest spines are subdistal, below short, stout, secondary tooth; lower ones with fewer rows of spines below mainly entire tips (Fig. 24E).

Anus dorsal on segments 25 and 26; a pair of anal cirri on short cirrophores project posteriorly.

Paratype: Length 13 mm, width including parapodia 3.9 mm, with 26 segments. The paratype resembles the holotype closely in all characters of taxonomic importance.

REMARKS. — POTTS (1910) originally described a specimen of this species as *L. cristata* var. *echinata* but there is no doubt that this species is sufficiently distinct from *L. cristatus* to warrant species rank; the characteristics of the elytron pigmentation and ornamentation are very different.

As POTTS (1910) originally described the specimen he examined as a variety and subspecific rank was not assigned prior to 1985, the name '*echinata*' is not available for use as a species name. Therefore we have assigned a new species name with type specimen NTM W5448 and the type locality is the Chesterfield Islands.

HORST (1915, 1917) briefly describes several specimens collected by the Siboga Expedition as *L. cristatus* var. *echinatus*, however we are doubtful of this record as his description does not agree well with the description provided by POTTS, or the material we have examined. Our material agrees very closely with the specimen described by POTTS.

SEIDLER (1924) referred *L. cristatus* Grube, 1878 to *L. oculatus* Baird and therefore POTTS' *L. cristatus* var. *echinata* became *L. oculatus* var. *echinata*. Our examination of material and descriptions of *L. cristatus* and *L. oculatus* demonstrate the two species are quite distinct.

Lepidonotus spinosus has been previously recorded from Mauritius, as *L. cristata echinata* Potts, 1910, in the Indian Ocean. Its presence at

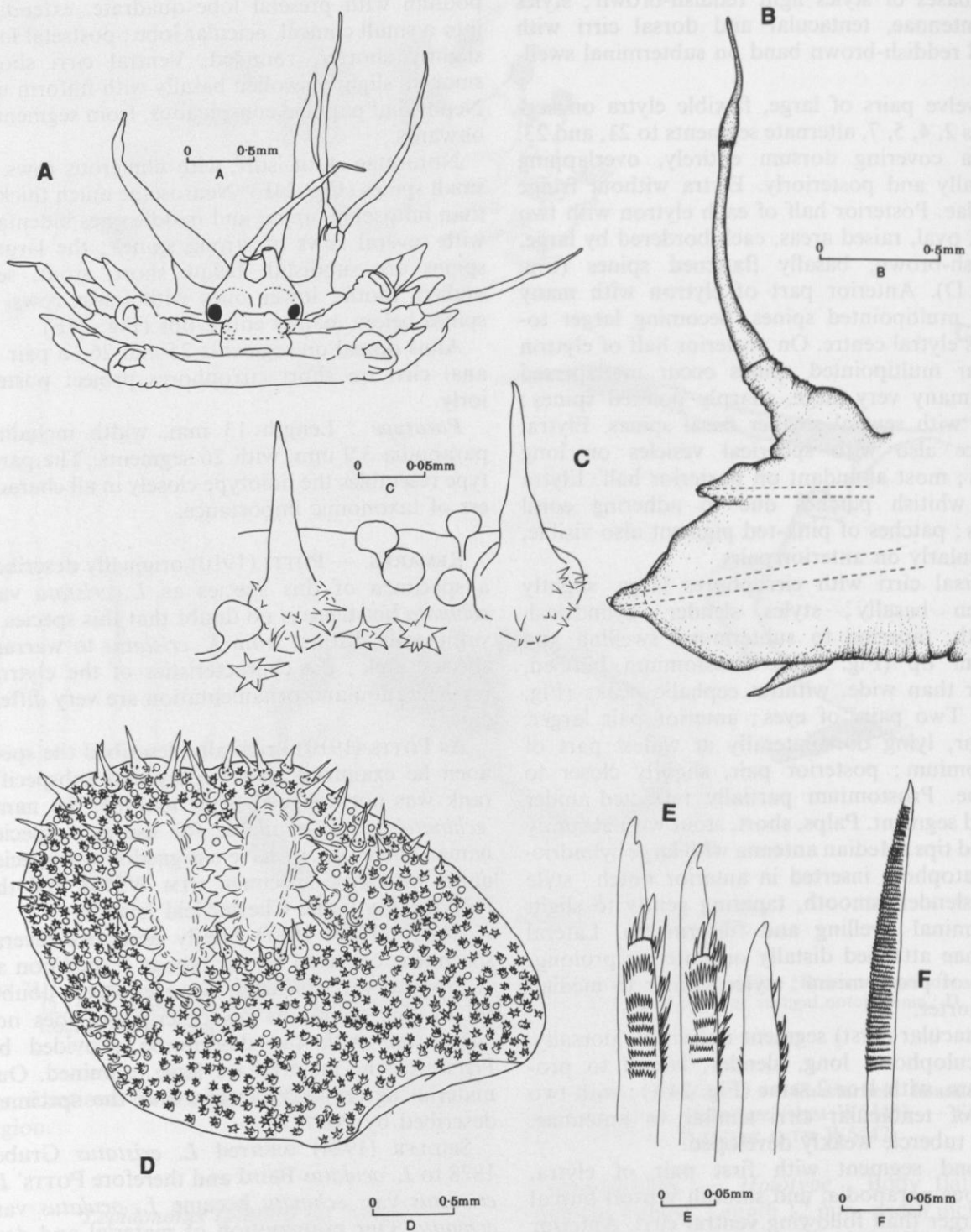


FIG. 24. — *Lepidonotus spinosus* sp. nov., holotype (NTM W5448) : A, anterior end, dorsal view, some appendages missing ; B, cirriferous parapodium from segment 14, anterior view ; C, enlargement of elytron showing tubercles ; D, elytron from unknown segment ; E, neurosetae from segment 14 ; F, notoseta from segment 14.

the Chesterfields in the Pacific suggests the species is rare but widely distributed.

ETYMOLOGY. — The species name *spinosus* refers to the thorny appearance of the elytra.

Genus *THORMORA* Baird, 1865

Thormora Baird, 1865 : 199.

TYPE SPECIES. — *Thormora jukesii* Baird, 1865 : 199.

DIAGNOSIS. — Body oblong, flattened, robust. 26 segments. Elytra, 12 pairs on prominent elytophores on segments 2, 4, 5, 7, alternate segments to 21 and 23. Elytra large, tough, flexible, with microtubercles and micropapillae, with or without fringe of sparse, short papillae. Elytra not overlapping medially, exposed dorsum. Dorsal cirri with large, flattened cirrophores. Prostomium bilobed, wider than long, cephalic peaks absent. Two pairs of eyes on posterior half of prostomium. Two palps, each with or without six longitudinal rows of papillae. Three antennae, median ceratophore inserted in anterior notch, lateral antennae attached terminally to anterior prolongations of prostomium. First or tentacular segment not visible dorsally; tentaculophores lateral to prostomium, with 1-3 fine setae, with small acicular lobe, with two pairs of tentacular cirri. Segment 2 with first pair of elytra, biramous parapodia, and ventral, buccal cirri longer than following ventral cirri. Setae of segment 2 differ from setae on rest of body; notosetae fine with rows of serrations below blunt tips; neurosetae also fine, with similar rows of serrations below fine, capillary tips. Parapodia biramous. Notopodium small, bluntly conical, with acicula. Neuropodium with bluntly rounded presetal and postsetal lobes of similar length, and short, blunt acicular lobe. Ventral cirri short. Notosetae of two kinds: outer palisade of short, stout, curved ones with rows of serrations below blunt tips, and inner bundle of long, fine, smooth setae with lancet shaped tips. Neurosetae stout, distinctly expanded subdistally with several rows of serrations below bi- or unidentate tips. Anus dorsal on last segment. Pygidium small, with pair of anal cirri.

REMARKS. — Members of this genus are very similar to many species of *Lepidonotus* and in large specimens of *Thormora* species most of the characteristic lancet-tipped notosetae may be

missing, often confined to the first few segments (see HANLEY & BURKE, 1990).

Some authors (DAY, 1967, 1975) consider *Thormora* a subgenus of *Lepidonotus*. We prefer to give *Thormora* full generic status as the presence of the distinctive lancet-tipped notosetae is unique to a discreet group of species which share many other character traits. The diagnosis of the genus *Lepidonotus* presented in this paper already encompasses a range of variation in characters which have been used to separate groups of species into genera. Incorporating the *Thormora* species into *Lepidonotus* would broaden that range of variation. We expect that revision of the genus *Lepidonotus* will ultimately lead to the establishment of several new genera, each composed of a suite of species which exhibit one or more unique characters. Such a reclassification is a necessary first step toward compiling an evolutionary rather than phenetic classification of the scaleworms.

Thormora jukesii Baird, 1865

Figs 25A-G, 26A-H

Thormora jukesii Baird, 1865 : 199, 200.

MATERIAL EXAMINED. — **Chesterfield Islands**: stn RH 88-62, 16-26 m, in shallow water near sandy cay (MNHN UC190, MNHN UC191, NTM W5517). — Stn RH 88-71, 25-95 m, coral rubble from lagoon floor (NTM W5516).

DESCRIPTION. — Body flattened, oblong, robust. Length 11-14 mm, width including parapodia 3-4.5 mm, 26 segments. Dorsal surface of prostomium light reddish-brown, heavier pigmentation over lateral and median antennae. Dorsal surface of body largely without pigment except for small reddish-brown patches (grey-green posteriorly) medially on each segment, and on cirrophores of dorsal cirri. Ventral surface of body without pigment except for a small area around the facial tubercle. Anal region darkly pigmented on all specimens.

Twelve pairs of large elytra on segments 2, 4,

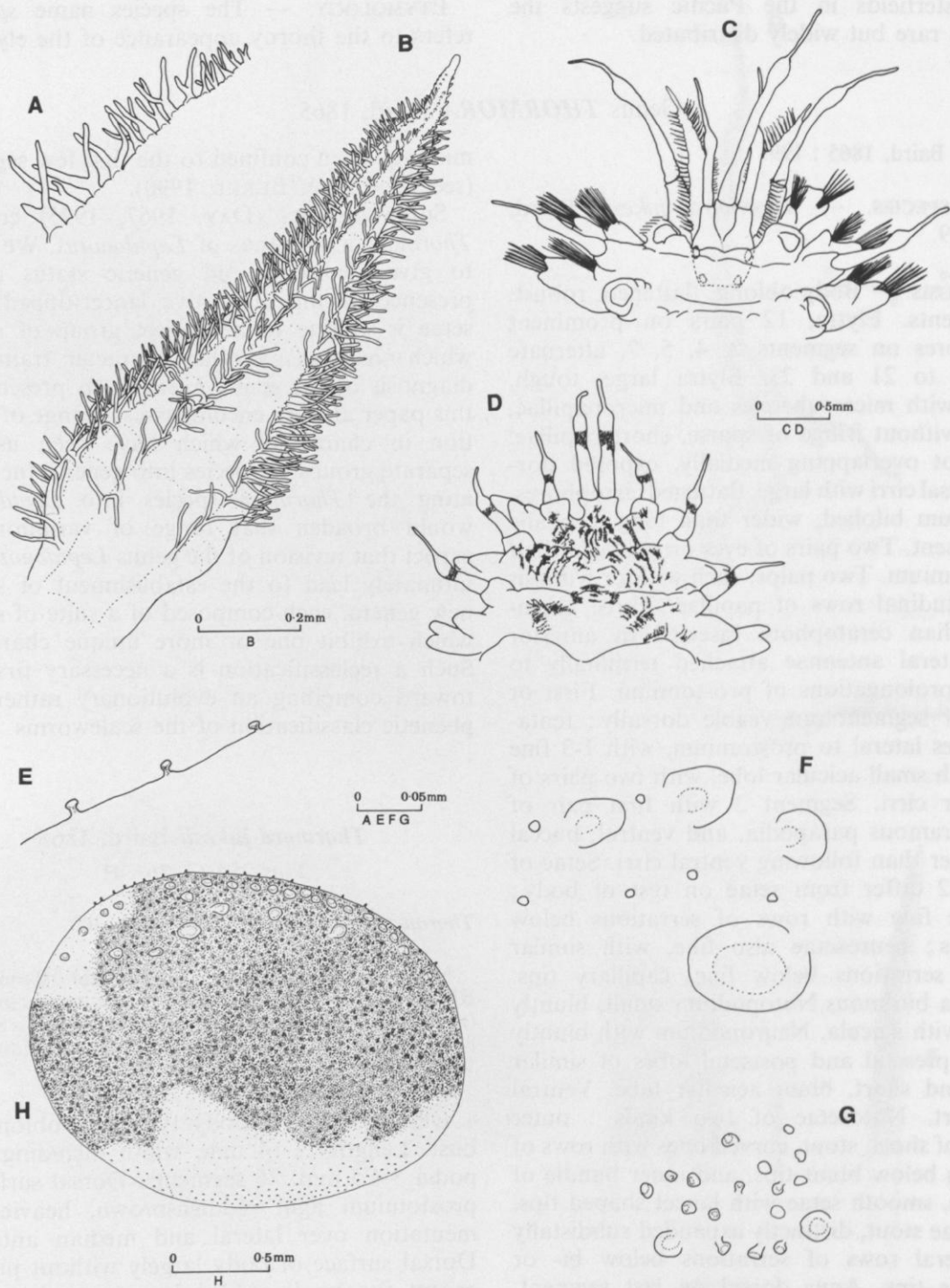


FIG. 25. — *Thormora jukesii* Baird, 1865 (NTM W5516, A-D; NTM W5517, E-H): A, margin of palp; B, palp; C, anterior end, dorsal view; D, posterior end, dorsal view (setae omitted); E, clytral fringe papillae; F-G, tubercles on elytron from segment 11; H, elytron from segment 11.

5, 7, alternate segments to 21, and 23. Elytra overlap posteriorly, but not medially. Elytra with sparse fringe of short marginal papillae (Fig. 25E); surface with thinly scattered, small clavate papillae, denser near outer margin (Fig. 25H, G). Elytron tubercles variable in size, smaller ones peglike, larger ones ovoid, all smooth (Fig. 25F, G). Anterior elytra circular, becoming oval to reniform posteriorly. All elytra with outer edges curled upwards above notosetae. Elytra mainly reddish-brown, with patches of creamy white pigment on outer half, anterior and posterior pairs almost completely cream coloured.

Dorsal cirri with cirrophores large, flattened, much wider basally; styles similar in length and shape to median antenna (Fig. 26E), with broad band of cream pigment basally and thinner band of reddish-brown pigment on subterminal swelling.

Prostomium bilobed, roughly hexagonal, wider than long, without cephalic peaks (Fig. 25C). Two pairs of eyes; anterior pair larger, almost circular, lying dorsolaterally at widest part of prostomium; posterior pair at rear corners of prostomium, closer to midline. Prostomium partially retracted beneath the second segment on all specimens and posterior pair of eyes not visible unless second segment pulled back (Fig. 25C). Two palps, short, stout, reddish-brown with abruptly tapered tips; with six longitudinal rows of long slender, distally bifurcate papillae (Fig. 25A, B). Median antenna with large cylindrical ceratophore inserted in anterior notch; style long, smooth, tapering to subterminal swelling and filiform tip. Lateral antennae inserted terminally on the distal ends of the prostomium (Fig. 25C); styles similar shape to median antenna but shorter.

Tentacular (first) segment only visible either side of prostomium. Tentaculophores of moderate length lateral to prostomium, with 1-3 fine setae; with two pairs of dorsal and ventral tentacular cirri of similar length, shape and

pigmentation to median antenna. Facial tubercle weakly developed. Second segment with first pair of elytra, biramous parapodia, and smooth, ventral buccal cirri longer than following ventral cirri.

Parapodia biramous (Fig. 26A, C, E), and similar along length of body. Notopodium small, conical. Neuropodium with presetal lobe subtriangular, extending into short, distinct acicular lobe; postsetal lobe rounded, similar length to presetal lobe. Ventral cirri short, smooth, basally cylindrical, tapering to subterminal swelling and filiform tip. Nephridial papillae conspicuous, from segment 8, onwards.

Notosetae of two kinds: an outer palisade of short, stout ones, basally expanded with rows of spines below blunt tips (Fig. 26H), and much longer, very fine, smooth, slightly subdistally expanded setae (Fig. 26G). Short serrated notosetae on all segments from segment 2 onwards, although those of segment 2 have fine tips (Fig. 26F). Fine smooth notosetae first appear on segment 3. Neurosetae stouter than notosetae, distinctly expanded subdistally, with several rows of serrations below bluntly unidentate tips (Fig. 26D). Neurosetae on segments 2, 3 and sometimes segment 4 with fine tips (Fig. 26B).

Anus dorsal on segment 26. Anal cirri with medially fused cirrophores; styles resembling dorsal cirri in length, shape and pigmentation (Fig. 25D).

REMARKS. — This species is widely distributed in the Indo-West Pacific.

Previous descriptions of this species have failed to mention the unique and distinctive bifurcated papillae on the palps. The setae of segments 2, 3 and 4 are also shown to be quite different in character when compared with the setae of successive segments. The ovoid microtubercles on the elytra of the Chesterfields specimens are not as well developed as those seen on the elytra of specimens from Western Australia (DAY, 1975).

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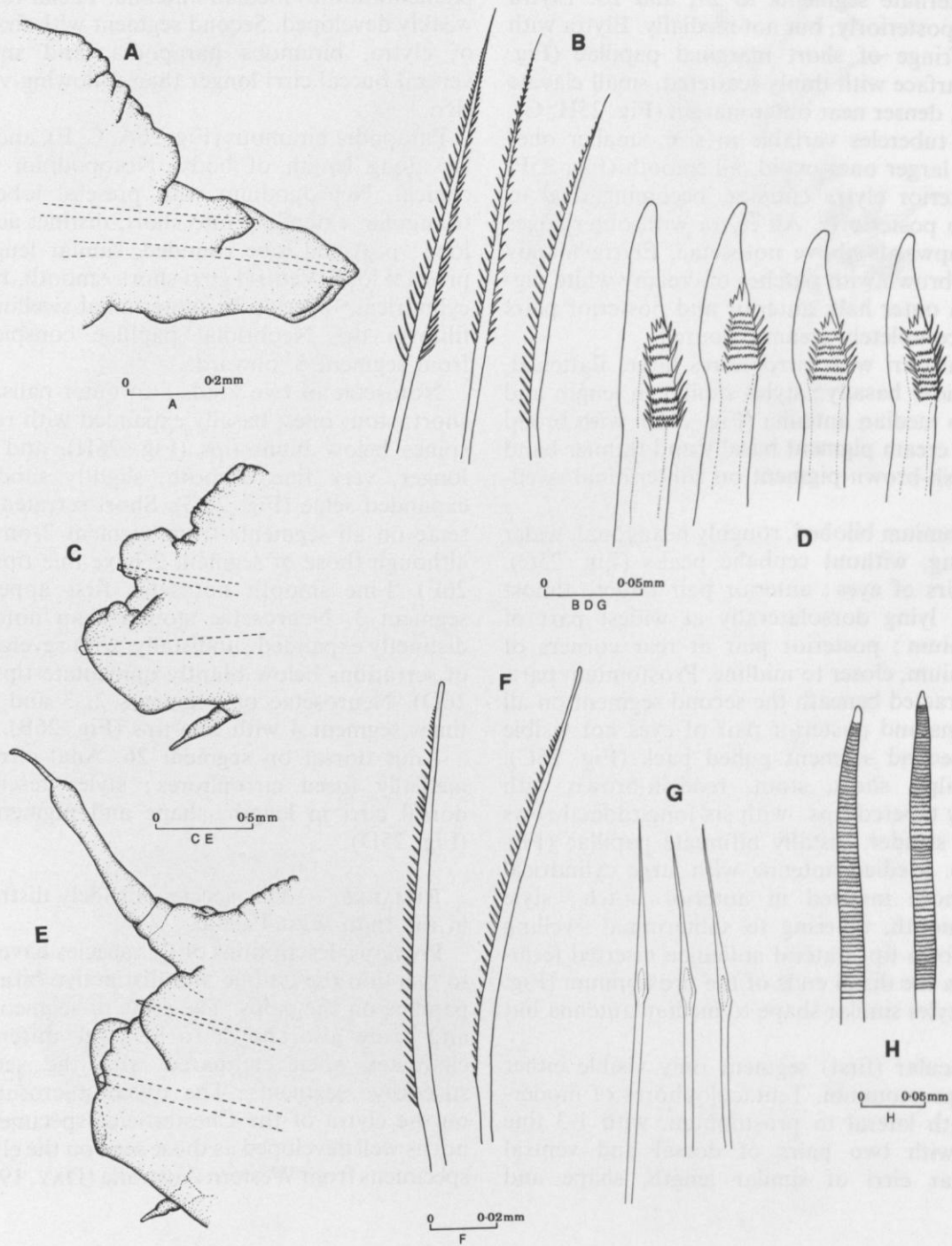


FIG. 26. — *Thormora jukesii* Baird, 1865 (NTM W5516, A,B,F; NTM W5517, C-E,G,H) : A, elytragerous parapodium from segment 2, anterior view; B, neurosetae from segment 2; C, elytragerous parapodium from segment 13, anterior view; D, neurosetae from segment 13; E, cirriferous parapodium from segment 14, anterior view; F, notosetae from segment 2; G, notosetae from segment 13; H, notosetae from segment 14.

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Harmothoe spongicola sp. nov. The manuscript benefitted greatly from the comments of two referees. We are indebted to Marian PETTIBONE for providing us with some of her unpublished work.

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