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Sponge-fauna of the Ariake Sea

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In 1957～'58, several series of dredgings were made by the Hama Experimental Station of the Seikai Regional Fisheries Research Laboratory for the purpose to survey the benthonic communities of the Ariake Sea and the sponges found in that collection were submitted to my examination.

The collection were made nearly all areas of the Ariake Sea using a dredge and a shrimp-net. The stations where the sponge specimens secured are shown in text-fig. 1.

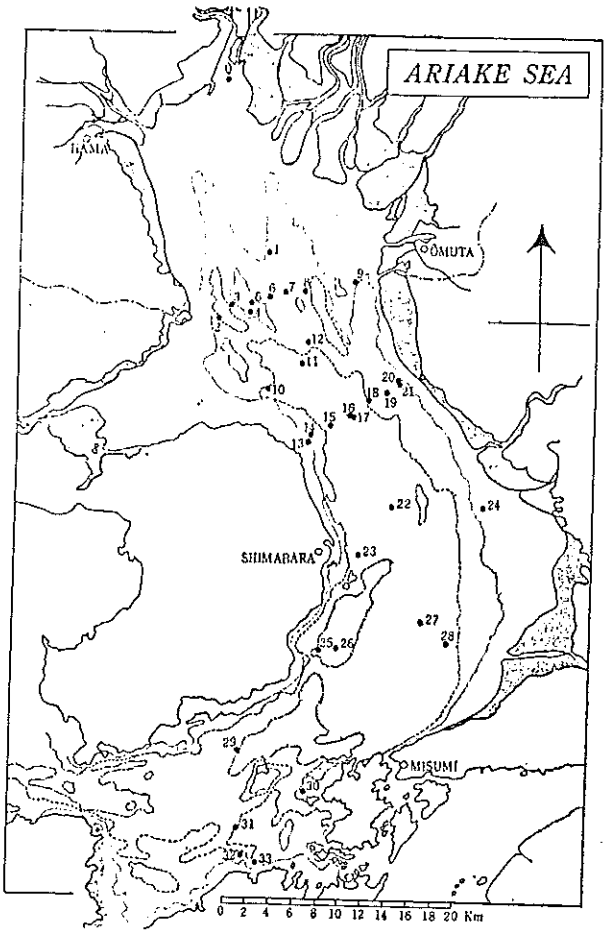
The collection is very interest and valuable, because of, firstly, until now there are no reports on the sponges of these sea-areas and secondary, the survey includes widely nearly all water areas of the bay. It is, however, a really regrettable that some of the specimens were not perfect states. All collecting materials came from one station were put in one vessel each and were preserved in formalin; some of them break-down and mixed each other. Such specimens could not identified sufficiently. These specimens together with some others which are too small to thorough study put in future study.

The species of the sponges described in this report are shown in the following table. They contain only one Calcarea and the remaining belong to the Demospongiae. Of 25 species described in the following pages contain 9 new species and 1 new variety.

Before going further, the writer expresses his hearty thanks to Dr. IKEMATSU of the Nansei Regional Fisheries Research Laboratory for his kindness of rendering the valuable specimens and the data of the survey.

SYSTEMATIC LIST OF SPECIES

Class Calcarea
  Order Heterocoela
    Family Heteropiidae
      1) *Grantessa intusarticulata* (CARTER)
Class Demospongiae
  Order Haplosclerina
    Family Haliclonidae
      2) *Haliclona permollis* (BOWERBANK)
      3) *Haliclona aquaeductus* (SCHMIDT)
    Family Desmacidonidae
      4) *Strongylacidon obtusispiculifera* (DENDY)
    Family Callyspongiidae
      5) *Callyspongia elongata*



Text-fig. 1. Map of the Ariake Sea, showing the stations where sponges were obtained.

(RIDLEY and DENDY)

6) *Callyspongia flabelliformis*, n. sp.

7) *Callyspongia ariakensis*, n. sp.

Order Poecilosclerina

Family Adocilidae

8) *Adocia cinerea* (GRANT)

Family Myxillidae

9) *Myxilla incrustans* (JOHNSTON)

Family Tedaniidae

10) *Lissodendoryx spinulosa*, n, sp.

Family Raspailidae

11) *Raspailia trachystyla*, n. sp.

Family Microcionidae

12) *Clathria fasciculata* WILSON

13) *Clathria spinispicula*, n. sp.

Family Ophlitaspongiidae

14) *Litaspongia arborea*, n. sp.

15) *Paresperella undulata*, n. sp.

16) *Mycale aegagropila* (JOHNSTON)

17) *Mycale macginitiei* DE

LAUBENFELS

Order Halichondrina

Family Axinellidae

18) *Homaxinella erecta*, n. sp.

Family Halichondriidae

19) *Halichondria panicea* (PALLAS)

Family Hymeniacidoniidae

20) *Acanthella vulgata* THIELE

21) *Acanthella minuta*, n. sp.

Order Hadromerina

Family Choanitidae

22) *Latrunculia ikematsui*, n. sp.

23) *Spirastrella abata* TANITA

24) *Spirastrella insignis* THIELE

Order Tetractinellida

Family Craniellidae

25) *Craniella globosa* var. *anamonaena*, n. var.

DESCRIPTION OF THE SPECIES

1) *Grantessa intusarticulata* (CARTER)

Hypograntia intusarticulata, CARTER, 1885, p. 45.

Hypograntia medioarticulata, CARTER, 1885, p. 46.

Grantessa intusarticulata, DENDY, 1892, p. 108; 1893, p. 181; 201, Pl. 13, fig. 18; DENDY and ROW, 1913, p. 753; HOZAWA, 1916, p. 14, P. 1, fig 4, Pl. 2, fig. 13, text-fig. 3; 1929, p. 318; 1933, p. 7; 1940, p. 37; BRÖNDSTED, 1926, p. 308; ROW and HOZAWA, 1931, p. 775; TANITA, 1942, p. 36, Pl. 2, fig. 10; 1943, p. 415; 1965, p. 45.

Grantia intusarticulata, BREITFUSS, 1897, p. 219.

Occurrence:—St. 16, Nov. 1958; by shrimp-net.

Description:—Five specimens; tubular, solitary or simple colony; the largest measures 30 mm in height, diameter of tube 2 mm. Color dirty white.

Distribution:—Australia; New Zealand; Japan—Kanagawa-, Shizuoka-, Mie-, Ishikawa-, and Niigata-Prefectures.

Remarks:—This species seems to be one of the commonest species in Japan.

2) *Haliclona permollis*(BOWERBANK)

Isodictya permollis, BOWERBANK, 1886, p. 278; 1874, p. 123, Pl. 48, figs. 9, 10.

Reniera tubifera, GEORGE and WILSON, 1921, p. 145.

Haliclona permollis, DE LAUBENFELS, 1936, p. 444; 1939, p. 1; 1942, p. 263; 1949, p. 11; TANITA, 1958, p. 130, Pl. 1. figs. 3, 4, text-fig. 2; 1961, p. 338; 1965, p. 45; 1967, p. 113.

Occurrence:—St. 6, Nov. 1958; by shrimp-net.

Description:—Fourteen small fragments; probably belong to one or two individuals. Color faded and is greyish brown in preserved state, texture soft and brittle. Even the largest one 25×25×10 mm in dimensions, with an osculum of 2 mm diameter. Skeleton consists of only small oxeas.

Distribution:—Cosmopolitan.

3) *Haliclona aquaeductus* (SCHMIDT)

Reniera aquaeductus, SCHMIDT, 1862, p. 73, Pl. 7, fig. 6; KÖLLIKER, 1864, p. 70, Pl. 8, fig. 6; CZERNIAVSKY, 1879, p. 393; OSTROUMOV,

1893, p. 153 ; SWARTSCHEWSKY, 1905, p. 14, Pl. 1, fig. 5, Pl. 3, fig. 7 ; CHICOFF, 1912, p. 31 ; BABIC, 1922, p. 223 ; DENDY and FREDERICK, 1924, p. 496, Pl. 25, fig.12 ; BURTON, 1930 ; p. 511 ; KOLTUN, 1959, p. 215, Pl. 38, fig. 2, text-fig. 174.

Reniera laxa, LUNDBECK, 1902, p. 44, Pl. 2, fig. 6, Pl. 11, fig. 13.

Haliclona aquaeductus, BURTON, 1934, p. 7 ; 1935, p. 66 ; KOLTUN, 1962, p. 186.

Occurrence:—St. 5, Nov. 1958 ; by shrimp-net.

Description:—Several small fragments, some of them tubular in shape, with round oscula of 2～3 mm in diameter. Color pale grey, texture soft.

Distribution:—Cosmopolitan.

4) *Strongylacidon obtusispiculifera* (DENDY)

(Pl. I, fig. 1, text-fig. 2)

Chalina obtusispiculifera, DENDY, 1905, p. 150, Pl. 10, fig. 9.

Occurrence:—St. 28, Sep. 1957 ; by dredge.

Description:—A single specimen, cylindrical, given off a branch near the base, 35 mm high, 6 mm in diameter. Surface hispid, were adhered other materials; no special dermal skeleton. Color nearly transparent; texture soft but elastic and tenacious. The skeleton consists of an irregular reticulation of well-developed horny fibers cored by strongyles. In the spongin fibers, many spicules run parallel to the fiber axis. The primary fibers run parallel to the body axis and the secondary ones vertically to the surface. Fibers tending to branch and anastomose in places ; distal end of fibers projecting slightly at surface.

Text-fig. 2. *Strongylacidon obtusispiculifera* (Dendy). Strongyles×100.

Spicules are strongyles only (text-fig. 2); nearly straight, equally rounded both ends; 150～190× 7～10μ.

Distribution:—Gulf of Manaar, Ceylon.

Remarks:—The specimen was identical with this species in external form, skeleton, and spicules which was first described by DENDY using a specimen obtained from Ceylon.

5) *Callyspongia elongata* (RIDLEY and DENDY)

Pachychalina elongata, RIDLEY and DENDY, 1886, p. 329 ; 1887, p. 23, Pl. 6, fig. 1.

Cladochalina elongata, BURTON, 1927, p. 510.

Callyspongia elongata, TANITA, 1962, p. 339, Pl. 1, fig. 3 ; 1964, p. 17, Pl. 1, fig. 3 ; 1967, p. 114.

Occurrence:—St. 29, Dec. 1957 ; by dredge.

Description:—Five specimens and several fragments; digitate, with one or two branches. The largest 72 mm in length, 3～6 mm in diameter. They agree fairly closely with one another in external form. In the present condition of the specimens

it is almost impossible to discover the arrangement of the pores and oscula; but there is no reason to doubt that they are arranged here as in other species of the genus, viz. the oscula on one surface and the pores on the other. All of them show a more or less strongly marked tendency to form digitate processes. Spicules only oxeas; 120~130× 6 ~7.5μ.

Distribution:—Australia; Japan—Kurushima Strait; Bingonada; Noto-Peninsula; Tajima District.

6) *Callyspongia flabelliformis*, n. sp. (Pl. I, fig. 2, text-fig. 3)

Occurrence:—St. 13, Sep. 1957; St. 12, Dec. '57; St. 7 and St. 18, Sep. '58; St. 6, Nov. '58; by dredge and shrimp-net.

Description:—There are thirteen specimens in the collection which were taken in five different stations. All of them are nearly the same in shape.

The largest specimen came from St. 12 which the writer chose as the type of this species (Pl. I, fig. 2) is thin, encrusting, irregularly flabellate, with roundish margin in shape, being attached to a small stone by one point of its under side. The surface of the sponge is smooth but undulate in general and the marginal portion is minutely hispid owing to the obliteration of its dermal skeleton. Oscula scattered both sides of the body and are round in shape with diameters of 3~4 mm and their margins raise very slightly. Pores disperse densely on the dermal membrane. The sponge measures 170×130 mm with the thickness of 4~6 mm only. Color is pale brownish white in preserved state and the texture soft but flexible and tough. The dermal membrane is distinct, thin and transparent.

The dermal skeleton is a definite, triangularly or rectangularly meshed reticulation of spiculo-fibers. The fiber contains but little horny matter and is usually uni- or bispiculous. The main skeleton is a well developed, rectangularly meshed reticulation of strong fibers. The primary fibers running vertically to the surface and the secondary ones crossing them at nearly right angles.

Spicules (Text-fig. 3) are only oxeas, smooth, sharply pointed at both ends, measuring 90~100× 3~4 μ.

Text-fig. 3. *Callyspongia flabelliformis*, n. sp. Oxeas×160.

Remarks:—This species is closely allied to *Chalina rectangularis* RIDLEY and DENDY in spiculation, but differs from the latter not only by the external form but also by the absence of dermal echinating spicules and by the thickness of spicules. This species seems to be common in the Ariake Sea judging from the numbers obtained.

7) *Callyspongia ariakensis*, n. sp. (Pl. I, fig. 3, text-fig. 4)

Occurrence:—St. 31, Sep. 1958; St. 6, Nov. '58; by dredge and shrimp-net.

Description:—This species is represented by three specimens in the collection. They differ considerably from one another in external appearance, but all of them show encrusting and flabellate in shape.

The largest specimen (Pl. I, fig. 3) is flabellate, being attached to a stone by its one corner and grown horizontally, measuring 170×65 mm in dimensions by 3～5 mm thick. The surface of the sponge is uneven. Oscula numerous, round in shape up to about 3 mm in diameter, scattered singly, each of them situates at the end of a short tubular projection and forming the termination of a wide cylindrical oscular tube. The dermal membrane is translucent and thus the inner reticulate skeleton can be seen easily through them. The color is nearly white and the texture soft but very elastic and tough.

Both dermal and main skeletons are much the same as in the preceding species, except that the reticulation of spiculo-fibres are polygonal and the spicules are scattered abundantly outside of the fibres.

Text-fig. 4. *Callyspongia ariakensis*, n. sp. Oxeas×160.

Spicules (Text-fig. 4) are oxeas. They are nearly straight, sharply pointed at both ends, measuring 90～100×4～5 μ.

Remarks:—This species is nearly allied to the preceding species, *Callyspongia flabelliformis*, but differs from the latter in having cylindrical oscular tubes, in having polygonal meshed reticulation of spiculo-fibres and the spicules of this species are thicker than that of the latter.

8) *Adocia cinerea* (GRANT)

Spongia cinerea, GRANT, 1827, p. 204, Pl. 2, fig. 3.

Halichondria cinerea, FLEMING, 1828, p. 521; JOHNSTON, 1842, p. 110, Pl. 4, figs. 3, 4.

Isodictya cinerea, BOWERBANK, 1866, p. 274; 1874, p. 121, Pl. 48, figs. 1—5.

Isodictya permollis, BOWERBANK, 1866, p. 278; 1874, p. 121, Pl. 48, figs. 9, 10.

Isodictya peachii, BOWERBANK, 1866, p. 276; 1874, p. 121, Pl. 48, figs. 6—8.

Isodictya simulo, BOWERBANK, 1866, p. 279; 1874, p. 121, Pl. 48, figs. 11—13.

Reniera cinerea, SCHMIDT, 1870, p. 77; RIDLEY and DENDY, 1887, p. 15; FRISTEDT, 1887, p. 119; LAMBE, 1893, p. 26, Pl. 2, fig. 2; LUNDBECK, 1902, p. 43, Pl. 11, fig. 10; BABIC, 1922, p. 226, text-fig. G; BRÖNDSTED 1923, p. 120, text-fig. 3; 1924, p. 452; BURTON, 1926, p. 72; HENTSCHEL, 1929, p. 898; p. 979.

Adocia cinerea, BURTON, 1926, p. 415; 1934, p. 534; 1936, p. 11; ARNDT, 1935, p. 93, fig. 200; DE LAUBENFELS, 1936, p. 445.

Haliclona cinerea, DE LAUBENFELS, 1932, p. 120, fig. 74; KOLTUN, 1959, p. 219, fig. 179; TANITA, 1964, p. 17, Pl. 1, fig. 2.

Occurrence:—St. 27, Dec. 1957; by shrimp-net.

Description:—Twenty small frag-

ments; probably belong to one or two individuls. The largest one 40×15×8 mm in dimensions, with three circular or elliptical oscula of 2～4 mm diameter. Color ashy-grey; texture soft but spongy. Surface even and smooth; pores inconspicuous. The dermal skeleton, tangential unispicular reticulation of tri- or quadriangular meshes of nearly equal sizes. Main skeleton, multispicular fibres joined by irregularly disposed isolated spicules. Spicules remarkably uniform in size, rather small, slightly curved, equally thick throughout, pointed suddenly at both ends, 130～150×7.5～9 μ.

Distribution:— Cosmopolitan.

9) *Myxilla incrustans* (Johnston) (Text-fig. 5)

Halichondria incrustans, Johnston, 1842, p. 122, Pl. 12, fig. 3, Pl. 13, fig. 5; Bowerbank, 1866, p. 249; 1874, p. 108, Pl. 44, figs. 7—12.

Halichondria saburrata, Johnston, 1842, p. 120, Pl 11, fig. 3.

Isodictya fimbriata, Schmidt, 1870, p. 56.

Isodictya barrentsi, Vosmaer, 1885, p. 27, Pl. 4, figs. 15, 16, Pl. 5, figs. 56—59.

Desmacidon incrustans, Marenzeller, 1886, p. 10, Pl. 1, fig. 2.

Dendoryx incrustans, Topsent, 1888, p. 118, Pl, 6, fig. 16; 1890, p. 201.

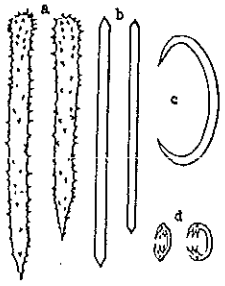
Myxilla incrustans, Lambe, 1896, p. 191, Pl. 1, fig. 10; Lundbeck, 1905, p. 132, Pl. 4, figs. 6, 7, Pl. 14, fig. 3; Dendy, 1921, p. 89; Burton, 1926, p. 80; 1935, p. 70; 1959, p. 27; Brøndsted, 1926, p. 5; Hentschel, 1929, p. 879; p. 942; Arndt, 1935, p. 58, fig. 105; De Laubenfels, 1942, p. 264; Koltun, 1959, p. 108, Pl. 13, figs. 3, 4, Pl. 14, fig. 1, text-figs. 61—65; 1962, p. 190.

Occurrence:—Sts. 1, 9, 23, and 29, Dec. 1957; Sts. 11, 15, and 18, Sep. '58; Sts. 2 and 5, Nov. '58; by dredge and shrimp-net.

Description:—There are exceedingly numerous specimens of this species in the collection obtained from nine different stations. They differ considerably from one another in external appearance and in size. The sponge consists of elongated, subcylindrical branches of about 4～8 mm in diameter, some of which aggregate compactly and shows as a whole a more or less irregularly lump-shaped. Surface not smooth, hispid irregularly. Color in formalin pale brown with faint pinkish tint; texture compact but friable.

The main skeleton is a compact, isodictyal reticulation of acanthostyles. No echinating spicules can be found and there is no recognizable spongin. The dermal skeleton is a dense felt-work of tangentially disposed acanthostyles, partly supported on feebly developed subdermal brushes of tornotes. Microscleres, sigmas and isochelas, scattered irregularly in the tissue.

Spicules (Text-fig. 5):—1) Acanthostyles (a), nearly straight, densely and rather coarsely spined all over, measuring 130～170×8～13 μ. 2) Tornotes (b), smooth, straight, abruptly pointed at both ends, measuring 150～170×4～6.5 μ. 3) Sigmas (c), rather evenly contorted, measuring 35～50×2.5 μ, abundant. 4) Isochelas (d), tridentate, length 15～20 μ, not abundant.



Texi-fig. 5. *Myxilla incrustans* (Johnston). a, acanthostyles×160 ; b, tornotes× 160 ; c, sigma×300 ; d, isochelas×300.

Distribution:—Probably cosmopolitan.

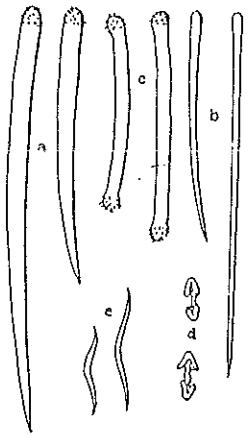
Remarks:—This species seems to be the most common in this bay.

10) *Lissodendoryx spinulosa*, n. sp. (Pl. I , fig. 4 , text-fig. 6)

Occurrence:—St. 3 , Sep. 1957 ; by dredge.

Description:—This new species is represented by a single small specimen in the collection. The sponge is irregularly massive, somewhat compressed laterally, 12× 7 × 4 mm in dimensions. The surface is minutely hispid and the central part of the body is compact. No pores or oscula visible to the naked eye. Color is pale brown in preserved state; texture moderately hard, not bristle. The skeleton is of the usual type, consisting of a stout reticulation of styles and strongyles with dermal brushes of slender styles.

Spicules (Text-fig. 6):—Styles (a) smooth, gently curved, with minutely spiny head, the other end sharply pointed, measuring 220~460×8.5~15μ. Slender styles (b) nearly straight or very slightly curved, mainly in dermal portion,



Text- fig. 6. *Lissodendoryr spinulosa*, n. sp. a, styles×100 ; b, slender styles×100 ; c, strongyles×100 ; d, isochelas×300 ; e, toxas×300.

measuring 320~410× 5 ~ 6 μ. Strongyles (c) slightly curved, feebly spined at both ends, with a slight tendency to become tylotes, measuring 180~225×10~13 μ. Isochelas (d) arcuate, of very rare occurrence, 15μ long. Toxas (e) of the usual form, not rare, 50μ long.

Remarks:—This species differs from most species of this genus in having toxas. *Lissodendoryx tawiensis* WILSON has toxa, but differs from this species in its shape and dimension of toxas and, moreover, in having acanthose styles. The characteristics of this new species are (1) have two sorts of styles, (2) feebly spined at both ends of strongyles, and (3) have two sorts of microscleres, isochelas and toxas.

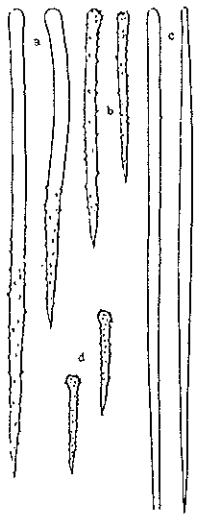
11) *Raspailia trachystyla*, n. sp. (Pl. I , fig. 5 , text-fig. 7)

Occurrence:—St. 29, Dec. 1957 ; by

dredge.

Description:—This new species is represented by a massive and some small fragments in the collection. The sponge (Pl. I, fig. 5) erect, consisting of bushly ramose mass of stout, cylindrical branches placed upon a substratum. Most of the branches appear to have arisen by simple furcation of pre-existng ones; but some few are given off in the form of small secondary branches from stouter branches. The branches tend vertically upwards and end in blunted apices. The specimen measures 12× 9 × 7 mm in dimensions. The color is nearly white in the preserved state.

The skeleton consists of a more concentrated axial portion occupying the center of each branch, from which the larger spicules, mainly trachystyles accompanying a few styles, project obliquely outwards to the surface of the sponge; that is, the spicules arranged in an Axinellid manner. The ends of the branches project beyond the surface in the form of tufts of spicules, and thereby give it hispid appearance. The short echinating spicules, acanthostyles, placed to the axis at nearly right angles.



Text fig 7. *Raspailia trachystyla*, n. sp. a, trachystyles×60 ; b, acanthostyles ×60 ; c, styles×40 ; d, echinating acanthostyles×60.

Spicules (Text-fig. 7):—Trachystyles (a) which composed main skeleton, straight or slightly curved, sparingly spined half, with smooth, round head, 500 ~720×18~23 μ. Acanthostyles (b) nearly straight, covered all over with minute sharp spines, which are most abundant at the base and apex, 270~350×16~19 μ. Styles (c) not abundant, straight, slender, passing on occasionally into subtylostyles, 800~1200×13~20 μ. Echinating acanthostyles (d) straight, sharply pointed one end, spined throughout, 110~170×7.5~9 μ.

Remarks:—This species is closely allied to *Raspailia villosa* THIELE in external form, but differs from the latter by having the large trachystyles and echinating acanthostyles. This species is very remarkable (1) for its large trachystyles which is main elements of the skeleton, (2) for scarcity of smooth styles, and (3) for the presence of echinating acanthostyles.

12) *Clathria fasciculata* WILSON

Clathria fasciculata, WILSON, 1925, p. 442, Pl. 42, fig. 6, Pl. 49, figs. 7, 8 ; DE LAUBENFELS, 1954, p. 140, text-fig. 89 ; TANITA, 1963, p. 124.

Occurrence:—St. 21, Sep. 1957 ; St.

33, Dec. '57 ; St. 5 , Nov. '58 ; by dredge and shrimp-net.

Description:—The largest specimen from Station 21, slightly flattened, branching, 50 mm long and the diameter of branches varies 2～6 mm. About twenty specimens are in one bottle of St. 21, but it seems that two or three specimens gone to pieces. One small specimen from St. 33 ; two from St. 5 . External form of all specimens nearly identical; branching, fruticose. Surface hispid. Color pale grey. Skeleton consists of spiculo-fibers, running transversally and branched go towards the surface; terminating in small processes.

Spicules:—Dermal styles, 180～300× 4 ～6.5 μ; skeletal styles, 240～280×15～21μ; both smooth, nearly straight or slightly curved. Echinating acanthostyles 70～85 × 6 μ. Isochelas, 12～15μ long, abundant in the dermal membrane.

Distribution:—Celebes; Philippines; Truk; Palaus: Japan—Seto Inland Sea, Noto-Peninsula.

13) *Clathria spinispicula*, n. sp. (Pl. I , fig. 6 , text-fig. 8)

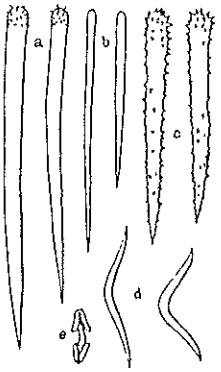
Occurrence:—St. 19, Sep. 1957; Sts. 9 and 10, Dec. '57; St. 20, Sep. '58; by dredge and shrimp-net.

Description:—There are many specimens of this new species in the collection which are collected from four different stations. Each consists of a loose agglomeration of rather slender, frequently anastomosing branches, terminating here and there in short, free apices. Their surface is not even but minutely hispid.

The sponge (Pl. I , fig. 6) which the writer select as a type of this species, is erect, roughly anastomosing colony of slender branches, 74 mm in height and 70 mm in breadth. The color is pale purplish and the consistency slightly compressible but fragile.

The skeleton is of the usual *Clathria* type, a close, more or less irregular network of horny fibres. The fibres are cored by the large styles which also form the surface hispidation, and echinated by the small acanthostyles. There is no well-developed dermal skeleton, but the superficial fibres of the main skeleton are echinated by large styles whose apices project beyond the surface. There are also the usual slender dermal styles, scattered irregularly or in loose tufts over the surface.

Spicules (Text-fig. 8):—Skeletal styles (a) long, stout, nearly straight or slightly curved, smooth except the head portion where provided with small spines, sharply pointed one end, measuring 250～280×



Text-fig. 8. *Clathria spinispicula*, n. sp.
a, skeletal styles×100 ; b, dermal styles ×100 ; c, echinating acanthostyles×200 ; d, toxas×200 ; e, isochela×300.

10~12μ. Dermal styles(b) slender, nearly straight, entirely smooth, measuring 170~220× 6~7 μ. Echinating acanthostyles (c) short, straight, entirely spined from head to sharp end, measuring 100~160× 6~8 μ. Toxas (d) 70~90× 4 μ. Isochelas (e) small, palmate, measure 10~15μ. Both microscleres are scattered irregularly through the choanosome but the isochelas only found in smaller numbers.

14) *Litaspongia arborea*, n. sp.
(Pl. Ⅱ, fig. 7, text-fig. 9)

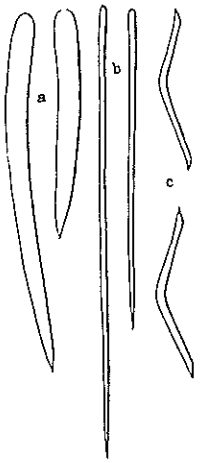
Occurrence:—St. 26, Sep. 1957; Sts. 12 and 29, Dec. '57; St. 20, Sep. '58; by dredge and shrimp-net.

Description:—There are seven specimens of this species in the collection. The sponge (Pl. Ⅱ, fig. 7) is erect, being attached to a stone by its base, from a short stem branched off dichotomously and as a whole shows a arborescent appearance. Most of the branches are in one plane, some of them unite with each other and thus reticulate loosely. The branches measure 6~10 mm in diameter and the ends of them swollen slightly and ended bluntly. Oscula and pore not apparent. The surface is even but minutely hispid. Color is light brown in preserved state and texture hard. It measures 120 mm in height and 100 mm in the greatest breadth.

The skeleton is composed of spiculofibres run vertically in the center of the branch, from which loose fibres of strong styles radiate to the surface and at the surface the pointed ends project slightly beyond the dermal membrane. Between these fibres, the spicules connect each other transversally and thus as a whole show an irregular reticulation near the dermal portion. Around the spicule-bundles, there are some amount of spongin. The dermal skeleton is composed of slender, tangentially placed styles and toxas, associating with outermost ends of radiating spicules belonging to the main skeleton.

The other specimens smaller than the type and vary in color showing dirty white or brownish grey.

Spicules (Text-fig. 9):—Styles of the



Text-fig. 9. *Litaspongia arborea*, n. sp.
a, skeletal styles; b, dermal styles; c, toxas. All×100.

main skeleton(a) smooth, slightly curved, sharply pointed one end, measuring 280~510×20~28 μ. Dermal styles(b) slender, very sharply pointed at one end, nearly straight, measuring 400~740× 4~8 μ. Toxas(c) nearly equally thick all length, both ends pointed abruptly, measuring 170~200× 2~6 μ.

15) *Paresperella undulata*, n. sp.
(Text-fig. 10)

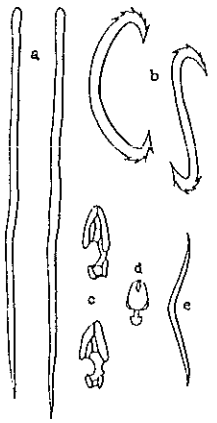
Occurrence:—St. 26, Sep. 1957; by dredge.

Description:—This new species is represented by a small massive and some smaller fragments, which all probably appertain to only one specimen, in the collection. The sponge is preserved in formalin but not good state. In the present condition of the specimen it is almost impossible to discover the arrangement of the pores and oscula and observe the detail of the dermal structure. The massive specimen is like a wet-cotton, nearly white, attached to a piece of a shell, measuring 15×6 mm in dimensions.

The main skeleton of the sponge consists of slender megascleres, mostly loosely scattered, but occasionally collected in stout multispicular fibres. Between these spicules there are scattered sigmas, anisochelas of two sizes. Toxas are also scattered among these spicules.

Spicules (Text-fig. 10):—Styles (a) long, slender, smooth, not straight, always feebly undulated, measure 370~400×7~8.5 μ. Sigmas (b) of two sizes, C- or S-shaped, all serrated at both ends; the larger measure 80~90×5 μ and the smaller 35~40×3 μ. Anisohelas also of two sizes, both palmate. The larger (c) 33~40×3 μ in length, mostly in rosettes; the smaller (d) 14~16 μ, not rosettes. Toxas (e) slender, normal form, gradually sharply pointed at both ends, measure 70~80 μ in length.

Remarks:—This new species is easily distinguished from the other members of the genus by the undulating styles and by the presence of toxas.



Text-fig. 10. *Paresperella undulata*, n. sp. a, styles×100; b, larger sigmas×160; c, larger anisochelas×200; d, smaller anisochela×200; e, toxa×200.

16) *Mycale aegagropila* (JOHNSTON)

Halichondria aegagropila, JOHNSTON, 1842, p. 119, Pl. 11, figs. 1, 2.
Esperella aegagropila, VOSMAER and PEKELHARING, 1898, p. 19.
Mycale aegagropila, WILSON, 1925, p. 426.

Occurrence:—St. 20, Sep. 1958; by dredge.

Description:—Two amorphous specimens; they consist of spiculo-fibres only as dermal membranes macerated off. Spiculo-fibres reticulate and anastomose as a whole; main skeleton composed of densely packed styles in spongin; styles arranged nearly parallel to the axis of the spiculo-fibres, 270~300×6~9 μ. Microscleres three sorts; sigmas of one type, 45~55 μ, toxas of two sizes, large

and small, 90~140μ and 45~70μ in length respectively, and anisochelas of one type, 30~35 μ in length; they scattered singly, but frequently anisochelas occur in rosettes.

Distribution:—Philippine; England.

17) *Mycale macginitiei* DE LAUBENFELS

Mycale macginitiei, DE LAUBENFELS, 1930, p. 26; 1932, p. 68, fig. 36; TANITA, 1958, p. 132, Pl. 2, figs. 7—9, text-fig. 4.

Occurrence:—St. 12, Dec. 1957; St. 5, Nov '58; by shrimp-net.

Description:—Several large fragmentary specimens conforming with this species in the details of its skeleton. Color in the preserved state drab. Dermal membrane very thin, larger parts of them macerated off; endosome like "crumb-of-bread", with spiculo-fibres.

Megascleres, subtylostyles, slightly undulated. Microscleres, three sorts; palmate anisochelas of two sizes, toxas, and sigmas; larger anisochelas are arranged in rosettes of as many as twelve spicules, small ones not in rosettes, associated with the large anisochelas. Both toxas and sigmas are distributed generally throughout the flesh.

Distribution:—Monterey Bay, California; Japan—Matsushima Bay.

18) *Homaxinella erecta*, n. sp.
(Pl. II, fig. 8, text-fig. 11)

Occurrence:—St. 21, Sep. 1957; by dredge.

Description:—There are five specimens of this new species in the collection, larger three of which are shown in Pl. II, fig. 8. All of them slender, erect, being attached to small stones, have no branches, nearly equally thick through the entire length and become thin near the upper end where a small osculum open or merely pointed.

The largest specimen which was designated the type of this species, nearly straight and measures 34 mm in height with a diameter of 1 mm. The surface of the sponge is even but minutely hispid. Color in the preserved state is pale grey and the consistency hard and flexible.

The skeleton composed of an axial core or bundles of spicules which arranged longitudinally and are packed rather densely together, united by moderately quantity of spongin. The dermal skeleton consists of similar spicules arranged in brushes obliquely to the surface. The microscleres absent.

Text-fig. 11. *Homaxinella erecta*, n. sp. Styles×75.

Spicules (Text-fig. 11):—Only styles; long, slender, smooth, straight or slightly curved, sharply pointed at distal end with slightly developed head and thus show a tendency undergo to subtylostyle, measuring 370~630× 7~10 μ.

19) *Halichondria panicea* (PALLAS)

Spongia panicea, PALLAS, 1766, p. 388.
Amorphina panicea, SCHMIDT, 1870, p. 77; FRISTEDT, 1887, p. 421.
Amorphina megalorhaphis, CARTER, 1881, p. 368; RIDLEY, 1884, p. 416; 1885, p. 571.
Halichondria panicea, JOHNSTON, 1842, p. 114, Pl. 10, Pl. 11, figs. 5, 6; RIDLEY and DENDY, 1887, p. 2, Pl. 2, figs. 2, 3; LAMBE 1893, p. 25; 1896, p. 182; DENDY, 1905, p. 146; 1916, p. 112; 1921, p. 37; BABIC, 1922, p. 220, text-fig. B; BRÖNDSTED, 1924, p. 451; WILSON, 1925, p. 394; HENTSCHEL, 1929, p. 902; p. 990; BURTON, 1929, p. 421; 1932, p. 199, Pl. 7, figs. 5—9; 1934, p. 43; p. 13; 1935, p. 75; de LAUBENFELS, 1932, p. 56, fig. 28; 1936, p. 449; 1949, p. 17, figs. 14, 15; ARNDT, 1935, p. 103, fig. 221; KOLTUN, 1958, p. 205, Pl. 36, fig. 2, Pl. 37, fig. 3, text-fig. 163; 1964, p. 90; TANITA, 1958, p. 134, Pl. 3, figs. 12—15, text-fig. 6; 1963, p. 125; 1964, p. 18; BERGQUIST, 1961, p. 41; LITTLE, 1963, p. 51, fig. 20.

Occurrence:—St. 4, Dec. 1957; by dredge.

Description:—This well-known species is represented by two small fragmental specimens in the collection.

Distribution:—Cosmopolitan.

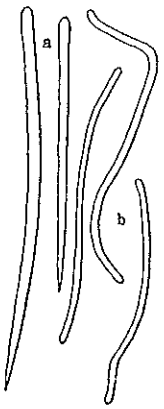
20) *Acanthella vulgata* THIELE (Pl. II, fig. 9, text-fig. 12)

Acanthella vulgata, THIELE, 1898, p. 53, Pl. 3, fig. 8, Pl. 8, fig. 35.

Occurrence:—St. 26, Sep. 1957; by dredge.

Description:—A single specimen; attached to a stone by its base; several branches stand upwards, from which many small branches get off laterally and are connected by thin web-like dermal membranes between them. Each central axis has numerous hispidate processes and thus shows an irregular plumose appearance. Total height 40 mm and the breadth 52 mm. Color nearly white; texture hard, not flexible.

The main skeleton consists of longitudinally placed, slender strongyles and forms a dense central axis, from which styles radiate to the surface in brushes whose apices project slightly beyond the surface. There is no dermal skeleton.



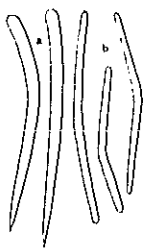
Text-fig. 12. *Acanthella vulgata* Thiele. a, styles; b, strongyles. All×40.

Spicules (Text-fig.12):—Styles (a) nearly straight or slightly curved, smooth,

varying in length, 420~1000×16~20 μ. Strongyles (b) usually shorter and thinner than the styles, sinuously curved, 650~900×10~12 μ.

Distribution:—Sagami Bay.

Remarks:—This is the second report of this species from Japan.



Text-fig. 13. *Acanthella minuta*, n. sp. a, styles; b, strongyles. All×50.

21) *Acanthella minuta*, n. sp.
(Pl. II, fig. 10, text-fig. 13)

Occurrence:—St. 29, Dec. 1957; by dredge.

Description:—There is a single specimen in the collection upon which this new species is established. The sponge (Pl. II, fig. 10) is massive as a whole, composed of numerous, columlar, thickly-set branches. It measures 12 mm high, 21 mm broad and 8 mm thick. Each branch has several short branches and shows a tree-like appearance, and the diameter is 1~2 mm only with the height of 5~6 mm. The specimen is nearly white in preserved state in formalin and the texture slightly hard.

The skeleton is very strongly developed, consists of nearly longitudinally placed spicules and forms a dense central axis. From this axis styles radiate obliquely to the surface in brushes and thus give a hispidation to the surface. There is of course no dermal skeleton.

Spicules (Text-fig. 13):—Styles (a) smooth, slightly curved, measuring 300~600×13~22 μ. Strongyles (b) also smooth, always curved like toxas with rounded ends, measuring 300~500×12.5~15 μ.

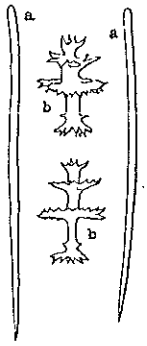
22) *Latrunculia ikematsui*, n. sp.
(Pl. II, fig. 11, text-fig. 14)

Occurrence:—St. 13, Sep. 1957; by dredge.

Description:—This new species is established upon a single specimen in the collection. The sponge (Pl. II, fig. 11) is a strongly compressed mass, 14 mm high, 20 mm broad and only 3 mm thick. The surface of the specimen is nearly smooth to the naked eye; the inner portion of the body is compact but the marginal portion moderately soft to touch. Oscula and pores not apparent. Color in formalin is yellowish grey and the texture slightly spongy.

The dermal skeleton composed of a single layer of vertically placed discorhabds. Beneath the dermal skeleton there is a loose and irregular reticulation of slender spicules, some of which form spiculo-fibres.

Spicules (Text-fig. 14):—Styles (a) nearly straight or slightly curved, smooth, sharply pointed at one end and of nearly even thickness all over, measuring 280~320×6.5~8 μ. Discorhabds (b), the base roughly spined, with three whorls. The first is of the greatest diameter and



Text-fig. 14. *Latrunculia ikematsui*, n. sp.
a, styles×100; b, discorhabds×300.

placed vertically to the axis, the second is bending a little towards the apex, the third is distally placed with spines nearly parallel with the axis; the length of the whole spicule 32~38 μ with 20~22 μ in diameter of the largest whorl.

Remarks:—This species is closely allied to *Latrunculia laevis* LINDGREN and *L. spinispiraefera* BRONDSTED, but LINDGREN's species has a larger spicules than this species and moreover has tylostyles in addition to styles. *L. spinispiraefera* resembles to this species in spiculations, but differs from this species by the external form and by the presence of spinispirae. This species is easily distinguishable from the other members of the genus by the dimensions of spicules and the shape of discorhabds.

I have much pleasure in naming this species after Dr. IKEMATSU, to whom I am indebted for the opportunity of studying and describing this valuable collection.

23) *Spirastrella abata* TANITA

Spirastrella abata, TANITA, 1962, p. 348, Pl. 4, fig. 16, text-fig. 8; 1967, p. 117, Pl. 2, fig. 9.

Occurrence:—St. 29, Dec. 1957; by dredge.

Distribution:—Kurushima Strait, Seto Inland Sea; Tajima District.

Remarks:—The specimen in the collection was not perfect, crumbled into pieces, therefore, the external shape cannot ascertained, but judging from the shapes, sizes, and arrangement of spicules, the writer identified to this species.

24) *Spirastrella insignis* THIELE

Spirastrella insignis, THIELE, 1898, p. 43, Pl. 2, fig. 5, Pl. 8, fig. 18; TANITA, 1962, p. 349, Pl. 4, fig. 17, text-fig. 9; 1964, p. 18; 1965, p. 50, Pl. 2, fig. 9; 1967, p. 117, Pl. 2, fig. 8.

Occurrence:—St. 12, Dec. 1957; by shrimp-net.

Distribution:—Sagami Sea; Kurushima Strait; Noto Peninsula; Sado Island; Tajima District.

Remarks:—The specimens were not in good preservations.

25) *Craniella globosa* var. *anamonaena*, n. var.
(Text-fig. 15)

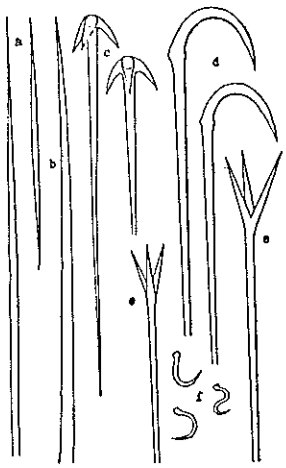
Occurrence:—St. 11, Sep. 1958; by dredge.

Description:—There are two specimens of this new variety, agreeing fairly closely with one another in external form.

They were obtained from St. 11 together with other species, *Myxilla incrustans*, and were put in one bottle. The specimens, therefore, were not preserved in a state of perfection. The sponge is an irregular in shape of 12×10 mm. Color nearly white in formalin and the texture soft.

The skeleton consists of oxeas, anatriaenes, anamonaenes, and protriaenes; all of them radiate from a centrally placed skeleton nucleus to the surface of the sponge. Microscleres are of one sort which scattered throughout the sponge body. There is no cortex and no visible distinction between the ectosome and choanosome.

Spicules (Text-fig. 15):—Oxeas (a,b)



Text-fig. 15. *Craniella globosa* var. *anamonaena*, n. var.
a, oxeas×16; b, oxea×60; c, anatriaenes ×60; d, anamonaenes×60; e, protriaenes ×60; f, sigmaspires×240.

two sizes, long and short, both slender, nearly straight, very sharply pointed both ends; the longer measures 1800~2500×28~33 μ and the shorter 630~800×16~23 μ. Anatriaenes (c): rhabds very long, at about the one third from the base tapering suddenly to a hair-like thickness, more than 1.8 mm long and 12 μ thick at the base; clads, sharply pointed, measure 55~60 μ in length. Anamonaene (d): rhabds very long, nearly the same with the former; clads large, curved like a fish-hook, about 150μ long. Protriaenes (e): rhabds, nearly straight, very sharply ended, 2000~2600×16 μ; clads, equal length, making an acute angle with one another, even thinner than rhabdome, 100~120 μ in length. Sigmaspires (f) very abundant, one end swell while the other pointed sharply, contort like a small fish hook, variable in shape, measuring 10~15 μ from bend to bend.

Remarks:—The specimen in hand is, no doubt, nearly allied to *Craniella globosa* THIELE which was obtained from the shore of Tango in Japan Sea(30~40 fathoms). The only difference of this variety is the presence of large anamonaenes.

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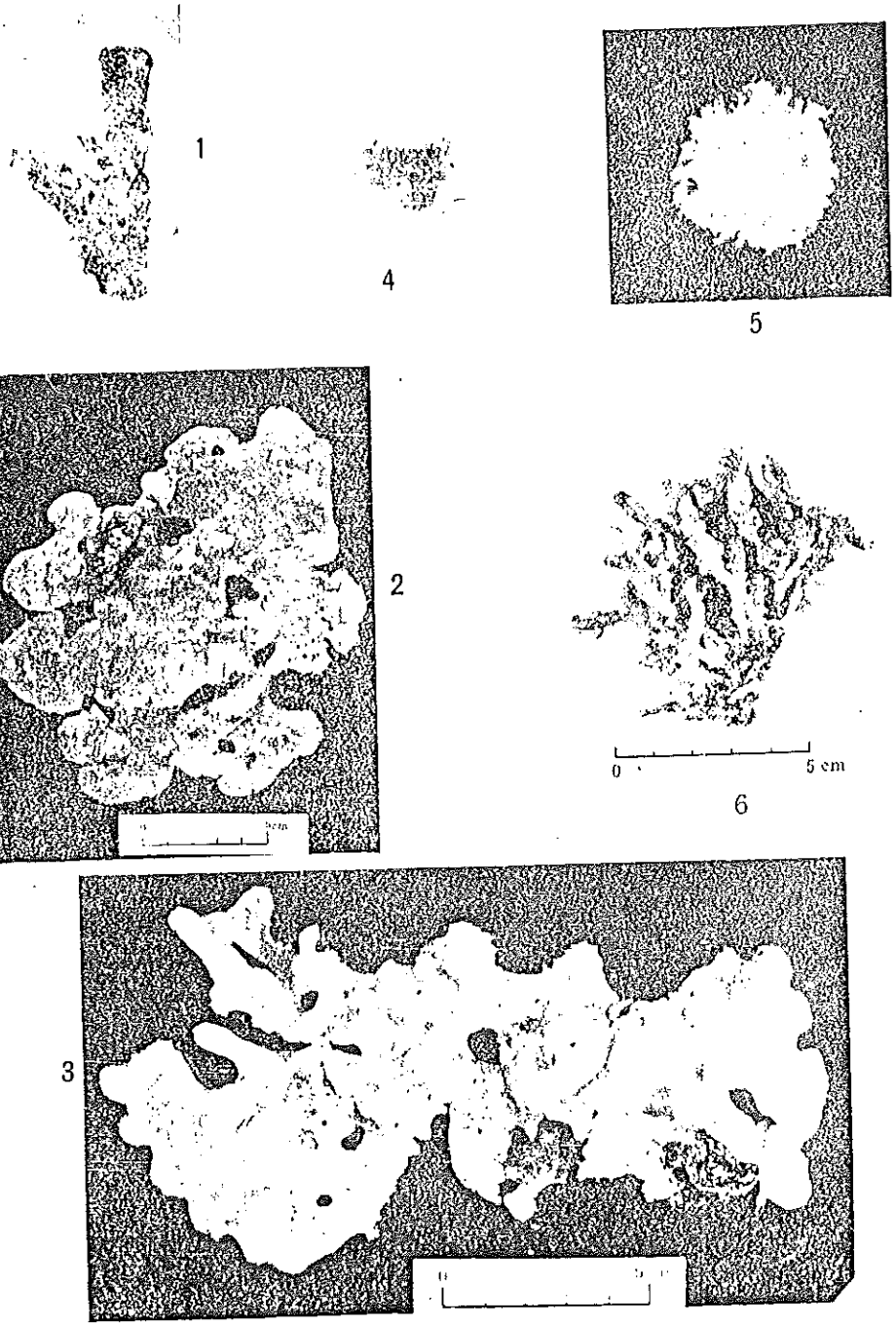
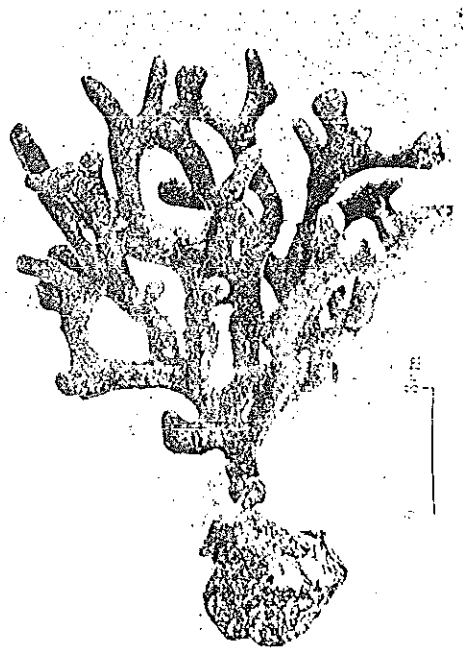


PLATE I

Fig. 1. *Strongylacidon obtusispiculifera* (DENDY)×0.9.
Fig. 2. *Callyspongia flabelliformis*, n. sp.
Fig. 3. *Callyspongia ariakensis*, n. sp.
Fig. 4. *Lissodendoryx spinulosa*, n. sp.×1.5.
Fig. 5. *Raspailia trachystyla*, n. sp.
Fig. 6. *Clathria spinispicula*, n. sp.



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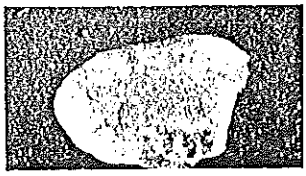

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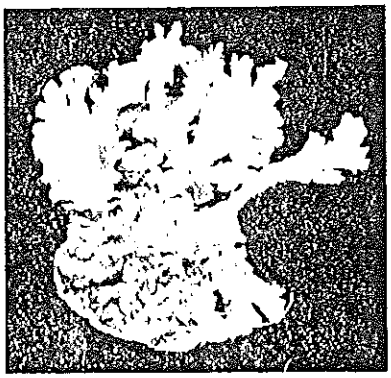

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PLATE II
Fig. 7. *Litaspongia arborea*, n. sp.
Fig. 8. *Homaxinella erecta*, n. sp.×0.9.
Fig. 9. *Acanthella vulgata* THIELE×0.8.
Fig.10. *Acanthella minuta*, n. sp.×1.4.
Fig.11. *Latrunculia ikematsui*, n. sp.×1.4.

有明海の海綿類

谷田専治

本報告は1957～'58年，当時の西海区水産研究所浜試験地の池末技官他が，3回にわたって行なった有明海総合調査の際，ベントスとして採集された海綿類の分類学的研究結果である．

採集は有明海のほぼ全域にわたり，神谷式ドレッヂおよびエビ漕網によって行なわれたが，海綿類の得られた地点は第1図に示す通りである．

当海域の海綿類に関する研究は，これまで全く行なわれていないし，且つこの調査は有明海全域に及んでいるので，極めて興味あり貴重な採集で，これによって有明海の海綿相がほぼ明らかにされたものと考えられる．

ここに報告した海綿は25種であるが，そのうち1種が石灰海綿綱に，他はすべて尋常海綿綱に属するもので，新種9と新変種1とを含んでいる．

1) *Grantessa intusarticulata* (Carter) コトゲカイメン

オーストラリア，ニュージーランドから知られているが，わが国ではもっとも普通な石灰海綿の1．

2) *Haliclona permollis* (Bowerbank) ムラサキカイメン

世界的広分布種で，本邦沿岸にも普通．

3) *Haliclona aquaeductus* (Schmidt)

世界的広分布種．

4) *Strongylacidon obtusispiculifera* (Dendy)

(Pl. I, fig. 1, text-fig. 2)

体は円筒形で弾力があり，網目状に走る海綿質繊維よりなる．繊維の中央には棍棒体が軸に平行にならぶ．セイロンから知られているが，本邦では最初の記載．

5) *Callyspongia elongata* (Ridley-Dendy) ホソナガザラカイメン

オーストラリアから報告されたもの．本邦では瀬戸内海・能登半島・但馬沿岸から知られている．

6) *Callyspongia flabelliformis*, n. sp. *ヒラザラカイメン

(Pl. I, fig. 2, text-fig. 3)

体は扁平で不規則な葉状を呈し，両面に円形の口が散在する．表皮は薄く透明で骨片繊維よりなる．主骨格は四角形網目状によく発達した骨片繊維よりなるが，海綿質を有する．骨片は細い棒状体のみ．本種は採集地点および得られた標本数からみて，有明海には広く分布するものと思われる．

7) *Callyspongia ariakensis*, n. sp. *アリアケザラカイメン

(Pl. I fig. 3, text-fig. 4)

体は薄板状であるが形は一定せず，一平面に伸びる指状突起が連接し，不規則形を呈する．体表は滑かであるが凹凸に富み，所々から突起状に盛りあがった先端に丸い口を開く．薄い表皮を通して内部の網目状骨格がみられる．骨格は前種と類似しているが，網目は多角形で，繊維間に多くの骨片が散在する．骨片は棒状体であるが，前種よりやや太い．

8) *Adocia cinerea* (Grant) *ハイイロコボネカイメン

世界的広分布種．

9) *Myxilla incrustans* (Johnston) (Text-fig. 5)

主骨格は有棘錐状体，表皮骨格は両尖体よりなり，微小骨片としてシグマ体と3歯の等爪

状体を有す．分布は世界的と思われる．本邦では瀬戸内海から知られているが，本海域ではもっとも豊富な種である．

10) *Lissodendoryx spinulosa*, n. sp.
(Pl. I, fig. 4, text-fig. 6)
体は不規則塊状で，質はかなり硬い．本種は2種の錐状体と棍棒体および微小骨片として等爪体と彎曲体をもち，しかも針状体の頭端と棍棒体の両端に微棘があることにより，本属の他種と容易に区別される．

11) *Raspailia trachystyla*, n. sp. *ザラヤスリカイメン
(Pl. I, fig. 5, text-fig. 7)
円筒状分枝が叢生して塊状を呈している．骨格の主要構成要素は中央部より先端にかけて有棘の大型錐状体で，このほか普通の有棘錐状体と平滑な錐状体があるが，後者は少数である．また骨片繊維から直角に突出する棘毛骨片として小型の有棘錐状体をする．

12) *Clathria fasciculata* WILSON タバクダカイメン
セレベス，フィリッピン，パラオ，トラック島などより報告されているが，本邦では瀬戸内海，能登半島から知られている．

13) *Clathria spinispicula*, n. sp.
(Pl. I, fig. 6, text-fig. 8)
ゆるく分枝する管状体が叢生して塊状をなす群体．管状体の表面は細かい棘がある．主骨片の錐状体鈍端に細棘がある．本海域ではかなり多くみられる．

14) *Litaspongia arborea*, n. sp. *キノエダカイメン
(Pl. II, fig. 7, text-fig. 9)
体は直立し，ほぼ一平面上で分枝して全体として樹枝状を呈する．大小2種の錐状体の骨片繊維と海綿質よりなり，微小骨片として彎曲体を有す．

15) *Paresperella undulata*. n. sp. (Text-fig. 10)
本種の主骨片である細長の錐状体は常に波状に曲る．微小骨片は両端に数個の鉤をもつ大小2種のシグマ体と，大小2種の異爪状体のほか，彎曲体を含む．

16) *Mycale aegagropila* (JOHNSTON)
フィリッピン及び英国より報告されているが，本邦では最初の記載．

17) *Mycale macginitiei* DE LAUBENFELS ヒラミカーレカイメン
カリホルニア沿岸及び本邦太平洋岸から知られている．

18) *Homaxinella erecta*, n. sp. *ホソタチカイメン
(Pl. II, fig. 8, text-fig. 11)
体は細長い円筒状で，分枝せず，海底より直立．頂端に口を開く．骨格は細長い錐状体のみよりなり，微小骨片はない．

19) *Halichondria panicea* (PALLAS) ナミイソカイメン
世界的広分布種．

20) *Acanthella vulgata* THIELE ナミトゲカイメン
(Pl. II, fig. 9, text-fig. 12)
相模湾より記載されたもので，2度目の記載である．

21) *Acanthella minuta*, n. sp. *チビトゲカイメン
(Pl. II, fig. 10, text-fig. 13)
ほぼ柱状をした多数の枝が密に叢生し，全体として団塊状の海綿．柱状枝体は短い側枝をだし，やや樹状となる．骨格はよく発達し，やや曲った錐状体と彎曲体に近い形をした棍棒体とよりなる．

* 和名新称

22) *Latrunculia ikematsui*, n. sp.

(Pl. Ⅱ, fig. 11, text-fig. 14)

体は側扁された団塊状．表皮骨格は1層の本属特有な有盤棒状体よりなり，内部はゆるい網状にならぶ錐状体よりなる．

23) *Spirastrella abata* Tanita アバタカイメン

瀬戸内海，但馬地方に分布．

24) *Spirastrella insignis* Thiele オウバンカイメン

最初に相模湾から記載されたものであるが，その後，来島水道・能登半島・佐渡・但馬沿岸などから知られている．

25) *Craniella globosa* var. *anamonaena*, n. var.

(Text.-fig. 15)

体は柔かく不規則形で，骨格は棒状体・前向三叉体・後向三叉体及び後向単叉体よりなり，これらの骨片は体の中央から外表に向かって放射状にならぶ．このほか微小骨片としてシグマ状螺旋体を有す．

＊和名新称