III. SPONGES

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The sponges represent thirty-three species, and although their study has resulted in little of unusual interest, a useful addition to the faunal list of the Red Sea area has been made. In addition, it has been possible to establish the correct identity of some of the forms described by Keller (1889 and 1891), which has long been in doubt. Most of the thirty-three species are common to the Indian Ocean fauna, some having been recorded also from Australia or the Indo-Pacific. It is of interest to note, however, that twelve species appear to be endemic, but this may be due largely to gaps in our knowledge of the Indian Ocean fauna. Furthermore, there are three species (*Leuconia nausicae*, *Tethya aurantium*, and *Pseudosuberites mollis*) belonging more properly to the Mediterranean fauna.

The commonest form in the Gulf of Aqaba seems to be *Callyspongia viridis*, which, according to the members of the expedition, is 'abundant everywhere'.

LIST OF SPECIES AND SYSTEMATIC NOTES

Order CALCAREA

Leucosolenia canariensis (Michlucho-Maclay)

Nardoa canariensis Michlucho-Maclay, 1868: 221.
Leucosolenia canariensis, Dendy & Row, 1913: 724.

Occurrence. Mualla, 30.i.49, under rocks at low tide; Sherm-el-Moiya, 3.ii.49.
Remarks. A greyish white, typical specimen, 10 mm. across.
Distribution. Arctic; Mediterranean; Cape Verde Islands; Canaries; Red Sea; Mauritius; NW. Pacific (Commandorski Islands).

Leucosolenia tenuipilosa Dendy

Leucosolenia (*Clathrina*) *tenuipilosa* Dendy, 1905: 227, pl. xiii, fig. 9.
L. canariensis (pars), Thacker, 1908: 762.
Clathrina tenuipilosa, Row, 1909: 185.
Leucosolenia tenuipilosa, Dendy & Row, 1913: 723.

Occurrence. Dahab, 14.ii.49; Abu Zabad, 11.ii.49.
Remarks. There are a number of typically cushion-shaped specimens, up to 30 mm. across, which were brown or fawn in formalin, and now, in spirit, are coloured a greyish brown.
Distribution. Ceylon; Red Sea; Cape Verde Islands.

Grantessa glabra Row

Grantessa glabra Row, 1909: 203, pl. xix, figs. 5–6; Dendy & Row, 1913: 752.

Occurrence. Sherm Sheik, 11.i.49; Abu Zabad, 10.ii.49, on reef at low tide.
Distribution. Red Sea.

Leuconia bathybia (Haeckel)

Dyssycum bathybia Haeckel, 1869: 241.
Leucaltis bathybia, idem, 1872: 156, pl. xxviii, fig. 2.
Leucandra bathybia, Dendy & Row, 1913: 773.

Occurrence. Sherm Sheik, 2.ii.49, 2 fms.; Sanafir, 6.ii.49.

Remarks. The four specimens may possibly represent two well-marked varieties, and, since the species was originally subdivided in this manner, it may be worth while to consider them in this light.

The first specimen is the smaller, a few millimetres high, and of typical form and colour. The skeleton is arranged as Haeckel described it, and the rays of the large quadriradiates have a maximum of 0·4 by 0·032 mm.

The other three range from a few millimetres high to 16 mm. high by 12 mm. diameter. Again, the external form is typical, as well as the spiculation. But in these three the rays of the quadriradiates have a maximum of 0·96 mm. by 0·09 mm.

Either the first of the present specimens represents Haeckel's var. *perimina* and the other three var. *arabica*, or, what is much more likely, we have to deal with a species showing a tendency to vary widely in the measurements of the spicules.

The first specimen and two out of the group of three were found at the same station, Sherm Sheik.

Distribution. Red Sea; ? Australia.

Leuconia nausicae (Schuffner)

Leucaltis nausicae Schuffner, 1877: 407, pl. xxiv, fig. 1.
Leucandra nausicae Dendy & Row, 1913: 774.

Occurrence. Sanafir, 9.i.49; Tiran, 10.i.49; Abu Zabad, 11.ii.49, on reef at low tide.

Remarks. The two specimens seem to agree closely with the description of the holotype, which is the only other recorded specimen. Presumably Row (l.c.) examined this and, as a consequence, the species was transferred to *Leucandra*. It is difficult, therefore, to accept Topsent's (1937: 14) remark that '*Leucaltis Nausicae* Schuffner se confond vraisemblablement avec *Leucetta solida* (O. Schmidt)'.

Distribution. Mediterranean.

Kebira uteoides Row

Kebira uteoides Row, 1909: 210, pl. xx, figs. 8–9, text-figs. 7–8; Dendy & Row, 1913: 785.

Occurrence. Sherm Sheik, 2 fms., 2.ii.49.

Remarks. The single specimen, 20 mm. high, is typical, in both external appearance and the details of the skeleton.

Distribution. Red Sea.

Order TETRAXONIDA

Stelletta purpurea Ridley

(For synonymy *see* Burton, 1926.)

Occurrence. Tiran, 10.i.49; Sanafir, 8 and 9.i.49 and 4.ii.49; Sherm-el-Moiya, 3.ii.49.

Remarks. The spiculation of the several specimens shows the usual variation in

size. The main interest lies, however, in the external form. The smallest specimens, 10 to 15 mm. diameter, have the spherical or subspherical shape typical of the species, but in one or two cases these small spherical sponges have coalesced to give an irregular lobulated mass. In the larger specimens, 50 to 60 mm. across, on the other hand, the form is often extremely irregular, suggesting not only the coalescence of several smaller sponges but irregularities of growth due to environmental factors.

Distribution. Red Sea; Indian Ocean; Malay; Australasia; Antarctic.

Chondrilla sacciformis Carter

(For synonymy *see* Burton, 1924.)

Occurrence. Sherm-el-Moiya, 3.ii.49.

Distribution. Indian Ocean; Malay.

Chondrosia reniformis Nardo

Chondrosia reniformis Nardo, 1847: 272.

Occurrence. Abu Zabad, 11.ii.49.

Remarks. The two specimens appear to be typical except that there is a sparse accumulation of fine sand grains in the outer layers of the cortex.

Distribution. Atlantic coast of Europe; Mediterranean; South Africa (Stil Bay); Indian Ocean; Malay; Australia.

Chrotella cavernosa (Lamarck)

Tethya cavernosa Lamarck, 1813: 70; 1815: 385.
T. cranium var. *australiensis* Carter, 1886: 127.
Cinachyra australiensis, Burton, 1934: 523.
(For further synonymy *see* Burton, l.c.)

Occurrence. Mualla, 30.i.49, at low tide under rocks.

Distribution. Red Sea; Indian Ocean; Malay; Australia; Philippines.

Tethya aurantium (Pallas)

(*See* Burton 1924 and 1949: 122.)

Occurrence. Sherm Sheik, 2.ii.49, 11.i.49, and 2.ii.49; Tiran, 10.i.49; Mualla, 30.i.49, at low tide under rocks.

Remarks. The five specimens, all somewhat flattened, are fawn, orange, or red (in formalin) and measure 7, 8, 12, 18, and 21 mm. across respectively.

Distribution. Arctic; North Atlantic; West Indies; Mediterranean.

Tethya robusta Bowerbank

(For synonymy *see* Burton, 1924.)

Occurrence. Mualla, 30.i.49, under rocks at low tide; Abu Zabad, 10 and 11.ii.49, on reef at low tide.

Remarks. The six specimens measure 12, 15, 21, 25, 26, and 28 mm. across respectively. The colour (in formalin) is pink to red. There is, however, another specimen

consisting of five lobes set in a horizontal plane, each lobe being about 20 mm. across. Its colour was a cerise-red in formalin. Clearly this specimen has been formed by the complete coalescence of five adjacent individuals. It is not unknown for two specimens to fuse in this way, but five is unusual.

The spiculation is typical in all but two specimens, which lack the larger microscleres. In other words, these two should be assigned to *Tethya japonica* Sollas. In 1924 I suggested that this so-called species was probably a reduced form of *T. diploderma* Schmidt (= *T. ingalli* Bowerbank), but it now seems that it is a mixture of the reduced forms of both *T. robusta* and *T. ingalli*.

Distribution. Australia; Malay; Indian Ocean.

Pseudosuberites mollis Topsent

Pseudosuberites mollis Topsent, 1925: 9, fig. 2*m*.

Occurrence. Mualla, 30.i.49, under rocks at low tide.

Remarks. The sample consists of three fragments of a soft and delicate sponge, having approximately the characters described by Topsent (l.c.). The spicules are slightly larger, 0·15 to 0·45 by 0·005 to 0·008 mm., as compared with 0·175 to 0·315 by 0·0065 mm. in the holotype, but the variations in the shape of the spicules are similar to those figured by Topsent.

Distribution. Mediterranean (Étang de Thau).

Haliclona toxophorus (Hentschel)

Gellius toxophorus Hentschel, 1912: 392, pl. xxi, fig. 46.
G. toxotes, idem, l.c.: 392, pl. xxi, fig. 47.

Occurrence. Sherm Sheik, 11.i.49.

Remarks. The two small fragments are evidently from one sponge which formed a flattened, massive incrustation, with oscules slightly raised. Almost transparent, soft and compressible, delicate in texture, the specimen appears to be denuded of flesh, the skeleton, an isodictyal and unispicular network, being held together by spongin at the nodes. The megascleres are oxea, with a tendency to become strongylote at one or both ends, 0·24 by 0·012 mm. The microscleres are toxa, 0·02 to 0·1 mm. across.

The two species described by Hentschel were sufficiently closely related, judging by the original descriptions, to suggest their identity one with the other. The intermediate character of the present material adds point to this.

Distribution. Malay.

Adocia dendyi (Burton)

Toxochalina robusta Dendy, 1905: 139; idem, 1921: 29.
T. dendyi Burton, 1931: 340, fig. 2*b*.
Nec *Toxochalina robusta* Ridley.

Occurrence. Sherm Sheik, 11.i.49.

Remarks. The several specimens are all small and cushion-shaped, with conspicuous oscules 2 to 3 mm. diameter. The colour, in spirit, is brownish grey, and

the texture soft, compressible, elastic. The main skeleton is a close-meshed reticulation of fibres, the ascending fibres multispicular (3 to 4 spicules), the connectives unispicular. The tangential dermal skeleton is very much as figured by me (l.c., fig. 2*b*) and is unispicular. The spicules are oxea 0·1 by 0·004 mm., and toxa of about the same length.

Distribution. Indian Ocean.

Callyspongia viridis (Keller)

Dactylochalina viridis Keller, 1889: 391, pl. xxiii, figs. 37–43.

Occurrence. Sherm Sheik, 2 and 3.ii.49; Tiran, 10.i.49; Abu Zabad, 10 and 11.ii.49, on reef at low tide; Dahab, 13.i.49 and 14.ii.49; Sanafir, 4, 5, and 6.ii.49.

Remarks. Of the eleven specimens, only one is almost identical with that figured by Keller (l.c., fig. 37), nine of the remainder being irregularly massive, on the whole smaller, and the eleventh being no more than a thin incrustation on a coral. All have the typical vents and the typical pore-sieves (Keller, l.c., fig. 40), although in some cases the pore-sieves are less strongly marked. In a few cases, at least, the characters of the surface have been blurred by preservation in formalin.

The characters of the skeleton are comparatively uniform for the nine irregularly, massive specimens, but the typical specimen and the thin incrustation show features which merit special notice. In the nine specimens the network of the main skeleton consists of well-marked primary or ascending fibres which branch, as they run to the surface, in a somewhat irregular manner. At the centres of the fibres is a more or less continuous core of spicules arranged in an untidy manner (almost irregularly sub-plumose), often with individual spicules projecting from the fibres. The primary fibres are connected by secondary fibres, thinner than the primaries, and forming often an irregular network. In these the spicules are arranged, usually, uniserially; but, again, individual spicules may project, at right angles to the main series, beyond the surface of the fibres. The tangential skeleton at the surface is a close-meshed network of fibres, cored by uniserially arranged oxea, and showing no obvious differentiation into primary and secondary meshes. The average diameter of the meshes is 0·04 mm. The oxea vary from 0·08 to 0·16 by 0·004 to 0·005 mm.

The main skeleton of the one typical specimen (i.e. externally typical) is unlike that of the nine specimens in that it approaches the ceraochalinoid condition. It is a very close-meshed reticulation of thick fibres which appear at first sight to be aspiculous. In general it resembles that shown in Keller's fig. 39. On closer examination, however, it can be seen that the spicules are present, are reduced in numbers, and seldom more than 0·002 mm. thick; and often a spicule may be discontinuous throughout its length (as though breaking up).

As a result of comparing the external forms of these sponges, as well as the structure of their skeletons, there seems little doubt that they are all conspecific and that the variation in their skeletons is unimportant. Generally speaking, it seems that in the younger sponges and the newer tissues the reticulation of the fibres is more loose and the fibres themselves more heavily cored with spicules; that with maturity the skeleton is more closely knit and the proportion of spicule to spongin decreases (cf.

Burton, 1926: 265). One further point may be mentioned. In the specimen, described above as typical, the spicules have the appearance, as a result of their slender build and the discontinuous structure already referred to, of being dissolved or absorbed. Whether, in fact, this is the case is, however, problematical.

The colour of the present specimens, in formalin, was grey to fawn.

Distribution. Red Sea.

Gelliodes fibulatus Ridley

Gelliodes fibulatus Ridley, 1884: 427, pl. xxxix, fig. 1, pl. xli, fig. *b*; Ridley & Dendy, 1887: 47, pl. xii, fig. 2; Lendenfeld, 1887: 793.
Pachychalina fragilis, Lindgren, 1897: 481; idem, 1898: 290.
Gelloides ramosa Kieschnick, 1898: 47.
? *Pachychalina conulosa*, idem, l.c.: 51.
Gelliodes ramosa, idem, 1900: 565, pl. xliv, fig. 3.
? *Pachychalina conulosa*, idem, l.c.: 568, pl. xliv, fig. 8.
Gelliodes fibulatus, Hentschel, 1912: 393.
Sigmaxynissa fibulata, Burton, 1928: 115.

Occurrence. Graa, 30.i.49; Sherm-el-Moiya, 3.ii.49; Sanafir, 6.ii.49.

Remarks. It is somewhat surprising to find what appear to be typical examples of this species so far west as the Gulf of Aqaba. All records previously have been for the Malay region and the Indian Ocean (Andaman Islands).

Distribution. Malay; Indian Ocean; (? Australia).

Mycale euplectellioides Row

Esperella euplectellioides Row, 1911: 333, pl. xxxvii, fig. 12, text-fig. 16.
Mycale euplectellioides, Burton, 1926: 80.

Occurrence. Sherm Sheik, 2.ii.49; Graa, 30.i.49; Dahab, 13.i.49; Sanafir, 4 and 6.ii.49.

Remarks. The sponge occurs in irregular masses on coral, the largest being some 30 mm. across. Externally there is a close resemblance to the type, and from the condition of the several specimens, when removed from the formalin in which they were originally preserved, it is clear that a copious amount of mucus is present in life.

The skeleton is typical except that microscleres are extremely rare, none being found except in a section from one specimen, which contained a few sigmata, 0·05 to 0·08 mm. chord, and one anisochela 0·024 mm. chord.

Distribution. Red Sea; Suez Canal.

Mycale (Carmia) suezza (Row)

Esperella suezza Row, 1911: 338, fig. 18.

Occurrence. Mualla, 31.i.49; Dahab, 14.ii.49.

Remarks. Two samples are assigned doubtfully to this species. The first is a thin incrustation, orange-coloured in formalin, and a larger, irregularly massive sponge, having the same colour and general appearance. The skeleton has the same structure as the holotype of *Mycale suezza*, but in neither specimen has it been possible to find a single microsclere.

Distribution. Red Sea.

Mycale (Aegagropila) erythraena (Row)

Esperella erythraena Row, 1911: 340, fig. 19.
Mycale erythraena, Burton, 1926: 80.

Occurrence. Dahab, 4.ii.49.

Remarks. The single specimen forms a thin, irregular incrustation on coral. Its colour, in formalin, was grey. The arrangement of the skeleton approximate closely to the type, and the megascleres are typical in form and size; but in spite of repeated searching not a single microsclere has been found.

Distribution. Red Sea; Suez Canal.

Genus *PARISOCIELLA* gen. n.

Type Species. Esperiopsis anomala, Ridley & Dendy, 1886: 341.

Diagnosis. Mycaleae with skeleton an irregular reticulation of spongin fibres cored by slender tylostyli; microscleres, when present, degenerate anisochelae palmatae and toxa.

Parisociella anomala (Ridley & Dendy)

Esperiopsis anomala Ridley & Dendy, 1886: 341; idem, 1887: 84.
Ceraochalina gibbosa Keller, 1889: 386, pl. xxiv, fig. 44.
Ophlitaspongia arbuscula Row, 1911: 347, pl. xxxix, fig. 22, pl. xl, fig. 25, text-fig. 22.
O. horrida, idem, l.c.: 349, pl. xl, fig. 26, text-fig. 23.

Occurrence. Sanafir, 4 and 9.ii.49, along the shore among rocks; Abu Zabad, 10.ii.49, on reef at low tide.

Diagnosis. Sponge typically branching, surface uneven, minutely hispid; oscules not apparent; texture soft, elastic; colour alive red, in spirit greyish yellow to dark grey; main skeleton an irregularly isodictyal reticulation of fibres cored by megascleres; dermal skeleton of radiating brushes of megascleres; megascleres tylostyli, slender and often appearing as styli, 0·25 to 0·3 by 0·002 to 0·005 mm.; microscleres usually absent and never plentiful, anisochelae palmatae, 0·01 mm. chord, and toxa, 0·02 to 0·06 mm. long.

Remarks. The diagnostic features of this species are unsatisfactory, since the microscleres, even when present, exist in such small quantities and are difficult to find. Further, the main skeleton is so like that of *Mycale euplectellioides*, growing in the same habitat, that only the external form remains as a guide to identification. If, therefore, the particular specimen is macerated or fragmentary the possibility of wrong identification is great.

The present three specimens include a fragment of a branch, which is macerated, and two extensive, but low, incrustations on pieces of coral. The colour, in formalin, was orange and yellowish brown, in spirit, yellow or brown. No microscleres were found.

Distribution. Red Sea; Honolulu.

Lissodendoryx cratera (Row)

Myxilla cratera Row, 1911: 343, pl. xxxvii, fig. 13, text-fig. 20.

Occurrence. Abu Zabad, 11.ii.49.

Distribution. Red Sea.

Agelas mauritianus (Carter)

Ectyon mauritianus Carter, 1883: 310, pl. xii, fig. 3.
Agelas mauritianus, Ridley & Dendy, 1887: 164, pl. xxix, fig. 10.
A. cavernosa Thiele, 1903: 963, fig. 28.
A. mauritiana, Dendy, 1905: 174.

Occurrence. Sanafir, 6.ii.49.

Remarks. A fairly large fragment which, in formalin, was pink outside and orange in the interior.

Distribution. Indian Ocean; Malay.

Halichondria glabrata Keller

Halichondria glabrata Keller, 1891: 311, pl. xvi, fig. 9; Burton, 1926: 75.

Occurrence. Abu Zabad, 11.ii.49.

Remarks. A single, thinly encrusting specimen, in colour pale brown, both in formalin and in spirit.

Distribution. Red Sea.

Rhaphoxya typica Hallmann

Rhaphoxya typica Hallmann, 1917: 643, pl. xxix, fig. 3, pl. xxxviii, figs. 8–9, pl. xxxix, fig. 5, pl. xlii, figs. 1–2, text-fig. 17.

Occurrence. Sanafir, 6.ii.49; Abu Zabad, 10.ii.49, on reef at low tide.

Remarks. The several species which may be assigned to *Rhaphoxya* are mainly Australian and none has been previously recorded from the Red Sea, although *Anacanthaea nivea* Row might conceivably belong to this genus. Yet the present two specimens clearly belong to *Rhaphoxya* and are almost certainly conspecific with the genotype. They are both encrusting, but their general appearance and the characters of the surface agree closely with those described and figured by Hallmann, except that the pore-areas (?), in his pl. xxxviii, fig. 8, are not so numerous in the 'Manihine' sponges. There is, also, a close agreement in the shape of the spicules and their arrangement in the skeleton, except that the trichites are not numerous and, as far as can be seen, do not form dragmata.

A striking feature of the anatomy concerns the presence of numerous oval groups of cells, looking very like embryos, which they may well be, except that they vary somewhat in size, from 0·08 to 0·2 mm., with 0·12 mm. as the average, across the long axis. The tissues of the sponge contain numerous brown pigment cells in the surface layers, and the 'embryos' lying in the surface tissues are also filled with them.

Distribution. Australia.

Order KERATOSA

Aplysilla lacunosa Keller

Aplysilla lacunosa Keller, 1889: 356, pl. xxii, figs. 19–22.

Occurrence. Sanafir, 6.ii.49.

Remarks. A single, very small, incrusting specimen, purple in colour, showing the typical fibres (see Keller, l.c., pl. xxii, fig. 22).

Distribution. Red Sea.

Megalopastas erectus Row

Megalopastas erectus Row, 1911: 360.

Occurrence. Sherm Sheik, 11.i.49; Dahab, 14.ii.49.

Remarks. The two specimens form irregular encrustations, with the surfaces irregularly conulose. The colour of one, in formalin, was purple, in spirit it turned to a deep violet; in the other it was fawn in formalin and the same in spirit.

Distribution. Red Sea.

Spongia officinalis Linnaeus, var. *arabica* (Keller)

Euspongia officinalis, var. *arabica* Keller, 1889: 342; Topsent, 1906: 558; Row, 1911: 379.

Occurrence. Abu Zabad, 10 and 11.ii.49, on reef at low tide; Sherm-el-Moiya, 3.ii.49; Sanafir, 9.i.49.

Remarks. There are two typical specimens, two very small specimens in which the skeleton only remains and which are doubtfully assigned to this species, a fifth, typical but very small, and a sixth specimen which agrees in general appearance, but has the internal tissues so crowded with sand that a better identification is not possible.

The colour in formalin varies from fawn (the specimens without flesh) to dark brown.

Distribution. Red Sea.

Heteronema erecta Keller

Heteronema erecta Keller, 1889: 340, pl. xx, figs. 4, 7, 8; Topsent, 1906: 558; Row, 1911: 369.
Duriella nigra Row, 1911: 370, pl. xli, fig. 29.

Occurrence. Dahab, 3.i.49 and 2.ii.49 and 14.ii.49, shore; Sanafir, 5.ii.49.

Remarks. The type of *Duriella nigra* and Row's specimen of *Heteronema erecta* are almost identical in external form though they differ in the structure of the skeleton. Both specimens are, however, massive and lack the digitiform processes of the type of *H. erecta*. There is also available in the British Museum collection a preparation from Keller's type, and comparing this with Row's specimens suggested, in the first place, that the only difference between *Duriella nigra* and *Heteronema erecta* lay in the much greater amount of sand in the fibres of the latter. The 'Manihine' specimens, four in all, have a sufficiently general resemblance to each other, and to the specimens described by Keller and Row, to be considered alongside them. In these, two have a skeleton approximately similar to that of *Duriella nigra*, one is much more like *Heteronema erecta*, and the fourth is intermediate between the two.

With seven specimens thus available for comparison it seems certain that the variation in the skeleton of this species (for *Duriella nigra* and *Heteronema erecta* are here accepted as conspecific) is similar to that shown by me (1934, figs. 18–33) for *Dysidia fragilis*. In other words, that according to the amount of sand present the skeleton will vary from clearly defined ascending fibres cored with sand, connected by a secondary network free of it, to a dense network in which the spongin of all fibres is almost entirely obscured by a heavy intake of sand, with no perceptible differentiation into primary (or ascending) and secondary fibres.

Supporting such a view is the fact that the amount by which the fibres are impregnated with sand varies from one part to another of the skeleton of any individual sponge.

The colour of the 'Manihine' specimens ranged, in formalin, from brown to a deep purple-brown.

Distribution. Red Sea.

Carterispongia clathrata (Carter)

(For synonymy and discussion *see* Burton, 1934: 574.)

Occurrence. Sherm Sheik, 11.i.49; Mualla, 31.i.49; Dahab, 13 and 14.ii.49; Sanafir, 9.i.49 and 4.ii.49; Sherm-el-Moiya, 3.ii.49.

Remarks. The several fragmentary specimens have the typical cavernous appearance. The skeleton differs considerably, however, from one individual to another, and these differences seem to offer a gradation from the typical skeleton of this species to that of *Eurypongia lactea.* It is possible, therefore, that *Eurypongia* may ultimately prove to be synonymous with *Carterispongia.*

The colour of the different specimens, in formalin, ranged from fawn or brown, to purple, with occasional pink patches.

Distribution. Indian Ocean; Australia; (? West Indies).

Hircinia ramosa Keller

Hircinia ramosa Keller, 1889: 345, pl. xx, fig. 5.
H. schulzei Dendy, 1905: 221, pl. xvi, fig. 3.
H. ramosa, Row, 1911: 372; Burton, 1934: 579, pl. 1, fig. 11, text-fig. 16.

Occurrence. Sanafir, 8.i.49 and 9.ii.49, littoral, growing among rocks.

Remarks. The two specimens are typical in the structure of the skeleton but show less of the ramose external form. One of them is low-lying and massive, with occasional ramose portions.

The colour of the two specimens, in formalin, was fawn and brown respectively, in spirit it is now olive-green and brown.

Distribution. Red Sea; Ceylon; Australia (Barrier Reef).

Cacospongia ridleyi, sp. n

Cacospongia cavernosa Ridley, 1884: 590; nec *C. cavernosa,* Autt.

Occurrence. Abu Zabad, 11.ii.49.

Remarks. The name *Cacospongia cavernosa* has been used by many authors for sponges from the Indian Ocean, Mediterranean, and the West Indies. Pallas (1766: 395) appears to have been the first to use the trivial name, but his *Spongia cavernosa* is not recognizable except as one of the Keratosa. Esper's (1794: 189) *S. cavernosa,* based on Pallas's specimen, has been inadequately re-described by Ehlers (1870: 30); and Lamarck's specimen (1813: 371) has been shown by Topsent (1930: 13) to be conspecific with *Ciocalypta penicillus* Bowerbank. Ridley (1884: 590) recorded specimens under *Cacospongia cavernosa* from the Seychelles, and it is with these

that the present specimens are to be identified. *C. ridleyi* agrees closely with *C. cavernosa* Schmidt (as re-described by Schulze, 1879) in external form, but the skeleton has larger meshes and the fibres are more heavily cored with sand-grains and other foreign bodies. It is, however, impossible to say, in the present state of our knowledge, whether the sponges from Seychelles and the Gulf of Aqaba represent a simple variety of the Mediterranean form. As a temporary measure at least they are here given full specific rank.

Distribution. Indian Ocean.

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Station	Position	Date	Hour L.M.T.	Sounding (metres)	Wind		Barometer (inches)	Hydrological obs.			Bathythermograph obs.		Biological observations				Remarks
					Direction	Force		Depth (metres)	Temp. °C.	S‰	Depth (metres)	Temp. °C.	Gear	Depth (metres)	Time From	Time To	
A 1	29° 26′ 30″ N.	1948	1140–	40	N.	3	29·8	0	22·1	40·8	—	—	D.M.	40	1155	1200	No catch: net torn off.
	34° 51′ 30″ E.	31.xii	1237										D.S.	40	1227	1231	No catch.
													N. 100 V.	36	1215	1225	K.T.
1	29° 30′ 54″ N.	1949	1300–	356	S.	1	29·55	0	21·59	40·79	0	21·4	N. 100 V.	*c.* 180	1340	1355	
	34° 57′ 30″ E.	15.i	1415					137	—	40·78	40	20·8					
								274	—	40·38							
2	29° 29′ 54″ N.	15.i	1435–	165	S.	1	29·55	0	21·65	40·78	0	21·3	N. 100 V.	73	1440	1455	K.T.
	34° 55′ 30″ E.		1500					137	—	40·71	40	20·8					
3	29° 27′ 00″ N.	15.i	1515–	289	S.	1	29·5	0	21·61	40·77	0	21·3	N. 100 V.	79	1550	1600	K.T.
	34° 53′ 36″ E.		1555					137	—	40·67	40	20·9					
								219	—	40·8							
4	29° 26′ 6″ N.	15.i	1625–	713	S.	1	29·55	0	21·62	40·78	0	21·3	N. 100 V.	—	—	—	Net lost.
	34° 57′ 18″ E.		1655					274	—	—	40	21·0					
								549	—	40·72							
5	29° 21′ 36″ N.	16.i	1150–	642	SW.	2	29·35	0	21·61	40·72	0	21·1	N. 70 V.	*c.* 140	1255	1310	
	34° 51′ 12″ E.		1410					137	—	40·68	40	20·8					
								274	—	40·8							
6	29° 20′ 18″ N.	16.i	1010–	697	SW.	2	29·35	0	21·56	40·74	0	21·1	N. 70 V.	*c.* 140	1105	1115	
	34° 55′ 24″ E.		1115					137	—	40·8	42	20·8					
								274	—	40·79							
8	29° 15′ 42″ N.	16.i	1350–	274	SW.	1	29·35	0	21·72	40·79	0	21·1	N. 70 V.	*c.* 140	1422	1435	
	34° 47′ 42″ E.		1440								42	20·8					
9	29° 09′ 24″ N.	16.i	1455–	830	SW.	1	29·35	0	21·57	40·75	0	21·2	N. 70 V.	*c.* 140	1515	1527	
	34° 45′ 24″ E.		1540					274	—	40·79	42	20·8					
								548	—	40·66							
10	29° 08′ 30″ N.	17.i	0845–	914	SW.	1	29·3	0	21·38	40·8	0	21·1	N. 70 V.	*c.* 180	0940	1000	
	34° 50′ 00″ E.		1000					274	—	40·72	42	20·7					
								731	—	40·68							
11	29° 03′ 36″ N.	17.i	1105–	293	SW.	1	29·3	0	21·51	40·76	0	21·1	N. 70 V.	*c.* 140	1113	1125	
	34° 43′ 00″ E.		1125								40	20·8					
12	29° 02′ 00″ N.	17.i	1015–	805	SW.	1	29·3	0	21·53	40·77	0	21·1	N. 70 V.	*c.* 180	1025	1045	
	34° 48′ 30″ E.		1045								42	20·8					
13	28° 56′ 12″ N.	17.i	1240–	1019	SW.	2	29·4	0	22·0	40·74	0	21·3	N. 70 V.	*c.* 140	1309	1325	
	34° 46′ 42″ E.		1330								40	20·7					

14	28° 57′ 00″ N. 34° 42′ 30″ E.	17.i	1145–1215	503	SW.	1	29·3	0 137 274	21·63 — —	40·73 40·75 40·74	0 42	21·0 20·7	N. 70 V.	*c.* 180	1158	1215		
15	28° 50′ 48″ N. 34° 41′ 24″ E.	18.i	0930–1000	598	S.	1	29·55	0	21·35	40·71	0 42	21·2 20·7	N. 70 V.	*c.* 180	0940	1000		
16	28° 49′ 54″ N. 34° 46′ 06″ E.	18.i	1025–1110	> 1500	S.	1	29·55	0	21·74	40·70	0 42	21·1 20·8	N. 70 V.	*c.* 180	1035	1110		
17	28° 43′ 36″ N. 34° 45′ 26″ E.	18.i	1150–1220	—	S.	1	29·55	0 137 274	21·88 — —	40·63 40·71 40·73	0 42	21·4 21·0	N. 70 V.	*c.* 180	1200	1220		
18	28° 44′ 30″ N. 34° 38′ 24″ E.	18.i	1310–1415	942	S.	1	29·55	0	21·57	40·78	0 42	21·1 20·7	N. 70 V.	*c.* 180	1348	1415		
19	28° 39′ 06″ N. 34° 38′ 00″ E.	18.i	1430–1530	> 1460	S.	1	29·5	0 137 820	21·58 — —	40·78 40·74 40·66	0 40	21·2 20·7	N. 70 V.	*c.* 180	1505	1530		
21	28° 31′ 30″ N. 34° 42′ 18″ E.	19.i	1120–1200	—	NW.	2	29·65	0 137 550	21·56 — —	40·70 40·74 40·64	0 40	21·1 20·8	N. 70 V.	*c.* 180	1145	1200		
22	28° 32′ 48″ N. 34° 35′ 00″ E.	19.i	1000–1040	—	NW.	2	29·65	0 137 550	21·22 — —	40·76 40·72 40·67	0 40	21·1 20·8	N. 70 V.	*c.* 180	1009	1040		
23	28° 25′ 36″ N. 34° 40′ 54″ E.	19.i	1230–1300	—	NW.	2	29·65	0	21·81	40·53	-0 40	21·5 20·9	N. 70 V.	*c.* 180	1240	1300		
24	28° 27′ 12″ N. 34° 33′ 20″ E.	19.i	0900–0930	850	NW.	2	29·65	0	21·20	40·75	0 33	20·9 20·7	N. 70 V.	*c.* 180	0909	0930		
25	28° 20′ 12″ N. 34° 38′ 12″ E.	19.i	1400–1430	—	N.	2	29·6	0	22·20	40·61	0 26	21·7 21·3	N. 70 V.	*c.* 180	1410	1430		
26	28° 20′ 54″ N. 34° 30′ 18″ E.	20.i	0900–0920	—	N.	3	29·65	0	21·40	40·70	0 33	21·2 21·0	N. 70 V.	*c.* 180	0903	0920		
27	28° 15′ 42″ N. 34° 28′ 00″ E.	20.i	0950–1045	—	N.	3	29·65	0 137 550	21·45 — —	40·59 40·66 40·66	0 38	21·4 21·1	N. 70 V.	*c.* 180	1020	1045		
28	28° 14′ 36″ N. 34° 35′ 12″ E.	20.i	1125–1210	—	NNE.	4	29·6	0 137 460	21·44 — —	40·66 40·66 40·66	0 35	21·3 21·0	N. 70 V. O.T.L.	*c.* 180 *c.* 250	1149 1300	1210 1500	Catch nil.	
29	28° 09′ 30″ N. 34° 30′ 6″ E.	21.i	1000–1030	—	N.	2	29·75	0	21·50	40·66	0 42	21·1 20·9	N. 70 V.	*c.* 180	1008	1030		
30	28° 03′ 00″ N. 34° 28′ 42″ E.	21.i	1100–1150	—	N.	2	29·75	0 137 550	22·38 — —	40·50 40·66 40·68	0 42	21·9 21·4	N. 70 V.	*c.* 180	1129	1150		
31	27° 53′ 24″ N. 34° 27′ 36″ E.	3.ii	1400–1445	—	N.	1	29·6	0 137 730	22·54 — —	40·48 40·46 40·48	0 38	21·7 21·1	N. 70 V.	*c.* 180	1425	1445		

Stations 7 and 20 were planned but never worked.