

PRELIMINARY NOTES ON SOME TETRAC- TINELLIDS OF THE BAY OF NAPLES.

BY

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In the following lines I will endeavor more exactly to determine those tetractinellid Sponges of the Bay of Naples, which have been only insufficiently described and which have proved to vary to such an extent, that any one who is not well versed in systematic spongiology, can easily be misled.

The more specimens one has studied carefully and the more microscopic sections as well as preparations of isolated spicules one has compared, the more the conviction imposes itself that species vary enormously, and that each species has a great number of modifications, which at most should be called »varieties''. A good many specific names can consequently be dropped and considerable simplification can thus be obtained.

I have often insisted upon this point; however with only a moderate success. Yet I do not intend to give it up. As before, I still believe that there is e. g. but one species of *Thenea*. *Thenea muricata* (Bwk.) Gray has more than twenty synonyms. Even those species, which have been carefully described by Sollas in his elaborate Report on the Tetractinellids ¹⁾ as *Thenea schmidtii*, *grayi*, *wyvilli*, *delicata*, *wrighti*, *intermedia* etc. are according to me nothing more than varieties, for which no special name is

1) Challenger Reports. Zoology Vol XXV (1885).

wanted, unless we agree to baptise every specimen. For my forthcoming report on the Porifera in calcaria, which will be published in the well-known »Fauna and Flora of the Bay of Naples», I have figured a number of spicules of one and the same species or even specimen and I hope there again to show to what extent variations and modifications occur. In this short paper I cannot furnish the proof of many of my statements, nor even mention the views of other authors. I have taken the trouble to do this carefully in the definitiv work; for the sponges here after described the M. S. lies before me, ready for the press; many of the plates are already printed. What I publish now, is therefore by no means the result of a cursory glimpse at some preparations, but an abstract of the written report.

As to the technical terms used in this paper I refer to Sollas ¹⁾ and to a paper of my own ²⁾.

Cydonium gigas (O. S.) Soll.

Syn. 1862 *Geodia gigas* O. S.

Cf. Schmidt, Spong. Adriat. Meeres (1862) p. 50 Pl. IV figs. 8 & 9.

Sollas, Chall. Tetractin. (1888) p. 258—259.

The shape of this sponge is spherical, sometimes very regular, sometimes very irregular and resembling brains. The surface is smooth or rough. In some specimens large parenchymal oxeas project beyond the surface; in such cases the sponge feels rough. In others there are few of such spicules, but a large quantity of minute spicules (oxeas and anatriaenes). Apart from the spicules the surface looks like shagreen. At one or more places a shallow, rarely deep depression is to be seen where the proctions lie congregated together. If, what sometimes happens the depression is deep and narrow, an osculum is formed which resembles the os-

1) l. c.

2) On the Canal System of the Homocoela and on the Morphological Value of the Terms Osculum and Pore in Sponges. Tijdschr. Ned. Dierk. Ver. (2). III. 1892. p. 235—242.

culum of *Geodia barretti*.¹⁾ The size of the sponge is from 5 to 25 c. m. in largest diameter. The colour is pale buff, dirty white, greyish or pearl-coloured.

A section through the living animal shows a bluish or yellowish parenchyme and an almost white cortex. According to the shape of the sponge the outline of such a section will be regular or not. The cortex, which is rather thin, is perforated by straight little canals, already visible to the naked eye. These canals are the excurrent and incurrent chones, which end in the parenchyme in rather straight canals.

On the surface of the sponge a quantity of spots are visible, which, to the naked eye seem to be pores. These spots are however no pores at all, but correspond to the lumina of the chones. A thin tangential section shows under the microscope that on the spots, mentioned above, there are groups of stomions, of which about ten lie together. Sections at right angles to the surface of the sponge and passing through a chone, help us to understand how the entrances of the canal-system are. There is a distinct difference between endochone and ectochone. The latter begins with a wide funnel, the equivalent of the subdermal cavities in other sponges. On this funnel follows a long, straight, narrow tube (ectochone), which communicates in the ordinary way with the short dome-like endochone. Immediately in communication with these endochones are the subcortical crypts. The system of ramifying incurrent canals, either starts from here or we have first a few canals which start from the crypts, and after a while unite again in lacunae. Such seems to be the case in large specimens and we see then that the ramifying canals begin only after these lacunae i. e. nearer the sponge-centrum. The incurrent canals end into rather short and not very narrow prosodi. The flagellated chambers are hemispherical, resembling those of *Euspongia* e. g.; they are not very numerous. The aphodi are

1) There are however distinct anatomical differences between the cloacas of *Geodia barretti* and the *Cydonium* here mentioned.

generally a little wider than the prosodi; sometimes they are extremely short. After having been united with neighbouring ones, the excurrent canals end into crypts, from which the water passes into endo- and ectochones. These resemble the incurrent chones, only being a good deal wider. The ectochone is covered by the dermis in which a group of proctions are visible. The excurrent chones lie together in one, seldom more shallow depressions of the sponge-surface. There are frequently 100—200 excurrent chones in one depression.

The cortical skeleton consists chiefly of sterrasters; the dermal skeleton of one or more layers of chiasters. In addition to these some of the long parenchymal anatriaenes protrude till beyond the surface of the sponge; but these are not abundant. On the other hand there is a number of microxeas and delicate anatriaenes, projecting with the cladome. As they are never found very deep in the cortex they may be considered as dermalia¹⁾. They do not occur however in the dermis which covers the chones.

The chief part of the parenchymal skeleton consists of long oxeas. They radiate in more or less distinct bundles from the centrum of the sponge. Towards the cortex anatriaenes make their appearance. Close under the cortex the oxeas become rare and here anatriaenes, orthotriaenes and protriaenes prevail. The cladomes of the orthotriaenes form a distinct layer just beneath the cortex and above the crypts. Only a few orthotriaenes lie deeper in the parenchyme.

In the peripheral parts of the sponge the arrangement of the parenchymalia is merely a radial one. In the parts which are near to the centre, there are always some oxeas in a concentric position, i. e. at right angles to the radial bundles. I found this in many sponges, where the skeleton is for the rest a radiate one; a fact which seems to have escaped the attention of other observers.

1) These dermal anatriaenes are only seen in very carefully prepared specimens as the fine cladome easily breaks off.

In addition to these megascleres the parenchyme of *Cydonium gigas* contains an amount of various asters.

Spicules. Orthotriaene. Stout, the rhabdome long, straight, sharp-pointed. The cladi are not very long, curved, seldom abruptly bent.

Anatriaene. There are two distinct kinds. The long, slender parenchymal anatriaenes are varying in size and shape, especially with regard to the cladome. In some specimens they are remarkably rare, but always present. The minute anatriaenes occur, as is stated above in the dermis.

Protriaene. Rare; very long and slender.

Oxea. Abundant, varying in length and diameter. They are generally somewhat curved, and always shorter than the triaenes.

Styli occur in several specimens, but I do not believe them to be of any specific value.

Microxea. Abundant in the dermis, hispidating.

Sterraster. The difference of the long and short diameter of the ellipsoid is but small.

Oxyaster. Varying considerably in size. The actines are few, long, generally conical, sometimes subcylindrical, and as a rule subspined. The spines can only be seen with a high power. Transitions are found to plesiasters and pynasters. They occur chiefly in the parenchyme, but a few are seen in the cortex.

Chiaster. Sometimes knobbed. They often line a portion of a canal, but never so markedly as they do the external surface.

Found near Posillipo and Nisida; 30—50 meter.

Isops maculosus n. sp.

The shape of *Isops maculosus* is spherical, sometimes quite regularly globular, sometimes more ellipsoid or oviform. Procts and stoma's are scattered over the surface without any order; the former are rather large. No spicules project beyond the cortex and thus is the sponge smooth on the touch. The size is from 2×2 to 4×8 c. m. in diameter. The colour is dirty pale buff with irregular sepia-coloured spots of various tints.

A section through the living sponge shows a rather compact yellowish parenchyme and a very thin, somewhat paler cortex. On places where much dark pigment is present, the cortex has a brown colour. If we cut longitudinally through one of the procts, we see some rather wide main excurrent canals, which terminate into one short canal the opening of which is the proct. The stomas are easily seen with a pocket-lens, especially on the dark places of the sponge-surface as they are surrounded by an almost colourless wall. The small flagellated chambers communicate with narrow aphodi and prosodi, almost as in *Synops*. In the neighbourhood of the chambers is the parenchyme granular.

In the cortex we find some layers of spherules and here and there a few asters. Then follow two to four layers of sterrasters; around a proct there are about eight such layers.

The parenchymalia are chiefly represented by radiating bundles of oxeas and dichotriaenes. In addition to these we find asters. As is always the case in *Geodidae* we find also sterrasters in the parenchyme, but these are probably formed there in order to be transported afterwards to the cortex.

Spicules. Oxea. Straight or somewhat curved, tapering gradually towards their extremities.

Strongyles and styles occur, but they are probably oxeas or other spicules, which are stopped in their growth.

Dichotriaene. Stout, rhabdome not very long. Deuterocladi generally longer than the procladi. Often some of the deuterocladi are again bifurcated.

Sterraster. Rather large, spherical or elliptical.

Spherule. With short tubercules; irregularly spherical.

Aster. They are generally spherasters, with comparatively long blunt or pointed actines. Sometimes transitions are met with to plesiasters, oxyasters or even chiasters.

The species was found between Capri and Naples, at about 150 or 200 meter.

Synops anceps n. sp.

The shape of *Synops anceps* is rather irregular, showing some cylindrical or conical prologations of various size. On the top of these there is a little depression where the procts are lying together. The number of procts varies according to the diameter of the depression. The surface is even and smooth. The size is from 5×4 to 8×5 c. m. in diameter. The diameter of the proct areas varies from 0.4 to 1.7 c. m. The colour is pale brownish with irregular darker spots; the depressions generally sepia-brown with a pale wall around the procts.

A vertical section through the living animal across a depression, shows us a yellowish parenchyme and a whiter cortex. Some main excurrent canals are visible, ending into a proct. The parenchyme is rather compact and of the smaller canals little is to be seen. The stomas are dispersed over the sponge surface at rather regular distances from one another.

The stomas lead into narrow chones; the ectochone is long, the endochone very small or hardly developed. The subcortical crypts are very large and form a system of communicating lacunae, strengthened by pillars of parenchyme and spicules. From the crypts narrow canals start, which communicate with wide cavities, from which again narrow canals start of various size. The flagellated chambers are small, not very numerous. The prosodi are somewhat narrower than the aphodi. As stated before the main excurrent canals terminate into procts. The excurrent chones are a good deal wider than the incurrent ones and the sphincters developed accordingly.

The skeleton is not very strong. The parenchymalia are comparatively few in number, arranged radially and consisting of oxeas and triaenes. This radial arrangement is often rather inconspicuous in forms which have an irregular shape, but a transverse section of a cylindrical processus, shows us an unmistakable radial structure. In the centrum of the sponge we find chiefly oxeas; towards the periphery orthotriaenes and dichotriaenes

appear. As usual their cladomes mark out the limit between the parenchyme and the cortex. In addition to these spicules a few anatriaenes and asters occur. In the cortex we find a peripheral layer of spherasters and under these about six layers of sterrasters.

Spicules. Oxea. Stout, somewhat curved.

Orthotriaene. Rhabdome rather stout, straight, sharp-pointed. Cladi waved or straight, rather long.

Dichotriaene. Rhabdome long, rather stout, straight and sharp-pointed. The angle ϕ is about 110° . Procladi as a rule longer than the deuterocladi.

Anatriaene. Not frequent. Rhabdome long, slender. Cladi short and stout.

Oxyaster. Very frequent, especially in the parenchyme. Actines long and slender.

Spheraster. Frequent everywhere, but especially in the cortex. Actines pointed, many.

Sterraster. Spherical or ellipsoid.

Found between Naples and Capri; 150—200 meter.

Caminus vulcani O. S.

Cf. Schmidt, Spong. Adriat. Meeres (1862) p. 48; Pl. III fig. 27 and Pl. IV, fig. 6.

Sollas, Chall. Tetractin. (1888) p. 241—242.

The shape of *Caminus vulcani* O. S. is spherical, oval or ellipsoid, attached sometimes with a broad base to stones, corals or shells. Once I saw a short pedicel. The surface is smooth, as no spicules are hispidating. With a pocket lens a net-like figure can be seen. Generally there is but one single proct; I have seen one specimen with three procts. The size is from 0.7×0.7 to 5×10 c.m. in diameter. The colour is yellowish or pale greyish; according to Schmidt also dark-coloured specimens occur.

A section through the proct of a living sponge shows us a yellowish parenchyme and a greyish cortex. Two or three main excurrent canals are visible, around which the colour is more bluish transparent, owing to the hyaline connective tissue. In

some of the meshes of the network of the surface there are several stomions; in others there is no opening at all or one large stoma (?) Subdermal cavities are distinctly visible; they lead the water into the inhalant chones. The endochone is very insignificant and can generally not be distinguished from the subcortical crypt. From the crypts start short canals which open into wide spaces and from these again narrow ramifying canals start. The main excurrent canals open in somewhat various ways into the apparatus which Schmidt called »Schornstein». On the morphological value of this chimney I shall not speak here. I hope to discuss this point soon in my work for the »Fauna & Flora».

The skeleton of *Caminus* exhibits an unmistakable degeneration from the tetraxile type. The specimens which were at my disposal possess however more tetraxile spicules and less difformities than the specimens of Schmidt. The strongyles are arranged into radial bundles and, at about right angles hereon and inter se, concentric bundles of less spicules occur. In addition to strongyles and orthotriaenes, we find numerous asters and spherules. In the cortex there are some layers of spherules (dermalia) and under these several layers of sterrasters. No parenchymalia go through the cortex.

Spicules. Strongyle. Generally curved.

Orthotriaene. Rhabdome very short; cladi straight or somewhat curved. Once or twice I saw these spicules without rhabdome at all.

Sterraster. Rather large.

Oxyaster. Typically with smooth actines, sometimes with spined ones. They are not unfrequently reduced to microxeas.

Spherule. Small, almost like those of *Isops*.

My specimens were all found between Capri and Naples at a depth of 150—200 meter.

Erylus euastrum (O. S.) Ridl.

Syn. 1868 *Stelletta euastrum* O. S.

Cf. Schmidt, Spong. Küste von Algier (1868) p. 20; Pl. IV, fig. 4.

Weltner, Beitr. Kenntn. Spongien (1882) p. 45.

The shape of *Erylus euastrum* (O. S.) is irregular with one or more bluntly conical processus on which a single proct is visible. The surface is uneven, smooth; no spicules project beyond the surface. Stomas are scattered over the surface. The colour is purplish brown.

The section through the living animal at right angles through the proct shows a yellowish parenchyme and a thin dark cortex. One or two wide main excurrent canals open into the proct. The stomas are the openings of chones; no distinction can be made between endo- and ectochone, and nothing can be seen of a sphincter. Under the cortex rudimentary crypts can be distinguished. From these crypts rather wide canals start which become narrower and ramify, till they end in distinct prosodi. The aphodi are shorter and wider than the prosodi; the flagellated chambers are ellipsoid.

The skeleton of the cortex consists of about six layers of sterrasters packed closely together. The dermal part of the cortex is strengthened by microxeas, and in addition to these a few minute spherasters occur. The parenchymal skeleton shows a similar arrangement as in *Caminus*, and consists chiefly of oxeas. Strongyles are mixed with these and just beneath the cortex a few orthotriaenes occur. Between these megascleres there are abundantly oxyasters and minute spherasters.

Spicules. Oxea. They vary considerably in length; the shape is generally somewhat fusiform and not quite straight. The extremities are as a rule rather blunt. With a low power this is hardly to be seen; with a high power it becomes however clear that they are in fact blunt-ended oxeas; some of them are sharp-pointed.

Strongyle. Not as frequent as the oxeas, smaller than these, cylindrical or slightly fusiform.

Orthotriaene. Rhabdome only a little longer than the cladi, straight or slightly curved, sharply pointed. Not frequent; occurring especially close under the cortex.

Sterraster. Disc-like; the longest diameter about six time the thickness; surface granulated; outline irregular.

Oxyaster. Frequent; actines long.

Spheraster. Frequent; much smaller than the oxyasters.

Microxea. Not uncommon both in the parenchyme and the cortex; around the stomas they are very abundant and, by projecting partly into the lumen, make the stomas look irregularly shaped if seen with the naked eye. The ends are not sharply pointed; the surface is very little roughened and they are often centrotylote.

Found between Naples and Capri at about 200 meters.

Penares helleri (O. S.) Gray.

Syn. 1864 *Stelletta helleri* O. S.

1867 *Penares helleri* Gray.

? 1868 *Papyrula candidata* O. S.

1888 *Papyrula helleri* Soll.

Cf. Schmidt, Suppl. Spong. Adriat. Meeres (1864) p. 32; Pl. III, fig. 8.

Schmidt, Spong. Küst. Algier (1868). p. 18—19; Pl. IV, fig. 1.

Marenzeller in Ann. K.K. Naturhist. Hofmus. Bd. IV (1889) p. 17; Pl. III, fig. 7.

I have demonstrated ¹⁾ that Schmidt's *Stelletta helleri* has to be named *Penares helleri*; so I need not explain this again.

The shape of this sponge is elongated and spherical, broader at the top. The surface is smooth but uneven; as a rule there is but one wide proct. The stomas are scattered irregularly over the surface. The size of my specimens was from 3×3.5 to 5×8 c.m. in diameter. The colour is pale yellowish brown, somewhat darker in the neighbourhood of the proct.

The parenchyme is yellowish, the thin cortex darker. In accordance to the wide proct is the ultimate excurrent canal also rather wide; some main canals terminate herein.

1) Notes on Some Species of *Stelletta* and other Genera allied to it. In: Tijdschr. Nederl. Dierk. Ver. (2). III, Part. 1. 1890.

The stomas lead into distinct chones, which are of course very short, the cortex being very thin. No differentiation can be seen in endo-chone and ecto-chone. Subcortical crypts small; from here start the incurrent canals, which ramify soon and terminate into narrow prosodi. Aphodi and prosodi have about the same size.

The skeleton of the cortex is mainly formed by centrotylote microxeas. The parenchymal skeleton is formed by bundles, which consist chiefly of oxeas; towards the periphery just under the cortex of dichotriaenes. Between the bundles of megascleres asters occur abundantly.

Spicules. Oxea. Sharply pointed, generally curved.

Dichotriaene. Rhabdome short, at least not very long. Procladi normally shorter than the deuterocladi.

Oxyaster. Of various size; actines generally long, conical. Transitions to spherasters are not uncommon.

Microxea. Slightly curved, as a rule incipiently centrotylote. I do not know why Schmidt says that the ends are blunt; neither in my specimens, nor in an original piece from Schmidt I found them blunt, they were on the contrary sharply pointed. Found between Capri and Naples, 150 to 200 meter.

Stryphnus mucronatus (O. S.) Soll.

Syn. 1868 *Stelletta mucronata* O. S.

1880 *Stelletta carbonaria* O. S.

1888 *Stryphnus carbonarius* (O. S.) Soll.

1888 *Stryphnus mucronatus* (O. S.) Soll.

Cf. Schmidt, Spong. Küste Algier (1868) p. 19; Pl. IV, fig. 2.

Schmidt, in Arch. Mikrosk. Anat. XVIII (1880) p. 280—281.

Sollas, Chall. Tetractin. (1888) p. 192—193.

Marenzeller in Ann. K. K. Naturhist. Hofmus. Bd. IV (1889) p. 16—17) Pl. II, fig. 4.

I have united *Stelletta mucronata* O. S. and *Stelletta carbonaria* O. S. on account of the statements of Marenzeller and of a

comparison between type-slides of both. Those of *S. mucronata* I owe to the kindness of Prof. Sollas from Dublin. Sollas leaves this question of identity open; but then, he has not seen *S. carbonaria*.

The sponge occurs in the shape of irregular lumps. The surface is very rough on the touch. The stomas are difficult to be seen; they are scattered irregularly and vary much in size. Generally there is but one proct. The colour is dark brown or black.

A longitudinal section through a proct of the living sponge exhibits a rather rough substance, sepia-brown with an olive shade. Towards the periphery the colour grows darker, and this dark band simulates a cortex, but goes in fact a good deal deeper.

The procts and ultimate excurrent canals are, compared with the size of the sponge small. The stomas are the entrances of much wider lacunae which, communicating with others, form quite a lacunar system in the cortex. Under the cortex is a layer of small crypts, from which narrow canals start; these debouch into wide lacunae, from which the system of ramifying canals starts. The skeleton of the cortex consists of three distinct parts: 1. one or more layers of amphiasters, close under the outer pinacocytes. 2. a layer of small dichotriaenes and oxeas, the former placed at right angles to the surface, the latter, in the region of the claudomes parallel to the surface (tangential) 3. Some layers of tangential oxeas. Between these megascleres various modifications of the aster are to be seen.

The skeleton of the parenchyme consists chiefly of a dense mass of oxeas, which, especially towards the periphery of the sponge show a radial arrangement. Some oxeas from these radial bundles pass through the cortex and project, although but a little, beyond the surface. Just under the cortex we find again a layer of dichotriaenes. Through the whole parenchyme numerous asters are visible.

Spicules. Oxea. Stout, sharp-pointed, fusiform, not quite straight.

Stylus. Not frequent; with transitions to tylostylus and strongylus.

Dichotriaene. Small. Angle ϕ about 120° . With transitions to plagiotriaenes. Deuterocladi as a rule shorter than procladi.

Oxyaster. Actines slender.

Amphiaster. Very minute.

Found between Capri and Naples (150 to 200 meter); Secca di Benda Palummo (40 meter).

Ancorina cerebrum O. S.

Syn. 1862 *Stelletta wagneri* O. S.

1862 *Stelletta immunda* O. S.

1862 *Ancorina verruca* O. S.

1867 *Stelletta wagleri* Gray.

1867 *Ancorina crebra* Gray.

1867 *Ancorina virescens* Gray.

1878 *Ancorina verrucosa* Claus.

1888 *Ancorina wagneri* Soll.

1889 *Ancorina radix* Marenz.

Cf. Schmidt, Spong. Adriat. Meeres (1862) pp. 46, 51 und 85 (!);
Pl. IV, fig. 3; Pl. III, fig. 28.

Marenzeller in Ann. K. K. Naturk. Hofmus. Wien. (1889)
p. 13—15; Pl. III, fig. 5 und 6.

Von Marenzeller has sufficiently proved that *Stelletta wagneri* O. S. = *Ancorina cerebrum* O. S. = *Ancorina verruca* O. S. I investigated type-specimens of all these sponges and I can only agree with Marenzeller. Only it seems to me probable that *A. radix* Marenz. ought also to be included, especially as I found in the Naples specimen both oxyasters with long slender actines and such with short, conical ones; there are moreover very few dichotriaenes but on the other hand sanidasters which are smaller than in the type-specimen of *A. cerebrum*. I will discuss this in extenso in the »Fauna and Flora" where I have illustrated these points with figures after the original specimens.

The shape of my specimens is irregular. The surface is even, but nevertheless rough to the touch. A shallow depression is visible in which lie the proctious. The colour is greyish blue.

A vertical section through the living animal shows a yellowish parenchyme. The cortex is bright yellow; its peripheral part dark grey. Only a few main excurrent canals are visible. On the surface one can see stomions irregularly dispersed. They are the entrances of short canals and lacunae, which then communicate with irregular chones, which however in certain cases can be distinguished. Under the fibrous cortex is a layer of crypts, from which ramifying canals start. Prosodi and aphodi are both narrow, rather long. The aphodi unite into groups and debouch into main canals, which communicate with crypts. The excurrent chones are as irregular as the incurrent ones.

The skeleton is arranged radially. Bundles of oxeas radiate from a common centre. Towards the periphery plagiotriaenes and anatriaenes appear. These bundles pass through the cortex, but do not project beyond the sponge surface. The cortex is distinctly marked out by the fibrous tissue of the innermost parts. The peripheral, lacunar part is without fibres, but is strengthened by radial protriaenes. The dermal skeleton is formed by a single layer of sanidasters. Both in the cortex and in the parenchyme there are numerous oxyasters and on some places chiasters.

Spicules. Oxea. Stout, straight or curved.

Plagiotriaene and *dichotriaene*. In some specimens there are more in other less dichotriaenes, but always they seem to be two modifications of one kind. The cladi are always very stout and short.

Anatriaene. The cladome varying somewhat in shape.

Oxyaster. Actines generally slender; but sometimes short, conical.

Chiaster. Actines varying in length, more or less distinctly knobbed.

Sanidaster. Very minute, frequent in the dermis.

Stelletta grubii O. S.

Syn. 1862 *Stelletta boglicii* O. S.

1864 *Stelletta dorsigera* O. S.

1868 *Stelletta anceps* O. S.

1888 *Astrella anceps* Soll.

1888 *Astrella dorsigera* Soll.

- Cf. Schmidt, Spong. Adriat. Meeres (1862) p. 46—47; Pl. IV, figs. 2 und 4.
 Schmidt, Suppl. Spong. Adriat. Meeres (1864) p. 31—32; Pl. III, figs. 6 und 7.
 Schmidt, Spong. Küst. Algier (1868) p. 31.
 Sollas, Chall. Tetractin. (1888) p. 181—182.
 Marenzeller in: Ann. K. K. naturhist. Hofmus. Wien. Bd. IV, (1889) p. 10—11; Pl. II, fig. 1.
 Auchenthaler *ibid.* p. 1—6; Pl. I.
 v. Lendenfeld und Schulze in: Anh. Abh. Akad. Wiss. Berlin. (1890).

The shape of *S. grubii* O. S. is as a rule irregularly spherical; Auchenthaler described a flat specimen. The surface is generally covered by foreign bodies or other sponges; if cleaned from these often the honeycomb-like appearance as Schmidt stated for his *S. dorsigera*, is conspicuous. They can reach the size of a child's head. The colour is dark violet-grey, brownish black or greyish.

A section through the living animal exhibits a pale yellowish parenchyme and a dark cortex. Cortex and parenchyme are often sharply separated from each other by a white line of demarcation. The parenchyme is rather compact and shows some large holes: the sections of main exhalant canals. The water enters through stomions into canals which are sometimes rather long and debouch together into a chone. The chones are by no means always distinctly marked out; but a comparison between many sections of this sponge and of others seem to prove that we have in fact to do with chones.

Under the fibrous cortex there is a system of crypts. Under the dermis there is a system of subdermal cavities, which are however not always easily recognised, e. g. under the stomions. Still, I think it quite certain that a portion of the first inhalant canals is due to these cavities. Large lacunae are in communication with the crypts. It is only from these lacunae that the ramifying inhalant canals start. The prosodi are a little longer and

narrower than the aphodi. The flagellated chambers are ellipsoid.

The skeleton consists chiefly of radiating bundles of oxeas. The nearer to the cortex, the more plagiotriaenes appear. The bundles traverse the cortex; here the plagiotriaenes prevail. There is no special cortical skeleton; a dermal skeleton is formed by one or more layers of chiasters. The honeycomb appearance of some specimens is due to the fact that between the bundles of megasccleres the cortex remains thinner and thus forms small depressions. In specimens where the growth of the cortex is equal, no such depressions are visible and the sponge-surface can then even look quite plane.

Spicules. Oxea. Stout, straight or very slightly curved, sharply pointed; the extremities not unfrequently teat-like.

Plagiotriaene. Stout; cladi short, conical, straight or abruptly curved; angle ϕ on an average 120° , but varying between 110° and 140° .

Oxyaster. Actines as a rule cylindrical, blunt.

Chiaster. Resembling the parenchymal oxyasters, but smaller.

Microxea. Not frequent, sometimes very rare (or absent?).

Poecillastra fragilis n. sp.

The shape is that of a flat cake, slightly curved. The convex side bears the stomas, the concave side the procts. The latter are larger than the former and surrounded by a light yellow wall or ring. The colour is dirty yellow or buff.

A transverse section does not show large (excurrent) canals; the substance resembles crumb of bread. Under the dermis there is a system of subdermal cavities, which communicate with wide lacunae; from these start the ramifying incurrent canals. Prosodi short, not very narrow. Aphodi wider than the prosodi. Flagellated chambers ellipsoid. The exhalant canals terminate into simple procts.

The dermal skeleton consists of some layers of microxeas, and some few oxeas, lying parallel to the surface, centrifugal from

the subdermal cavities. In the region of this lacunar system we find calthrops, the rhabdome of which lies partly in the dermis.

The parenchymal skeleton consists chiefly of oxeas placed in bundles in three directions vertically on each other. In addition to the oxeas there are calthrops and asters.

Spicules. Oxea. Stout or slender, straight or curved.

Calthrops. Varying considerably in shape. Hardly two are exactly like each other.

Anatriaene. Very rare; perhaps of no specific value.

Oxyaster. Not very frequent. Transitions to plesiasters and spherasters.

Microxea. Extremely frequent. With high power very minute spines or knobs are visible.

Found between Capri and Naples; 150 to 200 meter.

Poecillastra cumana n. sp.

The shape closely resembles the leaf of a water-lily, or what in Botany is called obtusely cordate. The surface is rather smooth on the touch. On one side of the very thin sponge numerous procts are visible; on the other side still more stomas. The size is about $9 \times 7 \times 1$ c.m.

A transverse section through the leaf-like sponge shows a much looser tissue than that of *P. fragilis*. Large lacunae are visible. In fact the whole canal system is lacunar. The stomas communicate with subdermal cavities. The arrangement of the skeleton is like that of *P. fragilis*. The presence of numerous asters in the dermis distinguishes this species, among other characters, from *P. fragilis*.

Spicules. Oxea. Much more slender than those of *P. fragilis*.

Calthrops. Varying in shape.

Anatriaene. Very rare; perhaps of no specific value.

Oxyaster. Very abundant.

Microxea. Generally smaller than those of *P. fragilis*; often centrotylote. Found in the Bay of Cumae; 150 meter.