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Report on a small Collection of Sponges from Stil Bay, S. Africa. By MAURICE BURTON, M.Sc., Assistant-Keeper, Department of Zoology, British Museum (Natural History).

THE collection of sponges upon which the following report is based was made by Prof. T. A. Stephenson during the course of an ecological survey of Stil Bay, 200 miles along the coast eastwards from Cape Town. This collection, although small, affords a welcome addition to our knowledge of the South African sponges, and, as the section on distribution shows, indicates how important it is that the sponge-fauna of South Africa should be fully investigated.

SYSTEMATIC LIST OF SPECIES.

Order CALCAREA.

Leucosolenia coriucea (Montagu).*Distribution.*—Practically cosmopolitan.

Leucosolenia cerebrum (Haeckel).

Distribution.—Europe (Mediterranean only).

Sycon ciliatum (Fabricius).

Distribution.—Europe.

Sycon gelatinosum (Blainville).

Distribution.—Australia ; Indo-Pacific.

Sycon munitum Jenkin.

Distribution.—Zanzibar.

Sycon kerguelensis Hentschel.

Distribution.—Kerguelen.

Heteropia glomerata (Bowerbank).

Distribution.—Port Elizabeth, S. Africa ; Indian Ocean.

Order TETRAXONIDA.

Suborder HOMOSCLEROPHORA.

Oscarella lobularis (Schmidt).

Distribution.—Europe.

Suborder ASTROSCLEROPHORA.

Stelletta grubei Schmidt.

Distribution.—Europe.

Stelletta gruboides Burton.

Distribution.—Port Elizabeth, S. Africa.

Geodia littoralis Stephens.

Distribution.—Saldanha Bay, S. Africa.

Chondrosia reniformis Schmidt.

Distribution.—Europe ; Indian Ocean ; Australia.

Suborder SIGMATOSCLEROPHORA.

Tetilla cranium (Müller).

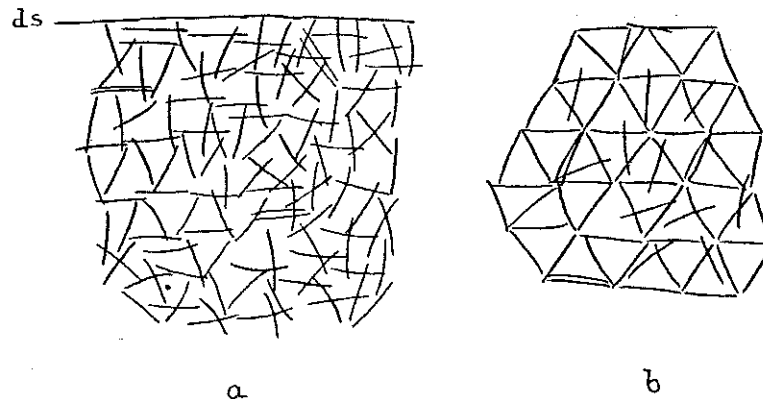
Distribution.—Europe ; Arctic Ocean ; N. coast of Canada.

Adocia simplicissima, sp. n.* (Fig. 1.)

Holotype.—B.M. 32.7.25.40.

Diagnosis.—Sponge thinly encrusting ; surface smooth, even ; oscules not apparent ; texture soft, friable ; main skeleton irregularly sub-isodictyal and mainly unispicular ; dermal skeleton unispicular, with triangular mesh, often slightly irregular ; oxea, usually, curved, $\cdot 12$ by $\cdot 004$ mm.

Fig. 1.



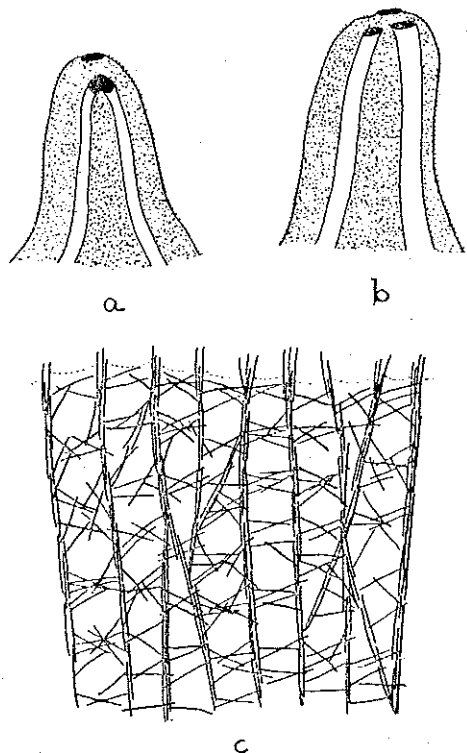
Adocia simplicissima, sp. n. a, section at right angles to surface (ds=dermal skeleton); b, dermal skeleton seen from above.

Remarks.—The distinctive feature of the species is its simple structure. It resembles *A. (Pellinella) conica* (Thiele) from S. America in the structure of its skeleton, but differs in external form and in the size of the spicules. Similarly, it differs from *A. (Pellina) integra* (Topsent) from Amboina in external form and size of spicules.

* The synonymy of the genus *Adocia* Gray will be dealt with in my report on the sponges of the Barrier Reef Expedition.

Haliclona ciocalyptoides, sp. n. (Fig. 2.)*Holotype*.—B.M. 32.7.25.1.*Diagnosis*.—Sponge encrusting; surface even, porose, minutely hispid; oscules papillate, numerous, closely packed, seldom more than 3 to 4 mm. distant from each

Fig. 2.

*Haliclona ciocalyptoides*, sp. n.

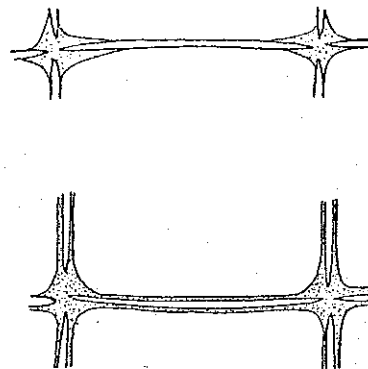
a, b, types of oscules, with subdermal canals shown leading up to terminal oscules; c, section at right angles to surface, showing structure of skeleton.

other; texture soft, compressible, friable; skeleton isodictyal, with ascending fibres bi- or trispicular, often branching and anastomosing, and joined by irregularly disposed single spicules (fig. 2c); oxea usually curved, .115 by .003 mm.

Remarks.—The characteristic feature of this species, which resembles *H. foraminosa* (Thiele, 1905, pl. xxvii. fig. 10) somewhat in appearance, is the structure of the oscules. These are usually solid papillate processes arising from the surface traversed by longitudinal subdermal canals, which end at their summits in one or more openings. The subdermal canals are roofed over by a thin dermis only, so that the papillae appear to be longitudinally ribbed. Altogether the appearance of the papillae recalls that of the fistulae of *Ciocalypta*.

Haliclona stilensis, sp. n. (Fig. 3.)*Holotype*.—B.M. 32.7.25.2.*Diagnosis*.—Sponge encrusting to irregularly massive, with oscules papillate or level with surface; surface even, porose, minutely hispid; texture soft, compressible, somewhat friable; skeleton irregularly isodictyal, unispicular; spicules completely invested with spongin or joined only at nodes (fig. 3); oxea straight or curved, .12 to .15 by .003 to .007 mm.

Fig. 3.

*Haliclona stilensis*, sp. n., showing variation in distribution of spongin in fibres of skeleton.

Remarks.—In external form this species varies from that figured for *Isodictya cinerea* (Bowerbank, 1874, pl. xlviii. fig. 1) to that figured for *I. densa* (id. l. c. pl. 1. fig. 5). The characteristic feature is the unispicular network of the skeleton, the spicules of which are usually, but not invariably, completely invested in spongin.

Occasionally an ascending line of spicules may be bi-spicular or, rarely, trispicular.

Lissodendoryx sinensis Brøndsted.

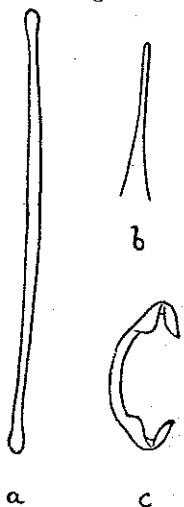
Distribution.—Indo-Pacific.

Forcepia agglutinans, sp. n. (Fig. 4.)

Holotype.—B.M. 32.7.25.39.

Diagnosis.—Sponge small, thinly encrusting, with numerous fragments of calcareous debris incorporated in its substance; main skeleton composed of wisps of tylota running to surface and ending in loose and irregular

Fig. 4.



Forcepia agglutinans, sp. n.

a, tylole, $\times 200$; b, forceps, $\times 200$; c, chela, $\times 650$.

brushes; tylota usually curved, $.28$ by $.006$ mm.; microscleres chelæ arcuatae, $.028$ mm. chord, and forceps, of usual form, $.1$ mm. long.

Remarks.—This is an aberrant species of *Forcepia* characterised by the absence of acanthostyli, and with only one category of chelæ and forceps. It is probable, however, that the absence of the acanthostyli may be due to the fact that the holotype is merely an immediate post-fixation form, and that these would appear later.

In any case, the species is sufficiently close to the other species of *Forcepia* to be included in that genus.

Ciocalypta oculata var. *maxima* Hentschel.

This species may be identical with *C. polymastia* (Lendenfeld) (see Hallmann, 1914, p. 353).

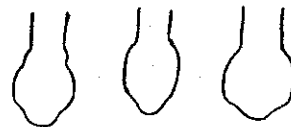
Distribution.—Indo-Pacific.

Suberites stilensis, sp. n. (Fig. 5.)

Holotype.—B.M. 32.7.25.35.

Diagnosis.—Sponge regularly massive; surface even, harsh to touch; oscules not seen; texture compressible, soft; internal structure cavernous; colour ash-white; main skeleton of plumose fibres of tylostyli running to surface, branching and anastomosing, with, in places, numerous scattered spicules lying between fibres; dermal palisade of tylostyli similar to those of main skeleton, but smaller; tylostyli up to $.8$ by $.01$ mm.

Fig. 5.



Suberites stilensis, sp. n., showing various shapes found in heads of tylostyli.

Remarks.—The species resembles *S. capillitium* Topsent in external form and the shape of the spicules, and *C. laticeps* Topsent in the structure of the skeleton and shape of the spicules; but it differs from both in the much larger size of the spicules (up to $.8$ mm. long as against $.3$ mm. in Topsent's species). Nevertheless, there can be little question that the South African species and Topsent's two species, both from the Azores, are closely related.

Polymastia mammillaris (Müller).

Distribution.—N. Atlantic; N. Pacific; Arctic.

Tethya lyncurium Pallas.

Distribution.—N. Atlantic; West Indies.

Tethya diploderma Schmidt.

Distribution.—West Indies; Indian Ocean; Indo-Pacific; Australia.

Order EUCERATOSA.

Aplysilla rosea Schulze.

Distribution.—Europe; Australia.

Spongelia fragilis (Montagu).

Distribution.—N. Atlantic (including Azores); S. America; Indian Ocean; Australia.

Spongelia cinerea (Keller).

Distribution.—Red Sea; Indian Ocean.

Hippospongia frondosa Hentschel.

Distribution.—Indo-Pacific.

Hircinia aruensis Hentschel.

Distribution.—Indo-Pacific.

GEOGRAPHICAL DISTRIBUTION.

The 28 species recorded from Stil Bay are distributed as follows:—

| | |
|--|---|
| New species | 5 |
| Other points on S. African coast | 3 |
| Cosmopolitan | 1 |
| Europe (including in some cases the Arctic and N. America) | 7 |
| Europe and Australia (and Indian Ocean in two cases) | 3 |
| Australia and Indo-Pacific | 2 |
| Indo-Pacific | 4 |
| Indian Ocean | 2 |
| Kerguelen | 1 |

Excluding the S. African and cosmopolitan species, the new species, and the single one from Kerguelen, we have seven found elsewhere only in Europe, eight in the Indo-Australasian area, and three common to Europe and Indo-Australasia. This suggests that at Stil Bay,

more than at any other point on the S. African coast yet explored, there is a strong mixing of Indo-Australasian and European species. That this fact has great significance for the study of distribution is certain, but what this significance is cannot be fully determined until faunal groups have been revised for other parts of the world, especially for Australia and the Indo-Pacific.

The published works on the sponges of South Africa are few, and include those by Stephens (1915), Kirkpatrick (1902 (*bis*), 1903), and Burton (1926, 1929, 1931). In the report by Stephens, on sponges from Saldanha Bay, we find that 33 species are recorded (excluding *Reniera cinerea*, always a doubtful identification), which are distributed as follows:—

| | |
|--|----|
| New species | 15 |
| Other points on S. African coast | 6 |
| Cosmopolitan | 2 |
| Europe | 8 |
| Europe and Indo-Australasia | 2 |

The species recorded by Kirkpatrick and Burton from the Natal coast are distributed as follows:—

| | |
|--|-----|
| New species | 55 |
| Other points on S. African coast | 10 |
| Cosmopolitan | nil |
| Europe (including two from the Azores) | 6 |
| Indo-Australasia | 16 |

Comparing the three tables, we find that, if the local species be ignored, the European species far outnumber the Indo-Australasian species at Cape Town, that they are evenly divided at Stil Bay, but that Indo-Australasian species predominate along the Natal coast. This suggests that, at the very least, the South African coast is a key-position, and that an exhaustive study of its sponge-fauna must be made in order to understand fully the distribution of Atlantic and Indian Ocean species.

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