# Description of a new species of sea-urchin of the genus Temnopleurus (Temnopleurus mortenseni sp. n.).

By

**A. M. Djakonov.**

(With 3 fig. in the texte).

[Дьяконовъ, А. М. Описаніе новаго вида морского ежа изъ рода Temnopleurus (Temnopleurus mortenseni sp. n.) (съ 3 рис. въ текстѣ)].

(Presented the 23 of january 1917).

Amongst the materials of the Zoological Museum of the Academy of Sciences there occured to be four dry, but well preserved specimens of sea-urchins, belonging indubitably to the genus *Temnopleurus*, but approaching none of the hitherto known species in the combination of characters.

These specimens are provided with the original ancient label, written by the hand of the collector himself, and bearing the inscription: „Guimaras, Cuming". From this it can be concluded that they were taken near the small island Guimaras belonging to the group of the Philippine islands, and were delivered to the Zoological Museum by the notorious traveller and merchant, m-r Cuming.

The specimens were defined by m-r Shalfeev, as *Temnopleurus toreumaticus* Klein. Indeed, their affinity to the given species is most close, but a series of characteristic features, nevertheless, lead me to regard them, as a distinct species.

In describing this new species I propose to name it *Temnopleurus mortenseni* in honour of one of the most distinguished echinologist of our time, Dr. Th. Mortensen, who had treated in

such a classical manner nearly the whole material known on the genus *Temnopleurus*[1]).

As was mentioned, this species stands the closest to *T. toreumaticus*. The test is in general of the same structure, as in the species named, although there are some points of difference (fig. 1).

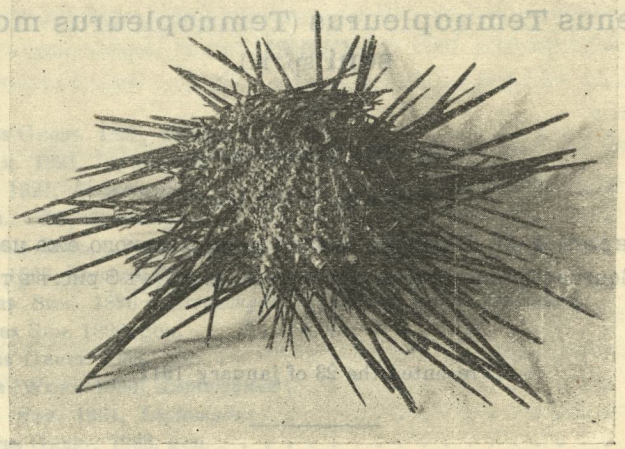

Fig. 1. *Temnopleurus mortenseni* sp. n. Slightly magnified.

The test is not heigh (for dimensions — see table of measurements); the ratio of height to diameter varies between 1,67 to 1,84. The primary tubercles are sharply distinguishable among the test. All the larger tubercles are distinctly crenulated, i. e. provided with radiating ribs, in the centre of which is the mamelon, which serves for the articulation of the spine. The number of primary tubercles in each vertical areas, both radial and interradial, is somewhat larger than in *T. toreumaticus*. Thus, in a specimen of this species with a diameter of 21,3 mm. there are 20 radial primary tubercles, and 16 interradial, whereas in a specimen of *T. toreumaticus* with a diameter of 22,3 mm. (i. e. somewhat larger) there are 18 and 15 tubercles respectively.

Two, thre or more of the ambulacral plates, nearest to the apical system, are devoid of primary tubercles.

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1) Mortensen, Th. Echinoidea of the Danish Expedition to Siam, 1904. Kongl. Danske Videnskabern. Selsk. Skrifter. Raenne VII, Bd. I, 1904—1906; pp. 1–124.

The secondary tubercles are altogether absent in the ambulacral areas. In the interambulacral areas somewhat above the ambitus, nearer to the median line there appears a small secondary tubercle; the secondary tubercles gradually become larger downwards, and on the ambitus they may nearly attain the dimensions of the primary ones; then, if in one vertical row the secondary tubercles attain the size of the primary, in the adjacent (of the same interradius) these tubercles are much smaller. Below the ambitus the tubercles again diminish in size, reaching nearly to the very peristome.

The miliary tubercles are very few. On the ambulacral plates of the dorsal surface there can be counted only several (to 12) disposed about the primary tubercle nearer to the anal margin of the plate. On the ambitus and lower the number of miliary tubercles is somewhat larger, and they can be distributed over the whole plate. On the interambulacral plates the number of miliary tubercles is greater (to 30), but still much smaller than in the corresponding specimens of *T. toreumaticus*. These tubercles are distributed on the dorsal surface also only in the vicinity of the primary tubercles, being arranged around the latter radially, and the adjacent tubercles are frequently divided by radial fissures. Such a radiate figure formed by the miliary tubercles is never observed in *T. toreumaticus*. In the middle of the interradius there always remains a wide nude median space. Below the ambitus the radiate figure disappears and the miliary tubercles are found dispersed over the whole plate.

The form and arrangement of the coronal grooves are in general similar to those in *T. toreumaticus*. The grooves are wide and deep with abruptly sloping, edges. In the ambulacral areas there run two vertical rows of grooves on either side of the median line. These grooves are nearly square with rounded angles; on the ambitus and below the grooves are of nearly regular circular form; they reach the peristome.

TABLE 0

*Temnopleuru*

(The measurements are expressed in millimetres; the percen

| № in Catalogue. | Diameter (D) | Height (h) | D/h | Apical system | Periproct |
|---|---|---|---|---|---|
| 704 | 26,5 | 16 | 1,67 | 6 = 22,6% | 2,6 = 9,8% (= 43,4% of apical syst.) |
| 702 | 25,5 | 13,6 | 1,78 | 5,6 = 22,0% | 2,8 = 11% (= 50% of apical syst.) |
| 701 | 24,4 | 13,2 | 1,84 | 5,3 = 21,7% | 2,6 = 10,6% (= 49% of apical syst.) |
| 703 | 21,3 | 12 | 1,78 | 5,2 = 24,4% | 2,5 = 11,8% (= 48% of apical syst.) |

In the interambulacral areas pass 4 rows of coronal grooves; two are adjacent to the median line and one lies along the border of each of the ambulacral areas. These grooves are considerably wider than the ambulacral ones, having the aspect of a rectiangular extending horisontally. The grooves of the two middle rows are wider than the outer ones. On the ambitus the grooves become slit-formed, and lower they assume a rounded shape. The interradial grooves also reached to the very peristome, which is not observed in *T. toreumaticus*, in which these grooves are interrupted on the ambitus, or somewhat below it, and the test remains continuous.

Besides these regular coronal grooves, on the border of the ambulacral and interambulacral areas is situated a row of minute

MEASUREMENTS.

*mortenseni* SP. N.

tage is estimated according to the diameter of the test).

| eristome | Number of ambulacral tubercles. | Number of interambulacral tubercles. | Lengh of the largest spine. | Diameter of spine. | Colour of spine. |
|---|---|---|---|---|---|
| = 32,4% | 22 | 18 | 19,5 = 73,5% (broken) | 0,8 = 3,1% | Dark olivebrown; below lighter; not ringed. |
| = 35,3% | 20 | 17 | 24,2 = 95% | 1 = 3,9% | same. |
| = 34,9% | 20 | 17 | 24,5 = 100% | 0,9 = 3,7% | same; only the actinal slightly ringed. |
| = 34,2% | 20 | 16 | 21 = 98,6% | 0,8 = 3,8% | same. |

pits each lying opposite the space between the two neighbouring pairs of pores.

The zone of ambulacral pores is somewhat narrower than the nude median ambulacral space. The pores are arranged nearly vertically, the oblique arrangement of the pores in three pairs, so characteristic of *T. toreumaticus*, is expressed only in a weak form and not in all specimens. The zone of pores is nude, without tubercles; only in very rare cases there are encountered small solitary tubercles between the pores and the limit with the interradius.

The apical system is sharply delimited from the corona by a shallow fissure. The genital plates are fairly large, of triangular shape; their surface is nearly entirely nude; only along the anal

TABLE OF MEASUREMENTS.

*Temnopleurus mortenseni* SP. N.

(The measurements are expressed in millimetres; the percentage is estimated according to the diameter of the test).

| № in Catalogue. | Diameter (D) | Height (h) | D/h | Apical system | Periproct | Peristome | Number of ambulacral tubercles. | Number of interambulacral tubercles. | Lengh of the largest spine. | Diameter of spine. | Colour of spine. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 704 | 26,5 | 16 | 1,67 | 6 = 22,6% | 2,6 = 9,8% (= 43,4% of apical syst.) | 8,6 = 32,4% | 22 | 18 | 19,5 = 73,5% (broken) | 0,8 = 3,1% | Dark olivebrown; below lighter; not ringed. |
| 702 | 25,5 | 13,6 | 1,78 | 5,6 = 22,0% | 2,8 = 11% (= 50% of apical syst.) | 9 = 35,3% | 20 | 17 | 24,2 = 95% | 1 = 3,9% | same. |
| 701 | 24,4 | 13,2 | 1,84 | 5,3 = 21,7% | 2,6 = 10,6% (= 49% of apical syst.) | 8,5 = 34,9% | 20 | 17 | 24,5 = 100% | 0,9 = 3,7% | same; only the actinal slightly ringed. |
| 703 | 21,3 | 12 | 1,78 | 5,2 = 24,4% | 2,5 = 11,8% (= 48% of apical syst.) | 7,3 = 34,2% | 20 | 16 | 21 = 98,6% | 0,8 = 3,8% | same. |

In the interambulacral areas pass 4 rows of coronal grooves; two are adjacent to the median line and one lies along the border of each of the ambulacral areas. These grooves are considerably wider than the ambulacral ones, having the aspect of a rectiangular extending horisontally. The grooves of the two middle rows are wider than the outer ones. On the ambitus the grooves become slit-formed, and lower they assume a rounded shape. The interradial grooves also reached to the very peristome, which is not observed in *T. toreumaticus*, in which these grooves are interrupted on the ambitus, or somewhat below it, and the test remains continuous.

Besides these regular coronal grooves, on the border of the ambulacral and interambulacral areas is situated a row of minute pits each lying opposite the space between the two neighbouring pairs of pores.

The zone of ambulacral pores is somewhat narrower than the nude median ambulacral space. The pores are arranged nearly vertically, the oblique arrangement of the pores in three pairs, so characteristic of *T. toreumaticus*, is expressed only in a weak form and not in all specimens. The zone of pores is nude, without tubercles; only in very rare cases there are encountered small solitary tubercles between the pores and the limit with the interradius.

The apical system is sharply delimited from the corona by a shallow fissure. The genital plates are fairly large, of triangular shape; their surface is nearly entirely nude; only along the anal

margin is situated a row of minute uniform tubercles. The genital pore is minute, roundish, situated nearly in the centre of the plate. The ocular plates are minute, roundish, and slightly convex; none of them are adjacent to the periproct; the entire surface of these plates is densely set with extremely minute tubercles, like granules, amongst which may be seen one, two or three larger tubercles. In each angle formed by the ocular plate and two adjacent genitals there is also a small pit.

The periproct is roundish or slightly ellipsoid. The anal plates in all the four specimens were broken.

The peristome is fairly narrow. The gill-cuts not sharply defined. The buccal membrane is nude, without any plates, excepting, of course, the 10 buccal plates with pores for the buccal tube-feet. These plates are arranged nearer to the oral rim than to the edge of the test. The colour of the test is brown abactinally and yellowish — white actinally.

The spines are very characteristic (fig. 1). They are slender, very long; the ambitual spines are the longest, not shorter than the diameter of the test, but as many of the spines are defective (the tips are broken), it is to be supposed that they even exceed the diameter in length. Only in one specimen the longest spine composed only 73 per cent. of the diameter of the test, but this again is due to the greater number of the spines in this specimen being broken. In *T. toreumaticus*, at any rate according to the large material in possession of the Zoological Museum of the Academy of Sciences, the spines are shorter. I did not chance to observe that the length of the spines in them exceeded 65 per cent. of the diameter (with the exception of the smallest young specimens, in which the spines are always relatively longer).

The spines of the species described are cylindrical at the basis, and slightly flattened toward the end. The secondary spines corresponding to the secondary tubercles are not numerous; they are cylindrical, toward the end pointed and several times shorter than the primary ones. The miliary spines are slender, filiform and of a structure similar to those in *T. toreumaticus*. The most characteristic feature is the colour of the spines. All the dorsal and ambitual primary and secondary spines are dark-olive-brown, often even nearly black without any trace of bands (i. e. there are no differently coloured rings); in *T. toreumaticus*, as is known,

the bandes of the primary spines presents one of the most characteristic features. In some of these specimens the ventral (i. e. that directed downwards) sufrace of these spines may be lighter than the dorsal. Below the ambitus by degree as the spines approach the peristome, they become lighter, and here some spines (in most cases only those nearest to the peristome) become slightly annulated with white and pinkish-brown rings. In two specimens, however, the annulations are altogether absent. The spines nearest to the peristome are strongly flattened, at the end bluntly trunkated and slightly curved. The miliary spines are of straw-yellow colour.

The pedicellariae are of all the four kinds (fig. 2).

The globiferous pedicellariae (fig. 2, A) are not numerous and very minute. In the specimens of *T. toreumaticus* of a similar site these pedicellariae are considerably larger. The valves of the species described have a wide basal part with sharply protruding upper angles and nearly straight lateral sides; the blade bears the aspect of slender tube, open only in the upper third, and provided with a terminal unpaired end-tooth and short paired lateral-teeth, one on each side. In this species there are not observed any variations in the arrangement of the lateral-teeth which are so frequent in *T. toreumaticus*. The measurements of the valves are as follows:

| | | |
|---|---|---|
| Total length of valve . . . . . | = 0,24 | mm. |
| length „ basal-part . . . | = 0,10 | „ |
| width „ „ „ . . . | = 0,09 | „ |
| length „ the blade . . . | = 0,14 | „ |
| „ „ end-tooth . . . | = 0,05 | „ |
| „ „ lateral tooth . | = 0,01 | „ |

The ophicephalous and triphyllous pedicellariae do not differ in any essential characters from those of *T. toreumaticus*. Both these types of pedicellariae are found on the test in large numbers.

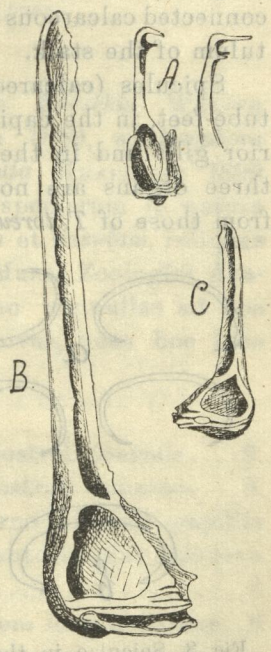


Fig. 2. The pedicellariae of *Temnopleurus mortenseni* sp. n. *A* — valve of globiferous pedicellariae; *B* — valve of large form of tridentate pedicellariae; *C* — valve of small form of tridentate pedicellariae (Zeiss, ob. B oc. 4).

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