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MARINE SPONGES MOSTLY FROM NATAL COAST. 337

On a Collection of Marine Sponges mostly from
the Natal Coast.

By

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THE following account is concerned with a few of the more interesting specimens, some representative of new species, taken from a consignment of over a hundred sponges collected from various points on the Natal coast and deposited in the Natal Museum. The sponge fauna of Natal is rich, both in the number of individuals and in the genera and species they represent. The description of the new species which have come to light in the Natal Museum collections is, therefore, a matter of considerable interest.

All the specimens were examined in the dried state.

Order TETRAXONIDA.

Sub-order ASTROSCLEROPHORA.

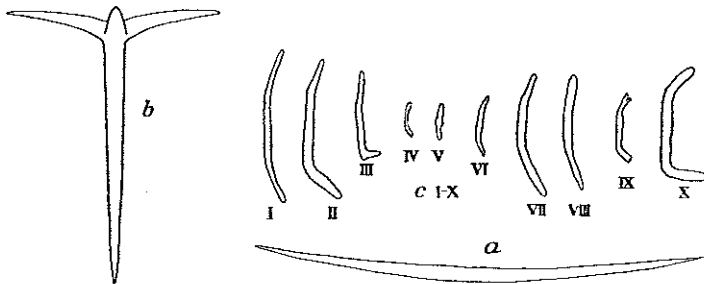
✓ *Penares orthotriæna* sp. n. Text-fig. 1.

HOLOTYPE.—Natal Mus. No. 1297.

DIAGNOSIS.—Sponge massive, growing round alga; surface even and smooth, with numerous foreign bodies incorporated;

neither pores nor oscules visible; colour, in dry state, golden-yellow; main skeleton composed of a dense irregular mass of oxea and biangulate microstrongyla, arranged in no apparent order, with a dermal tangential layer of microstrongyla and a layer of short, shafted orthotriænes situated just beneath dermis; tylasters present in small quantities in the choanosome; megascleres oxea, smooth, slightly curved, $\cdot 624$ by $\cdot 018$ mm.; orthotriænes with straight rhabdome, $\cdot 312$ by $\cdot 022$ mm., and slightly curved cladi, $\cdot 144$ by $\cdot 022$ mm.; microscleres microstrongyla, usually biangulate, but often only slightly curved or irregularly

TEXT-FIG. 1.



Penares orthotriæna sp. n. a. Oxeote. b. Orthotriæne. c. I-X. Microstrongyla of various sizes. All $\times 100$.

crooked; smaller forms often centrotylote; size variable, from $\cdot 04$ by $\cdot 003$ mm. to $\cdot 2$ by $\cdot 009$ mm., and tylasters, smaller with numerous short actines and distinct centrum, larger with few long actines and no centrum, varying from $\cdot 008$ to $\cdot 012$ mm. in diameter.

LOCALITY.—Trawled off the mouths of the Tugela and Umvoti Rivers, November, 1920, depth, 35 fathoms, H. W. Bell Marley.

This species of *Penares* is extremely interesting from many points of view. In the first place, it is the first case on record of the replacement of the usual dichotriænes by orthotriænes. Secondly, the extremely rare occurrence of both triænes and asters, which are easily overlooked, suggest a very close relationship between the present genus and the genus *Jaspis*. Indeed

the two genera might quite reasonably be united. Furthermore, the present species suggests the possibility that some of the species with oxea and microxea, or microstrongyla only, at present included in the Axinellidæ, may conceivably be nothing more than species of Penares in which the reduction in the spiculation has gone even further than in the present species, with the complete loss of both trienes and asters.

Sub-order SIGMATOSCLEROPHORA.

Fam. HAPLOSCLERIDÆ.

Toxochalina robusta Ridley. Text-fig. 2.

Toxochalina robusta Ridley, 1884, p. 403, pl. xxxix, fig. G; pl. xli, fig. n.

Phyllosiphonia robusta (Ridley), Lendenfeld, 1887, p. 797.

Toxochalina ridleyi Dendy.

Toxochalina robusta Ridley, Ridley and Dendy, 1887, p. 50; Topsent, 1913, p. 638, pl. i, fig. 3.

T. robusta var. *ridleyi* Dendy, 1905, p. 140, pl. ix, fig. 2.

Toxochalina dendyi sp. n.

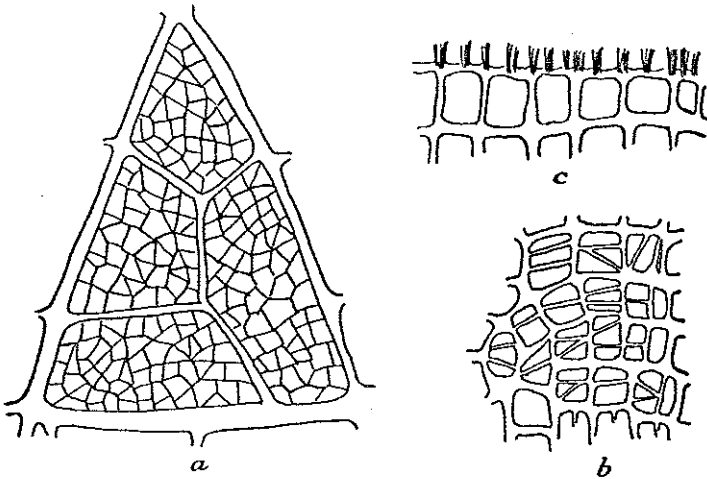
Toxochalina robusta Ridley, Dendy, 1905, p. 139; *id.*, 1921, p. 29.

LOCALITY.—Winkle Spruit, July, 1922, W. Cullingworth.

The various specimens of *Toxochalina robusta* hitherto recorded fall naturally into three groups, which I propose to regard as three distinct species, *T. robusta*, *T. ridleyi*, and *T. dendyi* sp. n. These three, while agreeing remarkably well in spiculation and, to a lesser extent, in external form, are shown to be quite different when the characters of the dermal skeleton are examined. In *T. robusta* this consists of a network of fibres enclosing large triangular, or quadrangular, meshes, approximately 1.0 mm. across, subdivided into numerous small

secondary and tertiary meshes (text-fig. 2a). In *T. dendyi* the dermal skeleton consists of a network of fibre enclosing small, more or less quadrangular, meshes, approximately 0.1 mm. across, which may be subdivided by 1, 2 or 3 secondary fibres (2b). The dermal skeleton of *T. ridleyi* is almost identical

TEXT-FIG. 2.



Diagrammatic representation of the dermal skeletons of *Toxochalina robusta*, *T. ridleyi* and *T. dendyi*. The oxea coring the fibres have been omitted. *a.* *T. robusta* from above, showing a primary mesh subdivided into secondary and tertiary meshes. *b.* *T. dendyi*, from above, showing small primary meshes sparingly subdivided into secondary meshes. *c.* *T. ridleyi*, at right angles to surface, showing the dermal brushes of oxea which echinate the nodes of the tangential network of fibres. In *T. robusta* and *T. dendyi* the surface is almost smooth to the touch, in *T. ridleyi* it is minutely hispid.

with that of *T. dendyi*, except that the nodes of the dermal network are echinated by small tufts of outwardly directed oxea, with their bases embedded in the spongin fibres (2c). In all three species, the main skeleton is an isodictyal reticulation of spongin fibre cored by oxea, and the fibres of the dermal skeleton are similarly cored by a linear series of single spicules.

The length of the oxea and toxa varies between .05-1 and .04-.06 mm. respectively. It may be justly doubted whether *T. ridleyi* and *T. dendyi* really represent two species, and whether the apparent difference is not due to the fact that in the one set of specimens the echinating oxea have been lost perhaps temporarily. This is especially so when it is recalled that a second specimen from Natal (Natal Museum, No. 110) is a typical example of *T. ridleyi*.

The present specimen of *T. dendyi* is almost identical in form with the holotype of *T. robusta* (cf. Ridley 1884, pl. xxxix, fig. G) and the lengths of its spicules are: oxea, .06 mm., and toxa, .045 mm.

Family DESMACIDONIDÆ.

Section MYXILLEÆ.

Myxilla pygmæa sp. n. Pl. XXIII, fig. 1.

HOLOTYPE.—Natal Mus. No. 1263.

DIAGNOSIS.—Sponge irregularly massive, or perhaps irregularly and massively flabellate; surface marked with a reticulate pattern, caused by a fine network of low, anastomosing ridges, at whose nodes delicate aculeations are given off; oscules small, scattered; pores not apparent; texture firm, but elastic and compressible; main skeleton a fairly regular isodictyal reticulation of fibres composed of a few rows of styli surrounded by a copious layer of spongin; dermal skeleton an irregular palisade of tornota set, usually, at right angles to surface; megascleres smooth styli, slightly curved, .105 by .004 mm., and regularly amphitylote tornota, with a smooth globular head at each end, .15 by .006 mm.; microscleres chelæ arcuatæ, of usual form, divided into two categories, .021-.027 mm. and .012 mm. long respectively, and stout stigmata, .021-.027 mm. long.

LOCALITY.—Washed up at Kelso Junction on 2nd December, 1919, H. W. Bell Marley.

This species may possibly be identical with that identified by Row (1911) as *Myxilla isodictyalis* Carter, but as there is

neither specimen nor microscopic preparation of this sponge available, it is impossible to speak with certainty. It is, however, extremely unlikely that a species recorded from Central America should be found in the Red Sea, and nowhere else, and, since the present species bears some resemblance to Carter's species, it is probable that it is closely allied to, if not identical with, Row's sponge. This is the more probable since other species are common to both the Natal coast and the Red Sea.

The sponge still retains traces of a reddish coloration.

Anchinoë clathrodes (Dendy).

Plumohalichondria clathrodes Dendy, 1921, p. 86, pl. iv, fig. 2; pl. xv, fig. 3.

LOCALITY.—Umtentweni and Kelso Junction, Natal, 1919, H. W. Bell Marley.

Section CLATHRIÆ.

Rhaphidophlus procerus (Ridley). Pl. XXIII, fig. 2.

(For synonymy see Dendy, 1921, p. 64.)

LOCALITY.—Scottburgh, Natal, 1905, E. Warren.

The Natal Museum Collection includes numerous sponges which agree more closely with the spiculation of the holotype of this species than do those specimens described under the same name by Dendy (*l. c.*) from the Indian Ocean. In external form, however, they resemble more nearly the Indian Ocean forms.

✓ *Clathria juncea* (Lamarck). Pl. XXIII, fig. 5; text-fig. 3.

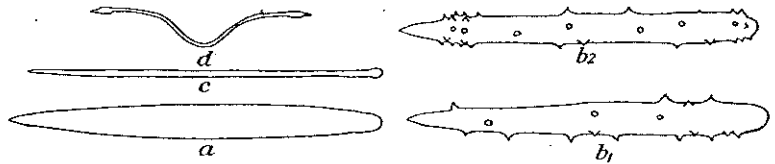
DIAGNOSIS.—Sponge erect, branched; branches few, compressed, slightly angulated in places; surface even, minutely hispid; oscules small, numerous, stellate, scattered over surface, often in linear series; pores not apparent; texture firm, compressible; skeleton a regular isodictyal reticulation with primary lines running vertically to surface and composed of stout spongin fibres containing 2 to 3 lines of spicules; secondary fibres, with or without abundant spongin, containing only 1 or

2 spicules; one spicule's length between primary fibres; megascleres smooth styli, or subtylostyli, $\cdot 099$ by $\cdot 009$ mm., acanthostyli $\cdot 096$ by $\cdot 009$ mm., and slender subtylostyli, $\cdot 095$ by $\cdot 002$ mm.; microscleres toxa, with slightly roughened ends, $\cdot 06$ mm. long; both primary and secondary fibres contain a mixture of styli and acanthostyli; latter never echinating; slender subtylostyli found, in rare numbers, scattered indiscriminately throughout choanosome, never forming a distinct dermal layer.

LOCALITY.—Winkle Spruit, July, 1922, W. Cullingworth.

The species, apparently fairly common on the Natal coast, is represented by a piece of a branch which is practically identical in

TEXT-FIG. 3.



Clathria juncea (Lamarck). *a*. Smooth style of main skeleton. *b_{1,2}*, Acanthostyli of main skeleton. *c*. Auxiliary subtylostyle. *d*. Toxon. All $\times 500$.

external form and spiculation with a portion of Lamarck's type in the British Museum. The simple nature of its skeleton, the absence of definitely echinating acanthostyli, and the absence of any special dermal layer of subtylostyli, show this sponge to be, at least, an aberrant member of the genus *Clathria*. In all probability it will be necessary to establish a separate genus for its reception, but until it is possible to go more carefully into the matter, I propose to leave it in the genus *Clathria*.

Clathria whiteleggii Dendy.

C. whiteleggii Dendy, 1921, p. 67, pl. vii, fig. i; pl. xiii, fig. 5.

LOCALITY.—Kelso Junction, Nov., 1919, H. W. Bell Marley.

The Natal specimen differs slightly from the holotype in external form, as well as in the absence of well-developed

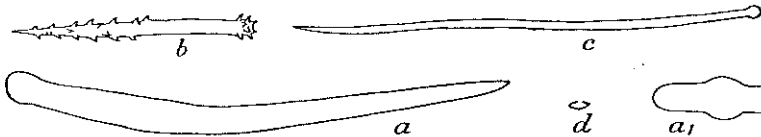
head and spines on the bases of the acanthostyles. In all other respects it is quite typical.

✓ *Clathria cullingworthi* sp. n. Pl. XXIII, figs. 3, 4;
text-fig. 4.

HOLOTYPE.—Natal Mus. No. 1270.

DIAGNOSIS.—Sponge erect, stipitate, flabello-digitate; surface even, minutely hispid, porous; oscules small, scattered generally over surface; skeleton a more or less polygonal mesh of spiculo-fibre formed of rather abundant spongin cored by tylostyli and

TEXT-FIG. 4.



Clathria cullingworthi sp. n. a. Tylostyle of main skeleton.
a₁. Head of tylostyle in which swelling has been displaced. b.
Acanthostyle. c. Subtylostyle. d. Isochela. All × 500.

echinated by acanthostyli; auxiliary spicules in form of slender subtylostyli associated with main fibres; no special dermal skeleton; microscleres in form of palmate isochelæ and (possibly) toxa; megascleres smooth tylostyli of main skeleton, usually slightly curved throughout their length and abruptly curved at about the centre, tylote head frequently replaced by an annular swelling a little away from base of spicule, .130 by .006 mm.; smooth subtylostyli, with small but distinct head, gently curved in an undulating manner, .120 by .002 mm.; and acanthostyli usually with spines confined to distal half and extreme basal portions of spicule, smooth central portion of shaft often almost entirely obscured by spines, sometimes abruptly bent at about centre of spicule, .06 by .004 mm., exclusive of spines; microscleres palmate isochelæ, of usual type, .006 mm. long, and toxa (?).

LOCALITY.—Winkle Spruit, Natal Coast, July, 1922, W. Cullingworth.

In external appearance and in the spiculation this species comes very close to *C. procera* Dendy (1921), but differs from it and all other species of *Clathria* in the small size of the spicules, particularly of the isochelæ. The presence of toxa is subject to doubt. In my preparations I found a fragment of a toxon which may or may not have been foreign to the sponge.

Wilsonella indica (Dendy).

Clathria indica Dendy, 1889, p. 84, pl. iv, fig. 10; *id.*, 1905, p. 171.
Wilsonella indica (Dendy), Hallmann, 1912, p. 242.

LOCALITY.—Natal coast.

Several specimens were obtained agreeing very closely with the holotype.

✓ *Marleyia gen. n.*

GENOTYPE.—*M. irregularis sp. n.*

DIAGNOSIS.—*Clathriæ* with main skeleton composed of a sub-isodictyal reticulation of spongin fibres cored by stout and slender subtylostyli and echinated by acanthostyli, and with dermal skeleton consisting of a tangential network of fibres cored by subtylostyli and echinated by acanthostyli.

The present genus differs from all other genera of the *Clathriæ* in the presence of a special dermal, tangential skeleton composed of a reticulation of spongin fibres.

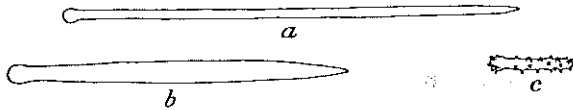
✓ *Marleyia irregularis sp. n.* Pl. XXIII, fig. 6;
 text-fig. 5.

HOLOTYPE.—Natal Mus. No. 1279.

DIAGNOSIS.—Sponge erect, flabello-digitate; surface even, smooth; oscules conspicuous, numerous, scattered generally over surface, with margins level with surrounding surface or

raised in low collar-like extensions of margin; pores apparently distributed generally over surface; texture firm but compressible; main skeleton a sub-isodictyal reticulation, somewhat irregular, of fibres with meshes measuring, on an average, .3 mm. across; dermal skeleton a network of fibres with triangular, quadrangular or polygonal meshes, measuring, on an average, .2 mm. across; main and auxiliary spicules comparatively rare and found only at centres of spongin fibres; no special dermal layer of auxiliary spicules; spongin fibres, usually containing only a few spicules of any kind, often entirely aspiculous, .024 mm. thick in dermal skeleton, .036 mm. thick in main skeleton; main megascleres smooth, stout subtylostyli, .09 by .005 mm.;

TEXT-FIG. 5.



Marleyia irregularis sp. n. a. Subtylostyle. b. Smooth style of main skeleton. c. Acanthostyle. All $\times 500$.

auxiliary megascleres smooth, slender subtylostyli, .12 by .003 mm.; echinating megascleres acanthostyli, .021 by .004 mm.; microscleres absent.

LOCALITY.—Washed up on Durban Beach, 6th November, 1919, H. W. Bell Marley.

The spiculation in this species is very much reduced: Most of the fibres contain but a few spicules and fully one quarter of them are entirely aspiculous. The microscleres are entirely absent. By the further reduction in the spiculation, in such a species as this, it would be possible to derive something approximating very closely to some of the horny sponges, the so-called *Euceratosa*, and there seems to be little doubt that eventually, when a closer study has been made of the *Euceratosa*, we shall see that large numbers thereof are merely aspiculous species of Monaxonid genera.

Echinodictyum jousseaumi Topsent. Pl. XXIII, fig. 7.

E. jousseaumi Topsent, 1892, p. 24, pl. i, fig. 3.

LOCALITY.—Winkle Spruit, July, 1922, W. Cullingworth.

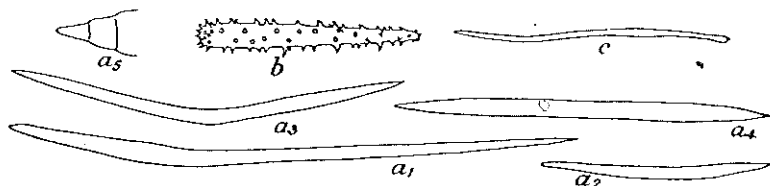
The present specimen is almost identical with the holotype.

✓ *Echinodictyum marleyi* sp. n. Pl. XXIII, figs. 8, 9; text-fig. 6.

HOLOTYPE.—Natal Mus. No. 1256.

DIAGNOSIS.—Sponge stipitate, cup-shaped or flabellate;

TEXT-FIG. 6.



Echinodictyum marleyi sp. n. a_{1-4} Various sizes of pseudoxeae. $\times 150$. a_s End of a pseudoxeote enlarged to show annulations. $\times 450$. b Acanthostyle. $\times 300$. c Subtylostyle. $\times 300$.

surface minutely reticulate and faintly hispid; in cup-shaped forms, inner surface of cup bears a number of rounded openings, presumably oscules; in flabellate forms, there is no apparent differentiation into pore- and oscule-bearing surfaces; colour, in dry state, dull brown; skeleton composed of a more or less regular network of primary fibres containing serially-arranged pseudoxeae, running perpendicularly to surface and connected at intervals by feeble secondary fibres, usually containing one or two spicules only; fibres echinated by acanthostyli set at right angles; auxiliary subtylostyli present in fibres or scattered between meshes; no special dermal skeleton and no microscleres; spicules pseudoxeae, from $\cdot 216$ to $\cdot 54$ mm. in length and $\cdot 011$ to $\cdot 014$ mm. in thickness; acanthostyles $\cdot 85$ to $\cdot 1$ mm. long by $\cdot 006$ mm. thick; and subtylostyli $\cdot 24$ by $\cdot 0025$ mm.

LOCALITY.—Washed up at Umtentweni and Kelso Junction respectively, H. M. Bell Marley.

The similarity between the present specimens and those of *Echinodictyum bilamellatum* (*Lamarck*) from Australia is very striking, and the temptation to regard the former as a simple geographical variety of the latter is very strong. There are, however, a number of vital points on which they differ. In the first place, the surface of the present specimens is never conulose or strongly ridged as in *Lamarck's* species, the texture is much coarser, the skeleton is more regular, with fewer spicules in the fibres and smaller meshes to the network, the acanthostyli are less numerous and less obtusely-pointed, while the spicules themselves are not only larger but more diverse in shape. Nevertheless we may regard the two as very closely related species giving further evidence of a certain similarity between the sponge faunas of Australia and South Africa. The main spicules appear to be modified styli rather than true oxea, although at first sight their form is that of an oxeote. This is particularly noticeable in the larger forms where the spicule is asymmetrical. They are extremely variable in shape and size, the larger being slightly curved at about one-third of the length, the smaller straight or angulated to a varying extent. The ends of the spicules are almost invariably of the type shown in text-fig. 6, *a*₃, and in this respect resemble the pseudoxea of *Mycale acerata*, *M. intermedia*, *Iophon aceratus*, etc.

Family AXINELLIDÆ.

Genus *Axinyssa* *Lendenfeld*.

The genotype of *Axinyssa*, *A. topsentii*, described by *Lendenfeld* (1897) from the coast of Zanzibar, contains a skeleton composed of vertically ascending fibres of large oxea which end at the surface in small projecting brushes of microxea. The only other species of the genus, *A. tethyoides* *Kirkpatrick* and *A. gravieri* *Topsent*, possess large oxea only, arranged in the same manner as the corresponding spicules of *A. topsentii*. The absence of the small oxea seems to be sufficient justification

for their generic separation from the genotype of *Axinyssa*. I accordingly propose the genus *Pseudaxinyssa*, with genotype *Axinyssa tethyoides Kirkpatrick*, for the reception of such species.

Pseudaxinyssa gen. n.

The following are the species :

P. tethyoides (*Kirkpatrick*) (genotype).

P. gravieri (*Topsent*).

P. tenuispicula sp. n.

DIAGNOSIS.—Axinellidæ of massive form in which the skeleton is composed of vertically ascending fibres of oxea of one sort only, the fibres branching and anastomosing throughout their length and ending at the surface in small tufts which project to a greater or lesser extent.

✓ *Pseudaxinyssa tenuispicula* sp. n. Pl. XXIII,
fig. 10.

HOLOTYPE.—Natal Mus. No. 1268.

DIAGNOSIS.—Sponge fragmentary, massively flabellate ; surface in macerated condition, marked with numerous processes formed by the projecting ends of the primary fibres ; oscules situated in a slight depression along the upper margin, arranged in a double row ; skeleton composed of vertically ascending fibres which branch and anastomose repeatedly throughout their course ; fibres composed of loose aggregations of spicules arranged, for most part, longitudinally to axis of fibres and bound together with an inconspicuous amount of spongin ; spicules oxea, rarely straight, often strongly curved, varying in length from .4 to .5 mm. and in thickness from .008 to .014 mm.

LOCALITY.—Winkle Spruit, Natal, July, 1922, W. Cullingworth.

The present species differs from the other known species in the flabellate external form and the small size of the oxea.

Phakellia weltnerii (*Lendenfeld*).

Phacellia weltnerii *Lendenfeld*, 1897, p. 114, pl. x, figs. 120-133.

LOCALITY.—Winkle Spruit, Natal, 1922, W. Cullingworth.

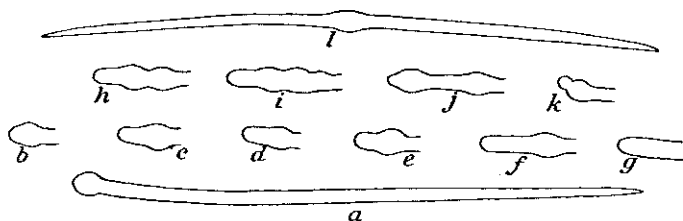
Family CLAVULIDÆ.

✓ *Spirastrella excentrica* sp. n. Text-fig. 7.

HOLOTYPE.—Natal Mus. No. 1267.

DIAGNOSIS. — Sponge cup-shaped, non-stipitate; surface minutely papillose or raised in low meandering ridges, areas between papillæ and ridges minutely stellate or reticulate; pores apparently scattered in a thin dermis, which covers stellate or reticulate areas; oscules small, numerous, scattered generally over inner surface of cup; skeleton composed of dense, closely-packed, irregular bundles running vertically to surface to end

TEXT-FIG. 7.



Spirastrella excentrica sp. n. a. A typical tylostyle. b-k. Heads of tylostyli, showing the variation in form. l. Centrotylote pseudoxeote. All $\times 250$.

in a dense cortical layer of spicules showing no particular arrangement; no special dermal skeleton and no microscleres; spicules, ranging from styli to tylostyli, or even to centrotylote oxea, .32 by .008 mm.

LOCALITY.—Tanganyika Territory, 1908, H. Swanfield.

The single specimen is a large cup, 24 cm. high and 22 cm. across the mouth. On one side is a small secondary cup containing two, still smaller, cups in its inner wall.

The skeleton possesses several peculiarities. In the first place the spicules are in no sense definitely orientated. Usually in the genus *Spirastrella*, the tylostyli are directed with the head pointed towards the inner part of the sponge and the pointed end towards the surface. In this species the head may point towards the surface or towards the interior. Further,

the spicules range from simple styli to simple tylostyli, but between the two all manner of modifications may occur. The tylote head may be reduced to an annulation a little removed from the end of the spicule, or there may be two such annulations at varying distances from the end of the spicule and from each other. Sometimes the annulation is asymmetrical. Occasionally the tylote head may be removed to the centre of the spicule, giving rise to centrotylote oxea.

Of the examples of the modifications of spicules in fig. 7 *a-g* are common, *h-j* fairly common, *k* rare, and *l* only occasional.

The distinctive features of the species are the cup-shaped external form, the lack of definite orientation in the megascleres, the modifications of the shape of the spicules and the absence of any trace of microscleres.

At first sight the generic identification here used may appear to be at fault and that the sponge belongs more properly to the Suberitidæ, but the absence of a definite cortical palisade of small tylostyli, the typically Spirastrellid character of the sponge itself, its texture, etc., and of the spicules all militate against this view.

Hallmannia gen. n.

GENOTYPE.—*Hallmannia spirophora* sp. n.

DIAGNOSIS.—Spirastrellinæ of massive form, whose skeleton consists of a triangular meshwork of more or less curved styli, without special dermal skeleton and with roughened spinispiræ of peculiar form and minute styli as microscleres.

The genus finds its closest ally in *Trachycladus*.

— *Hallmannia spirophora* sp. n. Pl. XXIII, fig. 12;
text-fig. 8.

HOLOTYPE.—Natal Mus. No. 1254.

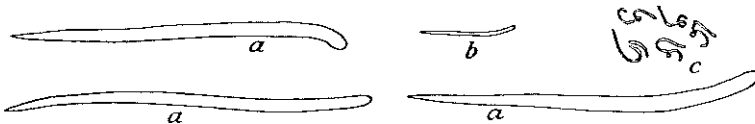
DIAGNOSIS.—Sponge massive; surface even, but minutely hispid; pores probably scattered generally over the surface; with a single oscule at the apex; colour, in dry state, grey; skeleton composed of a triangular network of curved styli, without special dermal skeleton and with minute styli and

spinispiræ of peculiar form for microscleres; megasclere styli, smooth, slightly curved, undulating or strongly curved at about the basal third, .24 by .009 mm.; microsclere styli small, smooth, strongly curved, .045 by .0016 mm. and spinispiræ, of peculiar and somewhat diverse form, with whole surface minutely roughened measuring about .006 mm. across.

LOCALITY.—Thrown up on the Natal Coast, 1919, H. W. Bell Marley.

The peculiar form of the spinispiræ characteristic of this species is quite distinctive and is unlike that of any other known *Spirastrellid*, with the possible exception of one or two species of *Trachycladus*.

TEXT-FIG. 8.



Hallmannia spirophora sp. n. a. Various forms of large styles. $\times 200$. b. Minute style $\times 250$. c. Spinispiræ. $\times 1000$.

The holotype is little more than a fragment and, being in a dried state, is rather unsatisfactory for the purposes of description. The surface appears to be even in life and covered with a thin aspiculous dermal membrane of which only a few patches here and there remain. The tissues directly underlying it, however, are furrowed or marked by more or less subspherical pits, representing the subdermal canals and subdermal crypts respectively.

Hemiastrella vasiformis (*Kirkpatrick*). Pl. XXIII, fig. 11.

Kalastrella vasiformis *Kirkpatrick*, 1903, p. 238, pl. v, fig. 3; pl. vi, fig. 3.

Hemiastrella vasiformis (*Kirkpatrick*), *Topsent*, 1919, p. 7.

LOCALITY.—Durban Bay, J. F. Quekett.

A particularly fine specimen of this species was obtained.

Order EUCERATOSA.

Phyllospongia foliascens (Pallas)

(Synonymy see Lendenfeld, 1889, p. 196.)

LOCALITY.—Tanganyika Territory, H. T. Peach.

Phyllospongia vasiformis (Carter).

(Synonymy see Lendenfeld, 1889, p. 180.)

LOCALITY.—Tanganyika Territory, 1908, H. Swanfield.

Phyllospongia radiata Hyatt.

(Synonymy see Row, 1911, p. 379.)

LOCALITY.—Tanganyika Territory, 1908, H. Swanfield.

Euspongia spp.

The collection contains two fragments of *Euspongia* spp. whose condition does not admit of identification.

Hippospongia nardorus (Lendenfeld). Pl. XXIII,
fig. 14.*Aphrodite nardorus* Lendenfeld, 1885, p. 306, pl. xxxv, fig. 34.*Hippospongia aphroditella* Lendenfeld, 1889, p. 312, pl. xi, figs. 11-14; pl. xii, fig. 13.

LOCALITY.—Mouth of Umlalazi River, December, 1919, 25 fathoms, H. W. Bell Marley. Previously recorded from Torres Straits, Australia.

The present specimen, 11 cm. high by 10 cm. across, agrees almost exactly with the holotype except in size, as I have been able to ascertain by direct comparison.

Aplysina cæspitosa Carter. Pl. XXIII, fig. 13.

A. cæspitosa Carter, 1886, p. 282.

Dendrilla cæspitosa Lendenfeld, 1889, p. 721, pl. xlv, figs. 6, 10.

LOCALITY.—Off mouths of Tugela and Umvoti Rivers, November, 1920, 35 fathoms, H. W. Bell Marley. Previously recorded from Australia.

There appears to be much in common between this species, previously only known from Australia, and *Aplysina mollis* Row from the Red Sea. Possibly they are representatives of a single species extending throughout the Indian Ocean and adjacent waters.

Stelospongius costifera (Lamarck). Pl. XXIII,
fig. 15.

(Synonymy see Lendenfeld, 1889, p. 523.)

LOCALITY.—Durban Bay, J. F. Quekett. Previously recorded from Bahamas Is., West Indies; Australia.

Whether the present specimen is identical with Lamarck's sponge is a matter for speculation, but there is little doubt that it is practically identical with those specimens described under the same name from Australia by Lendenfeld.

Stelospongius operculum Lendenfeld. Pl. XXIII,
fig. 16.

Stelospongia operculum Lendenfeld, 1897, p. 124, pl. x, figs. 158-161.

LOCALITY.—Durban Bay, J. F. Quekett.

^{*Dydenia*}
Spongelia chalinoides sp. n. Text-fig. 9.

HOLOTYPE.—Natal Mus. No. 106.

DIAGNOSIS.—Sponge irregularly massive, with flabellate or papillate outgrowths on upper surface; oscules situated in linear series on crest of flabellate outgrowth, or singly at apices

of papillate outgrowths; pores not apparent; texture elastic and compressible; skeleton a network of well-defined primary fibres, about $\cdot 072$ mm. thick, running vertically to surface and connected at intervals by very irregular secondary fibres, or networks of fibres; primary fibres usually cored by a continuous series of incorporated spicules, quartz-grains, etc.; secondary

TEXT-FIG. 9.



Spongelia chalinoides sp. n. a. Outline of sponge to show disposition of oscules $\times 75$. b. Portion of skeleton to show disposition of fibres, and (x) position of enclosed spicules. $\times 75$.

fibres occasionally contain a single, linear series of foreign spicules.

LOCALITY.—Umgeni Beach, 15th May, 1919, H. W. Bell Marley.

The fact that the specimen was dried and, apparently, beach-worn does not aid its identification or description. It appears probable that, in life, the dermis may have been supported by a delicate but irregular network of fibres. If so, then the dermal

skeleton has been effaced but for a few traces. On the whole, however, it is extremely probable that no such skeleton was present.

The microscopic appearance of the skeleton of this species bears a strong resemblance to that of a Chalinine sponge, so much so that one is apt to be a little misled at first. This is due to the fact that the primary fibres are so regular in direction and in the manner in which their enclosed spicules are arranged, and that the spicules enclosed are almost entirely oxea. Only a few quartz-grains and spicules, other than oxea, are found. Further, those secondary fibres enclosing foreign spicules bear a strong resemblance to the secondary fibres of a Chalina (fig. 9*b*, *x*).

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(Note.—The references to literature prior to 1913 are taken from Vosmaer's Bibliography.)

EXPLANATION OF PLATE XXIII,

Illustrating Mr. M. Burton's paper “On a Collection of Marine Sponges mostly from the Natal Coast.”

- FIG. 1.—× 50. *Myxilla pygmæa* sp. n.
- FIG. 2.—× 37. *Rhaphidophlus procerus* (Ridley).
- FIG. 3.—× 33. *Clathria cullingworthi* sp. n.
- FIG. 4.—× 33. *Clathria cullingworthi* sp. n.
- FIG. 5.—× 33. *Clathria juncea* (Lamarck).
- FIG. 6.—× 50. *Marleyia irregularis* gen. et sp. n.
- FIG. 7.—× 50. *Echinodictyum jousseaumi* Topsent.
- FIG. 8.—× 75. *Echinodictyum marleyi* sp. n. (holotype).
- FIG. 9.—× 50. *Echinodictyum marleyi* sp. n.
- FIG. 10.—× 33. *Pseudaxinyssa tenuispicula* gen. et sp. n.
- FIG. 11.—× 33. *Hemiassterella vasiformis* (Carter).
- FIG. 12.—× 50. *Hallmannia spirophora* gen. et sp. n.
- FIG. 13.—× 70. *Aplysina cæspitosa* Carter.
- FIG. 14.—× 60. *Hippospongia nardorus* (Lendenfeld).
- FIG. 15.—× 80. *Stelospongia costifera* (Lamarck).
- FIG. 16.—× 33. *Stelospongia operculum* Lendenfeld.

N.
 ollected by Mr. Cyril Crossland,
 Linn. Soc., London, xxxi, 1911.
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 arctique national écossaise,"
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 erites et Hemiasterella,"
 1919.
 prior to 1913 are taken from

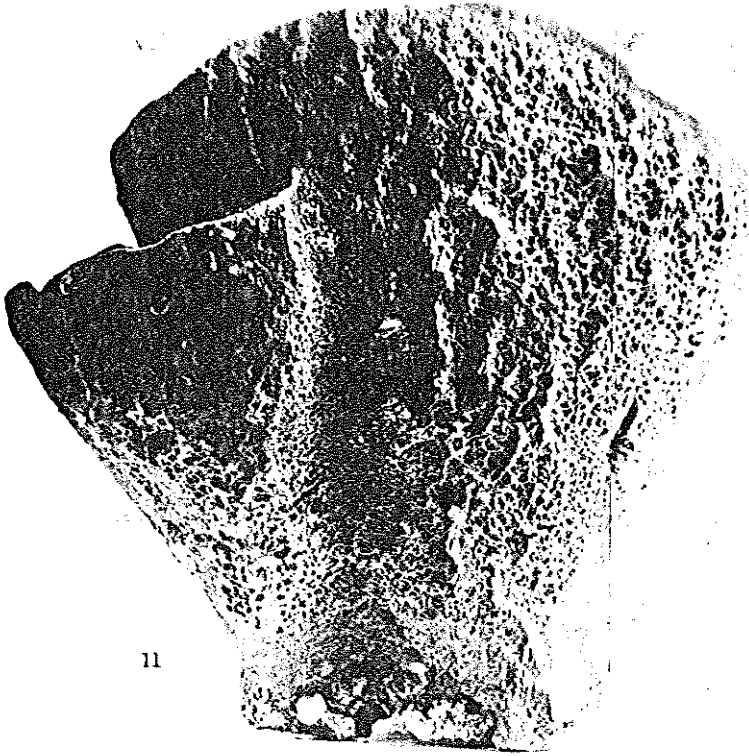
PLATE XXIII,

On a Collection of Marine
Natal Coast."

- sp. n.*
- procerus (Ridley).*
- worthingi sp. n.*
- worthingi sp. n.*
- (Lamarck).*
- laris gen. et sp. n.*
- jousseaumi Topsent.*
- marleyi sp. n. (holotype).*
- marleyi sp. n.*
- tenuispicula gen. et sp. n.*
- asiformis (Carter).*
- rophora gen. et sp. n.*
- tosa Carter.*
- ardorus (Lendenfeld).*
- ostifera (Lamarck).*
- perculum Lendenfeld.*



W.A. Smith photo.



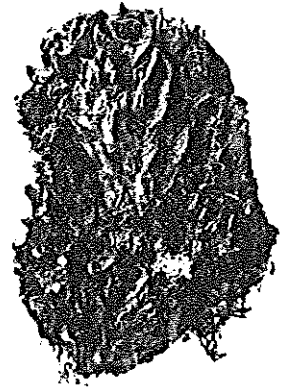
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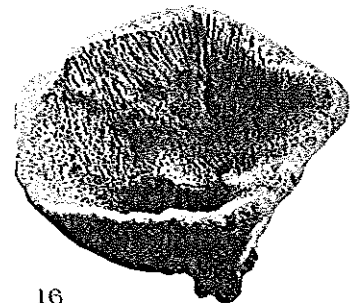


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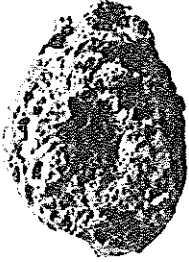
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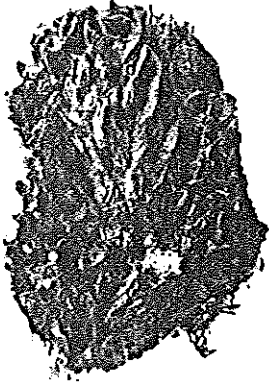
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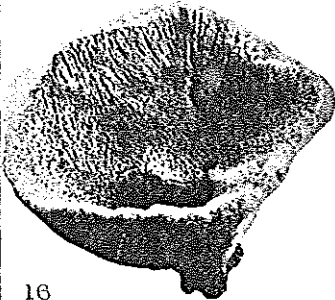


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