N. Jb. Geol. Paläont. Abh. **242** (2/3) 289–327 Stuttgart, Dezember 2006

Desmoceratidae and Silesitidae (Ammonitida) from the Aptian – Albian of Antarctica

Francisco A. Medina, Buenos Aires and **Alberto C. Riccardi,** La Plata

With 7 figures

MEDINA, F. A. & RICCARDI, A. C. (2006): Desmoceratidae and Silesitidae (Ammonitida) from the Aptian – Albian of Antarctica. – N. Jb. Geol. Paläont. Abh., **242**: 289–327; Stuttgart.

Abstract: Aptian-Albian Desmoceratidae and Silesitidae of James Ross Island, Antarctica are described. Desmoceratid Puzosiinae are represented by *Parasilesites* IMLAY, *Pseudosilesites* EGOIAN, *Feruglioceras* LEANZA, *Umsinenoceras* KENNEDY et al., and Silesitidae by species of *Neoastieria* EGOIAN, *Piatnitzkyceras* MEDINA & RICCARDI, and *Sobraliceras* gen. nov. On James Ross Island several assemblage zones are recognized: the *Peltocrioceras* assemblage zone (Upper Aptian) is characterized by *Pseudosilesites russoi* (LEANZA); the *Ptychoceras* assemblage zone (Lower Albian) by *Feruglioceras piatnitzkyi* LEANZA, *Umsinenoceras* sp. indet., *U.*? sp. nov., *Neoastieria antarcticaensis* sp. nov., *Piatnitzkyceras thomsoni* sp. nov., *Sobraliceras stoneleyi* gen. et sp. nov. and *S.*? sp. nov.; the *Aioloceras* assemblage zone (Lower Albian) is characterized by *Piatnitzkyceras* cf. *bonarellii* MEDINA & RICCARDI, *Umsinenoceras cardielense* MEDINA & RICCARDI, *U. compressum* sp. nov., *Parasilesites jamesrossi* sp. nov., *P. densicostatus* sp. nov., and *Sobraliceras robustum* gen. et sp. nov.

Key words: Ammonitida, Desmoceratidae, Puzosiinae, Silesitidae, Aptian, Albian, Antarctica.

Zusammenfassung: Desmoceratidae und Silesitidae aus dem Aptium – Albium von James Ross Island (Antarktis) werden taxonomisch und chronostratigraphisch revidiert. Desmoceratide Puzosiinae werden durch *Parasilesites* IMLAY, *Pseudosilesites* EGOIAN, *Feruglioceras* LEANZA und *Umsinenoceras* KENNEDY et al. vertreten; Silesitidae durch *Neoastieria* EGOIAN, *Piatnitzkyceras* MEDINA & RICCARDI, und *Sobraliceras* gen. nov. Auf James Ross Island werden mehrere Assemblage-Zonen erkannt: die *Peltocrioceras* Zone (Oberes Aptium) wird durch *Pseudosilesites*

0077-7749/06/0242-0289 $ 9.75

russoi (LEANZA) charakterisiert; die *Ptychoceras* Zone (Unteralbium) durch *Feruglioceras piatnitzkyi* LEANZA, *Umsinenoceras* sp. indet., *U.*? sp. nov., *Neoastieria antarcticaensis* sp. nov., *Piatnitzkyceras thomsoni* sp. nov., *Sobraliceras stoneleyi* gen. et sp. nov. und *S.*? sp. nov.; die *Aioloceras* Zone (Unteralbium) durch *Piatnitzkyceras* cf. *bonarellii* MEDINA & RICCARDI, *Umsinenoceras cardielense* MEDINA & RICCARDI, *U. compressum* sp. nov., *Parasilesites jamesrossi* sp. nov., *P. densicostatus* sp. nov. und *Sobraliceras robustum* gen. et sp. nov.

Schlüsselwörter: Ammonitida, Desmoceratidae, Puzosiinae, Silesitidae, Aptium, Albium, Antarktis.

1. Introduction

The Cretaceous of James Ross Island is well known for its excellently preserved Late Cretaceous ammonoids, which were described and figured by KILIAN & REBOUL (1909), SPATH (1953), HOWARTH (1958, 1966), and OLIVERO (1984, 1988, 1992). On the other hand, Early Cretaceous ammonoids are poorly known (THOMSON, 1982, 1984; MEDINA et al. 1983; INESON et al. 1986; MEDINA et al. 2003). Although several assemblage zones were proposed for the Aptian and Albian (MEDINA & BUATOIS 1992; OLIVERO & MEDINA 1993; MEDINA et al. 2003), figured material has been restricted to a few, mostly poorly preserved specimens (MEDINA et al. 1983; THOMSON 1984; MEDINA & BUATOIS 1992; MEDINA 1999; MEDINA et al. 2003).

Because of geographic proximity and analogous geology, the similarity of these faunas to those in stratigraphically equivalent sedimentary rocks of southern Patagonia has been assumed for a long time (see THOMSON 1982). When compared with those of Antarctica, however, the Early Cretaceous faunas of Patagonia are better preserved and better known taxonomically and biostratigraphically, and they can more easily be placed in the European zonation. The identification of the same species in both regions greatly improves the Lower Cretaceous biostratigraphy of the Antarctic Peninsula.

Desmoceratidae and Silesitidae from Alexander Island, west of the Antarctic Peninsula, were described only by HOWARTH (1958) and THOMSON (1974). No material from James Ross Island, east of the Antarctic Peninsula, has previously been described.

This study includes material collected by one of us (FAM) throughout the last 15 years and characterizes the ammonoid fauna, its stratigraphy and its relationships to similar faunas from other regions, mainly Patagonia.

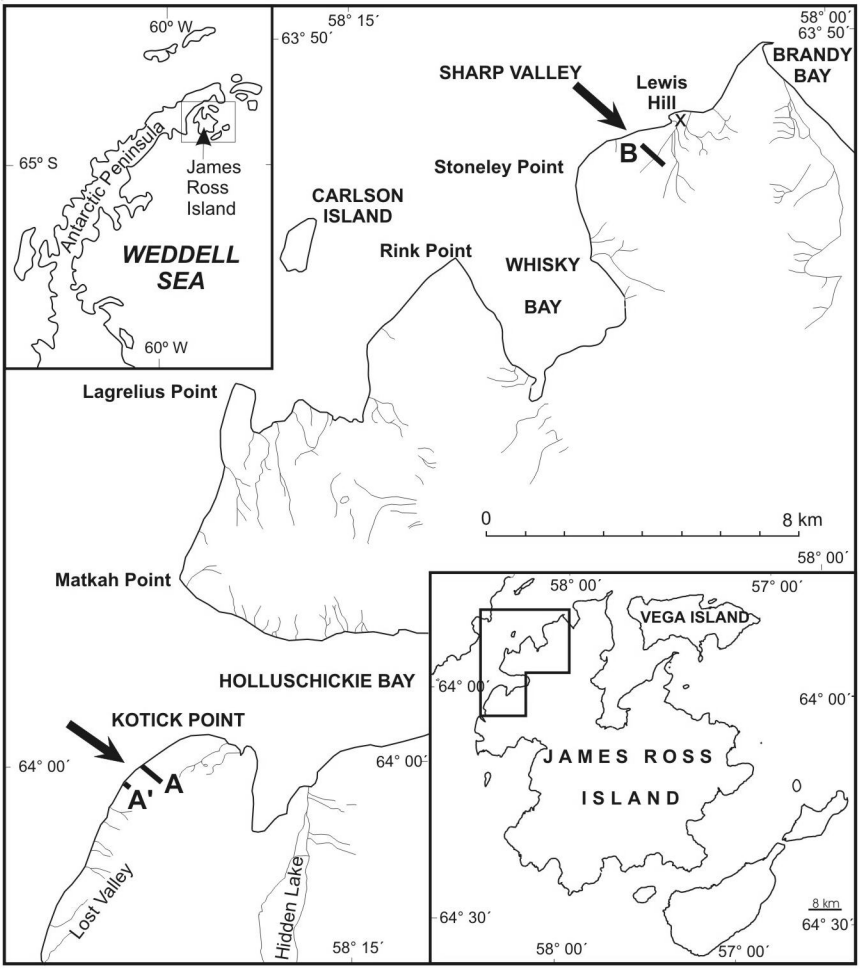

Fig. 1. Index and locality maps of investigated region in James Ross Island, Antarctica. Locality letters as in descriptions of stratigraphic sections.

2. Fossil localities and stratigraphy

James Ross Island is adjacent to the northeastern Antarctic Peninsula (Fig. 1). During Mesozoic to Tertiary times a volcanic arc was located in the

Antarctic Peninsula, while a back-arc basin (the James Ross Island or Larsen Basin) developed to the east. The arc was related to the subduction of the proto-Pacific Ocean (Panthalassa) crust beneath the southern margin of Gondwana (INESON 1989; BUATOIS & LOPEZ ANGRIMAN 1992). Cretaceous strata on James Ross Island comprise a thick Barremian? – Maastrichtian succession, which is divided into two major lithostratigraphic units: the Gustav Group (INESON et al. 1986), below, and the Marambio Group (OLIVERO et al. 1986).

The Cretaceous deposits of the Gustav Group are exposed in western James Ross Island where they form a belt about 50 km in length. The group includes, from base to top, the Lagelius Point Formation, Kotick Point, an unnamed unit, Whisky Bay and Hidden Lake formations (INESON et al. 1986; MEDINA et al. 1992). The group is characterized by thick sequences of conglomerates, breccias, sandstones and mudstones, with marked lateral and vertical facies variations. Detailed stratigraphy of the measured sections and paleontological studies indicate that the age of this group ranges from Barremian? – Aptian to Coniacian – Santonian (INESON et al. 1986; MEDINA & BUATOIS 1992; MEDINA et al. 1992).

All ammonites described in this paper were collected from the Kotick Point Formation, at two different localities on the west side of James Ross Island (Fig. 1):

1. Sharp Valley, about 1.3 km east of Stoneley Point

The Kotick Point sequence, exposed on both sides of Sharp Valley, is 320 m thick (Fig. 2) and consists of mudstones, siltstones and sandstones, with subordinate conglomerates and breccias, with some lateral facies changes.

On the western slope of Sharp Valley is a succession with several Upper Aptian fossiliferous levels. The upper part of the Kotick Point Formation is well exposed on the eastern flanks of the Sharp Valley, where it comprises 52 m (268-320 m above base) of interbedded mudstones, sandstones and breccias. The lowest 10 m, exposed on the eastern flank, are still Upper Aptian and have yielded the ammonoids *Phyllopachyceras* sp., *Lithancylus* cf. *guanacoensis* (LEANZA) and *Sanmartinoceras* sp. The overlying 13 m did not yield ammonoids.

In the superjacent 8 m, three levels with Albian ammonoids are present. The base is marked by *Pictetia* sp. and *Sobraliceras stoneleyi* gen. et sp. nov.; 5 m higher occur *Ptychoceras* sp. and *Phyllopachyceras* sp.; the upper level contains *Neoastieria antarcticaensis* sp. nov. and *Feruglioceras* cf. *piatnitzkyi* LEANZA.

About 7 m higher is a level with abundant *Anopaea* sp. and *Sobraliceras robustum* gen. et sp. nov.

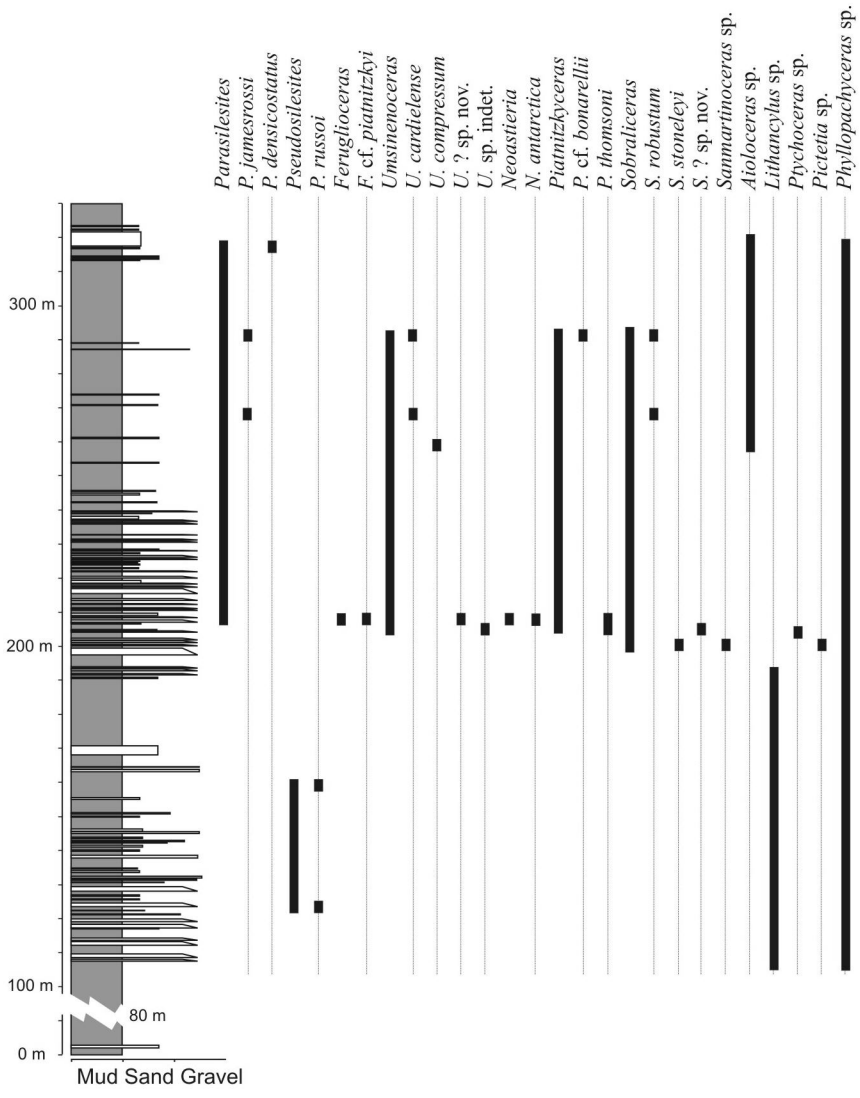

Fig. 2. Upper Aptian-Lower Albian composite stratigraphic section with distribution of ammonoid fauna, James Ross Island.

2. Kotick Point

About 2.1 km southwest of Kotick Point, two sections (Fig. 1, A' – A) have been measured in a succession of about 330 m and ascribed to the Kotick Point Formation (Fig. 2). The base is not exposed.

The basal 170 m studied in Section A and the lower part of the succession exposed in Section A', are characterized by grey silty mudstones and conglomerates with minor fine-grained sandstone intercalations. Late Aptian ammonoids are present at different levels. *Sanmartinoceras* sp. and *Pseudosilesites russoi* (LEANZA), an Upper Aptian species originally described from Patagonia, occur at 124-160 m above base.

The following 75 m (170-245 m above base) are composed of mudstones and siltstones, with subordinate intercalations of fine-grained sandstones and conglomerates. Three ammonoid levels occur at 201–208 m above base: the lowest has yielded *Pictetia* sp.; the middle (205.8–206.2 m) *Umsinenoceras* sp. indet., *Piatnitzkyceras thomsoni* sp. nov. and *Sobraliceras?* sp. nov.; the uppermost *Umsinenoceras?* sp. nov.

The superposed 85 m (245–330 m above base) comprise massive, dark-grey siltstones and mudstones with intercalations of fine-grained sandstones and occasional thin conglomerates. The lowest fauna in this section (at 259 m) includes *Anopaea* sp., *Aioloceras* sp. and *Umsinenoceras compressum* sp. nov. Above (at 269 m) occur *Parasilesites jamesrossi* sp. nov., *Umsinenoceras cardielense* MEDINA & RICCARDI, and *Sobraliceras robustum* sp. nov. Higher up (at 292 m) occur: *Aioloceras* sp., *Parasilesites jamesrossi*, *Umsinenoceras cardielense*, *Piatnitzkyceras* cf. *bonarelli* MEDINA & RICCARDI and *Sobraliceras robustum*. A level at 318 m yielded *Parasilesites densicostatus* sp. nov. and *Aioloceras* sp.

3. Biostratigraphy, age and paleobiogeography

The existing bio- and chronostratigraphical zonations for the Early Cretaceous of James Ross Island were presented by MEDINA & BUATOIS (1992), OLIVERO & MEDINA (1993), and, slightly modified, by MEDINA et al. (2003). The zonation is as follows (from below) (Fig. 3):

***Australiceras* assemblage zone.** This zone is characterized by the presence of *Lithancylus guanacoensis*, *Australiceras* sp., *Helicancylus patagonicus*, *Phyllopachyceras* sp., *Lytoceras* sp., *Ammonoceratites* sp. and *Sanmartinoceras* sp. Here added are *Pseudosilesites russoi* and *Toxoceratoides* sp.

Some of these species have also been found in the *Australiceras hallei* assemblage zone of Patagonia (MEDINA & RICCARDI 2005), i.e. *Lithancylus*

STAGE		EUROPEAN STANDARD	"ASSEMBLAGE ZONES" PATAGONIA	ANTARCTICA
ALBIAN	Upper	Dispar	*Mariella patagonica*	
		Inflatum	*Puzosia vegaensis*	
	Middle	Lautus		*Tetragonites*
		Loricatus		
		Dentatus	*Sanmartinoceras patagonicum*	
	Lower	Mammillatum	*Aioloceras rollerii*	*Aioloceras*
			Aioloceras argentinum	
		Tardefurcata		*Ptychoceras*
APTIAN	Upper	Jacobi	*Peltocrioceras deeckei*	*Peltocrioceras*
		Nolani	*Australiceras hallei*	*Australiceras*
		Nutfieldiensis		
		Tschernyschewi		
		T. drewi		
	Lower	Bowerbanki	*Tropaeum magnum*	
		Deshayesi		
		Tenuicostatus		

Fig. 3. Aptian – Albian ammonoid assemblage zones of James Ross Island, Antarctica, and southern Patagonia compared with the European standard chronozones.

guanacoensis, Helicancylus patagonicus and *Pseudosilesites russoi*. At the generic level, both regions are also characterized by the presence of *Sanmartinoceras, Toxoceratoides* and *Australiceras,* but apparently not with the same species in the former genus, while, for the others, comparisons are handicapped by the incomplete preservation of the Antarctic material.

The Antarctic *Australiceras* zone and the Patagonian *Australiceras hallei* zone are approximately coeval and dated as early Late Aptian.

***Peltocrioceras* assemblage zone.** According to the original definition (MEDINA & BUATOIS, 1992), this zone includes: *Peltocrioceras* sp., *Lithancylus guanacoensis, Tetragonites heterosulcatus* (ANTHULA) and *Hypophylloceras* sp. Now added are: *Pseudosilesites russoi* and *Sanmartinoceras* sp.

Several of these taxa are known from the *Peltocrioceras deeckei* assemblage zone of Patagonia (MEDINA & RICCARDI 2005), i.e. *Lithancylus guanacoensis, Tetragonites heterosulcatus* and *Pseudosilesites russoi*. Comparisons of the nominal species with the Antarctic material of *Peltocrioceras* are hindered by the poor preservation of the latter. Nevertheless, both assemblage zones are probably coeval and dated as late Late Aptian.

***Ptychoceras* assemblage zone.** This zone is characterized by *Pictetia* sp., *Tetragonites heterosulcatus*, and *Ptychoceras* sp. Now added are: *Piatnitzkyceras thomsoni, Feruglioceras piatnitzkyi, Neoastieria antarcticaensis, Sobraliceras stoneleyi, S.* sp. nov., *Umsinenoceras* sp. indet. and *U.*? sp. nov.

Original definition and dating of this zone were based on the occurrence of *Pictetia* sp. and its stratigraphic position between *Australiceras* and *Peltocrioceras* (below), and *Anopaea* and *Aioloceras* (above).

Taxa here added to this assemblage show a large difference between our two localities, Sharp Valley and Kotick Point. The only taxa in common at the generic level are *Pictetia* and *Sobraliceras.* As the thickness of this interval differs between Sharp Valley (10 m) and Kotick Point (42 m), some strata may be missing and those present may differ at the localities.

Thus far, there is no biostratigraphic evidence in Patagonia for an equivalent unit. Patagonian representatives of *Ptychoceras* and *Neoastieria* have been found in levels dated as Late Aptian, whilst *Piatnitzkyceras* and *Umsinenoceras* were found in Early Albian levels. Only *Feruglioceras pitanitzkyi*, whose precise stratigraphic position in Patagonia is doubtful, could provide evidence for the existence of approximately coeval faunas in both regions.

***Aioloceras* assemblage zone.** This zone was originally recognized by MEDINA et al. (2003). It is characterized by *Aioloceras argentinum* (BONARELLI), *Anagaudryceras* sp., *Desmoceras* sp., *Rossalites* sp., and *Anopaea* sp. Here added are: *Parasilesites jamesrossi, P. densicostatus, Umsinenoceras cardielense, U. compressum, Piatnitzkyceras* cf. *bonarellii*, and *Sobraliceras robustum.*

Apparent differences in diversity of this assemblage at both localities are probably due to collection bias. Sharp Valley exposure is poor, and repre-

sented by a single level with *Anopaea* sp., and *Sobraliceras robustum*, while at Kotick Point there are four levels with a larger number of taxa.

Comparison of this assemblage zone with the Patagonian biostratigraphy suggests similarities with the *Aioloceras argentinum* and *A. rollerii* assemblage zones. Taxa in common are: *Aioloceras argentinum, Umsinenoceras cardielense*, and *Piatnitzkyceras bonarellii* at species level, and *Rossalites, Sobraliceras* and *Anagaudryceras* at genus level. Of these taxa, *A. argentinum, P. bonarellii, Rossalites, Sobraliceras*, and *Anagaudryceras* are indicative of the Patagonian *Aioloceras argentinum* assemblage zone, whilst *U. cardielense* indicates the *A. rollerii* assemblage zone. Some fragments found at Kotick Point could belong in *A. rollerii*, but poor preservation precludes identification at species level. Thus, it seems that the Antarctic fauna is more closely related to that of the *A. argentinum* Zone, although a partial equivalence to the *A. rollerii* assemblage zone can not be excluded. Following RICCARDI & MEDINA (2002), this zone is considered to be coeval to the Lower Albian Mammillatum Standard Superzone and, most probably, to the upper Chalensis and lower Auritiformis Standard Zones of Europe

Although a detailed paleobiogeographic analysis is beyond the scope of this paper, it is worth to mention some important aspects about the affinities of the described ammonoids.

The Late Aptian – Albian ammonoid fauna of Antarctica is closely related to that present in southern Patagonia, both regions sharing a number of genera, e.g. *Peltocrioceras, Feruglioceras, Piatnitzkyceras, Sobraliceras*, that are endemic for the whole region. Furthermore, some genera present in Antarctica and southern Patagonia are shared with other regions that were located at similar high latitudes, i.e. *Umsinenoceras, Aioloceras, Labeceras* and *Myloceras* are found in South Africa and Madagascar, the last two being also present in Australasia. This pattern supports the existence of an Austral faunal region (Austral Subrealm/Realm in WESTERMANN 2000) for the Late Aptian – Albian, as proposed on the basis of other invertebrates (see PIRRIE et al. 2004)

Also, as shown in previous studies (see RICCARDI 1991) and the distribution of some genera, i.e. *Pseudosilesites* and *Neoastieria,* the Late Aptian – Albian ammonoid faunas from Antarctica and southern Patagonia show a closer affinity to those from the central Tethys than to those of northern South America, supporting a direct migration route between the first two areas.

4. Systematics

Terminology and dimensions (in mm): juv., juvenile; phr., phragmocone; b. ch., body chamber; inc., incomplete; P, S, primary and secondary ribs per half-whorl;

E, L, U, I, external, lateral, umbilical and internal lobes. Conventional dimensions (D, diameter; H, whorl height at given D, from umbilical seam to venter in plane of coiling; W, whorl width at given D, perpendicular to plane of coiling; U, umbilical width at given D, 'inner' diameter at umbilical seam, including within brackets the corresponding H/D, W/D and U/D ratios of specimens in mm. Some specimens were measured at different diameters, representing morphogeny, at phragmocone and body chamber as indicated.

Repository: MLP (F. A. Medina collection), Departamento Paleozoologia Invertebrados, Museo de La Plata, Paseo del Bosque s/n, 1900 La Plata, Argentina.

Order	Ammonitida Zittel, 1884
Suborder	Ammonitina Hyatt, 1889
Family	Desmoceratidae Zittel, 1895
Subfamily	Puzosiinae Spath, 1922
Genus	*Parasilesites* Imlay, 1959

Type species: *P. bullatus* Imlay (1959, p. 184, pl. 29, figs. 1-8; 1960, p. 106, pl. 18, fig. 1-8); Alaska; original designation.

Fig. 4. a-f – *Parasilesites jamesrossi* sp. nov., Kotick Point, J. Ross Island, Lower Albian, a-b: Holotype, MLP 31403, complete specimen; **c-d** – Paratype, MLP 31404, complete specimen; **e-f** – paratype, MLP 31405, complete specimen; **g-h** – *Parasilesites densicostatus* sp. nov., Kotick Point, J. Ross Island, Lower Albian, holotype, MLP 31406, incomplete phragmocone with part of body chamber; **i-j** – *Pseudosilesites russoi* (Leanza), Kotick Point, J. Ross Island, Upper Aptian, MLP 31408, incomplete phragmocone; **k-n** – *Umsinenoceras cardielense* Medina & Riccardi, Kotick Point, J. Ross Island, Lower Albian; k-l, MLP 31411, almost complete juvenile; m-n: MLP 31412, almost complete juvenile; **o** – *Feruglioceras* cf. *piatnitzkyi* Leanza, Sharp Valley, J. Ross Island, Lower Albian, MLP 31409, complete specimen; **p-s** – *Umsinenoceras compressum* sp. nov., Kotick Point, J. Ross Island, Lower Albian, p-q: Paratype, MLP 31429, incomplete body chamber and phragmocone; r-s, holotype, MLP 31428, almost complete specimen; **t-u** – *Umsinenoceras* sp. indet., Kotick Point, J. Ross Island, Lower Albian, MLP 31434, complete specimen, **v-w** – *Umsinenoceras*? sp. nov., Kotick Point, J. Ross Island, Lower Albian, MLP 31439, almost complete specimen; **x-y** – *Neoastieria antarcticaensis* sp. nov., Sharp Valley, J. Ross Island, Lower Albian, holotype, MLP 31440, complete phragmocone with beginning of body chamber. – Lateral and ventral views, x1.

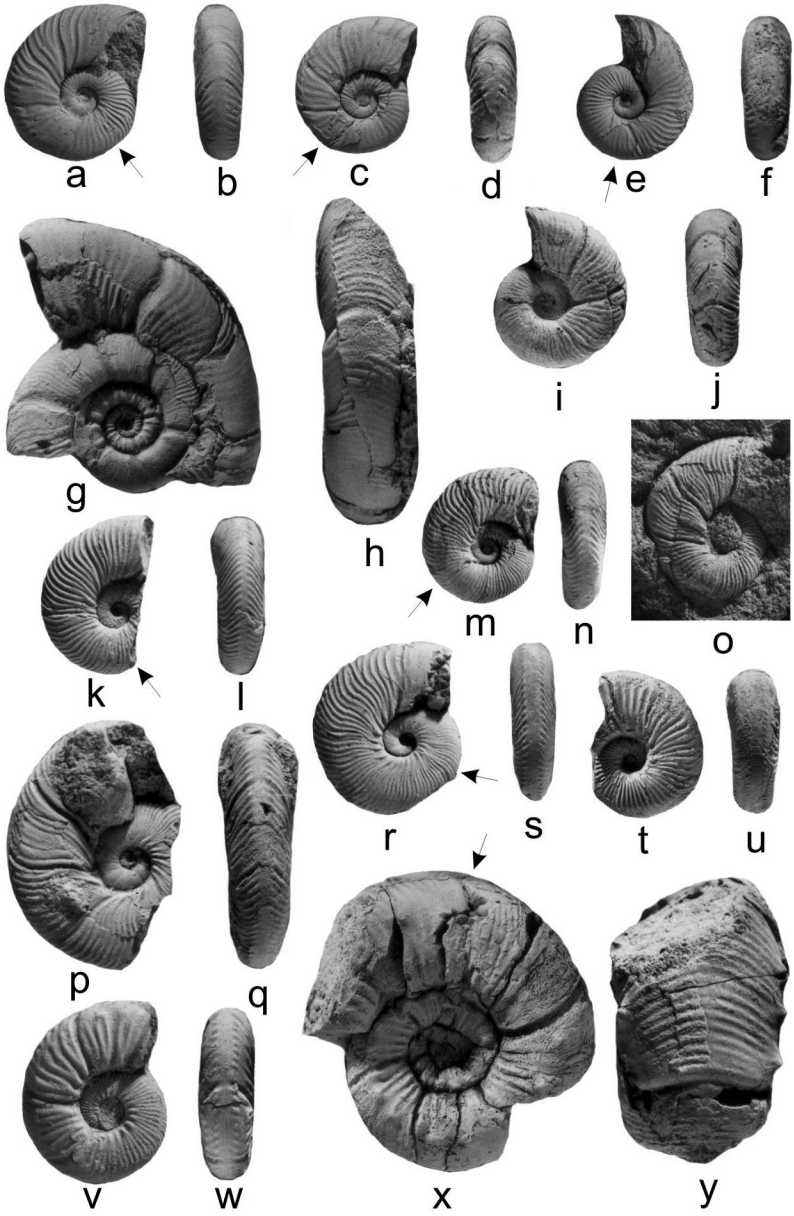

Fig. 4 (Legend see p. 298)

Diagnosis: Shell fairly evolute, with shallow umbilicus, subrounded to slightly compressed whorls, with numerous constrictions (4-9) per whorl; ribs with occasional bullae on umbilical margin, somewhat flexuous on flank and projected on venter, dividing at different height; rather complex suture, L deeper than E, and umbilical lobes retracted.

Remarks: The genus *Parasilesites* was included in the Silesitidae, although the umbilical lobes are protracted in *Silesites* UHLIG and *Neosilesites* BREISTROFFER. Subsequently, another species was described from the Albian of Alaska, *P. irregularis* IMLAY (1960: 107, pl. 18, figs. 9-17). The genus was discussed by WIEDMANN & DIENI (1968, p. 124) and its inclusion in the Silesitidae rejected by MEDINA & RICCARDI (2005: 257) who placed it in the Puzosiinae.

Additional information on the genus is available from the descriptions of other species, i.e. *P. laperousianus* (WHITEAVES 1876: 39, pl. 3, fig. 3; see MCLEARN 1972: 55, pl. 8, figs. 1-2) from the Albian of Queen Charlotte Island; *P. kilianiformis* (FALLOT 1910: 83, pl. 1, fig. 5; 1920: 46, pl. 3, fig. 3; PASSENDORFER 1930: 636, pl. 3, figs. 59, 61a; ALMELA & DE LA REVILLA 1957: 28, pl. 7, fig. 3; see WIEDMANN & DIENI 1968: 124, pl. 10, fig. 7; RENZ 1979: 364, pl. 2, fig. 1; 1982: 37, pl. 5, fig. 10; MARCINOWSKI & WIEDMANN 1990: 58, pl. 7, fig. 4) from the Albian of Mallorca, Baleares, Spain, Sardinia, the North Atlantic, Poland and Venezuela; *P. kiliani* (FALLOT 1910: 80, pl. 1, figs. 1, 3; see WIEDMANN & DIENI 1968: 125, pl. 11, fig. 3) from the Albian of Mallorca and Sardinia; *P. orientalis* MICHAILOVA & TERECHOVA (1975: 57, figs. 1-4; ALABUSHEV & ALABUSHEVA 1988: 13, pl. 1, figs. 8-9) from the Albian of NE Russia. The genus appears to be present also in eastern Africa with *P. africanus* (KRENKEL 1910: 226, pl. 22, fig. 4; = *P. austroafricanus* KRENKEL, 1911, jun. syn. and nomen nudum), a species that could include "*Puzosia kiliani* var. *inornata*" FALLOT, 1920: 48, pl. 3, figs. 1-2; see BREISTROFFER 1947: 72, 78; WIEDMANN & DIENI 1968: 124,125; and MARCINOWSKI & WIEDMANN 1990: 55) from Spain.

Alleged *Parasilesites* has also been recorded from southern Patagonia (LEANZA 1968: 157; 1970: 224), with three species: *P. desmoceratoides* (STOLLEY, 1912: 7, pl. 1, fig. 1, 1a; LEANZA 1970: 224, fig. 21.1-6), *P. turici* LEANZA (1970: 225, fig. 22.1), and *P. russoi* LEANZA (1970: 225, fig. 23.1-3). But we have shown (MEDINA & RICCARDI 2005) that these species do not belong in *Parasilesites*.

The first is the type species of the new genus *Stolleyiceras* MEDINA & RICCARDI, 2005 and the other two belong to a single species of *Pseudosilesites, P. russoi* (LEANZA). Thus far, *Parasilesites* has not been recorded from Patagonia.

Parasilesites jamesrossi sp. nov. Figs. 4a-f, 5a

Holotype: The complete specimen figured on Fig. 4a-b (MLP 31403), from the Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian.

Material: The holotype and 2 almost complete paratypes (MLP 31404-5), from the same locality; F. A. MEDINA collection.

Etymology: From the area where the species occurs, named in 1903 by the Swedish Antarctic Expedition, under the comand of O. NORDENSKJOLD, honoring Sir J. C. ROSS, leader of the British expedition that discovered this island in 1842.

Diagnosis: Involute for genus; ribbing with relatively frequent divisions on flank, becoming faint on venter.

Description: Septate whorls (D = 11-16 mm) with relatively evolute coiling (U/D = 0.26-0.37), subrounded to subquadratic section as high as wide (H/W = 1.00/1.07), vertical umbilical wall, rounded umbilical margin, sub-parallel flanks; wide, shallow constrictions, 3 per half-whorl, radial on umbilical wall and projected on flanks. Inner whorls smooth and outer whorls with fine ribs, as wide as interspaces. Ribs are born on the umbilical shoulder, usually bundled in twos, are flexuous on the flank and projected on the venter.

Body chamber about 3/4 whorl, reaching c. 18-22 mm in diameter, with relatively evolute coiling (U/D = 0.28-0.37), subrectangular section (H/W = 1.13-1.25), shallow umbilicus with vertical wall, rounded umbilical margin, slightly curved flanks and rounded venter. There are about 4-8 deep and narrow constrictions per whorl, parallel to ribbing. Umbilical wall smooth; rounded, well marked ribs begin prorsiradiate at umbilical margin, are slightly flexuous on flank and projected. There are about 4 ribs between constrictions. Usually two ribs are bundled at the umbilical margin forming weak bullae, often divide at mid-flank and cross the venter, where they become blunt and form an adapertural arc.

Suture (Fig. 5a) is rather complex; L is narrow and slightly asymmetrically trifid and deeper than E; U_2 is not as deep as E.

Measurements (in mm):

	D	U	H	W	H/W
MLP 31403					
b. ch.	21.9	7.3(0.33)	9(0.41)	7.2(0.33)	1.25
end phr.	15.5	4.0(0.26)	6(0.39)	5.6(0.36)	1.07
MLP 31404					
b. ch.	21	7.7(0.37)	8.8(0.42)	7.4(0.35)	1.19
end phr.	16	5.9(0.37)	6.4(0.40)	6.4(0.40)	1.00
MLP 31405					
b. ch.	17.8	5.0(0.78)	6.8(0.38)	6.0(0.34)	1.13

Remarks: *Parasilesites jamesrossi* sp. nov. is similar to *P. orientalis* MICHAILOVA & TERECHOVA (1975: 57, figs. 1-4; ALABUSHEV & ALABUSHEVA 1988: 13, pl. 1, figs. 8-9) in whorl section and rib density, but differs by being less evolute, with blunter ribbing on venter and more frequent rib-divisions on flank. *P. africanus* (KRENKEL, 1910: pl. 22, fig. 4) differs by more compressed whorls and blunter ribbing. *P. bullatus* IMLAY (1959: pl. 29, figs. 1-8; 1960: pl. 18, figs. 1-8), *P. irregularis* IMLAY (1960: pl. 18, figs. 9-17), *P. laperousianus* (WITHEAVES, 1876: pl. 3, fig. 3;

McLearn 1972: pl. 8, figs. 1-2), and *P. kilianiformis* (Fallot, 1910: pl. 1, fig. 5; 1920: pl. 3, fig. 3) are more evolute; *P. kilianiformis* and *P. kiliani* (Fallot, 1910: pl. 1, figs. 1, 3; Wiedmann & Dieni 1968: pl. 11, fig. 3) are more compressed, and have less marked and denser ribbing; whorls in *P. laperousianus* are more depressed.

Parasilesites densicostatus sp. nov. Figs. 4g-h, 5b

Holotype: The incomplete phragmocone with part of body chamber on Figure 4g-h (MLP 31406), from the Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian.

Material: The holotype; F. A. Medina collection.

Etymology: Latin, for the dense ribbing.

Diagnosis: Parasilesites with depressed whorls and numerous fine ribs.

Description: Phragmocone whorls up to 29 mm in diameter with evolute coiling (U/D = 0.43), depressed rounded section (H/W = 0.88-0.92), shallow umbilicus with subvertical wall, rounded margin and convex flank and venter. There are 7 constrictions per whorl, slightly flexuous on flank and projected on venter. Between constrictions are 10-14 ribs, with those bordering the constrictions slightly raised. Ribs are fine and as wide as interspaces. They are borne on the umbilical margin, sometimes two bundled at weak bullae, weakly projected on flank forming a weak adapical arc on lower flank, and becoming strongly projected on venter, where they form an adapertural bow.

The preserved part of the body chamber, c. 50 mm in diameter, becomes more evolute with shallower umbilicus. Ribbing and constrictions become more flexuous and blunter.

Suture is rather complex; L is narrow, asymmetrically trifid and deeper than E; U2 is not as deep as E.

Measurements (in mm):

	D	U	H	W	H/W
Holotype MLP 31406					
phr.	29	12.4(0.43)	9.8(0.34)	10.6(0.36)	0.92
	25.5	11(0.43)	8.6(0.34)	9.8(0.38)	0.87

Remarks: *Parasilesites densicostatus* sp. nov. is similar to *P. laperousianus* (Whiteaves, 1876: pl. 3, fig. 3; McLearn 1972: pl. 8, figs. 1-2) in coiling and whorl section, but differs by being larger and more densely ribbed. All other species of *Parasilesites* are more compressed and have sparser ribbing.

Genus *Pseudosilesites* EGOIAN, 1969

Type species: *Pseudosilesites seranoniformis* EGOIAN (1969: 180) from the Upper Aptian of Psekha River, western Caucasus, Russia; original designation.

Diagnosis: Whorls rather evolute and subrounded to subovate-subrectangular, with fine flexuous ribs, branching occasionally near umbilical edge and, usually, on upper flank and ventrolateral shoulders, crossing the venter with adoral projection; constrictions present; suture with trifid L longer than E, U_2 also trifid and longer than I (modified from EGOIAN 1969: 79; MICHAILOVA 1972: 351; and WRIGHT, in WRIGHT et al. 1996: 78).

Remarks: This genus has recently been discussed by us (MEDINA & RICCARDI 2005). It is known from Dagestan in the northern Caucasus, Russia, from Patagonia, and probably from the Lower Albian of California, USA, and Spain.

Pseudosilesites russoi (LEANZA, 1970) Figs. 4i-j, 5c

v 1970. *Parasilesites russoi* LEANZA, p. 225, fig. 23.1-3.
1970. *Parasilesites turici* LEANZA, p. 225, fig. 22. 1.
2005. *Pseudosilesites russoi*. – MEDINA & RICCARDI, p. 258, pl. 1, figs. 1-27; pl. 2, figs. 1-2; textfigs. 3-4.

Material: 1 small, incomplete septate juvenile specimen (MLP 31407) and 1 larger specimen, from a level slightly higher in the same section (MLP 31408), Kotick Point Formation, Kotick Point, James Ross Island. Upper Aptian. F. A. MEDINA collection.

Description: Juvenile septate whorls (D = 11-23 mm) are relatively evolute (U/D = 0.31-0.33), with a round, outwardly inclined umbilical wall. Whorl section is subrounded to slightly compressed (H/W = 1.04-1.21), with slightly curved flanks and rounded umbilical margin and venter. There are three to four constrictions per half-whorl, which are slightly prosocline, become projected on the upper flanks where they truncate one to two of the preceding ribs, and pass without interruption over the venter. Succeeding ribs are parallel to constrictions. About five to six simple ribs, as wide as the interspaces, separate the constrictions, but fade on venter.

Suture is rather complex; L is narrow and slightly asymmetrically trifid and deeper than E; U_2 is not as deep as E.

Measurements (in mm):

	D	U	H	W	H/W
MLP 31407	11	3.6(0.33)	4.8(0.44)	4.6(0.42)	1.04
MLP 31408	23	7.2(0.31)	10(0.43)	c.8.2(0.33)	1.21
	–	–	7	6	1.16

Remarks: These juveniles are identical with juveniles of this species described from Patagonia (Medina & Riccardi 2005: pl. 1, figs. 24-27), and thus far are the only record of this genus and species in Antarctica.

Genus *Feruglioceras* Leanza, 1968

Type species: *Feruglioceras piatnitzkyi* Leanza (1968: 156), from the Lower Albian of Lago San Martin, Province of Santa Cruz; original designation.

Diagnosis: Shell compressed, with subtabulate venter; 6 flexuous constrictions per half-whorl, separated by 8-16 fine, parallel ribs that branch at umbilical margin, occasionally with blunt bullae at umbilical shoulder or at mid-flank (modified from Wright, in Wright et al. 1996: 73).

Remarks: Additional information on this genus can be found in Leanza (1968, 1970), Kennedy et al. (1979), and Medina & Riccardi (2005). This is the first record of the genus outside Patagonia.

Feruglioceras cf. *piatnitzkyi* Leanza, 1968 Fig. 4o

cf. 2005. *Feruglioceras piatnitzkyi* Leanza, 1968. – Medina & Riccardi, p. 261, pl. 2, figs. 3-7 (and synonymy therein).

Material: 2 almost complete but slightly crushed internal molds (MLP 31409, 31410), from Sharp Valley, James Ross Island, Antarctica. Lower Albian. F. A. Medina collection.

Description: Shell fairly evolute (U/D = 0.31), whorl compressed to subrounded, slightly higher than wide, with almost subvertical umbilical wall, rounded umbilical shoulder, gently convex flanks and subrounded venter. There are four narrow but well marked constrictions per half-whorl, projected on lower flank, reclined on middle and projected on upper flank. About 13 fine, parallel ribs separate constrictions. Most ribs bifurcate on the umbilical margin and again at mid-flank. The umbilical branching point occasionally has bullae-like thickenings.

Measurements (in mm):

	D	U	H	W	H/W
MLP 31409	23	7.2(0.31)	9(0.39)	–	–
MLP 31410	27	–	c.13.8(0.51)	c.10(0.37)	1.38

Remarks: This species was known only from its type locality, Lago San Martin, Argentina (Leanza, 1968, 1970; Medina & Riccardi, 2005). The Patagonian material consists of only parts of poorly preserved internal and external molds. The Antarctic material, comparatively better preserved, resembles the Patagonian

material, but is smaller (D = 19.5-23 vs. 33-44) and has 4 constrictions per half-whorl (vs. 6). The venter is subrounded instead of slightly tabulated (MLP 30151, MEDINA & RICCARDI 2005: pl. 2, figs. 6-7), but this could be due to crushing.

Genus *Umsinenoceras* KENNEDY, WRIGHT & KLINGER, 1979

Type species: *Umsinenoceras linguatuberculatum* KENNEDY et al. (1979: 30) from the low Middle Albian of Zululand, South Africa; original designation.

Diagnosis: Shell small, compressed, relatively evolute; ribs dense and flexuous, single or branching, some forming bullae on umbilical shoulder, prorsiradiate on flanks, splitting at different heights on upper flank or ventrolateral shoulder; strongly projected on venter forming tongue-like projection; immature venter flattened with fine striae; constrictions frequent, parallel to ribs. Ventrolateral clavi small, irregularly developed on immature and mature stages. Suture deeply incised, with bifid saddles, asymmetrically trifid L and retracted U (modified from KENNEDY et al. 1979: 30, and WRIGHT, in WRIGHT et al. 1996: 73).

Remarks: *Umsinenoceras* is known from the lower Middle Albian of Zululand (KENNEDY et al. 1979: figs. 1-4), and the upper Lower Albian of Patagonia (MEDINA & RICCARDI 2005). Similarities and differences with other Early Cretaceous Puzosiinae were given by KENNEDY et al. (1979) and MEDINA & RICCARDI (2005).

Umsinenoceras cardielense MEDINA & RICCARDI, 2005
Figs. 4k-n, 5d

1992. "*Kossmaticeras*" *meseticum* BONARELLI. – MEDINA & BUATOIS, p. 38, pl. 1, fig. k.
1993. "*Kossmaticeras*" *meseticum* BONARELLI. – OLIVERO & MEDINA, p. 184.
2003. "*Kossmaticeras meseticum* BONARELLI". – MEDINA et al., p. 88.
2005. *Umsinenoceras cardielense*. – MEDINA & RICCARDI, p. 262, pl. 2, figs. 8-27 (see synonyms therein).

Material: 2 almost complete juveniles (MLP 31411, 31412), 4 phragmocones with beginning of body chamber (MLP 31413-31416), and 11 juvenile phragmocones (MLP 31417-31427), from Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian. F. A. MEDINA collection.

Description: Juvenile septate whorls involute. Ribbing starts after shallow constriction at 6-7 mm diameter and become dense on following whorl, where another two barely visible constrictions are present. At D = 13-17 mm the whorls are relatively involute (U/D = 0.22-0.31), with round, sloping umbilical wall, subrounded to subrectangular section (H/W = 1.12-1.23), slightly curved flanks, rounded umbilical shoulder and rounded to tabulate venter. 13-18 ribs per half-whorl

are borne prorsiradiate on umbilical wall, form weak bullae-like thickenings on umbilical shoulder, and bifurcate into secondaries, that bend backwards at mid-flank. Ribs split again on upper flank into 37-39 secondaries per half-whorl. They strongly project on ventrolateral shoulder and weaken on venter forming chevrons. There are about 3 shallow constrictions per half-whorl, parallel to ribs.

Between 20 and 24 mm diameter, the body chamber remains relatively involute (U/D = 0.28-0.33) and the whorl-section subrectangular (H/W = 1.17-1.32), with slightly flattened venter. 18-22 primary ribs per half-whorl form bullae-like thickenings on umbilical shoulder, divide on lower flank and project slight before dividing again on upper flank, where some intercalatories are also present. Secondaries, 38-44 per half-whorl, are strongly projected on ventrolateral shoulder and form chevrons on venter. There are about 2 shallow constrictions per half-whorl, parallel to ribs.

Suture (Fig. 5 d) is complicated, with deep and slight asymmetrically trifid L; U2 is not as deep as E; umbilical lobes are retracted.

Measurements (in mm):

	D	U	H	W	H/W	P	S
MLP 31411							
b.ch.	23.3	7.8(0.33)	9.8(0.42)	7.4(0.32)	1.32	18	44
MLP 31412							
b.ch.	20.5	5.7(0.28)	8.2(0.4)	7(0.34)	1.17	22	38
MLP 31413							
end. phr.	13	3.6(0.28)	5.8(0.44)	4.8(0.37)	1.21	–	–
MLP 31414							
end phr.	17	–	8.6(0.50)	6(0.35)	1.43	9	c.44
MLP 31415							
beg. b.ch.	17.3	5.4(0.31)	6.7(0.39)	6(0.35)	1.12	13	37
phr.	12.3	3.0(0.24)	5.5(0.45)	5(0.41)	1.1		
phr.	7.6	1.5(0.20)	3.9(0.51)	3.8(0.50)	1.02		

Fig. 5. a – Suture of *Parasilesites jamesrossi* sp. nov., MLP 31404, at H = 6 mm and W = 6 mm; **b** – Suture of *Parasilesites densicostatus* sp. nov., MLP 31406, at H = 8.6 and W = 9.8; **c** – Suture of *Pseudosilesites russoi* (LEANZA, 1970), MLP 31407, at H = 4.8 and W = 4.3 mm; **d** – *Umsinenoceras cardielense* MEDINA & RICCARDI, suture of specimen MLP 31419, al H = 3.4 mm and W = 3.1 mm, and whorl section of MLP 31415; **e** – *Umsinenoceras compressum* sp. nov., holotype, MLP 31428, suture at H = 7 mm and W = 5 mm, and whorl section and rib pattern; **f** – Suture of *Umsinenoceras*? sp. nov., MLP 31439, at H = 9 mm and W = 7 mm.

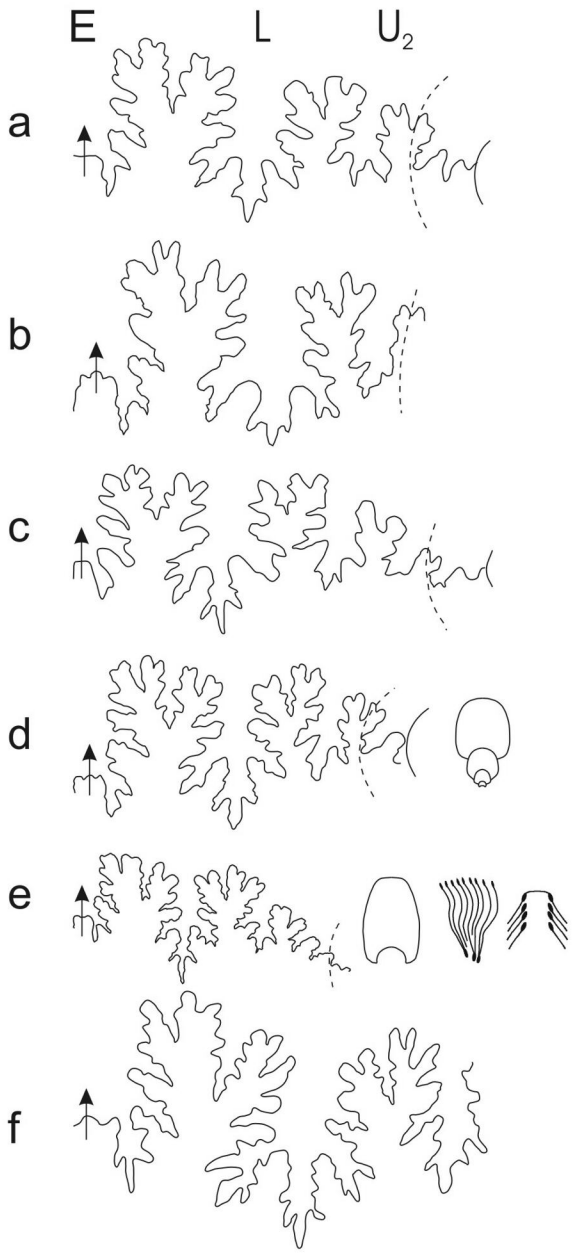

Fig. 5 (Legend see p. 306)

MLP 31416							
phr.	11.9	2.9(0.24)	5.8(0.49)	5.3(0.44)	1.09		
MLP 31417							
phr.	13.2	2.9(0.22)	6.3(0.48)	5.1(0.39)	1.23	18	39

Remarks: *Umsinenoceras cardielense* resembles *U. linguatuberculatum* KENNEDY et al. (1979: 30, figs. 1-4) in the dimensions of the inner whorls, as well as in lateral ribbing and suture, but differs in the less compressed outer whorls, less marked constrictions throughout, the presence of a tabulate venter and feebly ventral ribbing that is restricted to intermediate whorls. The Antarctic specimens appear to be juveniles and differ from the Patagonian adult *U. cardielense*, which on the body chamber have clavi-like tubercles on the outer flanks and a rounded venter.

Umsinenoceras compressum sp. nov. Figs. 4p-s, 5e

Holotype: The almost complete specimen on Figure 4r-s (MLP 31428), Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian.

Material: The holotype, 1 adult specimen with part of body chamber (MLP 31429), 3 phragmocones with beginning of body chamber (MLP 31430, 31431, 31432) and 1 juvenile phragmocone (MLP 31433), from Kotick Point, James Ross Island; F. A. MEDINA collection.

Etymology: Latin, for the compressed whorls.

Diagnosis: Involute *Umsinenoceras* with flat flanks; tabulate venter has interrupted ribbing throughout most of ontogeny; flexuous ribbing with regular umbilical and ventrolateral bullae.

Description: At 13-20 mm diameter the septate whorls are relatively involute (U/D = 0.19-0.24), with rounded sloping umbilical wall, subrounded to subrectangular section (H/W = 1.1-1.48), rounded umbilical shoulder, slightly curved to flat flanks and rounded to tabulate venter. Primary ribs are borne strongly prosocline on umbilical shoulder, where they form bullae-like thickenings and bifurcate; secondaries are rursiradiate at mid-flank and strongly projected on upper flank, where intercalatories are often present, ending in clavi-like thickenings beside the venter.

At larger diameter (D = 20-35 mm) the body-chamber becomes more evolute (U/D = 0.22-0.26) by egression of umbilical seam, and subrectangular in section with subvertical umbilical wall and tabulate venter. 23 ribs per whorl arise on umbilical margin and divide forming well developed bullae. 69 secondaries per whorl are strongly projected, bend backwards below mid-flank, project strongly on upper flank and end in clavi-like thickenings beside venter. There are about 3-5 constrictions per half-whorl, parallel to ribs.

Suture (Fig. 5e) is relatively complicated, with deep and symmetrically trifid L and retracted umbilical lobes.

Measurements (in mm):

	D	U	H	W	H/W	P	S
Holotype MLP 31428 b.ch.	24.4	c.5.4(0.22)	10(0.41)	7(0.28)	1.43	23	69
MLP 31429 b.b.ch.	35.6	9.4(0.26)	16(0.45)	10.8(0.30)	1.48	–	–
MLP 31430 end phr.	20.6	4(0.19)	9.8(0.47)	6.6(0.32)	1.48	18-20	40
MLP 31431 b.ch.	18.4	4.5(0.24)	8.8(0.49)	6.7(0.36)	1.31	–	–
MLP 31433 phr. juv.	13.7	2.8(0.20)	6(0.44)	5.4(0.39)	1.11	–	–

Remarks: *Umsinenoceras compressum* resembles *U. cardielense* MEDINA & RICCARDI (2005) in size of sepatate inner whorls and suture, but differs in the more involute and compressed outer whorls, with more flexuous ribbing, in the presence throughout growth of umbilical, bullae-like thickenings, the clavi-like thickenings at the end of secondaries and in the tabulate smooth venter. Compared with *U. linguatuberculatum*, the Antarctic species is more involute and compressed, has more regularly present umbilical and ventrolateral thickenings throughout growth, and fewer and shallower constrictions.

Umsinenoceras? sp. nov. Figs. 4v-w, 5f

Material: 1 complete phragmocone (MLP 31439), Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian. F. A. MEDINA collection.

Description: Inner septate whorls are relatively involute (U/D = < 0.31), with subrounded to subrectangular section, almost parallel flanks and rounded to slightly tabulate venter. Ribs are borne on umbilical shoulder, where they form bullae-like thickenings, before bifurcating into secondaries which cross the flank with slight flexuosity. Ribs become projected on the ventral shoulder, where they form a row of tubercles which increase in prominence with growth; ribs end in clavi-like thickenings at smooth ventral band.

Mature phragmocone remains relatively involute (U/D = 0.33), with subrectangular whorl section (H/W = 1.31), parallel flanks and subrounded to flattened venter. Ornament becomes more prominent: ribs begin in pairs in umbilical, bullae-like thickenings, are flexuous on flanks and form a row of tubercles on ventral

shoulder; they then project and end in small, clavi-like tubercles beside smooth venter. On last half-whorl are two constrictions, narrow and deep, and parallel to ribbing.

Suture rather complex, with lateral lobe narrow and asymmetrically trifid, deeper than E.

Measurements (in mm):

	D	U	H	W	H/W	P	S
MLP 31439							
end phr.	26.7	8.9(0.33)	10.5(0.39)	c.8(0.30)	1.31	5	24
phr.	19.4	6(0.31)	8.4(0.43)	7.5(0.38)	1.12	–	–

Remarks: *Umsinenoceras*? sp. nov. resembles *U. cardielense* in coiling, whorl section and ribbing, but differs in the last septate whorl by stronger and sparser ribbing and three rows of tubercles. The available material is not enough to justify an emendation of the generic diagnosis or to erect a new taxon. It is tentatively included in *Umsinenoceras*, although other species have only two rows of tubercles.

Umsinenoceras sp. indet. Fig. 4t-u

Material: 4 incomplete phragmocones (MLP 31435-31437), and 1 poorly preserved specimen (MLP 31438) from Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian. F. A. MEDINA collection.

Description: Inner phragmocone whorls are involute (U/D = 0.20), with subrounded section, round umbilical wall, curved flanks, and rounded venter. Ribs are borne on umbilical shoulder forming bullae-like thickenings, bifurcate into prorsiradiate/projected secondaries, and cross the flank slightly flexuous. On upper flank ribs bifurcate again and become more projected and finer, and cross the venter forming an adoral arc.

Outer phragmocone whorls remain involute (U/D = 0.24), with slight egression of umbilical seam, subrounded whorl section, higher than wide (H/W = 1.21), rounded umbilical shoulder, curved flank and rounded to slightly flattened venter. 10 ribs per half-whorl become visible on umbilical shoulder where they form bullae-like thickenings, before dividing in two or three secondaries; some intercalatories are also present that do not reach the umbilical shoulder. All secondaries, c. 26 per half-whorl, cross the flank with slight projection forming a shallow adoral arc. On ventral shoulder, secondaries bifurcate and become more projected, finer, before ending in small clavi-like thickenings beside venter, which is smooth and slightly flattened. Close to aperture are one or two constrictions per whorl, parallel to ribbing.

The suture is not visible.

Measurements (in mm):

	D	U	H	W	H/W	P	S
MLP 31434							
phr.	22	5.3(0.24)	9.2(0.42)	c.7.6(0.34)	1.21	10	26
phr.	c.14	2.8(0.20)	6.6(0.47)	–	–	–	–

Remarks: *Umsinenoceras* sp. indet. resembles *U. compressum*, described above, but differs by the more involute coiling (U/D = 0.21-0.20 vs. 0.19-0.26), more inflated and subrounded section (H/W = 1.51 vs. 1.43-1.48), and less flexuous ribbing.

Family Silesitidae HYATT, 1900 (incl. Silesitoidinae BREISTROFFER, 1953)

Genus *Neoastieria* EGOIAN, 1969

Type species: *Noastieria reliqua* EGOIAN, 1969: 150, Upper Aptian, from Caucasus; original designation.

Diagnosis: Inflated Silesitidae with depressed whorls; 3 constrictions per half-whorl. Inner whorls cadiconic and "coronate", with strong primary ribs forming distinct tubercles, in which fine secondaries originate that cross venter with shallow adapical arc; outer whorls becoming less depressed, with primaries dividing at different whorl height and projecting progressively. Occasional tubercles are present on outer flank where 2-3 primaries meet and 2-3 secondaries originate. Suture highly incised with narrow, asymmetrically trifid L, as deep as E, U_2 half deep as L, and protracted umbilical lobes (modified from EGOIAN 1969: 149; WRIGHT, in WRIGHT et al. 1996: 87).

Remarks: This genus is known by its type species, occurring in the Upper Aptian of the Caucasus (based on single specimen: EGOIAN 1969: pl. 8, fig. 1, pl. 22, fig. 23), and *N. patagonica* MEDINA & RICCARDI (2005: pl. 3, fig. 1-10) from the Upper Aptian of Patagonia. Although the genus may be present in the "Aptian-Albian" of Spain, i.e. the small incomplete phragmocone figured by ALMELA & DE LA REVILLA (1957: 34, pl. 8, fig. 5) as "*Neohimalayites* sp.", it has been considered as restricted to the Upper Aptian. This material from Antarctica extends the stratigraphic record of *Neoastieria* to the Lower Albian.

Neoastieria antarcticaensis sp. nov. Figs. 4x-y, 7a

1992. cf. *Eogunnarites* sp. – MEDINA & BUATOIS, p. 38.
1993. cf. *Eogunnarites* sp. – OLIVERO & MEDINA, p. 184.

Holotype: The complete phragmocone with beginning of body chamber on Fig. 4x-y (MLP 31440), Kotick Point Formation, Sharp Valley, James Ross Island. Lower Albian. F. A. Medina collection.

Material: The holotype, 1 juvenile phragmocone with part of body chamber and 1 septate inner whorls (MLP 31441-31442), from type locality.

Etymology: From area where species occurs.

Diagnosis: Medium-sized *Neoastieria* with relatively involute shell and rounded whorls; primaries and secondaries not clearly differentiated, and many ventro-lateral tubercles.

Description: Juvenile whorls (D = 17-26 mm) relatively involute (U/D = 0.29-0.32), rounded depressed (H/W = 0.63-0.73) and curved flanks and venter. Ornament on inner whorls with about 14 prominent, slightly projected ribs, which bear tubercles at umbilical seam of subsequent whorls. Venter with faint, mostly superficial ribs, 11 between constrictions. Four narrow, shallow constrictions per half-whorl, parallel to ribbing on inner flank forming an adapically concave arc on venter.

At the end of the phragmocone (D = 41.2 mm) whorls become less depressed (H/W= 0.85) by negative allometry of W. There are 8 constrictions per whorl, and ribbing becomes less prominent, with 28 primaries, 52 secondaries and 9 ventro-lateral tubercles per half-whorl.

Suture is complicated, with almost symmetrically trifid L deeper than E, U_2 similar to L but less than half in depth, and protracted umbilical lobes (Fig. 7a).

Measurements (in mm):

	D	U	H	W	H/W	P	S
Holotype MLP 31440							
b.ch.	c.43	15.5(0.36)	16.7(0.39)	20.7(0.48)	0.81	–	–
end phr.	41	13.6(0.33)	16.4(0.4)	20(0.49)	0.82	28	52
phr.	26	8,3(0.32)	10.6(0.41)	14.5(0.56)	0.73	–	–
phr.	17.2	5(0.29)	6.6(0.38)	10.4(0.60)	0.63	–	–

Remarks: *N. antarcticaensis* differs from *N. reliqua* Egoian (1969: 150, pl. 8, fig. 1, pl. 22, fig. 23) by larger diameter, more involute shell, rounded whorls, blunter stronger primaries that are not clearly differentiated from the secondaries, and shallower constrictions.

N. patagonica is larger, with more evolute and depressed whorls, more numerous primaries that are more clearly differentiated from the secondaries, deeper constrictions, and fewer tubercles.

Because *N. reliqua* and *N. patagonica* are both Late Aptian, *N. antarcticaensis* is the first *Neoastieria* species recorded from the Early Albian; the genus may also be present in the Albian of Spain (Almella & De La Revilla 1957: 34, pl. 8, fig. 5).

Genus *Piatnitzkyceras* MEDINA & RICCARDI, 2005

Type species: *Piatnitzkyceras bonarellii* MEDINA & RICCARDI, 2005 from the Lower Albian of Lago San Martin, Province of Santa Cruz.

Diagnosis: Large Silesitidae with subrounded to suboval whorls; ribs form shallow adapical arc on flank, occasionally bifurcate below mid-flank and become strongly projected on ventrolateral shoulder, where occasionally small clavi-like tubercles occur; broad and deep constrictions parallel to ribs (MEDINA & RICCARDI 2005).

Remarks: Affinities of *Piatnitzkyceras* were discussed by MEDINA & RICCARDI (2005). The genus may include material from Alexander Island, Antarctica, recorded by HOWARTH (1958) and THOMSON (1974).

HOWARTH (1958: pl. 1, fig. 5) figured poorly preserved "*Silesites* cf. *trajani* (TIETZE)" from the southern end of Succession Cliffs; THOMSON (1974) illustrated "*Silesites* aff. *vulpes* (COQUAND)", "*Silesites antarcticus* THOMSON" and "*Silesites desmoceratoides* (?) STOLLEY" from Keystone Cliffs. All these specimens probably do not belong in *Silesites*. "*Silesites* cf. *trajani*" of HOWARTH (1958), c. 43 mm in diameter, has evolute coiling, constrictions, ribs that often bifurcate at the umbilical margin, bend slightly forward on the flank, project on the ventrolateral shoulder, and divide once more. *S. seranonis* (incl. *S. trajani*; see MEDINA & RICCARDI 2005: 267) has evolute coiling, but whorls are compressed, ribs on flank are simple and almost straight, becoming projected on the ventrolateral shoulder where most form small tubercles.

From the same locality on Alexander Island THOMSON (1974: 31) described several poorly preserved "*Callizoniceras* (?) sp.", which he suggested could represent the early stages of the "*Silesites* cf. *trajani*" figured by HOWARTH (1958). The two figured specimens (THOMSON 1974: pl. 5c, d) appear to be quite involute, but ribbing is similar to HOWARTH's specimen and to a number of THOMSON's (1974) "*Silesites*", "*Pseudothurmannia*" and "*Hemihoplites*", which may belong to *Piatnitzkyceras* and/or *Stolleyiceras* (see below). THOMSON's (1974: 32, pl. Vf) "*Silesites* aff. *vulpes*" (D ≈ 32 mm) is quite similar to HOWARTH's (1958: pl. 1, fig. 5) "*Silesites trajani*" in coiling, constrictions and ribbing, but rib division appears to be absent. THOMSON (1974: 32) compared his material to *Silesites vulpes*, especially as figured by HAUG (1889: pl. 13, fig. 6). However, HAUG's material has simple primaries that are almost straight on flank and strongly projected on venter, features that are also evident in material figured by MATHERON (1878: pl. C-20, fig. 1a-b) and UHLIG (1883: pl. 18, fig. 9).

THOMSON (1974: 32, pl. 5, figs. g-i, ?j) also placed 3 or 4 figured specimens from Keystone Cliffs, Alexander Island, in *Silesites antarcticus* THOMSON. The species, as exemplified by its holotype (D ≈ 31 mm), has compressed evolute whorls with flat flanks, constrictions, and ribbing bundled in pairs at umbilical margin and projected slightly on flank and strongly on venter. Although THOMSON (1974: 33) does not mention bullae at the umbilical furcation points, two or more appear to be present.

Rib density is similar to THOMSON's (1974: pl. 2, fig. i) "*Pseudothurmannia* cf. *mortilleti*", from the same locality, which has regular umbilical bullae. As indicated by him (p. 33), *S. antarcticus* differs from *S. trajani*, as well as from all other species of *Silesites*, by the absence of ventrolateral tubercles and the umbilical bundling of ribs. In this regard, most specimens of *S. antarcticus* (THOMSON 1974: pl. 5, fig. g, h, i) do not differ substantially from material from the same section, referred by him to "*Pseudothurmannia* cf. *mortilleti*", "*Hemihoplites* (?) sp.", and "*Macroscaphites* (?) sp."

THOMSON (1974: 34, pl. 5k) figured another specimen from Keystone Cliffs under *Silesites desmoceratoides* STOLLEY (?). He stated that the specimen differs from the Patagonian holotype (see MEDINA & RICCARDI 2005) in the absence of adoral fine ribbing. This specimen closely resembles *S. antarcticus*, except for the sudden coarsening of ornament.

THOMSON (1974: 14, pl. 2, figs. i-j) figured two specimens under "*Pseudothurmannia* cf. *mortilleti*". In his opinion, one of them (fig. i) compares well with the specimen from Majorca referred to that species by WIEDMANN (1962: pl. 7, figs. 4-5), and with that from Chatel St. Denis, France, figured by SARASIN & SCHÖNDELMAYER (1901: 84, pl. 11, fig. 5). However, THOMSON's material differs from that from Majorca by the presence of bullae-like tubercles throughout ontogeny and the more flexuous ribbing that is projected on venter. The specimen of SARASIN & SCHÖNDELMAYER has umbilical bullae-like tubercles, but, unlike THOMSON's material, has a shallow umbilicus passing gradually into the lower flank and less projected ribbing on the ventrolateral margin. The figured specimen assigned to "*Hemihoplites* (?) sp." by THOMSON (1974: 14, pl. 2, fig. h), appears to differ from his "*P.* cf. *mortilleti*" in the ribs which are straighter on inner and outer whorls, but flexuous on intermediate whorls. This could be due to preservation: the immature ventrolateral rib projections are covered by the succeeding whorls, and the mature venter by sediment. All other features are similar to those of "*P.* cf. *mortilleti*" and the sparser ribbing could be infraspecific variation.

Fig. 6. a-b – *Piatnitzkyceras* cf. *bonarellii* MEDINA & RICCARDI, Kotick Point, J. Ross Island, Lower Albian, MLP 31443, end of phragmocone and beginning of body chamber; **c-f** – *Piatnitzkyceras thomsoni* sp. nov., Kotick Point, J. Ross Island, Lower Albian; c-d: Paratype, MLP 31449, incomplete phragmocone; e-f: Holotype, MLP 31444, complete specimen; **g-k** – *Sobraliceras robustum* gen. et sp. nov. Kotick Point, J. Ross Island, Lower Albian, g-i: Holotype, MLP 31460, complete specimen (g) and inner whorls (h-i); j-k: MLP 31461, complete specimen; **l-m** – *Sobraliceras stoneleyi* gen. et sp. nov., Sharp Valley, J. Ross Island, Lower Albian, holotype, MLP 31462, almost complete specimen; **n-o** – *Sobraliceras*? sp. nov., MLP 31468, phragmocone with part of body chamber. Notice spine on lateral view. – Lateral and ventral views, x 1.

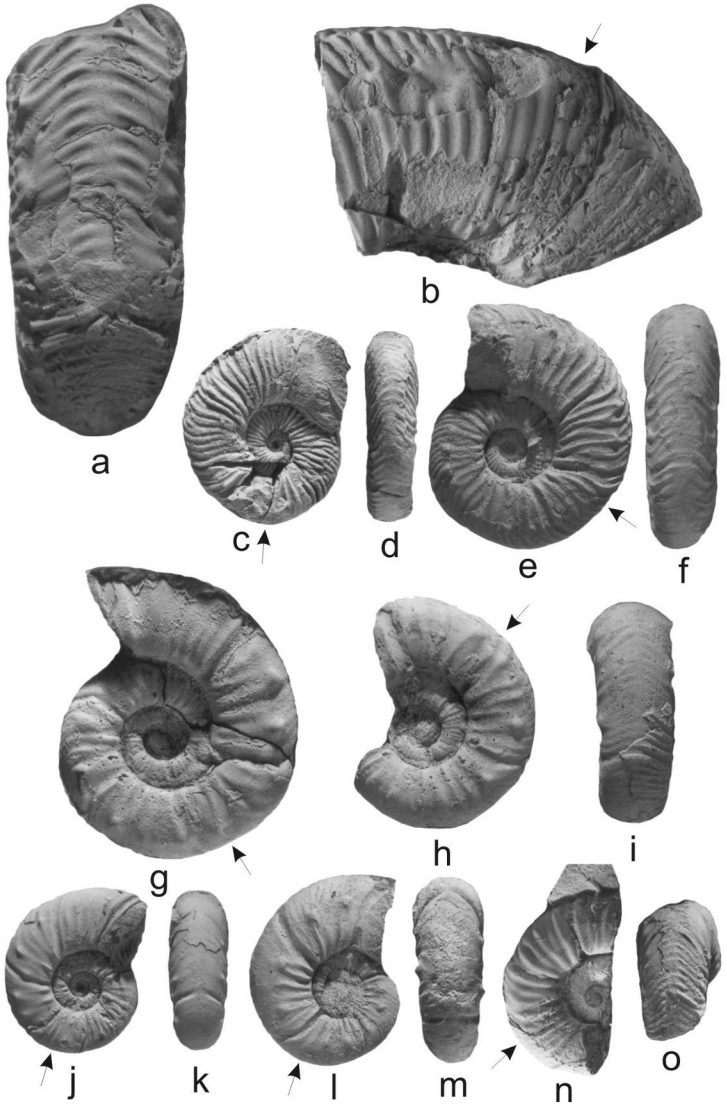

Fig. 6 (Legend see p. 314)

The figured "*Macroscaphites* (?) sp." of THOMSON (1974: 12, pl. 2, fig. g) is almost identical to *Piatnitzkyceras thomsoni* n.sp. (see below), except for the ventrolateral rib projection, which in THOMSON's specimen is probably embedded in matrix and the apparent straightening of the last whorl which is likely due to deformation. It is worth noting that THOMSON's (1974) "*Pseudothurmannia* cf. *mortilleti*, *Hemihoplites* (?) sp., *Macroscaphites* (?) sp., and *Silesites desmoceratoides* (?)" probably come from a single level (153 m above base) or interval (142.5-153 above base) of his locality W. "*Silesites antarcticus*" was recorded by THOMSON (1974) from the basal 4.7 m of the same section, but it is not clear whether his material was collected *in situ* or from scree. All specimens share a number of features, i.e., evolute coiling, subrectangular whorl section, constrictions, ribbing with slight flexuosity on flank and projection on venter, frequent bundling at umbilical shoulder where bullae may be developed. Thus, all of THOMSON's (1974) material may belong to a single genus and, perhaps, species, and not to the listed genera (*Silesites, Hemihoplites, Pseudothurmannia, Macroscaphites*, and *Callizoniceras*). There appears to be close affinity to some Patagonian and Antarctic material placed by MEDINA & RICCARDI (2005) in their new genera *Piatnitzkyceras* and *Stolleyiceras*. Apparent absence of ventrolateral tubercles in some specimens suggest affinity with *Stolleyiceras*, but the presence of this feature in others (e.g. THOMSON 1974: pl. 2, fig. g, pl. 5, fig. f) suggests infrageneric diversity and overall affinity to *Piatnitzkyceras*. Poor preservation prevents definite conclusion on this matter.

Piatnitzkyceras cf. *bonarellii* MEDINA & RICCARDI, 2005
Fig. 6a-b

cf. 2005. *Piatnitzkyceras bonarellii* MEDINA & RICCARDI, p. 268, pl. 3, figs. 11-19, pl. 4, figs. 1-2; text-fig. 9.

Material: 1 large fragment with end of phragmocone and beginning of body chamber (MLP 31443), Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian. F. A. MEDINA collection.

Description: End of phragmocone and beginning of body chamber are evolute with weakly compressed subrectangular section; flanks are slightly curved and venter broadly rounded. Ribs, c. 15 per 1/4 whorl, are blunt and radial on umbilical wall, almost as wide as the interspaces; become more pronounced on umbilical shoulder and flank, where they are curved and weakly projected; become projected on ventrolateral shoulder; cross the venter forming an adapical arc and weaken on mid-venter. Small clavi-like tubercles are occasionally developed on ventrolateral shoulder. There are two weak constrictions. The suture is poorly preserved.

Remarks: This specimen is similar to material from Patagonia described under *Piatnitzkyceras bonarellii* MEDINA & RICCARDI (2005), in the complexity of the suture, but it differs in being less compressed and with less marked constrictions.

Piatnitzkyceras thomsoni sp. nov. Figs. 6c-f, 7b

? 1974. *Macroscaphites* (?) sp. – THOMSON, p. 12, pl. 2, fig. g.
? 1974. *Hemihoplites* (?) sp. – THOMSON, p. 14, pl. 2, fig. h.
?1974. *Pseudothurmannia* cf. *mortilleti* (PICTET & LORIOL, 1858). – THOMSON, p. 14, pl. 2, figs. i-j.
1992. ? "*Silesites*" cf. *antarcticus* THOMSON. – MEDINA & BUATOIS, p. 38.
1993. ? "*Silesites*" cf. *antarcticus* THOMSON. – OLIVERO & MEDINA, p. 184.

Holotype: The complete specimen on Figure 7e-f (MLP 31444), from Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian. F. A. MEDINA collection.

Material: The holotype, 1 complete ?juvenile (MLP 31445), 3 almost complete specimens (31446, 31447, 31448), 1 incomplete phragmocone (MLP 31449), 6 fragmentary specimens (MLP 31450-31455), 3 whorl fragments (MLP 31456-31458), and 1? large fragment of body chamber (MLP 31459), all from type locality.

Etymology: After the British geologist and paleontologist M. R. A. THOMSON, in recognition of his contributions to the paleontology and stratigraphy of the Mesozoic of Antarctica.

Diagnosis: Small *Piatnitzkyceras* with relatively involute coiling and subrectangular whorls; prominent or coarse ribbing with regular ventrolateral tubercles and occasional bullae-like thickenings on umbilical shoulder of body chamber.

Description: Inner phragmocone whorls (D = 12.6 mm) relatively involute (U/D = 0. 19) and compressed subrectangular (H/W = 1.35), with vertical umbilical wall, rounded shoulder and curved flanks and venter. About 20 radial primaries per half-whorl on umbilical wall, some divide at, or slightly above, umbilical shoulder. They project on inner flank and divide again slightly above mid-flank. Secondaries, about 44-45 per half-whorl, become more projected on outer flank and very blunt on venter, where they form an adoral arc. There is one constriction per whorl, parallel to ribbing.

Intermediate and outer phragmocone whorls (D = 20-28 mm) become more evolute (U/D = 0.34), and depressed (H/W = 1.11) by negative allometry of H (H/D = 0.52-0.39); with vertical umbilical wall, parallel flanks and rounded venter. Ribs become coarser/more prominent and slightly projected on umbilical wall and on inner flank, where they may divide forming faint bullae-like tubercles. They bend backwards at mid-flank and form occasional clavi-like tubercles on outer flank, where most divide again. Secondaries are strongly projected on ventrolateral shoulder and become less prominent on venter where they form an adoral arc.

Body chamber about 2/3 whorl and up to c. 40 mm in diameter, evolute (U/D = 0.34), with subrectangular and compressed section (H/W = 1.23). There are 6 constrictions per whorl. There are 22 primaries per half-whorl, become more prominent and project on vertical umbilical wall and inner flank, where some of

them divide forming bullae-like tubercles; bend backwards below midflank and divide again in clavi-like tubercles on outer flank. 40 secondaries per half-whorl cross the venter with undiminished strength fortning an adoral arc.

The suture is rather complex, with slightly asymmetrically trifid L, deeper than E, and protracted umbilical lobes.

Measurements (in mm):

	D	U	H	W	H/W	P	S
Holotype, MLP 31444							
b.ch.	40	13.8(0.34)	15.5(0.39)	12.6(0.31)	1.23	22	40
beg. b.ch	29	9.8(0.34)	11.4(0.39)	10.3(0.35)	1.11	–	–
MLP 31446							
b.ch.	31.6	8.6(0.27)	12.6(0.40)	+8.7(0.27)	–	29	–
MLP 31449							
inc. b. ch.	23	7(0.30)	10.2(0.44)	8.4(0.36)	1.21	21	–
MLP 31450							
phr.	12.6	2.4(0.19)	6.6(0.52)	4.9(0.39)	1.35	20	44-45

Remarks: *P. thomsoni* differs from *P. bonarellii* Medina & Riccardi (2005: 268, pl. 3, figs. 11-19) by its smaller size, less evolute coiling, subrectangular section, regular ribbing, occasional presence of bullae-like thickenings on umbilical shoulder, and regular presence of tubercles on ventrolateral shoulder of phragmocone and body chamber.

Material from Alexander Island figured by Thomson (1974) under "*Macroscaphites* (?) sp.", "*Hemihoplites* (?) sp.", and "*Pseudothurmannia* cf. *mortilleti*" may belong to this species (see Remarks under *Piatnitzkyceras*). His "*Hemihoplites* (?) sp." is almost identical with material here included in the new species, except for the projected ribs, which in his material are present on intermediate stages only. This is probably due to preservation.

Genus *Sobraliceras* gen. nov.

Type species: *Sobraliceras robustum* sp. nov., Kotick Point Formation, Kotick Point, James Ross Island, Antarctica. Lower Albian.

Etymology: Named after the Argentinean geologist J. M. Sobral, member of the Swedish Expedition (1901-1903) to Antarctica.

Diagnosis: Whorls evolute throughout with subrounded to subrectangular section; 5-6 deep and wide constrictions per half-whorl; ribs are radial on umbilical wall, often bifurcate on umbilical margin forming weak bullae-like tubercles, and are prominent and almost straight on flank with clavi-like tubercles on mid- to upper

flank; occasionally, two primaries loop here and 2-4 secondaries are borne, which project on outer flank and cross the venter with an adoral arc.

Remarks: Besides the type species, *Sobraliceras* includes the Antarctic species *S. stoneleyi* sp. nov. and *S.*? sp. A, and the Patagonian species "*Piatnitzkyceras*?" *infirmum* MEDINA & RICCARDI (2005).

Sobraliceras infirmum (MEDINA & RICCARDI, 2005: 269, pl. 4, figs. 3-4) was based on a single specimen from the Lower Albian of Patagonia and tentatively placed in *Piatnitzkyceras,* because it differed from *Piatnitzkyceras bonarellii* in having fewer, weaker and less regularly developed ribs, and tubercles on the inner whorls. *S. infirmum* differs from *P. thomsoni* in being more evolute and less compressed (H/W = 0.92-1.03 vs. 1.11-1.23). *Sobraliceras* differs from *Piatnitzkyceras* by the blunter, more rounded ribbing and the presence of tubercles in the inner whorls.

Sobraliceras robustum sp. nov. Figs. 6g-k, 7c

Holotype: The complete specimen (MLP 31460) on Fig. 6g-i, Kotick Point Formation, Kotick Point, James Ross Island, Antarctica. Lower Albian.

Material: The holotype and 1 complete specimen (MLP 31461), from Kotick Point Formation, Kotick Point; 1 external mold (MLP 31475) from Sharp Valley, James Ross Island. Lower Albian. F. A. MEDINA collection.

Etymology: Latin, for the well marked ornamentation.

Diagnosis: Whorls evolute, section as high as wide, with parallel flanks, weak bullae-like tubercles on umbilical shoulder, straight, rather prominent and well-spaced ribs on flank, sharp clavi on upper flank or, more commonly, on ventrolateral shoulder.

Description: Evolute phragmocone whorls (U/D = 0. 34-0.40) with a shallow umbilicus are slightly depressed to subrounded (H/W = 0.92-1.02), with curved umbilical wall, shoulder and venter, and subparallel flanks. There are 5-6 deep and wide constrictions per half-whorl, with 4-6 primaries and 5-6 secondaries between them. Ribs are radial on umbilical wall, often bifurcate on umbilical shoulder where weak bullae-like thickenings may develop, are almost straight on flanks, and strongly project on outer flank where clavi-like tubercles may develop on every second rib, slightly below the ventro-lateral shoulder. Constrictions and ribs cross the venter forming an adoral arc.

Adult body chamber, about a half-whorl in length and ranging in size from D = 29 to 50 mm, is evolute (U/D = 0.37-0.48) with subrounded section (H/W = 1.03), subvertical umbilical wall, rounded shoulder, parallel sides and convex venter. Number and disposition of ribs and constrictions remain as on phragmocone, while tubercles on upper flank and ventral ribs become more numerous and prominent.

Suture (Fig. 7c) rather complex, with slightly asymmetrically trifid L, deeper than E, and protracted umbilical lobes.

Measurements (in mm):

	D	U	H	W	H/W	P	S
Holotype							
MLP 31460							
b.ch.	50	20(0.40)	17.9(0.36)	–	–	6	12
end phr.	34.9	13.9(0.40)	13(0.37)	12.8(0.37)	1.01	5-6	12-13
phr.	26.7	9.2(0.34)	10(0.37)	10.8(0.40)	0.92	–	–
MLP 31461							
b.ch.	29	10.9(0.37)	10.3(0.35)	10(0.34)	1.03	3	7
end phr	20.8	7.7(0.37)	8.3(0.40)	8.1(0.39)	1.02	4	–

Remarks: The Antarctic material is similar to the type specimen of *Sobraliceras infirmum* (Medina & Riccardi, 2005: 269, pl. 4, figs. 3-4) in whorl dimensions and in the presence of tubercles on the inner whorls. It differs in the more robust and regular ornament on flank and venter and the finer ribbing on inner whorls. The two figured specimens (Fig. 6g-k) differ in size following similar inner whorls; the larger specimen has sparser and more regular ribbing on outer whorl. They could represent a dimorphic pair.

Sobraliceras stoneleyi sp. nov. Figs. 6l-m, 7d

1983. *Silesites desmoceratoides* Stolley. – Medina et al., p. 266, pl. 1, fig. 5.
1992. cf. *Wellmanites zelandicus* Wright. – Medina & Buatois, p. 38.
1993. cf. *Wellmanites zelandicus* Wright. – Olivero & Medina, p. 183.

Holotype: The almost complete specimen figured on Figure 6l-m (MLP 31462), from Sharp Valley, James Ross Island. Lower Albian. F. A. Medina collection.

Fig. 7. a – *Neoastieria antarcticaensis* sp. nov., holotype, MLP 31440, suture at H = 15 mm and W = 17.5 mm, and whorl section; **b** – *Piatnitzkyceras thomsoni* sp. nov., MLP 31449, suture at H = 6.4 mm and W = 5.5 mm, and whorl section; **c** – *Sobraliceras robustum* sp. nov., holotype, MLP 31460, suture at H = 12.6 and W = 11.9 mm; **d** – *Sobraliceras stoneleyi* sp. nov., holotype, MLP 31462, suture at H = 8.6 mm and W = 7.9 mm, and whorl section; **e** – *Sobraliceras*? sp. nov., MLP 31468, suture at H = 6.3 mm and W = 7.2 mm, and whorl section.

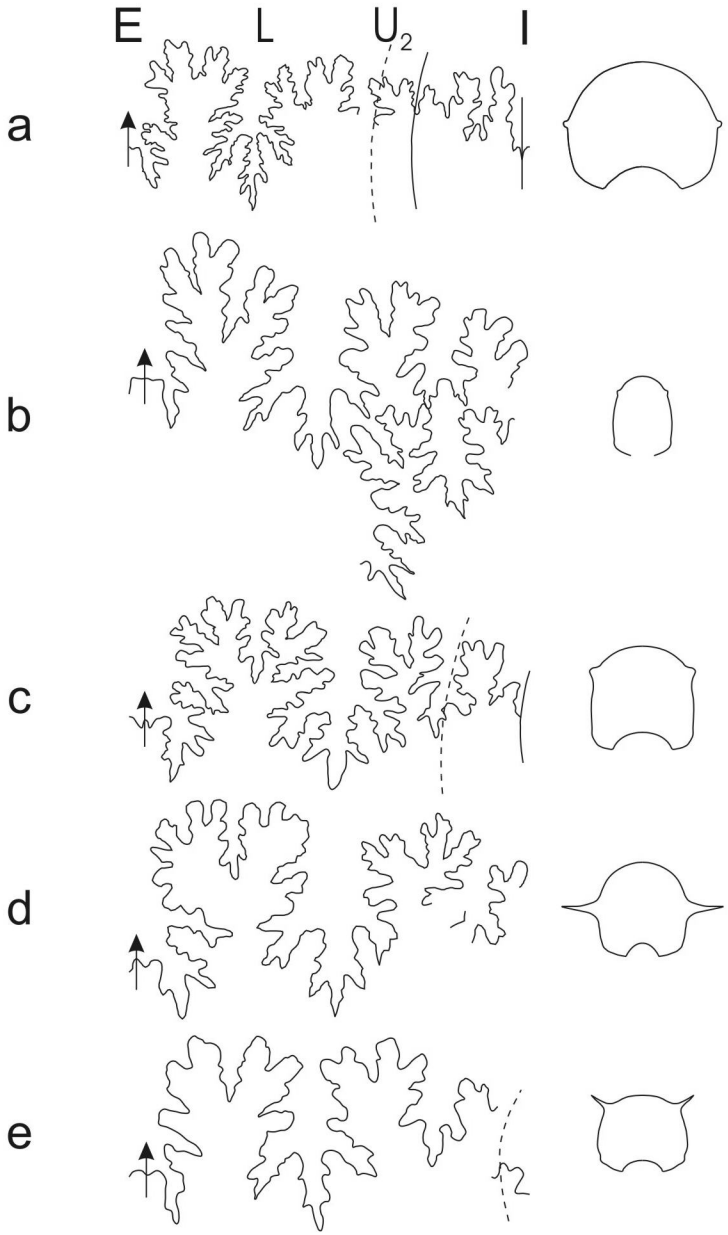

Fig. 7 (Legend see p. 320)

Material: The holotype, 1 almost complete specimen (MLP 31463), 1 juvenile almost complete (MLP 31464), and three whorl fragments (MLP 31465-31467), from type locality; F. A. MEDINA collection.

Etymology: From the locality where species occurs.

Diagnosis: Small involute and compressed *Sobraliceras,* with dense and sharp ribs bearing spine-like tubercles close to mid-flank and deep constrictions.

Description: Phragmocone whorls up to D = 24.8 mm are relatively involute (U/D = 0.34) with subrectangular section (H/W = 1.18), almost vertical umbilical wall, rounded shoulder, parallel flanks and curved venter. About five constrictions per whorl are radial on inner flank and projected on outer flank forming an adoral arc on venter. Ribs are sharp and narrow, with interspaces twice as wide, parallel to constrictions, radial on umbilical shoulder and form a very weak adapical curvature on flank. Above mid-flank some ribs end in spine-like tubercles between each pair of constrictions. On outer flank 4 blunt secondaries originate from each primary, become projected and are barely visible on venter.

Body chamber is about 1/2 whorl and reaches 29-32.4 mm in diameter. It remains involute (U/D = 0.32-0.33) with subrectangular to subrounded section (H/W = 1.02-1.13), slightly curved flanks and rounded venter. There are 5-6 constrictions per whorl. Ribs become more prominent. They are radial with slight adapical bend on inner flank and sometimes, meet in twos, at spine-like tubercles at mid-flank. 4-5 blunt secondaries originate from each primary and/or tubercle, project on outer flank and become very weak on venter. Aperture collared by deep and broad constriction.

Suture rather complex with symmetrically trifid L, as deep as E and raised umbilical lobes.

Measurements (in mm):

	D	U	H	W	H/W	P	S
Holotype MLP 31462							
b.ch.	32.4	10.4(0.32)	12.9(0.40)	12.6(0.39)	1.02	12	16
end phr.	24.8	8.4(0.34)	10.6(0.43)	9(0.36)	1.18	–	–
MLP 31463							
b.ch.	29	9.6(0.33)	12.4(0.43)	11(0.38)	1.13	12	–

Remarks: *S. stoneleyi* is similar to other Antarctic material included in *S. robustum*, but differs by being smaller, more involute (U/D = 0.32-0.34 vs. 0.34-0.40), and compressed (H/W = 1.02-1.18 vs. 0.92-1.03), with vertical vs. curved umbilical wall, denser and sharper primaries, has spine-like tubercles close to mid-flank, more numerous and blunt secondaries, and deeper constrictions.

One poorly preserved specimen, from a locality about one kilometre north of the type locality and referred to "*Silesites desmoceratoides* STOLLEY" by MEDINA et al. (1983: 266, pl. 1, fig. 5), is almost identical in coiling and ornament.

Sobraliceras? sp. nov. Figs. 6n-o, 7e

Material: The phragmocone with almost complete body chamber on Figure 6n-o (MLP 31468), from Kotick Point Formation, Kotick Point, James Ross Island. Lower Albian. F. A. MEDINA collection.

Description: Inner septate whorls (D = 13 mm) are relatively involute (U/D = 0.27) and depressed ovate to subrounded (H/W = 0.89), with vertical umbilical wall, rounded shoulder, subparallel flanks and curved venter. There are two shallow constrictions per half-whorl, parallel to ribbing and as wide as the rib interspaces. Primary ribs, 11 per half-whorl, are sharp and narrow, radial on the umbilical wall and inner flank, where they form weak bullae-like tubercles and divide into twos or threes. Secondaries, about 22 per half-whorl, are straight becoming slightly projected, and end in spine-like tubercles on the ventrolateral shoulder where some bifurcate and all become strongly projected to cross the venter with an adapical arc.

The incomplete body chamber is 30 mm in diameter. Coiling becomes more evolute (U/D = 0.36) and whorl section slightly compressed (H/W = 1.09). Ribs, 13 per half-whorl, are borne on umbilical shoulder where some of them form bullae-like tubercles, whilst others remain simple. From each bulla arise two secondaries, which are straight on flank, rounded and narrow with interspaces about 1 1/2 of rib width. There are about 20 secondary ribs per half-whorl. On ventrolateral shoulder most of them are looped in pairs at spine-like tubercles. Ribs born in pairs from these tubercles are finer, projected and cross the venter forming an adapical arc. There are 3 constrictions per half-whorl, parallel to ribbing.

Suture (Fig. 7e) rather complex, with narrow and slight asymmetrically trifid L, deeper than E and small U_2.

Measurements (in mm):

	D	U	H	W	H/W	P	S
Holotype MLP 31468							
b.ch.	30	10.8(0.36)	10.6(0.35)	9.7(0.32)	1.09	13	20
phr.	13	3.5(0.27)	6.3(0.48)	7.1(0.55)	0.89	11	22

Remarks: *S.* sp. nov. differs from *S. robustum* and *S. stoneleyi* by the more inflated whorls with more curved flanks, and the ribbing that develops from sharp to rounded. *S.* sp. nov. is strikingly different from *S. robustum, S. stoneleyi*, and *S. infirmum*, in coiling and whorl section, i.e. more involute in the inner whorls, and with subrounded whorls and deeper umbilicus. Because of the different coiling of the inner whorls, the generic assignation of this species is tentative.

Acknowledgements

Field work and laboratory research were financed by the Instituto Antartico Argentino (PICTA-17-2004) and by the Consejo Nacional de Investigaciones Cientificas y Tecnicas, Argentina (PIP 2702, 5635). G. E. G. WESTERMANN and J. MILLS-WESTERMANN, McMaster University, Canada, improved the English text. The referees M. WIPPICH and an anonymous one are kindly thanked for their critical comments and suggestions.

References

ALABUSHEV, A. I. & ALABUSHEVA, A. V. (1988): [Albian and Lower Cenomanian ammonites from northeastern USSR]. – Akad. Nauk SSSR Dal'nevost. Otd. Sev. – Vost. Kom. Nauchno-Issled. Inst. – 41 pp.; Magadan [In Russian].

ALMELA, A. & DE LA REVILLA, J. (1957): Fósiles piritosos del Cretáceo de la Sierra de Ricote (Murcia). – Bol. Inst. Geol. Esp., **68**: 47-83.

BREISTROFFER, M. (1947): Sur les Zones d'ammonites dans l'Albien de France et d'Angleterre. – Trav. Lab. Fac. Sci. Univ. Grenoble, **26**: 17-104.

BREISTROFFER, M. (1953): Commentaires taxonomiques. – In: BREISTROFFER, M. & DE VILLOUTREYS, O. (1953): Les ammonites albiennes de Peille (Alpes-Maritimes). – Trav. Lab. Géol. Fac. Sci. Univ. Grenoble, **30**: 69-74.

BUATOIS, L. A. & LOPEZ ANGRIMAN, A. O. (1992): Evolución de sistemas deposicionales en el Grupo Gustav, Cretácico de la Isla James Ross, Antártida. – In: RINALDI, C. A. (Ed.): Geología de la Isla James Ross, p. 263-297; Buenos Aires (Dirección Nacional del Antártico, IAA).

EGOIAN, V. L. (1969): [Ammonites of the Clansayesian beds of the western Caucasus]. – Tr. Krasnodar. Fil. Vses. Neftegazov. Nauchno-Issled. Inst., **19**: 126-188. [In Russian].

FALLOT, P. (1910): Sur quelques fossiles pyriteux du Gault des Baléares. – Trav. Lab. Géol. Fac. Sci. Univ. Grenoble, **9**(2): 62-90.

– (1920): La faune des marnes aptiennes et albiennes de la région d'Andraitx, Majorque. – Trab. Mus. Nac. Cienc. Nat., Madrid, **26**: 1-68.

HAUG, E. (1889): Beitrag zur Kenntniss der oberneocomen Ammonitenfauna der Puezalpe bei Corvara (Südtirol). – Beitr. Paläont. Geol. Öster.-Ungarn Orient, **7**: 193-231.

HOWARTH, M. K. (1958): Upper Jurassic and Cretaceous Ammonite faunas of Alexander Land and Graham Land. – Falkl. Isl. Depend. Surv., Sci. Rep., **21**: 1-16.

– (1966): Ammonites from the Upper Cretaceous of the James Ross Island Group. – Brit. Antarct. Surv., Bull., **10**: 55-69.

HYATT, A. (1889): Genesis of the Arietidae. – Smithson. Contr. Knowl., **673**: xi + 238 pp.

– (1900): Cephalopoda. – In: ZITTEL, K. A. v. (Ed.): Textbook of Palaeontology. 1st English ed. (transl. by EASTMAN, C. R.), p. 502-592; London (Macmillan).

IMLAY, R. W. (1959): New genera of Early Cretaceous (Albian) ammonites from Alaska. – J. Paleont., **33**: 179-185.

IMLAY, R. W. (1960): Early Cretaceous (Albian) Ammonites from the Chitina Valley and Talkeetna Mountains, Alaska. – U.S. Geol. Surv., Prof. Pap., **354-D**: 87-114.

INESON, J. R. (1989): Coarse-grained submarine fan and slope apron deposits in a Cretaceous backarc basin, Antarctica. – Sedimentology, **36**: 793-819.

INESON, J. R., CRAME, J. R. & THOMSON, M. R. A. (1986): Lithostratigraphy of the Cretaceous strata of west James Ross Island, Antarctica. – Cret. Res., **7**: 141-159

KENNEDY, W. J., WRIGHT, C. W. & KLINGER, H. C. (1979): Cretaceous faunas from Zululand and Natal, South Africa. A new genus and species of tuberculate Desmoceratacean Ammonite from the Mzinene Formation (Albian). – Ann. S. Afr. Mus., **78** (4): 29-38.

KILIAN, W. & REBOUL, P. (1909): Les céphalopodes néocretacés des îles Seymour et Snow-Hill. – Wissenschaftliche Ergebnisse der Schwedischen Südpolarexpedition, **3** (6): 1-75.

KRENKEL, E. (1910): Die Untere Kreide von Deutsch-Ostafrika. – Beitr. Paläont. Geol. Öster.-Ungarn Orient, **23**: 201-250.

– (1911): Zur unteren Kreide von Deutsch-Ostrafrika. – Zbl. Min., Geol. Paläont., **1911**: 285-288.

LEANZA, A. F. (1968): Anotaciones sobre los fósiles Jurásicos-Cretácicos de Patagonia Austral (Colección Feruglio) conservados en la Universidad de Bologna. – Acta Geol. Lilloana, **9**: 121-186.

LEANZA, A. F. (1970): Ammonites nuevos o pocos conocidos del Aptiano, Albiano y Cenomaniano de los Andes Australes con notas acerca de su posición estratigráfica. – Asoc. Geol. Argent., Rev., **25** (2): 197-260.

MARCINOWSKI, R. & WIEDMANN, J. (1990): The Albian Ammonites of Poland. – Palaeont. Polon., **50**: 1-94.

MATHERON, P. (1878): Recherches Paléontologiques dans le midi de la France; Marseille.

MCLEARN, F. H. (1972): Ammonoids of the Lower Cretaceous sandstone member of the Haida Formation, Skidegate Inlet, Queen Charlotte Islands, western British Columbia. – Geol. Surv. Canada, Bull., **188**: 1-78.

MEDINA, F. A. (1999): El genero *Sciponoceras* en el Cretácico de la Isla James Ross, Antartida. – Cuartas Jornadas sobre Investigaciones Antárticas (Buenos Aires, 1997), p. 288-293; Buenos Aires (Dirección Nacional del Antártico, IAA).

MEDINA, F. A. & BUATOIS, L. A. (1992): Bioestratigrafia del Aptiano-Campaniano (Cretacico superior) en la isla James Ross. – In: RINALDI, C. A (Ed.): Geología de la Isla James Ross, p. 37-45; Buenos Aires (Dirección Nacional del Antártico, IAA).

MEDINA, F. A., BUATOIS, L. A. & LOPEZ ANGRIMAN, A. (1992): Estratigrafia del Grupo Gustav en la isla James Ross, Antártida. – In: RINALDI, C. A. (Ed.): Geologia de la Isla James Ross, p. 167-192; Buenos Aires (Dirección Nacional del Antártico, IAA).

MEDINA, F. A. & RICCARDI, A. C. (2005): Desmoceratidae, Silesitidae and Kossmaticeratidae (Ammonitina) from the Upper Aptian-Albian of Patagonia (Argentina). – Rev. Paléobiol., **24** (1): 251-286.

MEDINA, F. A., RICCARDI, A. C. & GHIGLIONE, M. (2003): First record of the Albian ammonite *Aioloceras* WHITEHOUSE in Antarctica. – Alcheringa, **27**: 85-91.

Medina, F. A., Rinaldi, C. A., Del Valle, R. A. & Baldoni, A. M. (1983): Edad de la Formación Lower Kotick Point en la isla James Ross, Antártida. – Ameghiniana, **19**: 263-272.

Michailova, I. A. (1972): A little-known ammonite genus from the Clansayes horizon (Lower Cretaceous). – Paleont. J., **3**: 351-358.

Michailova, I. A. & Terechova, C. P. (1975): [Stratigraphy and fauna of the Albian of the Main River Basin (NE Russia)]. – Izv. Akad. Nauk SSSR, Ser. Geol., **9**: 54-65. [in Russian].

Olivero, E. B. (1984): Nuevos amonites campanianos de la isla James Ross, Antártida. – Ameghiniana, **21** (1): 53-84.

– (1988): Early Campanian Heteromorph Ammonites from James Ross Island, Antarctica. – National Geographic Research, **4** (2): 259-271.

– (1992): Asociaciones de amonites de la Formación Santa Marta (Cretácico Tardío), Isla James Ross, Antártida. – In: Rinaldi, C. A (Ed.): Geologia de la Isla James Ross, p. 47-61. Buenos Aires (Dirección Nacional del Antártico, IAA).

Olivero, E. & Medina, F. (1993): Bioestratigrafia de amonites del Cretácico (Aptiano-Maastrichtiano) de Antártida. – In: Segundas Jornadas de Comunicaciones sobre Investigaciones Antárticas, p. 183-187; Buenos Aires (Instituto Antártico Argentino).

Olivero, E. B., Scasso, R. A. & Rinaldi, C. A. (1986): Revision of the Marambio Group, James Ross Island, Antarctica. – Inst. Antárt. Argent., Contr., **331**: 1-29.

Passendorfer, E. (1930): Études stratigraphiques et paléontologiques du Crétacé de la Serie Hauttatrique dans les Tatras. – Trav. Serv. Géol. Polon., **2**: 511-676.

Pirrie, D., Marshall, J. D., Doyle, P. & Riccardi, A. C. (2004): Cool early Albian climates, new data from Argentina. – Cretaceous Research, **25**: 27-33.

Renz, O. (1979): Lower Cretaceous Ammonoidea from the northern Atlantic, Leg 47B, Hole 398D-DSDP. – Init. Rep. DSDP, **47** (2): 361-369.

– (1982): The Cretaceous ammonites of Venezuela. – 132 pp.; Basel (Birkhäuser).

Riccardi, A. C. (1991): Jurassic and Cretaceous marine connections between the Southeast Pacific and Tethys. – Palaeogeogr., Palaeoclimatol., Palaeoecol., **87**: 155-189.

Riccardi, A. C. & Medina, F. A. (2002): The Beudanticeratinae and Cleoniceratinae (Ammonitina) from the Lower Albian of Patagonia. – Rev. Paléobiol., **21** (1): 291-351.

Sarasin, C. & Schöndelmayer, C. (1901): Étude Monographique des Ammonites du Cretacique Inférieur de Chatel-Saint-Denis. – Mém. Soc. Paléont. Suisse, **28**: 1-91.

Spath, L. F. (1922): On the Senonian ammonites of Pondoland. – Trans. Roy. Soc. S. Afr., **10**: 113-148.

– (1953): The Upper Cretaceous cephalopod fauna of Graham Land. – Falkland Isl. Depend. Surv., Sci. Rep., **3**: 1-60.

Stolley, E. (1912): Über einige Cephalopoden aus der unteren Kreide Patagoniens. – Ark. Zool., **7** (23): 1-18.

Thomson, M. R. A. (1974): Ammonite fauna of the Lower Cretaceous of south-eastern Alexander Island. – Brit. Antarct. Surv., Sci. Rep., **80**: 1-44.

THOMSON, M. R. A. (1982): A comparison of the ammonite faunas of the Antartic Peninsula and the Magallanes Basin. – J. Geol. Soc. London, **139** (6): 763-770.
– (1984): Cretaceous ammonite biostratigraphy of western James Ross Island, Antarctica. – In: Memoria III Congreso Latinoamericano de Paleontología (México, 1984), p. 308-313.
UHLIG, V. (1883): Die Cephalopoden der Wernsdorfer Schichten. – Denkschr. Akad. Wiss. Wien, **46** (2): 127-290.
WESTERMANN, G. E. G. (2000): Marine faunal realms of the Mesozoic: review and revision under the new guidelines for biogeographic classification and nomenclature. – Palaeogeogr., Palaeoclimatol., Palaeoecol., **163**: 49-68.
WHITEAVES, J. F. (1876): Mesozoic Fossils. On some Invertebrates from the Coal-Bearing Rocks of the Queen Charlotte Islands. – Geol. Surv. Canada, **1** (1): 1-92.
WIEDMANN, J. (1962): Unterkreide-Ammoniten von Mallorca. 1. Lieferung: Lytoceratina, Aptychi. – Abh. Akad. Wiss. Literatur Mainz, math.-naturwiss. Kl., **1962** (1): 1-148.
WIEDMANN, J. & DIENI, I. (1968): Die Kreide Sardiniens und ihre Cephalopoden. Palaeont. Ital., **64**: 1-171.
WRIGHT, C. W., CALLOMON, J. H. & HOWARTH, M. K. (1996): Cretaceous Ammonoidea. – In: Treatise on Invertebrate Paleontology. Part L, Mollusca 4. – 4, xx + 362 pp.; Boulder & Kansas (Geol. Soc. Amer. & Univ. Kansas).
ZITTEL, K. A. v. (1884): Cephalopoda. – In: ZITTEL, K. A. (Ed.): Handbuch der Palaeontologie, **1** (2, 3): 329-522; München (Oldenbourg).
– (1895): Grundzüge der Paläontologie. – 971 pp.; München (Oldenbourg).

Manuscript received: April 3rd, 2006.
Revised version accepted by the Stuttgart editor: September 1st, 2006.

Addresses of the authors:

FRANCISCO A. MEDINA, Departamento de Ciencias Geológicas, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, 1428 Buenos Aires, Argentina; e-mail: famedina@gl.fcen.uba.ar

ALBERTO C. RICCARDI, Departamento Paleozoología Invertebrados, Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, 1900 La Plata, Argentina;
e-mail: riccardi@museo.fcnym.unlp.edu.ar