

SECOND ADDENDUM
TO THE MONOGRAPH OF THE AUSTRALIAN SPONGES.

BY R. VON LENDENFELD, PH.D.

HALME LAXA. N. SP.

SHAPE AND SIZE.

This sponge is similar to the digitate variety of *Halme nidus vesparum*, but it grows to a much larger size. The central bulbous mass measures 60 mm. in diameter, and is attached by a base about 40 mm. wide. From this 5-10 or more digitate processes grow upward. These attain a very much larger size in the variety *digitata* than in the variety *minima*. The whole sponge is, as the name implies, very loose in its structure. It is hollow throughout, the wall on an average 10 mm. thick. This wall is perforated by a great number of large holes which lie so close together that only narrow bridges of sponge tissue are left between them. The width of the meshes varies in the varieties. The average width however, is never less than 10 mm., whilst the thickness of the intervening walls does rarely exceed 1.5 mm. The shape of the meshes is more regular in fresh specimens than in dried ones, in consequence of the extreme laxity of the whole structure. Nevertheless, even in the fresh state, the meshes appear very much larger and more irregular than in any other species. They are of uniform shape throughout the whole body of the sponge.

SURFACE.

The surface is smooth, rendered slightly uneven in consequence of the irregular curvatures of the sponge lamellæ.

The oscula are small and circular, measuring about 1 mm. in diameter, pretty numerous and scattered irregularly over the surface. They are more numerous towards the interior than towards the outer surface.

COLOUR.

Alive very light pink, nearly white; in spirits this colour is retained. Dry skeletons are grey in consequence of the prevalence of sand.

CANAL SYSTEM.

A. VESTIBULE SPACE.

The vestibule space is developed as in *Halme tingens*, described in another paper of these Proceedings, and reminds one of Hippospongia. There is no dermal lamella at all. The lamellæ terminate distally with sharp margins. An interesting structure is the cavity which pervades the whole of the sponge. This has a width equal to a third of the diameter of the whole sponge. It must be considered as the first step towards the development of a pseudogaster, although it is divided from the outer water only by the loose network described above.

B. CANAL SYSTEM PROPER.

The subdermal cavities are very extensive, and the canals in the interior very large, many measuring 1 mm. in diameter. The ciliated chambers are very small and abundant.

SKELETON.

The network of horny fibres has very wide meshes; foreign bodies are not very abundant and form the core only of the main fibres. The main fibres have a thickness of 0.25 mm., the meshes an average width of 0.9 mm., and the connecting fibres which are free from foreign bodies, measure 0.012 mm. in thickness. The fibres are of a dark brown colour and consist of very uniform spongiolin, which does not show any indication of being stratified.

It is very remarkable that silicious spicules are found in great abundance in this sponge. Near the skin the main fibres form branches in a penicillate manner, and the branches are constituted nearly exclusively of spicules, which vary much in shape and size, but still I think it not unlikely that this sponge may belong to the silicious sponges, and that the spicules are not foreign bodies as I assume. The spicules in the surface are mostly slender and long, averaging 0.2 mm. in length and 0.003 mm. in thickness. In the interior numerous short and stout spicules are found together with slender ones such as those on the surface. These are Tr. Ac., and measure 0.08×0.007 mm., and are often inserted into the horny fibres as in the true Echispidæ. This species is one of those forms which, like certain species of Dactylochalina and Chalinopsis, are intermediate, between the horny and the silicious sponges.

I. VARIETY, HALME LAXA MINIMA.

Small and irregular, the digitate processes hardly longer than high, and the whole sponge flat and extended, more or less incrusting. The network of the sponge lamella is formed of lamellæ not more than 1 mm. thick, whilst the meshes barely exceed a width of 10 mm.

GEOGRAPHICAL DISTRIBUTION.

East Coast of Australia, Port Jackson, (von Lendenfeld.)

BATHYMETRICAL DISTRIBUTION,

30 metres.

II. VARIETY, HALME LAXA DIGITATA.

Grows to a large size, the digitate processes attaining a height of 300 mm., by a width of 70 mm. They are however, not so numerous as in the foregoing variety. The meshes of the network are much wider, averaging a diameter of 20 mm.

GEOGRAPHICAL DISTRIBUTION.

East Coast of Australia, Port Jackson, (von Lendenfeld.)

BATHYMETRICAL DISTRIBUTION.

Shallow water.

HALME GIGANTEA. N. sp.

SHAPE AND SIZE.

I distinguish three varieties of this species. These differ from each other, particularly in their outer shape and in the size of the meshes of the network of the sponge. The sponge consists of a basal mass, attaining a diameter of 100 mm., and attached by a broad base. From this, peculiar elongate more or less conic processes grow upward. These processes differ very much in their shape from the regularly cylindrical digitate processes of the foregoing species. Their greatest width is half-way up, from there they taper to a narrow point. They attain a length of 400 mm. and a greatest width in the centre of 60 mm. Very often three or more of these processes coalesce for a part of the distance to form thick lamellæ, which may attain a size of 150 by 120 mm. From the terminations of these lamellæ the distal parts of the conic processes project, so that the lamella itself attains a highly serrated margin, with 4 or 5 incisions not less than 80 mm. deep. Like the foregoing species, this one also is hollow. The cavity measures about $\frac{1}{3}$ of the diameter of the sponge. The sponge lamella itself forms a network with meshes which are much more regular and smaller than in the foregoing species. Their width varies as mentioned above in the different varieties, from 4 to 12 mm. The distal margin of the sponge lamella is slightly thickened and not sharp as in *Halme laxa*. There is, however, no trace of a dermal lamella. The meshes are more or less hexagonal.

SURFACE.

Smooth, slightly uneven.

COLOUR.

Light brown, skeletons yellowish-grey.

CANAL SYSTEM.

A. VESTIBULE CANALS.

The central continuous cavity is a primitive form of pseudogaster. The reticulation is pretty regular below the outer surface, where the lamellæ are always more or less vertical to the surface. Towards the interior however, they become slightly irregular. The straight prismatic spaces of the outer portion, lead into more oblique canals before they enter the pseudogaster.

B. CANAL SYSTEM PROPER.

The subdermal cavities are small and inconspicuous. The canals in the interior rarely exceed the width of 0.2 mm. This species therefore appears more dense than the foregoing.

SKELETON.

The skeleton of this species is similar to the foregoing.

I. VARIETY, HALME GIGANTEA MICROPORA.

With long and slender processes; the meshes of the network on an average 6 mm. in width.

GEOGRAPHICAL DISTRIBUTION.

East Coast of Australia, Illawarra, (Ramsay.)

BATHYMETRICAL DISTRIBUTION.

(?)

II. VARIETY, HALME GIGANTEA INTERMEDIA.

More irregular in shape, the digitate processes terminally more rounded; the pores or meshes of the network on an average 7-8 mm.

GEOGRAPHICAL DISTRIBUTION.

East Coast of Australia, (Ramsay); Broughton Islands.

BATHYMETRICAL DISTRIBUTION.

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III. VARIETY, HALME GIGANTEA MACROPORA.

Similar to the foregoing but with pores or meshes of the sponge reticulation about 10 mm. wide. In this variety sometimes bulbous extensions in the processes are met with. With these, extensions of the pseudogaster correspond. In these swellings, moreover, the pseudogaster has a diameter equal to half that of the sponge.

GEOGRAPHICAL DISTRIBUTION.

East Coast of Australia, (Ramsay.)

BATHYMETRICAL DISTRIBUTION.

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