# Report on a Collection of Sponges made in South Saghalin by Mr. Tomoe Urita.

By

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# Report on a Collection of Sponges made in South Saghalin by Mr. Tomoe Urita.

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(With Pls. VII–VIII and 6 text-figs.)

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The sponge fauna of the Asiatic waters to the north of Japan is practically unknown to us. A few records of sponges are known to us from the Behring Seas, and a few, of doubtful value, from the Sea of Okhotsk; and because Saghalin and the Sea of Okhotsk lie between the Arctic seas to the north and the warmer Japanese seas to the south, records from this area might be expected to yield interesting and important information. I am indebted therefore to Dr. Sanji Hôzawa for the privilege of working through the collection of sponges made by Mr. Tomoe Urita in South Saghalin.

The specimens are deposited in the Biological Institute of the Tôhoku Imperial University.

The number of species represented in this collection is 8. Of these, 1 is believed to be cosmopolitan, or nearly so, 2 are new, 1 has been recorded hitherto only from Japan, 1 from Norway, and the remaining 3 are typically Arctic.

The list of species is:—

1. *Semisuberites arctica* Carter.
2. *Uritaia*, gen. n. *halichondroides*, sp. n.
3. *Halichondria panicea* (Pallas).
4. *Halichondriella corticata* Burton.
5. *Eumastia sitiens* Schmidt.
6. *Suberites domuncula* (Olivi).
7. *Rhizaxinella clavata* Thiele.
8. *Aplysinopsis lobosa*, sp. n.

Because the Saghalin area is likely to prove unusually interesting, when its fauna is more completely known, and in order to that there shall be no doubt as to the identification of the sponges herein recorded, I have included as many photographs as possible, even of the more familiar species.

## 1. Semisuberites arctica CARTER.

(Pl. VII, figs. 1–2; text-figs. 1–3).

*Semisuberites arctica* CARTER 1877, p. 39, pl. 1, fig. 1, a–c).
*? Veluspa polymorpha* var. *cribrosa* MIKLUCHO-MACLAY 1870, p. 6, pl. i, figs. 12, 13;
*Cribrochalina variabilis* et varr. *crassa, salpingoides* VOSMAER 1882, p. 36, pl. i. figs. 16, 17, pl. iii, figs. 67–69, pl. iv, figs. 146–147; *C. sluiteri* LEVINSEN 1886, p. 14, pl. xxix, figs. 6–9, pl. xxx, fig. 6; *C. sluiteri* SWARTZEWSKY 1906, p. 335, pl. xi, fig. 4, pl. xv, fig. 23; *C. variabilis* FRISTEDT 1887, p. 418, pl. xxvi, fig. 4; *Stylaxia variabilis* TOPSENT 1913, p. 53; *Semisuberites arctica* TOPSENT 1919, p. 2.

*Occurrence.* — East Coast, off Sakaehama, South Saghalin, 20 fathoms; bottom, mud; September, 1929.

*Remarks.* — The species, although first described by CARTER, received a more complete description by VOSMAER (l. c.) when he established the species *Cribrochalina variabilis* for the reception of some sponges from the Barents Sea. These were divided two groups representing two varieties (varr. *crassa* et *salpingoides*) but it is evident, in view of the remarkable similarity between them, that this was quite unnecessary. In both varieties the sponges were stipitate, with cylindrical bodies ending in trumpet-shaped upper ends, the mouths of the trumpets being represented by shallow depressions bearing numerous oscula. A description of the skeleton was not given, but the spicules were stated to be styli which may occasionally become slightly subtylostylote. One of the co-types of the species is in the British Museum collection and from this the skeleton may be described

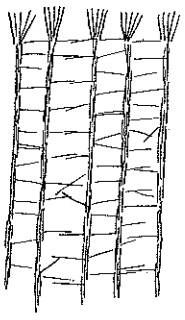


Fig. 1.

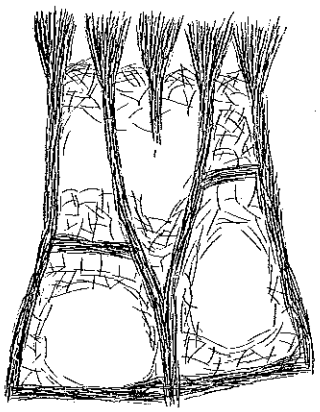


Fig. 2.

Text-figs. 1, 2. Sections at right angles to the surface to show the range of variation in the skeleton in *Semisuberites arctica* CARTER (Semi-diagrammatic).
1. From a co-type of *Cribrochalina variabilis* VOSMAER in the British Museum;
2. From the specimen collected by Mr. URITA at Saghalin.

as a subisodictyal reticulation of styli, with multispicular fibres running vertically to the surface and ending there in brushes of spicules. Isolated spicules scattered between the vertical fibres and arranged somewhat transversely to the primary fibres (text-fig. 1) give the effect of an isodictyum. The styli are variable in size and measure up to .36 by .008 mm.

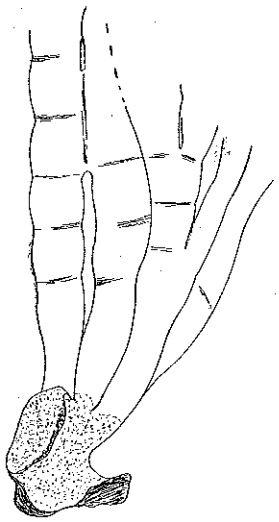
LEVINSEN recorded from the Kara Sea, under the name of *Cribrochalina sluiteri* VOSMAER, a number of specimens which obviously belong to *C. variabilis*. They differed from the type of the latter species in having a single oscule in the apical depression and in having spicules which vary from .2 to .64 mm. in length; and one of them was clavate rather than trumpet-shaped. It may be noted that LEVINSEN's suggestion that *C. variabilis* and *Auletta elegans* VOSMAER are synonymous with *C. sluiteri* is quite erroneous.

Other specimens have since been described by a number of authors, under various specific names. FRISTEDT's specimens varied from cylindrical, with cribriform oscular plate at the summit, to subinfundibuliform. SWARTZEWSKY's sponge was clavate like the one figured by LEVINSEN. TOPSENT described a number of specimens from Hope Island, near Spitzbergen, which appear to agree closely with those previously described, and in these the styli varied from .06 to .315 by .003 to .006 mm. One of these was remarkable for the long fibres, of spongin and spicules, found in the skeleton. In this work, TOPSENT created a new genus, *Stylaxia*, for the reception of *Cribrochalina variabilis*.

The specimen from Saghalin is stipitate and consists of a bunch of erect branches which vary from clavate to cylindrical or sub-infundibular. The height of the sponge is 14 cms. and the diameter of the branches varies from 1 to 2.5 cms. Here and there oscula are found on the sides of the branches but in all cases the summit of the branch bears a cribriform oscular plate (pl. VII, fig. 2). The branches show a tendency to fuse at the points where they meet.

The surface of the specimen is even, but the branches show an annular outline in places. The skeleton consists of a coarse reticulation of spiculofibre with a dense palisade of dermal brushes (text-fig. 2). The styli measure up to .3 by .007 mm. The presence of copious spongin in the skeleton shows that this specimen approximates closely to the fibrous specimen described by TOPSENT.

*Veluspa polymorpha* var. *cribrosa* MIKLUCHO-MACLAY (l. c.), so inadequately described, is probably synonymous with this species and has a close resemblance to the present specimens.



Text-fig. 3. The lower part of the Saghalin specimen of *Semisuberites arctica* CARTER, to show the dead portions (shaded) of an older sponge attached to the base of the present individual.

An interesting feature of the present specimen is that it has quite evidently grown from the base of another, presumably larger individual, that the latter had died and the remains of its base are left. The dead tissues extend for a short way up the stalks of the living branches, and these can be recognised by their lighter colour and greater compressibility. (text-fig. 3).

*Distribution.*—Barents Sea; Spitzbergen; White Sea; Okhotsk Sea (?).

### Genus URITAIA, gen. n.

*Genotype.* — *U. halichondroides*, sp. n.

*Diagnosis.* — Axinellidae with skeleton composed of two categories of smooth styli; main skeleton a halichondroid reticulation of large styli, with a few small styli scattered between; dermal skeleton formed of brushes of smaller styli set at right angles to surface with numerous styli of similar size lying horizontally and scattered between them.

*Remarks.* — The genotype has a strong resemblance to *Amorphilla halichondroides* THIELE, and was at first sight mistaken for it. For this reason, a discussion of the systematic position of THIELE's species is given below under *Hymeniacidon.*

### Genus HYMENIACIDON BOWERBANK.

*Genotype.* — *Spongia sanguinea* Grant.

*Diagnosis.* — Axinellidae with skelekton of smooth styli, not differentiated into categories, forming a halichondroid main skeleton and a special tangential, dermal skeleton.

*Remarks.* — In the majority of specimens of *Hymeniacidon sanguinea*, the dermal skeleton is easily seen, though in a few it is not strongly marked and is difficult to observe. The presence of this dermal skeleton appears to have been entirely ignored until THIELE (1898, p. 44) founded the genus *Amorphilla* for species which differed, according to him, from those of *Hymeniacidon* in the presence of a tangential dermal skeleton.

Under the circumstances therefore, *Amorphilla* must be regarded as a synonym of *Hymeniacidon*.

### 2. Uritaia halichondroides, sp. n.
(Pl. VII, figs. 3–4; text-fig. 4).

*Holotype.* — Spec. No. 9 (Pl. VII, fig. 4). In the collection of the Biological Institute, Tôhoku Imperial University.

*Diagnosis.* — Sponge irregularly massive; surface thrown into irregular ridges or tubercles; oscules few, small, inconspicuous, level with surface; colour, in spirit, ash-grey; main skeleton loose and irregular, dermal skeleton a close-set palisade of brushes of spicules; spicules slightly curved divided into 2 categories measuring .42 by .014 mm. and .26 by .007 mm. respectively.

*Remarks.* — In external appearance the holotype is practically identical with the specimen of *Halichondria panicea* shown in Pl. VII, figs. 5–9.

Text-fig. 4. *Uritaia halichondroides*, sp. n. spicules. ×200.

### 3. Halichondria panicea (PALLAS) Auctt.
(Pl. VII, figs. 5–9).

*Occurrence.* — East Coast, Sirutoru, depth unknown. Aniwa Bay, Tobuti, Shallow watter; bottom, rock; Aug., 1928. Off Sakaehama, 20 fathoms; bottom, mud; 1930.

*Remarks.* — There are three specimens, quite typical in anatomical details. The first is in every way like the specimen figured by BOWERBANK (1874, pl. xxxix, fig. 4), the second is intermediate in character between that figured on pl. xxxix, fig. 5 and pl. xi, fig. 5, and the third has essentially the characters of *Hymeniacidon firmus* BOWERBANK (l. c., pl. lxxii, fig. 1), which may be considered a synonym of *Halichondria panicea*.

There is a doubt about the actual distribution of this species, owing to the possibility of the wrong identification of specimens bearing a superficial resemblance to it. Under the circumstances therefore, it has been considered worth while to publish photographs of the present specimens in order to emphasize the truly striking resemblance to European examples of the species.

Photographs are included also of specimens from Misaki, Japan, collected from the littoral zone by Mr. INSOLE in May 1921 and deposited in the British Museum. These show beyond doubt that the species extends also to Japan.

There can be little doubt that *Spuma borealis* var. *tuberosa* MIKLUCHO-MACLAY (1870, p. 14, pl. ii, figs. 27–29) is synonymous with this species; and *S. borealis* var. *velamentosa* MIKLUCHO-MACLAY (1. c., p. 14, pl. ii, fig. 30) may be also.

*Distribution.* — Almost cosmopolitan (?).

### 4. Halichondriella corticata BURTON.

(Pl. VII, fig. 10).

*H. corticata* BURTON 1931 (M. S.)

*Occurrence.* — Aniwa Bay, off Merei, 10 fathoms, gravel, August 1928.

*Remarks.* — The specimen is an elongated, tuberose sponge, growing around a piece of seaweed. The surface is much wrinkled and bears several small, inconspicuous oscules scattered over the surface. The skeleton differs little from the holotype except that the dermal skeleton is denser and multispicular and the subdermal palisade of spicules is absent. These differences have probably little significance and may be only the result of different growth stages.

The holotype was fragmentary so that it is useful to have a record of a complete specimen.

*Distribution.* — Norway.

### 5. Eumastia sitiens SCHMIDT.

(Pl. VIII, figs. 11–12).

*?Spuma borealis* var. *papillosa* MIKLUCHO-MACLAY 1870, p. 13, pl. ii, figs. 23, 24; *Eumastia sitiens* SCHMIDT 1870, p. 42, pl. v, fig. 12; FRISTEDT 1887, p. 426, pl. xxiv, fig. 13, pl. xxvii, fig. 13; LAMBE 1894, p. 115; Id. 1896, p. 182, pl. i, fig. 1; LUNDBECK 1902, p. 31, pl. iv, figs 1–6, pl. x, figs. 9–12; ARNESEN 1903, p. 6, pl. i, fig. 1, pl. vii, fig. 1; SWARTZEWSKY 1906, p. 333, pl. xv, fig. 21; HENTSCHEL 1929, p. 994; BURTON 1930, p. 496.

*Occurrence.* — East Coast, off Sakaehama, 20 fathoms; mud; September, 1929.

*Remarks.* — There are two specimens, both massive and bearing a number of papillae. The spiculation in each is typical but in external appearance they differ slightly. The first is irregular in form and measures 9 cms. long by 6 cms. across by 5 cms. high. The texture is soft and

fragile, the dermal membrane readily ruptured and torn from the underlying tissues and the papillae small and not particularly conspicuous. It agrees closely with the specimen figured by ARNESEN (1. c., pl. VII, fig. 1).

The second specimen approximates more closely to the one figured by LUNDBECK (1. c.). It is subspherical, about 4 cms. in longest diameter, firm and incompressible, not easily broken, and bears a number of conspicuous papillae. In no case is it possible to detect the characteristic oscula on the papillae, but this may be the effect of shrinkage due to preservation.

The two specimens are of particular interest in that they suggest an explanation of the true systematic position of *Spuma borealis* var. *papillosa* MIKLUCHO-MACLAY (1870, p. 13, pl. II, figs. 23, 24). The curious drawings meant to represent this variety might very easily have been made by an unskilled artist from the two specimens here described and there is every probability that *Spuma borealis* var. *papillosa* is synonymous with *Eumastia sitiens*.

*Distribution.* — Norway, Greenland, N. E. Coast of Canada;

### 6. Suberites domuncula (OLIVI).

(Pl. VIII, fig. 13).

(For further synonymy see TOPSENT 1900, p. 225).
*? Ficulina ficus* (Linnaeus) *sensu* TOPSENT 1900, p. 203.

*Occurrence.* — Aniwa Bay, off Merei, 10 fathoms; gravel; December, 1928.

*Remarks.* — The single specimen is a large irregular mass bearing a number of lobose outgrowths and having at one point a wide opening leading into an internal chamber. The internal chamber lodges a hermit crab and the opening into it is sub-oval and measures 3 cms. by 1.5 cms. There is a second opening, on the opposite side of the sponge, measuring 7 mm. in diameter which is presumably the oscule. The specimen itself, which is a drab-grey in colour, measures 8 cms. by 7 cms. by 6 cms. The skeleton is indistinguishable from that of the European individuals of *Suberites domuncula* (OLIVI). There would be therefore no hesitation in assigning this specimen to OLIVI's species but for one circumstance, that THIELE (1898, p. 38) has described from Japan a sponge which resembles the present specimen in all respects but has in addition microstrongyla for microscleres. This sponge THIELE has referred to *Suberites suberea* (JOHNSTON), a species synonymous, according to TOPSENT (1900, p. 204), with *Ficulina ficus* (LINNAEUS). We have therefore the truly anomalous

state of affairs in which two sponges practically identical in all respects are referred not only to separate species but to different genera. The question naturally arises as to whether the presence or absence of a microstrongyla is sufficiently important to form the basis of a generic distinction. Having examined a number of specimens of *Ficulina ficus*, it is possible to say positively that these microscleres, as might have been suspected, vary considerably in the numbers in which they may be present. In one specimen they may be abundant, in another only a few will be present, and in a third they may be so rare that only careful and prolonged search will reveal them. For taxonomic purposes therefore they are valueless and *Ficulina* must be regarded as a synonym of *Suberites*.

There is yet another important point to be discussed. TOPSENT (1. c.) has included *Halichondria suberea* JOHNSTEN (1842, p. 139) as a synonym of *Ficulina ficus* (LINNAEUS), yet the sponges figured by JOHNSTON in this instance are to all intents identical with those figured by TOPSENT (1. c.) for *Suberites domuncula* (OLIVI). If now we compare TOPSENT's description of the latter with his description of *Ficulina ficus*, it becomes apparent that there is little to choose between the two species. They have the same texture, the same spiculation except for the presence of microstrongyla in *F. ficus*, and the gemmules in each case appear to differ little in structure or in the position they occupy within the maternal tissues. The only differences between them, apart from the question of the microstrongyla, are that *Ficulina ficus* is not invariably associated with mollusc shells, although it is in the majority of cases, and its shape is more irregular. *Suberites domuncula*, on the other hand, grows invariably around a mollusc shell in which a hermit crab usually dwells, and the shape is more consistently regularly massive and rounded, with no lobos outgrowths. Taking also into consideration the evidence afforded by a comparison between the specimen described here from Saghalin, and THIELE's specimens from Japan, it seems most probable that *Ficulina ficus* and *Suberites domuncula* are merely forms of a single species. At all events, the two species are congeneric and very closely related.

*Distribution.* — Europe; W. Indies; Senegal; Behring Straits; Japan, N. Pacific; Australia (fide TOPSENT 1900, pp. 208, 226).

### 7. Rhizaxinella clavata THIELE.

(Pl. VIII, fig. 14).

*R. clavata* THIELE 1898, p. 34, pl. i, fig. 19, pl. v, fig. 27, pl. viii, fig. 1; *R. excellens* Id. 1. c., p. 34, pl. iii, fig. 2, pl. viii, fig. 2; *R. arborescens* Id. 1. c.,

p. 35, pl. iii, fig 3 b, pl. viii, fig. 3; *R. elevata* Id. 1. c., p. 35, pl. iii, fig. 3 a, pl. viii, fig. 4; *R. incrassata* Id. 1. c., p. 36, pl. iv, fig. 6, pl. viii, fig. 5; *R. cervicornis* Id. 1. c., p. 36, pl iii, fig. 4, pl. viii, fig. 6.

*Occurrence.* — East Coast, Sirutoru, depth unknown, 1930.

*Remarks.* — The six species described by THIELE (1. c.) are, in my opinion, identical. Their spiculation, as also the general appearance of the surface, are alike. All are erect and branching with a tendency to swell out slightly at the tips of the branches. The differences between them all are therefore slight. In *R. cervicornis* we have a sponge with thick branches, slightly flattened in places, and in *R. elevata* the branches are slender and slightly swollen at the tips, but these two sponges have everything else in common. Moreover, the types of the other species are intermediate in form and exhibit an almost complete transition from the one to the other of the two species mentioned.

The present specimen consists of numuerous long slender branches, not exceeding 3 mm. in thickness and nowhere showing sign of the conspicuous terminal swellings evidenced in THIELE's sponges. Further, although the smaller tylostyli have much the same proportions as in THIELE's specimens, the larger seldom exceed. .8 mm. in length and .01 mm. in thickness, whereas in the Japanese forms they range from .8 to 1.9 mm. long and from .02 to .05 mm. thick. It has, however, the characteristic appearance of the surface. (pl. VIII, fig. 14). There can be therefore, little doubt that the present specimen is identical with *R. clavata*, as here understood.

*Distribution.* — Japan.

## Genus APLYSINOPSIS LENDENFELD.

*Genolectotype.* — *A. elegans* LENDENFELD. 1889, p. 379, pl. xxvii, fig. 5, pl. xxxiv, figs. 8, 11.

*Diagnosis.* — Spongiidae with skeleton of pithed fibres forming a quadratic mesh; main fibres regular, usually cored with sand; secondary fibres free of inclusions but branching and anastomosing to form an irregular network of fibres between main or ascending fibres.

### 8. **Aplysinopsis lobosa**, sp. n.

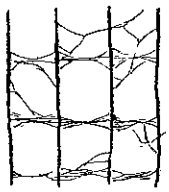
(Pl. VIII, fig. 15; text-figs. 5, 6).

*Holotype.* — Spec. No. 4. In the collection of the Biological Institute, Tôhoku Imperial University.

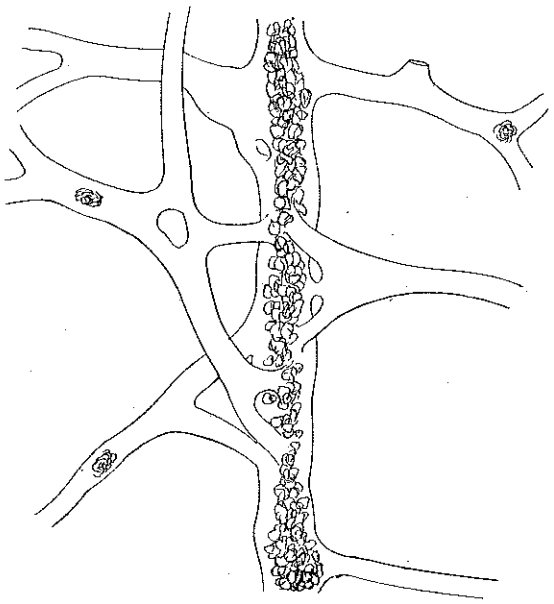
*Occurrence.* — Aniwa Bay, off Enoura; depth unknown; sandy mud; October, 1929.

*Diagnosis.* — Sponge massively lobose; surface characters unknown; skeleton a coarse reticulation of fibres of quadratic mesh; primary fibre stout, cored with sand, running in general direction from base of sponge to surface; secondary fibres irregular, with tendency to anastomose and branch in all directions, but generally without foreign inclusions.

*Remarks.* — The single specimen, although preserved in spirit, was dead long before capture, and retains no trace of the soft tissues. Under ordinary circumstances it would therefore have been doubtful whether to make it a type of a new species. Hitherto only five species of *Aplysinopsis* have been described, *A. elegans*, *A. pedunculata* and *A. digitata*, all of LENDENFELD, and *A. massa* and *A. tuberosa* of SZYMANSKI. The first three, all of which come from New South Wales, Australia, appear to belong to a single species only. Similarly, the two described by SZYMANSKI from Aegina, Mediterranean, appear to be identical forms. We can say therefore that the present species is virtually the third known to us, and for this reason is worth description, even though the material is in a poor state of preservation.



Text-fig. 5. *Aplysinopsis lobosa*, sp. n., to show the arrangement of the skeleton. ×7.



Text-fig. 6. *Aplysinopsis lobosa*, sp. n., showing a portion of the skeleton to show inclusions in the fibres. ×33.

The holotype of *Aplysinopsis lobosa*, sp. n. is a large sponge consisting of 3 lobes, with a small secondary lobe springing from the lowermost of these. It is 13 cms. high, 8 cms. across at the widest part, and 3 cms. through at the thickest point. Although the dermis is gone there can be little doubt that the surface was originally minutely conulose. No oscules are

visible, nor any exhalant openings or canals. The skeleton consists of main fibres, 3 mm. thick cored by sand grains, and the secondary fibres are 2 mm. thick. The secondary fibres are tolerably free from foreign inclusions, except for an occasional sand-grain.

The species differs from *A. elegans* LENDENFELD (syn. *A. pedunculata* et *A. digitata*) and *A. massa* SZYMANSKI (syn. *A. tuberosa*) in form, the former being stipitate with hollow digitate processes and the latter massive and low-growing. In the structure of the skeleton it makes a close approach to the Australian species but in that the fibres contain only a single row of sand-grains. The fibres of *A. massa* are much thinner, main fibres .75 to .112 mm. and secondary fibres .37 to .6 mm. thick, and there does not appear to be any trace of foreign inclusions.

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## EXPLANATION OF THE PLATES.

### PLATE VII.

Fig. 1. *Semisuberites arctica* CARTER (slightly less than natural size).

Fig. 2. *Semisuberites arctica* CARTER, seen from above and showing the cribriform oscular plates.

Figs. 3–4. *Uritaia halichondroides*, sp. n. ×1/1.

Figs. 5–9 *Halichondria panicea* (PALLAS). Figs. 5–6 from specimens from Saghalin, figs. 7–9 from specimens collected around Japan by Mr. INSOLE. ×1/1.

Fig. 10. *Halichondriella corticata* BURTON. ×1/1.

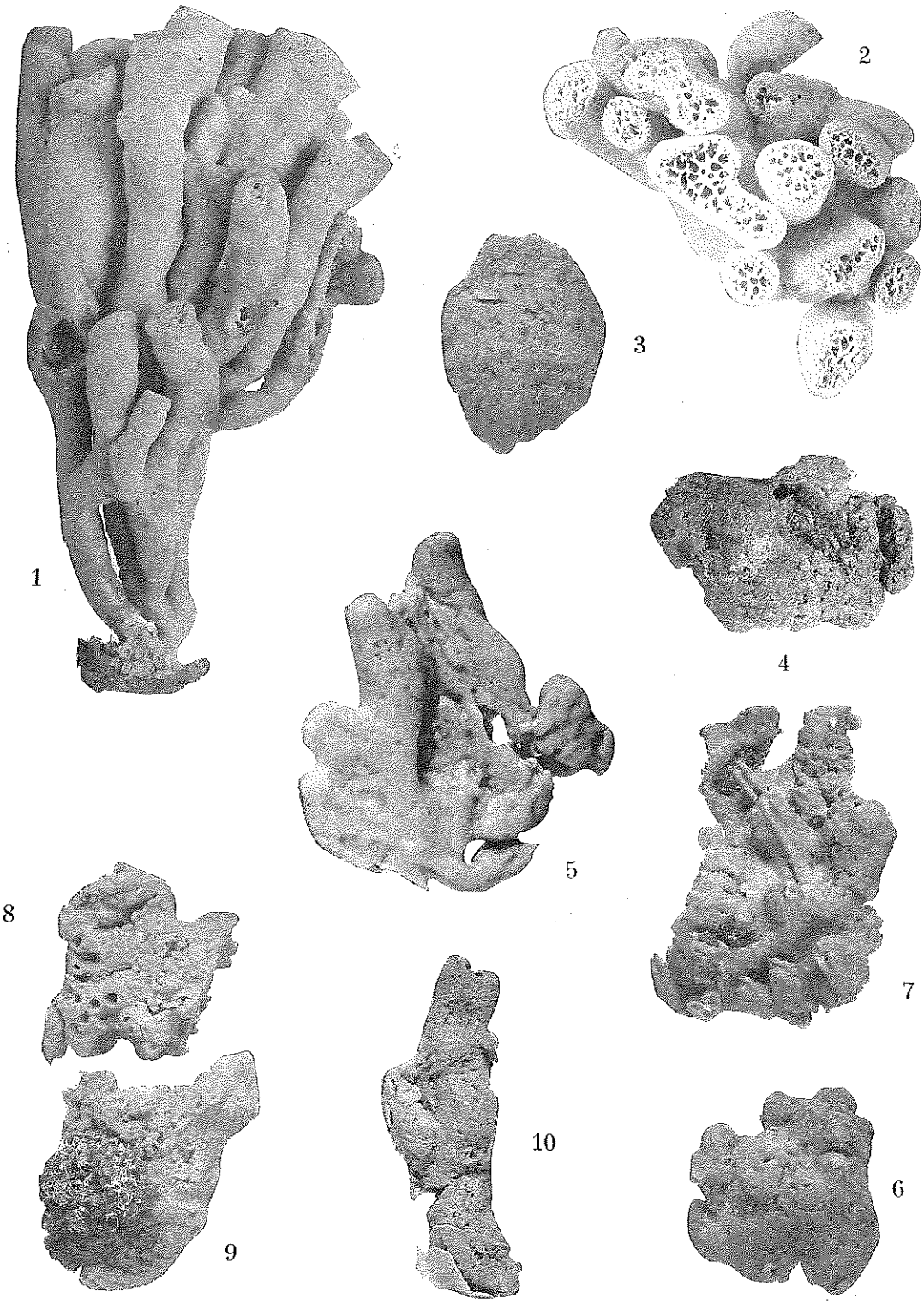
### PLATE VIII.

Figs. 11–12. *Eumastia sitiens* SCHMIDT. ×1/1.

Fig. 13. *Suberites domuncula* (OLIVI). ×2/3.

Fig. 14. *Rhizaxinella clavata* THIELE. ×1/1.

Fig. 15. *Aplysinopsis lobosa*, sp. n. ×2/3.

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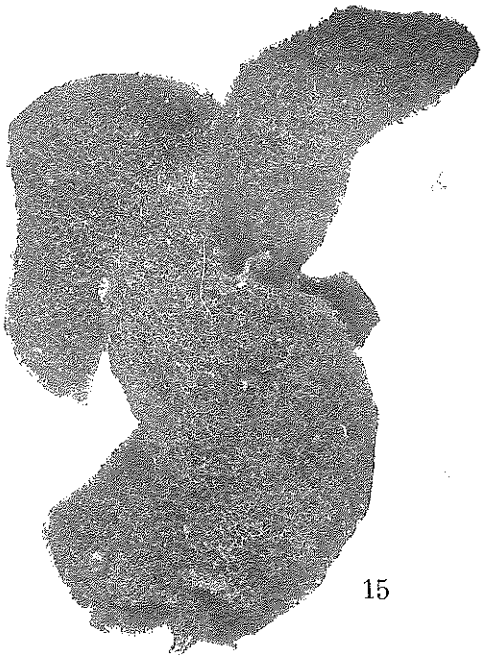

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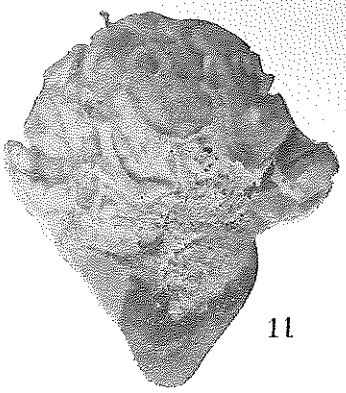

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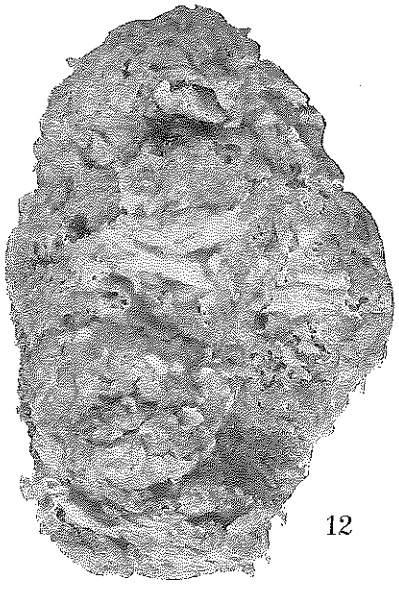

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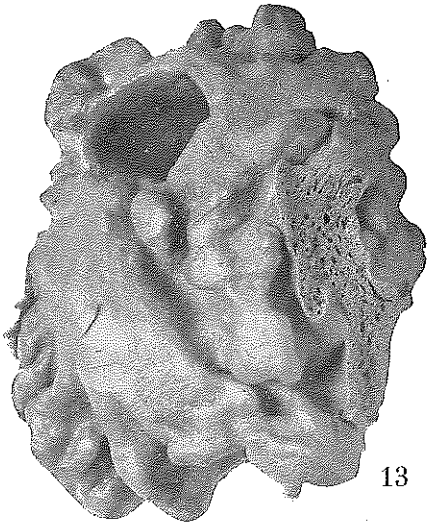

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