

Investigación Especial

A BIZARRE AMMONITE OF THE APTIAN (CRETACEOUS) FROM STATE OF DURANGO, NORTH MEXICO

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ABSTRACT. The teratoid shell from an ammonite *Deshayesites* is here described, the ribbing of the flank left was deformed; it was collected in La Peña Formation (Aptian, Lower Cretaceous) from the Durango State, Center North of Mexico.

The ribbing deformation in only one flank is already known in Jurassic and Cretaceous ammonites from different countries. The malformation analysis of this Mexican specimen should not be confused with the dimorphic concept as known in ammonoid genera from Upper Paleozoic and Mesozoic.

INTRODUCTION. The ammonites are characterized by its symmetric coiling shell with two similar flanks corresponding to evolute or involute features; the ornamentation is formed by rectiradial or incurved, simple or divided ribs, sometime having lateral and ventrolateral tubercles or sporadic constrictions; there are even ammonites with smooth shell as *Sphenodiscus* (Meek, 1871 in Wright *et al.*, 1996) of the Maastrichtian (Upper Cretaceous).

Therefore, specimens with different morphologic features in only one flank have been

considered as malformations that affected the bilateral symmetry of the shell, as *Cardioceras cordatum* Sow., of the Oxfordian from France (Theobald, 1958, p 20, pl. 1, figs. 4, 4a) (Pl. 1, figs. 2, 2a).

It has been pointed out that ammonites with anormal features in a flank of the shell might have been attacked by another animal during its growth stage, that affected the development; it is the case of *Schloenbachia sub tuberculata* (Sharpe) of the Cenomanian from France (Thomel, 1980, fig. 25) (Pl. 1, fig. 3).

Another teratoid shell with partial deformation in the ribbing is known in *Lithacoceras* n. sp. aff. *picunleufuense* (Parent *et al.*, 2011, p 27, fig. 4A₁, A₂, A₃), of the Middle Tithonian from Argentina; this specimen was considered by the mentioned authors as "a repaired injury that not affected the venter" (Pl. 1, figs. 1, 1a, 1b).

DIMORPHIC CASES. This concept in ammonoids differs from the previous one, according to various studies, which have been recognized at the genus level in Upper Paleozoic (Pennsylvanian-Permian) specimens,

as well as in Jurassic and Cretaceous ammonoids; it is referred to neighbors genera from the same families or subfamilies with different ornamentation features.

There is also the hypothetical case where shells are separated in micro and macro forms from the same species, it occurs in ammonites from the Jurassic and Cretaceous; this controversial subject in systematic paleontology of these fossils, it depends of the preservation in the shell of peristome and lateral structures which occurs in the edges of the body chamber, they are called as lappets; the more and controversial case is found in *Olcostephanus* from the Valanginian (Cantú Chapa, 2012; Cooper, 1981).

Dimorphic cases in ammonoid shells were even proposed to name them as superfamily Dimorphocerataceae (Hyatt, 1884) of the Upper Mississippian to Permian. Representatives of this taxa were grouped in lower systematic units with different shell shapes and suture line patterns (Kullmann, 1980).

In addition, there is the systematic, strange and aberrant case where two specimens with different shells shapes and ornamentations were classified with the same name, it is *Neodimorphoceras texanum* Smith of the Pennsylvanian from Texas. One of them has involute, smooth, discoidal and ovoid shell with flat and narrow venter, while the other one shows a relatively wide and subrounded venter with flanks also subrounded that is ornamented with thin, close together and sigmoidal ribs (Arkell *et al.*, 1957, p L68, figs. 106, 107). (Pl. 2, figs. 3, 3a, 4, 4a).

There are known some dimorphic cases in the Cretaceous ammonites where the ornamentation changes in the last whorl, the adapical mid part of the shell has somewhat sharp and separated ribs in both flanks; the ribbing becomes fine, sigmoidal and close together in the adoral part of the same shell; this case is represented by *Capeloites* of the Valanginian (Lissón, 1937) from Peru, Mexico and France (Cantú-Chapa, 2012) (Pl. 2, fig. 2).

Therefore, in description of ammonites two terms are used to name different sections of the shell from the same specimen;

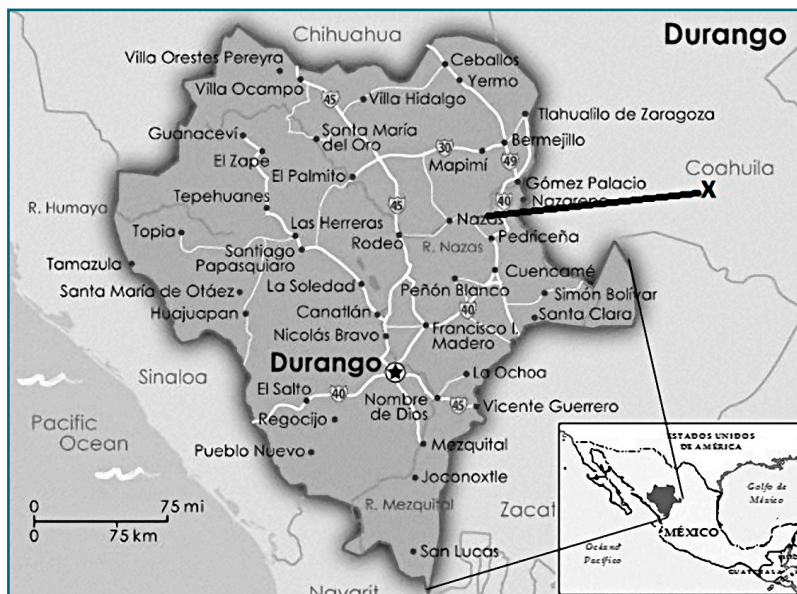
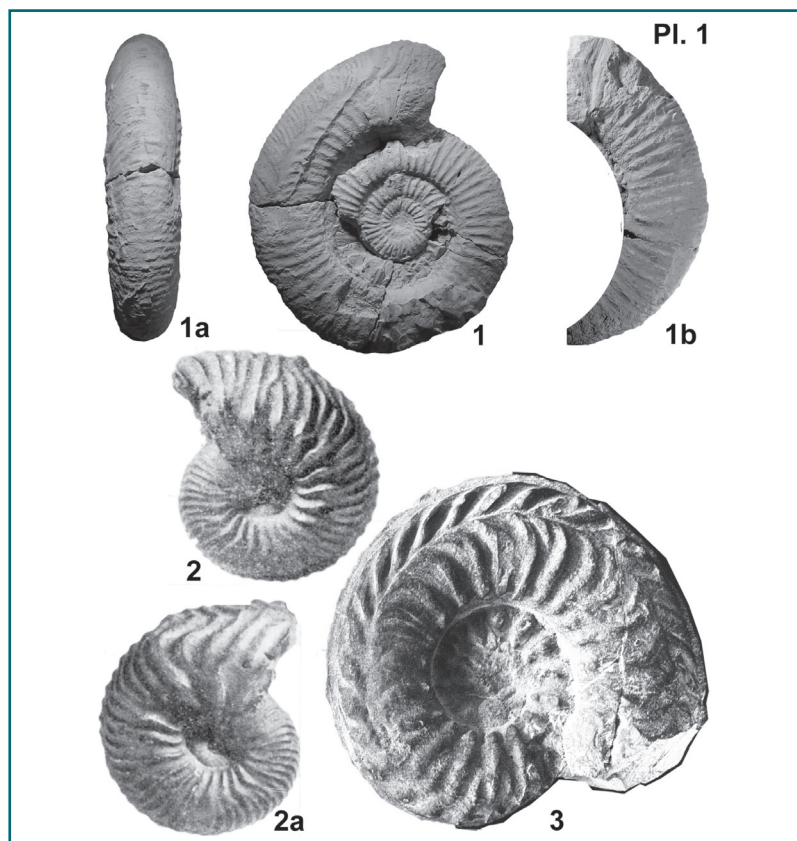
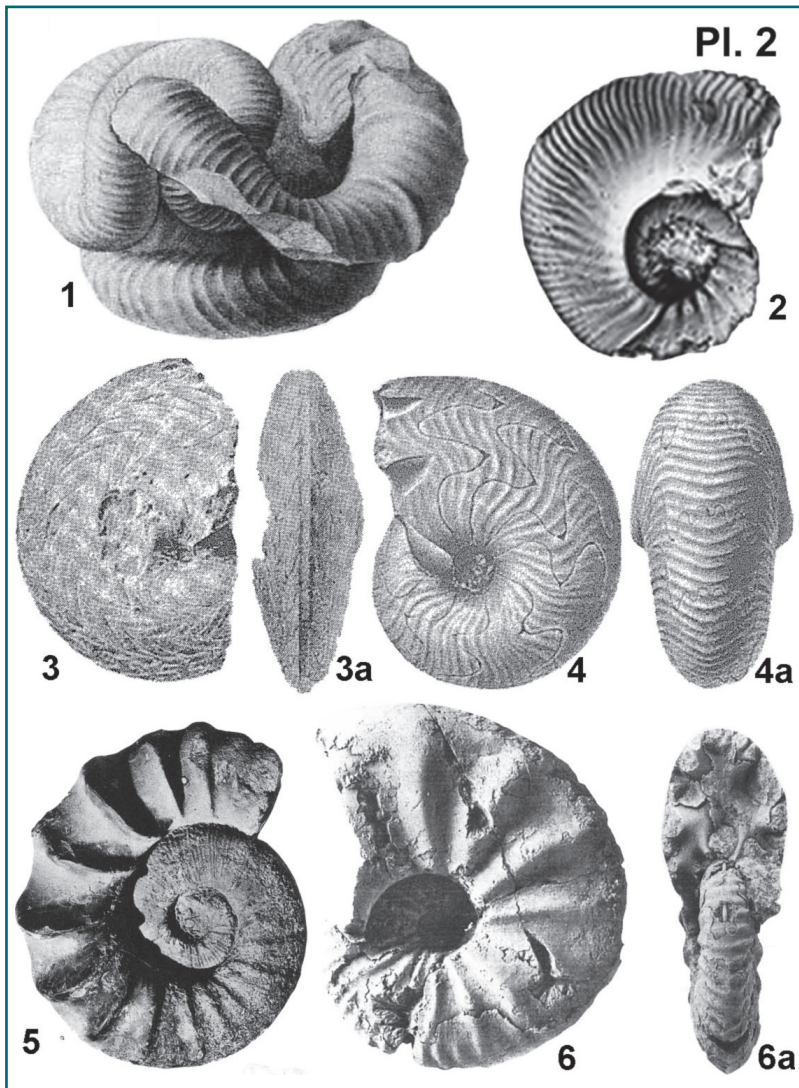


Fig. 1. Geographic locality of the fossil studied in Lerdo City, State of Durango, North of Mexico.

- one of them is the adapical part of the last whorl that is represented by the fragmocone that is internally segmented by septum that separate the cameras;



Pl. 1. Three shells of deformed ammonites in a flank.
Figs. 1, 1ab. *Lithacoceras* n. sp. aff. *picunleufense* of the Middle Tithonian from Argentina (Parent *et al.*, 2011),
Figs. 2, 2a. *Cardioceras cordatum* Sow., of the Oxfordian from France (Theobald, 1958).
Fig. 3. *Schloenbachia subtuberculata* (Sharpe) of the Cenomanian from France (Thomel, 1980). Without scale.



Pl. 2. Different dimorphic shells of ammonites.

Fig. 1. *Nipponites* Yabe (1904) of the Upper Cretaceous from Japan (in Wright et al., 1996).

Fig. 2. *Capeloites* of the Valanginian from Mexico (Cantu-Chapa, 2012).

Fig. 3, 3a, 4, 4a.

Two specimens of *Neodimorphoceras texanum* Smith of the Pennsylvanian; they show different shells shapes and ornamentation features; from Texas (in Arkell et al., 1957).

Fig. 5. *Tropaeum* Aptian, whorl wide distribution (in Wright et al., 1996)

Fig. 6, 6a. *Chigaroceras* of the Tithonian from Irak (Howarth, 1992). All figures without scales.

- the other one is the body chamber that characterizes the adoral mid whorl of the same shell.

There are also dimorphic cases with double ornamentation in the same shell, that is known in some genera like *Chigaroceras* (Howarth, 1992) of the Tithonian from Irak (Pl. 2, figs. 6, 6a):

- the adapical mid last whorl has primary, reticulate sharp ribs arising from small umbilical tubercles, ribs are divided in secondaries that cross normally the subrounded venter, by contrary, the adoral mid whorl of the same shell shows simple and somewhat wide ribs.

Therefore, dimorphic ribbing feature is also observed in some genera of the superfamily Ancylocerataceae (Gill, 1871) as *Tropaeum*

(J. de C. Sowerby, 1837, in Wright et al., 1996), from the Aptian, with world wide distribution (Pl. 2, fig. 5). The extreme case of dimorphism shells occurs with abnormal coiling, that does not show the symmetric plane; however, the ornamentation is similar in both flanks of the twisted shell, like *Nipponites* Yabe (1904) of the Upper Cretaceous from Japan (Pl. 2, fig. 1).

According to mentioned specimens that show the deformed ribbing in only one flank of the shell, a Mexican teratoid ammonite is here described as following.

SYSTEMATIC PALEONTOLOGY

LOCALITY AREA. Near the Francisco Zarco dam, Lerdo City; State of Durango, Center-North of Mexico (Fig. 1),

Morphological terminology follows Wright et al. (1996). All dimensions are given in centimeters;

Described specimen: jqb-976 is housed in the Museo de Paleontología de Torreón, State of Coahuila, Mexico.

Family DESHAYESITIDAE Stoyanow, 1949

Genus DESHAYESITES Stoyanow, 1949

DESHAYESITES sp.

Pl. 3

Specimen, Museo de Paleontología, Torreón, Coahuila.

Mesures in centimeter:

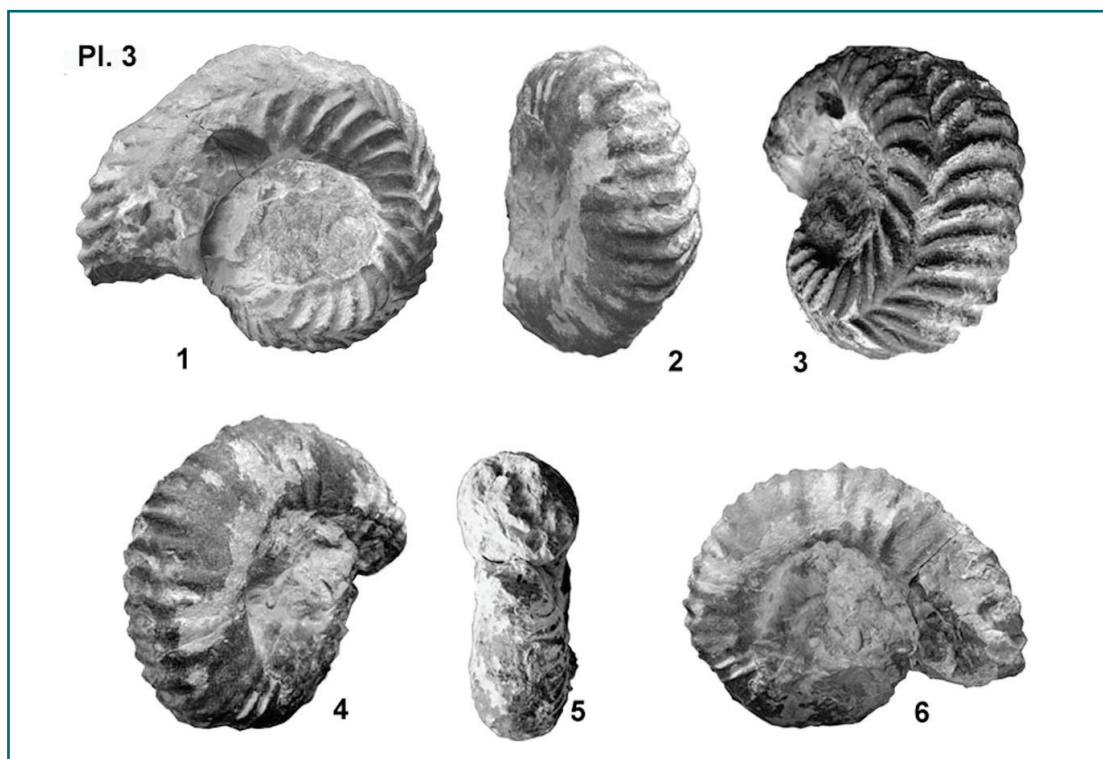
Shell diameter: 26.0

umbilicus: 12.0 (u/d = 0.46 %)

whorl high: 9.0

whorl width: 8.0

DESCRIPTION. Shell evolute, whorl section is subrectangular; the left flank is wide and has sharp, simple and separated ribs that borne normally at the umbilical edge, they become strongly rursiradate in inner mid flank, all ribs change abruptly in acute angle at outer mid flank and crosse normally the wide venter. By contrary, the primary ribs are sharp, radial, separated by wide intercostal space in the normal and partially eroded right flank; some



Pl. 3. Different views of a Mexican Deshayesites of the Aptian, from State of Durango, Mexico. Without scale, Fig. 1 Teratologic flank right. Fig. 2. Ventral region normal. Fig. 3. Intersection of ribs in the ventro lateral edge. Figs. 4 & 6. Flank left eroded and normal. Fig. 5. View of the whorl section.

intercalated simple ribs are in outer flank. The abnormal flank is wider toward the area where ribs change of direction; the inner area is inclined toward the umbilicus. The suture line is unknown.

The teratoid case of this specimen was strongly affected only in the left flank, it was provoked by the abrupt change in direction of its ribbing. The contact point of the two

types of ribs, deformed and normal, is the symmetric plan of the shell that is at the edges of both flanks, corresponding to the ventral area.

Its systematic position in this family is determined according to normal morphology that presents the right flank; the age is established according to association with some parahoplites that were found in the same locality.

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