Proceedings of the First International Marine Biological Workshop: The Marine Flora and Fauna of Hong Kong and Southern China, Hong Kong, 1980.
[Eds. B.S. Morton and C.K. Tseng].
Hong Kong, Hong Kong University Pre

A SMALL COLLECTION OF SPONGES (PORIFERA) FROM HONG KONG

香港海绵动物採集

R.W.M. van Soest

Institute of Taxonomic Zoology,
University of Amsterdam,
P.O.Box 20125 1000 HC Amsterdam,
The Netherlands

ABSTRACT

Systematic descriptions are given of 13 species of sponges from shallow waters of the Hong Kong area. All species are wide-spread in Indo-West Pacific waters.

摘 要

本文对香港地区13种浅水海绵作了分类描述。全部种都是广分布于印度——西太平洋水域的。

INTRODUCTION

To my knowledge only a single publication on sponges from the Hong Kong area has ever appeared to date i.e. the report by Gray (1858) of *Aphroceras alcicornis*; the paper confined itself to the description of that species only. Pulitzer-Finale (1981) has published descriptions of a further collection of sponges from Hong Kong. This study complements that of this author .

Unfortunately, the present collection was sent to me preserved in formalin and without essential data on colour, live appearance, and ecology. These are not only indispensable for a proper description, but in certain instances also for identification of the species. I choose to refrain from erecting new species on the basis of this material, although it was fairly obvious in some cases that traditionally used names are incorrect.

The order in which the species are treated and the higher taxa systematics is derived for the most part from Bergquist (1978)

SYSTEMATIC DESCRIPTIONS

Class Calcarea
Order Leucettida
Family Leucettidae

Leuconia solida (Schmidt, 1862)
Figure 1

The sponge consists of an aggregate of flattened, hollow lobes, each about 10 mm high. The surface is hispid and the consistency is fragile, easily torn. Colour (preserved) white. The skeleton consists of the usual irregular arrangement of large triradiates and smaller triradiates and quadriradiates. No oxeotes.

LOCALITY: Knob Reef.

DISTRIBUTION: Hawaii, "Mediterranean".

DISCUSSION: The present specimen is in all its details similar to Hawaii specimens described by De Laubenfels (1950) as *Leucetta solida*. For that reason I use the same species name. It is, however, unlikely, that the Pacific specimens are conspecific with Mediterranean *L. solida*. The original description (Schmidt, 1862 as *Grantia*) makes no mention of quadriradiates, but later (Schmidt, 1868) these were described from Algerian specimens, though stated to be rare. The interpretation of *L. solida* by Haeckel (1872) differs in a number of major ways from Schmidt's descriptions. Very probably the Pacific *L. solida* needs a new name. I am grateful to Mr. Th.van Koolwijk (Amsterdam) for this identification.

Class Demospongiae
Order Choristida
Family Jaspidae

Asteropus simplex (Carter, 1879)
Figure 2

Fragments of massivery encrusting specimen. Surface hispid, consistency fragile. The skeleton mainly comprises a confused mass of large oxea, 1300–1700 μ by 33–50 μ, next to many smaller and thinner growth stages. Stylote modifications are not uncommon; one promonaene modification was found. The very abundant microscleres include variable sanidasters, 17–25 μ long, and oxyasters of 25–40 μ, provided with 8–9 roughened rays, which occasionally become bifurcate.

LOCALITY: Chek Chau.

DISTRIBUTION: Indo-West Pacific.

DISCUSSION: Bergquist (1968) listed sizes of spicules of reported specimens of *Asteropus simplex*. The present material differs from these in the size of the megascleres (2000–3000 by 60–80 μ in other samples). On the other hand, Heron Island (Australia) specimens described later by Bergquist (1969) match the Hong Kong material precisely, so there is no clear regional difference in the spicule sizes.

The occurrence of a promonaene modification in the present specimen points to a close relationship with tetractine Choristida. The family Jaspidae is probably not the correct assignment for this species.

Order Hadromerida
Family Spirastrellidae

Spirastrella cf. *cunctatrix* (Schmidt, 1862)
Figure 3

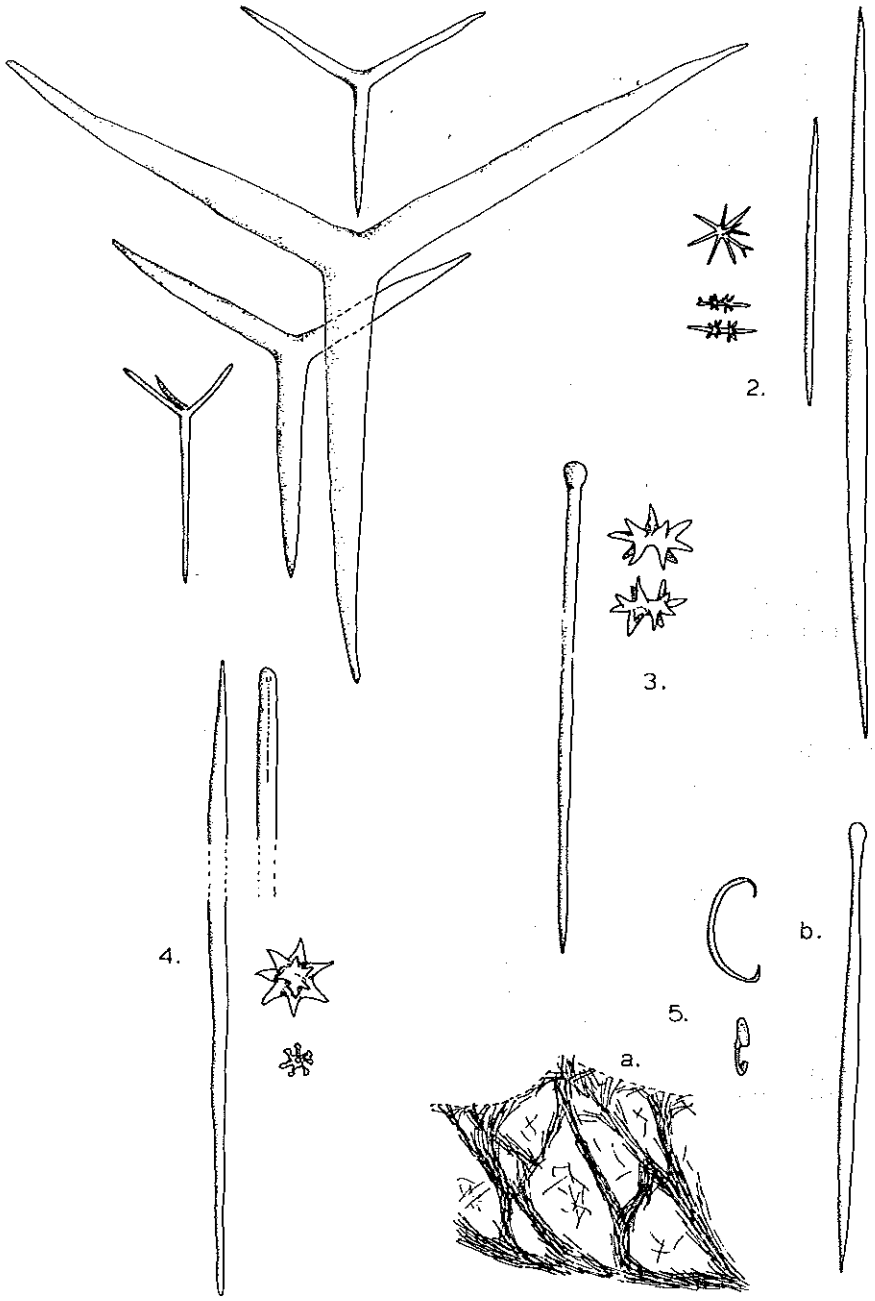

Figure 1. *Leuconia solida*. Spicules.

Figure 2. *Asteropus simplex*. Spicules.

Figure 3. *Spirastrella* cf. *cunctatrix*. Spicules.

Figure 4. *Tethya robusta*. Spicules.

Figure 5. *Mycale phyllophila*. a, Perpendicular section to show the course of the skeletal tracts; b, spicules.

Thinly encrusting on dead coral, with a smooth surface and tough consistency. Presumably the oscules are distinctly star-shaped.

Skeleton: erect tylostyle brushes overlain by a dense mass of robust spirasters. Tylostyles with prominent knobs 280–300 by 6.5–7 μ (knobs 8–12 μ), spirasters 40–55 μ long, 30–40 μ high, axis 7–8 μ wide.

LOCALITY: Bush Reef.

DISTRIBUTION: Indo-West Pacific, "Mediterranean".

DISCUSSION: According to Vacelet (1976) *Spirastrella cunctatrix* and *S. decumbens* Ridley, 1884 are synonymous. This synonomy is followed here, though it seems inevitable that this so-called cosmopolitan species will have to be further revised following the ill executed attempt of Vosmaer (1911) to do so.

Family Tethyidae

Tethya robusta Bowerbank, 1873
Figure 4

Globular orange sponges with radiate architecture. Spicules strongyloxea up to 1200 by 20–27 μ, sphaerasters 35–55 μ in diameter with 12–17 rays, tylasters 10–16 μ with 9–11 rays.

LOCALITY: Chinese University, Tolo Harbour.

DISTRIBUTION: Indo-West Pacific.

Order Poecilosclerida
Family Mycalidae

Mycale phyllophila Hentschel, 1911
Figure 5

Smooth encrustations several mm in thickness. Consistency soft. Ectosomal skeleton ill-developed, consisting of few, single megasleres and microscleres. Choanosomal skeleton consisting of plumose spicule tracts rising to the surface with only few anastomosing tracts. Megascleres robust subtylostyles, 230–255 by 4.5–8 μ. Microscleres include a single category of slim anisochelae, 19–23 μ, and a single category of sigmata, 35–50 μ.

LOCALITY: Chek Chau, Ah Chau.

DISTRIBUTION: Australia (Hentschel, 1911), Palau Islands (Bergquist, 1965; as *M. lissochela*).

DISCUSSION: This species is part of the complex of *Mycale* species with single categories of anisochelae and sigmata, and ill-developed ectosomal skeleton, such as *M. microsigmatosa* (Arndt, 1927) (West Indies), *M. senegalensis* Levi, 1952 (West Africa), *M. sanguinea* (Tsurnamal, 1969) (Mediterranean). These are all red or orange sponges, so it is likely that the present species has the same colour. *M. lissochela* Bergquist, 1965 seems a clear synonym.

Order Haplosclerida
Family Haliclonidae

Reniera sp.
Figure 6

Encrusting with osculiferous lobes. Size several sq.cm. Consistency soft, fragile. Surface smooth.

Colour: transparent beige (preserved). Ectosome ill-developed, not easily detached. Choanosome a predominantly unispicular reticulum of robust cigar-shaped oxea, 150–170 by 7–10 μ. Spongin quite rare, only present at some of the nodes.

LOCALITIES: Chek Chau, Gruff Head, Bush Reef, Ah Chau.

DISTRIBUTION: unknown, possibly wide-spread.

DISCUSSION: The present state of our knowledge of the Indo-West Pacific genera *Haliclona, Reniera* and *Adocia* does not allow a positive identification of even the most common species, the more so since live colours of older descriptions are unknown. Unispicular skeletons like the one in the present material are found in, for example, the following Indo-West Pacific species: *Reniera rosea*; Ridley, 1884 (not *Isodictya rosea* Bowerbank, 1866), *Reniera semifibrosa* Dendy, 1916, *Haliclona permollis*; De Laubenfels, 1951 (not *Isodictya permollis* Bowerbank, 1866), *Reniera chrysa* De Laubenfels, 1954, *Haliclona tulearensis* Vacelet, Vasseur and Levi, 1976, *Reniera* sp. 2 Hentschel, 1912, *Haliclona* sp. 2 Levi, 1961. It is anticipated that the Hong Kong species is conspecific with one of these.

Sigmadocia symbiotica Bergquist, 1967
Figure 7

Ramose, with a tendency to form palmate bushes, up to 15 cm high. Surface smooth, no oscules apparent. Consistency tough, incompressible.

Colour: orange-brown (preserved). The ectosome gives off a lot of slime during preservation.

Skeleton: the species uses an alga of the genus *Gracilaria* as support. The algal branches are woven into a tight mass by the sponge spicules. The ectosomal skeleton is a beautiful *Adocia* – type of unispicular tangential network.

Spicules: oxea 110–150 by 4–6 μ, sigmata 15–25

LOCALITIES: Chek Chau, Chinese University, Bush Reef, Gruff Head.

DISTRIBUTION: Australia (Bergquist, 1967).

DISCUSSION: Presumably the records by Thomas (1979) of *Sigmadocia fibulata* from the Indian Ocean are also referable to this species. His material was apparently symbiotic with the alga *Ceratodictyon spongiosum*, resulting in the same habit. The record by Thomas (1973) *Sigmadocia fibulata* presumably concerns another species, although it is possible that Thomas is right in claiming this symbiotic relationship to be facultative. *Reniera fibulata* as described by Schmidt (1862) is almost certainly not conspecific with the present species, nor with the material of Thomas.

Family Niphatidae

Gelliodes pumila (Von Lendenfeld, 1887)
Figure 8

Repent ramose branches of about 1 cm in diameter. Surface slightly uneven to smooth. Oscules with slightly raised margins, up to 5 mm in dia-

meter, not infrequently terminal on the branches. Consistency spongy, compressible.

Colour: pale yellow (preserved). Ectosomal skeleton a unispicular renieroid reticulation. Choanosomal skeleton consists of primary tracts 100–500 μ in diameter containing up to 15 spicules in cross section, encased in spongin, and secondary tracts, at right angles, of 40–60 μ (up to 7 spicules in cross section). Meshes wide, irregular in size.

Spicules: oxea 140–175 by 8–10 μ, sigmata 20–45 μ (not very numerous).

LOCALITIES: Chek Chau, Ah Chau, Gruff Head.

DISTRIBUTION: Indo-West Pacific.

DISCUSSION: This identification is largely based on the description of Burton (1934) of Lendenfeld's material. It is probably a common species, although the genus *Gelliodes* is in such a state of confusion that this cannot be verified with any certainty. The *Adocia pumila* material of Bergquist (1969) does not appear to be conspecific, as her specimens did not posses sigmata.

Family Callyspongiidae

Callyspongia pulvinatae (Lindgren, 1897)
Figure 9

Groups of tubular lobes or repent ramose branches, with slightly raised oscules. Lobes up to 4 cm high, branches up to 2 cm in diameter. Oscules up to 10 mm in diameter. Surface smooth to slightly rough, microhispid. Consistency spongy, typically *Callyspongia*-like.

Colour: light brown (preserved). Ectosomal skeleton the usual regular double reticulation of primary fibres 35–65 μ in diameter with a core of 3–8 spicules, enclosing meshes 600–10000 μ in diameter, and secondary fibres 10–30 μ in diameter with a core of 1–4 spicules, forming meshes 100–300 μ in diameter. All ectosomal fibres bear erect brushes of spicules (as is usual for the sub-genus *Euplacella*). Choanosomal skeleton a regular ladder-like system of primary fibres at distances 200–500 μ apart, 55–120 μ in diameter, cored by 10–20 spicules, and secondary fibres at right angles, 25–70 μ in diameter, cored by 2–10 spicules, evenly spaced at distances of 200–400 μ. Spicules cigar-shaped, robust oxea, 90–100 by 7–9 μ.

LOCALITIES: Chek Chau, Chinese University, Bush Reef, Knob Reef, Gruff Head.

DISTRIBUTION: Malayan region (Lindgren, 1897; 1898)

DISCUSSION: This species is close to the common *Callyspongia diffusa* Ridley, 1884 but differs from it in habit and spicule size. The spelling of the species name *pulvinatae* is mysterious; the latin word *pulvinar* (genitive *pulvinaris*), meaning "cushion" is the closest I could find.

Order Dictyoceratida
Family Spongiidae

Spongia ceylonensis Dendy, 1905
Figure 10

Massively encrusting to elevated cone-shaped masses, dark purple-brown (preserved) on top getting lighter downwards. Surface finely conulose. Oscules 4–5 mm in diameter. Next to these the surface shows numerous pores and

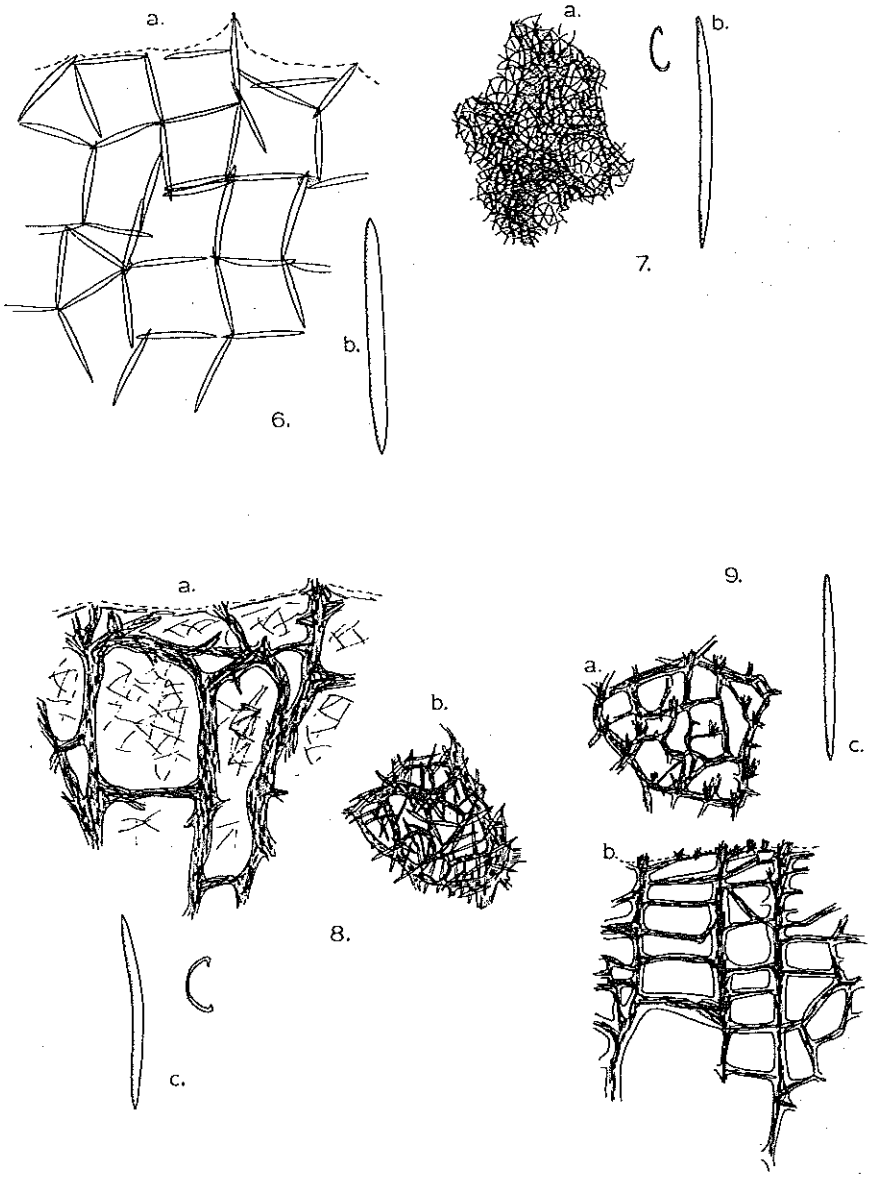

Figure 6. *Reniera* sp. a, Perpendicular section; b, spicule.

Figure 7. *Sigmadocia symbiotica*. a, Tangential section of ectosome (with algal thallus underneath); b, spicules.

Figure 8. *Gelliodes pumila*. a, Perpendicular section; b, tangential section of ectosome; c, spicules.

Figure 9. *Callyspongia pulvinatae*. a, Tangential section of ectosome; b, perpendicular section; c, spicule.

somewhat meandering grooves, which are partly covered by the ectosome. The latter is organic but tough. Primary skeleton fibres 30–50 u in diameter, cored sparingly by broken spicules, 500–600 μ apart. Secondary fibres 10–20 μ. uncored, forming tight irregular meshes.
LOCALITIES: Chek Chau, Ah Chau, Bush Reef, Knob Reef, Gruff Head.
DISTRIBUTION: Indo-West Pacific.
DISCUSSION: This material is indistinguishable from Dendy's species, but older names might exist, such as *Euspongia officinalis* var. *perforata* Von Lendenfeld, 1889, or *Spongia discus* var. *nicholsoni* Hyatt, 1877. A lack of sufficient material means this question cannot be resolved. *Spongia officinalis matamata,* as described by De Laubenfels (1954), is probably conspecific, as are many specimens reported as *Spongia officinalis* Linnaeus, 1758.

Ircinia pinna Hentschel, 1912
Figure 11

Thickly encrusting on coral rubble, with a smooth surface between three or four thin, pencil-shaped elevations about 15 mm high. These are of irregular outline. Consistency compressible but tough, difficult to cut or tear. Colour beige (preserved). Ectosome a tightly woven mass of filaments, with widely spaced inhalant pores. Choanosomal skeleton predominatly a mass of filaments. Spongin fibres reduced and scarce, up to 100 μ, filled with broken spicules. Filaments 2–4 μ in diameter, granulated, ending in knobs 7–8 μ in diameter.
LOCALITY: Knob Reef
DISTRIBUTION: Indonesia (Hentschel, 1912)
DISCUSSION: This identification is made largely on the basis of the habit.

Family Dysideidae

Dysidea cf. *cinerea* Keller, 1879
Figure 12

Lobate mass, with heavily conulose surface. Lobes about 2 cm high Conules 1–5 mm high, about 3 mm apart. Oscules not apparent. Consistency soft, easily torn (state of preservation rather bad). Skeleton rather open meshed with relatively thin fibres. Primary fibres 100–200 μ in diameter, heavily loaded with foreign material. Secondary fibres 15–50 μ in diameter (typically 20 μ), often uncored. Meshes 300–600 μ.
LOCALITY: Gruff Head.
DISTRIBUTION: Indo-West Pacific.
DISCUSSION: The identification is made on the overal similarity with specimens collected by the Siboga Expedition (Indonesia) identified by Burton. The present material is atypical on account of its largely uncored secondary fibres (compared with the description of this species by Vacelet, 1976). It approaches in that respect *Euryspongia lobata* Bergquist, 1965, which might turn out to be a synonym of *Dysidea cinerea.*

Order Verongida
Family Verongiidae

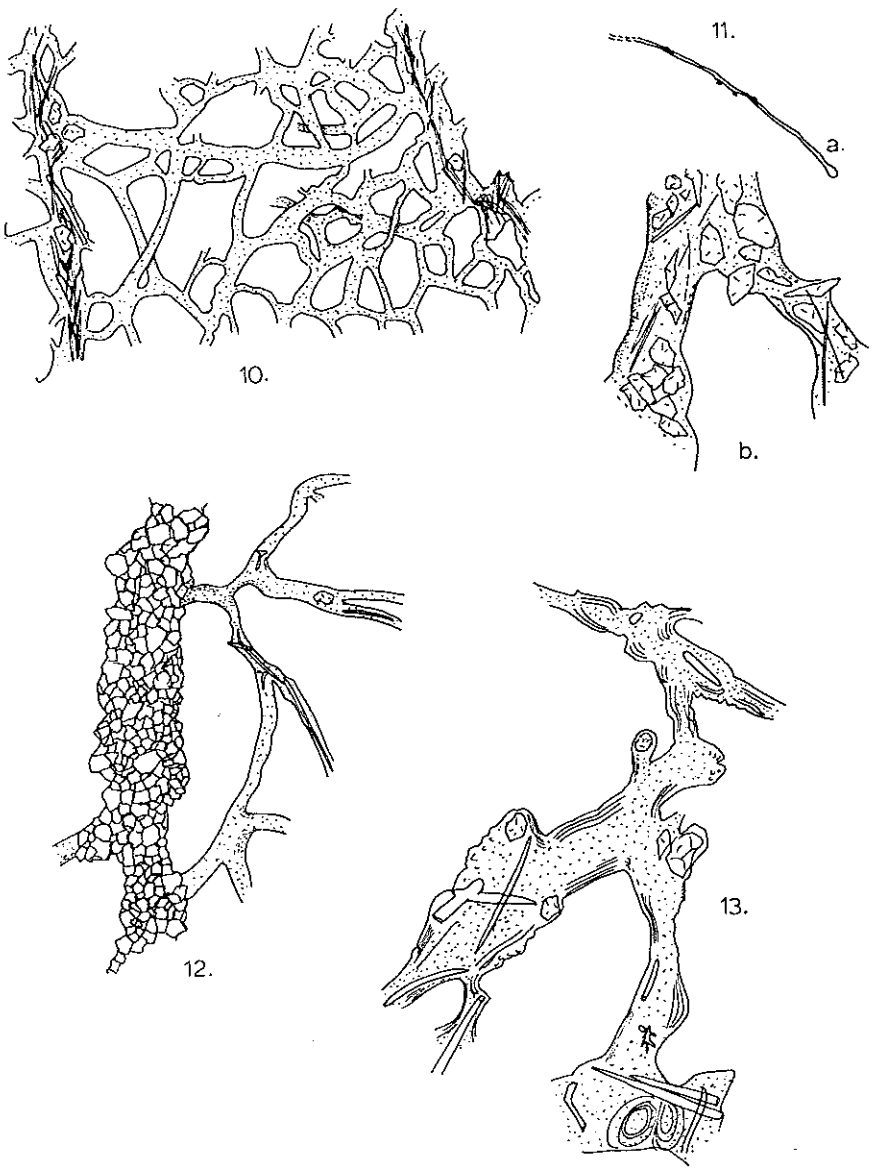

Figure 10. *Spongia ceylonensis*. Perpendicular section.
Figure 11. *Ircinia pinna*. a, Filament; b, portion of skeletal fibre.
Figure 12. *Dysidea cinerea*. Portion of the skeleton.
Figure 13. *Psammaplysilla purpurea*. Portion of the skeleton.

Psammaplysilla purpurea (Carter, 1880)
Figure 13

Dark purple (preserved) encrustations about 5 mm in thickness, provided with conules of 2 mm high, 5–8 mm apart. No oscules apparent. Consistency fairly soft, but with firm ectosome. Choanosome: a few irregular spongin fibres traverse the heavily pigmented interior. The fibres are for the most part cored by broken spicules. Outline of the fibres irregular, knobbly; spongin stratified. Diameter about 100 μ at the surface, increasing to about 350 μ near the substrate. Choanocyte chambers indistinct (formalin fixation), about 40–45 μ in diameter. Canal system extensive and wide.

LOCALITY: Bush Reef.

DISTRIBUTION: Indo West-Pacific (cf. Bergquist, 1965).

DISCUSSION: On account of the debris-filled fibres the present specimen approaches the genus *Pleraplysilla* of the order Dendroceratida. However, these fibres are not uncommon in other reported specimens of *Psammaplysilla purpurea*. Encrusting specimens have been reported under various names: *Druinella tyroeis* De Laubenfels, 1954 and *Hexadella pleochromata* De Laubenfels, 1950. Bergquist (1965) made it clear that these along with quite a number of other names are all synonymous.

ACKNOWLEDGEMENTS

I am grateful to Dr. G.B. Thompson and Dr. B.S. Morton for the opportunity to examine and report upon this material.

REFERENCES

Arndt, W., 1927. Kalk- und Kieselschwamme von Curacao. *Bijdragen tot de Dierkunde*. 25: 133–158.

Bergquist, P.R., 1965. The sponges of Micronesia, Part I. The Palau Archipelago. *Pacific Science*. 19: 123–204.

Bergquist, P.R., 1967. Additions to the sponge fauna of the Hawaiian Islands. *Micronesica*. 3: 159–174.

Bergquist, P.R., 1968. The marine fauna of New Zealand: Porifera, Demospongiae, Part I. (Tetractinomorpha and Lithistida). *New Zealand Oceanographic Institute, Memoir*. 37: 1–105.

Bergquist, P.R., 1969. Shallow-water Demospongiae from Heron Island. *University of Queensland Great Barrier Reef Committee Papers*. 1: 63–72.

Bergquist, P.R., 1978. *Sponges*. Hutchinson.

Burton, M., 1934. Sponges. *Scientific Reports of the Great Barrier Reef Expedition*. 4: 513–621.

Dendy, A., 1905. Report on the sponges collected by Prof. Herdman at Ceylon in 1902. *Reports Pearl Oyster Fisheries Commission, Gulf of Manaar*. Supplement 18, 3: 57–246.

Dendy, A., 1916. Report on the non-calcareous sponges collected by Mr. James Hornell at Okhamandal in Kattawiar in 1905–1906. *Report to the Government of Baroda on the marine Zoology of Okhamandal in Kattawiar*. Part II: 93–146.

Gray, J.E., 1858. Description of *Aphroceras*, a new genus of calcareous Spongiadae

brought from Hong-Kong by Dr. Harland. *Proceedings of the Zoological Society of London.* 1858: 113--114.

Haeckel, E., 1872. *Die Kalkschwamme: eine Monographie. Volume 2. System der Kalkschwamme.* Berlin.

Hentschel, E., 1911. Tetraxonida II. *Fauna Sudwest Australiens.* 3(10): 279–393.

Hentschel, E., 1912. Kiesel- und Hornschwamme der Aru- und Kei-Inseln. *Abhandlungen des senckenbergischen naturforschender Gesellschaft.* 34: 291–448.

Hyatt, A., 1877. Revision of the North American Poriferae; with remarks upon foreign species: Part II. *Memoirs of the Boston Society of Natural History.* 2: 481–554.

Laubenfels, M.W. De, 1950. The sponges of Kaneohe Bay, Oahu. *Pacific Science.* 4(1): 3–36.

Laubenfels, M.W.De, 1951. The sponges of the island of Hawaii. *Pacific Science.* 5: 256–271.

Laubenfels, M.W. De, 1954. The sponges of the West Central Pacific. *Oregon State Monographs in Zoology.* 7: 1–306.

Lendenfeld, R.L. von, 1889. *A monograph of the horny sponges.* London.

Levi, C., 1952. Spongiaires de la cote du Senegal. *Bulletin de l'Institut francais de l'Afrique noire.* 14: 34–59.

Levi, C., 1961. Eponges intercotidales de Nha Trang (Vietnam). *Archives de Zoologie experimentale et generale.* 100(2): 127–147.

Lindgren, N.G., 1897. Beitrag zur Kenntniss der Spongien-fauna des Malaysichen Archipels und der Chinesischen Meere. *Zoologische Anzeiger.* 20: 480–487.

Lindgren, N.G., 1898. Beitrag zur Kenntniss der Spongienfauna des Malaysichen Archipels und der chinesischen Meere. *Zoologische Jahrbucher, Abteilung fur Systematik.* 11: 283–378.

Pulitzer-Finali, G., 1981. Some shallow water sponges from Hong Kong. In. *Proceedings of the First International Marine Biological Workshop: the Marine Flora and Fauna of Hong Kong and Southern China, Hong Kong, 1980.* [Eds. B.S. Morton and C.K. Tseng]. Hong Kong University Press.

Ridley, S.O., 1884. *Spongida. Report on the zoological collections made in the Indo-pacific Ocean during the voyage of HMS "Alert" 1881–1882.* London. pp. 366–482 and 582–630.

Schmidt, O., 1862. *Die Spongien des Adriatischen Meeres.* Leipzig.

Schmidt, O., 1868. *Die Spongien der Kuste von Algier (Drittes Supplement).* Leipzig.

Thomas, P.A., 1973. Marine Demospongiae of Mahe Island in the Seychelles Bank (Indian Ocean). *Musee royal de l'Afrique centrale-Tervuren-Belgique Annales-Sciences zoologiques.* 203: i-x, 1–96.

Thomas, P.A., 1979. Studies on Sponges of the Mozambique Channel. I. Sponges of Inhaca Island. II. Sponges of Mambone and Paradise Islands. *Musee royal de L'Afrique central-Tervuren-Belgique Annales-Sciences zoologiques.* 227: i-vii: 1–73.

Tsurnamal, M., 1969. Four new species of Mediterranean Demospongiae and new data on *Callites lacazii* Schmidt. *Cahiers de Biologie marine.* 10: 343–357.

Vacelet, J., Vasseur P. and Levi C., 1976. Spongiaires de la pente externe des recifs coralliens de Tulear (Sud-ouest de Madagascar). *Memoires du Museum national d'Histoire naturelle, nouvelle serie, Serie A, Zoologie.* 99: 1–116.

Vosmaer, G.C.J., 1911. The Porifera of the Siboga Expedition, II. The genus *Spirastrella. Monografieen Siboga Expeditie*, 6: 1–69.