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On *Winkleria maastrichtensis* nov. gen. et nov. spec. (Echinoidea, Regularia, Stirodonta, Phymosomina, ? Phymosomatidae) from the Upper-Cretaceous (Md) of Maastricht (Limburg, Netherlands)

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Genus ***Winkleria*** nov. gen.

Characterized by a small hemispherical test. Ambulacra with simple primaries; pores in a regular, simple series; nearly every ambulacral primary plate with a tubercle.

Ambulacra hourglass-shaped, as they are narrower at the ambitus, while the interambulacrals are extraordinarily widened there, extra IA plates wedging in from the borders. IA plates low, each with a horizontal series of tubercles. No clear distinction between primary and secondary tubercles, no distinct vertical series of tubercles. Apical system unknown. Peristome rather large. Spines unknown.

Type-species: *W. maastrichtensis* nov. spec.

Winkleria maastrichtensis nov. spec.

30 tests, Maastricht, Mus. Teyler No. 16025 (mentioned by WINKLER, 1863, p. 196, No. 10980, as "*Cidaris* spec."). The specimen of 6.4 mm diameter, 2.7 mm high, peristome 3.4 mm, apex 3.2 mm, which is the only one showing clearly the ambulacral pores, is selected as the holotype. According to informations of Dr. Max Meyer the species occurs in the lower (L) zone of the subdivision Md in the Maastrichtian Cretaceous.

The state of preservation of this interesting series does not permit to determine exactly its place in the system. Most probably it is a Phymosomatid. Dr. TH. MORTENSEN, who was so kind to examine some of the tests, agreed with me, that they probably belong there, predicting that most probably the tubercles will prove to be crenulate. The curious arrangement of the tubercles of the IA plates remembering of *Plistophyma, Polycyphus,*

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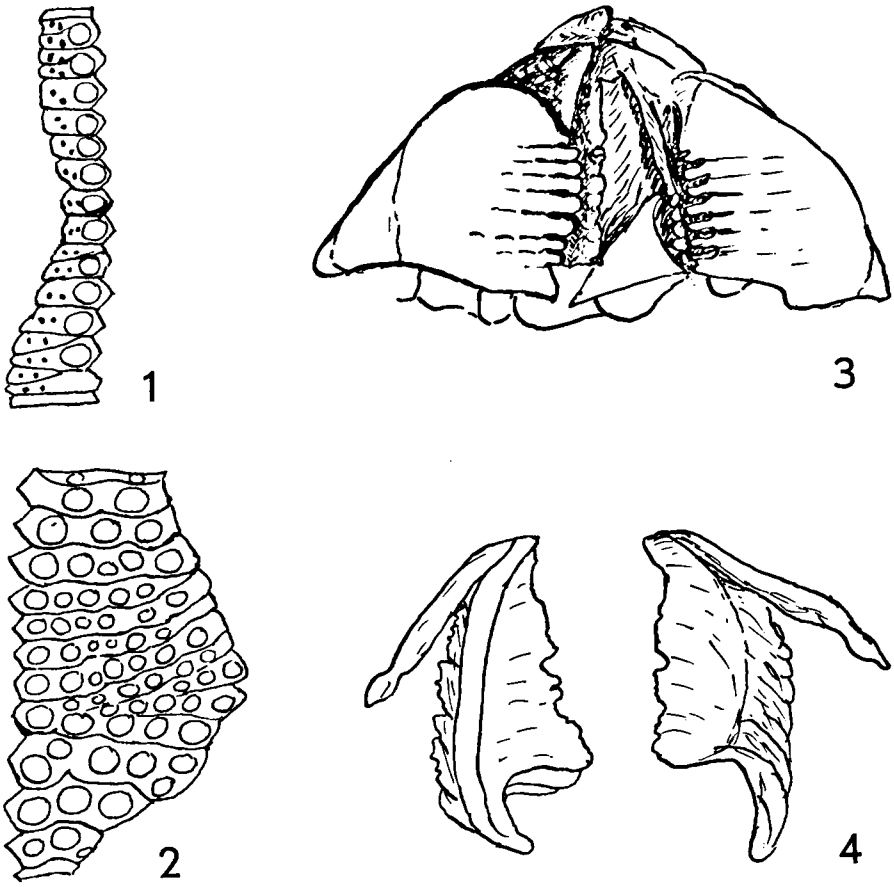

Figs. 1—4. *Winkleria maastrichtensis* nov. gen., nov. spec. 1, half ambulacrum of the holotype, schematically; 2, half interambulacrum of the holotype, schematically; 3, lantern (part) of one of the paratypes, as it is seen fixed inside the test (see text); 4, the one loose half pyramide of this lantern from two sides.

Magnosia, is sufficiently characteristic to recognize the species. The fact that the ambulacra are nearly simple throughout, assign it a place near *Leptechinus*, from which it differs, however, in the arrangement of the tubercles.

As the ambulacral pores could only be discerned in one specimen, this specimen was made the holotype of the species (textfigures 1, 2 and plate figs. 1, 2, 3, 10).

The apex is missing in all specimens, it is only little smaller in diameter than the peristome.

One of the specimens is in the possession of part of the lantern (textfigure 3, 4) which is fixed in the test for the greater part, one half pyramide is loose with the specimen. The only thing I can say about it, is that the teeth are keeled. Dr. Mortensen, who examined the specimen at my request, wrote

to me that, as far as the material permitted, it seemed to him, that the teeth were keeled and that the lantern was stirodont. The specimen to which this lantern belonged is 4.5 mm in diameter, 1.9 mm high, the apex and peristome are 2.2 and 2.5 mm in diameter respectively. The branchial incisions are only very slight. The auricles are small elevations, apophyses are present. It is the third in size on the plate figs. 4, 5, 6 (this specimen is preserved in the Zoological Museum of the University of Amsterdam).

The second in size on the plate figs. 4, 5, 6 is enlarged 4 times on the plate figs. 7, 8, 9. The largest of the wheel-shaped tests on the plate figs. 4, 5, 6 is 7.2 mm in diameter, 3.1 mm high, the peristome and apex are about 4 mm in diameter; in another these dimensions are 5.3, 2.1 and 2.7—2.9 mm respectively, in the smallest test on the plate 2.5, 1.0 and 1.4 mm respectively. The peristome seems slightly larger than the apex.

The ambulacra have a typical hour-glass shape, they are narrower at the ambitus than at the ends, in the largest specimen 1.6 mm near apex, 1.2 mm near peristome, 1.0 mm at the ambitus, in other specimens 1.5, 1.1, 1.0 or 1.5, 1.4, 1.0 respectively.

The A plates are rather high, of about the same height as the IA plates, sometimes even higher, and like these variable. Some lower or wedge-shaped plates without tubercle are seen among the others. The primary tubercles form two vertical rows only in each ambulacrum; they are large, lie close to each other in the median line and continue till nearly the apex and the peristome; only 2 or 3 very low ambulacrals without tubercle close the row above and below. At the ambitus the tubercles and the A plates are smaller. Irregularly larger tubercles occur among the others. In the largest specimen 12 to 13 tubercles occur in a row, in the specimen with the lantern 9 to 10, in the smallest test 8 to 9 tubercles. The pore zones are difficult to describe exactly, because of the state of preservation. The pore pairs can only be made out with great difficulty. They are discernable only in the type specimen (textfigure 1). They form one series, especially narrow at the ambitus, but near the peristome the pore zone seems to broaden out a little. The sutures between the ambulacrals are deep, especially deepened in the pore zone, sometimes a secondary suture divides the part of the plate outwards of the tubercle, sometimes this suture separates a wedge-shaped plate from the main tubercle bearing plate. The general impression is that of two regular rows of tubercles in each ambulacrum from apex to peristome, and of a pore zone very narrow at the ambitus, widening towards the apex and more towards the peristome.

The interambulacra are broad and give the general impression of many horizontal rows of tubercles, with smaller tubercles near the ambitus in V-shaped rows, while some very large tubercles occur irregularly among the others.

The sutures between the long and narrow, often undulating, IA plates are irregular, undulating as they follow the outer margins of the tubercles.

One half interambulacrum may be described as an example (see textfigure 2): One narrow plate with traces of tubercles near the apex only, three broad

plates with 2, 3, 4 to 5 tubercles respectively, the third slightly narrower than the second and this again narrower than the first. Then follow at the ambitus 7 plates partly incomplete, much narrower than the others, bearing the rows of smaller tubercles that are placed obliquely, so that the two halves of the I A form V-shaped rows. The inner tubercles here are larger, sometimes one irregularly enlarged. Then rather abruptly the plates are horizontal again, wider, with 5 larger tubercles; the next plate has a curious irregular form, broad at both ends, with 5 to 6 tubercles; the next two plates are broad, irregular, with 3 to 2 tubercles; the last plate is smooth and narrow. An unpaired I A plate was not seen.

In the smaller specimens the V-shaped rows of tubercles in the interambulacra are present though not as distinctly different as in the largest one.

A naked space near the apex in the interambulacrum is not very conspicuous, though as a consequence of the small number of tubercles the first plates have a small naked inward tip.

The tests are very much worn, most tubercles are mere circular elevations, but here and there one of the tubercles is enlarged and curiously preserved with an imperforate mammelon.

Though a crenulation is never discernable with certainty, in some cases small irregularities are present, that may be vestigial rests of it. Since, as Dr. Mortensen remarked to me *in litteris* it is often difficult to discern this feature distinctly even in recent echinids, it may be supposed, that some day it will be detected in better preserved material.

Literature cited

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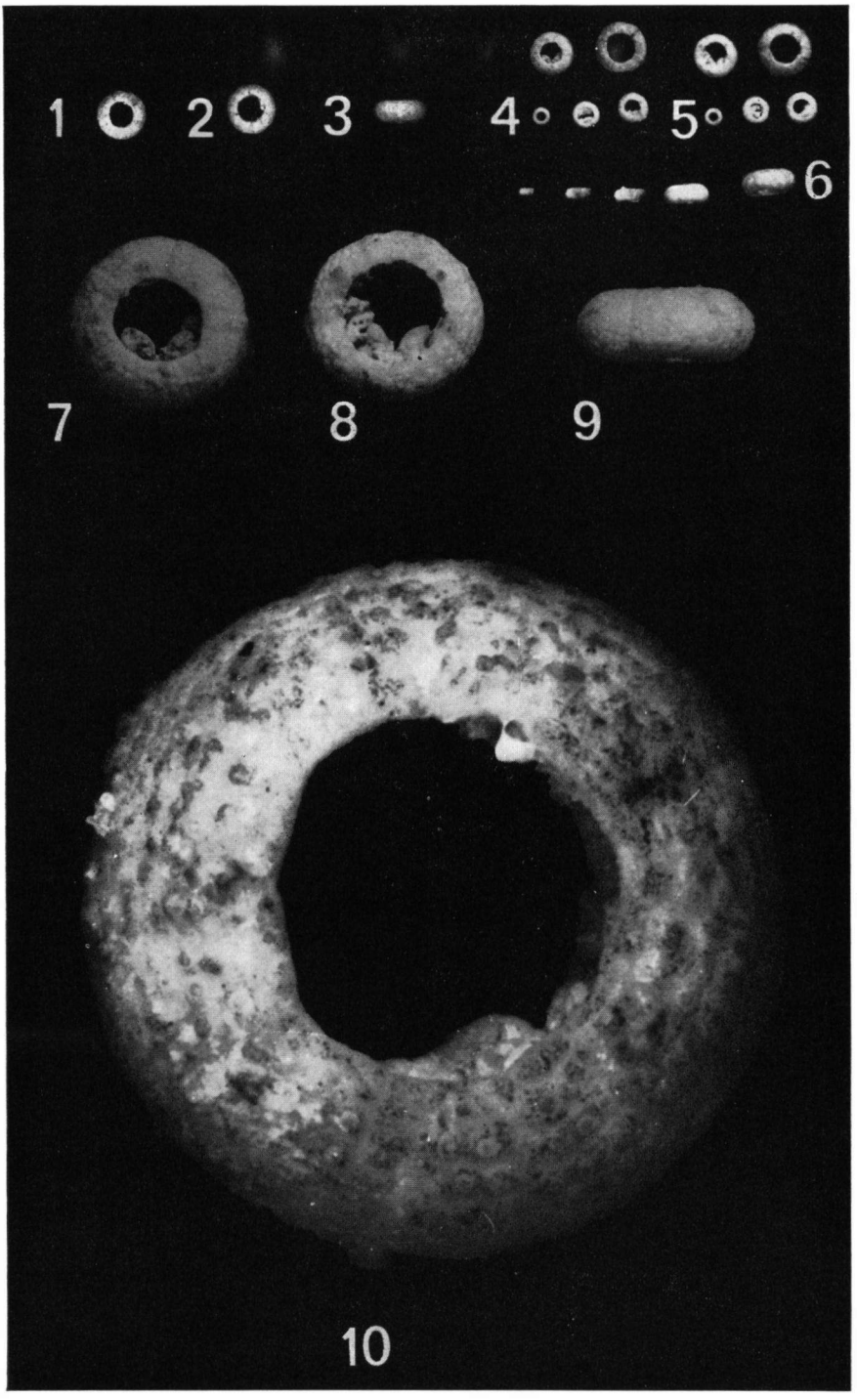

Winkleria maastrichtensis nov. gen., nov. spec.
1, the holotype in natural size, from above; 2, the same from below; 3, the same from the side; 4—6, five specimens, from above (4), from below (5), and from the side (6); 7—9, one of these specimens (the second largest of the five illustrated in figs. 4—6) enlarged (4 x), from above (7), from below (8), and from the side (9); 10, the holotype, enlarged, seen from above.