BASTERIA 41: 81-86, 1977

Notes on Loricata
9. On the rediscovery of Lepidopleurus africanus Nierstrasz, 1906 and the systematic position of the taxon Parachiton Thiele, 1909

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Mr. R.A. Van Belle (Sint-Niklaas, Belgium) recently showed me a dried and stretched specimen of a lepidopleuroid species that he had received on loan from Mr. S. Palazzi (Modena, Italy). It was collected at Gallipoli, Golfo di Taranto, Italy, and forms part of the collection of the Palaeontological Institution of Modena (fig. 1). The specimen was labelled "*Lepidopleurus cancellatus.* M 91 C". In fact it does not bear any resemblance to that species, as it has a very large tail valve with the mucro far posterior, quite like in some species of the Australasian genus *Parachiton.*

In 1906 H.F. Nierstrasz described *Lepidopleurus africanus* from Oran, Algeria, based on a single specimen in alcohol, which holotype is now in the Rijksmuseum van Natuurlijke Historie, Leiden, no. 2783. The description and figures given by Nierstrasz suggest that the author had a *Parachiton* before him, but as during seventy years the species never turned up again, one inclined to believe that the specimen described by Nierstrasz might rather have been of Australian provenance than from Oran, and that it was wrongly labelled.

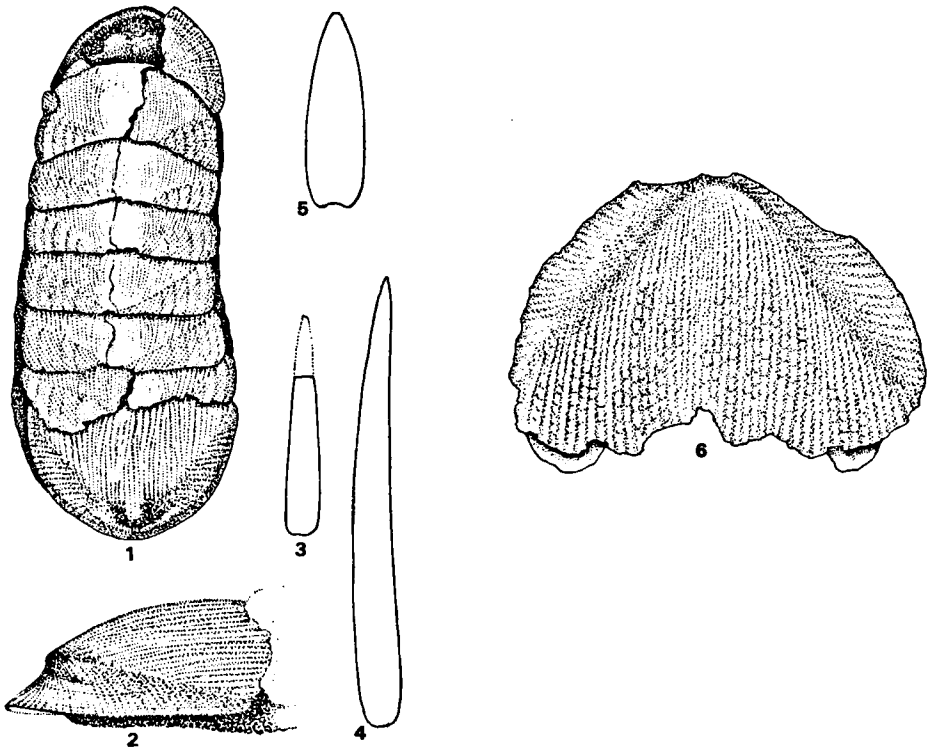
The specimen is deprived of its end valves, which, as may be assumed, were disarticulated by Nierstrasz in order to examine their interior side as well as for illustration purposes. *Lepidopleurus africanus* originally formed part of the collection of the Zoological Museum of the Utrecht State University, no. 696. Later the bulk of that collection was removed to the Leiden Museum. The loose valves might have been preserved separately and subsequently lost, which is the more regrettable as especially the tail valve is the most peculiar and distinctive part of the animal. Of course, there are Nierstrasz's

drawings accompanying his description, but these are more or less sketchy with regard to the outlines as well as the sculpture of the valves. What remains of the animal, however, was carefully compared with the corresponding parts of the Gallipoli specimen. This led to the conclusion that the latter is undoubtedly conspecific with Nierstrasz's holotype specimen, so that occurrence in the Mediterranean is now definitely established. Moreover, Mr. Van Belle could show me a slightly damaged loose tail valve of the same species (fig. 6) from his private collection, no. 1236, collected in shell sand from Calella, Costa Brava, Spain, in June 1973, by Mr. A. Verhecken (Antwerp) at a depth of ca. 30 m. The measurements of this valve are: length 2.08 mm, width 2.84 mm, height 0.98 mm.

In addition to Nierstrasz's description a few remarks may be made. The longitudinal ribbing on the jugal tract of the valves is a little convergent indeed, near the posterior margins. The pattern, however, is by no means as regular as Nierstrasz's figures would suggest. Although the lateral areas are well defined, they are definitely not raised. The pustules on these parts are less clear cut than those on the central areas, arranged in a random manner. There are six or seven concentric growth marks on the lateral areas at regular intervals. The length of the tail valve is about three quarters of the breadth, the posterior slope short, steep, a little concave directly behind the mucro (fig. 2). The girdle is narrow, dorsally rather densely armed with cylindrical, smooth, calcareous spicules of different sizes, those near the sutures largest, 160 μ long, 19 μ wide (fig. 4); towards the margin they become shorter and relatively thicker, 80 μ long, 15 μ wide (fig. 3). Ventrally the girdle is clothed with flat, thin, elongate scales, 68 μ long, 20 μ wide (fig. 5), somewhat truncate or emarginate at the base, bluntly pointed at the top, arranged in radiating, imbricating rows.

All valves of the Gallipoli specimen, except the tail valve, are broken along the median axis as a result of having been compressed laterally. The specimen is 8.0 mm long, 3.1 mm wide; lenght of the tail valve 2.32 mm, width 3.04 mm, height 0.92 mm.

Thiele (1909: 13) described *Lepidopleurus acuminatus* from Duke of York (= Neu Lauenburg) in the Bismarck Archipelago, NE. of New Guinea, for which he created a new subgenus *Parachiton*, characterized by the "dreieckigen Form des hintersten Schalenstückes mit dem fast terminalen Apex..., während die übrige Schale und der Rand sich andern Arten ähnlich verhalten." (l.c.: 14). Afterwards several more *Parachiton* species were described from New Caledonia, the Kermadec Islands, New Zealand, and Australia. Not all of these, however, are true *Parachiton* species, when tested by Thiele's diagnosis of the subgenus. Therefore, Iredale & Hull (1925: 343) gave a definition of their own: "Shells more elongately ovate than the preceding forms (i.c. *Terenochiton* Iredale, 1914 = *Leptochiton* Gray, 1847); median valves deep; the posterior valve large, generally being abnormally long, with the mucro posterior to sometimes terminal; moderately depressed; of pure white or delicately pinkish colouration; sculpture as in *Terenochiton*, but always finer and more elegant; the girdle covering consisting of fine elongated glassy spicules. Interior and other shell features as in *Terenochiton*." The authors furthermore stated (l.c.: 343): "autoptic examination shows that no relationship exists" between *Parachiton* and *Deshayesiella*..., "although the description of *Parachiton* reads somewhat like that of *Deshayesiella*." This remark gives rise to considerable doubt as, primo, nowhere is stated



Figs. 1-6. *Leptochiton (Parachiton) africanus* (Nierstrasz, 1906); 1-5, specimen from Gallipoli, Golfo di Taranto, Italy (S. Palazzi leg., Palaeontological Institution, Modena). 1. Dorsal aspect, x 9. 2. Lateral view of valve VIII, x 15. 3. Small spicule from the dorsal side of the perinotum, 76 x 12μ. 4. One of the larger spicules on the dorsal side of the perinotum, 160 x 19μ. 5. Scale of the ventral side of the perinotum, 68 x 20μ. 6. Valve VIII, from shell sand, Calella, Costa Brava, Spain, ca. 30 m deep (A. Verhecken leg., R.A. Van Belle colln. no. 1236), x 18.

whether the authors had an opportunity to study specimens of the Japanese *Lepidopleurus curvatus* Carpenter in Pilsbry, 1892, the type of the genus *Deshayesiella* Carpenter in Dall, 1879, and, secundo, they never mentioned to what conclusions anatomical studies may have led.

Deshayesiella is based on the unique specimen of *L.(D.) curvatus*; the main characteristics are the shape of the valves (more or less "thrown forward"), and the girdle covering

("chaffy scales and scattered small spines"), which, in my opinion, do not justify separating it from *Leptochiton* Gray, 1847, whose members almost always have a girdle with erect, striated scales as well as spicules. Judging from Pilsbry's figures (1892: pl. 4 figs. 78-81) *Deshayesiella* falls into the synonymy of *Leptochiton.*

In the mean time the occurrence of a *Parachiton* in the Mediterranean Sea, so far from the Australasian region, remains most remarkable, although discontinuous distribution of related species of Polyplacophora is not unknown. In *Cryptoconchus*, for instance, we find another example, with one species in the Caribbean area, one in New Zealand, and one in Indonesia.

Fortunately Mr. Van Belle drew my attention to the fossil species *Lepidopleurus (Parachiton) thielei* Šulc, 1934, based on a few intermediate and tail valves from the Miocene deposits of Steinabrunn in the Vienna Basin. Šulc compared it to the Recent *L. (P.) acuminatus* Thiele, 1909, from which it differs in the shape of the tail valve, being posteriorly rounded in *L. thielei*, while it is more or less triangular in *L. acuminatus.* Baluk (1971: 454, pl. 1 fig. 8) found seven intermediate and six tail valves of *L. (P.) thielei* in the Lower Tortonian *Pleurotoma*-clays (Miocene) of Korytnica, on the southern slopes of the Holy Cross Mountains in Central Poland. Judging from the figures given by Šulc and Baluk the shape of the tail valve of *L. (P.) thielei* is exactly like that of *L. (P.) africanus* and there is also a marked resemblance in the sculpture of both species. The fossil species, however, is slightly larger. Baluk's largest tail valve measures: length 3.8, width 5.0 mm. Baluk compares *L. (P.) thielei* to the South-Australian *P. verconis* Cotton & Weeding, 1939. Ashby, who apparently came into possession of one tail valve of *L. thielei* from Steinabrunn, probably presented to him by Sulc, states (Ashby & Cotton, 1936: 389), that it much resembles *L. columnarius* (Hedley & May, 1908) but that species is very highly arched, and has a totally different tail valve with a subcentral mucro; it is shaped like a true *Leptochiton.*

In my opinion *L. (P.) africanus*, if not conspecific with *L. (P.) thielei*, must be regarded as a closely allied descendant of the latter. The systematic position of *Parachiton* in the family Lepidopleuridae is uncertain. The type of the genus *Lepidopleurus* Leach in Risso, 1826 (not Carpenter in Dall, 1879) is *Chiton cajetanus* Poli, 1791, by subsequent designation, Gray, 1847. As Poli's work is not strictly binominal the species has to be called *Lepidopleurus cayetanus* Risso, 1826. Because it is the only species in the family with a heavy shell and strong concentric folds on the lateral areas and end plates, it is set apart from *Leptochiton* Gray, 1847 [type: *Chiton cinereus* Montagu, 1803 = *Chiton asellus* Spengler, 1797 (not *Chiton cinereus* Linnaeus, 1767) by subsequent designation, Gray, 1847]. It seems wisest to regard *Parachiton* as a subgenus of *Leptochiton*, on account of its extraordinary long tail valve with posterior or even terminal mucro, and exclusively spiculose girdle.

Up to now nine living and one fossil species of this subgenus are known. In chronological order these are:

L. (P.) africanus (Nierstrasz, 1906), Mediterranean Sea;

L. (P.) acuminatus (Thiele, 1909), Bismarck Archipelago;

L. (P.) mestayerae (Iredale, 1914), Kermadec Islands;

L. (P.) puppis (Hull, 1923), New South Wales, Australia;
L. (P.) litoreus (Iredale & Hull, 1925), Torres Strait, N. Australia;
L. (P.) capricornicus (Iredale & Hull, 1925), Capricorn Islands, Queensland, Australia;
L. (P.) lifuensis (Hull & Risbec, 1931), New Caledonia;
† *L. (P.) thielei* (Sulc, 1934), Miocene deposits in Austria and Poland;
L. (P.) textilis (Powell, 1936), Three King Islands, New Zealand;
L. (P.) verconis (Cotton & Weeding, 1939), South-Australia.

Other species assigned to *Parachiton* are *Lepidopleurus columnarius* Hedley & May, 1908, *Lepidopleurus pelagicus* Torr, 1909, *Lepidopleurus profundus* May, 1923, *Parachiton opiparus* Iredale & Hull, 1925, *Parachiton collusor* Iredale & Hull, 1925, and *Parachiton subantarcticus* Iredale & Hull, 1930, the latter being based only on one intermediate valve, and therefore of no significance at all. All have a rather normally shaped tail valve, with the mucro (sub)central or even anterior. These were placed in *Parachiton* only on account of their hairy girdle and sculpture more delicate than in the majority of the species of *Leptochiton*, a procedure that cannot be justified.

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