

## Preliminary Notice of a New Interesting Ophiuran (*Astrophium kawamurai*).

By

H. Matsumoto, *Rigakushi*.

Zool. Inst., Sci. Coll., Tokyo.

(With Plate III.)

Together with the curious Crinoid which I have described in another paper published in this journal under the name of *Phrynocrinus obtortus*, an interesting specimen of apparently a new species of *Astrophium* was sent me by Mr. K. Aoki of the Misaki Marine Laboratory. The two were said to have been obtained at the same locality and on the same day. The specimen in question I have called *A. kawamurai*. Deferring its full description to a future paper, I propose to give here a preliminary notice of it.

### *Astrophium kawamurai*, n. sp.

Diameter of the pentagonal body 12 mm; that of the disk proper, or of the circle passing through the outer ends of radial shields, 7 mm. Length of the free arms, 6 mm. Width of same close to the pentagonal body, 0.4 mm.

In all essential features this species is like the genotype (*A. permira*). On the dorsal side, the pentagonal "asteroid" body is entirely covered over by stout primary plates and radial shields of the disk proper and by the dorsal and lateral arm-plates of modified arm bases. The primary plates consist of the single central, five basals, five radials, five first interradians and five second interradians. The infrabasals, basals and interradians are elevated above the level of the central, radials and radial shields, so as to form a regular symmetrical system of ridges. Dorsal arm-plates number 7 or 8 in

each radius; they are confined in occurrence to the pentagonal body. Each dorsal plate with a pair of lateral arm-plates which are greatly modified, in relation to their being contained within the pentagonal body. The two first lateral arm-plates belonging to different but directly adjoining radii are apposed to each other in their distal parts and outside of the second interrarial. Distal edges of successive lateral plates form a continuous line forming interrarial border of the pentagonal body. This border is slightly concave in the middle and is margined by a series of soldered papillæ, which are evidently modified arm-spines of the modified lateral plates. These papillæ grow longer towards the middle of interrarial border, there attaining a length about equal to the width of the lateral plate they belong to. They number 3 or 4 to each lateral plate.

The ventral interbrachial surface of the pentagonal body, with the exception of the peripheral zone, is covered with a thin skin containing fine, delicate, transparent, close-set and polygonal or circular scales. The peritoneal cavity and genital glands can be discerned through the skin; both apparently extend into the arm bases. Genital bursæ, plates and scales are absent, while the genital openings are invisible. There is only a single oral shield, the madreporite, which is irregularly triangular in shape and so small and transparent as to be scarcely perceivable unless the specimen be dried. It is separated from the adoral shields by a space. The adoral shields (erroneously called "genital plates" by SLADEN) are long and narrow, with free inner ends. The oral plates (again erroneously called "side mouth shields," i. e. adoral shields, by SLADEN) are large and stout. A single tooth ("apical mouth papillæ" of SLADEN) is present at the apex of each jaw, directed somewhat upwards. There occur no dental or genuine oral papillæ; but there exist six or seven papillæ ("mouth papillæ," i. e. oral papillæ, of SLADEN) to each jaw; they are deeply situated within the oral slits, are directed upwards, and lie on the whole on a higher level than the single tooth, though the most apical two or three of

them are distinctly above it. They are possibly nothing else than scales of the first oral tentacles.

Ventral arm-plates in each interradius number 8 or 9, all situated within the limit of the pentagonal body. 7 or 8 pairs of tentacles are present in each radius, being also confined in their occurrence to the pentagonal body. The first pair of them are very large, and are homologous with the second oral tentacles of other Ophiurans, belonging, as they do, to the same arm-joint together with the first ventral arm-plates and adoral shields. All the tentacle pores, except the outermost one or two, are provided with one or two scales. Every two successive tentacle pores are separated from each other by a ridge (erroneously considered by SLADEN to be "ambulacural plate") of the basal or adradial parts of the lateral arm plate, which belongs to the same joint as the outer of the two pores.

The free distal parts of arms outside the pentagonal body are very abortive, being devoid of any dorsal and ventral arm-plates as well as of tentacle pores. There is a single, very small arm spine on each lateral arm-plate, though on the first one or two free joints, there occur two or three spines. In some radii, indications are not wanting of the first free arm-joint being in the process of being taken up into the pentagonal body.

Colour in alcohol : whitish, or light yellow ; central, radials, radial shields and the inner parts of ventral interbrachial spaces bluish gray.

Locality : Okinosé, a submarine bank off Misaki in the Sagami Sea. Depth about 330 fathoms.

The present species differs from the genotype, *A. permira* SLADEN, chiefly in the very regular arrangement of plates on the dorsal surface of the pentagonal body ; in the larger central plate ; in the much smaller and quite regular infrabasals ; in the much narrower basals and interradials being raised so as to form a regular symmetrical system of ridges ; in the radial shields forming a pair being scarcely in direct contact with each other instead of overlapping ; in

the absence of a central boss on the primary plates; in the very regular-shaped and much narrower dorsal arm-plates; in the much smaller and rather inconspicuous madreporic shield; in the longer adoral shields; in the somewhat narrower oral plates, the two in inter-radial pairs being in contact with each other to a less extent; in the saddle-shaped ventral arm-plates; and finally in the free arms being much narrower. Again, this species differs from CHUN's *Astrophium*,\* which has not yet been specifically named, chiefly in the smaller and regular-shaped infrabasals; in the narrower basals and interradians; in the elevated infrabasals, basals and interradians; in the absence of a central boss on the primary plates; in the much narrower dorsal arm-plates; and in the much narrower free arms. The *Astrophium* sp. just referred to seems to stand somewhat nearer to the genotype than to the present species.

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\*CHUN, Aus den Tiefen des Weltmeeres, 1900, p. 488, fig. Ditto, 2te Aufl., 1903, p. 171, fig.

### Explanation of Plate III.

Fig. 1. *Astrophium kawamurai* viewed from above.  $\times 6$ .

Fig. 2. Ditto viewed from below.  $\times 6$ .