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NEW ZEALAND
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

BULLETIN 139 (5)

Biological Results of The Chatham Islands 1954 Expedition

PART 5

New Zealand Oceanographic Institute

Memoir No. 13

1961

Photo: E. J. Batham

M.V. *Alert* lying at anchor off The Sisters Islets

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FOREWORD

The Chatham Islands 1954 Expedition was organised and led by Prof G. A. Knox of the Zoology Department of Canterbury University. The expedition was planned to explore the distribution of benthic and pelagic animals between the New Zealand coast and the Chatham Islands over the Chatham Rise, and to investigate the faunal affinities of the Chathams group, which lies in the Sub-tropical Convergence zone.

A substantial grant towards the cost of the expedition was made by the Council for Scientific and Industrial Research on the recommendation of the N.Z. Oceanographic Committee: further financial support was given by Canterbury University, Canterbury Museum, Dominion Museum and Canterbury and Southland Branches of the Royal Society of New Zealand. The expedition was carried out from the M.V. *Alert* under the command of her owner and master, Mr A. J. Black.

The scientific staff was drawn from the following organisations: Canterbury Museum (R. R. Forster); Canterbury University (G. A. Knox, E. W. Dawson, J. R. MacIntyre); Dominion Museum (R. K. Dell, J. M. Moreland); N.Z. Oceanographic Institute (D. M. Garner); Otago University (D. Marshall); Portobello Marine Biological Station (E. J. Batham); Victoria University of Wellington (J. C. Yaldwyn).

Prof. G. A. Knox has been responsible for organisation of the sorting and allocation of material. Type material from the expedition is deposited at Canterbury Museum. Preliminary technical editing of the resulting manuscripts has been carried out by Dr. D. E. Hurley and Mrs P. M. Cullen. Mr M. O'Connor (Information Bureau, D.S.I.R.) has been responsible for final editing.

Further results of the expedition will be published in this series as the examinations of other animal groups are completed.

J. W. BRODIE,
Director,
N.Z. Oceanographic Institute.

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CONTENTS

Demospongiae (Porifera) of the Chatham Islands and Chatham Rise, collected by the Chatham Islands 1954 Expedition

by PATRICIA R. BERGQUIST
Department of Zoology, University of Auckland

Abstract

Twenty-two species of siliceous sponges are described from the Chatham area, of which five are new and three recorded for the first time from New Zealand.

The five new species represent a strong endemic element, while the new records are all species of northern origin.

INTRODUCTION

All previous publications dealing with the marine fauna of the Chatham area have omitted to mention the sponges. The only species recorded from the islands are the four mentioned by Lendenfeld in his works on the Australian Sponges (1887; 1888):

Cacochalina pandaea (= *Placochalina pandaea*);
Ceraochalina multiformis var. *digitata* (= *Callyspongia ramosa*);
Euspongia irregularis var. *silicata;*
Tethya multistella.

Of the above, two are represented in the present collection, which contains 31 specimens obtained from 12 stations. Twenty-two species of siliceous sponges are described here, of which five are new, and three recorded for the first time from New Zealand.

Owing to our present inadequate knowledge of the composition and distribution of the sponge fauna of New Zealand as a whole, it is impossible to do more than comment on the relationships of the Chatham collection.

The five new species represent a strong endemic element, while the new records are all species of *northern* origins (Australia, 2; Northern Hemisphere, 1).

Within New Zealand, six species are northern, one subantarctic and two cosmopolitan. Three species—*Haliclona clathrata, Callyspongia robusta* and *C. ramosa*—are widespread throughout New Zealand, Australia and the tropics.

Several species of Keratosa and two of Calcarea were included in this collection. These will be described in a later paper. All type specimens are deposited in the Canterbury Museum, and all colour notations are made from Munsell's Colour Charts (1942).

LIST OF SPECIES

Class **DEMOSPONGIAE** Sollas

Order **HAPLOSCLERINA** Topsent

Family HALICLONIDAE de Laubenfels
Haliclona clathrata (Dendy)

Family CALLYSPONGIDAE de Laubenfels
Callyspongia robusta (Ridley)
Callyspongia ramosa (Gray)

Order **POECILOSCLERINA** Topsent

Family ADOCIIDAE de Laubenfels
Adocia semitubulosa (Lieberkühn)

Family COELOSPHAERIDAE Hentschel
Coelosphaera globosa nov. sp.

Family PHORBASIDAE de Laubenfels
Anchinoe novaezealandiae Dendy

Family MYXILLIDAE Hentschel
Iophon semispinosus nov. sp.

Family TEDANIIDAE Ridley and Dendy
Tendania diversiraphidophora Brøndsted

Family RASPAILIIDAE Hentschel
Raspailia agminata Hallmann

Order **HALICHONDRINA** Vosmaer

Family HALICHONDRIIDAE Gray
Halichondria rugosa Ridley and Dendy
Halichondria knowltoni Bergquist nom. nov.

Family AXINELLIDAE Ridley and Dendy
Axiamon novaezealandiae Brøndsted
Axinella lamellata nov. sp.

Order **HADROMERINA** Topsent

Family CHOANITIDAE de Laubenfels
Latrunculia spinispiraefera Brøndsted

Family CLIONIDAE Gray
Cliona celata (Grant)

Order **EPIPOLASIDA** Sollas

Family TETHYIDAE Gray
Tethya compacta nov. sp.
Tethya multistella (Lendenfeld)

Order **CHORISTIDA** Sollas

Family ANCORINIDAE Gray
Thenea novaezealandiae nov. sp.
Penares tylotaster Dendy

Sub-Family STELLETTINAE de Laubenfels
Stelletta novaezealandiae Brøndsted
Myriastra purpurea (Ridley)

Class **HYALOSPONGIAE** Vosmaer

Family ASKONEMATINAE Gray
(material cannot be ascribed to a genus)

SYSTEMATIC NOTES AND DESCRIPTION OF SPECIES

Class **DEMOSPONGIAE** Sollas

Order **HAPLOSCLERINA** Topsent

Family HALICLONIDAE de Laubenfels

Genus **Haliclona** Grant

Haliclona clathrata (Dendy) (fig. 1)

Reniera clathrata Dendy, 1894, p. 237.
R. spec. 6 Sollas (Miss), 1902, p. 211.
R. spec. 4 Hentschel, 1912, p. 410.
Reniera clathrata Brøndsted, 1923, p. 125.
Reniera clathrata Brøndsted, 1924, p. 453.
Haliclona clathrata Burton, 1934, p. 532.
Haliclona clathrata Bergquist, 1960 (in press).

Locality

Sta. 26, Waitangi Wharf.

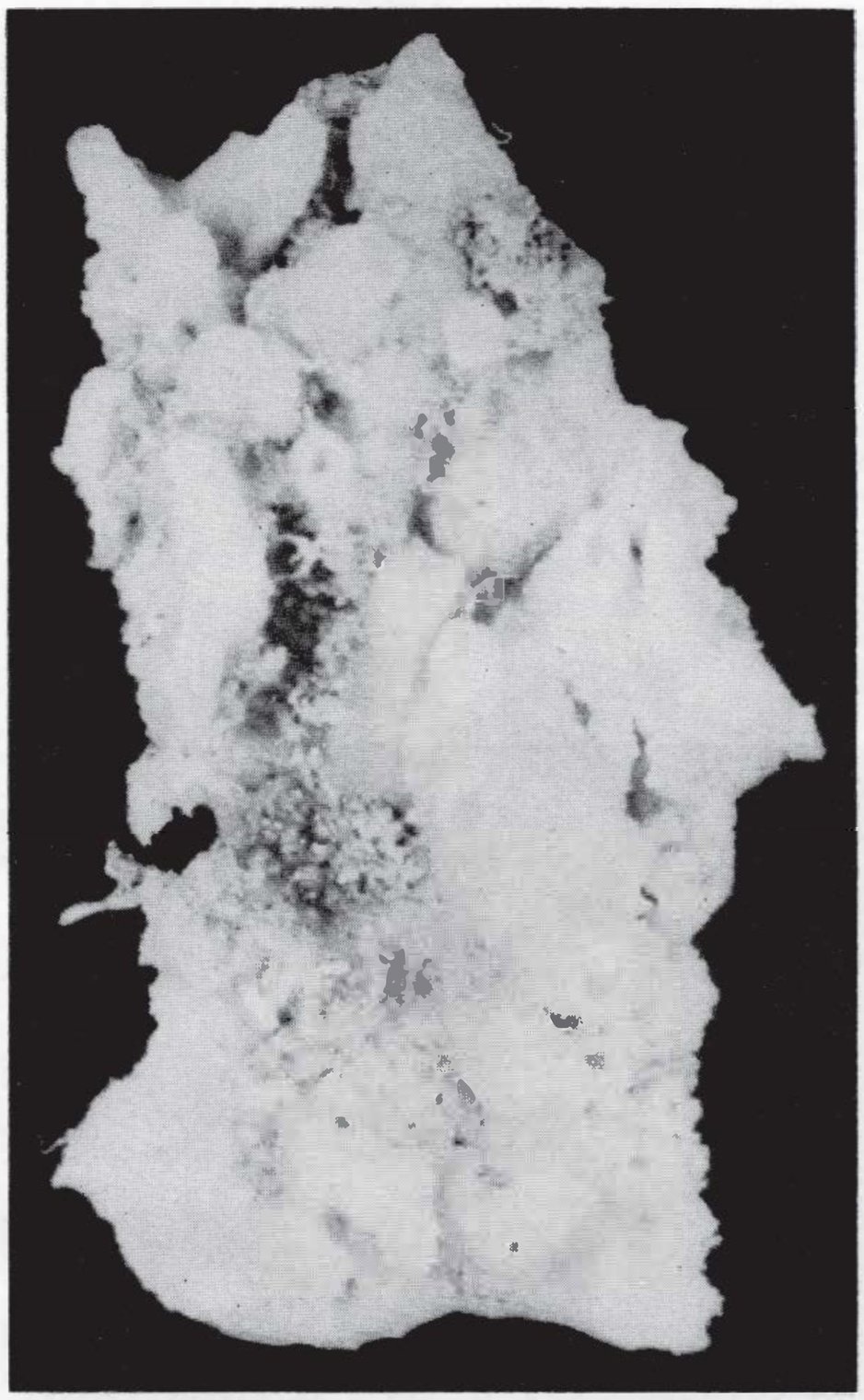

Fig. 1: *Haliclona clathrata* (Dendy).

Family CALLYSPONGIDAE de Laubenfels

Genus **Callyspongia** Duchassaing and Michelotti

Callyspongia robusta (Ridley) (fig. 2a, b, c)

Toxochalina robusta Ridley, 1884, p. 403, pl. xxxix, G; pl. xli, n, n'.
Toxochalina robusta Ridley and Dendy, 1887, p 50.
Toxochalina chalmeri Brøndsted, 1927, p. 5, fig. 4.
Toxochalina robusta Brøndsted, 1934, p. 17, figs. 14 and 15.

Remarks

Spicules are larger than those of the type, but approach closely the dimensions of the Great Barrier Reef specimen.

Dimensions

Locality	*Oxea* dimensions (μ)
Chatham Is.	141 × 5–6
Great Barrier Reef	120 × 5
Australia (South Coast)*	83 × 5
Campbell Is.	85–115 × 5
New Zealand	95–105 × 6
Mainland	80–95

*Type locality.

Distribution

Australia (south coast); New Zealand; Campbell Is.; Malaya; Great Barrier Reef.

Fig. 2, a: *Callyspongia robusta* (Ridley).

Toxochalina robusta Dendy, 1905, p. 139.
Toxochalina robusta var. *ridleyi* nov., Dendy, 1905, p. 140, pl. ix, fig. 2.

Localities

Sta. 6, Chatham Rise (2 specimens), 220 fm.
Sta. 23, North of the Sisters, 33 fm.

Remarks

In assigning these specimens to *Callyspongia* I am following Burton (1934) and de Laubenfels (1936 and 1950). These workers relegate *Toxochalina* into *Callyspongia;* de Laubenfels (1936) maintained *Patuloscula* (Carter), but in 1950 agreed that this too fell to *Callyspongia.*

Dimensions

Species	Chalmeri	Chatham sp.	Robusta (Ridley)	Robusta (Brøndsted)
Oxeas	55 × 2·7μ	56 × 4μ	100 × 3 2–4·2μ	95 × 5·6μ
Toxas	15–50μ	16–52μ	50–63μ	20–40μ
Main fibres	100μ	100μ	50–75μ	—
Dermal fibres	15–20μ	15μ	50–100μ	18μ*
Secondary fibres	—	50μ	35–50μ	—
Oscules	1–2 mm	2–7 mm	3–6 mm	1–2 mm

*Brøndsted notes that the dermal fibres are thicker at the nodes; it would appear that Ridley's measurements were made at the nodes.

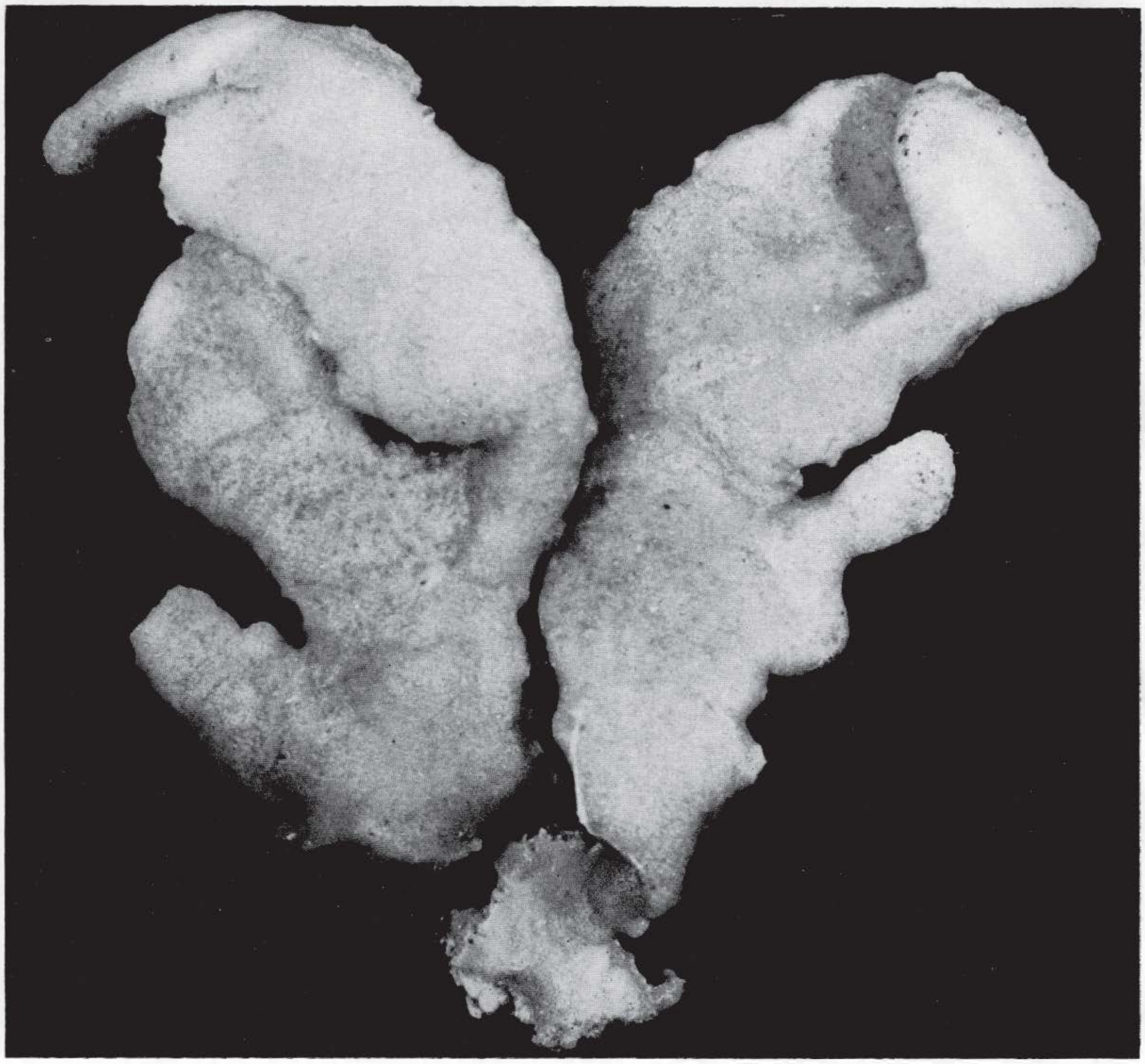

Fig. 2, b: *Callyspongia robusta* (Ridley).

Fig. 2, c: *Callyspongia robusta* (Ridley), portion of the skeleton (× 80).

C. robusta as described by Ridley differs from the present specimens chiefly in possession of larger oxea. Ridley and Dendy describe a specimen with overall smaller dimensions. Brøndsted's *chalmeri* compares very closely with his *robusta*, save in the dimensions of the oxea. On the basis of the comparison tabulated below, very little, if any, reason can be seen for maintaining the two species.

Burton (1934) relegates *Toxochalina robusta* and *chalmeri* with many other species to *Callyspongia ramosa*, making this species an almost indefinite entity. It appears that in the Callyspongidae presence or absence of microscleres is certainly not a generic character. I think it unwise to ignore microscleres completely and consequently, while referring the above species to *Callyspongia*, would hold them apart as a separate species from *ramosa*. The recognition of difference is useful until such time as synonymies can be put on a firm basis.

Distribution

Port Jackson (Australia); Bahia; Port Chalmers.

Callyspongia ramosa (Gray) (fig. 3)

For synonymy see Burton, 1934, p. 603.

Localities

Sta. 6, Chatham Rise, 220 fm ..... (1)
Sta. 3, Mernoo Bank, 41 fm ..... (2)
Sta. 37, Between South East Is. and Little Pitt Is., 30 fm ..... (3)

Remarks

The specimens conform to *C. ramosa* as described by Dendy (1897) and Burton (1934), number 2 coming very close to the lectotype of the species (Dendy, pl. xxxiii A) in general appearance and skeletal characteristics. In specimen 2 the branches are perfectly tubular, oscules very frequent, level with the surface, fibres multispicular incorporating much foreign matter—sand and spicules (acanthostyles, rhabdostyles). Specimen 3 conforms in exterior form to the illustration of *Ceraochalina euplax* (Lendenfeld, 1887, pl. xix, no. 13). This species was relegated to *C. ramosa* by Burton (1934).

Distribution

New Zealand; Australia; Mauritius.

Order **POECILOSCLERINA** Topsent

Group **PHORBASIFORMES** de Laubenfels

Family ADOCIIDAE de Laubenfels

Genus **Adocia** Gray

Adocia semitubulosa (Lieberkühn) (fig. 4a, b)

Halichondria semitubulosa Lieberkühn, 1859, p. 363.
Pellina semitubulosa Topsent, 1925, p. 709.
Pellina semitubulosa Dickinson, 1940, p. 11, pl. 13, figs. 25, 26.

Localities

Sta. 3, Mernoo Bank, 41 fm.
Sta. 37, Between South East Is. and Pitt Is., 30 fm.

Description

A massive, lump-like sponge, fragile in texture.

Dimensions

Height 21 mm, length 60 mm, width 30 mm. Long hollow fistulae, 6–30 mm high and 4–7 mm wide, arise randomly from the dorsal and lateral aspects of the body of the sponge. Where these fistulae have been broken, a vent is left lying flush with the surface of the sponge. *Colour*: in spirit, pale yellow-white, Munsell GY 8/4; in life, Munsell RY 8/4.

A dermal membrane is present in and below

which is a layer of tangentially disposed oxea. The membrane overlies a system of small subdermal cavities and is pierced by numerous pores. These occur in groups of 6–7 and thus form inconspicuous "pore areas"; they lie flush with the surface of the basal mass and never extend on to the fistulae. The texture of the specimens is fragile and crumbly.

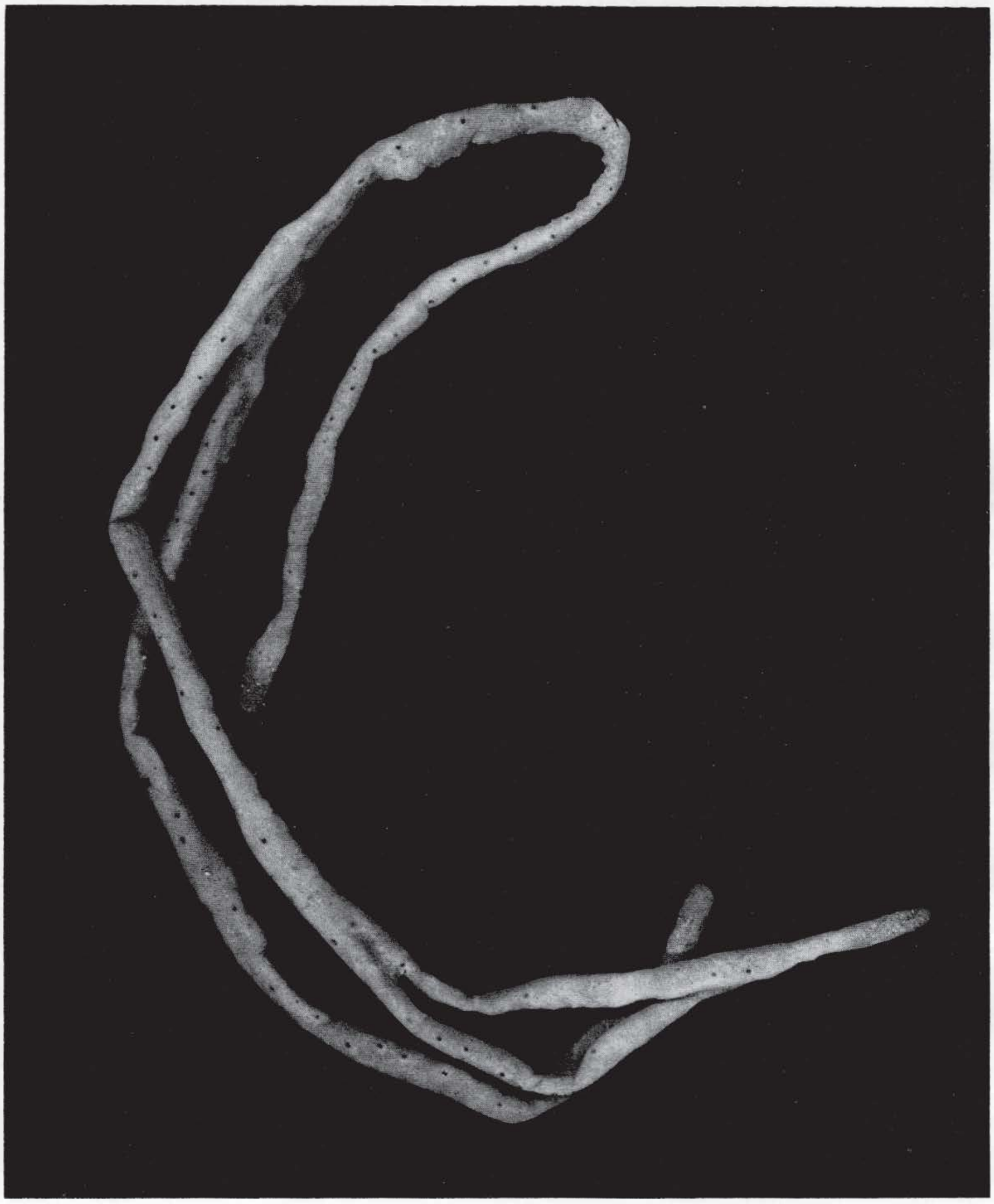

Fig. 3: *Callyspongia ramosa* (Gray).

As is typical of the Adociidae, the skeleton is an isodictyal reticulation which extends to the tangential spicules of the dermis. Some organisation of the skeleton into fibres is seen in the endosome, but the greatest concentration into fibres is in the sub-dermal region. Here the fibres consist of 15–20 oxea tightly packed together and expanding, fan-like, immediately below the surface. Few spicules penetrate the dermal membrane, none project further than 30μ

Spicules

Megascleres:

Oxea—100–180 × 6μ; usually slightly flexed, but often straight, evenly tapered to a sharp point. Developmental forms

microxea are present, always dispersed, never forming part of fibre or reticulum.

Remarks

Burton (1934) relegated *Pellina* (Schmidt) to *Adocia* on features of the dermal skeleton. De Laubenfels (1936) retains the two genera because of the distinctive external appearance of the latter. In the two Chatham specimens, some small variations are apparent in external form, none, however, in the skeleton. They cannot, on skeletal features, be separated from *Adocia*; the distinction is, therefore, not maintained.

Distribution

Mediterranean; California.

Fig. 4, a: *Adocia semitubulosa* (Lieberkühn).

Fig. 4, b: *Adocia semitubulosa* (Lieberkühn), oxea; (× 550).

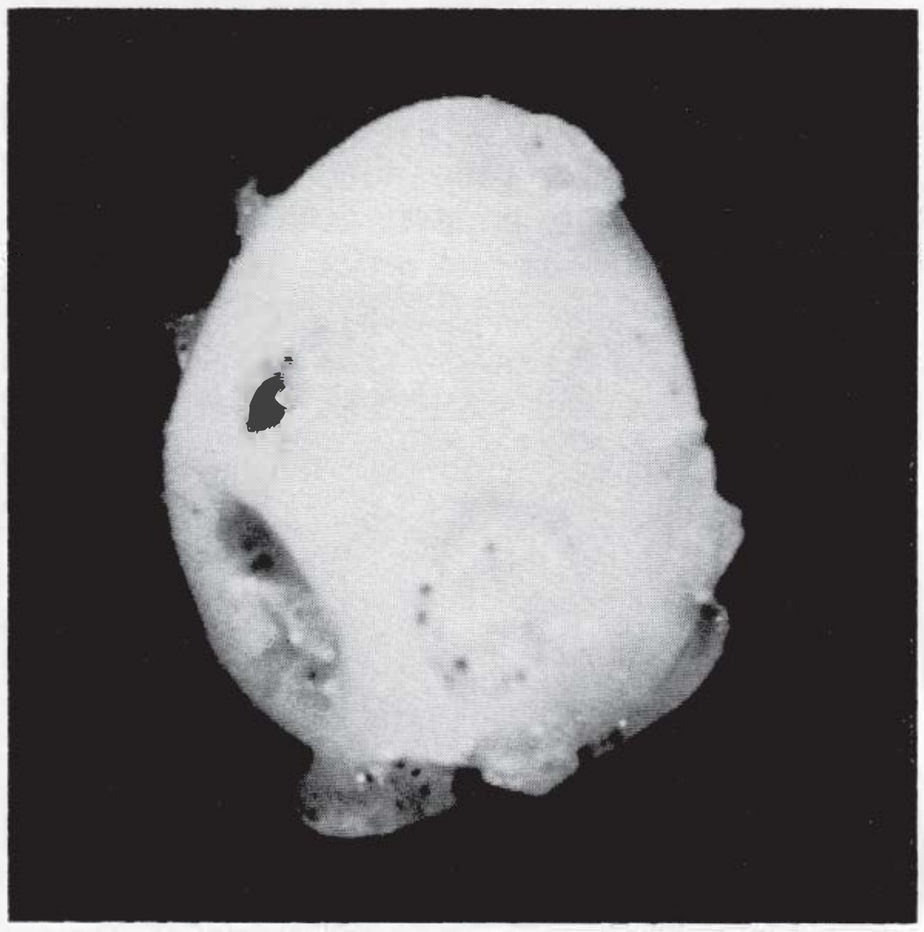

Fig. 5, a: *Coelosphaera globosa* (nov. sp.).

Fig. 5, b: *Coelosphaera globosa* (nov. sp.), isochelae, side view (× 500).

Family COELOSPHAERIDAE Hentschel

Genus **Coelosphaera** Thomson

Coelosphaera globosa (nov. sp.) (fig. 5a, b, c, d)

Locality

Sta. 59, Chatham Rise, 290 fm.

Description

A spherical sponge, 2·18 cm in diameter, with fistulae in the shape of low cones scattered over the surface. (Nine in this specimen.) These range from 2·75 to 4·75 mm outside diameter and are closed to the exterior by a fine much-perforated membrane divided into 4–5 distinct sections by inward extensions of the fistular wall. Stolons arise in adventitious fashion from the base; they are extensively branched and have much fine debris entangled in their ramifications. *Colour*: in life, white; in spirit, grey-white.

The ectosome is stiff and smooth, its constituent megascleres being tangentially dispersed. Spicules

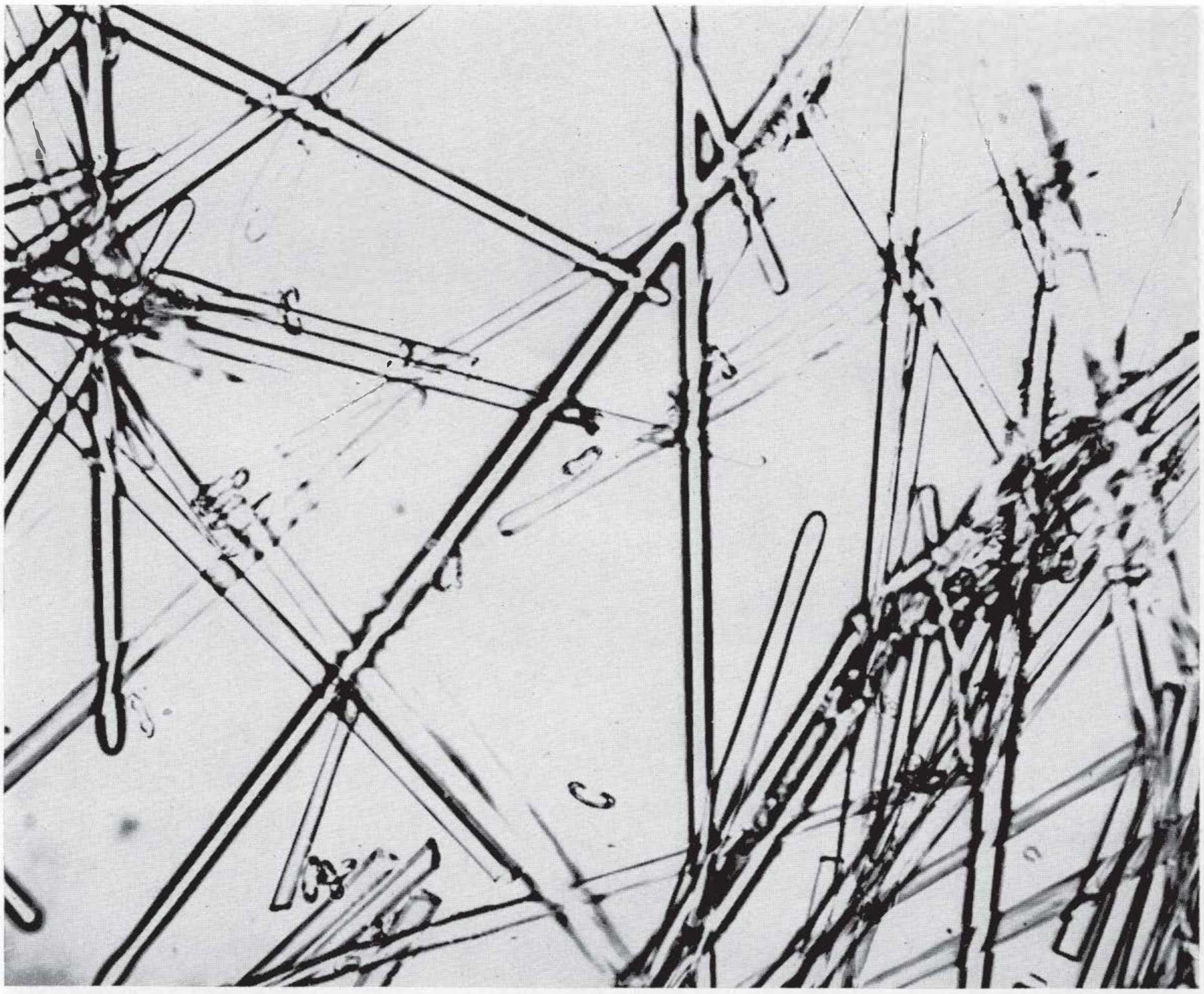

Fig. 5, c: *Coelosphaera globosa* (nov. sp.), tylota, strongyla and isochelae (× 150.)

extend to the walls of the fistulae and to the stolons. The ectosome is 0·5 mm thick and completely invests the pulpy structureless endosome.

The skeleton has no definitive arrangement other than the tangential placing of the dermal megascleres and the restriction of the sigmata to the endosome.

Spicules

Megascleres:

(a) Tylota—subtylota; 600–725 × 18μ.
(b) Strongyles—rare; 650–700 × 18μ.

Microscleres:

(a) Tridentate acuate isochelae, 25–28μ chord. The central tooth at each end is much reduced, being approximately a quarter of the length of the two laterals.

(b) Sigmata—slightly but sharply incurved; 25–40μ.

Remarks

In external appearance this specimen approaches closely *Histoderma physa* (O. Schmidt).

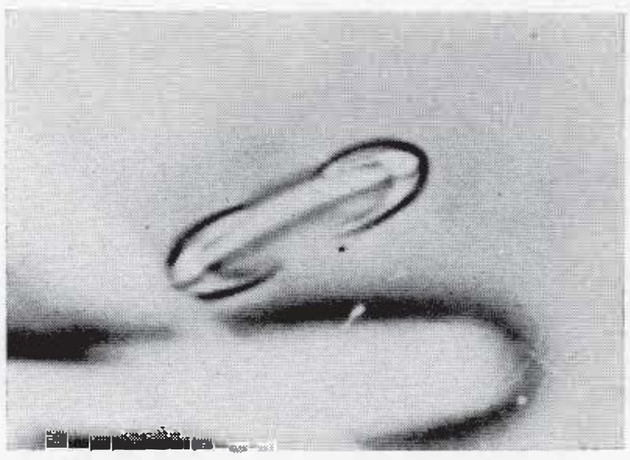

Fig. 5, d: *Coelosphaera globosa* (nov sp.), isochelae, face view (× 500).

Fig. 6, a: *Anchinöe novaezealandiae* (Dendy).

The spiculation is different, there being no trichodragmata and few strongyla. The genus *Coelsphaera* is recorded here for the first time in New Zealand waters, previous records ranging from Great Barrier Reef (Burton, 1934), through the tropics and north temperate seas.

Family PHORBASIDAE de Laubenfels

Genus **Anchinoe** Gray

Anchinoe novaezealandiae Dendy (fig. 6a, b, c)

Localities

Sta. 23, North of the Sisters; 33 fm.

Sta. 37, Between South East Islands and Pitt Islands; 30 fm.

Description

A large, irregularly lobate sponge. *Dimensions*: Height 110 mm; width 65 mm; 15 mm thick. *Colour* in spirit: Munsell RYR 5/8.

The surface is smooth and oscula (0·5 mm diam.) are scattered infrequently overall. There is a distinct dermal membrane overlying an extensive system of sub-dermal cavities. The dermal membrane is packed with profusely spined small acanthostyles. The main structural spicules are tornota, which are predominantly organised into fibres. These fibres terminate at, but do not

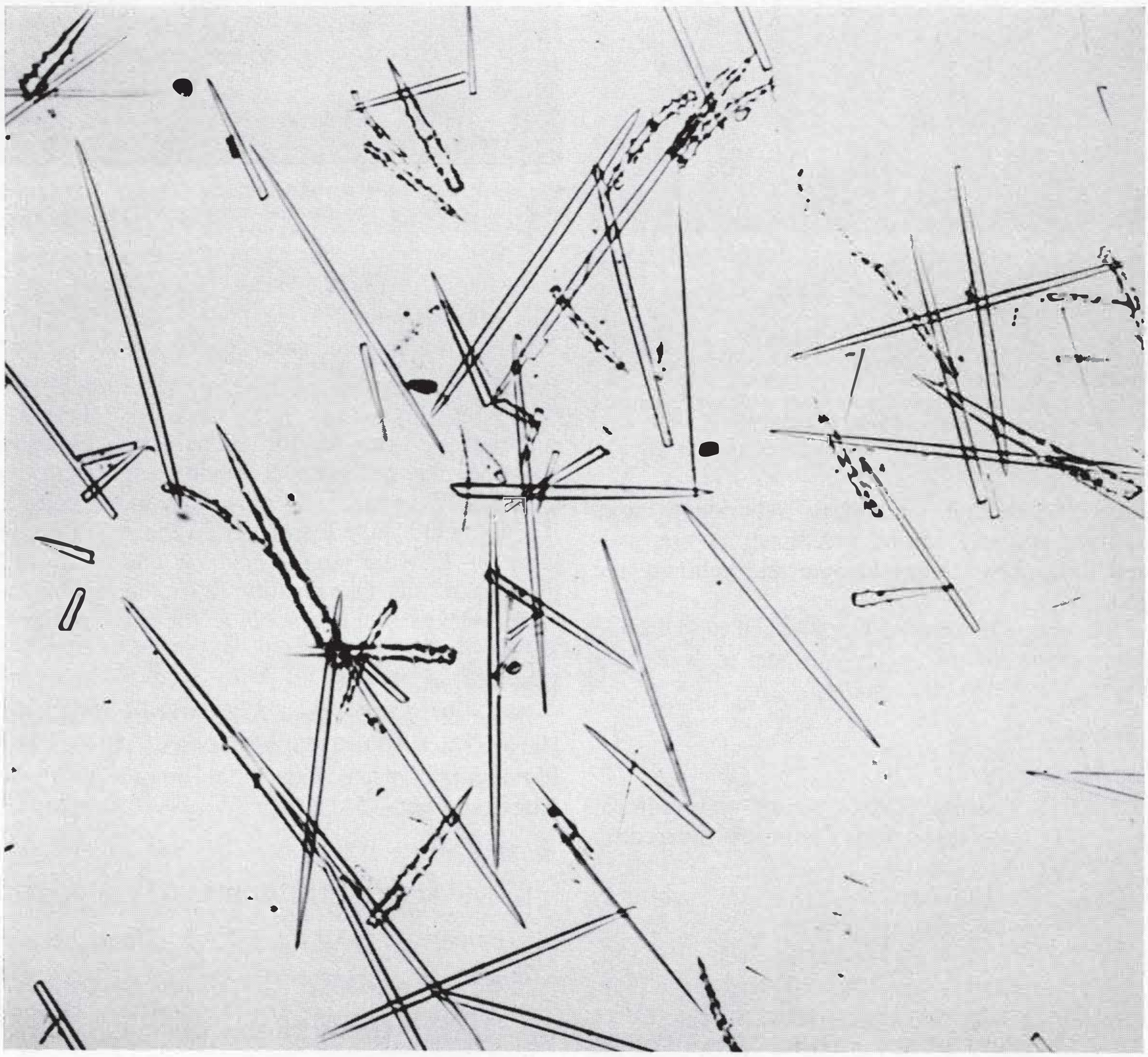

Fig. 6 b: *Anchinöe novaezealandiae* Dendy, endosomal and dermal acanthostyli and tornota (× 150).

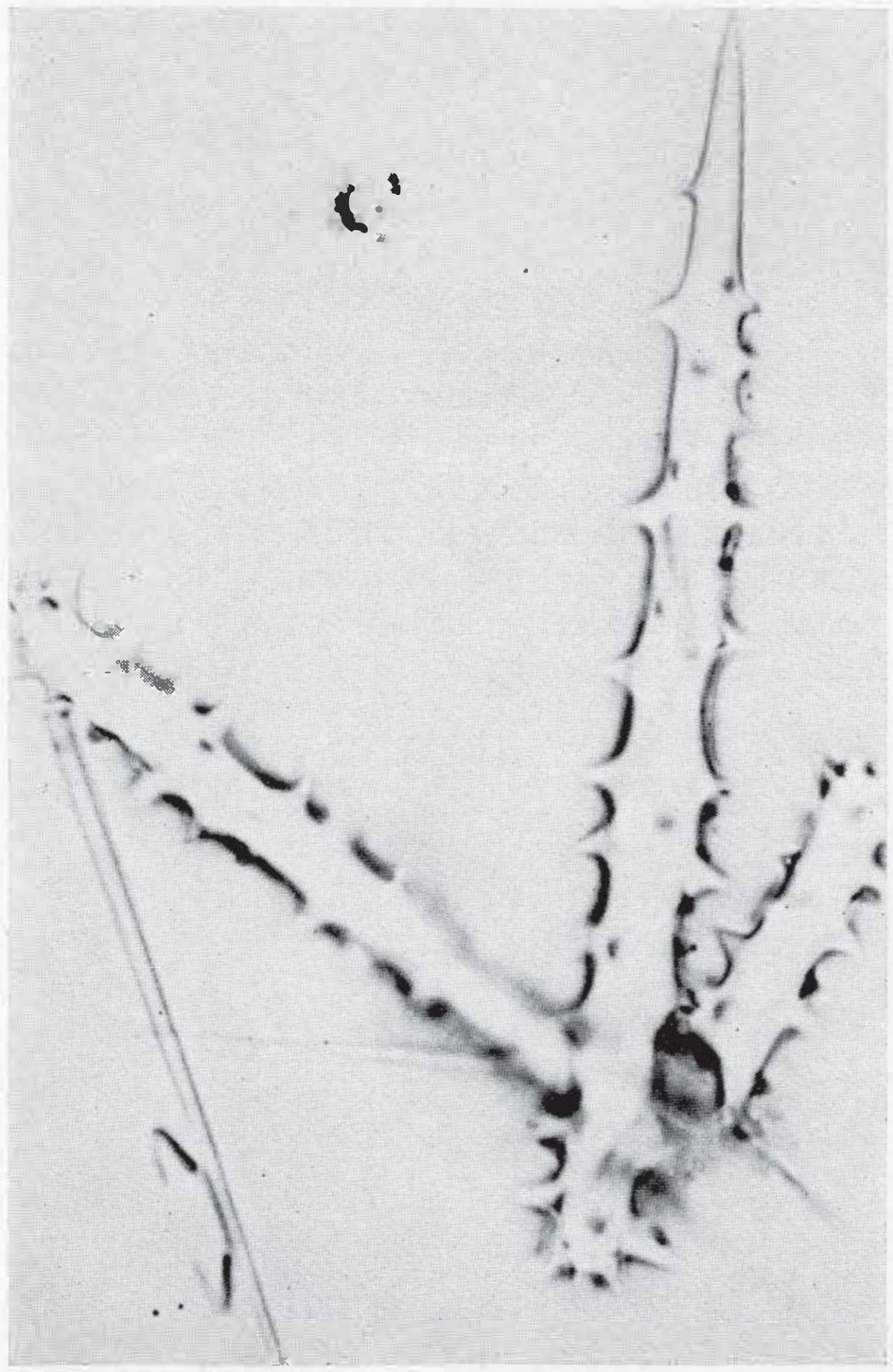

Fig. 6, c: *Anchinöe novaezealandiae* (Dendy), dermal acanthostyli and isochela (× 500).

Fig. 6, d: *Anchinöe novaezealandiae* (Dendy), portion of skeleton showing sub-dermal cavities and spicule fibres (× 60).

pierce, the dermal membrane. Abundant large, relatively sparsely spined acanthostyles are scattered throughout the endosome and echinate the fibres.

The sponge is growing from a shell of *Waltonia inconspicua* on the inner surface of which it forms a very thin encrustation.

Spicules

Megascleres:

(a) *Tornota*: 190 × 8μ; of very uniform size throughout, abruptly tapered.

(b) Acanthostyli:

(i) Dermal—100 × 11μ; profusely and uniformly spined.

(ii) Endosomal—165 × 13μ; spines concentrated on the stylote end, very infrequent on the lower third of the spicule. Show a slight tendency toward tylote modifications.

Microscleres:

Arcuate isochelae; 16μ chord.

Remarks

There is some doubt as to the validity of *Anchinöe,* some workers having suggested that it fall to *Phorbas*. The New Zealand species of *Anchinöe* are quite distinct from the type descriptions of *Phorbas* and *Anchinöe* and until such time as a full investigation is made, I think it preferable to retain *Anchinöe* for this species.

Distribution

T.N. off North Cape—14–30 fm; Wellington Harbour—5–10 fm; Little Barrier—30 fm; New Plymouth, Queen Charlotte Sound—3–10 fm; Paterson Inlet—5–15 fm.

Group **MYXILLIFORMES** de Laubenfels

Family MYXILLIDAE Hentschel

Sub-Family MYXILLINAE de Laubenfels

Genus **Iophon** Gray

Iophon semispinosus nov. sp. (fig. 7a, b, c)

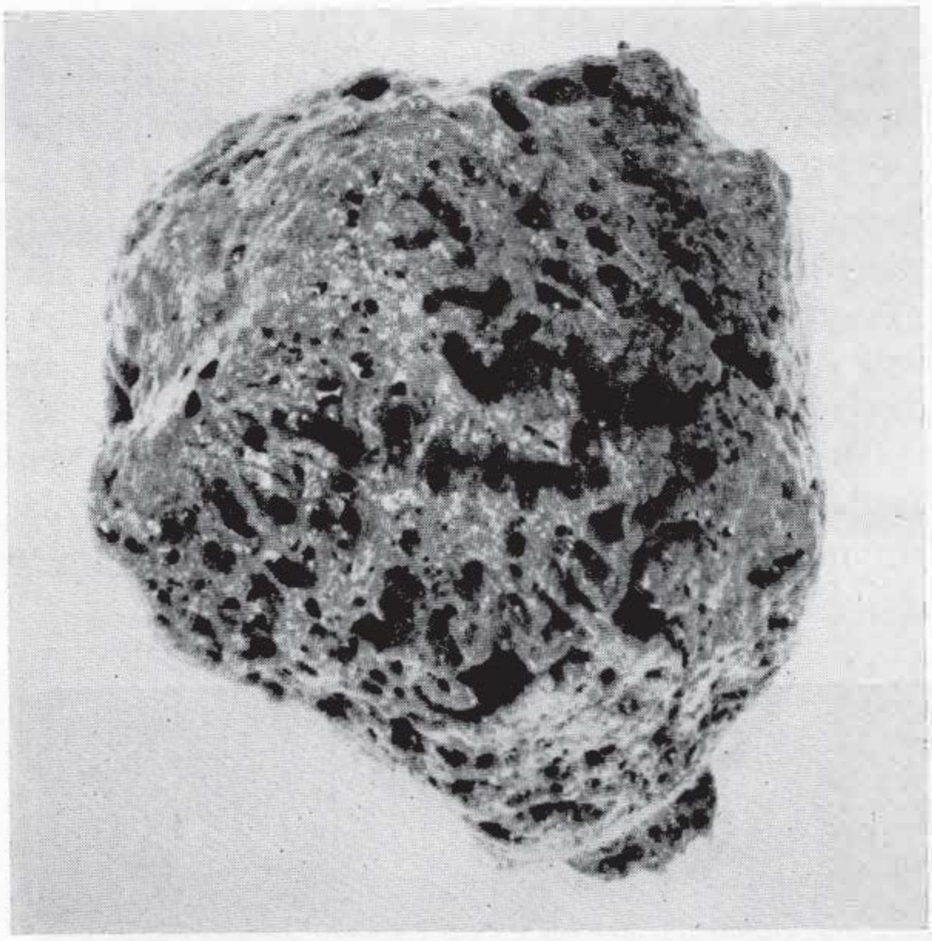

Fig. 7, a: *Iophon semispinosus* (nov. sp.).

Localities

Sta. 14, Hanson Bay, 15 fm.
Sta. 19, off Cape Young, 25 fm.

Description

An unevenly hemispherical sponge. The surface is weakly conulose, and the texture spongy. *Dimensions*: height 22 mm, length 42 mm and 38 mm. *Colour*: differs slightly in the two live specimens, Munsell YR-Y 6/6 and R 1/2; in spirit, identical, Y-R-Y 3/4, a colouration which is a distinguishing feature of the genus *Iophon*. Oscula are scattered over the upper surface of the sponge and range from 1 to 4 mm in diameter. The dermal membrane is extremely fine and transparent, pierced between conules by small pore groups. An extensive system of small subdermal cavities is visible beneath the membrane, which, in most cases, has collapsed.

In section, the endosomal skeleton is seen to be in the form of a weakly isodictyal reticulation of acanthostyli with no true fibres developed. A dermal skeleton is provided by stout brushes (80–100μ wide) of acanthotylota ascending to the surface and supporting the dermal membrane, which contains some tangential acanthostyles and acanthotylotes.

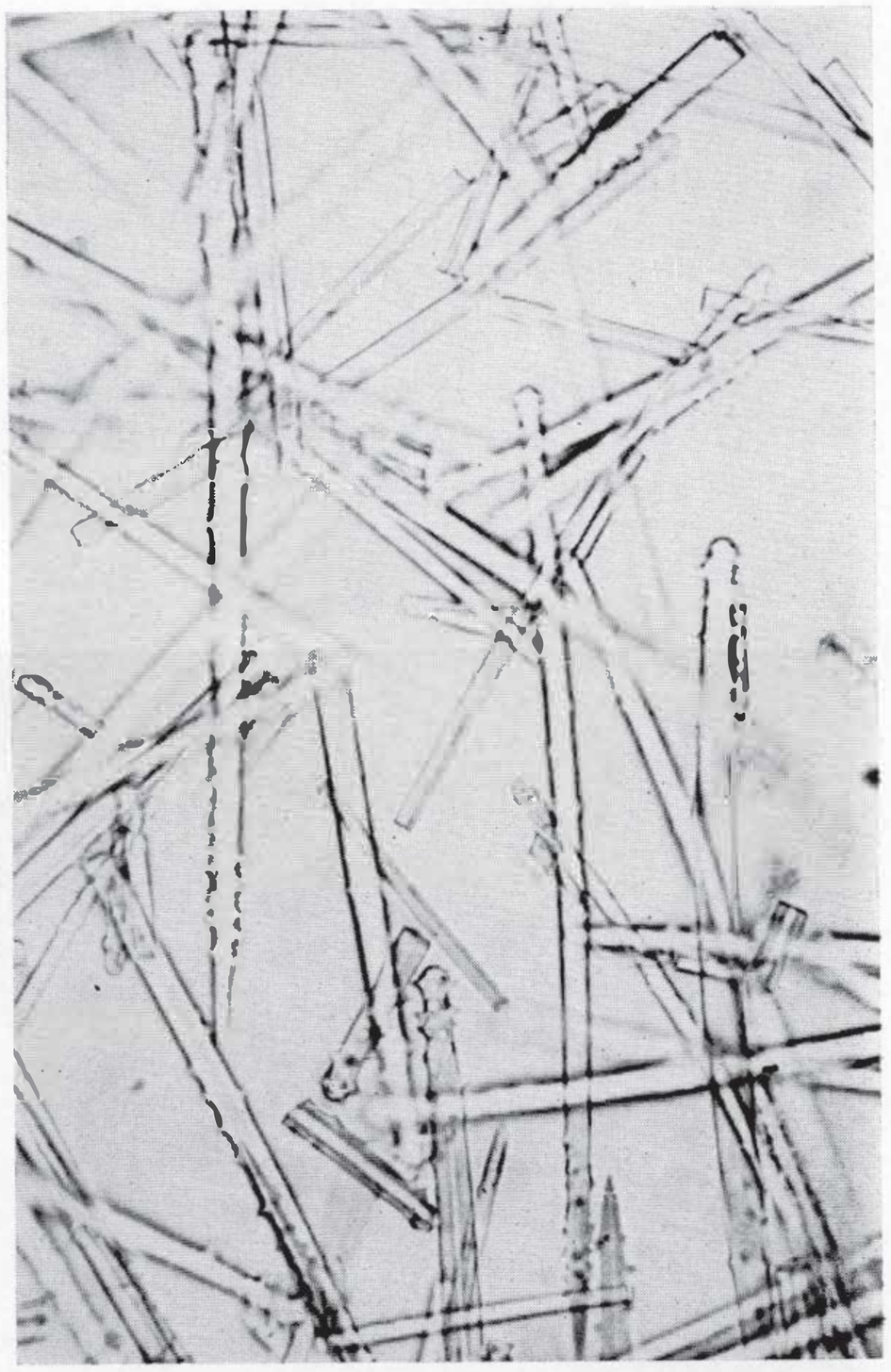

Fig. 7, b: *Iophon semispinosus* (nov. sp.), acanthostyli (× 500).

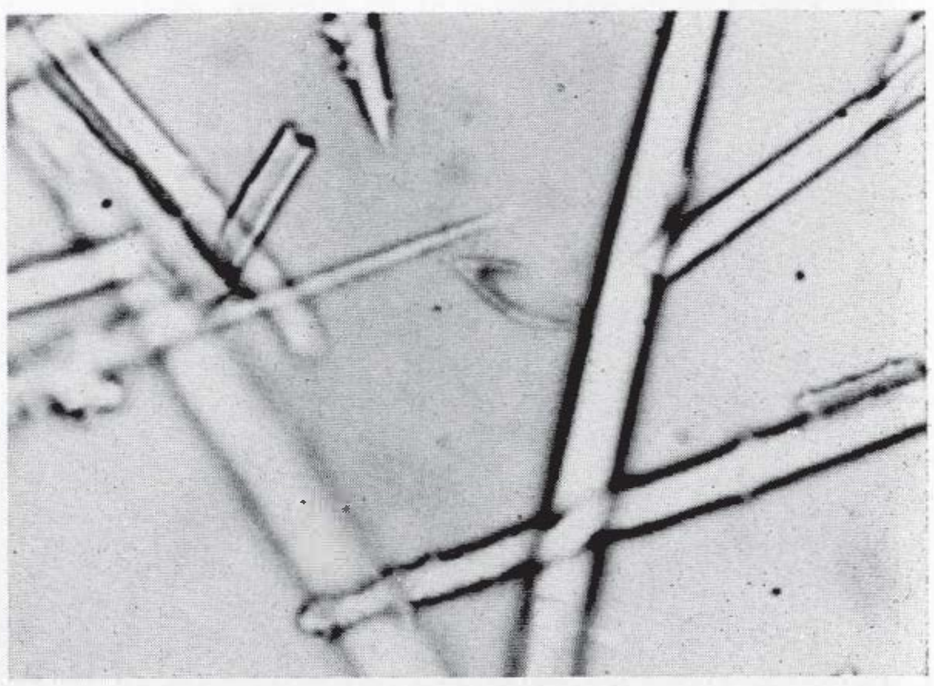

Fig. 7, c: *Iophon semispinosus* (nov. sp.), anisochela (× 500).

Spicules

Megascleres:

(a) Acanthostyli—sparsely spined, often smooth in the middle; 150–170 × 6μ.

(b) Acanthotylota—185–200 × 5μ; microspined at both ends.

Microscleres:

(a) Tridentate anisochelae—15 × 5μ.

(b) Bipocilli—8–10μ, sharply incurved terminally; tips only slightly expanded.

Remarks

Iophon is a genus credited with an origin in the European side of the North Atlantic (Burton, 1932), and a later southern migration with accompanying speciation. Those species already recorded from the Australasian. [*I. laevistylus* (Dendy) and *I. omnivorus* (Ridley and Dendy)] and Antarctic regions [*I. radiatus* (Topsent)] are distinctive and specialised.

The addition of this second species from New Zealand is interesting for two reasons. Firstly, it emphasises the divergent nature of the Southern

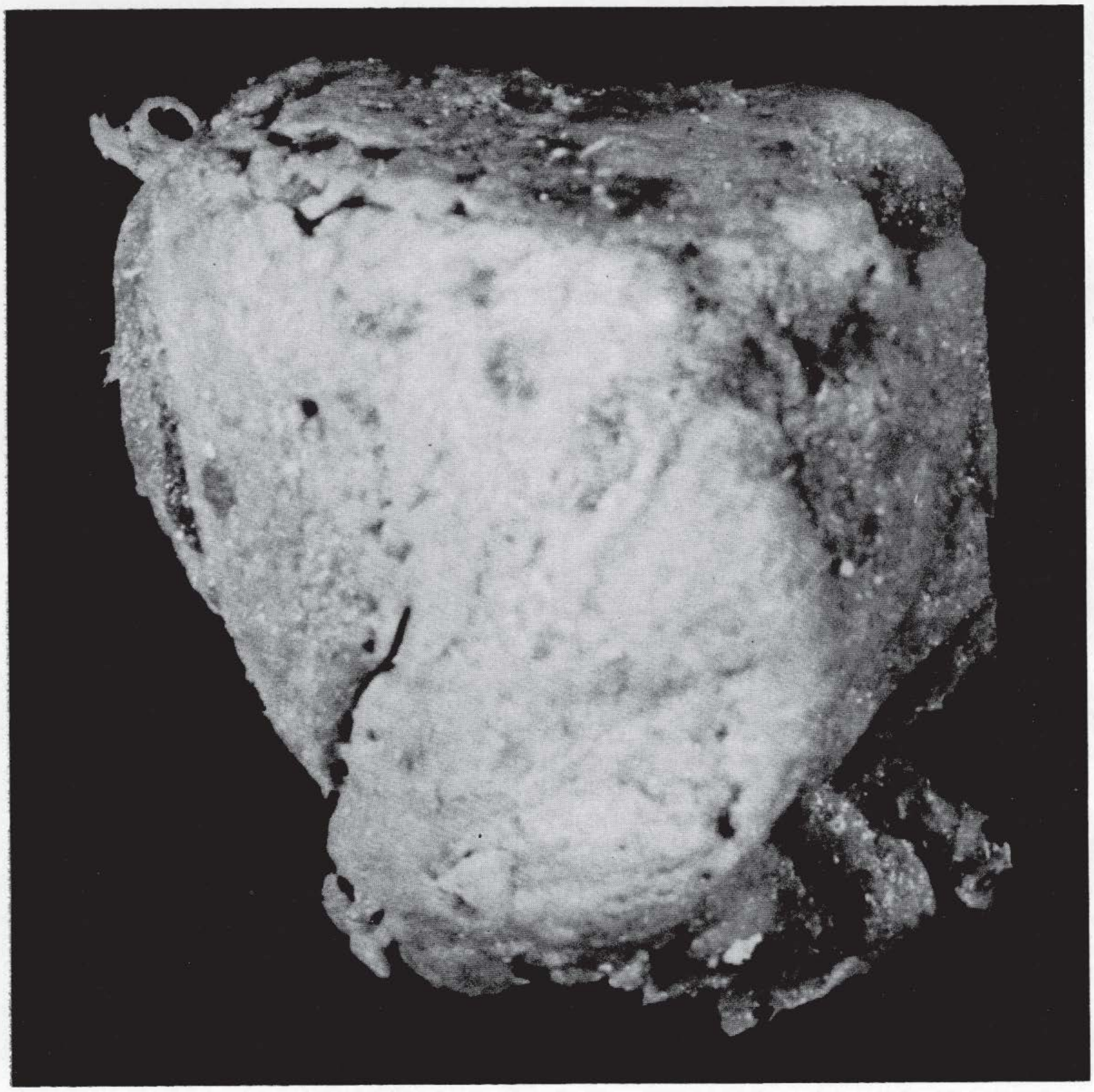

Fig. 8, a: *Raspailia agminata* Hallmann.

Iophonae. Secondly, in the absence of any smooth styli, but in possessing sparsely spined major spicules it is perhaps intermediate between *I. laevistylus* and the variable *I. proximum,* from which this group of species has presumably originated.

Family TEDANIIDAE Ridley and Dendy

Genus **Tedania** Gray

Tedania diversiraphidophora Brøndsted

Tedania diversiraphidophora Brøndsted, 1923, p. 133, fig. 15, a–e.

Locality

Sta. 6, Chatham Rise, 220 fm.

Description

A disc-shaped specimen of rubbery consistency.

Dimensions: height 28 mm, width 58 mm. *Colour*: in spirit, Munsell PR 6/4. A thin dermal membrane 4 mm thick is discernible; it is smooth and skin-like, not pierced by any spicule tufts.

The main skeleton is arranged as a series of ascending tracts of styli and tylostyli dissociating externally to form subdermal tufts. It is here the tylota occur in greatest concentration, diacts and rhaphides are frequent in the interfibrillar regions.

In details of spiculation this specimen differs from the type; there are no strongyla, and raphides were not observed to form trichodragmata.

Spicules

Megascleres:

(a) Styli—in some cases gently curved anteriorly; 250–320 × 3–6μ.

(b) Tylota—180–325 × 2·5–3μ (shaft diameter).

(c) Tylostyli—255–320 × 3–6μ.

Microscleres:

Rhaphides in all cases slightly roughened. Two distinct size groups in equal abundance.

(a) 100—150 × 1μ.

(b) 50–70 × 0·5μ.

Distribution

Carnley Harbour (45 fm. Adams Is.).

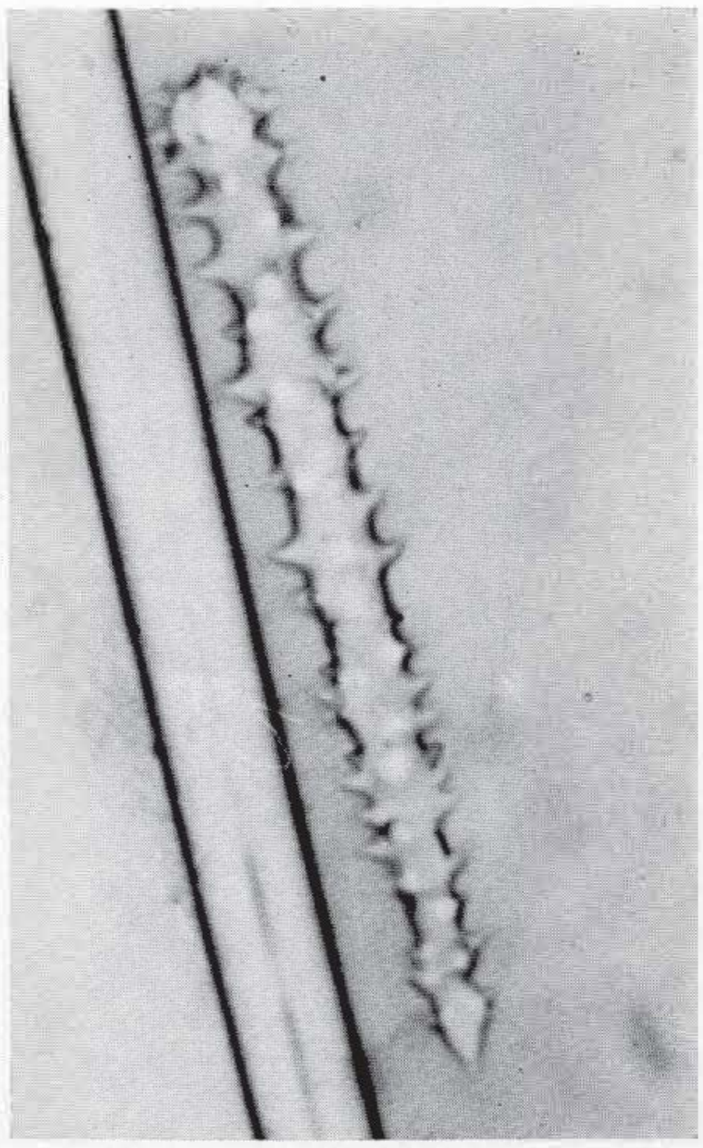

Fig. 8, b: *Raspailia agminata* Hallmann, acanthostyle (× 350).

Family RASPAILIIDAE Hentschel

Genus **Raspailia** Schmidt

Raspailia agminata Hallmann (fig. 8a, b, c)

Halichondria rubra var. *digitata* Lendenfeld, 1888, p. 80–81, pl. ii, fig. 1.

Raspailia agminata Hallmann, 1914, p. 438–440, fig. 22.

Locality

Sta. 6, Chatham Rise, 220 fm.

Description

A massive sponge, firm and fleshy in texture, with a few lobe-like projections which, in the spirit specimen, are pressed into the body of the sponge. *Dimensions*: height 63 mm, width 43 mm. *Colour*: in spirit, Munsell YY-R 6/4. In colour, size and texture, the specimen agrees closely with Lendenfeld's *H. rubra.* A skin-like, smooth dermis 1 mm thick is present, and is not pierced by the weakly-developed spicule fibres of the endosome.

Only the smooth spicules are represented in the dermis, the diacts (oxea) predominate.

Sections reveal this to be a much compacted and infolded specimen, hence the overall uniform

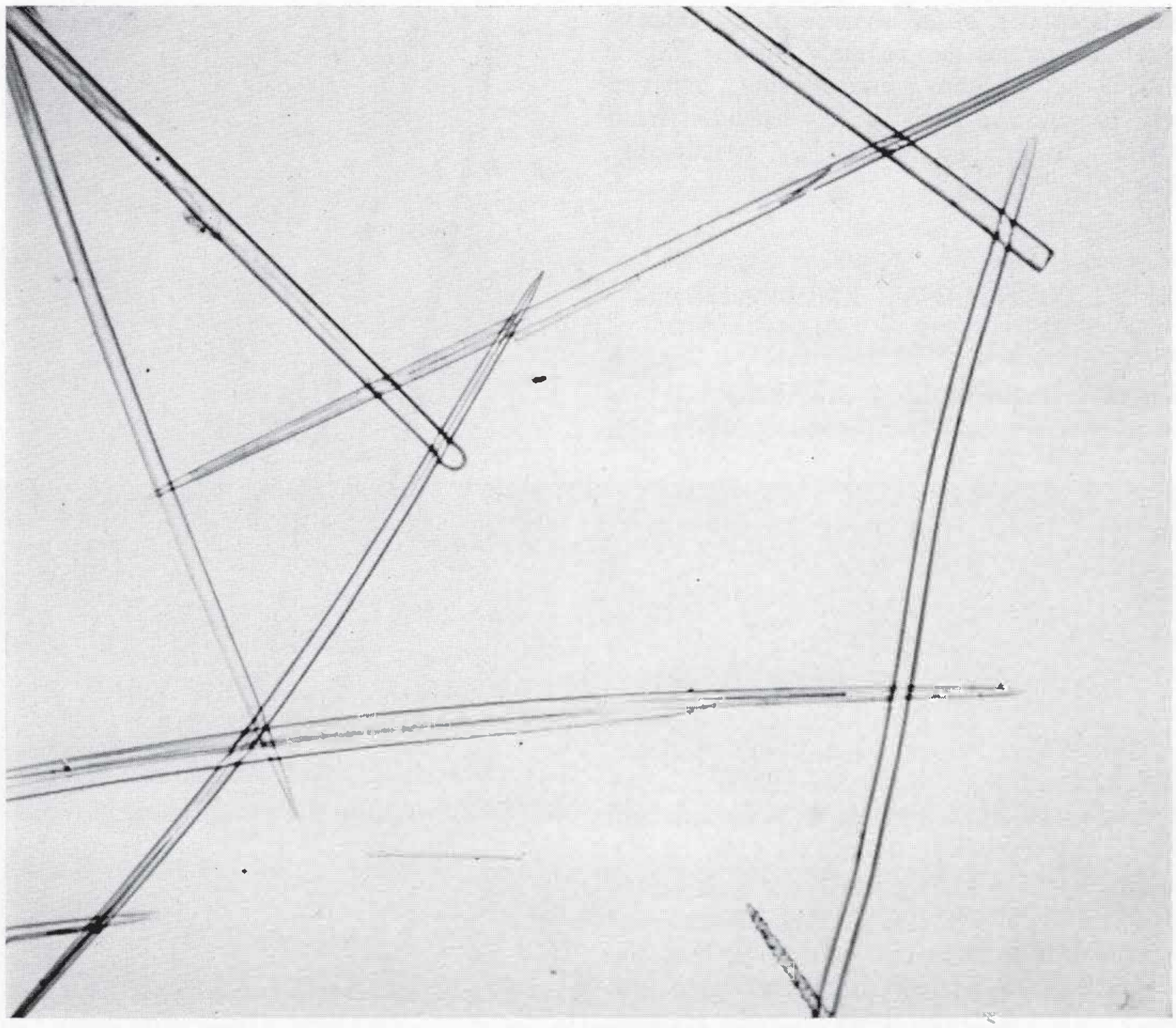

Fig. 8, c: *Raspailia agminata* Hallmann, oxea and subtylostyli (× 150).

appearance. This is atypical of the genus and further work may lead to a different generic diagnosis for both Australian and New Zealand specimens.

There is little development of fibres in the endosome, slender styli and tylostyli are the structural spicules, and acanthostyli and acanthotylostyli, the echinating and dispersed spicules. The structural spicules are also found as auxillary types, dispersed between the fibres.

Oscula are visible on the dorsal and lateral surface, and are 1–2mm in diameter.

Spicules

Megascleres:

(a) Styli—in general lightly curved in the apical third; 1060–2200 × 17·5–20μ.

(b) Sub-tylostyli—of similar size range and more frequent than the true styli.

(c) Acanthostyles—90–120 × 5–7μ. Densely spined overall, the larger spines are apical; some of these spicules are acanthotylostyles.

(d) Oxea—330–600 × 3–6μ, chiefly dermal spicules; developmental forms of the oxea are frequent and simulate raphides.

Remarks

In internal structure and spiculation, this specimen agrees closely with Hallmann's description. Externally there are vast differences between them. This is probably attributable to the great plasticity which sponges reveal under varying habitat conditions. The Chatham specimen does serve to emphasise the danger of diagnosing any sponge family on the basis of external appearance. The Raspailiidae have always been described as

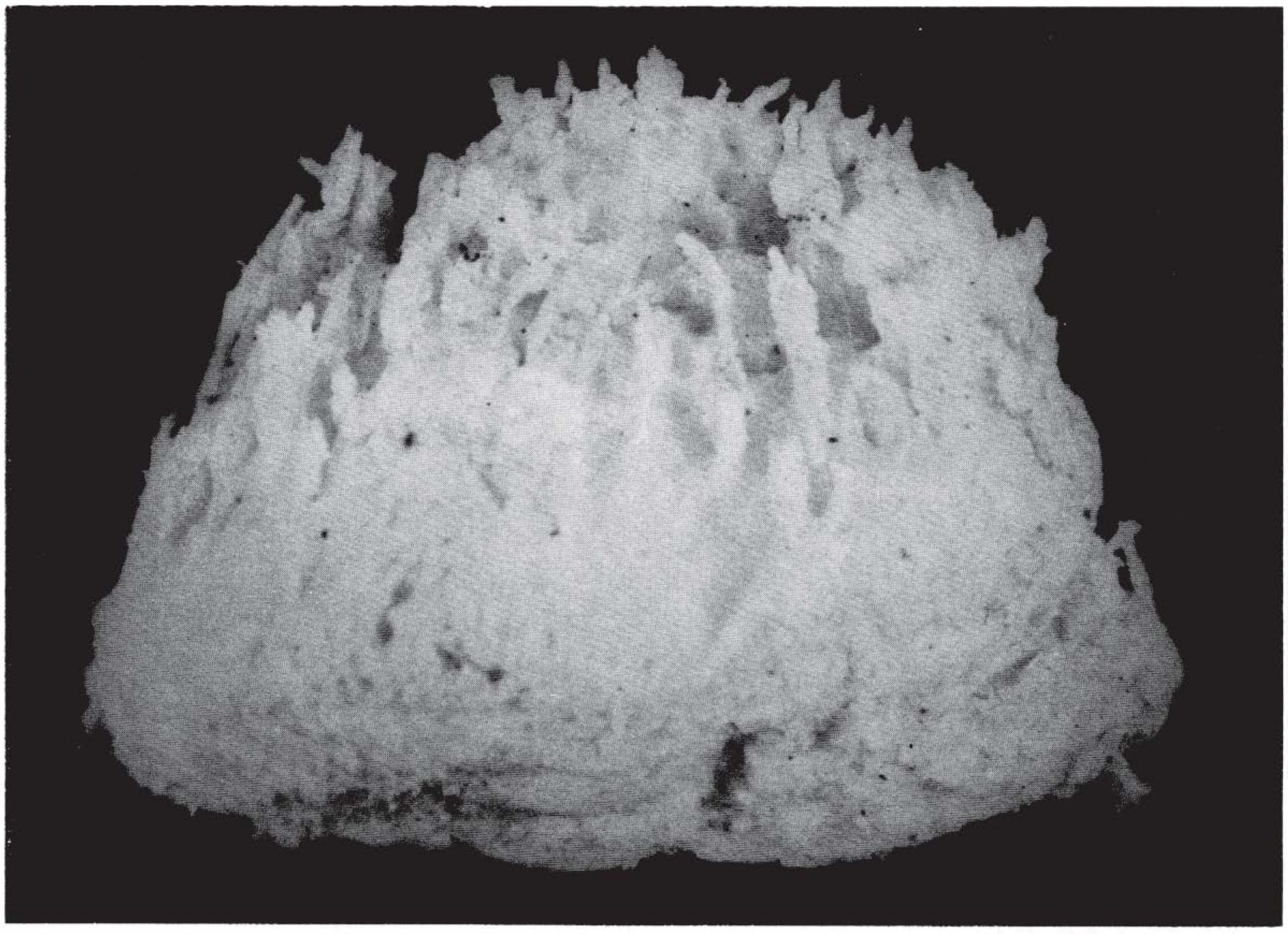

Fig. 9, a: *Halichondria rugosa* Ridley and Dendy.

"whiplike" or "digitiform" in appearance, never massive as in the present specimen.

Distribution

Port Jackson (Australia).

Order **HALCHONDRINA** Vosmaer

Family HALICHONDRIIDAE Gray

Genus **Halichondria** Fleming

Halichondria rugosa Ridley and Dendy (fig. 9a, b)

Halichondria solida var. *rugosa* Ridley and Dendy, 1885, p. 4.

Locality

Sta. 3, Mernoo Bank, 41 fm.

Description

A single specimen, massive, roughly triangular in profile, with the surface raised into jagged projections. *Dimensions*: height 65 mm; width (a) basal, 40 mm; (b) apical, 10 mm; length 100 mm. *Colour*: in spirit, white; in life Munsell Y-YR 7/10.

Oscules are frequent, predominantly single, sometimes in groups of 2–3; they range in diameter from 0·25 mm to 2·5 mm and are slightly sunken below the surface of the sponge.

The dermal membrane is well-developed and is constituted chiefly of tangentially placed oxea. The sub-dermal cavities are poorly developed, thereby giving the sponge a solid texture.

Fibres are not developed in the main skeleton; here oxeas of two sizes are indiscriminately intermingled. In a very few instances the larger oxeas are aggregated into bundles of 8–10, and resemble short fibres.

Spicules

Megascleres:

Oxea of two sizes:

(a) 500–750 × 14–22μ;

(b) 80–114 × 3·5–5μ.

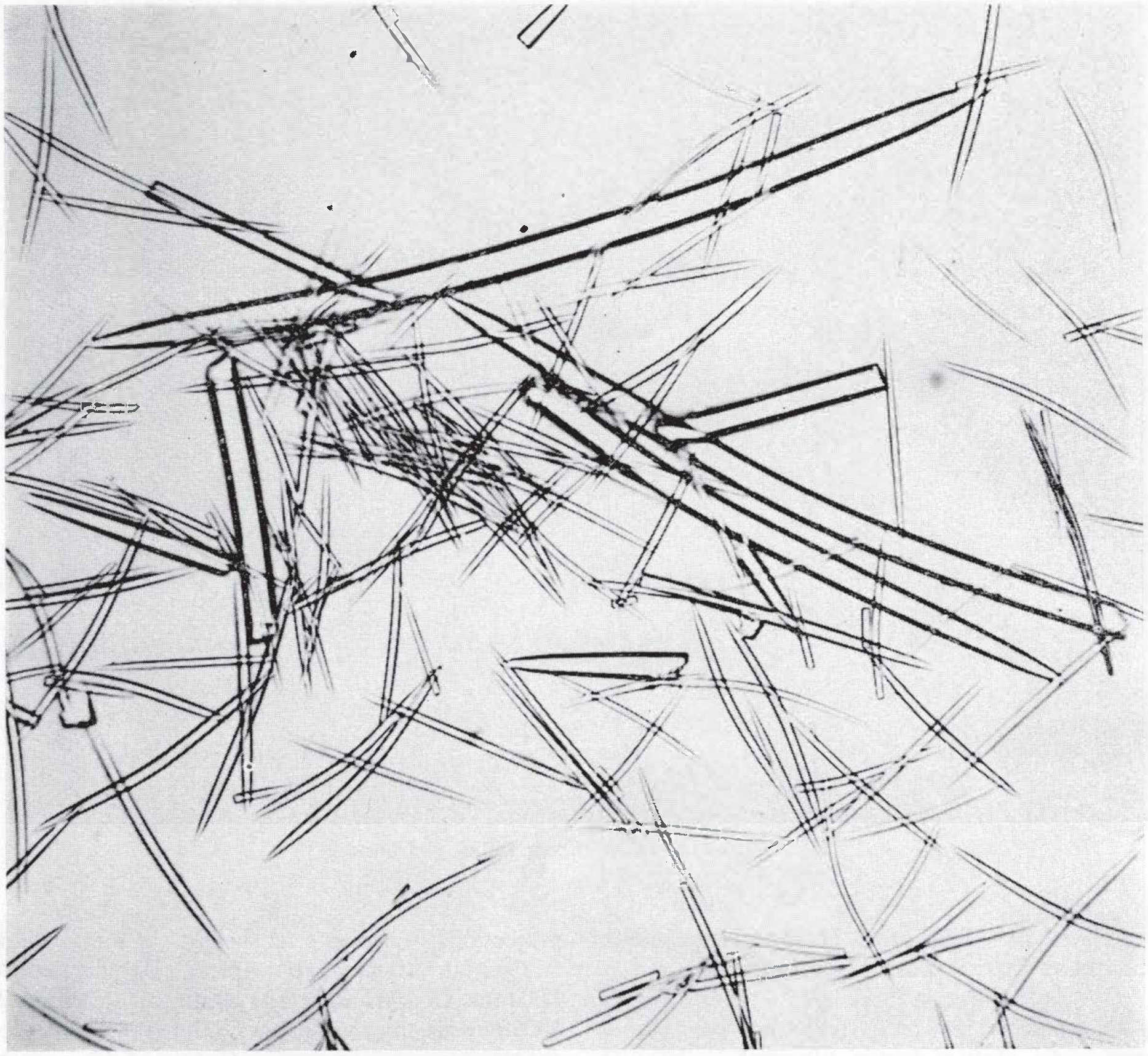

Fig. 9, b: *Halichondria rugosa* Ridley and Dendy, oxea (× 150).

Remarks

This species, originally described as var. *rugosa* by Ridley and Dendy, is markedly distinct from *H. solida*. Some differences have been previously noted, others are:

(1) The possession of two distinct categories of megascleres.
(2) The possession of distinct dermal membrane.
(3) The possession of oscula.

The maximum size of the megascleres in this species is much less than in *H. solida* (1100 × 38μ).

As described for *H. solida* var. *rugosa,* the ends of the oxea are sometimes irregular or blunted, this condition is restricted in the Chatham specimen to the larger spicules and even there is not common.

Distribution

Api (New Hebrides).

Halichondria knowltoni Bergquist nom. nov.
(fig. 10)

Halichondria reticulata Brøndsted, 1924, p. 450, fig. 9.

Locality

Sta. 26, Waitangi Wharf.

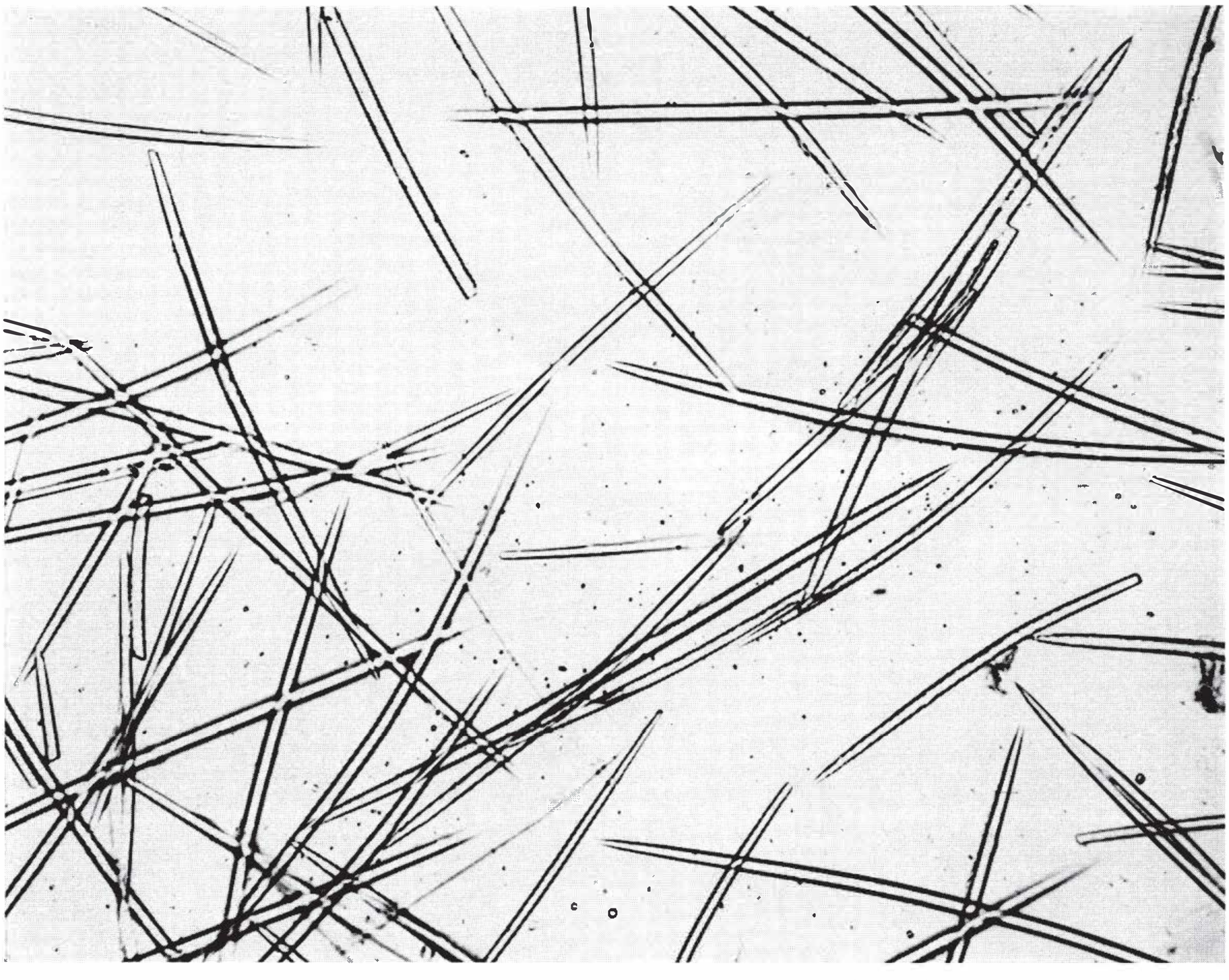

Fig. 10: *Halichondria knowltoni* Bergquist, oxea (× 150).

Description

Colour: in life, biscuit (notation not given); in spirit, yellow-white, Munsell RY 8/4. *Spicules*: oxea, 300–475 × 9–14μ.

Remarks

De Laubenfels (1936, p. 133) indicates that Brøndsted, in naming his species *H. reticulata,* used this name for the fourth time in *Halichondria.* Since *reticulata* is preoccupied, I propose for this species the name above in honour of the late Mr D. L. Knowlton, botanist, of Auckland.

The present specimen agrees in all except colour with Brøndsted's description. The Chatham sponge is a biscuit colour.

Distribution

Wellington Harbour, 5–10 fm.

Family AXINELLIDAE Ridley and Dendy

Sub-Family AXINELLINAE de Laubenfels

Genus **Axiamon** Hallmann

Axiamon novaezealandiae (Brøndsted) (fig. 11a, b)

Hymeniacidon novae-zealandiae Brøndsted, 1924, p. 477, fig. 31.

Locality

Sta. 3, Mernoo Bank, 41 fm.

Spicules

Megascleres:

(a) Styles—of two sizes:
(i) 425–500 × 18μ;
(ii) 180–300 × 8μ.
Styles may be either straight or slightly to sharply flexed.

(b) Oxea—300–325 × 8μ; much smaller developing forms of each are frequent.

Fig. 11, a: *Axiamon novaezealandiae* (Brøndsted).

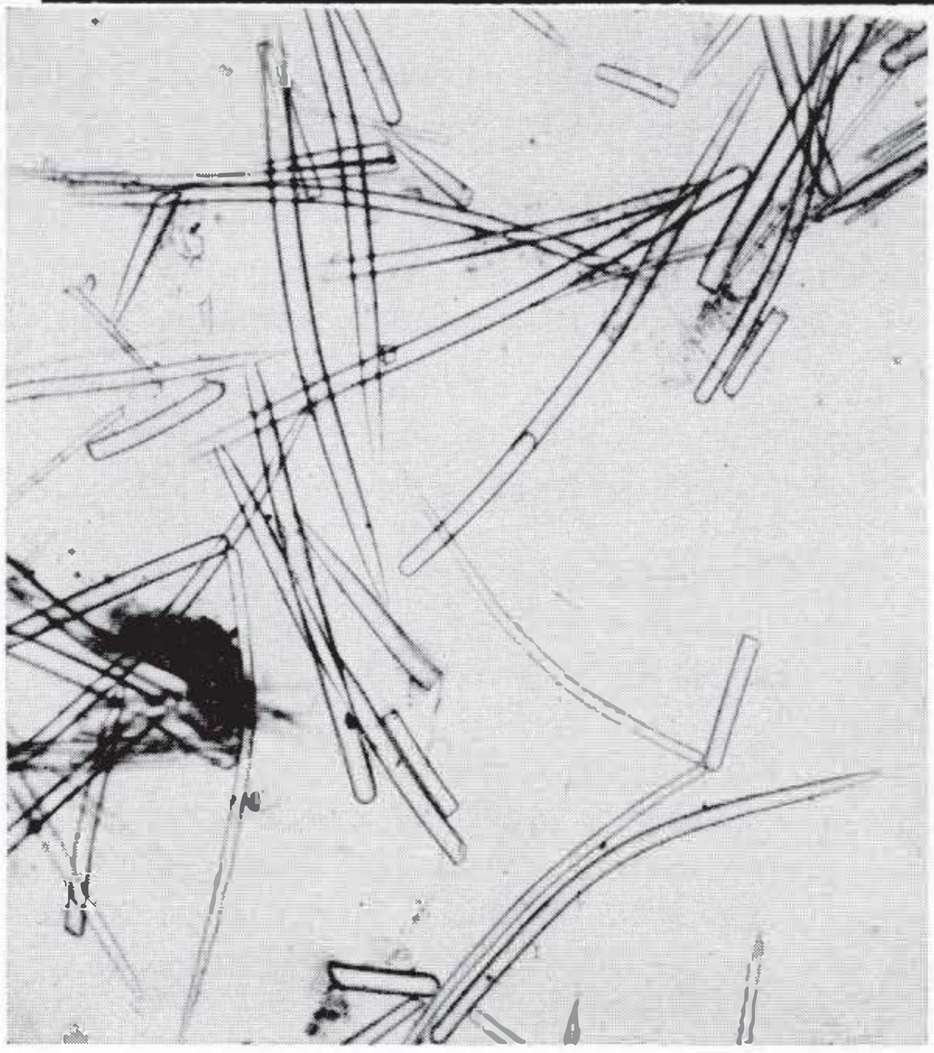

Fig. 11, b: *Axiamon novaezealandiae* (Brøndsted), oxea and styles (× 100).

Remarks

The specimen agrees very closely with Brøndsted's description. The colour in life is orange-red, Munsell YR 6/10; in spirit, greyish-white.

Distribution

Little Barrier Island, 30 fm.

Genus **Axinella** Schmidt

Axinella lamellata nov. sp. (fig. 12a, b, c)

Locality

Sta. 27, Petre Bay 45 fm.

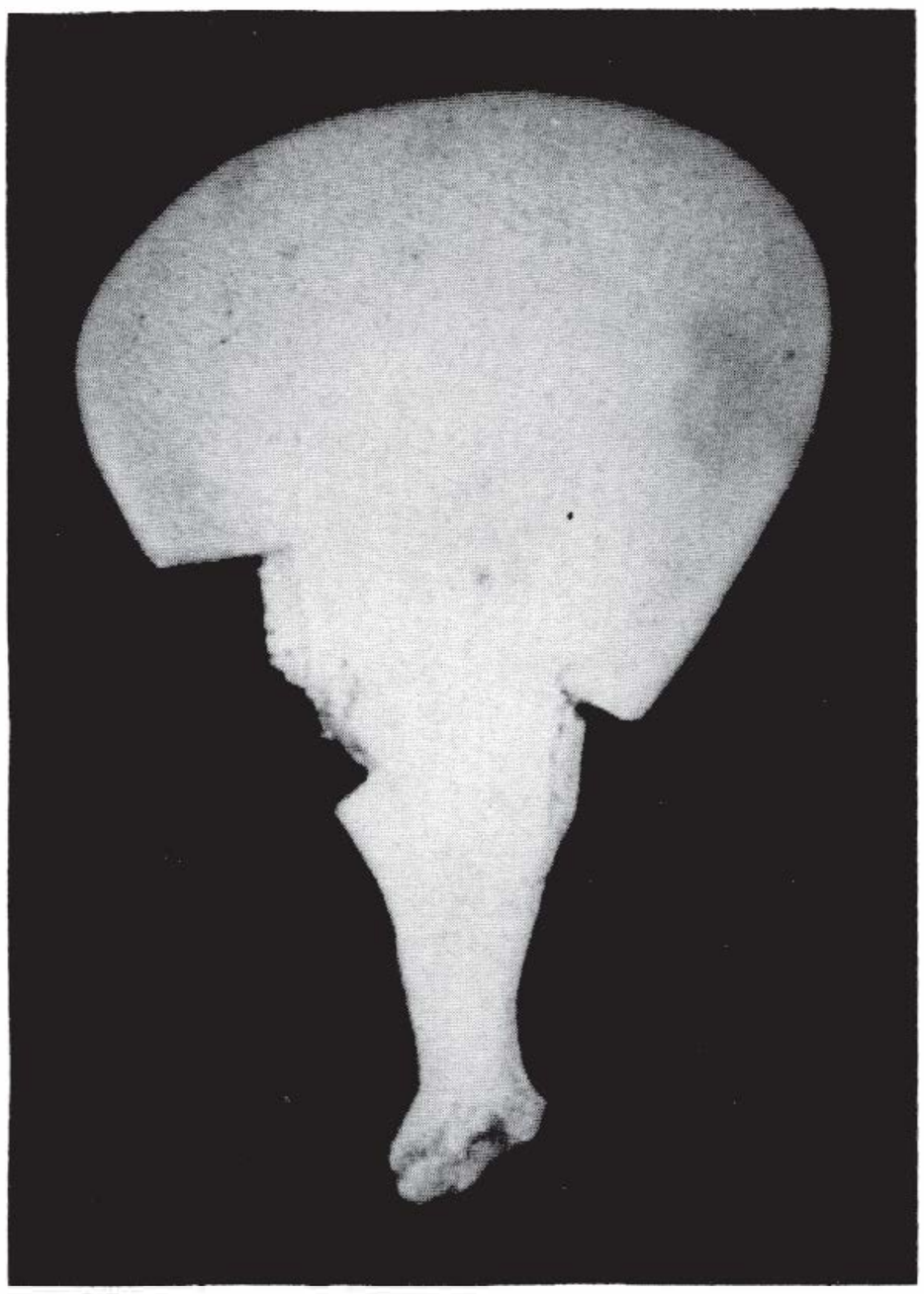

Fig. 12, a: *Axinella lamellata* (nov. sp.).

Description

A small, ear-shaped sponge, with an almost cylindrical stalk, 4 mm wide at the base. *Dimensions*: height 41 mm, width 28 mm, thickness 3 mm. *Colour*: in life, Munsell YR-Y 6/5 (deep cream); in spirit YR-Y 7/6. The surface is evenly conulose each conule receiving a small tuft of spicules which pierce its apex. Central, within the slight curve of the lamella, is a single large elevated osculum; both sides of the lamella are porous. The texture is cartilaginous.

Pronounced spicule fibres compose the skeleton. These are arranged at right angles to both surfaces and take their origin from the central region. Fibres are 38–80μ across and may contain as many as 30 spicules, though more often about 15.

Spicules

Megascleres:

Oxea—slightly flexed, occasionally straight, equiended, evenly tapered; 312–407 × 10–14μ.

Remarks

This species is typically axinellid in showing axial condensation. It differs markedly from normal axinellids, however, in the absence of branching, absence of monactines and in the possession of a relatively smooth surface.

Order **HADROMERINA** Topsent

Family CHOANITIDAE de Laubenfels

Sub-Family CHOANITINAE de Laubenfels

Genus **Latrunculia** du Bocage

Latrunculia spinispiraefera Brøndsted (fig. 13)

Latrunculia spinispiraefera Brøndsted, 1924, p. 480, fig. 33, a–e.

Locality

Sta. 6, Chatham Rise, 220 fm. 2 specimens.

Remarks

The single fragment in the collection conforms well with Brøndsted's description except in the absence of spinispirae. This specimen is badly macerated, however, and if these microscleres were confined to the endosome, it is likely that they have been lost.

Occurring very occasionally are strange spicules, rhabdostrongyles. These may be foreign, and I hesitate to make any alteration in my species determination on their account.

Spicules

Megascleres:

(a) Styles—tending slightly toward tylostyli and slightly flexed; 350 × 6μ.

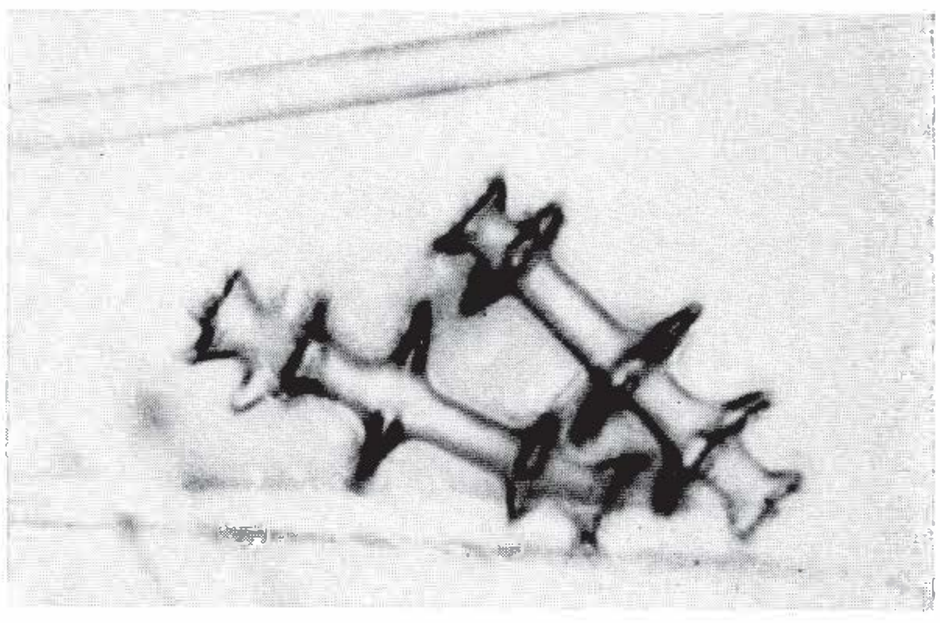

Fig. 13: *Latrunculia spinispiraefera* (Brøndsted), discorhabds (× 500).

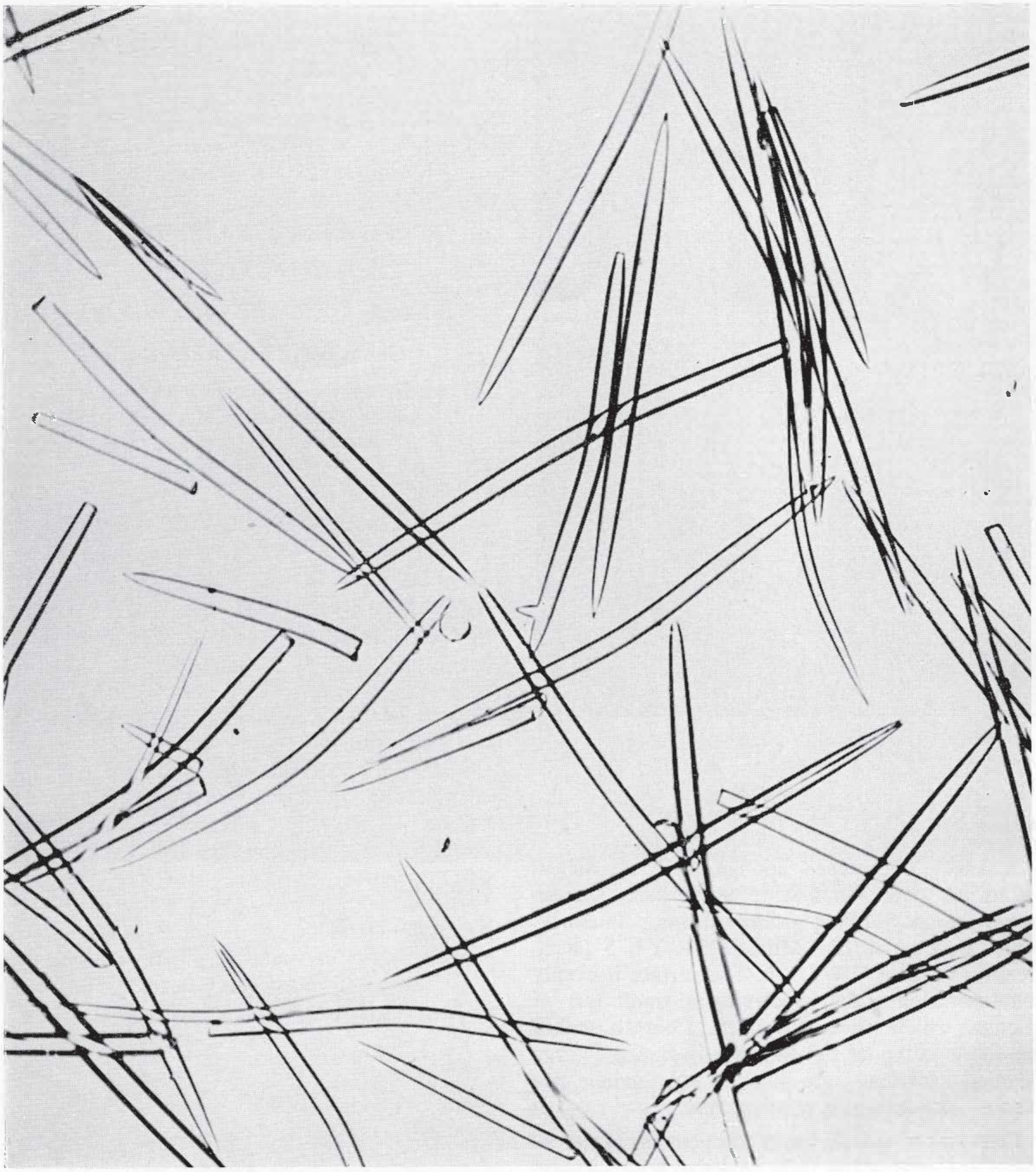

Fig. 12, b: *Axinella lamellata* (nov. sp.), oxea (× 350).

(b) Rhabdostrongyles—150 × 12μ.

Microscleres:

Discorhabds—42μ long.

Distribution

North Cape, 55 fm.

Family CLIONIDAE Gray

Genus **Cliona** Grant

Cliona celata Grant (fig. 14a, b, c)

Cliona celata Grant, 1826, p. 79.
(For synonymy up to 1900, see Topsent, 1900, p. 32-34.)

Fig. 12, c: *Axinella lamellata* (nov. sp.), portion of the skeleton showing the spicule fibres and the dermal membrane (× 120).

(For synonymy up to 1933, see Vosmaer, 1933, p. 349–383.)
Cliona celata Hartmann, 1958, p. 16.
Cliona celata Bergquist, 1960 (in press).

Locality

Sta. 23, North of Sisters, 53 fm.

Remarks

The two specimens are infesting shells of *Glycymeris laticostata* and are both at the α stage of development. As is often the case in young Clionids many of the more diagnostic spicules are lacking; no spirasters or oxea are present in either case.

The spicules present are tylostyles (262 × 4μ; head 7μ), and a few styli of similar dimensions. Excavations range in diameter from 0·3–1 mm, average 0·6 mm.

Although this sponge is a common member of the intertidal fauna of New Zealand, I can find no reference to it here prior to 1960.

Distribution

Cosmopolitan.

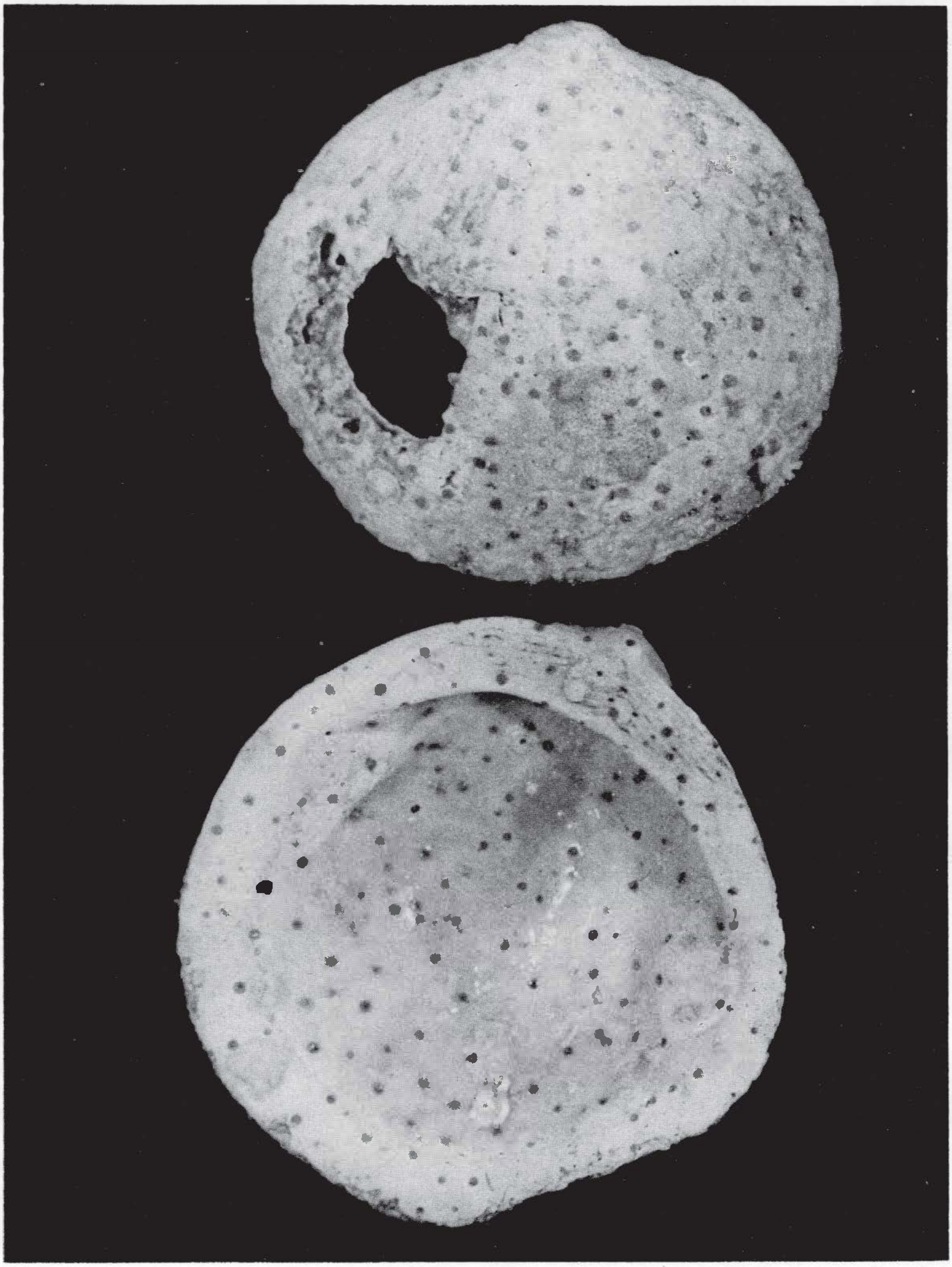

Fig. 14, a: *Cliona celata* Grant.

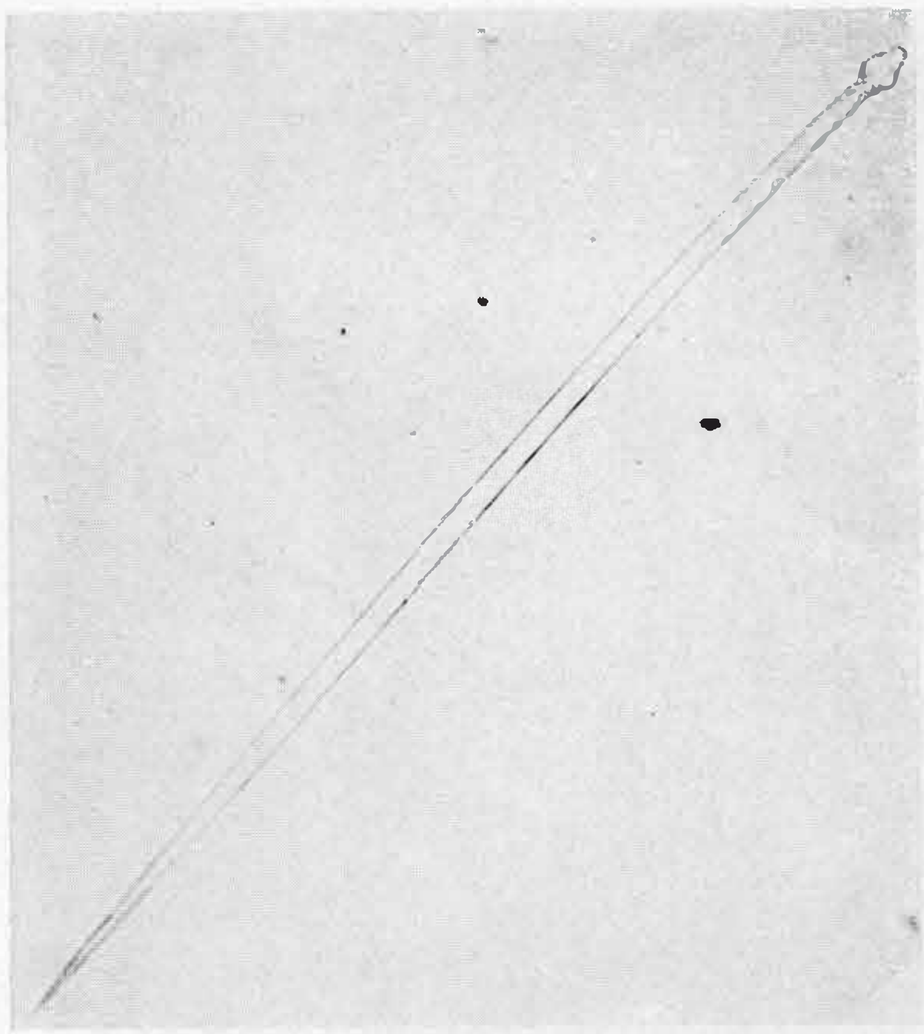

Fig. 14, b: *Cliona celata* Grant, tylostyle (× 300).

structure and has the fleshy parts completely reduced. Microscleres occur profusely throughout the endosome.

Spicules

Megascleres:

Strongyloxeas—definitely inequiended; 1218 × 18μ to 1574 × 21μ.

Microscleres:

(a) Spherasters—25–43μ in diameter, with an average 12–16 rays of uneven length.

(b) Tylasters—7–12μ in diameter, with 8–12 unequal, smooth rays.

Remarks

In details of spiculation this species approaches *T. japonica* (Sollas). Similarities extend no further than the skeletal morphology; the distinctive external appearance of this sponge is unparalleled in the genus.

Order **EPIPOLASIDA** Sollas

Family TETHYIDAE Gray

Genus **Tethya** Lamarck

Tethya compacta nov. sp. (fig. 15)

Locality

Sta. 6, Chatham Rise, 220 fm.

Description

The form of this sponge is unlike anything hitherto described in this genus, and it could be set aside specifically on these grounds alone. It is a rhomboid structure, with lateral fan-like projections (0·5–2·5 mm long), which are continuations of large cortical spicule brushes. *Dimensions*: height 5 mm, length 8 mm. *Colour*: in spirit, Munsell RY–R 2/4, a mid brown. The texture is stony and the surface coated with sand and shell particles. No external apertures were visible in the single preserved specimen.

Ectosome and endosome are clearly demarcated. The former is 1·2 mm deep and composed of closely packed spicule tracts 356–722μ across. These alternate with thin but dense tracts of tylasters, which are aggregated to a distinct dermal layer. The endosome displays the typical radiate

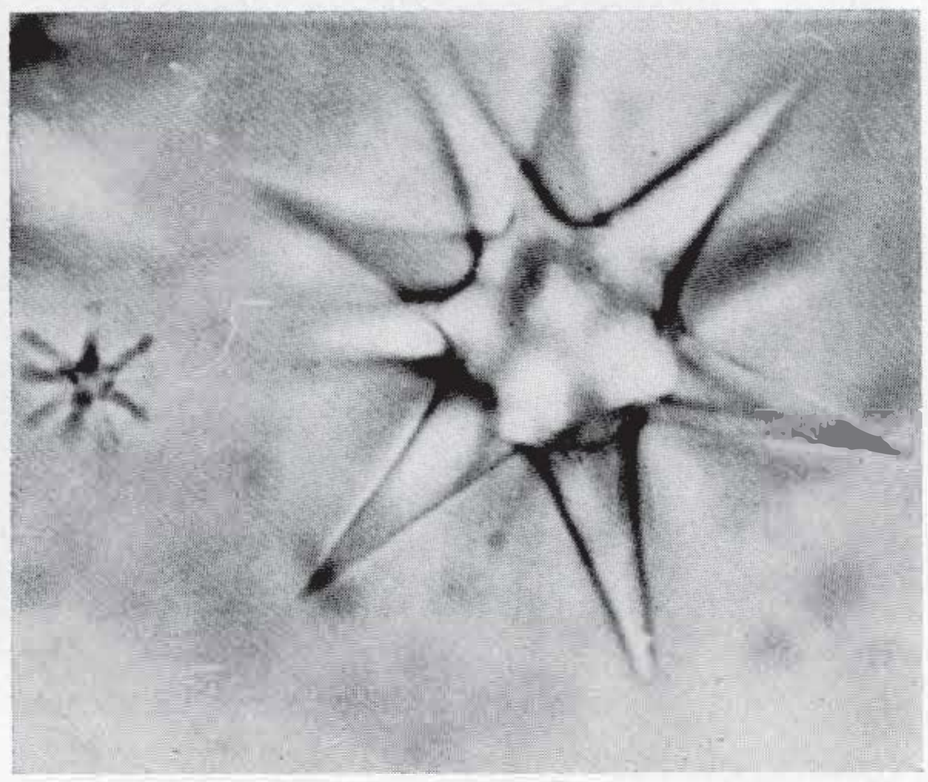

Fig. 15: *Tethya compacta* (nov. sp.), spheraster and tylaster (× 500).

Tethya multistella Lendenfeld (fig. 16a, b)

Tethya multistella Lendenfeld, 1888, p. 46–47.
Tethya multistella Hallmann, 1914, p. 270–273.
Donatia multistella Burton, 1924, p. 1038.
Donatia multistella Dendy and Frederick, 1924, p. 495–496.

Locality

Sta. 22, The Sisters, shore.

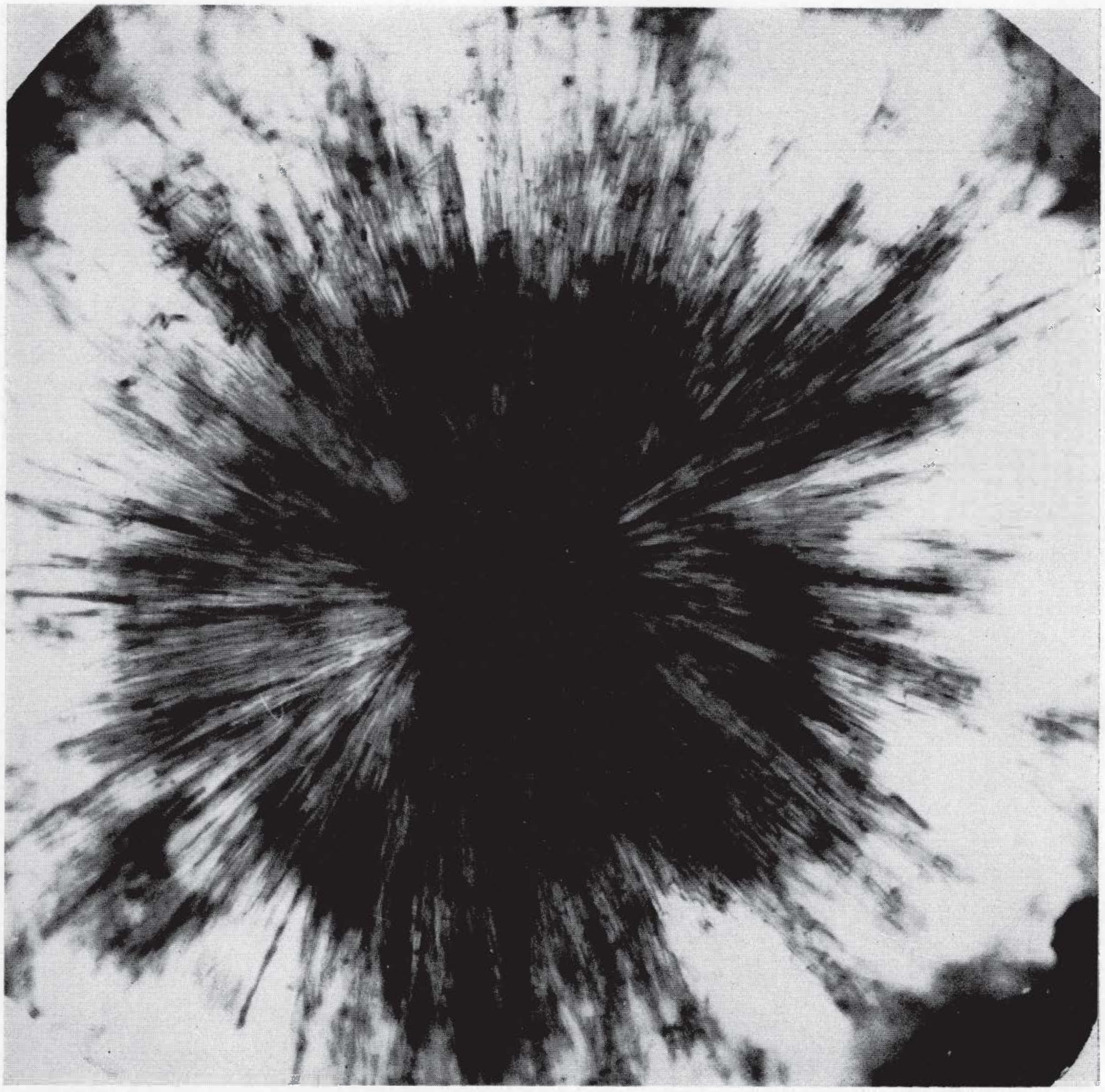

Fig. 14. c: *Cliona celata* Grant, section showing the disposition of the skeleton inside the excavations (× 80).

Description

A subhemispherical sponge, with several root-like processes springing from its ventrolateral border. *Dimensions*: height 20·2 mm, diameter 27·4 mm. *Colour*: in spirit, white. The surface is weakly tuberculate, the tubercles being 0·5 mm high × 2·5 mm wide. The usual division into cortex and endosome is very pronounced, the former being 3·5 mm deep, cartilaginous, and fawn in colour; the latter is strongly radiate and light brown in colour.

Spicule brushes in the cortex range from 255–390μ in diameter; between and among them are frequent loose megascleres and dense concentrations of tylasters. The spherasters are not organised to any distinct layer but are frequent in the cortex toward the inner edge. The endosome is composed of a solid radiate mass of spicule tracts which diverge at the junction of endosome and cortex; some enter the cortical region and the terminal spicules of these pierce the surface. Microscleres are present, but sparse in the endosome.

Fig. 16, a: *Tethya multistella* Lendenfeld, section of cortex showing spicule brushes and microscleres (× 80).

Spicules

Megascleres:

(a) Strongyloxeas—840–1250 × 12–16μ; these are the structural spicules, chiefly straight but can be slightly curved.

(b) Styles—200–730 × 4μ; these are abruptly and unevenly narrowed at the oxeote end.

Microscleres:

(a) Spherasters—20–35μ diameter with conical rays, 8–12μ long; the number of rays ranges from 12 to 18.

(b) Tylasters—8–10μ in diameter with an average of 8 tylote, terminally spined rays.

(c) Oxyasters—8–10μ in diameter; not spined, rare.

Remarks

The known species of this genus are on the whole poorly described and figured, hence the full

Fig. 17, a: *Thenea novaezealandiae* (nov. sp.).

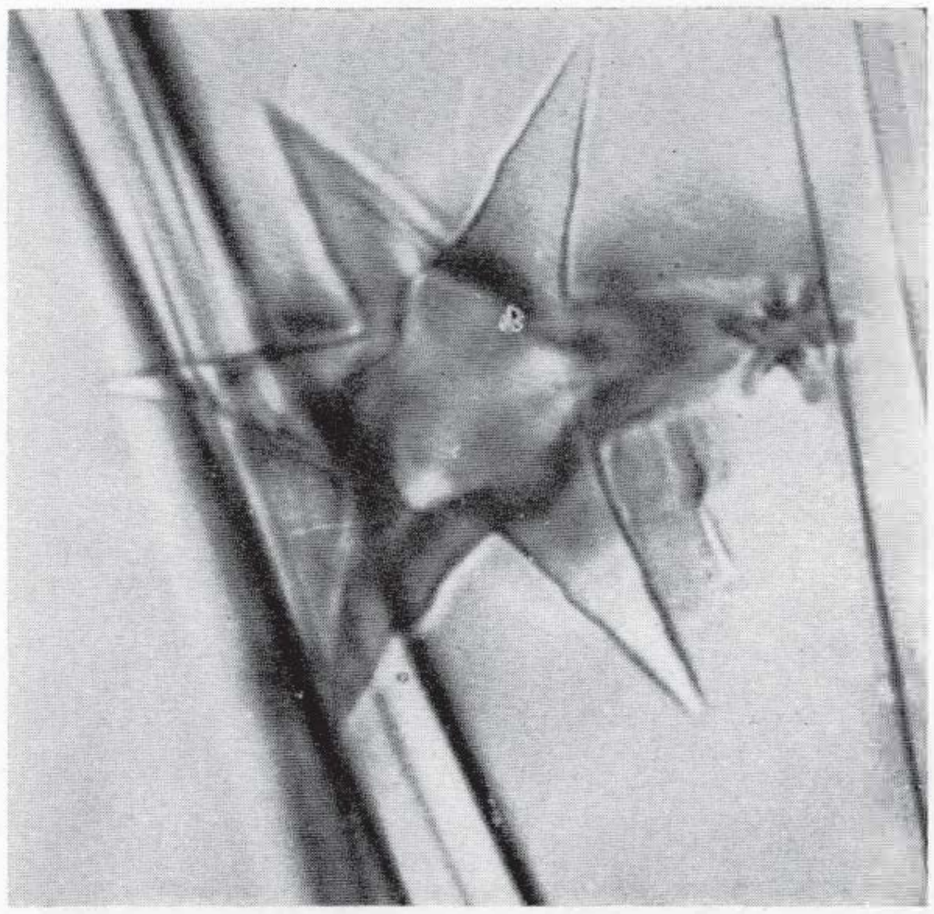

Fig. 16, b: *Tethya multistella* Lendenfeld, spheraster and tylaster (× 500).

description in this case. In the absence of accurate descriptions of type material, it is impossible to decide whether *T. multistella* should be maintained or united with *T. aurantia* (Pallas).

Distribution

Port Jackson, Port Phillip (Australia); Abrolhos Islands (S.W. Australia); Chatham Islands.

Order **CHORISTIDA** Sollas

Family ANCORINIDAE Gray

Sub-Family ANCORININAE de Laubenfels

Genus **Thenea** Gray

Thenea novaezealandiae nov. sp. (fig. 17a, b, c, d, e)

Locality

Sta. 34, East of Forty-fours, 130 fm.

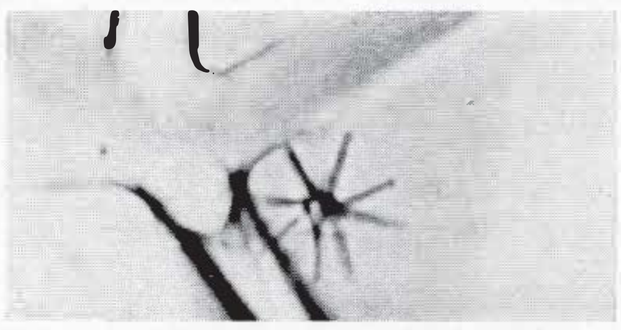

Fig. 17, b: *Thenea novaezealandiae* (nov. sp.), plesiaster (× 500).

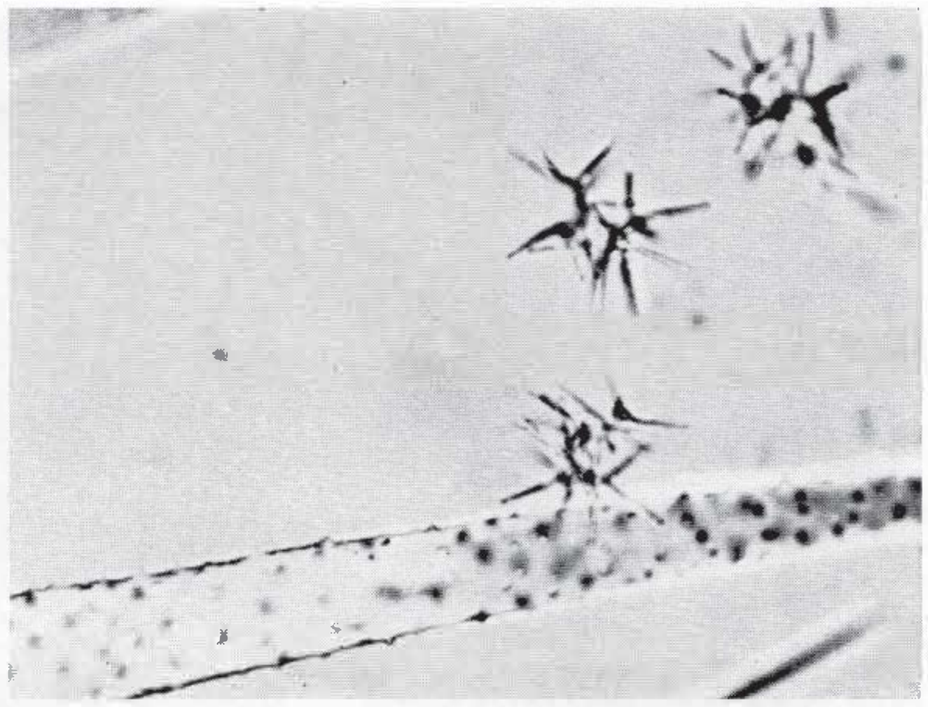

Fig. 17, c: *Thenea novaezealandiae* (nov. sp.), metasters (× 500).

Description

A sub-spherical sponge with a definite external form, a more or less flattened summit and rounded base. *Dimensions*: height 24 mm, width 28 mm. *Colour*: in spirit, grey. Oscula congregated on upper surface, range of size considerable, largest 0·3 cm diameter; not in any way fringed with protecting spicules; membranes delicate. Rootlets are small and relatively inconspicuous, arising abruptly from the ventral and ventrolateral surfaces of the sponge. Body of the sponge compact, architecture radiate as typical of the order; the texture is spongy. Surface is uniformly hispid; no large and obviously projecting spicules present, however. There is no differentiation of the body into ectosomal and endosomal regions. An equatorial recess is formed by the projection of the summit over the base and here a delicate poriferous membrane covers a series of sub-dermal cavities.

The chief structural spicules are oxea, radially disposed, and calthrops, scattered throughout the body of the sponge.

Spicules

Megascleres:

(a) Oxea—400 × 25μ; slightly curved.

(b) Calthrops—with evenly microspined rays, 162μ. Usually 4 rays not necessarily tetrahedrally disposed; 3–4–5–6 rays. Arms may be secondarily bifurcate.

(c) Anatrienes—250μ; fine (6μ) shaft with short (0·025μ) sharply recurved cladi, occasional.

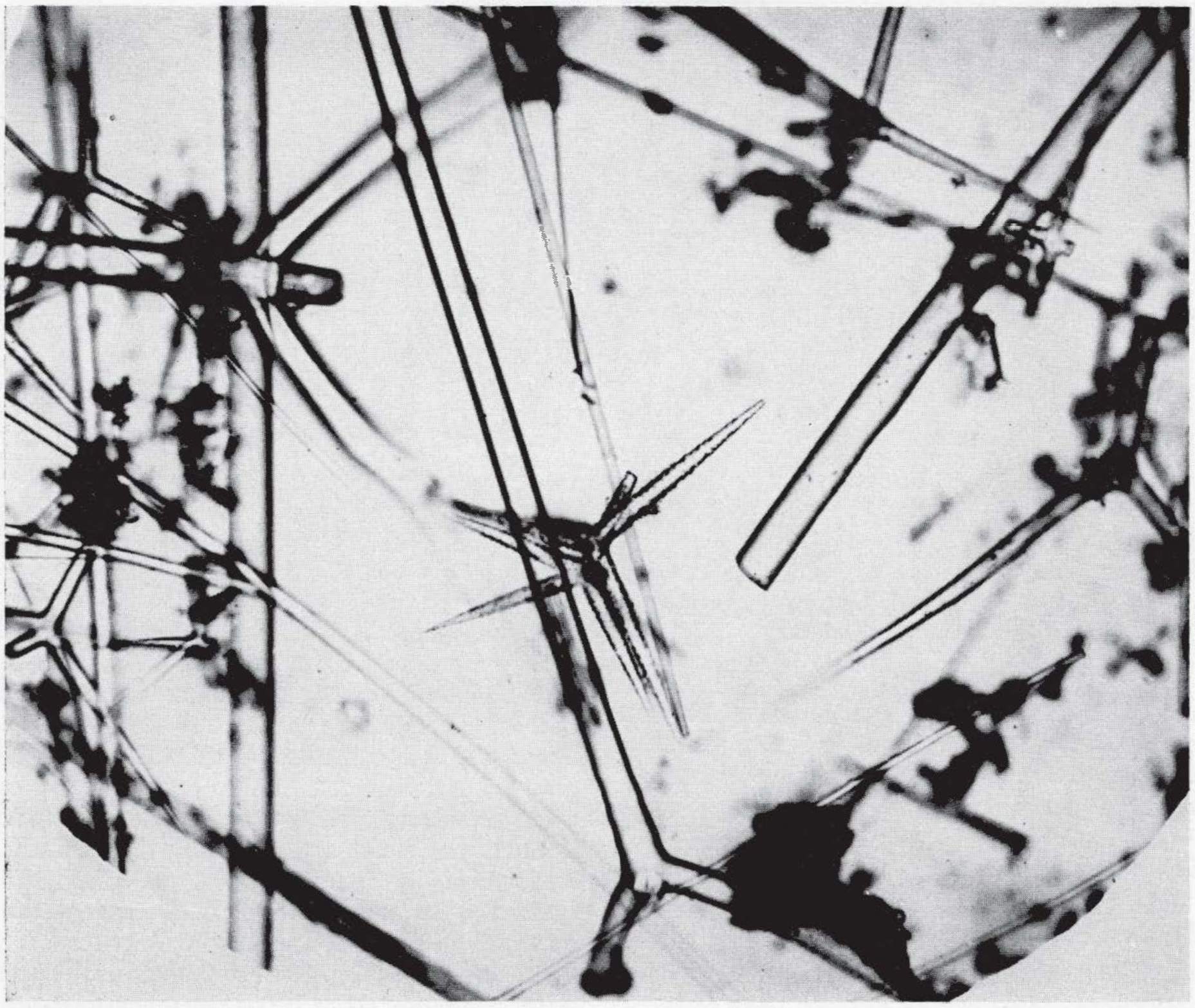

Fig. 17, d: *Thenea novaezealandiae* (nov. sp.), smooth and spined calthrops, oxea and portions of large dichotriaenes (×80).

(d) Dichotrienes—with very long cladi (400μ) and extremely short rhabd, rare.

(e) Smooth calthrops—ranging in size from just smaller than average spiny calthrops to large microscleres.

Microscleres:

(a) Amphiasters—21μ.

(b) Metasters—21μ.

(c) Plesiasters—41μ.

All microscleres uniformly microspined.

Remarks

This species appears closest to *T. megaspina* (Lendenfeld, 1907), but differs from it in the absence of tylostyles and protrienes, and in the dimensions of the plesiasters, which here are considerably smaller. These two species stand apart from all hitherto described species of *Thenea* in having spined plesiasters. It is appropriate here, to emphasise the distinctness of *Thenea* and *Ancorina*. The presence in the former of large calthrops and in *T. megaspina* and *T. novaezealandiae* of spinose calthrops and microscleres would support Sollas in maintaining his family Theneidae which is discredited by de Laubenfels (1936).

Genus **Penares** Gray

Penares tylotaster Dendy

Penares tylotaster Dendy, 1924, p. 303, pl. vii, figs. 16–19.

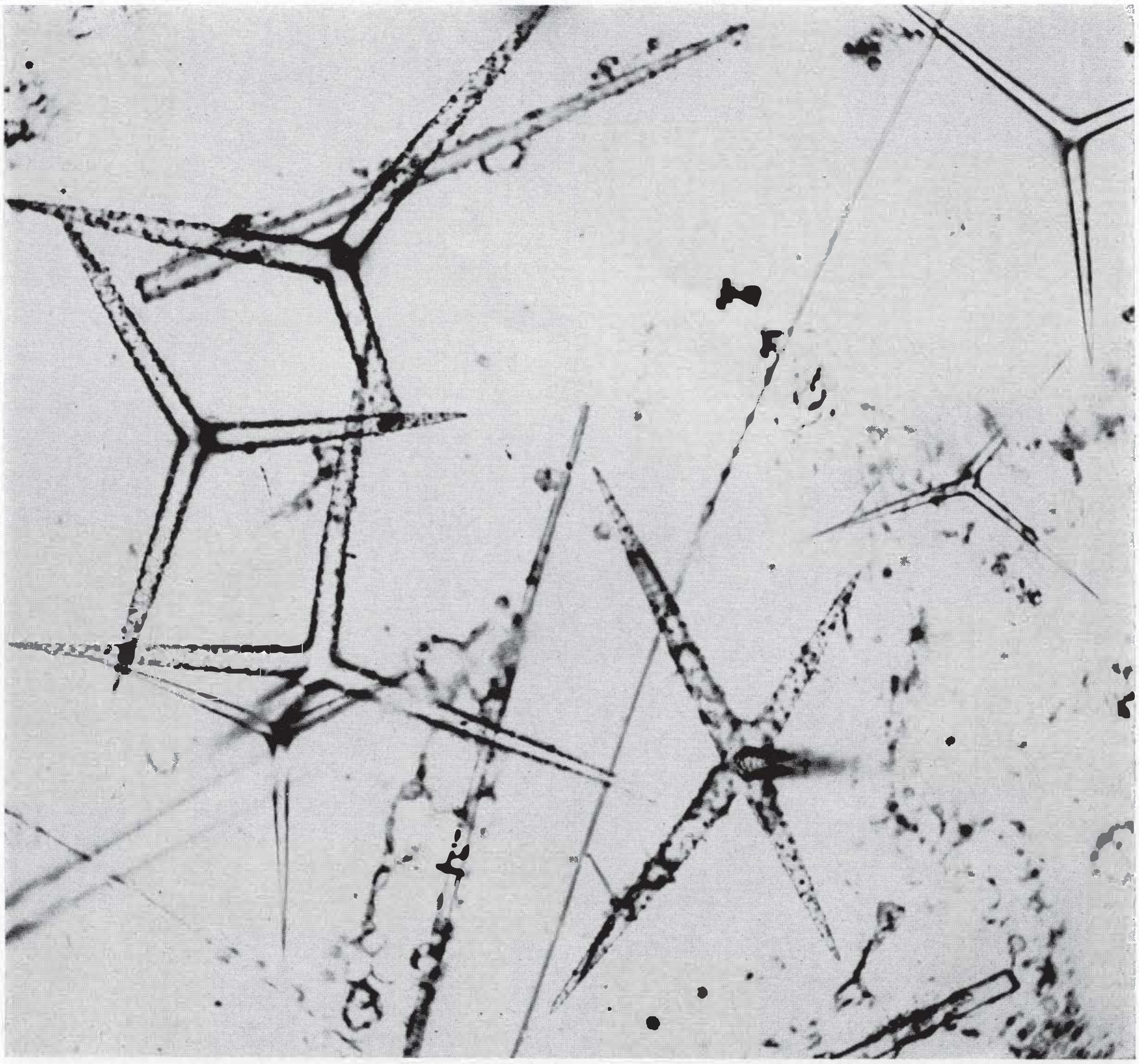

Fig. 17, e: *Thenea novaezealandiae* (nov. sp.), smooth and spined calthrops (× 80).

Penares tylotaster Brønsted, 1924, p. 440.
Penares tylotaster Burton, 1929, p. 415.

Locality

Sta. 6, Chatham Rise, 220 fm.

Remarks

This single fragmentary specimen concurs with the type description in all major respects. It contains only rare dichotriaenes and in this feature resembles Brøndsted's specimen. The sponge contains much calcareous debris and appears to have been of a semi-encrusting habit.

Distribution

North Cape (70 fm.); Slipper Is. (coast); McMurdo Sound (140 fm.).

Sub-Family STELLETTINAE de Laubenfels

Genus **Stelletta** Schmidt

Stelletta novaezealandiae Brøndsted (fig. 18a, b)

Stelletta novaezealandiae Brøndsted, 1924, p. 436, fig. 2, a–e.

Locality

Sta. 26, Waitangi Wharf.

Fig. 18, a: *Stelletta novaezealandiae* Brøndsted.

Spicules

Megascleres:

(a) Oxea—of two distinct sizes:
  (i) Large—1570–2002 × 7–11 μ.
  (ii) Small—75 × 1·7 μ.
(b) Plagiotriaenes—1575 × 35 μ; cladome 162 μ.
(c) Dichotriaenes—2000–2100 × 50 μ; cladome 150–200 μ.

Microscleres:

(a) Chiasters—with 4–6 truncated rays.
(b) Oxyeuasters—of two types:
  (i) Small—3 μ across, with many smooth, short spines.
  (ii) Large—less frequent, 12–20 × 7–12 μ; few smooth spines.

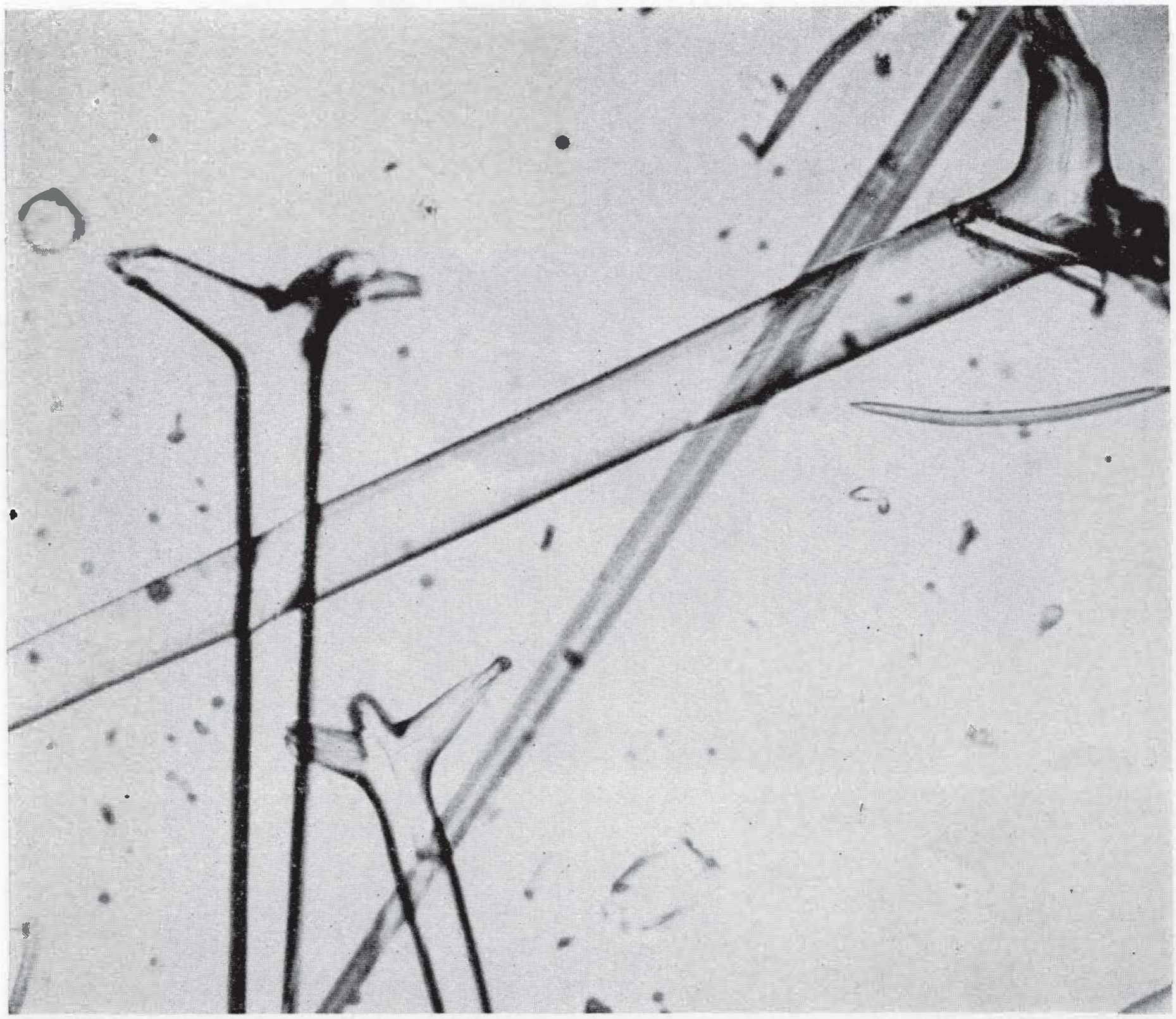

Fig. 18, b: *Stelletta novaezealandiae* Brøndsted, dichotriaene, plagiotriaene and small oxea (× 150).

Remarks

The specimen conforms moderately well to the type, although the shape is rather irregular. This is probably caused by growth in a strong current. Brøndsted figures only euasters in his type figure; it is diagnostic of *Stelletta* that microscleres are of two types—euasters and chiasters. These are both present in this specimen.

Distribution

North Cape (55 fm).

Genus **Myriastra** Sollas

Myriastra purpurea (Ridley) (fig. 19a, b)

Stelletta purpurea Ridley, 1884, p. 473, pl. xl, fig. e; pl. xliii, fig. j, j'.
Stelletta purpurea var. *retroflexa* Ridley, 1884, p. 473.
Stelletta purpurea var. *parvistella* Ridley, 1884, p. 627.
Pilochrota purpurea Sollas, 1886, p. 190.
Pilochrota longancora Sollas, 1886, p. 190.
Myriastra biformis Brøndsted, 1924, p. 437, fig. 1, a–e.
(For further synonymy see Burton, 1926, p. 45–46.)

Locality

Sta. 6, Chatham Rise, 220 fm.

Description

A larger specimen than Brøndsted's; turbinate, growing attached to a small rock. *Dimensions*: height 50 mm; width (a) base, 27 mm; (b) apex, 43 mm. *Colour*: in spirit, Munsell RY-R 6/4. No pores or oscula are visible owing to the contracted

Fig. 19, a: *Myriastra purpurea* (Ridley).

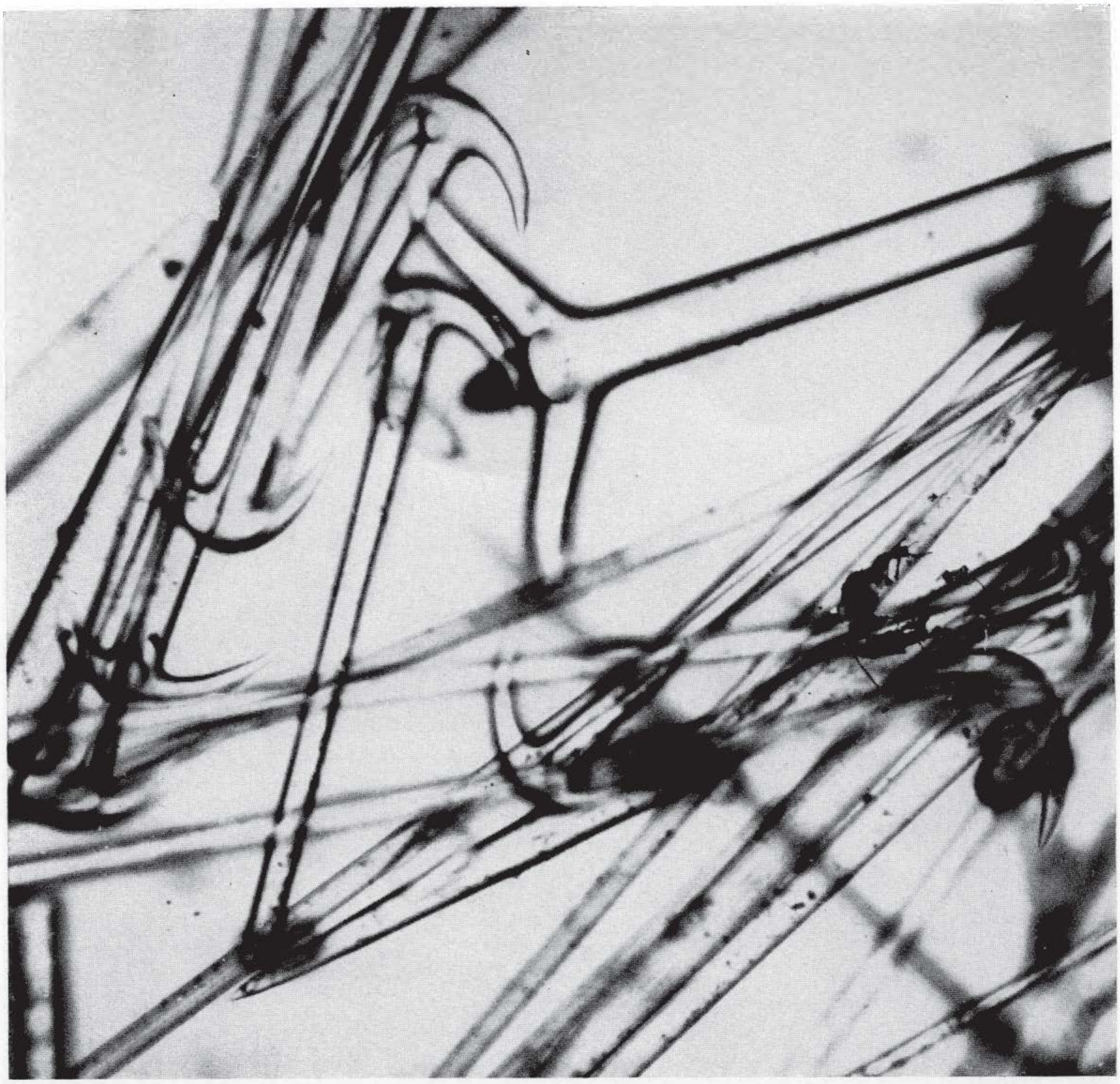

Fig. 19, b: *Myriastra purpurea* (Ridley), anatriaenes, orthotriaene and oxea (× 150).

condition. The consistency is soft and flabby, the dense ascending spicule tracts serving to maintain a definite shape. The cortex is distinct, 0·4 mm thick. The interlocked cladi of the orthotriaenes form a dense external layer. Colour is red (Munsell RY-R 6/4).

Spicules

Megascleres:

(a) Anatriaenes — 1540–1860 × 14–17·5μ. Cladi 71–98μ.

(b) Orthotriaene—2435–2700 × 35–40μ.

(c) Oxea—500–600 × 4·75μ.

Microscleres:

Chiasters—with numerous short, blunt rays, up to 8μ in diameter.

Remarks

Burton (1929) relegates this species to *Stelletta purpurea* (Ridley), this being consistent with his earlier work on Stellettids (Burton, 1926). This decision takes no account of the microsclere differentiation of the genera involved. De Laubenfels (1936) upholds *Myriastra,* on good grounds, stressing the importance of the single microsclere, the chiaster. It seems evident that *S. purpurea* is

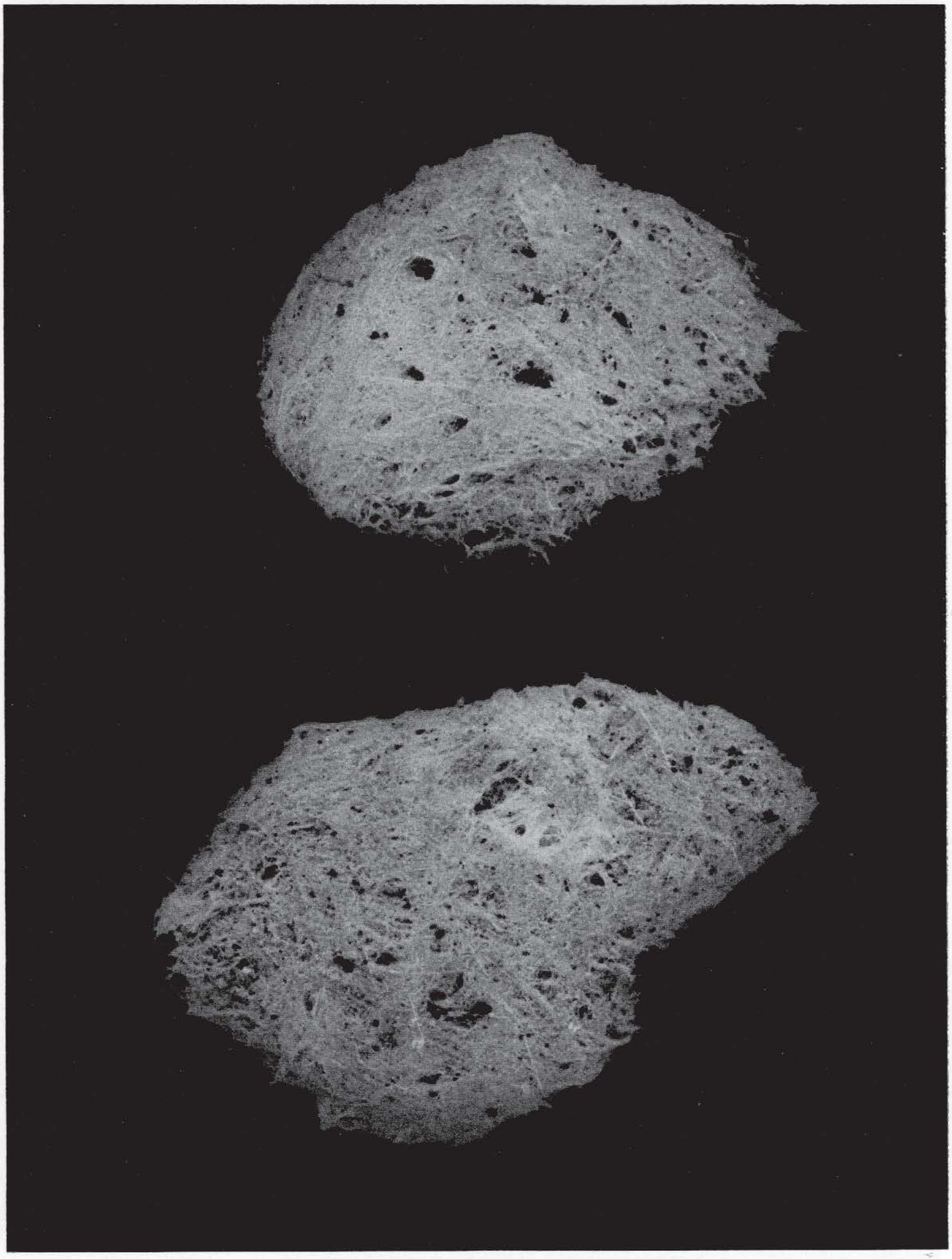

Fig. 20: Hexactinellid fragments.

in fact conspecific with *M. biformis,* but contrary to earlier suggestion, *S. purpurea* should be considered as *Myriastra purpurea,* and *Stelletta* (Schmidt) could then be retained for Stellettids with two distinct microsclere categories.

Distribution

Red Sea; Indian Ocean; Indo-Pacific and Japan; Australia; New Plymouth (8 fm.).

Class **HYALOSPONGIAE** Vosmaer

Order **HEXASTEROPHORA** Schulze

Family ASKONEMATINAE Gray
(fig. 20.)

Locality

Sta. 7, Chatham Rise, 280 fm.

Description

The material, which cannot be assigned to a genus, represents fragments from the interior of a large hexactinellid. The fragments are amorphous, with many pores, 0·2–0·5 mm–0·5 mm, scattered indiscriminately.

Much grit and mud is incorporated into the spicule weft.

Spicules

Megascleres:

Oxea:

(a) Large and smooth, 6050–9282 × 50μ.

(b) Thin with spinose ends, 5300–6700 × 6μ; often with 1 or more swellings along the length.

Microscleres:

(a) Oxyhexasters—with rays up to 20μ.

(b) Discohexasters—with rays up to 30μ; very irregular.

Remarks

Hexactines and pentactines, which are characteristic of the dermal regions of hexactinellids of this type, are lacking. It is upon these dermal spicules that the generic identification rests. The limitation of the microscleres of two types renders these spicules useless for diagnosis.

ACKNOWLEDGMENTS

I wish to acknowledge the kindness of Dr W. D. Hartmann (Peabody Museum of Natural History) in commenting upon certain of these specimens, and the assistance of Mr D. A. Challis, Zoology Department, Auckland University, in the preparation of microscope sections.

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The Keratosa (Porifera) collected by the Chatham Islands 1954 Expedition

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Abstract

Six species of Keratosa (Porifera) were collected by the Chatham Island 1954 Expedition. The genera *Euryspongia* and *Darwinella,* which have not previously been recorded from New Zealand waters, are each represented by a new species.

INTRODUCTION

The Chatham Sponge Collection includes six species of Keratosa all of different genera. Two are new species, namely, *Euryspongia arenaria* and *Darwinella oxeata.* The occurrence of these two specimens from the Chatham area is interesting in being the first record of both genera from New Zealand waters. *Euryspongia* is a northern hemisphere and tropical genus, which has extended its range to Australia and to Chile. Its occurrence in New Zealand is therefore not surprising; *E. arenaria* is, however, clearly distinguishable from other southern species. *Darwinella* is probably an almost cosmopolitan genus with a very few, variable species. The Chatham specimen is distinctive in possessing solely exeote spicules; Australian specimens of the genus all fall into *D. mülleri* which has a monact to hexact spicule complement.

Two species, *Leiosella levis* and *Polyfibrospongia australis,* are redescribed from earlier works by Lendenfeld, whose descriptions were pronounced unrecognisable by de Laubenfels (1948). In both cases, the specimens are easily identifiable with Lendenfeld's descriptions.

Dendrilla cactus is widely distributed throughout Australian seas, the Ceylon area and the Antarctic, but until now has not certainly been collected from New Zealand.

Dysidea fragilis is cosmopolitan; this is the second record of the species from New Zealand.

Previous records of Keratosa from the Chathams are:

Euspongia irregularis var. *silicata* Lendenfeld (now *Spongia zimocca* sub-sp. *irregularis*)

and

Thorecta meandrinus Lendenfeld (now *Thorecta murrayi*)

All specimens described are to be deposited in the Canterbury Museum. All colour notations given refer to Munsell's Colour Charts. (1942)

Fig. 1a: *Leiosella levis* (Lendenfeld).

LIST OF SPECIES

Order **KERATOSA** Grant

Family SPONGIIDAE Gray

Sub-Family SPONGIINAE de Laubenfels

Leiosella levis Lendenfeld

Polyfibrospongia australis (Lendenfeld)

Family DYSIDEIDAE Gray

Dysidea fragilis (Montagu)

Eurypongia arenaria nov. sp.

Dendrilla cactus (Selenka)

Family APLYSILLIDAE Vosmaer

Darwinella oxeata nov. sp.

SYSTEMATIC ACCOUNT AND DESCRIPTION OF SPECIES

Family SPONGIIDAE Gray

Sub-Family SPONGIINAE de Laubenfels

Genus **Leiosella** Lendenfeld

Leiosella levis (Lendenfeld) (fig. 1a, b)

Euspongia levis Lendenfeld, 1886.

Leiosella levis Lendenfeld, 1889, p. 213, pl. 12, fig. 14; pl. 15, fig. 6; pl. 20, fig. 14.

Locality

Sta. 6, Chatham Rise; 220 fm. (3 specimens).

Description

Massive, irregularly lobose sponges, the smallest specimen 7 cm high, 5 cm wide, 2 cm thick, the largest 12 cm high, 7 cm wide, the various lobes 1–1·75 cm thick.

The surface is minutely conulose, the hemispherical conuli coinciding with the apices of the primary fibres. Conuli are 0·25–0·3 mm high, and regularly spaced 0·3–0·5 mm apart over the whole surface save in the immediate vicinity of oscula.

Oscula may occur anywhere over the surface, but are chiefly confined to the ridges; they range from 0·5 to 2·25 mm diameter. The texture is firm, rather elastic, fleshy; colour in spirit greyish-white externally, red-brown, (Munsell Y-R 6/4) internally.

Skeleton is a reticulation of primary and secondary fibres overlain at the surface by a dermal membrane 0·25 mm thick, which contains a regular network of sand grains. All primary fibres are fascicular, cored with detritus (spicule fragments, and sand grains). Secondary fibres are uniformly full of inclusions. The fibre network is roughly polygonal.

Fibre Dimensions

Primary	*Secondary*
87–121μ (mean 108μ)	48–62μ (mean 56μ)

There is a distinct sand cortex.

Flagellate chambers can only just be discerned, due to the poor state of preservation of the specimens. They appear to range from 13·0–23·18μ (mean 20·9μ) in diameter and are roughly spherical.

Remarks

Leiosella levis was pronounced unrecognisable except as to genus by de Laubenfels (1948).

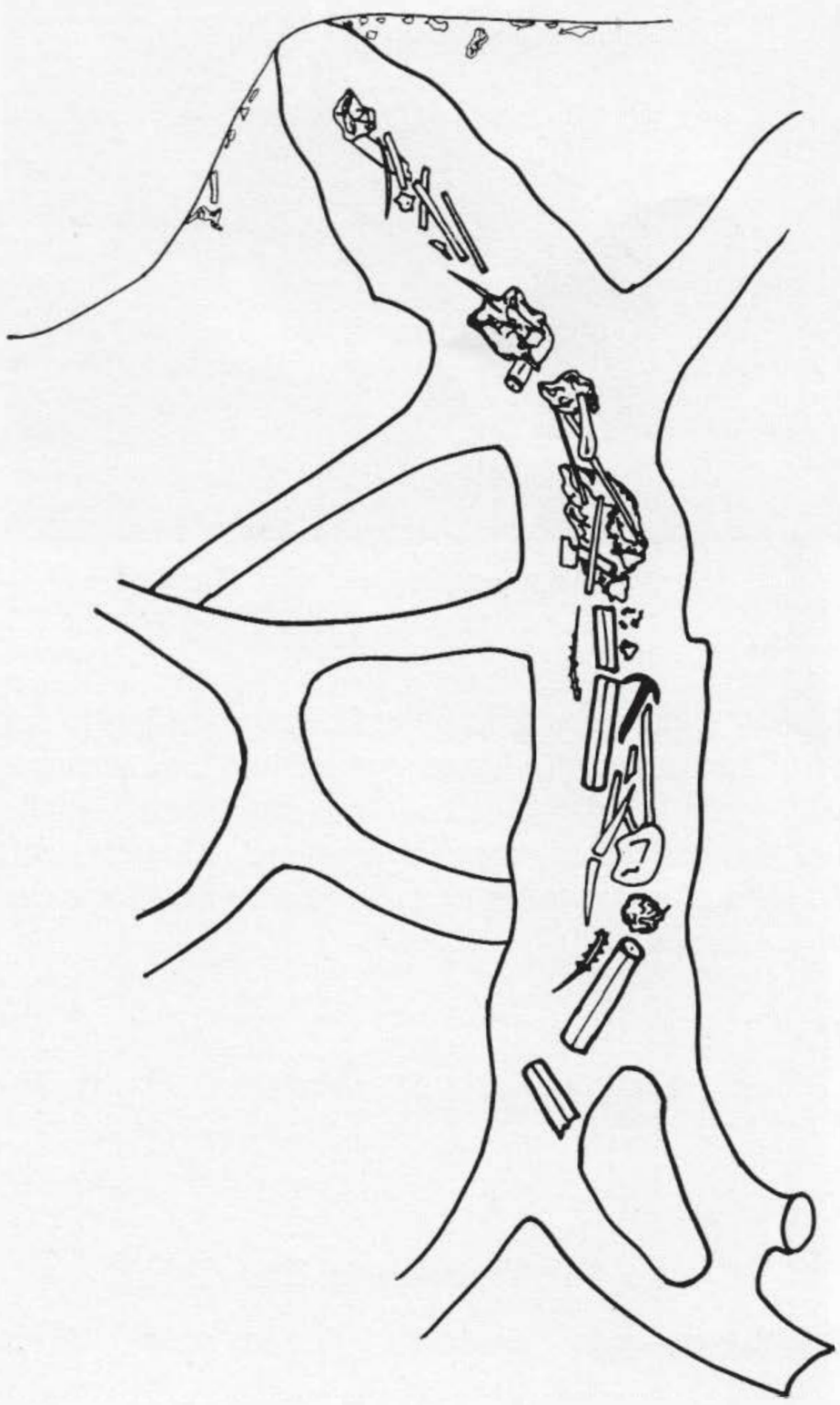

Fig. 1b: *Leiosella levis*, portion of skeleton showing primary and secondary fibres.

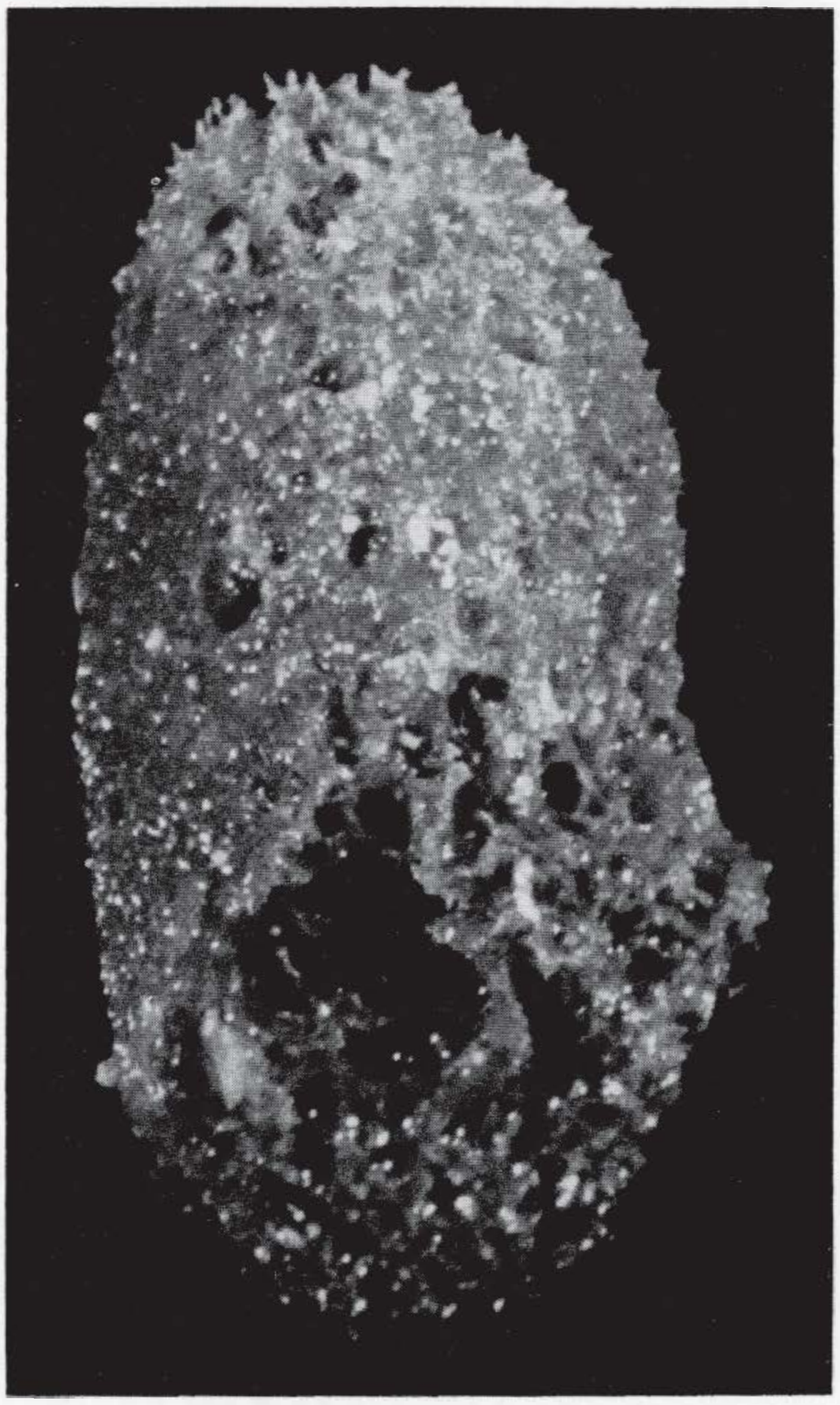

Fig. 2a: *Polyfibrospongia australis* (Lendenfeld).

Lendenfeld's description and figures (1889) appear adequate for the recognition of this species, particularly when considered in terms of de Laubenfels' more specific diagnosis of *Leiosella*. *L. levis* is consequently restored as a valid species of *Leiosella*.

Distribution

East, west and south coasts of Australia; 5–10 fm.

Genus **Polyfibrospongia** Bowerbank

Polyfibrospongia australis (Lendenfeld) (new comb.) (fig. 2a, b)

Stelospongos levis Hyatt, 1877, p. 530, pl. 15, fig. 16.

Stelospongos levis, var. *rotundus*, Hyatt, 1877, p. 530, pl. 17, figs. 23, 24.
Stelospongus levis Carter, 1885, p. 303.
Stelospongia australis Lendenfeld, 1886, p. 166.
Stelospongia australis, var. *conculata?*, Lendenfeld, 1889, p. 516, pl. 25, fig. 3; pl. 29, fig. 3; pl. 30, figs. 12, 13; pl. 31, figs. 2, 8.

Locality

Sta. 3, Mernoo Bank, 41 fm.

Description

A small, cylindrical sponge 2·2 cm high, 1 cm diameter. The surface is almost smooth; the conuli formed by the ends of the primary fibres, only just protect. The meshes of the skeleton form a regular rectangular pattern at the surface, the meshes are 0·25–1 mm in diameter externally, up to 2·5 mm internally.

Oscula are level with the surface and range from 1 to 2 mm in diameter.

The texture is soft, compressible but elastic, the colour in the dried specimen is a rich golden brown (YR 3/4).

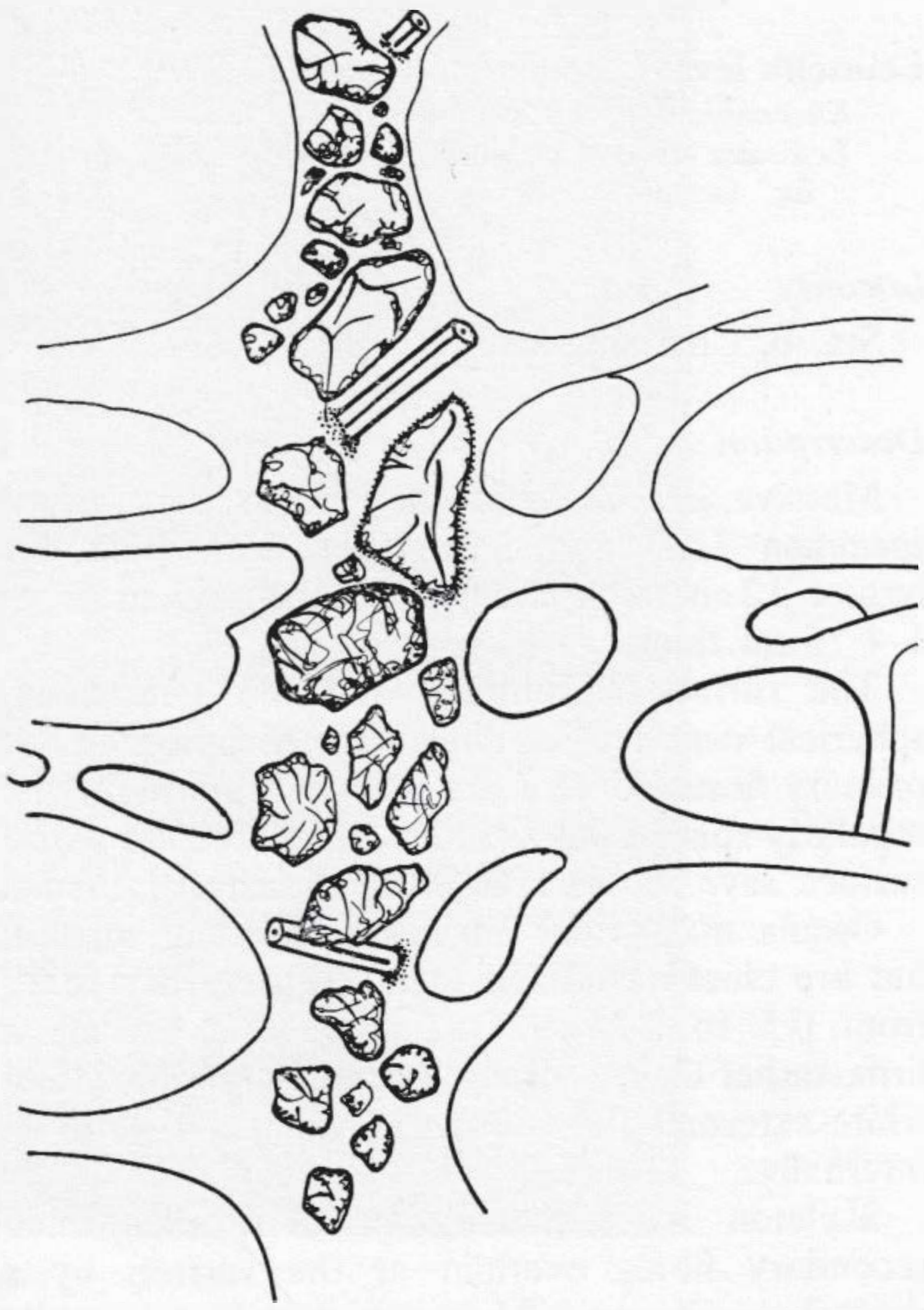

Fig. 2b: *Polyfibrospongia australis*, portion of skeleton showing primary and secondary fibres.

The skeleton is a reticulation of fascicular, trellised, cored, primary fibres and uncored slender secondaries. Inclusions in the primary fibres are chiefly sand grains; a few spicule fragments are present. A plumose configuration is formed by the ascending fibres.

Fibre Dimensions

	Nodes	Normal Diameter	
Primary fibres	145–180μ	63–106μ	(mean 90μ)
Secondary fibres		22– 48μ	(mean 31·9μ)

The outlines of the primary fibres are extremely wavy and irregular, their shape depending largely on the type of coring material.

No accurate measurements could be made of flagellate chambers; all indications are that they are small, about 20–25μ in diameter.

Remarks

Since the allocation of this specimen to the Spongiidae depends largely on measurement of flagellate chambers and since these are not preserved intact, there is a possibility that this diagnosis may prove to be wrong. All published accounts of the genus *Polyfibrospongia* seem, however, to admit this specimen easily.

Lendenfeld's *Stelospongia australis* was designated unrecognisable by de Laubenfels (1948) except as *Polyfibrospongia*. Allowing for variation in external form, it seems to me highly probable that this specimen is typical of the *S. australis* var. *conulata* group which has been previously recorded from Dunedin by Lendenfeld.

Family DYSIDEIDAE Gray

Genus **Dysidea** Johnston

Dysidea fragilis (Montagu) (fig. 3a, b)

For synonymy see Burton, 1934, p. 583; de Laubenfels, 1948, pp. 137–142.

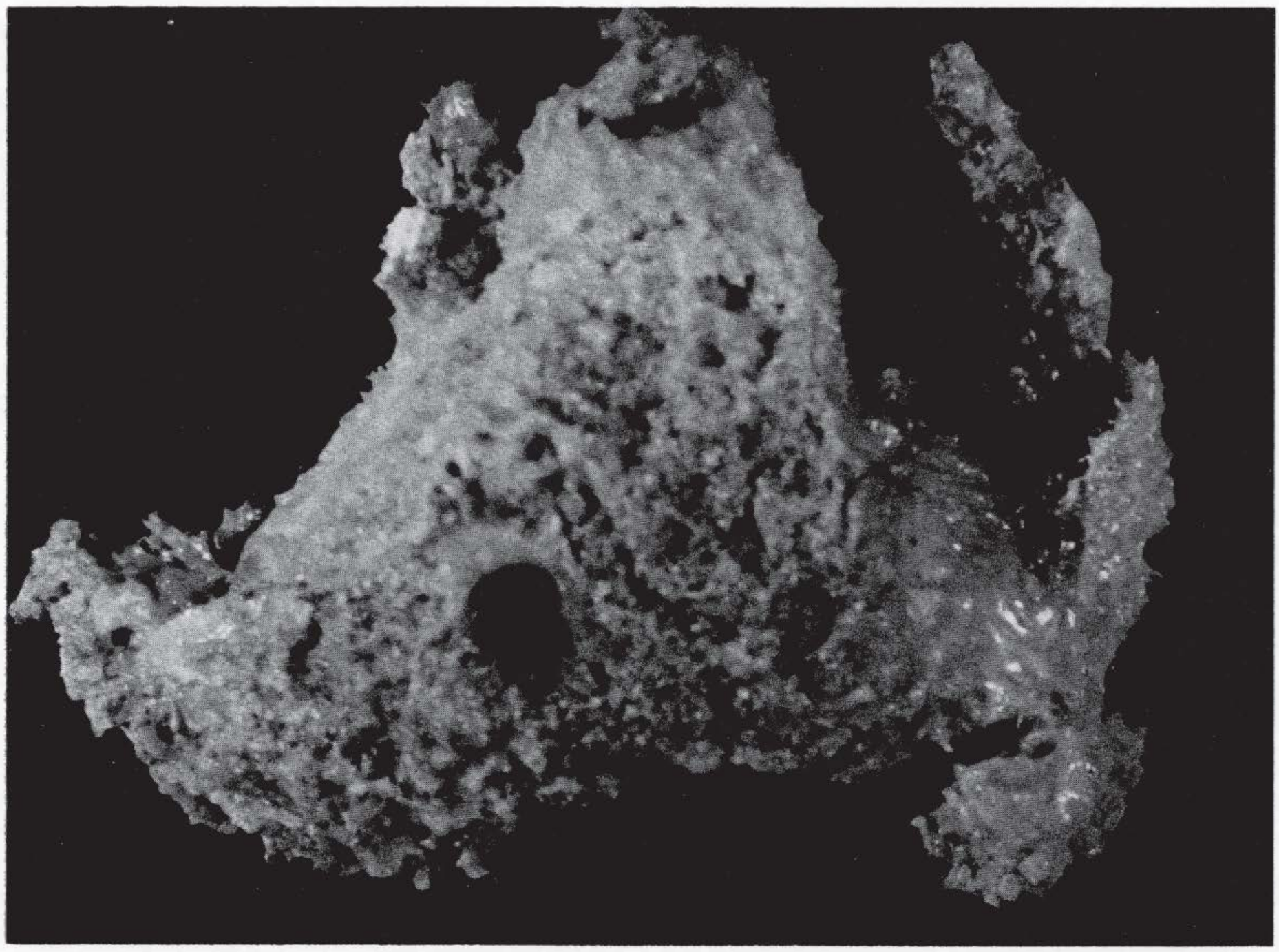

Fig. 3a: *Dysidea fragilis* (Montagu).

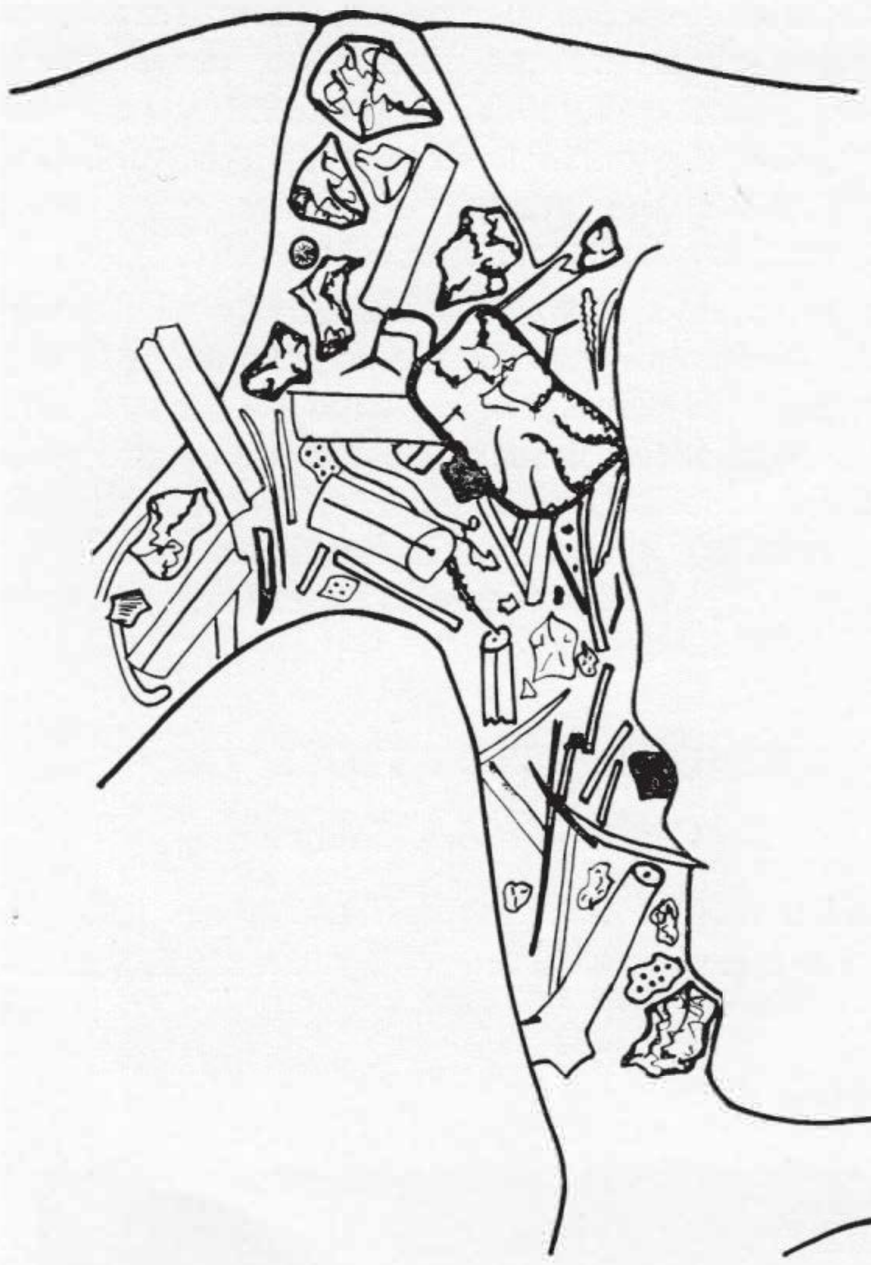

Fig. 3b: *Dysidea fragilis*, portion of skeleton showing primary and secondary fibres.

Locality

Sta. 3, Mernoo Bank; 41 fm.

Description

An irregular specimen 5 cm long, 3 cm wide, with cylindrical processes rising from the basal mass. At the apex of each cylinder is a single osculum 1–1·5 mm in diameter partially closed by a thin membrane. The surface is conulose, conuli up to 3 mm high and 1–3 mm apart. Colour in life Munsell Y-R-Y 5/2, brownish-grey; in spirit Y-R-Y 7/2.

Primary and secondary fibres are densely cored with debris and much foreign matter lies in the interfibrillar regions.

Fibre Dimensions

Primary fibres 150–340μ.
Secondary fibres 35–48μ.

Flagellate chambers

60–80μ.

Distribution

Cosmopolitan.

Genus **Eurypongia** Row

Eurypongia arenaria nov. sp. (fig. 4a, b, c)

Locality

Sta. 14, Hanson Bay; 15 fm.

Description

A small, almost cylindrical sponge 2·9 cm high by 1·5 cm wide. The surface is conulose, conuli 1·5 mm high, 2–3·5 mm apart. Capping each conule is an agglomeration of sand grains, sparsely surrounded by spongin. This is an external continuation of each primary ascending fibre. A delicate dermal skeleton is present, regularly arranged between the conuli and giving a web-like appearance to the dermal membrane.

Oscula are scattered over the surface and are 0·4–0·5 mm in diameter; inhalant pores are present over the whole surface and give access to a series of subdermal cavities.

The texture is granular and incompressible as a result of the incorporation of quite coarse debris into the body of the sponge. Colour in life Munsell YR-Y 7/4, a biscuit colour; in spirit Y 8/2, dull yellow gray.

The skeleton is a definite reticulation of spongin fibres; primaries are cored with spicule fragments and the secondaries, branching at right angles to them, are free of any inclusions. As the mesh formed by the fibres is irregular, no measurement can be given.

Fibre Dimensions

Primary fibres 170–242μ.
Secondary fibres 38–121μ.

Flagellate chambers are eurypyllous and occasionally very large; average diameter is 86–120μ.

Remarks

This species is close in many respects to *E. lactea* Row, but the fibres are much stouter and the flagellate chambers considerably smaller. In the possession of sandy material capping the fibres it is reminiscent of *E. arenofibrosa* from West Australia, but in the New Zealand specimen well-marked conuli are retained.

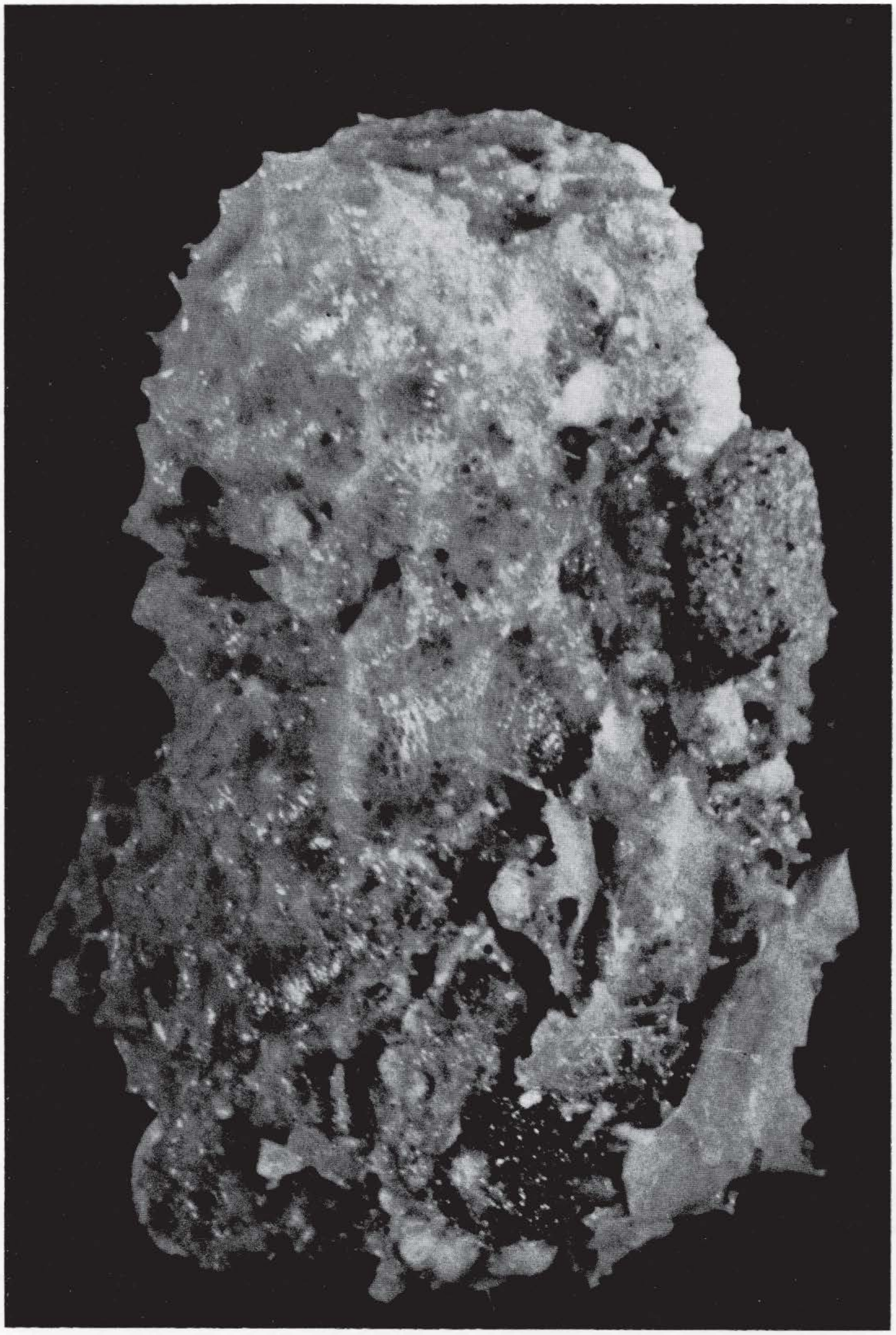

Fig. 4a: *Eurispongia arenaria* (nov. sp.).

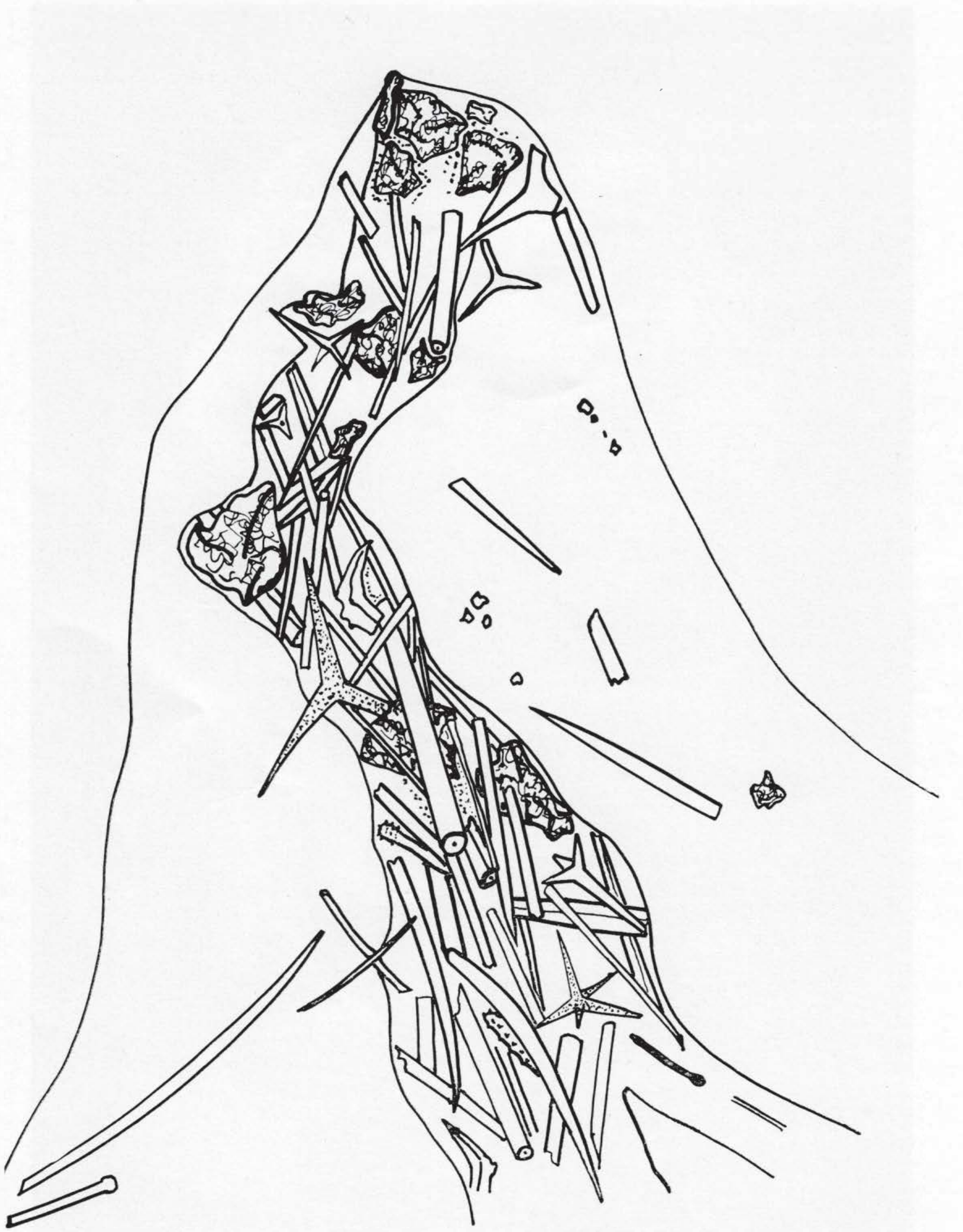

Fig. 4b: *Eurypongia arenaria,* portion of skeleton showing primary and secondary fibres. Primaries with irregular cap of sand grains.

Fig. 4c: *Euryspongia arenaria*, section (× 120) showing large flagellate chambers.

Genus **Dendrilla** Lendenfeld

Dendrilla cactus (Selenka) (fig. 5, a and b)

For synonymy see Burton, 1934, p. 595; de Laubenfels, 1948, pp. 152–153.

Locality

Sta. 6, Chatham Rise; 220 fm. (2 specimens).

Description

Few descriptive details are required for so well documented a species. The surface is conulose, externally very like a *Dysidea*; conuli are 3–5 mm high and irregularly spaced. The dermal membrane is delicate and spiculous.

None of the fibres contain any debris and the skeleton appears dendritic; occasional anastomoses

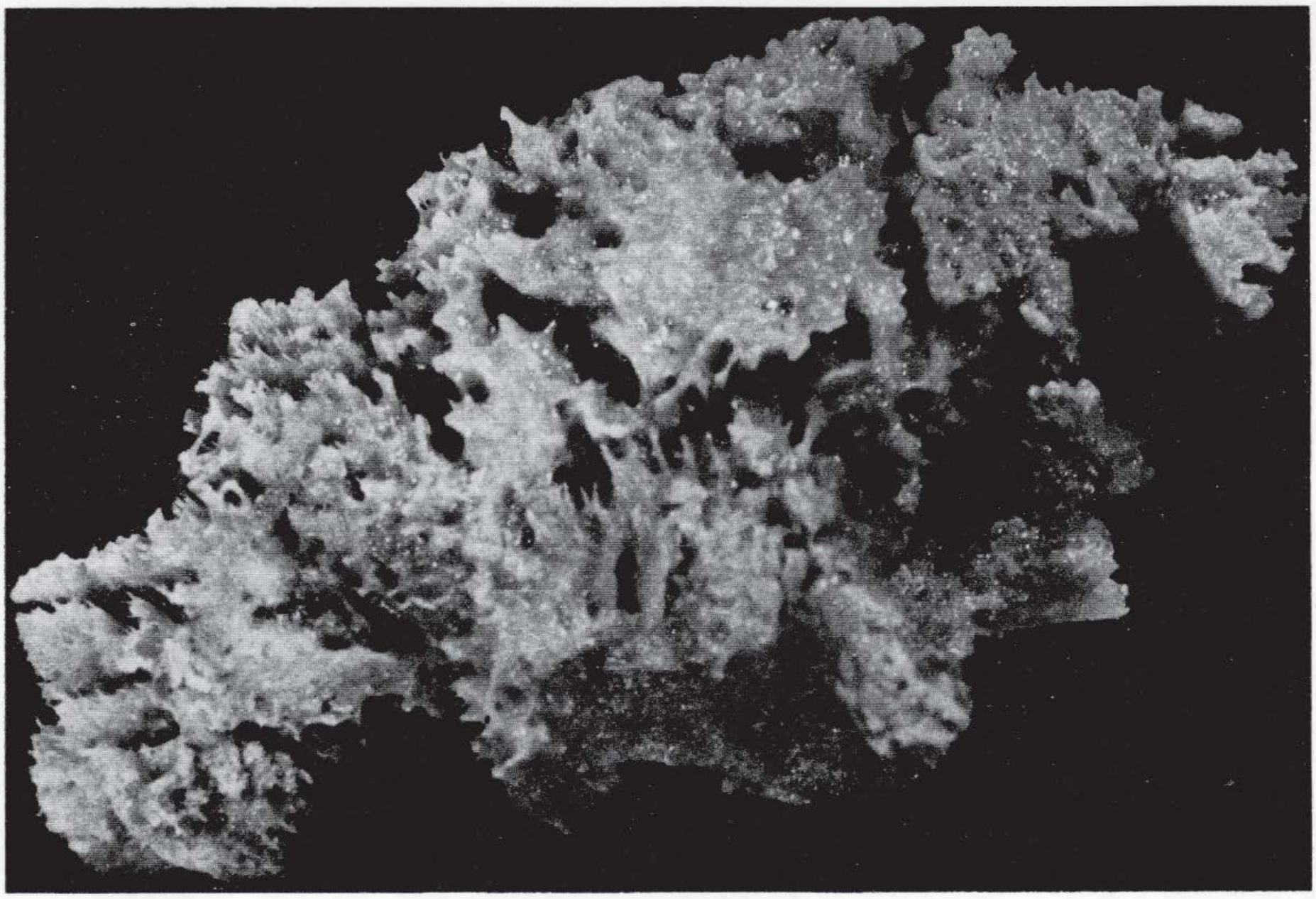

Fig. 5a: *Dendrilla cactus* (Selenka).

are discernible. A distinctive feature of these specimens is the presence of an armoured dermal region constructed entirely of spicule fragments.

Fibres taper somewhat as they branch, but there is no clear distinction between primaries and secondaries.

Range in fibre diameter is 4·8μ–4·9μ. Flagellate chambers are oval, 52–80μ long.

Distribution

Australia, Ceylon, Mediterranean (?), Antarctic and Subantarctic.

Family APLYSILLIDAE Vosmaer

Genus **Darwinella** Schultze

Darwinella oxeata (nov. sp.) (fig. 6a, b, c)

Locality

Sta. 14, Hanson Bay; 15 fm.

Description

A small, soft, semi-encrusting sponge, 2 cm long, 1 cm wide, 0·5 cm thick. The surface is smooth and skinlike; there are no oscula visible. The texture is soft and fleshy, the spongin skeleton accounting for very little of the body bulk. There is a distinct dermal region formed by the external skin. This layer is compact, 0·5 mm thick, and sharply demarcated histologically from the underlying layers.

The colour in spirit is a dark maroon (YR 3/4). It is, however, certain that the colour in life is identical, for red and brown sponge pigments are perfectly stable in alcohol.

As is typical of *Darwinella,* the skeleton includes spongin spicules. In this specimen the spicules constitute the bulk of a rather sparse skeleton. The main fibres are dendritic, uncored, with distinctly concentric aplysillid construction. Diameter 106–193μ (mean 148μ). The spicules are dispersed randomly throughout the body of the sponge. Dimensions 0·530μ–2083μ (mean 1754·7μ) × 24·2–29·8μ.

It is the spicule structure which differentiates this species clearly from others described. Without exception, the spicules are oxeote, slightly wavy,

Fig. 5b: *Dendrilla cactus*, section (× 65) showing dendritic skeleton.

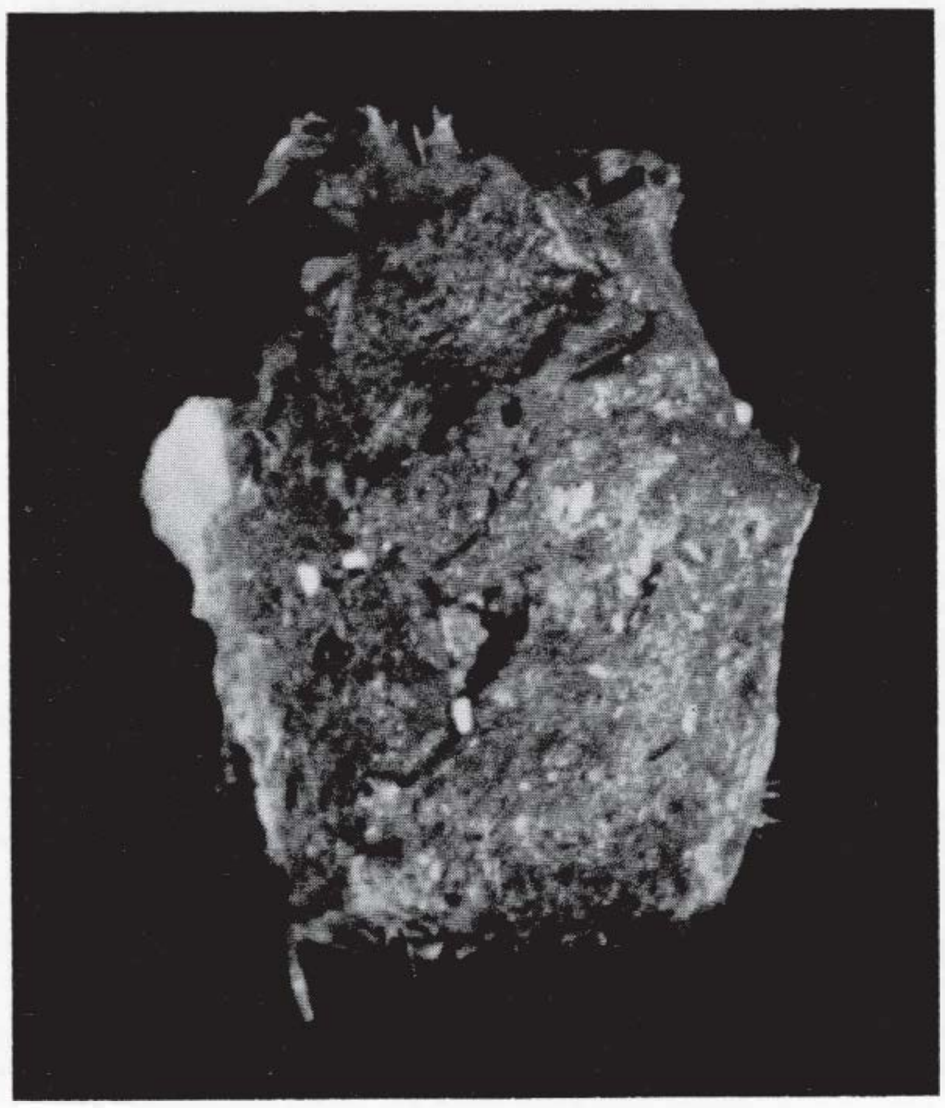

Fig. 6a: *Darwinella oxeata* (nov. sp.).

with small projections (3·5μ long) scattered over all but the middle third of the spicule.

Flagellate chambers are small, 50–60μ in diameter.

Remarks

This species and *D. gardneri* Topsent 1905 are the only species of *Darwinella* described with solely diactinal spicules. De Laubenfels (1948) relegates *D. gardneri* into *D. mülleri,* arguing that there is, even within the sponge, great variation in spicule structure. I can not say that this is not correct for *gardneri,* but it certainly is not so for *D. oxeata*. In the Chatham specimen the spicules have small surface projections, giving them a weakly roughened appearance. This feature is thus far unique in *Darwinella* and in combination with the uniformly oxeote spicules gives sufficient justification for holding this specimen apart from *D. miilleri*.

ACKNOWLEDGMENTS

I wish to acknowledge the assistance of Dr W. D. Hartmann in confirming some of the identifications entailed in this paper, and of Mr J. Kerr for preparation of sections.

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Fig. 6b: *Darwinella oxeata,* (× 100), spongin spicules.

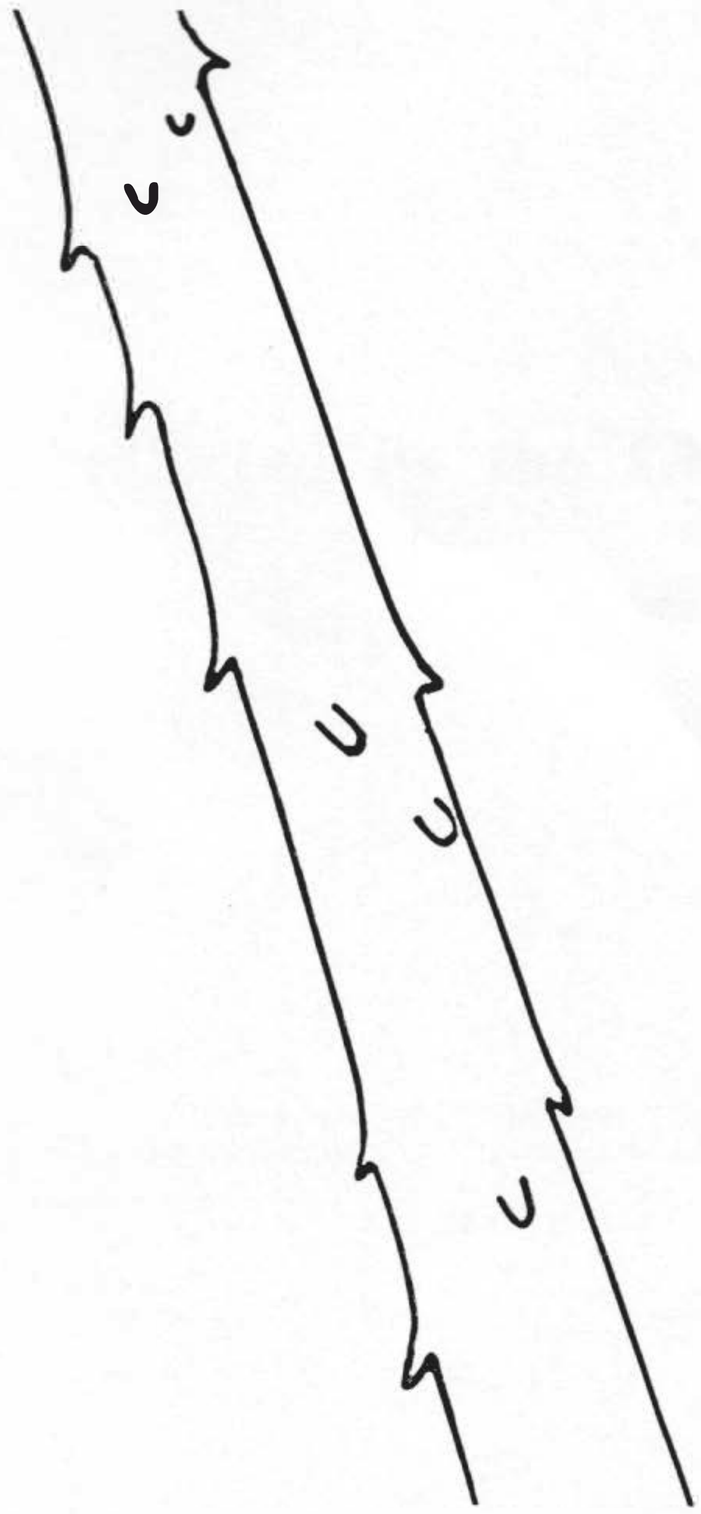

Fig. 6c: *Darwinella oxeata*, portion of spicule showing surface texture (× 500).

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A New Bopyrid Parasite collected by the Chatham Islands 1954 Expedition

by RICHARD B. PIKE
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Abstract

A new species of *Athelges* (Crustacea Isopoda: Bopyridae) is described as a parasite of the hermit crab, *Pagurus lacertosus* (Henderson), from Petre Bay, Chatham Island.

Order **ISOPODA**

Suborder **EPICARIDA**

Family BOPYRIDAE

Athelges lacertosi n. sp.

Host species

Pagurus lacertosus (Henderson)

Material examined

Chatham Islands 1954 Expedition: Sta. 30 (43°56′S, 176°53′W, 31.1.54, Petre Bay in 70 fm, Beam Trawl, fine green sand), 1 female, 1 male.

Holotype: Female and Male, Canterbury Museum.

Description

Holotype: *Female.* Total length 16·4 mm; greatest width 9·5 mm.

The body is asymmetrical, curved dorsally and with the abdomen upturned. The 3rd maxillipedes and the oostegites have not been dissected from the specimen. The anterior lamellae of the first oostegites are folded into two and project forward freely, to overhang the cephalon. The remaining oostegites enclose the marsupium which is strongly humped. On the dorsal surface the cephalon is deeply sunk, but stands above the surrounding tissue by its raised lateral margins. It is almost rectangular in shape and with antennae attached to the anterior edge and each composed of four segments. The first thoracic segment is clearly visible laterally where it surrounds the head, but it is very narrow posteriorly. The following five segments increase progressively in depth in the median line, while the seventh segment is somewhat narrower. In the anterior three segments, the lateral margins are directed forwards, but the forward inclination decreases progressively and in the seventh segment the lateral margins are directed posteriorly. The first four pereiopods are crowded together and have distinct ovarian bosses

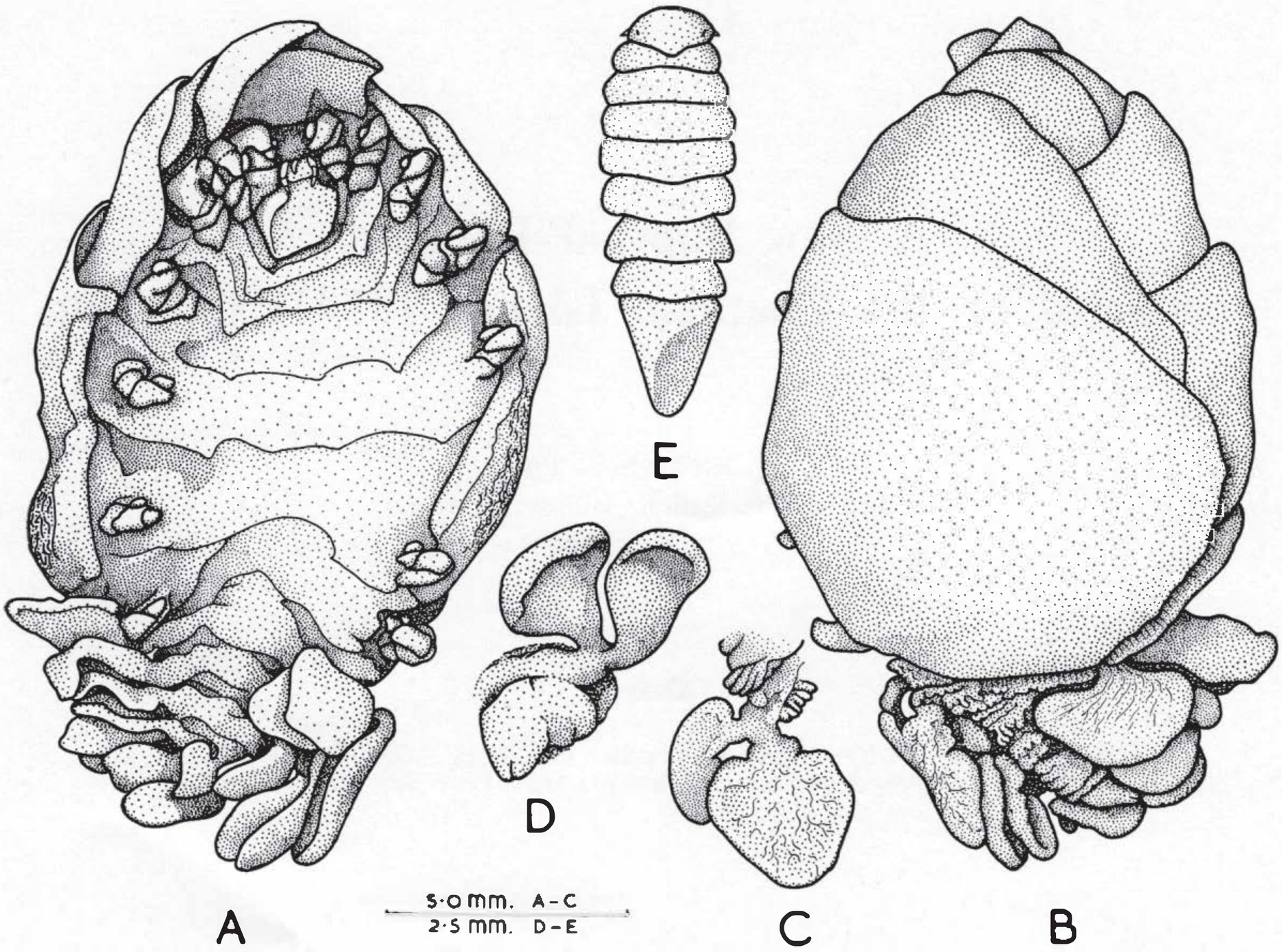

Fig. 1. *Athelges lacertosi* n. sp. A-D, holotype, female: A, dorsal view; B, ventral view; C, lateral view of anterior lamellae; D, lateral view of posterior lamellae and terminal segment of abdomen; E, holotype, male: dorsal view.

and narrow coxal plates, while the last three are without these structures.

The abdomen is cylindrical, about one third as long as the thorax. It is abruptly narrower than the thorax and gradually tapers to the terminal segment. A pair of biramous pleopods is situated on the lateral margins of the first four abdominal segments; each pair is united at the base by a short peduncle, and the lamellae are broad and spoon-shaped (fig. 1C). They decrease progressively in size until the fourth pair (fig. 1D) which is about half the size of the first (fig. 1C). These first four segments are clearly distinguished on both the smooth dorsal side and the wrinkled ventral side. Segments five and six, following the last pleopod pair (fig. 1D), are not so clearly separated from each other, or from the terminal piece. The terminal piece is triangular in shape, faintly marked off from the sixth abdominal segment and with a slightly bifid apex (fig. 1D).

Holotype: *Male*. Total length 4·3 mm; greatest width 1·3 mm.

This was attached to the ventral side of the female in the median line between the pleopods.

The cephalon is sunk into the first thoracic segment and marked off from it; the eyes which are brownish are not clearly visible. The antennules are three-segmented and about half the length of the antennae. The antennae are small and each has four segments, with the terminal segment just projecting beyond the lateral margins of the head. The thoracic segments are discontinuous, with the anterior four segments more closely compressed. The pereiopods are without distinctive features. The abdomen is unsegmented

and forms an undivided cone; it is slightly longer than its greatest width and less than one third of the total body length.

Remarks

This *Athelges* is very typical of the genus and similar to *Athelges japonicus* Shiino (Shiino, 1958), but it differs from that species in the shape of the terminal segment of the abdomen in the female and in having the cephalon in the male marked off from the first thoracic segment. The shape of the terminal segment in the female abdomen also distinguishes it from all other species so far described.

I wish to acknowledge the help given to me by Dr J. Forest of the Museum National d'Histoire Naturelle, Paris who has allowed me to include the following note on the identity of the Pagurid host-species.

Note sur *Pagurus thompsoni* (Filhol) = *P. lacertosus* (Henderson).

Ce spécimen est identifiable à l'espèce décrite du détroit de Cook par Filhol (*Bibl. Ec. H. Et., Sect. Sci. nat.*, XXX, n°2, 1885, p. 33) sous le nom *d'Eupagurus thomsoni*, dont le type est conservé au Muséum de Paris. La description et les dessins *d'Eupagurus lacertosus* Henderson (*Challenger Rep., Zool.*, XXVII, 1888, p. 63, pl. VI, fig. 7, 7a) sont également applicables à l'espèce en question et il apparaî que l'on se trouve en présence de deux synonymes.

Le nom spécifique proposé par Filhol a priorité sur celui de Henderson, mais, part suite de la substitution du nom générique *Pagurus* Fabricius à *Eupagurus* Brandt, résultant d'une récente décision de la Commission Internationale de nomenclature zoologique, se trouve être un homonyme secondaire plus recent de *Pagurus thompsoni* Bell 1852 (=*P. pubescens* Kröyer, 1839) de l'Atlantique nord, et doit par conséquent être rejeté. Le nom valide de l'espèce est *Pagurus lacertosus* (Henderson, 1888).

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The Distribution of the Isopod Crustacean *Serolis bromleyana* Suhm with a Discussion of an Associated Deepwater Community

by D. E. HURLEY,
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Abstract

The Isopod, *Serolis bromleyana* Suhm (Family Serolidae), was taken in considerable numbers on the Chatham Rise by the Chatham Islands 1954 Expedition. It was associated with a distinctive muddy bottom deepwater community which is briefly described and for which the term "*Serolis bromleyana-Spatangus multispinus* community" is proposed. Up to 10% of the specimens of *S. bromleyana* carried parasitic copepods of two species.

INTRODUCTION

Among the more striking Crustaceans collected by the Chatham Islands 1954 Expedition (Knox, 1957) on the Chatham Rise were numbers of the attractive, trilobitic-looking serolid isopod, *Serolis bromleyana* Suhm (pl.1). This species, taken at six Chatham Expedition Stations (fig. 1), was first described from Challenger material (Suhm, 1874). Subsequent to the Chathams collections it has only been taken in Cook Strait, New Zealand, by members of the Zoology Department, Victoria University of Wellington.

STATION LIST

This list details the Chatham Islands Expedition Stations at which *S. bromleyana* was taken. It is also convenient to list here the relevant Challenger and Victoria University of Wellington Stations.

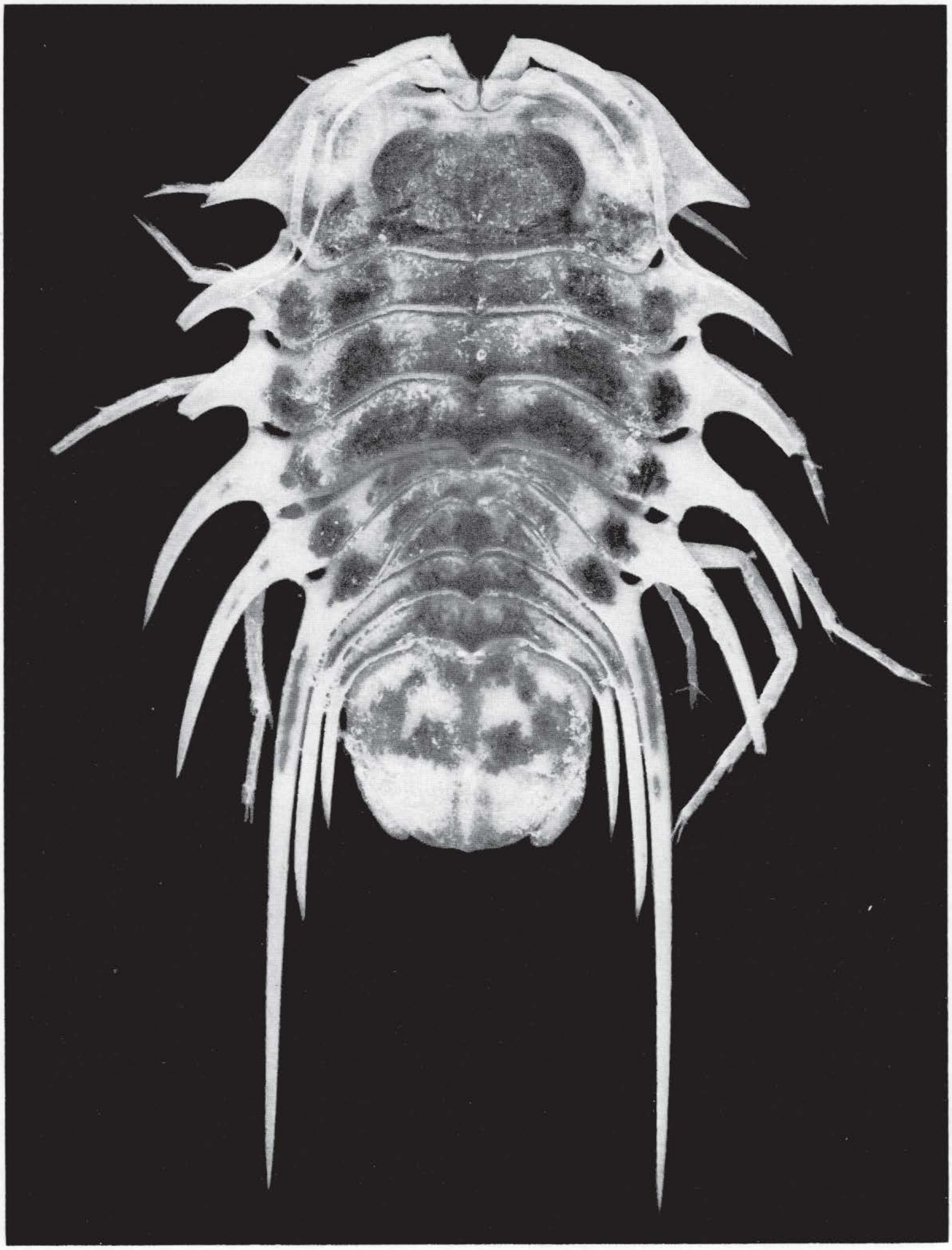
Chatham Islands 1954 Expedition Stations

Sta. 6. 43°40′S, 179°28′E. On Chatham Rise, 24 Jan., 1954. Depth 220 fm (403 m). Beam Trawl. 1115–1130 h, 1136–1206 h. Bottom fine grey sandy mud.

Sta. 7. 43°42′S, 179°55′E. On Chatham Rise, 24 Jan., 1954. Depth 280 fm (512 m). Beam Trawl, 1755–1815 h. Bottom fine grey sandy mud.

Sta. 41. 44°35·5′S, 176°04′W. S. E. of Pitt Island, 3 Feb., 1954. Depth 330 fm (604 m). Otter trawl, 1605–1630 h. Bottom fine green muddy sand.

Sta. 52. 44°04′S, 178°04′W. On Chatham Rise, 10 Feb., 1954. Depth 260 fm (476 m). Beam trawl, 0716–0736 h. Bottom fine green sandy mud.



—Photo: S. N. Beatus

Plate 1. *Serolis bromleyana* Suhm.

Sta. 58. 43°40′S, 177°59′E. On Chatham Rise, 11 Feb., 1954. Depth 320 fm (587 m). Beam trawl, 1245–1300 h. Bottom fine green sandy mud.

Sta. 59. 43°38′S, 177°19′E. On Chatham Rise, 11 Mar., 1954. Depth 290 fm (531 m). Large dredge, 1730–1742 h; beam trawl, 1750–1807 h. Bottom fine green sandy mud.

Challenger Stations (Beddard, 1884):

Sta. 156. 26 Feb. 1874. 62°26′S, 95°44′E. Depth 1975 fm. Trawled. Bottom diatom ooze. In vicinity of Antarctic Ice.

Sta. 164C. 13 June 1874. 34°19′S, 151°31′E. Depth 400 fm. Dredged. Bottom green mud. Temperature of bottom seawater, 40·0°F.

Sta. 168. 8 July 1874. 40°28′S, 177°43′E. Depth 1100 fm. Trawled. Bottom blue mud. Temperature of bottom seawater, 37·2°F.

Sta. 169. 10 July 1874. 37°34′S, 179°22′E. Depth 700 fm. Trawled. Bottom blue mud. Temperature of bottom seawater,40·0°F.

Victoria University of Wellington Stations (Hurley, 1957)

Sta. BOP. (V.U.Z. 41), 19 Jan., 1956. 41°30′ 30″S, 174°53′E (Palliser Bay). Depth 360 fm. Long line and baited trap, 0730–1530 h.

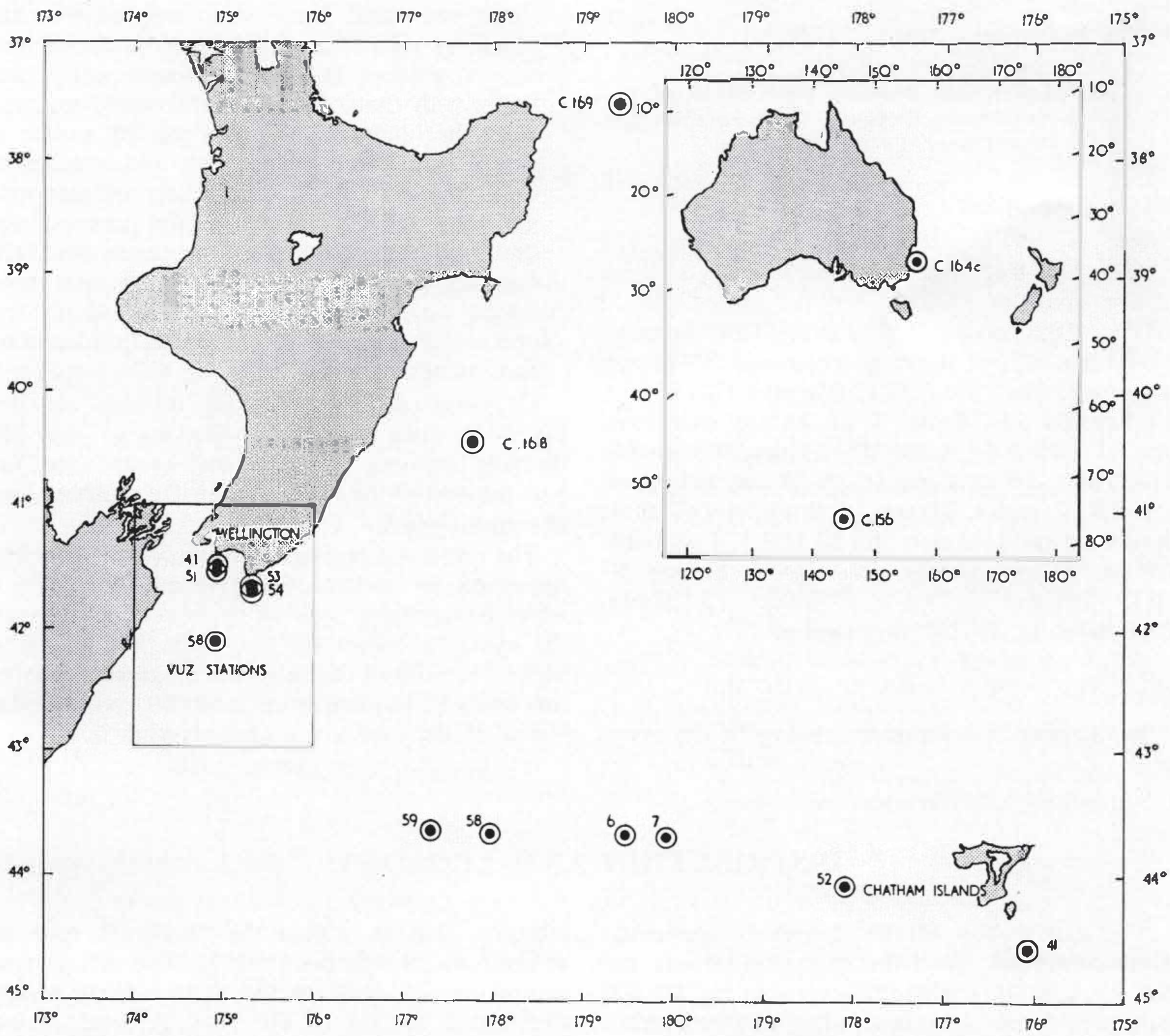


Fig. 1: Locality map showing stations at which *Serolis bromleyana* Suhm has been taken.

Sta. DOP. (V.U.Z. 51). 22 Feb. 1956. 41°35′S, 174°53′E (Palliser Bay). Depth 200–300 fm. Bottom mud and coral; 2 m. cone net fished on bottom.

Sta. HUL. (V.U.Z. 53). 41°41′S, 175°17′E. 23 Feb. 1956. (Off Cape Palliser). Bottom depth 250-350 fm. Beam trawl. Bottom (?mud), gravel.

Sta. GUL. (V.U.Z. 54). 23rd Feb., 1956. 41°39′30″S, 175°17′E (Off Cape Palliser). Bottom depth 50–200 fm. Beam trawl. Bottom mud, gravel.

Sta. FOOR. (V.U.Z. 58). 31 March, 1956. 42°7′S, 174°57′E. (S. of Cape Palliser). Bottom depth 1300 fm. Long line and baited trap. Bottom grey mud.

SYSTEMATICS

Order **ISOPODA**

Suborder **FLABELLIFERA**

Family SEROLIDAE

Serolis bromleyana Suhm, 1874.

Serolis bromleyana Suhm, 1874: xix
Serolis bromleyana, Beddard, 1884: 53–57, pl. iv.
Serolis bromleyana, Sheppard, 1933: 329–330, 280.
Serolis bromleyana, Hurley, 1957: 13.

Material Examined

Sta. 6 (BT), 107 males, 21–24 mm, 373 females plus fragments, 12–28 mm, many of these in the size range 21–28 mm ovigerous; Sta. 7 (BT), 105 males 15–24 mm, 184 females, 11–29 mm, 47 of these in size-range 21–28 mm ovigerous; Sta.. 41 (OT), 6 males, 20–23 mm, 12 females 11–24 mm, 1 at 24 mm ovigerous; Sta. 52 (BT), 39 males, 15–24 mm, 66 females, 11–28 mm, 15 of these at 25–28 mm ovigerous; Sta. 58, 2 males, 20 mm, 1 doubtful (all three dessicated and broken); Sta. 59 (DL), 1 probable female, 16 mm (badly dessicated); Station 59 (BT), 2 males 15–21 mm, 6 females, 12–28 mm, 2 of these at 27–28 mm ovigerous.

Remarks

In Sheppard's comprehensive key to the genus (Sheppard, 1933), *Serolis bromleyana* is characterised as follows:

> "Eighth thoracic segment, tergum and coxal plates absent; first 3 free thoracic somites (3rd -5th) separated from their respective coxal plates by sutures; uropods, both endopod and exopod present; 7th thoracic somite articulated freely with that of the 1st abdominal segment (i.e., the hindmost suture of the 7th somite is complete), coxal plates long and spiniform, extending well beyond the telson and uropods and also well beyond the pleural plates of the 2nd and 3rd abdominal segments; 2nd abdominal segment, pleural plates in male produced beyond the end of the telson; 3rd abdominal segment, pleural plates produced to end of telson. Eyes present, whitish-yellow."

Of these, the most striking features are the extremely long posterior processes of the 7th thoracic segment which extend around and far past the end of the telson rather like the two tines of a carving fork.

The present specimens which were formalin-preserved are mottled dull blue and brown on a white background, tending more to blue between the eyes, to brown on the body, and to white around the rim of the head and spine-processes of the body. The structural elements around the lenses of the eyes are a coppery-pink hue.

DISTRIBUTION AND ECOLOGY

The distribution of the species is apparently depth-controlled. With the exception of one station (V.U.Z. 54.) where it was taken in "50–200 fathoms", *Serolis bromleyana* has only been taken at depths greater than 200 but less than 2000 fathoms, that is, within the "bathyal" zone as defined in Hedgpeth (1957). The Challenger station records indicate that it is a fairly widely distributed species in the New Zealand region although the number of records is not great.

Of its associations at Challenger Stations 168 and 169, Tizard et alia (1885) state: "The deposits off the east coast of New Zealand in 1100 and 700 fathoms were blue muds, with a thin characteristic layer of a reddish colour on the surface. They contained only from 4 to 9 per cent. of carbonate of lime, the chief part of the deposit consisting of continental debris derived from the neighbouring land. The dredgings were rich in *Pourtalesia laguncula,*[1] Agass., *Serolis bromleyana,*[2] Suhm. *Protocaulon molle,* Köll., and *Leptopilum gracile,* Köll., and contained a very large number of other deep-sea species in addition."

The various animal groups reported on from the Chatham Islands Expedition Stations, the Challenger Stations and the Victoria University of Wellington Stations, show a surprising number of species common to several stations. The following list (See also Table 1) includes all species which have been noted to occur at 3 or more of the 15 *Serolis bromleyana* stations. The numbers in brackets indicate the total number of stations at which the various species were found. (CIE = Chatham Islands 1954 Expedition; C = Challenger; VUZ = Victoria University of Wellington).

[1] *Pourtalesia laguncula*: The validity of this record is in doubt. The species has not been recorded since from New Zealand waters and Mortensen (1950: 149) says "the localities . . . given in the 'Challenger' Ech., from off New Zealand and S. of Australia, are probably all of them due to erroneous identifications, which cannot any more be unriddled."

[2] The very useful semi-popular term "sand-lice" for the Serolid Isopods would seem to be something of a misnomer, at least for *Serolis bromleyana.* All of the known records indicate a bottom of diatom ooze or of grey, green or blue mud or sandy mud, sometimes mixed with gravel or "coral".

LIST OF SPECIES

Echinodermata (Fell, 1957, 1960).

(1) *Ophiuroglypha irrorata* (Lyman).
CIE Stations 6, 7, 41, 52, 58, 59; VUZ 41, 54; Challenger 164. (9)

(2) *Brissopsis oldhami* Alcock
CIE 41, 52; VUZ 53, 54; Challenger 168 (as *B. luzonica*) (5)

(3) *Spatangus multispinus* Mortensen
CIE 6, 7, 41, 52, 59; VUZ 53. (6)

(4) *Crossaster japonicus* (Fisher)
CIE 6, 7, 58 (3)

(5) *Pseudechinus flemingi* Fell
CIE 6, 41, 52. (3)

(6) *Paramaretia multituberculata* Mortensen
CIE 7, 41, 52. (3)

(7) *Goniocidaris umbraculum* Hutton
VUZ 51, 53, 54. (3)

Polychaeta (Knox, 1960)

(8) *Hyalinoecia tubicola*[3] (Müller)
CIE 6, 7, 41, 52, 58 (5)

[3] *Hyalinoecia benthaliana* McIntosh was taken at Challenger Sta. 168.

Decapoda Brachyura (Dell, 1960)

(9) *Leptomithrax richardsoni* Dell
CIE 6, 7, 41, 52 (4)

(10) *Carcinoplax victoriensis* Rathbun
CIE 6, 41, 58. (3)

Decapoda Natantia (Yaldwyn, 1960)

(11) *Campylonotus rathbunae* Schmitt
CIE 6, 7, 41, 52, 58, 59; VUZ 53, 54. (8)

(12) *Notopandulus magnoculus* (Bate)
CIE 6, 41, 52, 58, 59. (5)

(13) *Sclerocrangon knoxi* Yaldwyn
CIE 6, 7, 52, 59. (4)

(14) *Prionocrangon curvicaulis* Yaldwyn
CIE 6, 7, 41, 52 (4)

(15) *Pontophilus acutirostratus* Yaldwyn
CIE 7, 41, 52, 59 (4)

Mollusca (Dell, 1956)

(16) *Nassarius ephamillus* (Watson)
CIE 6, 7, 41, 52, 58, C. 168, C. 169 (7)

(17) *Micantapex parengonius* Dell
CIE 6, 7, 41, 52, 58, 59, C. 169 (7)

(18) *Neilo australis* (Q. & G.)
CIE 6, 7, 41, 52, 59, VUZ 54 (6)

(19) *Falsilunatia powelli* Dell
CIE 6, 7, 41, 52, 58, 59. (6)

(20) *Fusitriton laudandus* Finlay
CIE 6, 7, 41, 58, VUZ 53, 54. (6)

(21) *Fax alertae* Dell
CIE 6, 7, 41, 52, 58, 59. (6)

(22) *Coluzea mariae* Powell
CIE 6, 7, 41, 58, 59, VUZ 54. (6)

(23) *Comitas onokeana vivens* Dell
CIE 6, 7, 52, 59, 41. (5)

(24) *Alertalex blacki* Dell
CIE 6, 7, 52, 58. (4)

(25) *Aeneator (Ellicea) recens* Dell
CIE 6, 7, 41, VUZ 51. (4)

(26) *Retusa pachys* (Watson)
CIE 41, 52, 59, C. 169. (4)

(27) *Dentalium (Dentalium) tiwhanum* Dell
CIE 6, 7, 41, 59. (4)

(28) *Nucula strangeiformis* Dell
CIE 6, 41, 52 (3)

(29) *Linucula recens* Dell
CIE 41, 52, 59 (3)

(30) *Jupiteria wolffi* Dell
CIE 41, 52, 59 (3)

(31) *Austrotindaria flemingi* Dell
CIE 41, 52, 59 (3)

(32) *Bathyarca cybaea* (Hedley)
CIE 41, 52, 59. (3)

(33) *Zeminolia meridiana* Dell
CIE 41, 52, 59. (3)

(34) *Proximitra banksi* Dell
CIE 6, 58, 59 (3)

(35) *Aeneator valedictus* (Watson)
CIE 6, 7, 58 (3)

(36) *Fax mirabilis nuptialis* Dell
CIE 41, 52, 59 (3)

(37) *Chathamidia expeditionis* Dell
CIE 6, 52, 59 (3)

(38) *Teremelon knoxi* Dell
CIE 6, 7, 58 (3)

Almost all these species are regarded as typically deepwater. For example, of the 23 species of molluscs listed, all but six are classed by Dell as "species confined to deep water and not known from depths less than 100 fathoms." Of the latter six species, *Neilo australis, Bathyarca cybaea* and *Fusitriton laudandus* are considered "shelf species that extend into deep water (i.e., 200–330 fm) well away from the shelf" while *Proximitra banksi, Ellicea recens* and *Coluzea mariae* are "species whose occurrences appear to be predominantly deep water but with individual live specimens extending on to the shelf".

The list indicates that a surprising number of species of the four major groups reported on are common to several of the *Serolis bromleyana* stations. (Surprisingly, the polychaetes are poorly represented in this list). When the Chatham Islands stations alone are considered, it is even more apparent (table 1) that these are the elements of a recognisable deepwater muddy bottom faunal community. This, while it may be somewhat restricted geographically—although the VUZ Stations and the less extensive Challenger material indicate that at least some elements have a wider distribution than on the Chatham Rise alone—has sufficient common elements and is sufficiently distinct from any of the sublittoral communities previously described to warrant distinctive recognition.

Reference to the literature shows little discussion or even description of deepwater faunas between 200 and 2000 fathoms. Their existence is recognised but, in comparison with the now reasonably defined sublittoral communities (Thorson, 1957; Jones, 1950), there seems to have been little or no definition of bathyal communities as such. To some extent, the reasons for this are to be found in the tendency for deepwater stations to be taken at considerable distances apart, and for the ensuing results to be written up as purely specialist systematic papers over long periods of time. There is seldom any subsequent comprehensive re-assessment of the ecological nature of the material. In particular, to my knowledge, Serolid-characterised communities have not been described at all and this is undoubtedly affected by the general restriction of the Serolidae to the more southerly parts of the Southern Hemisphere (except for one species, *S. carinata,* known from San Diego, California).

Serolis bromleyana is an obvious first choice in naming this community; the choice of a second species is more difficult.

Ophiuroglypha irrorata, taken at 9 stations, is the most persistently present animal; it is, however, represented by more than two specimens at only one station.

Hyalinoecia tubicola is the most strikingly represented animal at Station 6 (cf. fig. 2) and judging from the systematic account, probably also at Station 58, but at other stations it is

represented by very few specimens (Knox 1960). In addition, it probably qualifies for a category which Thorson (1957) recommends avoiding—that of "ubiquitous animals, which, although numerous, also occur in large numbers in other communities and other seas". Decapods are also unsatisfactory, since they come under Thorson's category of "very mobile animals", although *Campylonotus rathbunae* occurs at all of the Chathams Stations and two of the VUZ Stations. The molluscs, *Nassarius ephamillus* (7 stations) or *Micantapex parengonius* (7 stations) might be suitable, but the best choice would seem to be the echinoid, *Spatangus multispinus*. This species was present in reasonable numbers (up to 30 specimens) at five of the Chathams Stations and one of the VUZ Stations. It is not a highly mobile animal, and it is large enough to meet another of Thorson's criteria: "Characterising species must be immediately conspicuous—i.e., they must dominate by their mere appearance—but this criterion of a certain size at the same time means that their numbers on a standard unit will normally not be enormous". *Spatangus multispinus* is a deepwater species mainly found between 200 and 500 fathoms and, although it occurs occasionally on the shelf, these "odd specimens . . . represent derivatives from the deep-water population living nearby" (Fell, 1960).

It is therefore suggested that we have on the Chatham Rise, probably also in Cook Strait, and perhaps widespread in other deepwater localities

Photo: E. J. Batham

Fig. 2: Part of the haul from C.I.E. Station 6. The two gasteropods (lower left and left centre) are *Fusitron laudandus* Finlay; the coral is *Flabellum* sp.; the two echinoids are *Paramaretia mutituberculata* Mortensen; and the large starfish (right) is *Zoroaster spinulosus* Fisher. Throughout the mass of tubes of *Hyalinoecia tubicola* (Müller) may be seen numerous *Serolis bromleyana* Suhm.

TABLE 1: List of species occurring at three or more *Serolis bromleyana* Stations.
(0 = Species present)

Species No.*	STATION NUMBERS															
	Challenger 156	Challenger 164	Challenger 166	V.U.Z. 41	V.U.Z. 51	V.U.Z. 53	V.U.Z. 54	V.U.Z. 58	Challenger 168	Challenger 169	Chathams 6	Chathams 7	Chathams 41	Chathams 52	Chathams 58	Chathams 59
1		0		0			0				0	0	0	0	0	0
2						0	0		•				0	0		
3						0					0	0	0	0		0
4											0	0			0	
5											0		0	0		
6												0	0	0		
7			0	0	0											
8									†		0	0	0	0	0	
9											0	0	0	0		
10											0		0		0	
11						0	0				0	0	0	0	0	0
12											0		0	0	0	0
13											0	0		0		0
14											0	0	0	0		
15												0	0	0		0
16									0	0	0	0	0	0	0	
17										0	0	0	0	0	0	0
18							0				0	0	0	0		0
19						0	0				0	0	0		0	
20											•	0	0	0	0	0
21											0	0	0	0	0	0
22							0				0	0	0		0	0
23											0	0	0	0		0
24											0	0		0	0	
25				0							0	0	0			
26										0			0	0		0
27										0	0	0			0	
28										0	0	0	0			
29												0	0		0	
30												0	0		0	
31												0	0		0	
32												0	0		0	
33												0	0		0	
34										0				0	0	
35										0	0			0		
36												0	0		0	
37										0			0		0	
38										0	0			0		

* See accompanying text for key to Species Numbers.
† = *Hyalinoecia benthaliana* McIntosh.

around New Zealand, a *Serolis bromleyana-Spatangus multispinus* deepwater ("bathyal" or "archibenthal") community, further characterised by the following species: the echinoderm, *Ophiuroglypha irrorata;* the decapod, *Campylonotus rathbunae;* the molluscs, *Nassarius ephamillus, Micantapex parengonius, Neilo australis, Falsilunatia powelli, Fusitron laudandus, Fax alertae, Coluzea mariae,* and, probably, the polychaete, *Hyalinoecia tubicola.*

Parasites

The specimens of *Serolis bromleyana* taken by the Chathams Expedition were parasitised by two species of copepods, *Sphaeronella serolis* Monod and *Rhizorhina serolis* Green which have been reported on elsewhere (Green, 1959). These parasites were especially common on the specimens from Station 6; approximately 10% of the Serolids examined carried them either in the broodpouches (*Sphaeronella*) or on the pleopods (*Rhizorhina*).

ACKNOWLEDGMENTS

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A Checklist of the Hydroid Fauna of the Chatham Islands

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Abstract

A check-list is given of the 27 hydroids now known from the Chatham Islands area. Twenty-five of these are new records for the Chatham Islands. All, except two species are known from New Zealand mainland waters, and there is a striking similarity between the Chatham Island fauna and that known from the mainland Cookian province. The conclusion reached is that it is not possible from the known species to recognise a distinctive Chatham Island hydroid fauna.

INTRODUCTION

Kirchenpauer in 1884 recorded two species of thecate hydroids (*Sertularella purpurea* Kirchenpauer and *Sertularella mülleri* Kirchenpauer—now respectively, *Symplectoscyphus johnstoni* (Gray) and *Sym. indivisus* (Bale)) from the Chatham Islands. These are the only species listed for the area prior to the Chatham Islands 1954 Expedition. Neither of the species described by Kirchenpauer was taken during the 1954 expedition.

In this report 27 species, inclusive of the two previously recorded, are listed. The most striking characteristic of the Chatham Islands hydroid fauna is its similarity to the fauna of New Zealand mainland waters. Two species only have not been taken in mainland waters, but one of these —*Symplectoscyphus indivisus* (Bale)—is well known from south-eastern Australian and Tasmanian waters, and its finding, ultimately, could be expected on New Zealand mainland shores. The other species is a *Hydractinia*-like athecate hydroid, but the specimen is infertile and the hydranths too contracted to give a decision on its status. The hydrorhizal "mat" and overlying coenosarc is however unlike that known for *Hydractinia ? parvispina* recorded from mainland waters.

Three species,—*Crateritheca insignis* (Thompson), *Stegolaria irregularis* Totton and *Acryptolaria conferta* (Allman) var. *australis* (Ritchie)—of the 27 listed here, have not been taken southward of approximately 38°S lattitude in mainland waters. They are best known from the North Cape — Three Kings Islands area. The other 24 species are known from either, or both, the Cook Strait area or South Island waters.

Thus it is concluded that broadly speaking the greatest similarity is shown between Chatham Islands hydroids and those known from the mainland Cookian province, and further, that it is not possible from the known hydroid fauna of the Chatham Islands area to recognise a distinctive Chatham Island Fauna. These conclusions are similar to those reached by Fell (1960) for the echinoderms.

ACKNOWLEDGMENTS

The author wishes to thank Professor George Knox of the University of Canterbury, first, for permission to examine the hydroids collected on the Chatham Islands 1954 Expedition, and secondly for kindly permitting the publication elsewhere (see Ralph, 1957, 1958, 1961) of the diagnoses of the thecate hydroids collected by the expedition.

CHECK-LIST OF SPECIES

Species previously described from the Chatham Islands are given in bold face type.

GYMNOBLASTEA

FAMILY HYDRACTINIIDAE

? *Hydractinia* species

CALYPTOBLASTEA

FAMILY CAMPANULARIIDAE

Obelia geniculata (Linnaeus). Cosmopolitan.

Clytia johnstoni (Alder). Cosmopolitan.

Orthopyxis delicata Trebilcock. New Zealand; Australia.

Orthopyxis mollis (Stechow). Southern France; New Zealand.

FAMILY CAMPANULINIDAE

Stegolaria irregularis Totton. New Zealand.

Stegopoma fastigiatum (Alder). Essentially cosmopolitan.

FAMILY LAFOEIDAE

Lafoea gracillima (Alder). Cosmopolitan.

Acryptolaria conferta (Allman) var. *australis* (Ritchie). Australia; Japan; New Zealand.

Hebella calcarata (L. Agassiz). Cosmopolitan.

FAMILY HALECIIDAE

Halecium beanii (Johnston). Cosmopolitan.

FAMILY SERTULARIIDAE

Crateritheca insignis (Thompson). New Zealand; Tasmania.

Dictyocladium moniliferum (Hutton). New Zealand.

Amphisbetia minima (Thompson). Essentially cosmopolitan.

Amphisbetia trispinosa (Coughtrey). New Zealand; South Australia; Straits of Magellan.

Sertularia tenuis Bale. New Zealand; Australia; India.

Sertularia unguiculata Busk. New Zealand; Australia: Tasmania.

Symptectoscyphus johnstoni (Gray). New Zealand.

Symplectoscyphus indivisus (Bale). New Zealand; Australia; Tasmania.

Sertularella robusta Coughtrey. New Zealand; Australia; Tasmania; Tierra del Fuego.

Sertularella crassiuscula Bale. New Zealand.

FAMILY PLUMULARIIDAE

Plumularia setacea (Ellis). Cosmopolitan.

Plumularia diploptera Totton. New Zealand.

Plumularia setaceoides Bale. Australia; New Zealand.

Plumularia hyalina Bale. Australia; New Zealand.

Halopteris campanula (Busk) var. *zelandica* Totton N.Z. variety of cosmopolitan species.

Thecocarpus subdichotomus Ralph. New Zealand.

BATHYMETRIC DISTRIBUTION

Full details of the stations have been previously published (see Knox, 1957, table 1), and consequently condensed station data only are given in the following distribution list. The records are arranged in order of increasing depth and the bathymetric divisions are similar to those used by Fell (1960) for the echinoderms. The abbreviations used for denoting the nature of the bottom are those of Knox, viz.: br., brown; bry., bryozoan; c., coarse; f., fine; g., gravel; gn., green; gy., grey; h., hard; m., mud; r., rock; s., sand; sft., soft; sh., shell; st., stones.

Shore collections

Sta. 26. Waitangi, 30/1/54.
Amphisbetia trispinosa (Coughtrey).
Sertularella robusta Coughtrey.
Plumularia hyalina Bale.

Sta. 49. Port Hutt, 8/2/54.
Orthopyxis delicata Trebilcock.
Sertularella crassiuscula Bale.
Plumularia setaceoides Bale.
Plumularia setacea (Ellis).

Bottom collections from the shelf

Sta. 50. Port Hutt, 9/2/54, 3–4 fm (5–7 m), f.gy.s.
Amphisbetia minima (Thompson).

Sta. 14. S.44°00′, W.176°21′ Hanson Bay, 27/1/54, 15 fm (27 m), c.sh.s. limestone.
Sertularella robusta Coughtrey.

Sta. 18. S43°41′, W.176°48′, off Cape Pattison, 28/1/54, 15 fm (27 m), r.
Orthopyxis mollis (Stechow).
Dictyocladium moniliferum (Hutton).
Plumularia diploptera Totton.

Sta. 31. S.43°56·5′, W.176°37′, Petre Bay, 31/1/54, 22 fm (40 m), f.gn.s.
Crateritheca insignis (Thompson).
Sertularia unguiculata Busk.

Sta. 37. S.44°21·5′, W.176°13′, between South East Island and Pitt Island, 2/2/54, 30 fm (55 m), r.c.sh.s.
Sertularia tenuis Bale.
Halopteris campanula (Busk) var. *zelandica* Totton.

Sta. 23. S.43°32·5′, W.176°47·5′, N. of The Sisters, 29/1/54, 33 fm (60 m), c.sh.s.
Halopteris campanula (Busk) var. *zelandica* Totton.

Sta. 3. S.43°10·1′, E.175°36·5′, Mernoo Bank, 23/1/54, 41 fm (75 m), c.bry.sh.s.
Hebella calcarata (L. Agassiz). (drift).

Sta. 2. S.42°59·4′, E.175°30·5′, Mernoo Bank, 23/1/54, 61 fm (112 m), f.bry.sh.s.
Obelia geniculata (Linnaeus). (drift).

Archibenthal collections

Sta. 34. S.44°04′, W.175°23·5′, E. of Forty Fours 1/2/54, 130 fm (238 m), f.s.g.
Stegopoma fastigiatum (Alder).
Acryptolaria conferta (Allman) var. *australis* (Ritchie).

Sta. 52. S.44°04′, W.178°04′, Chatham Rise, 10/2/54, 260 fm (476 m), f.gn.s.m.
Halecium beanii (Johnston).
Thecocarpus subdichotomus Ralph.

Sta. 7. S.43°42′, E.179°55′, Chatham Rise, 24/1/54, 280 fm (512 m), f.gy.s.m.
Clytia johnstoni (Alder).
Stegolaria irregularis Totton.
Lafoea gracillima (Alder).
Acryptolaria conferta (Allman) var. *australis* (Ritchie).
Halecium beanii (Johnston).

Sta. 59. S.43°38′, E.177°19′, Chatham Rise, 11/2/54, 290 fm (531 m), f.gn.s.m.
? *Hydractinia* sp.
Halecium beanii (Johnston).

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APPENDIX

List of Papers published elsewhere, dealing with the Results of the Chatham Islands 1954 Expedition

The following papers, dealing in part or in whole with material collected by the Chatham Islands 1954 Expedition, have been published outside this series:

BREWIN, B. I. 1956: Ascidians from the Chatham Islands and the Chatham Rise. *Trans. roy. Soc. N.Z. 84 (1):* 121–37, 4 text-figs.

CASTLE, P. H. J. 1960: Two Eels of the Genus *Pseudoxenomystax* from New Zealand Waters. *Trans. roy. Soc. N.Z. 88 (3):* 463–72, 2 text-figs.

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GREEN, J. 1959: *Sphaeronella serolis* Monod, and a new species of *Rhizorhina,* Copepods parasitic on the Isopod *Serolis bromleyana* Suhm (Crustacea). *Proc. zool. Soc. Lond. 132 (4):* 647–54, 16 figs.

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