ANNOTATIONES ZOOLOGICÆ JAPONENSES
VOL. X, ARTICLE 18.

On a new Genus of Calcareous Sponge.

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With 1 Plate.

In this paper I would suggest a new genus *Paralelapia* for a calcareous sponge which was described by Prof. Hara under the name of *Lelapia nipponica*. The specimen on which his description was based was collected by the late Prof. Ijima at Hazama in the Sagami Sea.

Prof. Hara's paper (**6**) entitled "On a new Calcareous Sponge", in which the species *Lelapia nipponica* was dealt with, was published in 1894, the description being written both in Japanese and English, accompanied by several figures on plate.

But, I much regret that this paper unfortunately seems to have remained quite unknown to foreign Spongologists until the present time.

Even the epoch-making paper "The Classification and Phylogeny of the Calcareous Sponges, with a Reference List of all the described Species, systematically arranged" by Prof. Dendy and Mr. Row, (**4**), has not referred to it.

During the course of my study on the Japanese calcareous sponges, I also have had the chance to examine the type-specimen as well as other specimens of this species, which have been deposited in the Science College Museum of the Tokyo Imperial University, since Prof. Hara's publication. And moreover, during my stay in the Zoological Laboratory of King's College, London University, I have had another opportunity, by the courtesy of Prof. Dendy, to compare the above specimens with those of the most closely related species *Lelapia australis* Gray (**5**, p. 557) and *Kebira uteoides* Row (**7**, p. 210).

The family Lelapiidæ appears to be the most highly specialized group among the calcareous sponges and its diagnosis given by Dendy and Row (**4**, p. 784) is as follows :—

" Canal system presumably always leuconoid. Skeleton of the chamber layer containing fibres or bundles of modified sagittal triradiates placed side by side, but not cemented together. Nuclei of collared cells (presumably always) apical." Hitherto, only two genera *Lelapia* and *Kebira* were represented in this family.

The diagnosis given by the above authors of the genus *Lelapia* (**4**, p. 785) is : "Skeleton of the chamber layer composed of large scattered oxea and loose fibres of tuning-fork spicules. Dermal skeleton of tangential triradiates and quadriradiates", and that of *Kebira* (**4**, p. 785) is : " Skeleton of the chamber layer composed of large longitudinally arranged oxea, and of loose fibres of sagittal triradiates whose paired rays are vestigial. Dermal and gastral skeleton of tangential triradiates."

Now, the present species, as will be seen later on, possesses firstly the canal system of leuconoid type, secondly the fibres of modified sagittal triradiates in chamber layer, and thirdly the collared cells with nuclei in apical position. These facts evidently show that the species should belong to the family Lelapiidæ.

But, in respect of the spiculation and skeletal arrangement (*cf.* diagnosis) it represents some features which are quite different from those seen in the genus *Lelapia* or *Kebira*.

I therefore consider that this species should be placed in a new genus, to which I give the name of *Paralelapia*. In the following pages a description of its sole representative species will be given.

I wish here to express my grateful thanks to the late Prof. Ijima, to whom I am deeply indebted for many acts of kindness and help during my study of Calcareous sponges. Many thanks are also due to Prof. Dendy of the University of London, who has rendered me much help during the course of this work.

Paralelapia, n. gen.

Diagnosis:—Skeleton of the chamber layer composed of radially arranged loose fibres of tuning-fork spicules and of the basal rays of subgastral sagittal triradiates. Dermal skeleton of tangential triradiates and of large longitudinally arranged oxea. Gastral skeleton of tangential triradiates and quadriradiates.

Paralelapia nipponica (Hara).

(Figs. 1—3.)

Lelapia nipponica, HARA (6), pp. 359–370, Pl. VIII, figs: 1–13.

This interesting species is represented by seven specimens (Spec. Nos. 41–47) in the Science College Museum collection of the Tokyo Imperial University. They were all obtained in the Sagami Sea. One of the said specimens, No. 42, is shown in Fig. 1. The following observations were made on the type specimen (No. 41).

Sponge consists of a solitary person, elongate cylindrical, rather strongly curved in the middle parts, with a single naked terminal osculum and a solid stalk for attachment. The dermal surface of body is even and smooth, showing fine longitudinal subspiral striation due to the large oxea of the dermal cortex. The stalk is more or less irregular in contour and slightly hispid on the outer surface on account of the projecting oxea. The gastral surface is perforated by numerous elongate elliptical exhalant pores which are longitudinally disposed, and is rough owing to the apical rays of the gastral quadriradiates. The sponge is about 90 mm. long and 7 mm. in greatest breadth. The sponge wall is about 2 mm. thick in the middle parts of body, gradually becoming thinner towards the osculum. The osculum is elliptical, 4 mm. by 2 mm. wide, and leads out of the gastral cavity which extends throughout $^2/_3$ of the whole length. The colour of the specimen which is preserved in alcohol is greyish white; the texture is fairly firm and elastic.

Structure: (Fig. 2). The canal system is of the leuconoid type. The dermal cortex is fairly well developed with some quantity of

mesogloea. The inhalant canals starting from several dermal pores unite to form wide inhalant canals which penetrate the dermal cortex and run deep into the sponge wall. The exhalant canals are also wide and extend through the greater part of the thickness of the wall and open into the gastral cavity through the gastral cortex, which is thinner than the dermal cortex. The exhalant pores measure 150–550 μ in length and 100–150 μ in breadth. The flagellate chambers, thickly packed between the inhalant and exhalant canals, are of an oval or elliptical shape, and measure about 70–100 μ in the shorter diameter. They are arranged more or less radially around the wide exhalant canals and each of their exhalant openings is provided with a delicate diaphragm. The position of the nucleus in the collared cells is apical. The lining epithelium of the gastral cavity is very conspicuous on account of its large component cells.

The dermal skeleton consists of: (1) a few layers of slender sagittal triradiates lying tangentially, with their basal rays generally directed towards the sponge base; (2) a few layers of large oxea which run longitudinally, and (3) microxea which are disposed vertically in the dermal cortex and which are grouped in small tufts, with their distal ends slightly projecting on the dermal surface. The skeleton of the chamber layer is composed of spicular fibres which are radially arranged extending from the gastral cortex to the dermal. They are composed of long bundles of elongate tuning-fork spicules with their basal ray pointing towards the dermal surface. Besides these, the basal rays of subgastral triradiates also take part in the formation of the skeleton. The gastral skeleton is made up of: (1) paired rays of subgastral triradiates; (2) gastral triradiates which are arranged in several layers with their strongly divergent paired rays usually running longitudinally and with their short basal rays pointing in various directions; (3) gastral quadriradiates which have long basal rays directed downwards and apical rays projecting into the gastral cavity and curved upwards. There are not any peculiar features in the skeleton of oscular margin.

Spicules: (Fig. 3). Dermal triradiates (a) strongly sagittal, slender-rayed. Basal rays much longer than paired rays, quite straight, narrow in middle parts and sharply pointed at end, 260–470 μ long and 6–8 μ thick. Paired rays usually equal, strongly divergent, very slightly curved backwards, gradually tapering from base to sharp point, 90–170μ long and 6–8 μ thick.

Tuning-fork spicules (b). Basal ray longer and thicker than paired rays, quite straight, nearly uniformly thick through the greater part of its length, sharply pointed at end, 70–400 μ long and 6–10 μ thick at base. Paired rays either equal or unequal in length, strongly bent forwards at the base and straight in the remaining parts, which run nearly parallel with one another and taper gradually to become sharply pointed at their ends, 30–200 μ long and 4–8 μ thick at base.

Subgastral triradiates (c) strongly sagittal. Basal ray straight, much longer than and nearly as thick as the paired rays, gradually tapering and sharply pointed at their ends, 260–350 μ long and 12–16 μ thick at base. Paired rays commonly equal in length, very widely divergent, slightly curved backwards, gradually tapering and sharply pointed, 120–180 μ long and 10–12 μ thick at base.

Gastral triradiates (d) strongly sagittal. Rays equally thick. Basal ray very much shorter than paired rays, straight, bluntly pointed at the end, 12–24 μ long and 8–10 μ thick. Paired rays widely diverging, and making nearly a right angle with the basal ray, slightly curved backwards, gradually tapering from base to sharp point, 100-150μ long and 8-10μ thick.

Gastral quadriradiates (e) strongly sagittal. Basal ray very much longer than other rays, straight, broad at base, perceptibly narrowed in the middle region, sharply pointed at the end, 220–590 μ long and 8–12 μ thick at base. It is readily broken off short from the narrowed middle part. Paired rays nearly equal, slightly curved, gradually tapering and sharply pointed, 25–60 μ long and 10–12 μ thick. Apical rays stout, slightly longer and thicker than paired rays, slightly curved,

of the same thickness throughout its length, except for the pointed end, 40–90 μ long and 10–12 μ thick at base.

Triradiates of the stalk (h) strongly sagittal. Basal ray very long, straight, broad at base, narrowed in the middle region, hence gradually becoming broader towards the end, which is sharply pointed, about 500μ long and 8 μ thick at base. Paired rays much shorter and slightly thicker than basal ray, widely divergent, slightly curved backwards, gradually tapering and sharply pointed, about 80 μ long and 10 μ thick at base.

Dermal oxea (f) very large and stout, fusiform, more or less curved and slightly irregular in contour, sharply pointed at the ends. Size variable, 1.1–3.2mm. long and 30–83 μ thick.

Dermal microxea (g) nearly straight or slightly curved, provided with a lance-head at one end and sharply pointed at the other, 100–210μ long and 5–8 μ thick.

Localities: Hazama, Doketsba, etc. in the Sagami Sea.

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Explanation of Plate.

Fig. 1. *Paralelapia nipponica* (Hara).

An entire specimen; natural size.

Fig. 2. *Paralelapia nipponica* (Hara).

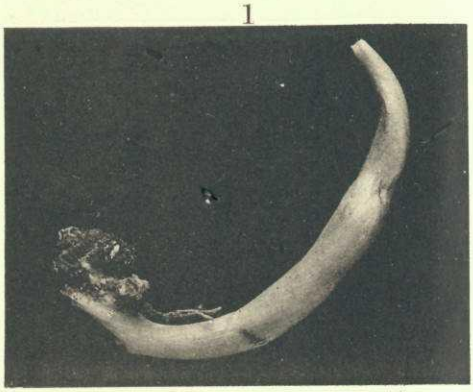
A small portion of a cross-section of sponge wall; showing the arrangement of the canal system and of the spicules; × 150.

Fig. 3. *Paralelapia nipponica* (Hara).

Spicules:—

a. Dermal triradiate; × 200.
b. Tuning-fork spicules; × 200.
c. Subgastral triradiate; × 200.
d. Gastral triradiate; × 200.
e. Gastral quadriradiate; × 200.
f. Large dermal oxea; × 60.
g. Small dermal oxea; × 200.
h. Triradiate of stalk; × 200.

1



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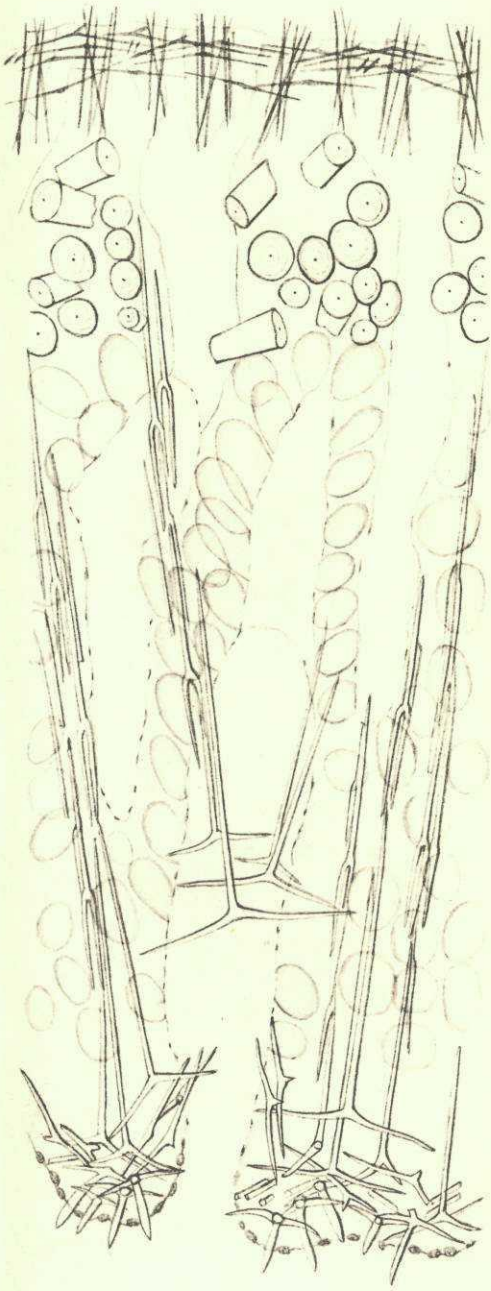

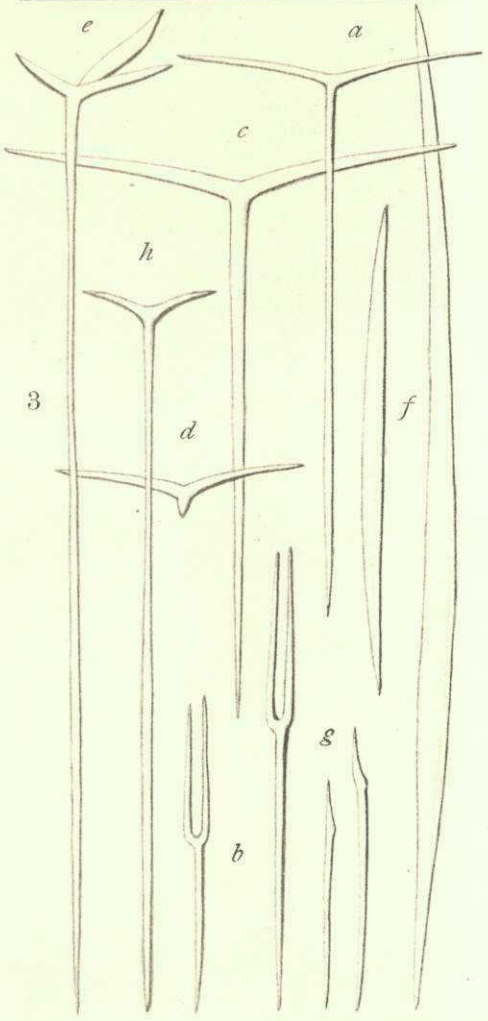

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Paralclapia nipponica (Hara).