SPONGES FROM THE BISMARCK SEA

SPUGNE DAL MARE DI BISMARCK

GUSTAVO PULITZER-FINALI

Istituto di Zoologia dell'Università, Via Balbi 5, I - 16126 Genova

ABSTRACT

A small collection of shallow-water sponges from the eastern coast of Papua New Guinea is recorded. It consists of 38 species, of which 18 are described as new: *Corticium niger, Caminus albus, Jaspis laingi, Agelas semiglaber, Higginsia palmata, Myrmekioderma pacifica, Halichondria syringea, Topsentia maculosa, Topsentia plurisclera, Hymeniacidon flaccida, Mycale (Aegagropila) peculiaris, Mycale (Aegagropila) pachysigmata, Xestospongia papuensis, Amphimedon cristata, Amphimedon conferta, Amphimedon strongylata, Amphimedon rudis, Amphimedon alata.*

The specimens are deposited at the Museum of Natural History of Genoa (MSNG).

KEY WORDS

Sponges, Bismarck Sea.

The sponges here recorded have been collected in the waters of the island of Laing (Papua New Guinea, 4° 09' S - 144° 52' E). The specimens are deposited at the Museum of Natural History of Genoa (MSNG).

HOMOSCLEROPHORIDA

PLAKINIDAE

Corticium n i g e r sp. n. (Fig.1)

Material: P. 74, depth 15 m, 12 August 1986.
Holotype: MSNG 48693

The specimen is cushion shaped, roundish, about 5 cm in diameter and 1 cm thick. The colour in life was noted as black; it is the same in spirit. The consistency is tough, scarcely resilient.

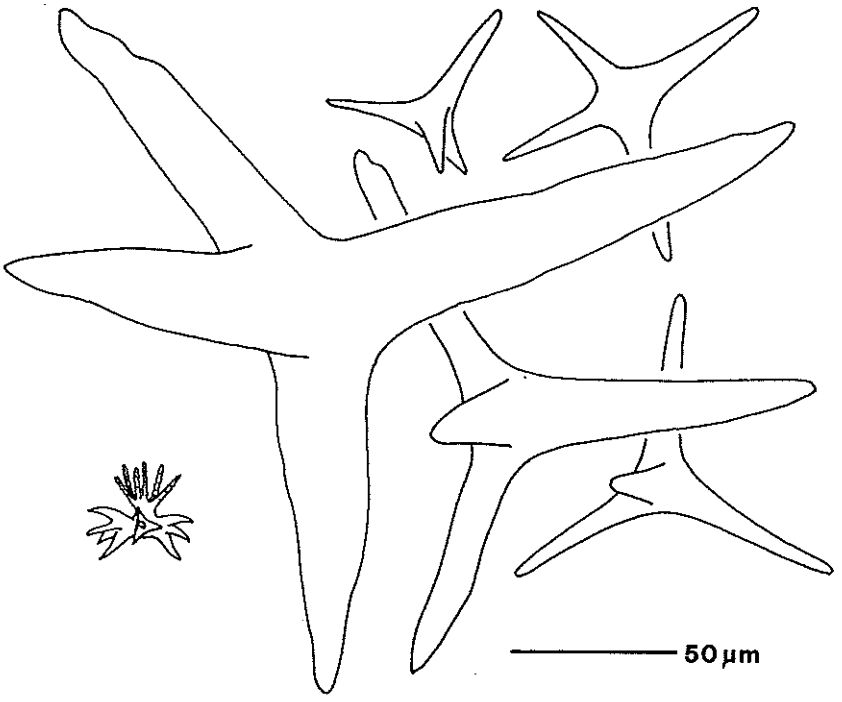

Fig. 1 - Spicules of *Corticium niger* sp. n.

The spicules are: 1) Calthrops with rays measuring from 37 to 160 µm. 2) Candelabra 23-30 µm across.

Corticium niger may be. compared with the cosmopolitan *C. candelabrum*. The maximum ray length of the calthrops of the latter species is generally indicated as 40 µm (46 µm in an Indian Ocean specimen recorded by THOMAS (1968: 261). In *C. niger* the calthrops reach a size four times larger.

Plakortis simplex F. E. Schulze

Plakortis simplex F. E. Schulze, 1880: 430
Material: P. 14, P. 97, depth 10 m, 12 August 1986; P. 99, P. 69, depth 15 m, 13 August 1986.

P. 14 is cushion shaped, with rounded borders, measuring 7 x 4.5 x 1.5 cm. In spirit, the surface is smooth, the consistency tough, the colour dark brown. P. 97 is in the dry state, cushion shaped, 5 x 3 x 0.5 cm. The colour is yellowish; it was brown in life. P. 69 is dry, a small, smooth cushion 2 x 2 x 1 cm, light brown. The colour was noted as violaceous in life. P. 99, in spirit, is smooth, tough, cushion shaped with rounded borders, violaceous brown as in life. It measures 5.5 x 4 x 1.5 cm.

The spicules are diactines measuring 110-150 x 3-4.5 μm. Rare triactines have been observed only in specimen P. 97.

ASTROPHORIDA

ANCORINIDAE

Melophlus sarasinorum Thiele

Melophlus sarasinorum Thiele, 1899: 8
Material: P. 103, depth 3 m, 14 August 1986.

The specimen, dubiously entire, measures 10 x 8 x 1-3 cm. The colour in life was orange yellow; it is light brown in spirit. The consistency is cork-like. The surface is conspicuously tuberculated, with close-set warts 5-7 mm high and as much thick. The cortex is about 2 mm thick.

The spicules are: 1) Oxeas measuring 900-1150 x 27-40 μm. 2) Microrhabds mostly oxeote and smooth, sometimes slightly centrotylote, measuring 50-70 x 2.5-7 μm. 3) Microrhabds rough, mostly centrotylote, very variable, measuring 9-25 x 1.5-4 μm. There are some intermediate forms between categories 2) and 3). 4) Oxyasters multirayed, smooth or rough, without centrum, 14-23 μm in diameter.

GEODIIDAE

Caminus albus sp. n. (Fig. 2)

Material: P. 145
Holotype: MSNG 48694

The specimen available, a fragment, is roughly cylindrical, with a diameter of about 15 mm. The colour, in spirit, is off white. The consistency, owing to a layer of cortical sterrasters about 1 mm thick, is stony hard, but the interior is pulpy.

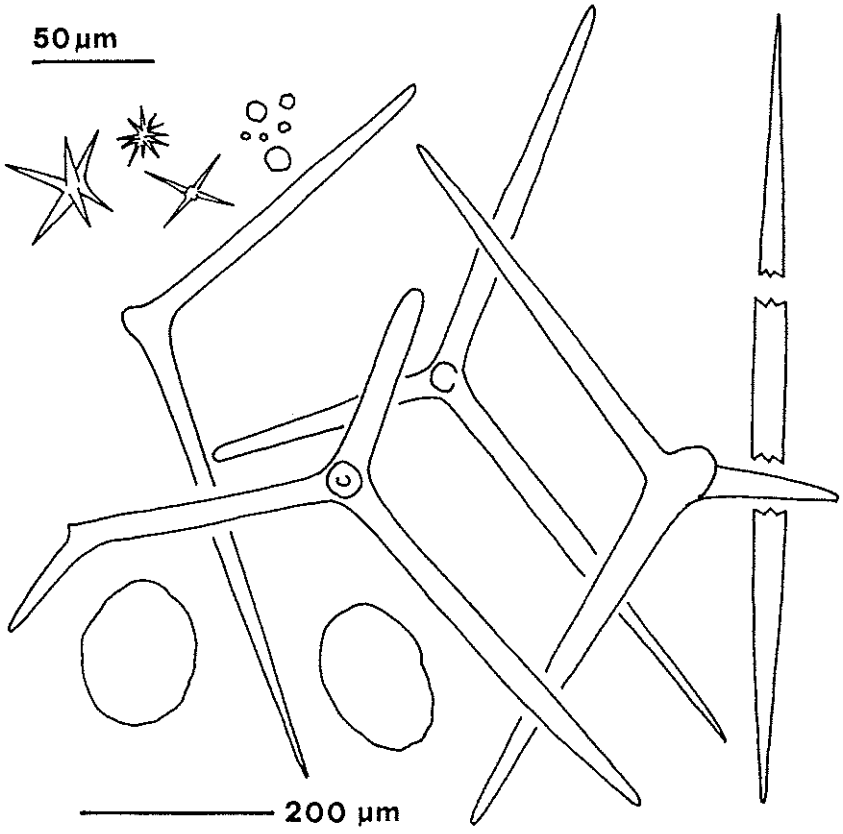

Fig. 2 - Spicules of *Caminus albus* sp. n.

The spicules are: 1) Oxeas measuring 2200-3000 x 25-46 μm. 2) Calthrop-like orthotriaenes with clads measuring 400-500 μm. 3) Sterrasters almost spherical, with a diameter of 130-150 μm. 4) Oxyasters without centrum, measuring 18-66 μm. 5) Spherules measuring 1-11.5 μm.

Caminus albus shares the absence of strongyles with *C. sphaerulipher*, a species from Madagascar established by VACELET & VASSEUR (1965: 89) as belonging to the genus *Isops*.

Some specimens from Japan have been attributed by HOSHINO (1981: 252) to a new genus *Geodistrongyla* which is a synonym of *Caminus* and to a new species *strongyla* which is a synonym of *chinensis* Lindgren, 1897: 485.

COPPATIIDAE

Jaspis l a i n g i sp. n. (Fig. 3)

Material: P. 88, P. 94, depth 7 m, 16 August 1986.
Holotype (P. 88): MSNG 48695
Paratype (P. 94): MSNG 48696

The two specimens are small fragments, shapeless. The colour in life was orange; it is cream in spirit. The consistency is tough, scarcely resilient.

The spicules are: 1) Oxeas measuring 600-750 x 11-15 μm. Some stylote modifications are present. 2) Oxeas measuring 90-150 x 3.5-4.5 μm, very abundant. 3) Asters not uniform, not separable in categories, oxyasters to strongylasters, with 4 to 8 rays. There are some small tylasters. The rays are from 4.5 to 23 μm long. Their tips may be slightly spiny.

LITHISTIDA

DESMANTHIDAE

Desmanthus incrustans (Topsent) (Fig. 4)

Aciculites incrustans Topsent, 1889: 32
Material: P. 44, depth 15 m, 10 August 1986.

The specimen is an encrustation about half a millimeter thick, hispid. It was noted as red in life.

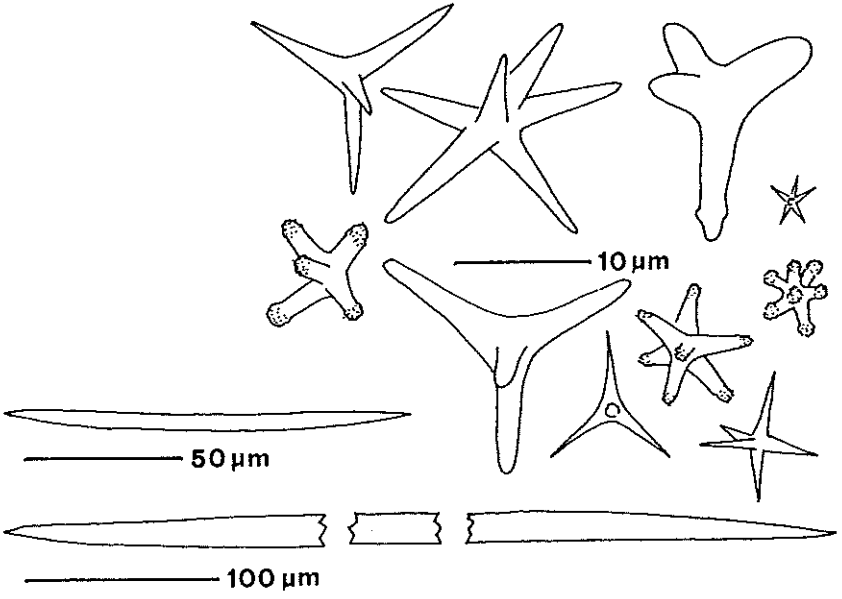

Fig. 3 - Spicules of *Jaspis laingi* sp. n.

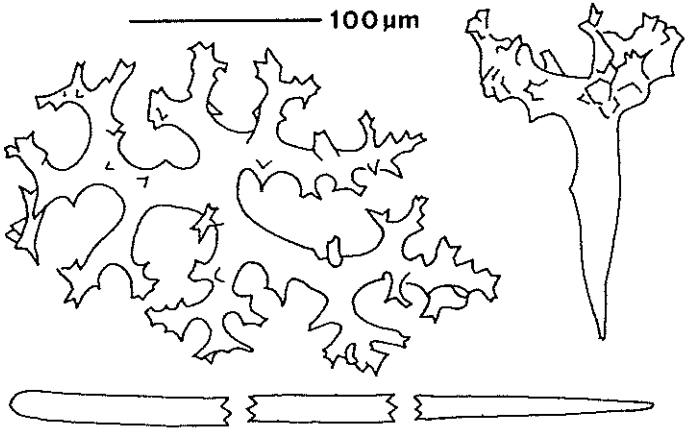

Fig. 4 - Spicules of *Desmanthus incrustans*, specimen P. 44.

The spicules are: 1) Desmas tetracrepid up to about 240 μm across. 2) Desmas tetracrepid (lophotriaenes) with a distinct, almost smooth rhabdome which is 70-150 μm long and 15-30 μm thick at the base. 3) Styles measuring 180-300 x 9-16 μm. They are sometimes curved near the base, but only slightly.

A specimen of this species from the Arafura Sea has been recorded with the name of *Lophacanthus rhabdophorus* Hentschel (1912: 306)

HADROMERIDA

SUBERITIDAE

Suberites carnosus (Johnston)

Halichondria carnosa Johnston, 1842: 146

Material: P. 45, depth 15 m, 13 August 1986; P. 36, depth 5 m, 12 August 1986.

P. 45.- The specimen is masive, 7 x 4 x 2 cm. In spirit, it is fleshy, very firm, smooth (but microscopically hispid), cream (it was orange-yellow in life). The ectosome is not separable. The skeleton is dense, more or less organized in tracts which branch and anastomose and are radially oriented toward the periphery. The ends of the tracts hispidate the surface. The spicules are tylostyles straight, measuring 210-350 x 2.5-4, 370-500 x 5-9, 540-670 x 8-11.5 μm. The smaller ones form the hispidation.

P. 36.- The specimen is massive, 5 x 5 x 2 cm. In spirit, the colour is light brown (it was orange in life). The surface is smooth (but microscopically hispid). The consistency is tough, not resilient. The ectosome is not separable. The skeleton consists of spicules in confusion which at the perifery are arranged in a palisade made by the smaller spicules hispidating the surface.

The spicules are tylostyles straight, measuring 190 x 4 - 840 x 17 μm. They differ from those of specimen P. 45 by being more fusiform.

PLACOSPONGIIDAE

Placospongia melobesioides Gray

Placospongia melobesioides Gray 1867: 128

Material: P. 33, depth 2 m, 26 August 1986.

A small specimen is available; light brown in life, it is now grayish in the dry state.

The spicules are: 1) Tylostyles measuring 550-800 x 7-14 μm. 2) Selenasters measuring 65-74 μm. 3) Spherules measuring about 1 μm.

TIMEIDAE

Timea curvistellifera (Dendy) (Fig. 5)

Hymedesmia curvistellifera Dendy, 1905: 121
Material: P. 71, depth 15 m, 21 August 1986.

The specimen is a very thin incrustation on dead coral, red in life.

The spicules are: 1) Tylostyles measuring 300-410 x 4.5-7 μm. 2) Asters measuring 14-34 μm across.

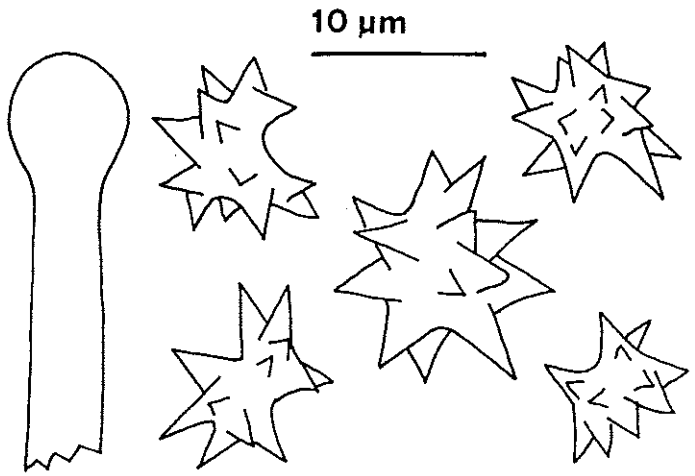

Fig. 5 - Spicules of *Timea curvistellifera*, specimen P. 71.

THEONELLIDAE

Theonella conica (Kieschnik) (Fig. 6)

Discodermia conica Kieschnick, 1896: 530

Material: P. 106, depth 10 m, 18 August 1986; P. 1, depth 6 m, 16 August 1986; P. 48, depth 6 m, 27 August 1986.

P. 106: from an irregularly massive base, about 7 x 5 cm, two digitations arise, open at the top, about 7 cm high and 1.5 cm in diameter. Numerous smaller processes arise from the base, all with apical openings. The sponge was apparently growing erect. The colour, which in life was violet, orange internally, is now (in spirit) uniformly very light brown. The sponge was almost entirely enveloped by a calcareous alga.

P. 1: small, 6 x 4 x 3 cm, massive, lobate, with openings (now contracted) at the summit of the lobes. The colour was dark brown in life; it is cream in spirit.

P. 48: a fragment. The colour in life was brown, orange internally; it is now, in spirit, a very pale orange, uniform.

The consistency of these specimens is firm, easy to cut. The surface is smooth. The skeleton is made by irregular bundles of

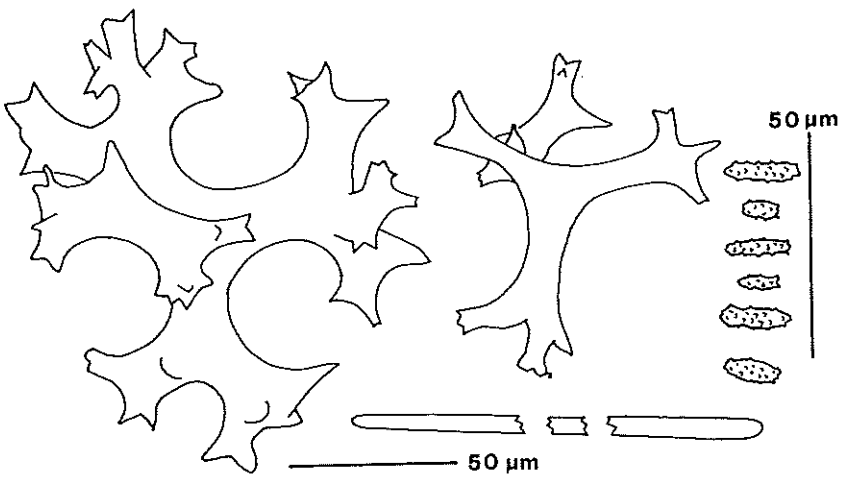

Fig. 6 - Spicules of *Theonella conica*, specimen P. 106.

strongyles, tangentially oriented near the surface and by sparse desmas. Microrhabds are very abundant.

The spicules are: 1) Strongyles slightly curved., measuring 330-470 x 4.5-16 μm. 2) Desmas tetracrepid up to about 280 μm across. They are fairly abundant in P. 106, rare in P. 1, apparently absent in P. 48. No dermal phyllotriaenes are present. 3) Microrhabds spiny, straight, irregular, measuring 7-15 μm.

AGELASIDA

AGELASIDAE

Agelas s e m i g l a b e r sp. n. (Fig. 7)

Material: P. 140, 23 August 1986.
Holotype: MSNG 48697

The specimen was a very small incrustation on a pebble. Only a spicule slide is now available.

The spicules are: 1) Verticillated acanthostyles measuring 230-375 x 11-16 μm. The spination, regular at the two extremities, gradually decreases, leaving the middle smooth. This character is shared by all these spicules, without exception. 2) Verticillated acanthostyles measuring 75-100 by about 3.5 μm, entirely spined.

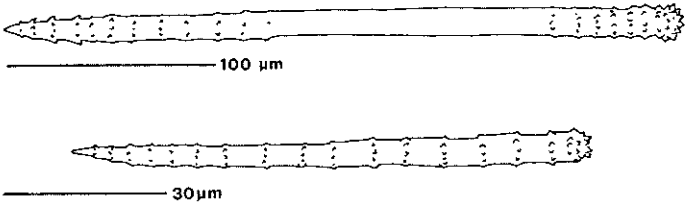

Fig. 7 - Spicules of *Agelas semiglaber* sp. n.

AXINELLIDA

DESMOXYIDAE

Higginsia p a l m a t a sp. n. (Fig. 8)

Material: P. 90, depth 20 m, 15 August 1986.
Holotype: MSNG 48698

The specimen is fan shaped, 13 cm high and 13 cm wide. The thickness at the base is. about 12 mm, tapering toward the border. The consistency is tough, the colour, dull brown in spirit, was noted as orange in life.

The spicules are: 1) Oxeas measuring 750-880 x 27-43 μm. 2) Oxeas measuring 600-1000 x 9-14 μm 3) Styles measuring about 2300 x 7-18 μm, rare. 4) Microacanthoxeas almost straight to centrangulate, measuring 50-130 μm.

There is a close agreement between these spicules and those described by TOPSENT (1897: 443) for a Moluccan sponge which he identified as *Higginsia coralloides* var. *massalis* Carter.

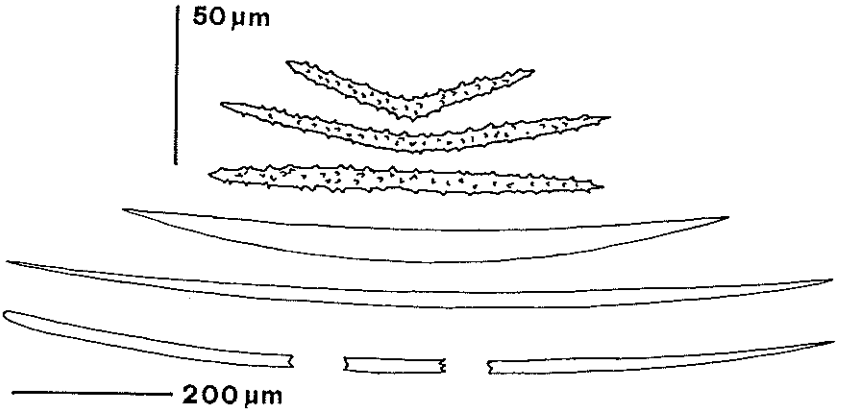

Fig. 8 - Spicules of *Higginsia palmata* sp. n.

Myrmekioderma p a c i f i c a sp. n. (Fig. 9)

Material: P. 63, depth 6 m, 15 August 1986.
Holotype: MSNG 48699

The specimen is a very small, amorphous fragment of soft, crumbly consistency (in spirit), devoid of organized spicular tracts.

The spicules are: 1) Oxeas measuring 650-850 x 27-45 μm. 2) Oxeas measuring 280-470 x 7-16 μm. These spicules are slightly, uniformly curved; their points are as a rule long and sharp, but among the larger ones tylote and strongylote modifications are frequent. 3) Raphides in dragmata, very abundant, straight or irregularly curved, extremely thin, 100-130 μm long.

HALICHONDRIDA

HALICHONDRIIDAE

Amorphinopsis excavans Carter

Amorphinopsis excavans Carter, 1887: 77
Material: P. 6, depth 15 m, 12 August 1986; P. 29, depth 6 m, 27 August 1986; P. 123, depth 6 m, 27 August 1986.

P. 6, cushion shaped., was brown in life; P. 29, also cushion

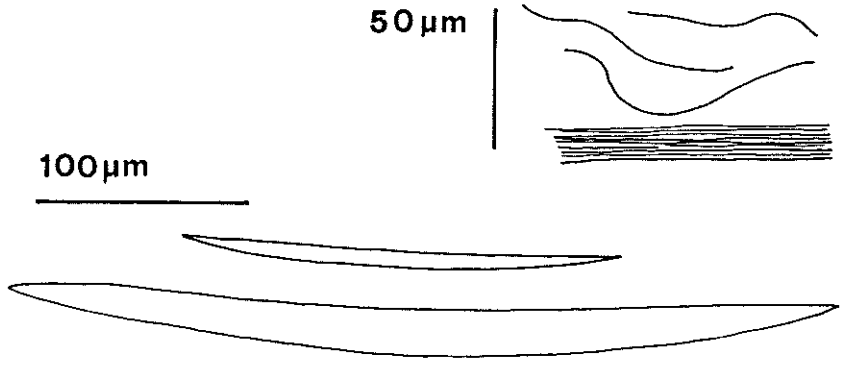

Fig. 9 - Spicules of *Myrmekioderma pacifica* sp. n.

shaped, was noted as cream white in life; P. 123 is a very irregular, cavernous mass, concrescent with various foreign materials. The three specimens, preserved, are light brown; the consistency is tough to hard. The skeleton is halichondroid, the ectosome is not separable, the surface is slightly, not uniformly, hispidated by small, erect styles.

Spiculation:

P. 6: oxeas 250 x 7 - 850 x 25 μm; styles 170-200 x. 4.5-7 μm.

P. 29: ox.eas 280 x 9 - 1000 x 32 μm; styles 200-280 x 7-9 μm.

P. 123: oxeas 230 x 7 - 950 x 38 μm; styles 180-240 x 9 μm.

Tylote and strongylote modifications of the larger oxeas are frequent in specimen P. 123. In all specimens the smaller oxeas are not abundant.

Halichondria s y r i n g e a sp. n. (Fig. 10)

Material: P. 72, depth 8 m, 12 August 1986.

Holotype: MSNG 48700

The specimen was growing on sand. Consisting of a mass of coalescent fistules, 12 cm high, about 4 cm across, it presumably lacks the buried base of attachment and the upper part of the fi-

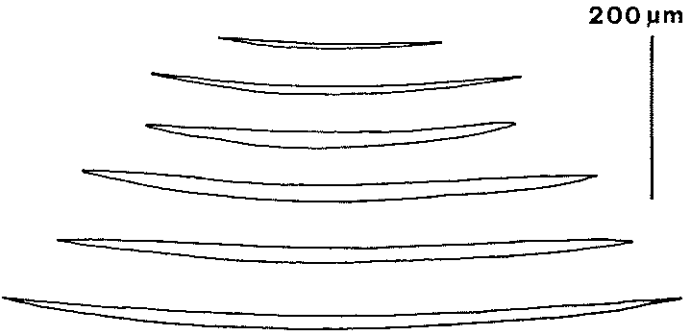

Fig. 10 - Spicules of *Halichondria syringea* sp. n.

stules. The consistency, in spirit, is mediocre, inelastic, friable. The colour of the sponge, now light brown, was noted as dull green in life. The surface is smooth. The ectosome is separable, supported by spicules arranged without order in a single layer, tangential. The choanosomal skeleton is dense and confused, with some ill-defined erratic spicular tracts.

The spicules are oxeas gently curved, with elongated and sharp points, measuring 260-750 x 2.5-21 μm, not separable in categories.

Topsentia maculosa sp. n. (Fig. 11)

Material: P. 25, depth 6 m, 23 August 1986.
Holotype: MSNG 48701

The specimen is irregularly cushion shaped, about 10 cm across and 2 cm thick, cream to light brown, mottled, in spirit. It was indicated as sand coloured in life. The consistency is tough and moderately compressible, but friable. The surface, which appears smooth, is rough to the touch. Oscules have not been observed.

The skeleton is made by spicules in confusion and in loose bundles intercrossing without any regularity. There are no organized tracts. At the surface the spicules are arranged tangentially.

The spicules are oxeas measuring mostly 650 x 25 to 950 x 37 μm. Smaller ones are present, not abundant and not representing a separate category.

Topsentia plurisclera sp. n. (Fig. 12)

Material: P. 116, depth 6 m, 23 August 1986.
Holotype: MSNG 48702

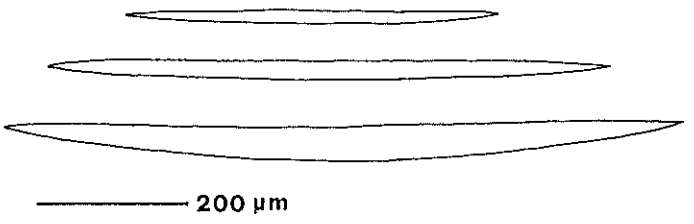

Fig. 11 - Spicules of *Topsentia maculosa* sp. n.

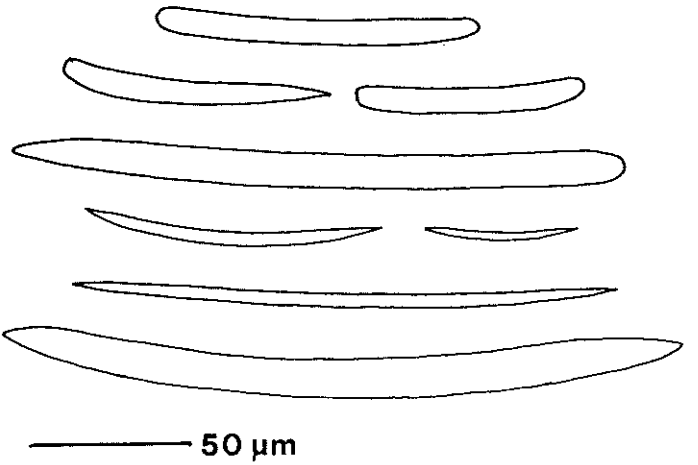

Fig. 12 - Spicules of *Topsentia plurisclera* sp. n.

The specimen is massive, knolly, incompressible, brittle, about 6 cm across. The colour, in spirit, is cream. The surface is smooth, the oscules are numerous, sparse, up to 1 mm wide.

The skeleton is dense, made by single spicules in confusion. There is no dermal specialisation, and no organized spicular tracts are apparent.

The spicules are oxeas measuring 40-185 x 2-9.5 µm, styles measuring 40-150 x 3-11.5 µm, strongyles measuring 44-135 x 3-10.5 µm. Oxeas predominate.

Hymeniacidon f l a c c i d a sp. n. (Fig. 13)

Material: P. 105, depth 6 m, 23 August 1986.
Holotype: MSNG 48703

The specimen is irregularly massive. The colour in life was noted as orange; it is light brown in spirit. The surface is wrinkled. The. consistency, in spirit, is fleshy, soft; the sponge is friable when dry.

The skeleton is confused, partly in vague bundles, without ecto-

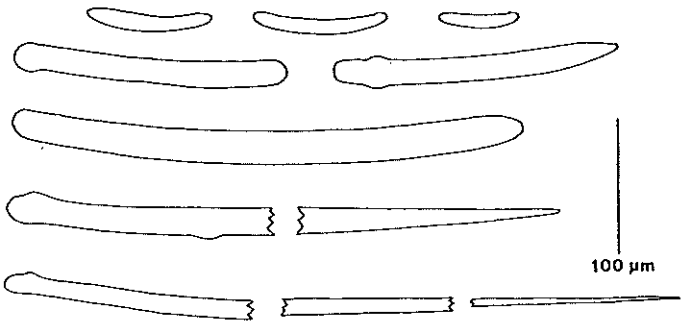

Fig. 13 - Spicules of *Hymeniacidon flaccida* sp. n.

somal differentiation. The spicules are: 1) Subtylostyles moderately curved, measuring 550-700 x 11.5-20.5 µm. The tyle, scarcely conspicuous, is often subterminal. Subtylostyles of the same length but much thinner are abundant: they are here regarded as development stages. However, there is another kind of subtylostyle which seems to belong to a distinct category. Measuring 800-1000 x 11-12 µm, it is not very frequent. 2) Subtylostrongyles to strongyles, fairly abundant. Apparently derived from the subtylostyles, they are shorter, of various lengths, (65-430 µm), always thick (16-25 µm). The smallest of these spicules may be further modified, having stylote or oxeote ends. Similar shortened and stout spicules have been observed by THIELE (1898: 46) in specimens of *Amorphilla* (=*Hymeniacidon*) from Japan.

POECILOSCLERIDA

MYCALIDAE

Mycale (Aegagropila) p e c u l i a r i s sp. n. (Fig. 14, 15)

Material: P. 17, P. 54, depth 15 m, 12-13 August 1986.
Holotype (P. 54): MSNG 48704

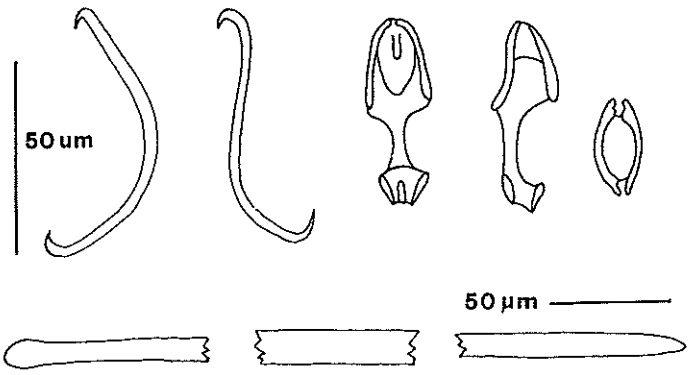

Fig. 14 - Spicules of *Mycale (Aegagropila) peculiaris* sp. n.

Paratype (P. 17): MSNG 48705

The specimens, in spirit, are small, of weak consistency, amorphous. The colour in life was noted as brown (P. 17) and orange (P. 54). The ectosomal skeleton, separable, consists of a neat, tangential reticulation of plurispicular fibres. They are 30-70 µm thick and form rather regular triangular meshes 380-460 µm wide. The spicules are 1) Subtylostyles measuring 530-570 x 7-14 µm. 2) Sigmas measuring 52-70 µm. 3) Anisochelas measuring 46-55 µm, also in rosettes. A smaller anisochela, measuring 32-36 µm, present (rare) in P. 54, was not observed in P. 17. 4) Undescribed microsclere of uncertain interpretation (Fig. 15), measuring 20-30 µm, abundant in both specimens.

Mycale (Aegagropila) p a c h y s i g m a t a sp. n. (Fig. 16)

Material: P. 84, depth 1 m, 20 August 1986.

Holotype: MSNG 48706

The specimen is encrusting, thin. The colour in life was noted as green; it is white in spirit. The ectosomal skeleton, separable, consists of strong tangential intercrossing spicular tracts having a diameter of 450-1000 µm, the thickest ones often running more or less parallel to each other. The meshes are irregular, 1800-2800 µm wide.

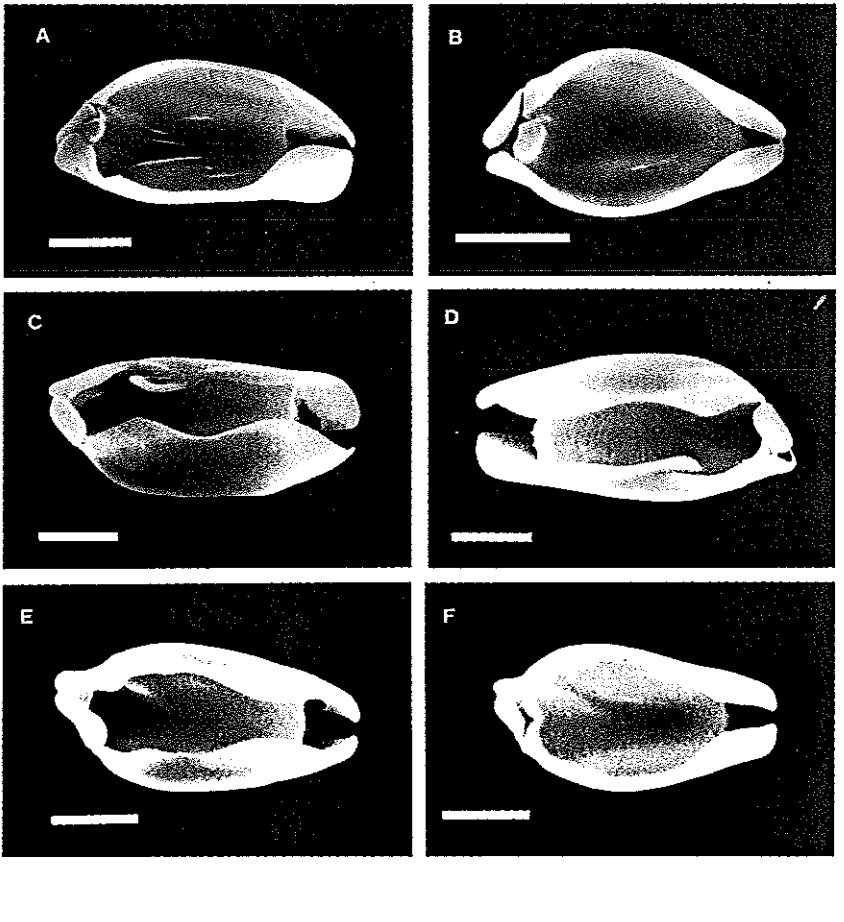

Fig. 15 - Undescribed spicule of *Mycale (Aegagropila) peculiaris* sp. n.

The spicules are 1) Subtylostyles straight or slightly flexuous, measuring 450-550 μm. A typical one, 500 μm long, has a tyle 7 μm thick and is 15 μm thick at the middle. 2) Anisochelas measuring 40-48 pm. 3) Anisochelas measuring 18.5-23 μm. 4) Anisochelas measuring 11.5-13.5 μm, rather rare. 5) Sigmas measuring 70-85 x 3.5-4.5 μm. 6) Sigmas measuring 90 x 11.5-14 μm. The latter sigmas, having a quite unusual thickness, are not abundant.

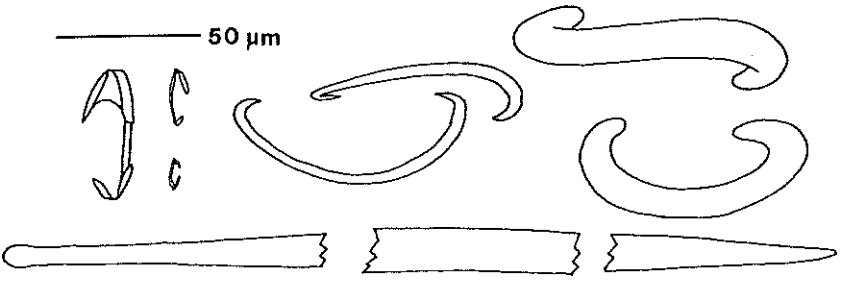

Fig. 16 - Scale 5 µm. Spicules of *Mycale (Aegagropila) pachysigmata* sp. n.

DESMACELLIDAE

Biemna fistulosa (Topsent)

Desmacella peachi var. *fistulosa* Topsent, 1897: 462
Material: P. 80, depth 15 m, 12 August 1986.

Available is only a dry, amorphous fragment. It was yellow in life.

The spicules are: 1) Styles slightly curved at the first third of their length, measuring 280-320 x 4.5-8 µm. Sigmas measuring 20-35 µm. 3) Microxeas straight, fusiform, measuring 35-70 by about 1 µm, very abundant. They may form dragmata. 4) Raphides not quite straight, about 95 µm long, much thinner than the microxeas, rare. 5) Commas extremely rare, measuring 26 µm and less.

DESMACIDIDAE

Tetrapocillon minor Pulitzer-Finali

Tetrapocillon minor Pulitzer-Finali, 1992: 296
Material: P. 77, depth 15 m, 13 August 1986.

The specimen was noted as brown, growing on sand. It is presently a very small, thin, collapsed lamella.

The spicules are: 1) Oxeas measuring 280-300 x 3 µm, straight or slightly curved. Some of them have one point shortened and rounded. 2) Tetrapocilli measuring 20-23 µm across.

TEDANIIDAE

Tedania anhelans (Lieberkuehn)

Halichondria anhelans Lieberkuehn, 1859: 521
Material: P. 40, P. 75, depth 15 m, 12 August 1986.

P. 40 is a soft, thin cushion which was brick red with green tinges in life. P. 75 is very small, encrusting; it was red in life. The spicules are: 1) Styles slightly, uniformly eurved, measuring 180-210 x 2-5.5 μm. 2) Tylotes straight, with finely spined tyles, measuring 190-205 x 2-4.5 μm. 3). Onychaetes measuring 150-205 μm.

MICROCIONIDAE

Allocia chelifera (Hentschel) (Fig. 17)

Spanioplon cheliferum Hentschel 1911: 362
Material: P. 119, depth 20 m, 15 August 1986.

The specimen is massive to branching, contorted, measuring 8 x 7 x 2-3 μm. The surface is extremely irregular, with protuberances, ridges and grooves, not hispid. The eonsisteney is softly resilient. The colour, red in life, is cream in spirit.

The skeleton is reticulated, made by spiculo-fibres 45-100 μm thick, forming irregular meshes 150-350 μm wide. The fibres consist of styles bound by clear spongin and are eehinated by acanthostyles. A delicate translucent membrane covers the surface, stretching over the grooves, and contains plentiful tangentially arranged strongyles and sparse chelas.

The spicules are: 1) Styles curved, measuring 140-160 x 4-5.5 μm. 2) Strongyles straight, measuring 140-190 x 3.5 μm. One end may be slightly spined. 3) Acanthostyles measuring 75-80 x 4.5-5.5 μm. 4) Palmate isochelas, abundant, measuring from 7 to 18.5 μm, not clearly separable in size categories.

Clathria (Microciona) eurypa (Laubenfels) (Fig. 18)

Dictyociona eurypa Laubenfels, 1954: 143
Material: P. 64, depth 15 m, 13 August 1986.

The specimen is encrusting, was orange-brown in life, is light brown in spirit.

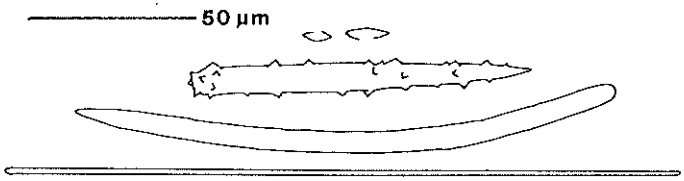

Fig. 17 - Spicules of *Allocia chelifera*, specimen P. 119.

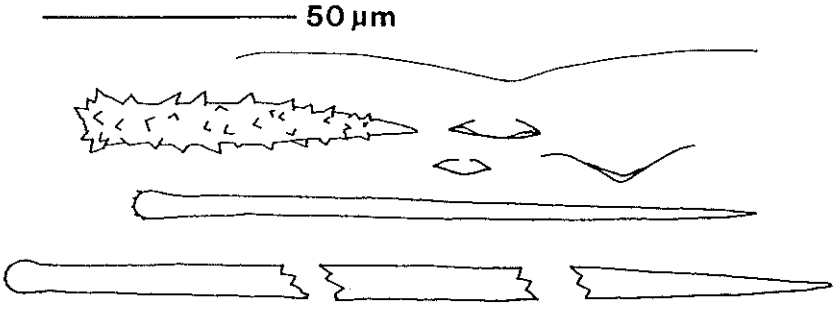

Fig. 18 - Spicules of *Clathria (Microciona) eurypa*, specimen P. 64.

The spicules are: 1) Subtylostyles straight, measuring 270-430 x 7-9.5 µm. The base may be finely spined. 2) Subtylostyles straight, measuring 96-260 x 2-5 µm, base finely spined. 3) Acanthostyles measuring 60-81 x 7-9 µm. 4) Hair-like toxas measuring 35-180 µm. 5) Palmate isochelas measuring 7-20 µm.

Clathria (Thalysias) coralliophila (Thiele) (Fig. 19)

Rhaphidophlus coralliophilus Thiele, 1903: 959
Material: P. 67, depth 15 m, 12 August 1986.
The specimen is thinly encrusting on a bivalve. The colour in

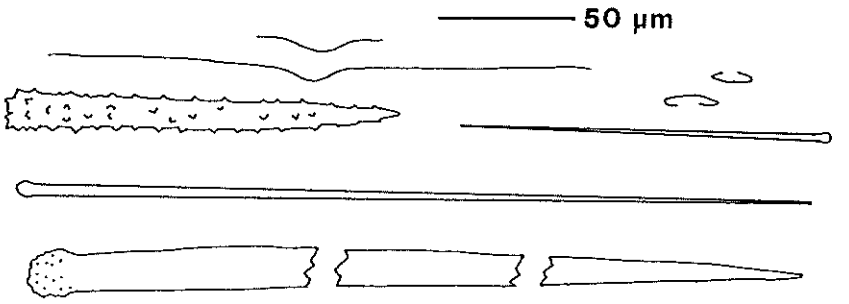

Fig. 19 - Spicules of *Clathria (Thalysias) coralliophila*, specimen P. 67.

life was recorded as whitish; it is light brown in spirit.

The spicules are: 1) Principal subtylostyles measuring 370-490 x 11.5-14 µm. 2) Subectosomal auxiliary subtylostyles measuring 260-380 x 4-5 µm. 3) Ectosomal auxiliary subtylostyles measuring 80-190 x 1.5-3 µm. 4) Echinating acanthostyles measuring 85-110 x 6-7 µm. 5) Toxas measuring 40-280 µm, hair-like. 6) Palmate isochelas measuring 14-18 µm. The smallest chelas (2-8 µm) recorded by HOOPER & LÉVI (1993: 1259) have not been observed.

Clathria (Thalysias) vulpina (Lamarck) (Fig. 20)

Spongia vulpina Lamarck, 1813: 449
Material: P. 101, depth 1 m, 20 August 1986.

The specimen is digitiform, 6 by 1 cm. The surface is conulose. The consistency is firmly resilient. The colour in life was noted as light brown; it is cream in spirit.

The spicules are: 1) Principal styles slightly curved, measuring 200-280 x 16-20 µm. 2) Subectosomal auxiliary styles straight, measuring 250-300 x 3.5-7 µm. 3) Ectosomal auxiliary subtylostyles straight, the base very slightly tylote and finely spined, measuring 80-120 x 4 µm. 4) Echinating acanthostyles measuring 60-75 x 4.5-9 µm. 5) Toxas hair-like, measuring 16-48 µm and about 160 µm. 6) Palmate isochelas measuring 9 µm and 14-16 µm.

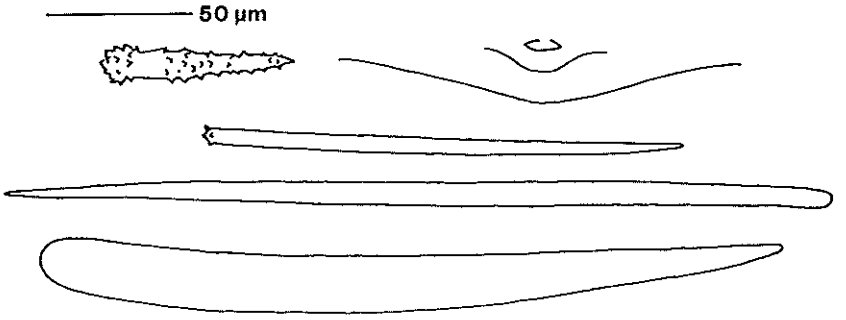

Fig. 20 - Spicules of *Clathria (Thalysias) vulpina*, specimen P. 101.

RASPAILIIDAE

Echinodictyum conulosum Kieschnick

Echinodictyum conulosum Kieschnick, 1900: 570
Material: P. 66, depth 15 m, 18 August 1986.

The specimen is approximately cylindrical, 10 cm high, about 4 cm in diameter. The base of attachment is missing. The consistency is firmly flexible; the colour in spirit is black, as it was in life. The structure is reticulate, honeycombed. The skeleton is a reticulation of spiculo-fibres formed by densely packed oxeas. Spongin is not apparent. The fibres are up to 600 µm thick and form elongate, irregular meshes. Acanthostyles echinating the fibres are rare.

The spicules are: 1) Oxeas straight or slightly curved, very variable as to size, 200 x 3 to 480 x 14 µm. 2) Subtyloacanthostyles measuring 96-114 x 4.5 µm. The spines are short and sparse, a little more dense at the base of the spicule. Extremely rare styles have been observed. They have the same size and curvature of the largest oxeas and may be regarded as modified oxeas. It may be noted that, while the presence of subectosomal styles is normal in members of the genus *Echinodictyum*, they have not been mentioned either in the original description of the present species or in the subsequent recordings from Madagascar by VACELET & VASSEUR (1971: 82) and by VACELET, VASSEUR & LEVI (1976: 47).

HAPLOSCLERIDA

PETROSIIDAE

Xestospongia papuensis sp. n. (Fig. 21)

Material: P. 92, depth 15 m, 12 August 1986.
Holotype: MSNG 48707

The specimen is massive, globose, 10 x 6 x 6 cm. The colour was noted as dark green in life; it is dark brown in spirit. The surface is even, smooth. There are two oscules, 6 and 8 mm wide. The sponge is heavy, the consistency is hard but rather friable.

The skeleton is a dense reticulation of ill-defined spicular tracts about 60-110 thick, forming meshes 135-235 μm wide. This pattern is generally obscured by a large number of single spicules in confusion. The skeleton is not differentiated at the surface, where it just becomes denser.

The spicules are strongyles slightly curved, remarkably uniform as to shape and size, measuring 195-215 x 13-14 μm.

Petrosia hebes Lendenfeld (Fig. 22)

Petrosia hebes Lendenfeld, 1888: 80
Material: P. 9, P. 11, P. 115, depth 5-6 m, 16-23 August 1986.

The specimens are fragments of irregularly massive, creeping sponges. They are hard, incompressible, brittle. The surface is smooth, the oscules are sparse, 3 to 6 mm in diameter. The colour, brown in life, is reddish brown in spirit. The ectosome is a distinct reticulation with meshes 140-230 μm wide, made by one to few spicules. The choanosomal skeleton is a dense reticulation of coarse bundles of spicules up to 350 μm thick. The meshes have in general a confused outline.

Fig. 21 - Spicules of *Xestospongia papuensis* sp. n.

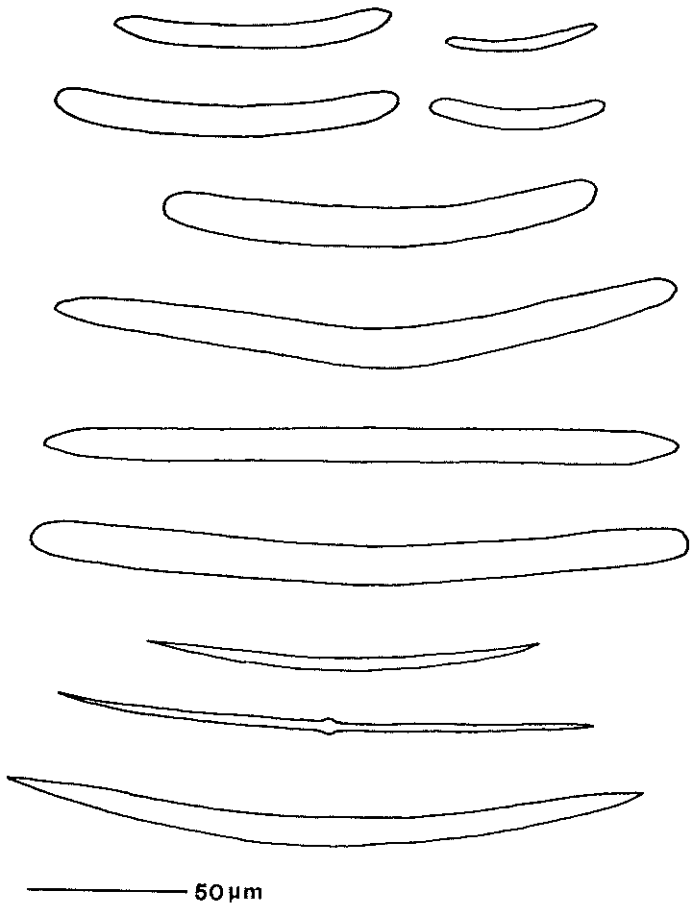

Fig. 22 - Spicules of *Petrosia hebes*, specimen P. 115.

The spicules are: 1) Strongyles measuring 45 x 4.5 - 220 x 14 µm (55 x 9 - 280 x 21 µm in specimen P. 115). Very often these spicules have one or both ends not regularly rounded, approximating to the form of a style or an oxea. 2) Oxeas measuring 100-240 x 2.5-10 µm, often slightly centrotylote.

PHLOEODICTYIDAE

Tabulocalyx corticatus (Wilson) (Fig. 23, 24)

Strongylophora corticata Wilson, 1925: 392
Material: P. 60, depth 11 m, 17 August 1986.

The specimen is irregularly massive, cylindrical-lobate, measuring 10 x 4 x 2.5 cm. The colour was cream in life; it is light brown in spirit. The surface is smooth, the oscules scattered, 4 to 6 mm wide. There is a well-marked cortex giving rigidity to the sponge, here and there not quite adherent to the soft, pulpy interior.

The cortex, easily separable, is about 900 μm thick and consists of two layers about 300 μm apart, joined by radial fibro-spicular pillars about 50 μm thick, which leave between them subdermal chambers about 300 μm wide. The skeleton of the outer, dermal layer, consists of a tangential, irregular reticulation of paucispicular tracts forming meshes 200-350 μm wide and of single, intercrossing spicules. The skeleton of the inner, subdermal layer, is a rigid, cribriform lamella, apparent to the naked eye. It consists of a close network of compact spiculo-fibres 130-190 μm thick, developed in one tangential plane, forming roundish meshes 280-400 μm wide.

The choanosomal skeleton is a confused reticulation of paucispicular tracts and single spicules.

A skeletal structure identical with the cortical one traverses the interior of the sponge, marking an earlier growth stage. The exsubdermal lamella appears intact, while the much weaker exdermal reticulation tends to disappear, merged into the choanosomal structure.

The spicules are: 1) Strongyles evenly curved, measuring 22-335 x 4. 5-11.5 μm. The smaller sizes are particularly abundant in the subdermal lamella. 2) Microxeas measuring 22-40 by about 2.5 μm. Not abundant in the outer layer of the cortex, they are rather rare elsewhere. They are bent, angulated, and might be regarded as slightly modifled toxas. 3) Besides the bent microxeas, representing a definite category, oxeas are sparsely present in the dermal skeleton and in the choanosomal one, but seem to take no part in the building of the subdermal lamella. More or less curved at the middle, they measure from 50 to 120 μm. Peculiar because of its frequency in the choanosome is a slender spicule, oxeote or strongylote, having the curvature and the length of the largest strongyles (about 300 μm) but a thickness of only 2-2.5 μm.

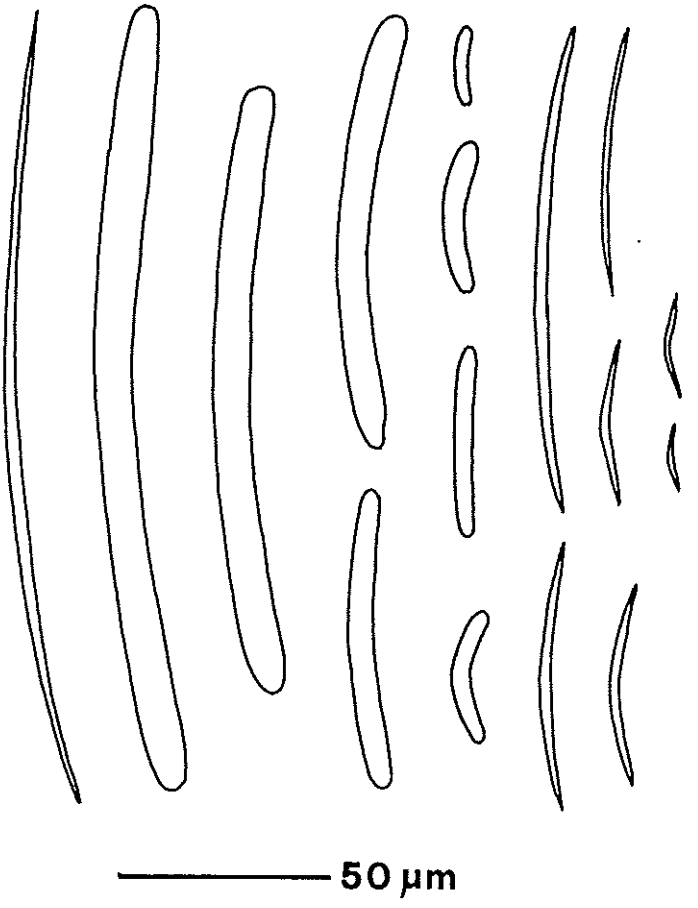

Fig. 23 - Spicules of *Tabulocalyx corticatus*, specimen P. 60.

This spiculation is undistinguishable from that of *Strongylophora* (=*Petrosia) durissima* Dendy, 1905: 141, but the skeletal structure of the present sponge prevents its collocation in the Petrosiidae.

I would amend the diagnosis of the genus *Tabulocalyx*

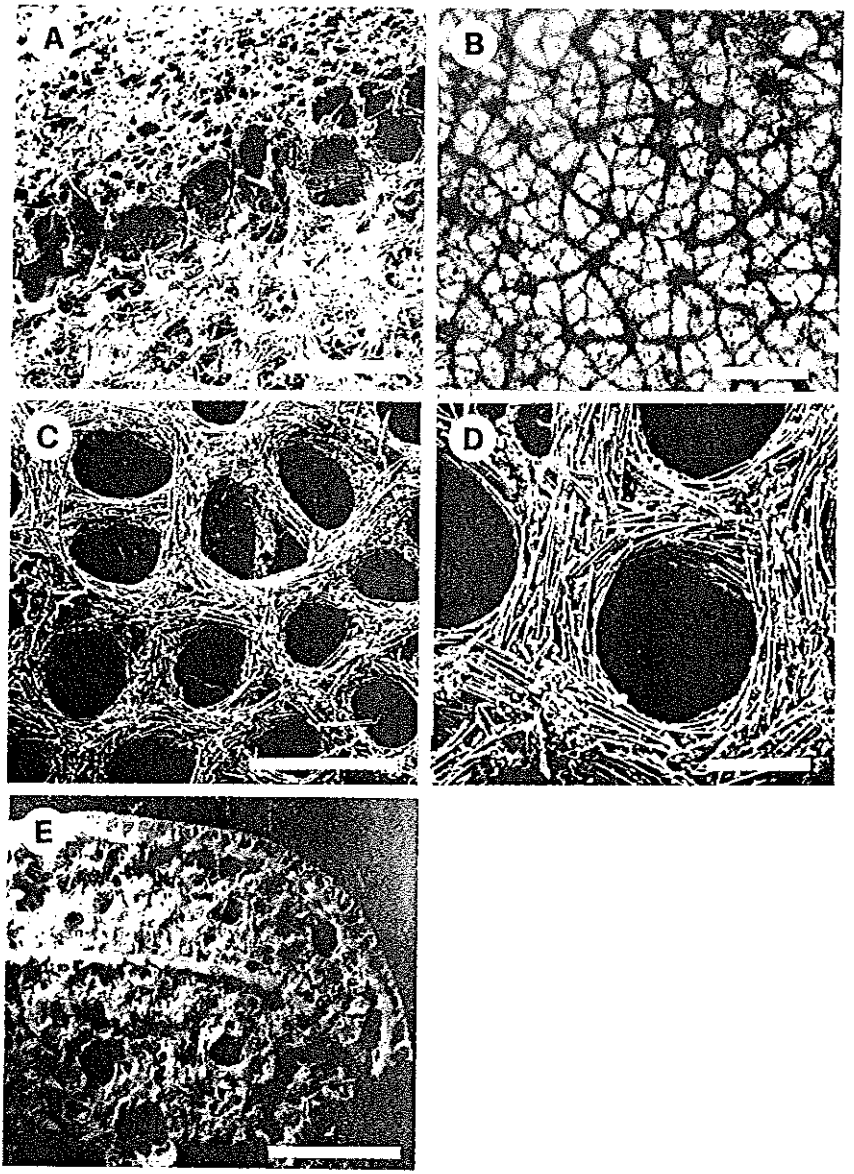

Fig. 24 - *Tabulocalyx corticatus*, specimen P. 60. A: the two-layered ectosome; scale = 1 mm. B: dermal layer; scale = 5 mm. C, D: subdermal layer; scales = 500, 200 μm. E: a former ectosomal structure incorporated in the choanosome; scale = 5 mm.

(PULITZER-FINALI, 1992: 322) as follows: "Phloeodictyidae without fistules. Cortex in two separable layers, the subdermal one being a rigid cribriform lamella consisting of a close network of compact spiculo-fibres developed in a tangential plane. Former ectosomal lamellae may be found inside the choanosome, marking earlier growth stages".

CHALINIDAE

Haliclona pigmentifera (Dendy) (Fig. 25)

Reniera pigmentifera Dendy, 1905: 143
Material: P. 125, depth 6 m, 27 August 1986.

The specimen is a fragment of a very large sponge. The colour, in spirit, is dark brown (it was noted as brown in life). The consistency is firm and friable. The surface is smooth; a few scattered oscules, 2 to 3 mm wide, are visible.

The skeleton is dense and irregular, the single spicules not forming tracts or fibres, with no ectosomal differentiation.

The spicules are: 1) Oxeas measuring 140-190 x 6-9.5 μm. 2) Styles measuring 130-150 x 7-9.5 μm. 3) Strongyles measuring 100-150 x 7-11.5 μm. The shortest ones are often the stoutest. More or less pronounced tylotysm is not rare among the styles and strongyles.

NIPHATIDAE

Amphimedon fragilis (Ridley & Dendy) (Fig. 26)

Dasychalina fragilis Ridley & Dendy, 1886: 330
Material: P. 59, depth 10 m, 16 August 1986.

The specimen is irregularly cylindrical, 18 cm long, 1-1.5 cm thick, light, incompressible. The surface is harsh to the touch, with low and sharp aculeations 2 to 3 mm apart. The oscules are sparse, numerous, 2-3 mm wide, with elevated rim. The colour, pink in life, is cream in the spirit-preserved specimen.

The ectosomal skeleton, not separable, is a network of spicular tracts 45-65 pm thick, forming irregular meshes 180-280 μm wide. Stronger tracts, 90-180 μm thick, have their nodes at the apices of the aculeations. The choanosome is cavernous; its skeleton is

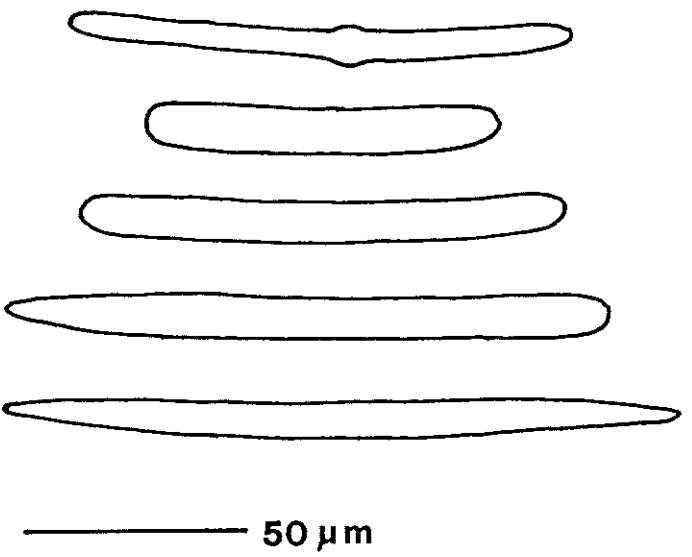

Fig. 25 - Spicules of *Haliclona pigmentifera*, specimen P. 125.

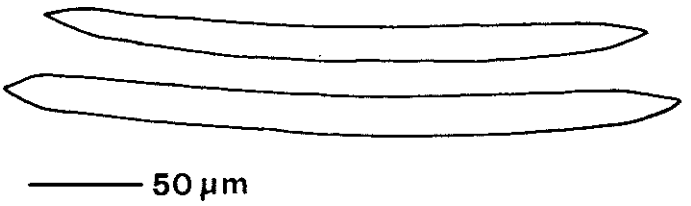

Fig. 26 - Spicules of *Amphimedon fragilis*, specimen P. 59.

formed by tracts of ill-aligned spicules, 45 to 190 μm thick, running irregularly, and by spicules in confusion.

The spicules are oxeas gently curved, measuring 280-340 x 7-15 μm, with mostly short points.

This identification is proposed with reserve, owing to the size difference between the oxeas of this specimen (mostly 280-300 pm x 11 μm) and those reported by RIDLEY & DENDY (420 x 20 μm). Specimens from Java, reported by LINDGREN (1900: 8), had oxeas measuring 290-340 x 14-20 μm.

Amphimedon cristata sp. n. (Fig. 27)

Material: P. 120, depth 6 m, 16 August 1986.
Holotype: MSNG 48708

The specimen is subcylindrical, with an apical oscule 12 mm wide, with a laterally projecting crested outgrowth. The sponge is light, rigid, not resilient; the surface is harsh to the touch. The colour, violet in life, is light brown in spirit.

The ectosomal skeleton, distinct but not separable, consists of a regular network of spicular tracts 45-90 μm thick, bound by clear spongin, forming meshes 370-560 μm wide. The choanosomal skeleton is made by irregular tracts 60-190 μm thick, bound by scarce transparent spongin, forming mostly radially elongated meshes of variable size (up to 1500 x 700 μm) and denser concentric planes parallel to the surface, about 2-3 mm apart.

The spicules are oxeas with short and blunt points (almost strongylote), measuring 230-370 x 11-18 μm.

Amphimedon conferta sp. n. (Fig. 28)

Material: P. 41, depth 5 m, 23 August 1986.
Holotype: MSNG 48709

Available are two small fragments of a subcylindrical, branching sponge. The colour, brown in life, is cream in the present dry state. The sponge is light, incompressible, smooth. There are few oscules, about 1 mm wide. The ectosome is not separable but distinct. Its skeletal frame is a markedly close, uniform, small-meshed reticulation made by spicular tracts about 75 μm thick, which form roundish meshes having the same width. The choanosomal skeletal structure is dense and rather confused, as the spicu-

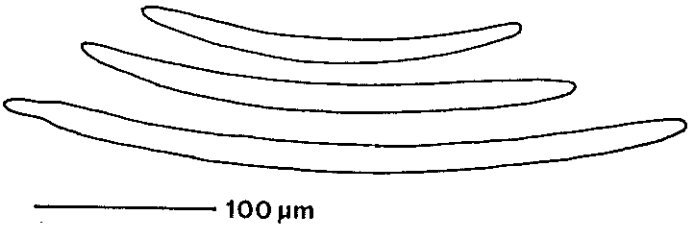

Fig. 27 - Spicules of *Amphimedon cristata* sp. n.

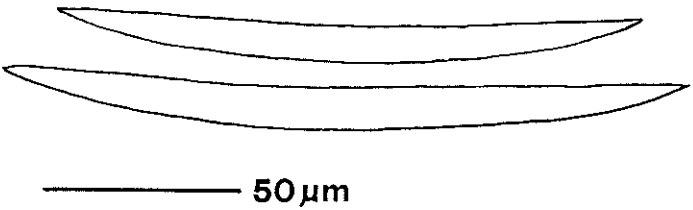

Fig. 28. - Spicules of *Amphimedon conferta* sp. n.

les are loosely arranged in tracts and bundles. Still, it is possible to distinguish primary lines running vertically to the surface, parallel to each other. Barely distinguishable 100-150 µm wide meshes are formed by connective bundles and single spicules.

The spicules are oxeas of uniform shape and size, measuring 140-160 x 7-9 µm. Stylote modifications are present.

Amphimedon strongylata sp. n. (Fig. 29)

Material: P. 109, depth 6 m, 27 August 1986.
Holotype: MSNG 48710

The specimen is subcylindrical, about 8 cm long and 2 cm

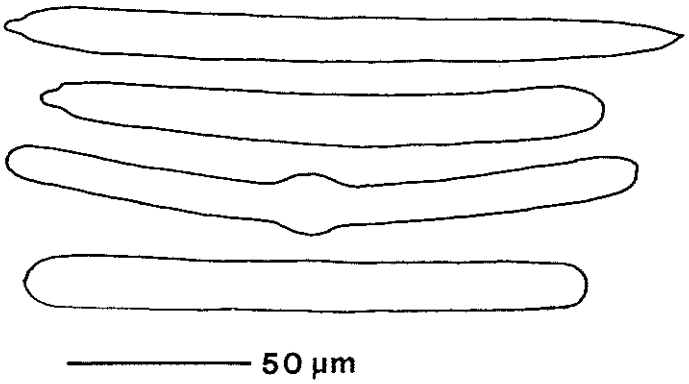

Fig. 29 - Spicules of *Amphimedon strongylata* sp. n.

thick The colour in life was gray; it is light brown in spirit. The surface is harsh to the touch, with short spines (1-1.5 mm), 3-5 mm apart. The oscules are numerous, 5-10 mm apart, about 1.5 mm wide. The consistency is tough, scarcely resilient. The skeleton is made by coarse spicular tracts with no apparent spongin, with variable thickness (70-190 pm), forming an irregular network of variable density (meshes 230-650 µm. There is no ectosomal differentiation.

The spicules are strongyles measuring 170-200 x 14 µm. Oxeote and strongylote modifications are very frequent; many spicule are centrotylote.

Amphimedon r u d i s sp. n. (Fig. 30)

Material: P. 57, depth 6 m, 15 August 1986.
Holotype: MSNG 48711

The specimen is part of a laminated sponge. In spirit, it is light, fibrous, cavernous, moderately resilient. The surface is harsh to the touch. No oscules are apparent. The colour, violet-brown in life, is now middle brown.

The skeleton is a strong reticulation of spicular tracts bound

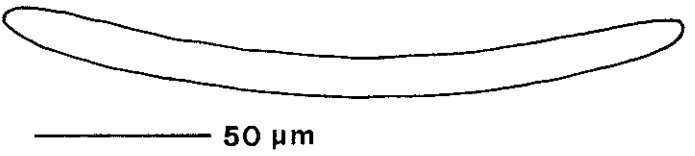

Fig. 30 - Spicules of *Amphimedon rudis* sp. n.

by clear spongin, up to 300 µm thick. They form irregular meshes 250-750 µm wide. Some spicules are free. The ectosome is not separable. At the surface, the network becomes denser, tangentially arranged, with a larger proportion of thinner fibres (2-3-4 spicules broad) which form more regular meshes, 190-380 µm wide.

The spicules are oxeas with short, rounded points, measuring 360-420 x 10-12.5 µm. Stylote or strongylote modifications are not frequent.

Amphimedon a l a t a sp. n. (Fig. 31)

Material: P. 130, 27 August 1986.
Holotype: MSNG 48712

The specimen is inconspicuous, creeping on a rock, narrow, sinuous, about 2 mm thick. In spirit, it is dark brown, softly resilient. The surface is smooth; there are several oscules flush with the surface, 1 to 2 mm wide. The ectosomal skeleton is distinct but not separable, consisting of an irregular, paratangential reticulation of single oxeas only partly imbedded in clear spongin or joined by it. The choanosomal skeleton is a strong reticulation of brown spongin fibres forming irregular meshes 200-400 µm wide. The fibres are 37-90 µm thick and are cored by 1 to 4 oxeas abreast.

The spicules are: 1) Oxeas measuring 100-130 x 7-11.5 µm. 2) Toxas measuring 11-50 µm. Many of them bear a swelling at their centre or near it.

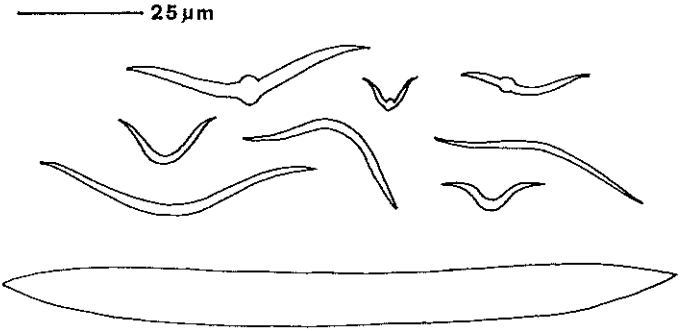

Fig. 31 - Spicules of *Amphimedon alata* sp. n.

ACKNOWLEDGEMENTS

I am very grateful to Dr R. Danovaro and Dr S. Fraschetti for having collected this material and to Prof. J. Bouillon of the Free University of Brussels for having made it available.

RIASSUNTO

Viene descritta una piccola collezione di spugne di acque poco profonde della costa orientale della Papua Nuova Guinea.

Essa comprende 38 specie, di cui 18 sono nuove: *Corticium niger, Caminus albus, Jaspis laingi, Agelas semiglaber, Higginsia palmata, Myrmekioderma pacifica, Halichondria syringea, Topsentia maculosa, Topsentia plurisclera, Hymeniacidon flaccida, Mycale (Aegagropila) peculiaris, Mycale (Aegagropila) pachysigmata, Xestospongia papuensis, Amphimedon cristata, Amphimedon conferta, Amphimedon strongylata, Amphimedon rudis, Amphimedon alata.*

Gli esemplari sono depositati presso il Museo di Storia Naturale di Genova (MSNG).

REFERENCES

CARTER H. J., 1887 - Report on the Marine Sponges, chiefly from King Island in the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson - *Journ. Linn. Soc. London*, 21: 61-84.

DENDY A., 1905 - Report on the sponges collected by Prof. Herdman, at Ceylon, in 1902 - *Publ. Roy. Soc. London* (suppl.), 18: 57-246.

GRAY J. E., 1867 - On *Placospongia*, a new generic form of Spongiadae in the British Museum - *Proc. Zool. Soc. London*: 127-129.

HENTSCHEL E., 1911 - Tetraxonida, II Teil - In: *Die Fauna Südwest Australiens*, 3, 10 (ed. Michaelsen & Hartmeyer), Jena: 279-393.

HENTSCHEL E., 1912 - Kiesel- und Hornschämme der Aru- und Kai-Inseln - *Abh. senckb. Natf. Ges.*, 34: 295-448.

HOSHINO T., 1981 - Shallow-water Demosponges of Western Japan, II - *J. Sci. Hiroshima Univ.*, B, 1, 29, 2: 207-289.

JOHNSTON G., 1842 - A history of British sponges and lithophytes - W. H. Lizars, Edinburgh: i-xii, 1-264.

KIESCHNICK O., 1896 - Silicispongiae von Ternate nach den Sammlungen von Herrn Prof. Dr. W. Kükenthal - *Zool. Anz.*, 19: 526-534.

KIESCHNICK O., 1900 - Kieselschämme von Amboina - *Denkschr. Medic. Naturw. Ges. Jena*, 8: 545-582.

LAUBENFELS M. W. DE, 1954 - The sponges of the West-Central Pacific - *Oregon State College Monogr. Stud. Zool.*, 7: 1-306.

LAMARCK J. B. P. A. DE M. DE, 1813 - Sur les Polypiers empâtés - *Ann. Mus. Hist. Nat. Paris*, 20: 294-312, 370-386, 432-458.

LENDENFELD R. VON, 1888 - Descriptive catalogue of the sponges in the Australian Museum, Sidney - Taylor & Francis, London: i-xiv, 1-260.

LIEBERKÜHN N., 1859 - Neue Beiträge zur Anatomie der Spongien - *Arch. Anat. Physiol. Wiss. Med.*: 353-382, 515-529.

LINDGREN N. G., 1897 - Beitrag zur Kenntniss der Spongienfauna des Malayischen Archipels und der Chinesischen Meere - *Zool. Anz.*, 20: 480-487.

PULITZER-FINALI G., 1992 - A collection of-marine sponges from East Africa - *Ann. Mus. St. Nat. Genova*, 89: 247-350.

RIDLEY O. S. & A. DENDY, 1886- Preliminary report on the Monaxonida collected by H.M.S. "Challenger". Part I-II - *Ann Mag. Nat. Hist.*, 18 (5): 325-351, 470-493.

SCHULZE F. E., 1880 - Untersuchungen über den Bau und die Entwicklung der Spongien, IX, Die Plakiniden - *Z. W. Z.*, 34: 407-451.

THIELE J., 1898 - Studien über pazifische Spongien. I - *Zoologica*, Stuttgart, 24: 1-72.

THIELE J., 1899 - Studien über pazifische spongien - *Zoologica*, Stuttgart, 24, II: 1-33.

THOMAS P. A., 1968 - Studies on Indian sponges. IV. Additions to the genus *Corticium* Schmidt with notes on the distribution of *Corticium candelabrum* Schmidt - *J. Mar. Biol. Ass. India*, 10 (2): 260-263.

TOPSENT E., 1889 - Quelques spongiaires du Banc de Campêche et de la Pointe à Pître - *Mem. Soc. Zool. France*, 2: 30-52.

TOPSENT E., 1897 - Spongiaires de la Baie d'Amboine. Voyage de MM. M. Bedot et C. Pictet dans l'archipel Malays - *Rev. suisse Zool.*, 4, 3: 421-487.

VACELET J. & P. VASSEUR, 1965 - Spongiaires des grottes et surplombs des récifs coralliens de Tuléar (Madagascar) - *Trav. Sta. Mar. Endoume*, suppl. 4: 71-123.

VACELET J. & P. VASSEUR, 1971 - Eponges des recifs coralliens de Tuléar (Madagascar) - *Thethys*, suppl. I: 51-126.

VACELET J., P. VASSEUR & C. LEVI, 1976 - Spongiaires de la pente externe des récifs coralliens de Tulear (sud-ouest de Madagascar) - *Mem. Mus. Nat. Hist. Nat. Paris*, (n. s. A) 49: 1-116.

WILSON H.W., 1925 - Silicious and horny sponges collected by the U.S. - Fisheries steamer "Albatross" during the Philippine Expedition, 1907-10 - *Smiths. Inst. U. S. Nat. Mus. Bull.*, 2, 4, 100: 273-532.

INDEX