According to our present knowledge this slightly ribbed variety is restricted to Assemblage 2a, and thus occurs higher in the section than *H. mirabilis.*

Description: Re6882 (Pl. 31, Fig. 7a–b). Conch slender. Whorl section almost identical with *H. mirabilis.* Ornament, however, consists of biconcave flat folds generally beginning indistinctly on lower fourth of flank, widening and ending on ventrolateral edge. Folds begin at an early stage of growth, as shown by juvenile specimen Re6883 (Pl. 31, Fig. 8) from same locality.

Re6863 (Pl. 31, Fig. 9) from Assemblage 2. Variety with weaker folds. Intermediate between smooth (Pl. 30, Fig. 6) and ribbed forms (Pl. 31, Fig. 7).

Re6883 (Pl. 31, Fig. 8). Juvenile stage with folds persisting to an early stage.

Measurements: Re6882, Dm 54 mm, Wh 29 (0.54), Ww 16 (0.30), U 4 (0.07).

Remark: Reyment (1970, p. 914, pl. 35) figured a similar specimen from Trinidad which he compares with varieties of *Hoplitoides ingens* von Koenen (pl. 35, fig. 2).

Hoplitoides munieri Pervinquière
Pl. 31, Fig. 3a–b, 4a–b, 5a–b, 6a–b, 11a–b

1907 *Hoplitoides Munieri* Pervinquière, p. 217, pl. 10, fig. 1a–b.
1921 *Hoplitoides Munieri* Pervinquière, Chudeau, p. 467, fig. 3.
1954 *"Hoplitoides"* cf. *"H". munieri* Pervinquière, Kummel and Decker, p. 317, pl. 33, fig. 1–2.
1956 *Hoplitoides munieri* Pervinquière, Benavides-Cáceres, p. 475.

Location: La Morita, type section of Chejendé Member, Assemblage 1, early to middle Turonian.

Description: All specimens available are of uniformly small size, with parts of body chamber preserved, comparing well with the holotype. Their wider, concave and less grooved truncated venter serves to distinguish them from *H. munieri.*

Re6851, Assemblage 1 (Pl. 31, Fig. 3). Smooth example with biconcave growth lines. Sipho faintly elevated as on specimens figured by Kummel and Decker (1954, p. 317).

MBJ28524 (Pl. 31, Fig. 4). From La Aguada in the Barbacoas syncline shows broad folds on outer half of flank and a wider, slightly concave venter.

Re6852 (Pl. 31, Fig. 5), *H.* cf. *munieri,* Assemblage 1. Juvenile stage with a rather narrowly truncated venter broadening rapidly.

Re6935 (Pl. 31, Fig. 11a–b), Assemblage 2, juvenile stage.

Re6884 (Pl. 31, Fig. 6a–b), Assemblage 2a, is a variety with wider tabulate, slightly concave venter and with pronounced biconcave growth lines on test.

Measurements:	Dm	Wh	Ww	U
Re6851, Pl. 31, Fig. 3	60 mm	32 (0.53)	19 (0.32)	5 (0.08)
Re6852, Pl. 31, Fig. 5	39 mm	21 (0.54)	9.5 (0.24)	2.5 (0.06)
Re6884, Pl. 31, Fig. 6	56 mm	31 (0.55)	17 (0.30)	5 (0.08)

Distribution: Tunisia, Venezuela, Mexico.

Remarks: Hoplitoides inca Benavides-Cáceres (1956, p. 475, pl. 63, fig. 6–11) possesses a concave venter and faint falciform ribs up to a diameter of 45 mm. It probably is closely related, if not identical, to *H. munieri.*

Hoplitoides aff. *wohltmanni* von Koenen
Pl. 30, Fig. 8a–b; Pl. 31, Fig. 1a–b, 2a–b; Text fig. 76

1897 *Neoptychites? (Hoplites) Wohltmanni* von Koenen, p. 12, pl. 1, fig. 2; pl. 2, fig. 3, 9, holotype.
1898 *Neoptychites? lentiformis* von Koenen, p. 11, pl. 2, fig. 1, 4, 7.
1904 *Hoplites Wohltmanni* von Koenen, Solger, p. 133, pl. 5, fig. 7; Text fig. 24, 27.
1955a *Hoplitoides* cf. *wohltmanni* (von Koenen), Reyment, p. 78, pl. 18, fig. 3.
1972 *Hoplitoides wohltmanni* (von Koenen), Reyment, p. 360, fig. 3; fig. 7 (5); fig. 8 (1).
1979 *Hoplitoides* cf. *H. wohltmanni* (von Koenen), Cobban and Hook, p. 20, pl. 4, fig. 3–4.
1980 *Hoplitoides* cf. *wohltmanni* (von Koenen), Cobban and Hook, p. 7, pl. 1, fig. 3–4.

Location: Allochthonous mass in Guárico flysch north of Ortiz, Los Robles de Ortiz, State of Guárico, late early Turonian.

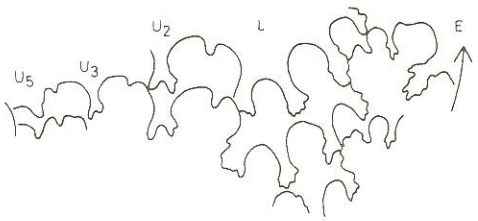
Description: VK1283B-1 (Pl. 31, Fig. 2). Preserved with test. Aperture simple, in conformity with curved growth lines. Body chamber three-quarters whorl, showing accelerated whorl expansion. Whorl section high sub-elliptical, thickest near mid-flank, from where sides converge towards narrowly rounded venter and umbilicus.
Surface of body chamber deprived of sculpture. Passage from tabulate venter on phragmocone to rounded venter on body chamber not visible, according to Solger (1904, p. 136) occurring at a diameter of 30 mm: «Die Aussenseite verliert bei etwa 15 mm Gehäuseradius ihre Höhlung ..., bei etwa 30 mm Radius verschwindet auch das, und die Flanken gehen durch eine einheitliche kurze Rundung ineinander über.» Suture line not preserved.

Re6922 (Pl. 30, Fig. 8), a fully preserved specimen, was collected from Assemblage 2a, above La Paragua, along the trail to Los Mamones. Here it occurs in association with *Benueites.*
MBJ28522 (Pl. 31, Fig. 1; Text fig. 76). Road culmination between Barbacoas and San Pedro. Of the numerous specimens collected this is the only one on which the external suture line is partly preserved.

Measurements:	Dm	Wh	Ww	U
VK1283B-1	120 mm	78 (0.65)	29 (0.24)	9 (0.07)
MBJ28522	113 mm	64 (0.57)	30 (0.27)	6 (0.05)

Distribution: Cameroon, Nigeria, Trinidad, Venezuela, USA.

Remarks: H. aff. *wohltmanni* occurs together with *Benueites* in the Guárico flysch. A younger age may, therefore, be assumed for this species. A correlation with Assemblage 2a from the upper part of Chejendé Member seems appropriate.



Text fig. 76
Suture line of *Hoplitoides* aff. *wohltmanni* van Koenen, MBJ28522, Pl. 31, Fig. 1, 2×.

c. Systematic description of late Turonian ammonites

In Western Venezuela, late Turonian sediments are developed in three different lithologic types. The most widespread is the La Luna facies with pelagic fossils, developed in the northern Perijá Range, on the Maracaibo Platform and in the Andes northeast of the Mérida High, in the States of Trujillo and Lara. Towards the southeastern border of the Cretaceous basin, mainly in Táchira, the euxinic carbonates are replaced by massive platform carbonates (Guayacán Limestones). These abound with large *Exogyra,* comparable to the *Exogyra mermeti* bioherm in Colombia. The Guayacán represents a fan-like tongue which extends as far north as the Río de Oro oil field. To the southeast, in direction of the Guayana Shield, it becomes incorporated in the upper part of the Escandalosa Formation which develops along the southeastern foothills of the Andes, in the State of Barinas. The Escandalosa comprises clastic material derived from the Guayana Shield (Text fig. 3, 4).

Late Turonian ammonites are restricted to the La Luna facies. Within the La Luna Formation, the upper Turonian interval is recognized by the presence of large-sized *Coilopoceras* which generally are preserved as fragments. They are present along the Perijá foothills, in the Andes, as well as in Turonian allochthonous slabs in the Paleocene-Eocene flysch of the Barquisimeto Trough. Recently also Ch. Beck has found a fragment of *Coilopoceras* cf. *newelli* Benavides-Cáceres in the Cerro El Peñón, south of Altagracia de Orituco.

In the Andes, the thin upper Turonian interval is rarely well exposed, being covered by debris originating from the high escarpments formed by the overlying Timbetes Member. The loose specimens of *Coilopoceras* are generally fragmentary and weathered and cannot be specifically determined. Few other ammonite species are associated with *Coilopoceras.*

In the Andes most *Coilopoceras* have their septa well preserved. This might be connected with the abundance of silica within the lower part of the Timbetes Member.

Foraminifera are only rarely observed in thin sections. In addition to the ammonites, inoceramids and bones of saurians occur in the limestone concretions.

As no signs of carbonate dissolution at the sea floor have ever been observed it may be concluded that the silica- and iron-rich (pyritic) lime-mudstone was deposited above the calcite compensation depth.

Family Coilopoceratidae Hyatt, 1903

Genus *Coilopoceras* Hyatt, 1903

Occurrence: France, Syria, North Africa, USA, Venezuela, Colombia, Peru, Ecuador (Wasson and Sinclair, 1927), Brazil (Oliveira, 1969).

Coilopoceras aff. *newelli* Benavides-Cáceres
Pl. 33, Fig. 1; Text fig. 77e–f

1956 *Coilopoceras newelli* Benavides-Cáceres, p. 473, pl. 61, fig. 4, holotype; pl. 62, fig. 5, text fig. 53c suture of holotype.

Location: Allochthonous slab of Turonian age in Tertiary Barquisimeto Trough, near Puente Torres, along the old road from Carora to Barquisimeto. Collected by the author.

Description: MBI28806. Internal cast with outer part of phragmocone missing. Large, discoidal ammonite with acute keel at the juvenile stage. Narrow umbilicus widens with progressing growth. Whorl section (Text fig. 77e) sublanceolate, reaching maximal width around mid-side. From here flanks converge towards keel, showing a slight concavity. Ornament reduced to faint fold-like elevations. According to Benavides-Cáceres these "may appear on the phragmocone (pl. 62, fig. 5) or only on the body chamber (pl. 61, fig. 4)". It appears that the specimens with thicker whorl sections have stronger ornamentation. With the exception of the external saddle, the suture line (Text fig. 77f) is characterized by predominantly rounded, feebly incised saddles, present also between adventitious lobes (compare Schindewolf, 1966, p. 718).

Measurements: Dm 225 mm, Wh 120 (0.53), Ww 64 (0.28), U 8 (0.08).

Remarks: Fragments of very large adult specimens collected by F. Stephan (MPI724, Wh 138 mm, Ww 98 mm) are characterized by suture lines with rounded saddles, strong bulges on flank, and a venter rounding towards the body chamber.

Specimens comparable to *Gleboceras* Reyment (1954b) from Nigeria, which possess a sharp keeled venter at all stages, have not been observed in Venezuela.

Coilopoceras springeri Hyatt
Pl. 40, Fig. 1a–c; Text fig. 78

1903 *Coilopoceras springeri* Hyatt, p. 96, pl. 12, fig. 1–3.
1980 *Coilopoceras springeri* Hyatt, Cobban and Hook, p. 16, pl. 1, fig. 5, 6; pl. 3, fig. 9–11; pl. 6, fig. 9–10; pl. 10; pl. 18, fig. 7–10; pl. 19, fig. 1–9.

Location: Chejendé syncline, late Turonian, Santa Rosa, Timbetes Member. Coll. Manuel Morales.

Text fig. 77
Whorl sections and suture lines of *Coilopoceras:*
a–b. *C. laraense* n. sp., holotype, MPI105-4, Pl. 32, Fig. 2, 1×.
c–d. *C. stephani* n. sp., holotype, MPI103-6, Pl. 32, Fig. 1, 1×.
e–f. *C.* aff. *newelli* Benavides-Cáceres, MBJ28806, Pl. 33, Fig. 1, 1×.
g–h. *C. colleti* Hyatt, MPI105-10, Pl. 33, Fig. 2, 1×.

Description: Re6932. Large ammonite. Outer whorl, which was destroyed by weathering has been removed. Specimen represents a rather juvenile stage with closed, funnel-like umbilicus. It begins to expand after about 120 mm diameter. Whorl section oxycone, thickest below mid-side (Text fig. 78). Flanks slightly convex, converging evenly, without concavity, towards keel. Ornament consists of very faint folds on ventral half of flank. Suture line with deeply frilled saddles. External saddle much higher than saddles of adventitious lobes on lateral lobe (Cobban and Hook, fig. 11, p. 18).

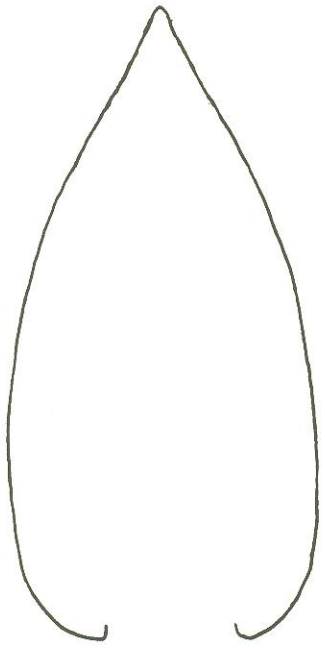
Coilopoceras colleti Hyatt
Pl. 33, Fig. 2; Text fig. 77g–h

1903 *Coilopoceras colleti* Hyatt, p. 91, pl. 10, fig. 5–21; pl. 11, fig. 1.
1955b *Coilopoceras colleti* Hyatt, Reyment, p. 579, Text fig. 1a (suture).
1942 *Coilopoceras colleti* Hyatt, Moreman, p. 218.
1980 *Coilopoceras colleti* Hyatt, Cobban and Hook, p. 13, pl. 1, fig. 7–8; pl. 3, fig. 1–3; pl. 5; pl. 6, fig. 1–8; pl. 7–9, with synonymy.

Holotype: Hyatt, 1903, pl. 10, fig. 5, 6; pl. 11, fig. 1.
Hyatt (1903) and later Cobban and Hook (1980, p. 13), observed a progressive change in whorl section and sculpture with advancing growth. The present specimen, still immature and smooth, can best be compared with a similarly unsculptured form of nearly equal size figured by Cobban and Hook (1980, p. 15, pl. 7, fig. 5–6).

Location: Autochthonous mass of Cerro Grande in the Barquisimeto flysch southwest of Humocaro Bajo. Coll. F. Stephan.

Description: MPI-105-10. Specimen partly damaged by compression. Whorl section (Text fig. 77g) suboval. Flanks at that size convex, declining evenly towards bluntly keeled venter and narrow umbilicus. The outstanding feature distinguishing *Coilopoceras colleti* from other *Coilopoceras* is the suture line (Text fig. 77h), characterized by only one large adventitious lobe on the lateral lobe.



Text fig. 78
Whorl section of *Coilopoceras springeri* Hyatt, Re6932, Pl. 40, Fig. 1a–b, 1×.

Measurements: Dm 138 mm, Wh 81 (0.59), Ww 34 (0.25), U? 9 (0.06).

Occurrence: USA, Mexico, ?Colombia (Bürgl, 1957, p. 138), Venezuela, Brazil.

Coilopoceras stephani n. sp.
Pl. 32, Fig. 1a–c; Text fig. 77c–d

Holotype: MPI-103-6. Deposited with the Ministerio de Energia y Minas, Caracas.

Location: Barquisimeto Trough, from allochthonous mass of Cerro Grande, southwest of Humocaro Bajo.

Derivation of name: The species is named in honour of the collector Dr. François Stephan from the Université Pierre et Marie Curie in Paris.

Age: Late Turonian.

Description of holotype: Venter sharp. Whorl section lanceolate. Sides inflated, widest near mid-flank, from there converging towards venter, distinctly impressed before reaching acute keel (Text fig. 77c). On inner fourth of outer volution, low, faint radial swellings, fading at 65 mm diameter. Swellings begin above umbilical slope and flatten out towards keel. They are hardly recognizable on the photograph, as they are superimposed by distinct suture lines which are characterized by narrowly denticulate saddles and three adventitious lobes on lateral lobe (Text fig. 77d).

Measurements: Dm 180 mm, Wh 96 (0.53), Ww 57 (0.32), U 20 (0.11).

Coilopoceras laraense n. sp.
Pl. 32, Fig. 2a–c; Text fig. 77a–b

Holotype: MPI-105-4. Deposited with the Ministerio de Energia y Minas, Caracas, collected by F. Stephan.

Location: Barquisimeto Trough, in allochthonous mass of Cerro Grande, southwest of Humocaro Bajo.

Age: Late Turonian.

Description of holotype: Single specimen. Last third of phragmocone with broadly fastigate venter has been removed in order to free sharpening of venter towards juvenile stage. Transition occurs between 140 and 175 mm diameter. Section of inner whorls broadly lanceolate, sharp keeled without sculpture, at least on the part exposed. Rounding of venter occurs within a short interval of about one third volution. Whorl section of outer volution inflated, with broad slightly fastigate venter (Text fig. 77a). Five flat bulges, irregular in size, occur on mid-flank of outer volution. Umbilicus moderately deep, steep-sided, its 15% diameter being rather wide for the genus. Umbilical wall merging into flank. Suture (Text fig. 77b) distinguished by roughly uniform-sized adventitious lobes, little differentiated from accessories of saddle L-U_2.

Measurements: Dm 175 mm, Wh 90 (0.51), Ww 70 (0.40), U 26 (0.15).

Remark: C. laraense is distinguished from *C. inflatum* Cobban and Hook (1980, p. 19) by its conspicuous suture line.

Family Hourcquiidae n. fam.

Two ammonites from the upper Turonian of the Chejendé syncline may be compared with *Hourcquia* Collignon (1965b, p. 77) of the same age from Madagascar. Collignon (1965b, p. 69) established a new subfamily for *Hourcquia* and *Masiaposites* Collignon (1965b, p. 69) which he called Neoptychitinae Collignon (1965b, p. 77): «L'existence de ce genre *(Hourcquia)* au sommet du Turonian, sa morphologie, le dessin de la cloison permettent de l'envisager comme pouvant être à l'origine des *Barroisiceras* coniaciens. Je le range, à côté de *Masiaposites* n. gen., dans la nouvelle Sous Famille des Neoptychitinae».
The external suture line of *Hourcquia* differs from that of *Neoptychites* (Text fig. 67) by an additional umbilical lobe which possibly corresponds to U_5.
The lobe formula of the Venezuelan *Hourcquia* (Text fig. 79) would appear to be most comparable with that of *Plesiovascoceras* Spath (Reeside, 1923, pl. 20, fig. 2) on which the lobe formula E L U_2 U_3 U_5/U_4 U_1 I (compare Schindewolf, 1966, p. 794) is indicated.
It is proposed that *Hourcquia* as well as *Masiaposites* should be separated from the Vascoceratidae and that the Family Hourcquiidae should be created comprising

the genera *Hourcquia* and *Masiaposites*. Additional material in which the ontogeny of the suture is exposed is, however, necessary in order to substantiate this recommendation.

Genus *Hourcquia* Collignon, 1965

Type species: Hourcquia mirabilis Collignon, 1965b, p. 77.

Occurrence: Madagascar, Venezuela.

Hourcquia krausei n. sp.
Pl. 34, Fig. 1a–b, Text fig. 79

Holotype: Re6893. Deposited with Maraven S.A., Caracas.

Derivation of name: The new species is named in honour of Dr. H. Krause, Exploration Manager of Maraven S.A., Caracas, at whose instigation the author undertook the task of compiling this monograph.

Location: Chejendé syncline, La Paragua, transition from the uppermost Chejendé to the Timbetes Member.

Age: Late Turonian.

Description of holotype: Single specimen, large sized. Phragmocone 288 mm diameter, fully preserved, living chamber missing. In contrast to most other ammonites from the La Luna Formation, the large phragmocones of *Hourcquia* as well as of *Coilopoceras* are filled with sediment, instead of the calcite cement which was formed in other ammonites during their diagenetic history. The absence of the calcite has allowed the suture lines to be preserved intact. Conch stout, slightly compressed. Umbilicus deep, narrow, 18% of diameter. Umbilical wall high and steep, rounding into flank. Whorl section subtrapezoidal, falling off steeply towards broadly fastigate and bluntly-keeled venter. Flanks inflated, ornamented by two rows of large, round-topped nodes. Whorl reaches greatest thickness below mid-flank, on dorsal row of larger nodes. It consists of eight round-topped nodes on outer volution, slightly elongated towards umbilical margin. Nodes on ventrolateral shoulder are half in size and more closely placed which permits space for twenty nodes. Two rows of nodes are separated by a concavely impressed spiral band. A second band with a much slighter concavity is developed between ventrolateral nodes and keel.

Collignon (1965b, p. 77) compared the (poorly reproduced) suture lines with those of Neoptychitinae: «Les lobes sont bien différents par leur massivité, mais leur découpage rappelle encore celui de certains Vascoceratidae et surtout de Neoptychitinae; quant aux selles, elles ne sont pas, elles aussi, sans certaines analogies avec celles de *Barroisiceras*.»

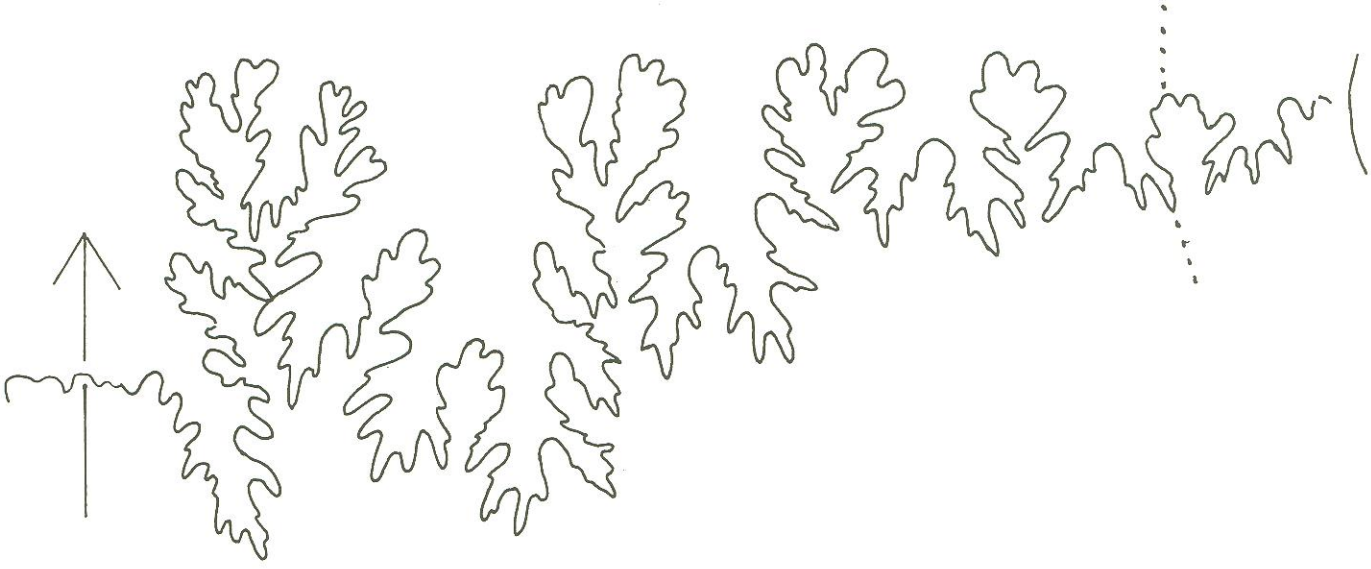
Measurements: Dm 288 mm, Wh 139 (0.48), Ww 126 (0.44), U 60 (0.21).

Hourcquia moralesi n. sp.
Pl. 34, Fig. 2a–b

Holotype: Re6806. Deposited with Maraven S.A., Caracas.

Derivation of name: In honour of collector Señor Manuel Morales in Chejendé, who presented this specimen to the author.

Location: Below houses La Ceiba, 2 km west of Chejendé, base of escarpment formed by the Timbetes Member.



Text fig. 79
Suture line of *Hourcquia krausei* n. sp., holotype, Re6893, Pl. 34, Fig. 1, 1×.

Age: Probably late Turonian.

Description of holotype: Right side of holotype abraded by erosion. Test partly retained, attached to matrix as well as to the sediment, which made the preparation of the specimen difficult. Outer volution, filled with sediment, belongs to body chamber. Phragmocone composed of calcite cement. Whorl section after reconstruction (Pl. 34, Fig. 2b) as wide as high, trapezoidal on costal section, thickest on umbilical bullae. Umbilical wall steep, umbilicus 28% of diameter. Ornament consists of two rows of tubercles connected by radial, broad, flat ribs which divide from 15 umbilical bullae and terminate at about 30 ventrolateral, slightly radially elongated tubercles from which ribs flatten towards keel. Flanks between umbilical and ventrolateral tubercles impressed, resulting in a conspicuous concave spiral band. From ventrolateral tubercles venter falls off steeply towards low rounded keel. Venter between keel and ventrolateral tubercles shows a very low concavity. Suture not preserved.

Measurements: Dm 96 mm, Wh 42 (0.44), Ww about 42 (0.44), U 27 (0.28).

d. Systematic description of Coniacian ammonites

Along the foothills of the Perijá mountains, limestones of Coniacian age form the upper part of the La Luna Formation. They contain rich assemblages of ammonites. In the State of Táchira the typical La Luna Formation is reduced to a thin horizon of concretionary limestones, intercalated between the Guayacán Formation beneath and the Táchira chert Member (time equivalent to the upper part of the La Luna Formation outside Táchira) above. It is assumed that the chert is predominantly of Coniacian age, though this cannot be confirmed since ammonites appear not to be present. The thin La Luna in Táchira may be of latest Turonian to early Coniacian in age.

Most of the ammonites described here were collected in the Andes, in the States of Trujillo and Lara, where the Coniacian is represented by the Timbetes Member of the La Luna Formation and exposed in the Chejendé and Barbacoas synclines. The lower limit of the member coincides with the first layer of black chert. This appears to be a remarkably reliable time marker in western Venezuela. It might be connected with a phase of Late Cretaceous volcanic activity observed to the north, in the present Caribbean on the islands of Curaçao and Puerto Rico.

The Coniacian limestones are dark grey, hard, dense and splintery and weather to a light grey colour. Thin layers and lenses of nodular black chert are intercalated throughout. In thin-section, poorly preserved pelagic foraminifera are observed, which are difficult to determine. Phaecal pellets occasionally occur. The silica content of the limestones is consistently below one percent.

Unlike the underlying Turonian Chejendé Member, which has a rich fossil assemblage, the Coniacian limestones contain few ammonites and then exclusively in concretions where they are accompanied by inoceramids and saurian bones. The bivalve *Didimotis variabilis* Gerhardt (1897a, pl. 5, fig. 3, p. 178) is abundant. The preservation of the fossils is typical for the La Luna facies in general. Most ammonite specimens have their test preserved and their living chambers filled with sediment. Moreover their phragmocones remained void and were only later filled with coarse-grained white calcite cement. Thermally altered bitumina can occasionally be observed between calcite crystals.

Family Baculitidae Meek, 1876

Subfamily Baculitinae Meek, 1876

Genus *Baculites* Lamarck, 1799

Type species: Baculites vertebralis De France, 1830.

Occurence: About world-wide.

Baculites inornatus Meek
Pl. 34, Fig. 3, 4, 5a–b, 6; Text fig. 80

1862 *Baculites inornatus* Meek, p. 316.
1876 *Baculites chicoensis* Meek non-Trask, p. 364, pl. 4, fig. 2, 2a–c.
1879 *Baculites chicoensis* Trask, Whiteaves, p. 114, pl. 2.
1952 *Baculites chicoensis* Trask, Usher, p. 96, pl. 26, fig. 1–4; pl. 31, fig. 18.
1958 *Baculites inornatus* Meek, Anderson, p. 190, pl. 48, fig. 2, 2a, 3.
1959b *Baculites inornatus* Meek, Matsumoto, p. 155, pl. 38, fig. 1; pl. 43, fig. 5a–c.

Lectotype designated by Matsumoto, 1959b, p. 155, pl. 43, fig. 5a–c from Meek, F. B. and Hayden, F. V., 1926.

Location: Type section Timbetes Member, La Paragua, together with *Barroisiceras,* early Coniacian.

Description: Re6819-1 to 3 (Pl. 34, fig. 3, 5–6). Straight shells mostly covered by test. Section broad elliptical with slightly flattened sides. Width/height ratio of section = 0,73, which is in close agreement with measurements made by Matsumoto (1959b, p. 157). Sculpture reduced to sinuously curved growth-lines crossing the sides obliquely prorsiradiate, and crossing the venter in a broad, forward projected arch. Dorsum is crossed in a low, moderately rounded bow (Matsumoto, 1959b, p. 156, fig. 73). Aperture (Pl. 34, Fig. 4) ending in a long

Text fig. 80
Suture line of *Baculites inornatus* Meek, Re6819-2, Pl. 34, Fig. 3, 5×.

ventral rostrum. Suture (Text fig. 80) with nearly square, broad saddles and lobes (compare Matsumoto, 1959b, p. 156, fig. 73).

Family Nostoceratidae Hyatt, 1894

Genus *Ankinatsytes* Collignon, 1965

Type species: Ankinatsytes yabei Collignon, 1965d, p. 16, fig. 1738.

Occurrence: Madagascar.

Ankinatsytes venezolanus n.sp.
Pl. 35, Fig. 1; Text fig. 81

Holotype: Re6820 deposited with Maraven S.A., Caracas.

Location: La Paragua, type section Timbetes Member between Chejendé and Mitón, about 30 m above zone containing *Barroisiceras.*

Age: Early Coniacian.

Description of holotype: Only the holotype and a fragment of another individual have been found so far. Test mostly preserved, joined partly to calcite cement filling of phragmocone. Spire helically rounded. Whorl section subcircular (Text fig. 81). Aperture collared, damaged during preparation. Ornament consists of stronger primary ribs intercalated by two, occasionally one or three weaker secondary ribs. Primary ribs bear two slightly elongated, ventrolateral bullae-like nodes. Secondary ribs remain untuberculated. All ribs attenuate over dorsum. Suture not exposed.

Remarks: Ankinatsytes is distinguished from *Hyphantoceras* Hyatt (1900) by its regular coiled spire as well as fewer intercalated ribs.

Family Desmoceratidae Zittel, 1895

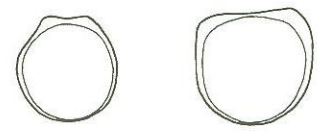
Subfamily Hauericeratinae Matsumoto, 1938

Genus *Hauericeras* de Grossouvre, 1894

Subgenus *Gardeniceras* Matsumoto and Obate, 1955

Type species: Ammonites Pseudo-Gardeni Schlüter, 1872.

Occurrence: Europe, South Africa, Madagascar, South India, Japan (Yabe, 1904), West Australia.



Text fig. 81
Whorl section of *Ankinatsytes venezolanus* n. sp., Re6820, Pl. 35, Fig. 1, 3×.

Hauericeras (Gardeniceras) aff. *gardeni* (Baily)
Pl. 35, Fig. 2, 3, 4a–b

1855 *Ammonites gardeni* Baily, p. 450, pl. 9, fig. 3a–c.
1961 *Hauericeras (Gardeniceras) gardeni* (Baily), Collignon, p. 76, pl. 26–30 (with synonymy).
1979 *Hauericeras (Gardeniceras) gardeni* (Baily), Summesberger, p. 133, pl. 6, fig. 27.
1980 *Hauericeras gardeni* (Baily), Klinger and Kennedy, p. 215.

Location: Trail La Paragua-Chejendé, upper part of the Timbetes Member type section, about 40 m above the *Barroisiceras* Zone, ?early Santonian.

Description: Re6808-1 and 2 (Pl. 35, Fig. 2, 3). Rather poorly preserved, still juvenile specimens precluding a confident specific determination. Test partly preserved. Whorl section compressed, involute with rounded venter at this stage. Low vertical umbilical wall. Striation on test biconcave, strongly projected forward over venter. Constrictions on internal mould only. Suture not exposed.

Re6808-3 (Pl. 35, Fig. 4) represents juvenile stage with rounded venter.

Measurements: Re6808-1, Dm 41 mm, Wh 15 (0.36), Ww 9 (0.22), U 16 (0.40).

Remarks: The specimens seem to be closely related to *Hauericeras gardeni* Baily as figured by Basse (1931, pl. 4, fig. 2–4) from Madagascar. *H. gardeni,* according to Klinger and Kennedy (1977, p. 80), seems, however, to be restricted to South Africa and Madagascar. It is mentioned from the early Santonian Uzamba Formation by Klinger and Kennedy (1980, p. 215).

Family Collignoniceratidae Wright and Wright, 1951

Subfamily Collignoniceratinae Wright and Wright, 1951

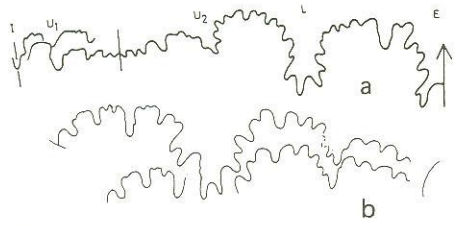
Genus *Subprionotropis* Basse, 1950

Type species: Subprionotropis columbianus Basse, 1950.

Occurrence: Colombia, Venezuela.

Subprionotropis columbianus Basse
Pl. 35, Fig. 5a–b, 6a–b, 7a–b, 8a–b, 9a–b, 10a–b;
Text fig. 82a

1950 *Subprionotropis columbianus* Basse, p. 205; pl. 11, fig. 8–10.



Text fig. 82
a. Suture line of *Subprionotropis columbianus* Basse, MBJ28512, La Luna Formation, El Corozo, 3×.
b. Suture line of ?*Solgerites* sp., Re6956, Pl. 38, Fig. 9, 5×.

Location: Valley of Río Torbes, 2 km south of El Corozo, southwestern plunge of Oso Uplift, State of Táchira; La Luna Formation, early Coniacian. All specimens derive from a single limestone concretion containing exclusively *Subprionotropis* which might be regarded to represent a population.

Description: MBJ28510 to MBJ28812, MBJ28814 to 15. Conch small-sized, involute. Last septa distinctly approximated. Whorl section rectangular, widest at ventrolateral tubercles, venter fastigate with serrate keel. Flanks flat, parallel. Umbilicus on phragmocone 20 to 24% of diameter, somewhat expanding towards end of body chamber. Umbilical wall steep, flattening on body chamber. Whorls are smooth on early growth stages up to about 6 mm diameter. On later stages distant, feebly prorsiradiate ribs branch, more or less distinctly, from umbilical bullae and rise into prominent ventrolateral clavi from where ribs incline forward, ending in siphonal clavi. A third row of very subdued clavi is occasionally indicated between ventrolateral tubercles and siphonal clavi. They are more distinct on test than on internal mould (MBJ28811 and 28814). These elevations might indicate close relationship with *Subprionocyclus*, which is characterized by a pair of ventrolateral clavi. On body chamber venter tends to loose keel, and sculpture gradually vanishes (MBJ28510). Suture (Text fig. 82a) shows two umbilical lobes, a short internal lobe and a broad, asymmetric, external saddle (specimen MBJ28512, not figured).

Measurements:	Dm	Wh	Ww	U
MBJ28510, Pl. 35, Fig. 5	40 mm	17 (0.42)	10 (0.25)	8 (0.20)
MBJ28811, Pl. 35, Fig. 6	32 mm	15.5 (0.49)	9 (0.28)	6 (0.20)
MBJ28812, Pl. 35, Fig. 7	27 mm	12 (0.44)	7.5 (0.28)	6 (0.22)
MBJ28814, Pl. 35, Fig. 8	27 mm	12.5 (0.48)	8 (0.29)	5.5 (0.20)
MBJ28815, Pl. 35, Fig. 9	22.5 mm	9 (0.40)	6 (0.26)	5.5 (0.24)

Distribution: Colombia, Venezuela.

Remarks: The 25 specimens available were all obtained from one and the same concretion. The variance in shape and sculpture is considerable.
Specimens have been selected for illustration to demonstrate the variation range of the population. On specimen MBJ28816 (Pl. 35, Fig. 10) the ventrolateral tubercles are fused into coarse ribs with the siphonal clavi, forming chevrons across venter. Since this may be a pathologic feature it would be prudent not to create a new species before additional material becomes available.

Subfamily Peroniceratinae Hyatt, 1900

Genus *Prionocycloceras* Spath, 1926

Type species: Ammonites guayabanus Steinmann, 1881.

Occurrence: North Africa, Madagascar, USA, Colombia, Venezuela, Trinidad, Japan (Matsumoto, 1965).

Prionocycloceras guayabanum (Steinmann)
Pl. 35, Fig. 11a–b, 12a–b, 13a–b, 14a–b

1897b *Prionocyclus guayabanus* Steinmann, in Gerhardt, p. 197, pl. 5, fig. 22a–c.
1921 *Prionocyclus guayabanus* Steinmann, Fritzsche, p. 277.
1926a *Prionocycloceras guayabanum* (Gerhardt), Spath, p. 80.
1936 *Prionocycloceras* aff. *guayabanum* Steinmann, Besairie, p. 203, pl. 24, fig. 19–20.
1963 *Prionocycloceras guayabanum* Steinmann, Young, p. 67, pl. 23, fig. 5–6, pl. 27, fig. 2–3.
1966 *Prionocycloceras guayabanum* Steinmann, Collignon, p. 48, pl. 29, fig. 1–6.
1979 *Prionocycloceras portarum* Etayo-Serna, p. 95, pl. 13, fig. 12; pl. 14, fig. 4.

Location: Chejendé syncline, type-section of Timbetes Member, lower part, La Paragua; occurs together with *Barroisiceras*, early Coniacian.

Description: Re6809-1 to 2 (Pl. 35, fig. 12, 13). Conch mostly covered by test which is consistently dark brown in colour. Whorl section rectangular. Venter flattened with blunt, nodate median keel. Umbilicus 31% of diameter. Ornament begins at a diameter of 15 mm, with closely spaced ventrolateral tubercles, turning into oblique clavi at about 20 mm diameter. Costation appears faintly at 30 mm diameter. Ventrolateral clavi develop into high hollow spines from about 35 mm diameter onwards (Re6809-3). Suture line not preserved.

JG314 (Pl. 35, Fig. 11). Adult specimen with simple aperture following biconcave growth lines.

Re6809-3 (Pl. 35, Fig. 14). Juvenile stage with distinctly crenulated keel and subdued ornamentation.

Measurements:	Dm	Wh	Ww	U
Re6809-1, Pl. 35, Fig. 12	65 mm	26 (0.40)	22 (0.34)	20 (0.31)
Re6809-2, Pl. 35, Fig. 13	58 mm	18 (0.40)	17 (0.35)	15 (0.31)
JG314, Pl. 35, Fig. 11	100 mm	40 (0.40)	32 (0.32)	33 (0.33)

Distribution: Colombia, Venezuela, Trinidad (Kugler and Bolli, 1967), Madagascar.

Remarks: Matsumoto (1965a, p. 40) excluded *Prionocycloceras* Spath from the Peroniceratinae and grouped them with the family Collignoniceratinae. For suture line compare Matsumoto, 1965a.

Prionocycloceras sp. indet.
Pl. 35, Fig. 15

A fragment of an adult specimen (Re6810) from the same locality as *P. guayabanum* (see above), is distin-

guished by very long ventrolateral horns on outer volution and by closely placed spines on inner volution. A fragment which probably is identical to the form discussed here has been figured by Collignon from the Tarfaya Basin, Morocco (1966, pl. 29, fig. 5-6).

Prionocycloceras mediotuberculatum (Gerhardt)
Pl. 40, Fig. 2a-c, 7a-b

1897b *Prionocyclus mediotuberculatum* Gerhardt, p. 198, pl. 5, fig. 23a-c, holotype from Colombia.
1957 *Prionocycloceras mediotuberculatum* (Gerhardt), Bürgl, p. 138, pl. 14, fig. 4.

Location: Chejendé syncline, La Ceiba, lower part of Timbetes Member.

Age: Early Coniacian.

Description: Re6927, Pl. 40, Fig. 2a-c; Re6941, Pl. 40, Fig. 7a-b. These are juvenile specimens closely related to *Prionocycloceras guayabanum*, from which they differ mainly by a stronger costation. Ribs broaden towards mid-flank and rise faintly on ventral half of side, before being elevated into ventrolateral clavi. Suture line with a reduced U_2 and a rudimentary U_3 (Pl. 40, Fig. 2c; compare Schindewolf, 1966, p. 720).

Measurements: Dm 48 mm, Wh 21 (0.43), Ww 17 (0.35), U 15 (0.31).

Prionocycloceras sp. indet.
Pl. 34, Fig. 7a-b

Location: Chejendé syncline, La Ceiba, lower part of Timbetes Member, early Coniacian, occurring together with *P. guayabanum*.

Description: Re2926. Juvenile stage, considerably stronger ornamentation than on *P. guayabanum*. Ribs broad, rectiradiate, ending in long spines on ventrolateral shoulder. Whorl section depressed subquadrate. Venter with closely nodate low keel, as in *P. guayabanum*.

Measurements: Dm 26 mm, Wh 9.5 (0.36), Ww 12 (0.46), U 10 (0.34).

Remark: A similar small *Prionocycloceras* has been figured by Collignon (1965c, pl. 433, fig. 1792, p. 46) from the Coniacian of Madagascar. He compared this specimen with *P. guayabanum*. The material at hand is not appropriate for a holotype.

Genus *Andersonites* van Hoepen, 1965

Type species: Andersonites listeri van Hoepen (1965, p. 29).

Occurrence: South Africa (Zululand).

Age: Late Coniacian.

Definition of genus, according to van Hoepen (1965, p. 29): "Ammonites with three keels, wide umbilicus, more or less square section, very strong, straight ribs each with two tubercles, a very large shoulder tubercle and an only slightly smaller umbilical tubercle".

Andersonites aff. *listeri* Anderson
Text fig. 83a-b

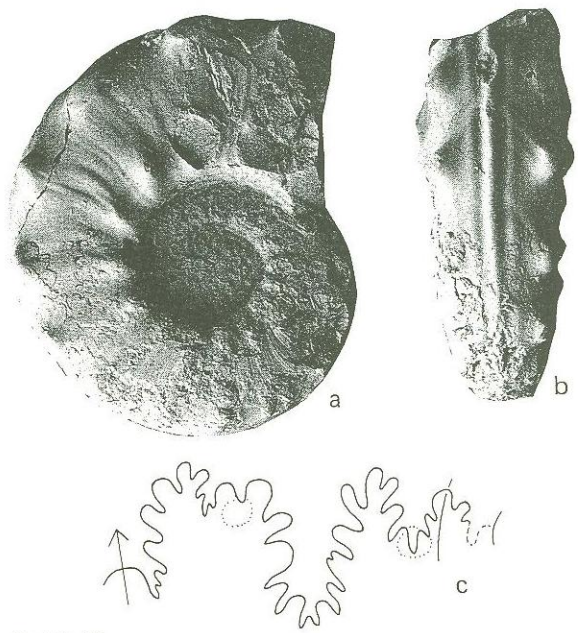
1965 *Andersonites listeri* van Hoepen, p. 31, pl. 23, fig. a-c, suture fig. 8, p. 30.

Location: Quebrada Buenaña, State of Táchira, from limestone intercalations in rocks of La Luna lithology, at the top of Táchira chert Member (Text fig. 4, section 13), late Coniacian.

Description: Re3010. Phragmocone composed of coarse calcite crystals which stick to matrix and destroy ornaments. Whorl section rectangular, slightly wider than high, broadest on umbilical tubercles. Flanks slope steeply towards wide umbilicus, which attains 33% of diameter. Umbilical edge distinct. On body chamber umbilical tubercles connected by low folds with lateral clavi. Venter with elevated, even, median keel, which is separated from much lower lateral keels by low grooves. Last suture lines (Text fig. 83b) are comparable with those illustrated in fig. 7 on p. 30 by van Hoepen (1965).

Measurements: Dm 55mm, Wh 22 (0.40), Ww 23 (0.42), U 18 (0.33).

Remarks: The present specimen is the youngest ammonite described so far from the La Luna Formation in Venezuela. *Sphenodiscus* has been mentioned by Kehrer (1938) from the upper Colón Shale in Táchira, but no specimens are available.



Text fig. 83
a-b. *Andersonites* cf. *listeri* van Hoepen, Re3010 (J 30490), Quebrada Buenaña, State of Táchira, late Coniacian, 1×.
c. Suture line, 2×.

Genus *Gauthiericeras* de Grossouvre, 1894

Gauthiericeras aff. *bajuvaricum* (Redtenbacher)
Pl. 40, Fig. 4, 8a–b

1873 *Ammonites bajuvaricus* Redtenbacher, p. 107, pl. 24, fig. 2.
1894 *Gauthiericeras bajuvaricum* Redtenbacher, de Grossouvre, p. 88, pl. 9, fig. 1.
1955b *Peroniceras (Gauthiericeras) bajuvaricum* (Redtenbacher), Bürgl, p. 40, pl. 6, fig. 1–5, 6.

Occurrence: Europe, South Africa, Madagascar, Colombia, Venezuela, Trinidad.

Location: Santa Rosa, east of village of Chejendé, Timbetes Member, Coniacian. Coll. Manuel Morales.

Description: Re6929. Body chamber deformed by compaction. One side of specimen abraded by erosion. Whorl section slender, with parallel flanks on phragmocone. Venter fastigate with crenulated keel, only partly preserved. Umbilicus moderately evolute, 28% of diameter. Ribs as far as visible single, low, broadly round-topped, superimposed by growth lines, slightly sigmoidally curved and faintly elevated bullae-like on sharp umbilical margin. Ribs end at strong ventrolateral tubercles. Suture line not exposed.

Re6944 (Pl. 40, Fig. 8a–b). Juvenile stage with low, faintly crenulated keel and very feeble indications of ventrolateral keels. The specimen can best be compared with *G. bajuvaricum* from France figured by de Grossouvre (1894, p. 88, pl. 12, fig. 2a–b). The very faintly indicated ventrolateral keels are just visible as a shadow on the excellent reproduction by de Grossouvre (pl. 12, fig. 36).

Remark: van Hoepen (1965, p. 3) groups *G. bajuvaricum* with *Peroniceras* on the basis that the minor differences of the suture line are of little importance.

Genus *Peroniceras* de Grossouvre, 1894

Type species: Peroniceras moureti de Grossouvre, 1894

Occurrence: Europe, India, Madagascar, SE Africa, USA, Mexico, Colombia, Venezuela, Japan (Matsumoto, 1965b).

Peroniceras aff. *canaense* (Gerhardt)
Pl. 35, Fig. 16a–b, 17a–b

1897a *Mortoniceras canaense* Gerhardt, p. 73, pl. 1, fig. 2a–c.
1946 *Peroniceras canaense* (Gerhardt), Sutton, p. 1651.
1979 *?Gloriaceras correai* Etayo-Serna, p. 97, pl. 14, fig. 10.

Location: Barbacoas syncline, Timbetes Member, near houses La Aguada, about 30 m above Chejendé Member, Coniacian.

Description: Re6807 (Pl. 35, Fig. 16). Test largely preserved. Last whorl segment forms part of body chamber. Whorl section square, flanks parallel, flat, sloping steeply towards umbilical seam. Venter tricarinate. Median keel distinctly stronger and higher than the two lateral keels which are faintly uneven (crenulated), however, not as conspicuously as shown on Gerhardt's drawing of the holotype. Ribs straight, slightly inclined forward, on umbilical margin faintly elevated, but not as pronounced as on holotype. Ribs project adorally from ventrolateral tubercles onwards, effacing towards lateral keel, which causes a faint crenulation, Suture not visible (compare Schindewolf, 1966, p. 720).

Re6912 (Pl. 35, Fig. 17). Juvenile stage from La Aguada (Barbacoas syncline). Inner whorls smooth to about 12 mm diameter. Venter distinctly tricarinate.

Distribution: Venezuela, Colombia.

Remarks: Peroniceras moureti de Grossouvre (1894, holotype: pl. 11, fig. 4) shows a row of bullae on dorsal half of flank. A poorly preserved fragment (Re3010-A) of this species has been collected by the author in the La Luna Formation of Táchira.

Subfamily Texanitinae Collignon, 1948

Genus *Protexanites* Matsumoto, 1955

Type species: Mortoniceras bourgeoisi de Grossouvre, 1894.

Occurrence: Europe, USA, South Africa, Japan, Peru, Venezuela.

Protexanites sp. indet.
Pl. 36, Fig. 1a–b

Location: Quebrada Maraca in the Perijá foothills, La Luna Formation, Coniacian.

Description: Re2431. Only a single fragment of *Protexanites*, which represents the body chamber, is available from Venezuela. Whorl section square with parallel sides. Venter flatly rounded. Alternating long and short ribs. Primaries begin above umbilical seam and rise in small tubercles on rounded umbilical margin. Shorter secondaries terminate below mid-flank. On all ribs two rows of ventrolateral tubercles are developed. Lower row consists of rounded tubercles, upper row of clavate tubercles. Along the siphonal line elongate crests which nearly touch each other, are developed. Ribs attenuate and become closer towards aperture.

Remarks: This fragment may be compared with *Ammonites Bourgeoisi* d'Orbigny (see also de Grossouvre, 1894, p. 73, pl. 13, fig. 2; pl. 14, fig. 2–5).

Subfamily Lenticeratinae Hyatt, 1900

Genus *Paralenticeras* Hyatt, 1900

Type species: Amaltheus sieversi Gerhardt, 1897a, p. 79.

Occurrence: Peru, Colombia, Venezuela.

Paralenticeras leonhardianum (Karsten)
Pl. 36, Fig. 2a–b, 3a–b, 4a–b, 5a–b, 6a–b; Text fig. 84

1856 *Ammonites Leonhardianus* Karsten, p. 106, pl. 2, fig. 6.
non
1897b *Pulchellia Leonhardi* Karsten, Gerhardt, p. 155, pl. 3, fig. 10.

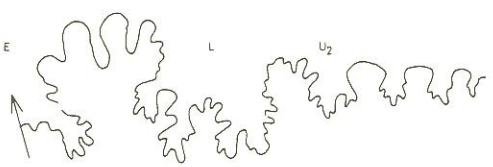
Location: Barbacoas syncline, section of Cerro Gordo, 4 km northeast of Barbacoas, basal Timbetes Member, early Coniacian.

Description: JG514a (Pl. 36, Fig. 2). Internal mould. Conch compressed, with fastigate venter and deep narrow umbilicus. Whorl section flat-sided, thickest above umbilical margin. Costation pattern quite irregular. Stronger prorsiradiate, primary ribs cross flank in biconcave curves, more distinct on body chamber than on phragmocone. They begin from bullate elevations on umbilical margin, variable in size and distance. Primaries alternate with two or more ribs which successively may shorten adorally. On body chamber most ribs reach umbilical margin. On ventrolateral shoulder mainly stronger ribs elevate into flat, round-topped nodes. External suture (JG514d, Pl. 36, Fig. 4) with four umbilical lobes. Broad external saddle, divided by deep incisions into two segments comparable to Coilopoceratidae (Text fig. 84).
On inner volutions (JG514c and JG514e; Pl. 36, Fig. 5, 6) umbilical bullae are more regular and sharp crested, and accordingly rib pattern is less irregular.

Specimen JG514b (Pl. 36, Fig. 3) represents a variety with distinctly closer spaced costation.

Measurements:	Dm	Wh	Ww	U
JG514a, Pl. 36, Fig. 2	44 mm	23 (0.52)	11 (0.25)	6 (0.13)
JG514b, Pl. 36, Fig. 3	47 mm	26 (0.55)	15 (0.32)	7 (0.15)
JG514c, Pl. 36, Fig. 5	35 mm	18 (0.51)	10 (0.30)	4 (0.11)

Distribution: Venezuela.



Text fig. 84
Suture line of *Paralenticeras leonhardianum* (Karsten) JG514d, Pl. 36, Fig. 4, 3×.

Paralenticeras sieversi (Gerhardt)
Pl. 36, Fig. 7, 8, 9a–b; Pl. 37, Fig. 1a–b; Text fig. 85a–d

1897a *Amaltheus Sieversi* Gerhardt, p. 79, pl. 1, fig. 5a–b.
1929 *Paralenticeras Sieversi* Gerhardt, Steinmann, p. 159, fig. 193.
1942 *Paralenticeras sieversi* Gerhardt, Basse, p. 355, pl. 10, fig. 2a–b.
1947 *Paralenticeras sieversi* (Gerhardt), Reeside, p. 4, pl. 3, fig. 13–21.

Location: La Paragua, type section of Timbetes Member, between Chejendé and Mitón, where it occurs in association with *Barroisiceras*, early Coniacian.

Description: JG359 (Pl. 36, Fig. 7; Text fig. 85c). Fragment of adult specimen showing end of phragmocone with last suture line exposed (Text fig. 85c). Conch discoidal. Whorl section compressed, with narrow rounded venter, sides flat-convex with insignificant sculpture, reduced to very flat biconcave folds superimposed by growth lines. Umbilicus very narrow. Suture (Text fig. 85b, 85d taken from fragments Re6934 and Re6842) with a very broad trifid, deeply incised external saddle. Compare: Basse, 1942, p. 356, fig. 2.

Re6909 (Pl. 37, Fig. 1) represents a juvenile stage with a fastigate, sharp-keeled venter. Sculpture consists of very faint folds, strengthening towards venter, and rising into faint bulges on ventrolateral edge. Suture (Text fig. 85a) with deeply incised external saddle typical for genus.

Re2302 (Pl. 36, Fig. 8; Text fig. 73b). Variety with very flat bugles slightly above mid-flank and ventrolaterally.

Re6811 (Pl. 36, Fig. 9). Excellent specimen with test partly preserved. Sculpture reduced to faint, club-shaped, biconcavely curved folds superimposed by growth lines.

Measurements:	Dm	Wh	Ww	U
Re6811	80 mm	44 (0.55)	18 (0.22)	4 (0.05)
Re6909	51 mm	31 (0.61)	22 (0.23)	1.5 (0.03)

Distribution: Colombia, Venezuela, Haiti (Reeside, 1947).

Genus *Lenticeras* Gerhardt, 1897

Type species: Ammonites Andii Gabb.

Occurrence: Peru, Venezuela.

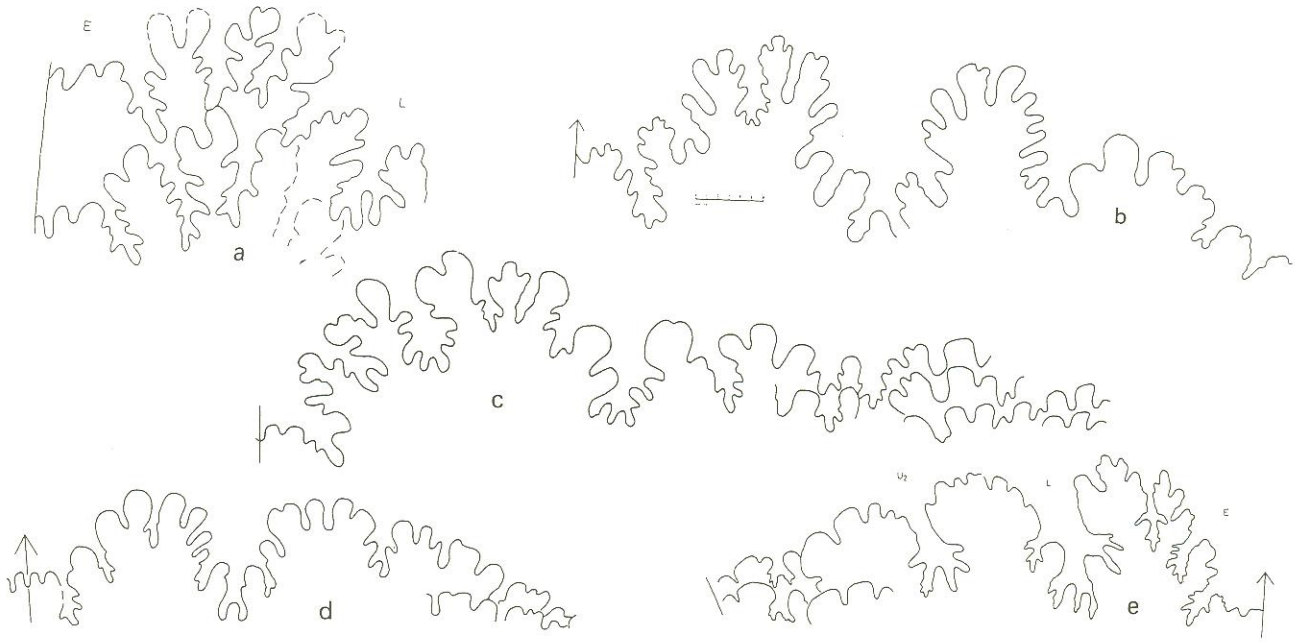
Lenticeras andii (Gabb)
Pl. 33, Fig. 3a–b; Text fig. 85e

1877 *Ammonites Andii* Gabb, p. 275, pl. 39, fig. 3.
1897a *Lenticeras Andii* Gabb, Gerhardt, p. 81, pl. 1, fig. 9a–b; suture, pl. 82, fig. 6.
1903 *Lenticeras Andii* Gabb, Paulcke, p. 279.
1908 *Lenticeras Andii* Gabb, Lissón, p. 13, pl. 13, fig. 1a–c; suture fig. 1c.
1928 *Lenticeras Andii* Gabb, Liddle, p. 151.
1929 *Lenticeras Andii* Gabb, Steinmann, p. 159, fig. 192.

Location: Southern flank of Mucujún Uplift, Quebrada Chiriria (tributary of Río Lobaterita), top of La Luna Formation, early Coniacian.

Description: MBJ28525. Internal mould of phragmocone. Shell very involute. Whorl section broadly lanceolate, thickest on dorsal third of strongly convex flanks. Ornament reduced to low, rounded folds beginning from faint umbilical bulges, and fading towards venter. Suture with two deep incisions on ventral slope of external saddle (Text fig. 85e).

Measurements:	Dm	Wh	Ww	U
Gerhardt, 1897	86 mm	48 (0.56)	50 (0.58)	4 (0.05)
MBJ28525	125 mm	73 (0.59)	73 (0.59)	9 (0.07)



Text fig. 85
Suture lines of *Paralenticeras* and *Lenticeras:*
a. *Paralenticeras sieversi* (Gerhardt), Re6909, Pl. 37, Fig. 1, 3×.
b. *Paralenticeras sieversi* (Gerhardt), Re6934, La Paragua, Timbetes Member, 4×.
c. *Paralenticeras sieversi* (Gerhardt), JG359, Pl. 36, Fig. 7, 2×.
d. *Paralenticeras sieversi* (Gerhardt), Re6842, La Paragua, Timbetes Member, 2×.
e. *Lenticeras andii* (Gabb), MBJ28525, Pl. 33, Fig. 3, 1×.

Distribution: Venezuela, Peru.

Remarks: According to Wiedmann (1962, p. 131) *Lenticeras* and ?*Eulophoceras* seem to be related to *Hemitissotia* Peron and *Plesiotissotia* Peron, belonging to the Family Tissotiidae. Also Reyment (1956, p. 73) favours a close relationship between Lenticeratinae and Tissotiidae.

Genus *Eulophoceras* Hyatt, 1903

Type species: Eulophoceras natalense Hyatt.

Occurrence: Algeria, Nigeria, SE Africa, Madagascar, Venezuela, Peru.

Eulophoceras jacobi Hourcq

Pl. 36, Fig. 10a–b, 11a–b; Pl. 37, Fig. 2a–b, 3a–b; Text fig. 86a–b

1949 *Eulophoceras jacobi* Hourcq, p. 95, pl. 1, fig. 2.
1955a *Eulophoceras jacobi* Hourcq, Reyment, p. 85, fig. 42, suture.

Location: La Paragua, middle part of type section of Timbetes Member, Coniacian.

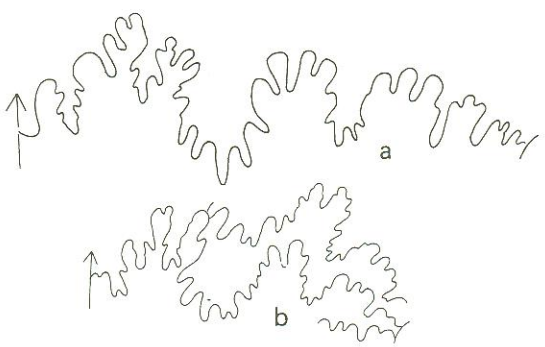
Description: Re6914 (Pl. 37, Fig. 2). Shell discoidal, compressed and very involute. Whorl section with narrow fastigate, sharp venter, and pronounced ventrolateral edge, comparable to young *Paralenticeras.* Sides slightly convex, converging towards venter. Ornament reduced to very faint folds, strengthening from mid-flank in direction of venter and ending in faint nodes on ventrolateral edge. Suture (Text fig. 86a) with external saddle divided by a deep incision (compare Reyment, 1955a, p. 85, fig. 42).

Re6915 (Pl. 37, Fig. 3). Variety with broad club-shaped folds beginning from below mid-flank and ending at ventrolateral edge, rising into flat spirally elongated clavi.

Re6812 and Re6933 (Pl. 36, Fig. 10a–b and 11a–b). Juvenile stages, showing deeply incised first lateral saddle and three umbilical lobes (Text fig. 86b).

Measurements: Re6914, Dm 48 mm, Wh 28 (0.60), Ww 11 (0.23), U 1.5 (0.03).

Distribution: Madagascar, Nigeria, Venezuela.



Text fig. 86
Suture lines of *Eulophoceras jacobi* Hourcq:
a. Re6914, Pl. 37, Fig. 2, 2×.
b. Re6933, Pl. 36, Fig. 11, 5×.

Subfamily Barroisiceratinae Basse, 1947

Genus *Barroisiceras* de Grossouvre, 1894

Type species: Ammonites Haberfellneri Hauer, 1866.

Subgenus *Barroisiceras* de Grossouvre, 1894

Occurrence: Europe, Tunisia, Israel (Parnes, 1964), Egypt, Madagascar, Texas, Peru, Venezuela, Trinidad, Australia, Japan.

Basse (1947) described a population of *Barroisiceras,* consisting of about 300 specimens, from outcrops at the confluence of the Onilahy river with the Menarandroy river in Madagascar. Numerous varieties are figured on plates 1 to 8. Basse (p. 100-101) mentions: «On arriverait facilement, résultat inquiétant, à quelques dizaines d'espèces sur trois cents échantillons. Comment, en effet, admettre la coexistence d'un nombre si élevé d'espèces voisines sur un territoire aussi restreint, sans qu'il se soit produit des croisements? ... Le bon sens nous incite donc à suspecter la valeur de ces critères et, par conséquent, à aborder l'étude de ce peuplement en faisant à la notion de polymorphisme spécifique la part aussi large que l'exigent les faits observés.» The name *Barroisiceras onilahyense* has been introduced for members of this population (Basse, p. 100 followed by Collignon, 1965c, p. 68).

The variability of the Venezuelan *Barroisiceras* from the lower part of the Timbetes Member is not comparable with the diversification of the population from Madagascar (Pl. 37, Fig. 5-8; Pl. 38, Fig. 1-2). It ranges between narrow limits in whorl width and strength of ornament. Therefore, we restrict the name *Barroisiceras onilahyense* to smooth specimens, such as those figured by Collignon (1965c, p. 68, fig. 1817) from Madagascar.

Barroisiceras (Barroisiceras) aff. *onilahyense* Basse
Pl. 37, Fig. 4a-b

1947 *Barroisiceras onilahyense* Basse, p. 100, pl. 5, fig. 2, 2a; pl. 6, fig. 2.
1965c *Barroisiceras onilahyense* Basse, Collignon, p. 68, pl. 444, fig. 1817.

Location: La Paragua, type section of Timbetes Member, occurs in association with other *Barroisiceras,* early Coniacian.

Description: JG362. Compressed, flat-sided with parallel flanks, and simple peristome fully preserved, following biconcavity of growth lines. Venter broad fastigate, with distant median clavi, rounding on body chamber. Umbilicus 21% of diameter, compared with 16% of specimen from Madagascar. Ornament reduced to biconcave growth lines on phragmocone. Indistinct flat folds appear, which on body chamber faintly bulge above midflank. Clavi on ventrolateral shoulder subdued, on median line of venter small and widely spaced. Suture not exposed (see Basse, 1945, p. 102, fig. 1, 2).

Measurements: Dm 125 mm, Wh 61 (0.49), Ww 35 (0.24), U 27 (0.21).

Distribution: Madagascar, Venezuela.

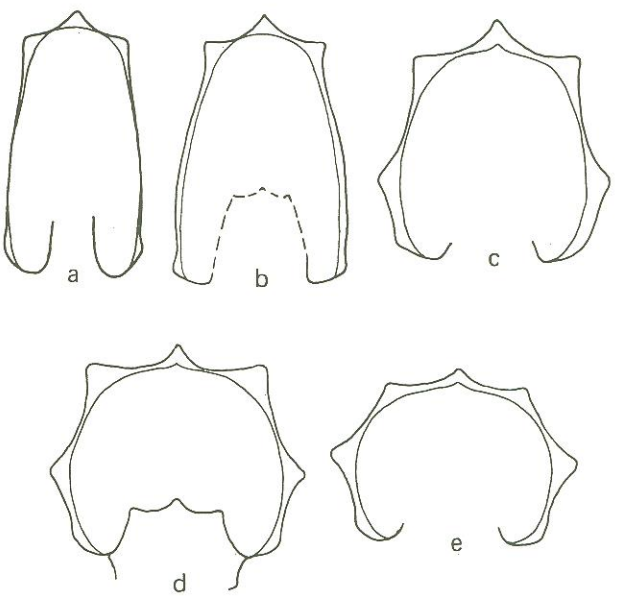
Barroisiceras (Barroisiceras) subtuberculatum (Gerhardt)
Pl. 37, Fig. 5a-b, 6a-b, 7a-b, 8a-b; Pl. 38, Fig. 1a-b, 2a-b; Text fig. 87a-b

1897b *Schloenbachia subtuberculata* Gerhardt, p. 156, pl. 3, fig. 12a-b.
?1956 *Barroisiceras (Solgerites) brancoi* (Solger), Benavides-Cáceres, p. 477, pl. 58, fig. 1, 2.
1969 *Barroisiceras (Basseoceras) peruvianum* Matsumoto, p. 303.

Schloenbachia subtuberculata Gerhardt (1897, p. 156, pl. 3, fig. 12a-b) appears to be identical to the *Barroisiceras* discussed here. Gerhardt, however, indicated "Velez" in Colombia, as its provenance and Barremian as its age, probably because of the abundance of Pulchellidae found in the region of Velez, which he described. It may be assumed that the equal lithology of the Barremian and Coniacian sediments, developed in euxinic La Luna facies in the eastern Cretaceous basin of Colombia misled the collectors. Gerhardt (p. 157) presumed this species to be a transitional form between *Schloenbachia* and *Barroisiceras.*

Location: Chejendé syncline, lower part of type section of Timbetes Member, near La Paragua, early Coniacian.

To show the constancy of morphological features of this



Text fig. 87
Whorl section of *Barroisiceras* and *Forresteria:*
a. *Barroisiceras (B.) subtuberculatum* (Gerhardt), Re6814, Pl. 38, Fig. 2, 1×.
b. *Barroisiceras (B.) subtuberculatum* (Gerhardt), Re6901, Pl. 37, Fig. 6, 1×.
c. *Forresteria pitalensis* (Steinmann), Re6823, Pl. 39, Fig. 1, 1×.
d. *Forresteria alluaudi* Boule, Lemoine and Thévinin, Re6822, Pl. 39, Fig. 5, 1×.
e. *Forresteria stantoni* Reeside, Re6817, Pl. 39, Fig. 2, 1×.

species in Venezuela three specimens collected at La Paragua are illustrated (Re6901, Pl. 37, Fig. 6; Text fig. 87b; Re6813, Pl. 38, Fig. 1; Re6814, Pl. 38, Fig. 2, Text fig. 87a).

Description: Re6813 (Pl. 38, Fig. 1). Conch compressed, high-whorled with test largely preserved. Umbilicus involute, slightly eccentric towards end of body chamber. Aperture simple, following growth lines. Venter fastigate, crenulate by elongate crests, widely spaced towards aperture. On umbilical margin ribs rise into low bullae of variable strength. Some remain single, others bifurcate indistinctly below mid-side. Some intercalatory ribs fade below mid-flank. All ribs gradually broaden into club-like features and rise into pronounced ventrolateral clavi. Here they flatten, turning adorally towards siphonal clavi. Sutures not preserved. Basse (1954, p. 102, fig. 1, 2) showed two to three umbilical lobes.
Re6843 (Pl. 37, Fig. 8) indicates some intra-specific variability. It is a distinctly flatter specimen with closer ribbing and consequently smaller ventrolateral clavi and siphonal crests.
Juvenile stages are represented by specimens Re6815 and Re6913 (Pl. 37, Fig. 5 and 7).

Measurements:	Dm	Wh	Ww	U
Re6813, Pl. 38, Fig. 1	94 mm	49 (0.50)	25 (0.26)	12 (0.13)
Re6814, Pl. 38, Fig. 2	73 mm	41 (0.56)	20 (0.27)	8 (0.11)
Re6815, Pl. 37, Fig. 5	52 mm	26 (0.50)	12 (0.23)	7 (0.13)

Subgenus *Texasia* Reeside, 1932

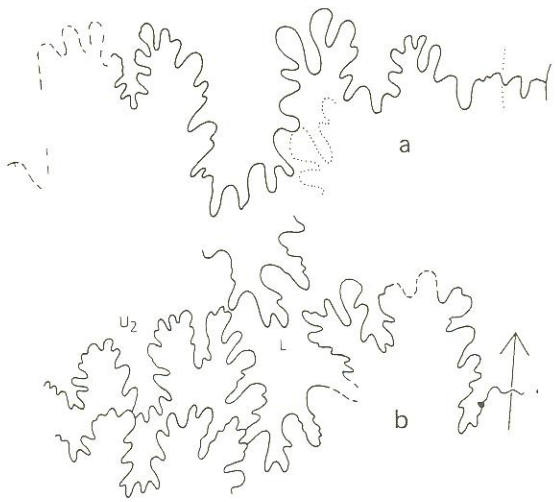
Barroisiceras (Texasia) dentatocarinatum (Roemer)
Pl. 38, Fig. 3; Text fig. 88a

1849 *Ammonites dentatus-carinatus* Roemer, p. 417.
1852 *Ammonites dentatus-carinatus* Roemer, p. 33, pl. 1, fig. 2a–c.
1904 *Schloenbachia (Barroisiceras) dentato-carinata* Roemer, Lasswitz, p. 249.
1928 *Barroisiceras dentatocarinatum* (Roemer), Adkins, p. 252.
1931 *Barroisiceras (Texasia) dentatocarinatum* (Roemer), Reeside, p. 15, pl. 3, fig. 1–10; pl. 4, fig. 1–3; pl. 5, fig. 1.
1947 *Texasia dentatocarinata* (Roemer), Basse, p. 121.
1969 *Texasia dentatocarinata* (Roemer), Matsumoto, p. 300, fig. 1–2.

Location: La Paragua, type section of Chejendé Member, early Coniacian.

Description: Re2344. Internal mould. Half of outer volution belongs to laterally crushed body chamber. Whorl section compressed, high-whorled. Flanks flat, almost parallel. Venter raised in high elongated and connecting median crests. Ribs low, fold-like, prorsiradiate, beginning from bullate umbilical tubercles, placed on sharp edged umbilical margin. Intercalated short ribs begin near mid-flank. All ribs end in high ventrolateral clavi which strengthen towards end of body chamber. Stronger ribs are faintly bulged near mid-flank which might suggest a relationship with *Forresteria*. Suture (Text fig. 88a) as on *Barroisiceras*.

Measurements: Dm 124 mm, Wh 61 (0.50), Ww ?40 (0.32), U 29 (0.32).



Text fig. 88
Suture lines of *Barroisiceras* and *Solgerites:*
a. *Barroisiceras (Texasia) dentatocarinatum* (Roemer), Re2344, Pl. 38, Fig. 3, 2×.
b. *Solgerites romieuxi* (Pervinquière), Re6832, Pl. 39, Fig. 4, 2×.

Distribution: Texas, Venezuela, Spain (Wiedmann, 1964, p. 113).

Genus *Forresteria* Reeside, 1932

Type species: Forresteria alluaudi Boule, Lemoine and Tévinin, 1907.

Occurrence: France, Israel, West Africa, Madagascar, USA, Peru, Venezuela, Japan.

Forresteria alluaudi Boule, Lemoine and Thévinin
Pl. 39, Fig. 5, Text fig. 87d

1907 *Acanthoceras (Prionotropis) Alluaudi* Boule, Lemoine and Thévinin, p. 32, pl. 8, fig. 6, 6a, 7.
1908 *Prionotropis Alluaudi* Boule et al., Lisson, p. 17, pl. 17.
1932 *Barroisiceras (Forresteria) forresteri* Reeside, p. 17, pl. 5, fig. 2–7, holotype.
1947 *Forresteria alluaudi* Boule et al., Basse, p. 128, pl. 8, fig. 3; pl. 9, fig. 2.
1956 *Barroisiceras (Forresteria) alluaudi* Boule, Lemoine and Thévinin, Benavides-Cáceres, p. 478, pl. 61, fig. 1.
1965c *Forresteria alluaudi* Boule et al., Collignon, p. 76, pl. 448, fig. 1828.
1969 *Forresteria (Forresteria) alluaudi* Boule et al., Matsumoto, p. 308, pl. 40, fig. 1–4.

Location: La Paragua, type section of Timbetes Member, about 35 m above its base, early Coniacian.

Description: Re6822. Strongly sculptured fragment showing beginning of body chamber. Test partly preserved. Whorl section slightly depressed, widest on mediolateral spinous tubercles (Text fig. 87d). Umbilical tubercles connected with mediolateral tubercles by coarse, beam-like ribs which branch indistinctly from mediolateral tubercles and then weaken above mid-

flank, ending in high clavate ventrolateral tubercles. Over venter ribs are projected forward, ending at high siphonal clavi. Suture not visible.

Distribution: Texas, Venezuela, Peru, Madagascar, Japan.

Forresteria stantoni Reeside
Pl. 39, Fig. 2a–b; Text fig. 87e

1932 *Barroisiceras (Forresteria) stantoni* (Reeside), p. 17, pl. 7, fig. 1–7; pl. 8, fig. 1–3; pl. 9, fig. 1.
1947 *Forresteria stantoni* Reeside, Basse, p. 127.

Holotype: Forresteria stantoni Reeside, 1932, pl. 7, fig. 1 (suture), fig. 2 (front view); pl. 8, fig. 1–3; pl. 9, fig. 1.

Location: La Paragua, type section of Timbetes Member; occurs in association with *Barroisiceras*, early Coniacian.

Description: Re6817. Internal mould. Body chamber slightly over half volution, with simple aperture, partly destroyed. Whorl section on tubercles about hexagonal, thickest on mediolateral tubercles, which are less pronounced than on *F. pitalensis*. Umbilicus 32% of diameter. Prominent beam-like ribs connect umbilical swellings with pointed lateral tubercles near mid-flank, from which they branch indistinctly. Ribs flatten before elevating into high spinous ventrolateral clavi and then again on venter before ending at siphonal crests. Some weaker intermediate ribs fade out near mid-side. Suture completely destroyed by recrystallisation.

Measurements: Dm 80 mm, Wh 33 (0.41), Ww 33 (0.41), U 26 (0.32).

Remark: The Venezuelan *F. stantoni* differs from the Texan holotype by a more slender whorl section and a slightly narrower umbilicus.

Forresteria pitalensis (Steinmann)
Pl. 39, Fig. 1a–b; Text fig. 87c

1897b *Prionocyclus pitalensis* Steinmann, Gerhardt, p. 198, pl. 5, fig. 21a–b.
1947 *Forresteria pitalensis* Steinmann, Basse, p. 130, pl. 7, fig. 4.
1968 *Forresteria* (*Edenoceras* van Houpen, 1968) *pitalensis* (Steinmann), Matsumoto, p. 315.

Location: La Paragua, type section of Timbetes Member, above level containing *Barroisiceras*, early Coniacian.

Description: Re6823. Body chamber with test largely preserved. Whorl section hexagonal on tubercles, widest at mediolateral spinous tubercles placed slightly below mid-side (Text fig. 87c). Umbilicus 22%, against 32% of diameter on *F. stantoni*. Low umbilical swellings and high lateral spines are connected by strong ribs which branch, more or less distinctly, at lateral spines, and then weaken towards closely spaced ventrolateral clavi. Few irregularly intercalated weaker ribs are not or only faintly elevated around mid-flank. Towards end of body chamber, sculpture becomes less pronounced. Elongated crests on mid-venter are partly connected, forming a crenulated keel. Suture not visible.

Measurements: Dm 95 mm, Wh 42 (0.44), Ww 30 (0.31), U 21 (0.22).

Remarks: This specimen differs from the holotype from Colombia by its broader whorl width and by its less distinct branching of ribs at mediolateral tubercles.
Additional material of *F. stantoni* and *F. pitalensis* will probably show that both species are connected by intermediate forms which together constitute a larger population.

Forresteria sp. indet.
Pl. 38, Fig. 4

?1932 *Barroisiceras (Forresteria) hobsoni* Reeside, p. 18, pl. 9, fig. 2–4, holotype; pl. 10, fig. 1–2.

Location: La Paragua, type section of Timbetes Member, occurs in association with *Barroisiceras subtuberculatum* (Gerhardt), early Coniacian.

Description: Re6829. Left half of specimen destroyed by erosion; not suitable as holotype. Whorl section after reconstruction high rectangular with flattened venter. Umbilicus 17% of diameter, umbilical wall steep. Tubercles on umbilical edge variable in size. Some weaker ribs remain untuberculated. Stronger ribs bear flat, rounded, mediolateral tubercles, also variable in strength. Faintly expressed bifurcations occur from these tubercles, both branches ending at high ventrolateral clavi and strengthening considerably towards end of living chamber. No suture preserved.

Measurements: Dm 17 mm, Wh 58 (0.50), ?Ww 40 (0.33), U 20 (0.17).

Remark: The present form differs from *Barroisiceras (Forresteria) hobsoni* Reeside by its irregular and weaker mediolateral tubercles which are responsible for a less distinct hexagonal whorl section.

Genus *Solgerites* Reeside, 1932

Type species: Barroisiceras brancoi, Solger, 1904.

Occurrence: Tunisia, West Africa, Madagascar, Peru.

Solgerites romieuxi (Pervinquière)
Pl. 39, Fig. 4a–b; Text fig. 88b

1907 *Barroisiceras Romieuxi* Pervinquière, p. 383, pl. 12, fig. 12a–b; Text fig. 146.
1932 *Barroisiceras Romieuxi* Pervinquière, Reeside, p. 13.
1947 *Solgerites romieuxi* Pervinquière, Basse, p. 124.

Location: La Paragua, type section of Timbetes Member, 30 m above the base of the member. Coniacian.

Description: Re6832. Test partly retained. Last third of outer volution belongs to body chamber. Conch compressed, rather involute. Umbilicus 18% of diameter. Whorl section subrectangular, widest near mid-flank. Venter broadly fastigate, shouldered with crenulate keel. Sides subparallel, slightly convex inflated. Umbilical margin narrowly rounded, falling off vertically and overturning slightly above umbilical seam. Flat folds begin from 14 small, rounded nodes along umbilical margin, widening and nearly fading above mid-flank. Ventrolateral clavi closely placed, oblique, faintly persisting towards elongated siphonal crests. External suture comparable to that of *Barroisiceras* (Text fig. 88b).

Measurements, end of phragmocone: Dm 85 mm, Wh 44 (0.51), Ww 32 (0.38), U 15 (0.18).

Distribution: Tunisia, Venezuela.

Solgerites brancoi mitis (Solger)
Pl. 39, Fig. 3a–b

1904 *Barroisiceras Brancoi* var. *mitis* Solger, p. 174, pl. 5, fig. 4–5.
1910 *Barroisiceras Brancoi* var. *mitis* Solger, Brüggen, p. 732, text fig. 11.
1918 *Schloenbachia (Barroisiceras) Brancoi* var. *mitis* Solger, Lüthy, p. 48, pl. 4, fig. 1a–b, 2a–b.
1932 *Barroisiceras (Solgerites) brancoi* var. *mitis* Solger, Reeside, p. 14.
1947 *Solgerites brancoi* Solger, Basse, p. 123.

Location: Barbacoas syncline, middle part of section of Cerro Gordo, northwest of La Aguada, Timbetes Member, Coniacian.

Description: MBJ28517. Adult specimen, last third of body chamber missing. On phragmocone test largely retained. Closely spaced flat, biconcave folds originate from small umbilical nodes and widen, club-like, by rising into ventrolateral clavi from where ribs fade towards crenulate keel which loses strength on body chamber. Last suture line just indicated.

Measurements: Dm 91 mm, Wh 45 (0.50), Ww 24 (0.26), U 13 (0.14).

Distribution: West Africa, Peru, Venezuela.

?*Solgerites* sp. indet.
Pl. 38, Fig. 5a–b, 6a–b, 9a–b; Text fig. 82b

Location: Chejendé syncline, La Paragua, type section of Timbetes Member, early Coniacian.

Description: Re6818-1 (Pl. 38, Fig. 6), Re6818-2 (Pl. 38, Fig. 5). Small sized, apparently adult specimens provisionally attributed to *Solgerites.* Conch compressed, involute. Body chamber three quarters of outer volution, which ends in a short rostrum on which ribs are strongly projected forward over venter. Whorl section high-rectangular with flanks slightly convex. Whorl width thickest near mid-flank. Venter narrowly fastigate with densely serrate keel. Ribs start faintly from low umbilical bullae, variable in size, and cross flank in a prorsiradiate biconcave curve. They rise into ventrolateral bullae from where they turn sharply forward, towards keel. Some indistinct branching occurs above umbilical margin. Single intermediate ribs end around mid-side. On test ribs superimposed by growth striae. Suture line (Re6956, Pl. 38, Fig. 9, Text fig. 82b) shows a feebly developed U_3 similar to *Subprionotropis.*

Measurements:	Dm	Wh	Ww	U
Re6818-1	26 mm	13 (0.50)	7.5 (0.25)	3 (0.11)
Re6818-2	25 mm	13 (0.50)	7 (0.28)	4 (0.16)

Genus *Harleites* Reeside, 1932

Type species: Barroisia haberfellneri var. *harlei* de Grossouvre, 1894.

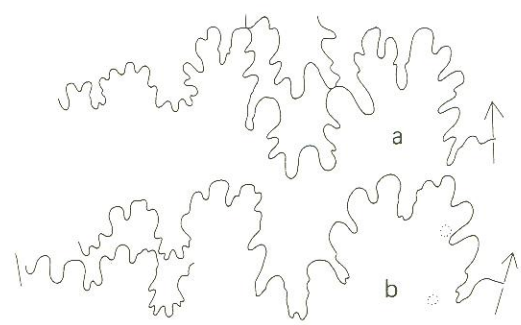
Occurrence: France, Germany, Madagascar, Cameroon, USA, Peru, Japan.

Harleites harlei (de Grossouvre)
Pl. 38, Fig. 7, Pl. 40, Fig. 5, 6a–b; Text fig. 89a

1894 *Barroisia Haberfellneri* var. *Harlei* de Grossouvre, p. 56, pl. 2, fig. 8a–b.
1904 *Barroisiceras Haberfellneri* var. *Harlei* de Grossouvre, Solger, p. 172.
1954a *Forresteria (Harleites) harlei* de Grossouvre, Reyment, p. 268, pl. 5, fig. 8.
1965c *Harleites harlei* de Grossouvre, Collignon, p. 69, pl. 445, fig. 1821.
?1979 *Buenoceras loboi* Etayo-Serna, p. 102, pl. 14, fig. 2.

Location: Río Torbes valley, 2 km south of El Corozo, southwestern plunge of Oso Uplift, State of Táchira. La Luna Formation, early Coniacian.
According to de Grossouvre (1894, p. 56) *H. harlei* comprises flat varieties without sculpture ("variétés très plates et à peu près lisses").

Description: Re5256 (Pl. 38, Fig. 7). Right side of mechanically compressed conch adhering to matrix. Test



Text fig. 89
Suture lines of *Harleites:*
a. *Harleites harlei* (de Grossouvre), Re6957, Timbetes Member, La Paragua, 3×.
b. *Harleites* sp. indet., Re6899, Pl. 38, Fig. 8, 3×.

preserved. Whorl section narrowly fastigate. Sides flat, abruptly declining towards keel, forming sharp edge with low, oblique, closely spaced ventrolateral clavi. From weak nodes on umbilical margin which are poorly preserved, flat biconcave folds begin, superimposed by growth-striae. They are widest near mid-flank and fade out towards ventrolateral clavi.

Re6930 (Pl. 40, Fig. 6a–b) from the La Ceiba section, in the Chejendé syncline, shows a fully preserved adult example of *H. harlei* (compare holotype). Aperture follows biconcave growth lines. Ornament reduced to faint, flat, biconcave ribs ending at densely spaced ventrolateral clavi which correspond to equally narrowly spaced siphonal crests. Suture line (Text fig. 89a) taken from an identical, not figured, fragment (Re6957) which also originates from La Ceiba, appears identical with the suture of *Barroisiceras*.

Re6931 (Pl. 40, Fig. 5) can best be compared with a variety of *H. harlei* figured by de Grossouvre (p. 56, pl. 2, fig. 2a). Right side of this specimen is abraded by erosion. Faint low folds starting from umbilical tubercles fade out towards ventrolateral clavi, more widely spaced than on specimen Re6930 described above.

Distribution: France, Madagascar, Cameroon, Peru, Colombia, Venezuela.

Remarks: Harleites seems to be closely related with *Barroisiceras*. This is indicated by transitional forms as described below.

Harleites castellensis (Reeside)
Pl. 39, Fig. 6a–b; Text fig. 90

1932 *Barroisiceras (Harleites) castellense* Reeside, p. 19, pl. 6, fig. 1–5.

Location: Barbacoas region, Quebrada Honda along trail to Cujizal, about middle part of Timbetes Member, Coniacian.

Description: MBJ28057. Internal mould with left side worn by erosion. Last third of outer volution belongs to body chamber. Conch compressed, high-whorled. Whorl section high oval, thickest near mid-flank (Text fig. 90). Venter on costal section broad and low fastigate. Umbilicus about 9% of diameter. Umbilical wall steep, rounding into flank on intercostal section. On phragmocone ribs begin on faint umbilical nodes, cross venter slightly prorsiradiate in a biconcave curve, as growth

Text fig. 90
Whorl section of *Harleites castellensis* (Reeside), MBJ28057, Pl. 39, Fig. 6, 2×.

lines, bending faintly forward towards ventrolateral tubercles. Intercalated shorter ribs begin near mid-flank and rise on phragmocone into slightly weaker ventrolateral tubercles. Towards living chamber costation is gradually effaced and ventrolateral tubercles become equal in size. Siphonal and ventrolateral tubercles in line. No suture line preserved.

Measurements: Dm 52 mm, Wh 29 (0.56), Ww 18 (0.35), U 4.5 (0.09).

Distribution: Texas, Venezuela.

?*Harleites* sp. indet.
Pl. 38, Fig. 8a–b; Text fig. 89b

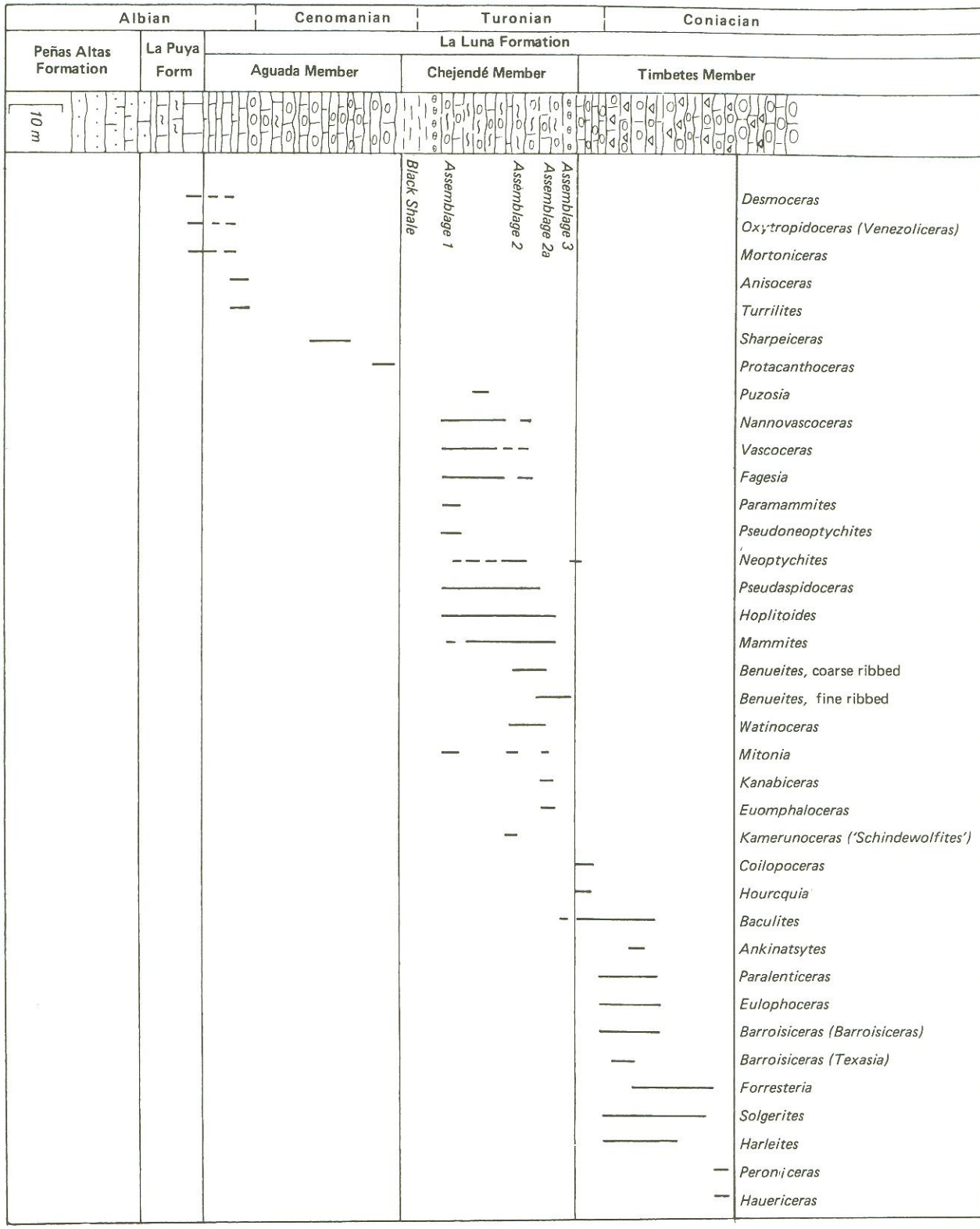
cf. 1964 *Harleites bentori* Parnes, p. 22, pl. 2, fig. 10, holotype, fig. 11–12.

Location: La Paragua, type section of Timbetes Member, early Coniacian.

Description: Re6899. Conch compressed, slender. Ornament on phragmocone subdued. Weak ribs begin on faint swellings at umbilical margin and cross flank in a biconcave curve, ending in closely spaced ventrolateral clavate tubercles. Venter fastigate with crenulated keel. On partly preserved body chamber rather widely spaced umbilical tubercles appear, from which stronger ribs originate. Suture line as on *Barroisiceras* (Text fig. 89b).

Measurements: Dm 39 mm, Wh 19.5 (0.50), Ww 11 (0.28), U 5 (0.13).

Remarks: The specimen possibly represents a juvenile stage. It differs from *H. bentori* mainly by the absence of clearly developed umbilical tubercles on the body chamber. Therefore, it might represent a new species either of *Harleites* or of *Barroisiceras*. Additional material would be needed for attributing the two specimens to either of these genera.



Text fig. 91
Distribution chart of selected ammonite genera from the late Albian to Coniacian of the Chejendé syncline.

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New names are printed in boldface type. Page numbers printed in italics refer to figured specimens.

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Plate 1

Aptian in the Perijá river sections (State of Zulia)

Fig. 1a–b
Deshayesites columbianus Riedel
MBJ28581, Machiques Formation, Quebrada Santa Rosita, upper lower Aptian, 1×. p. 17

Fig. 2
Deshayesites columbianus Riedel
Re2699a, juvenile stage, Machiques Formation, Quebrada Santa Rosita, upper lower Aptian, 1×. p. 17

Fig. 3a–b
Deshayesites? nodosus Riedel
Re2699b (J29141), Machiques Formation, Quebrada Santa Rosita, upper lower Aptian, 1×. p. 17

Fig. 4a–b
Deshayesites stutzeri Riedel
Re2699d (J29131), Machiques Formation, Quebrada Santa Rosita, upper lower Aptian, 1×. p. 17

Fig. 5a–b
Deshayesites stutzeri Riedel
Re2699e (J29132), juvenile stage, Machiques Formation, Quebrada Santa Rosita, upper lower Aptian, 1×. p. 17

Fig. 6a–b
Deshayesites rotundus Riedel
Re2699c (J29135), Machiques Formation, Quebrada Santa Rosita, upper lower Aptian, 1×. p. 18

Fig. 7a–b
Dufrenoyia aff. *furcata* (J. de C. Sowerby)
Re2574 (J30500), Cogollo Formation, Quebrada La Gé, upper Aptian, 1×. p. 18

Fig. 8a–b
Dufrenoyia justinae Hill
Re2416 (J29130), Cogollo Formation, Quebrada La Gé, upper Aptian, 1×. p. 18

Aptian in the Serranía del Interior (State of Sucre)

Fig. 9a–b
Dufrenoyia dufrenoyi (d'Orbigny)
Gu1585, Valle Grande Formation, village of La Garrapata, upper Aptian, 1×. p. 23

Fig. 10a–b
Dufrenoyia dufrenoyi (d'Orbigny)
Gu1584, same locality, 1×. p. 23

Fig. 11a–b
Dufrenoyia dufrenoyi (d'Orbigny)
Gu1586, same locality, 1×. p. 23

Fig. 12a–b
Dufrenoyia aff. *?codazziana* (Karsten)
Gu1037, Valle Grande Formation, Hacienda La Trinidad, 8 km NE Caripe, upper Aptian, 1×. p. 24

Fig. 13a–b
Burckhardtites sp. (? *Prodeshayesites* sp.)
García Formation, type locality Pico García, upper Aptian. Coll. M. Reinhard, Museum d'Histoire Naturelle, Geneva, 2×. p. 24

Fig. 14a–b
Aconeceras haugi (Sarasin)
Gu1568, Valle Grande Formation, houses Sacamanteca, camino real Cariaco-Catuaro, upper Aptian, 1×. p. 21

Fig. 15a–b
Aconeceras nisus (d'Orbigny)
Gu1044, Valle Grande Formation, Hacienda La Trinidad, 8 km NE of Caripe, upper Aptian, 3×. p. 21

Fig. 16
Dufrenoyia dufrenoyi (d'Orbigny)
MBJ28764, Valle Grande Formation, type locality, upper Aptian. Coll. E. Rod, 1×. p. 23

Fig. 17a–b
Burckhardtites nazasensis (Burckhardt)
MBJ28767, Valle Grande Formation, type locality, upper Aptian. Coll. E. Rod, 1×. p. 24

Fig. 18
Burckhardtites nazasensis (Burckhardt)
García Formation, Pico García, upper Aptian. Coll. M. Reinhard, 2×. p. 24

Fig. 19a–b
Aconeceras nisus (d'Orbigny)
García Formation, Pico García, upper Aptian. Coll. M. Reinhard, 2×. p. 21

Fig. 20a–b
Beudanticeras (Zuercherella) zuercheri (Jacob)
Gu1618, Valle Grande Formation, La Espuga, road Carupano-Caripito, upper Aptian, 1×. p. 22

On Plates 1–40 the ends of the phragmocones are indicated by short lines.

For position of the ammonites on the stratigraphic sections we refer to Textfig. 3, 4, 5, 33, 62.


1a
1b
3a
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6a
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20b

Plate 2

Aptian in the Serranía del Interior, continued

Fig. 1a–b
Mathoceras venezolanum Renz, holotype
Gu1237, BMC68185, Valle Grande Formation, type section, 5 km east of Cumanacoa, upper Aptian, 2×. p. 25

Fig. 2a–b
Mathoceras laeve Renz, holotype
Gu1569, BMC68187, Valle Grande Formation, houses Sacamanteca, Camino Real Cariaco-Catuaro, upper Aptian, 2×. p. 26

Fig. 3a–b
Mathoceras sucre Renz holotype
Gu1238, BMC68186, Valle Grande Formation, type section, upper Aptian, 2×. p. 25

Fig. 4a–b
Mathoceras caribense Renz, holotype
Gu1570, BMC68188, Valle Grande Formation, houses Sacamanteca, Camino Real Cariaco-Catuaro, upper Aptian, 1×. p. 25

Fig. 5a–b
Acanthohoplites nolani (Seunes)
Gu1624, Valle Grande Formation, Río Morocoto, 6 km west of village Guariquén, upper Aptian, 2×. p. 29

Fig. 6a–b
Gargasiceras aptiense Roch
MBJ28765-1, Valle Grande Formation, type section, upper Aptian, Coll. E. Rod, 1×. p. 28

Fig. 7a–b
Diadochoceras aff. *nodosocostatum* (d'Orbigny)
Gu1627, BMC68190, Valle Grande Formation, Río Morocoto, 6 km west of Guariquén, upper Aptian, 1×. p. 27

Fig. 8a–b
Diadochoceras aff. *nodosocostatum* (d'Orbigny)
Gu1630, Valle Grande Formation, Río Morocoto, 6 km west of Guariquén, upper Aptian, 1×. p. 27

Fig. 9a–b
Diadochoceras aff. *nodosocostatum* (d'Orbigny)
Gu1634, BMC68191, Valle Grande Formation, Río Morocoto, 6 km west of Guariquén, upper Aptian, 1×. p. 27

Fig. 10a–b
Gargasiceras acutecostatum (Riedel)
Gu1021, Valle Grande Formation, type section, upper Aptian, 2×. p. 28

Fig. 11a–b
Gargasiceras cf. *recticostatum* Roch
MBJ28765-2, Valle Grande Formation, type section, upper Aptian. Coll. E. Rod, 1×. p. 27

Fig. 12a–b
Gargasiceras cf. *recticostatum* Roch
Gu1404, Valle Grande Formation, type section, 4.5 km east of Cumanacoa, upper Aptian, 1×. p. 27

Fig. 13a–b
Gargasiceras cf. *recticostatum* Roch
MBJ28763, Valle Grande Formation, type section, 4.5 km east of Cumanacoa, upper Aptian. Coll. E. Rod, 1×. p. 27

Fig. 14a–b
Colombiceras sp. indet.
MBJ28757, Valle Grande Formation, type section, 4.5 km east of Cumanacoa, upper Aptian. Coll E. Rod, 1×. p. 29

Fig. 15a–b
Colombiceras cf. *caucasicum tyrrhenicum* Wiedmann and Dieni
Gu1391, Valle Grande Formation, type section, upper Aptian, 1×. p. 28

Fig. 16a–b
Colombiceras aff. *caucasicum* Luppov
Gu1033, Valle Grande Formation, Hacienda La Trinidad, upper Aptian, 1×. p. 28

Fig. 17a–b
Cheloniceras aff. *debile* Casey
MBJ28768, Valle Grande Formation, type section, 4.5 km east of Cumanacoa, upper Aptian. Coll. E. Rod, 1×. p. 26

Fig. 18a–b
Cheloniceras aff. *buxtorfi* Jacob
MBJ28809, Valle Grande Formation, type section, upper Aptian. Coll. E. Rod, 1×. p. 26

Fig. 19a–c
Valdedorsella getulina (Coquand)
Gu1602, La Espuga, road Carupano-Caripito, Valle Grande Formation, upper Aptian, 2×. p. 22

Fig. 20a–b
Melchiorites melchioris (Tietze)
MBJ28759, Valle Grande Formation, type section, upper Aptian. Coll. E. Rod, 1×. p. 23

Fig. 21a–b
Beudanticeras («Uhligella») cf. *mullerriedi* Humphrey
MBJ28766, Valle Grande Formation, type section, upper Aptian. Coll. E. Rod, 1×. p. 23

Fig. 22a–b
Macroscaphites cf. *striatisulcatus* (d'Orbigny)
Gu1179, García Formation, type section, Pico García, upper Aptian, 2×. p. 20

Fig. 23a–b
Jauberticeras sp., juvenile
MBJ28762, Valle Grande Formation, type section, 4.5 km east of Cumanacoa, upper Aptian. Coll. E. Rod, 1×. p. 20

Fig. 24a–b
Ancyloceras mantelli Casey
MBJ28760, Valle Grande Formation, type section, upper Aptian, 1×. p. 20

Aptian in the Andes (State of Táchira)

Fig. 25a–b
Roloboceras hambrovi (Forbes)
Re6906, Tibú Formation, section of the Cretaceous between La Quinta and Seboruco, upper lower Aptian, ¾×. p. 19


1a
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24b
25a
25b

Plate 3

Aptian in the Andes (State of Táchira), continued

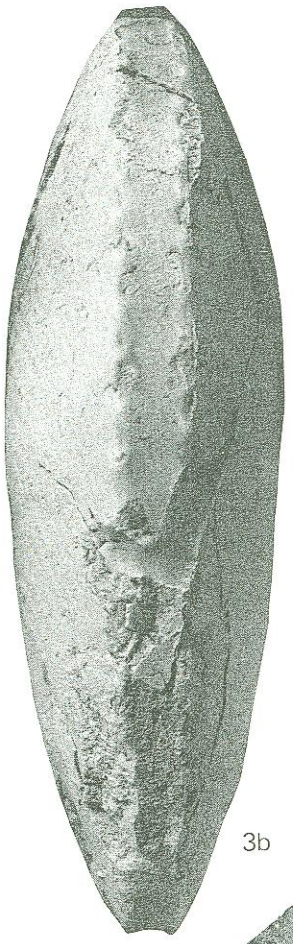
Fig. 1a–b
Roloboceras saxbyi Casey
Re6801 (J30573), Tibú Formation, section of the Cretaceous between La Quinta and Seboruco, upper lower Aptian, ¾×. p. 19

Fig. 2a–b
Roloboceras saxbyi Casey
Re6905, Tibú Formation, section of the Cretaceous between La Quinta and Seboruco, upper lower Aptian, ¾×. p. 19

Albian in the Perijá river sections

Fig. 3a–b
Knemiceras aff. *flexiloculosum* Basse
Re2420 (J30465), Lisure Formation, basal part, Caño Isure, lower Albian, 1×. p. 32

Fig. 4
Parengonoceras cf. *hachourii* (Dubourdieu)
Re2439, upper part Machiques Formation, Quebrada Maraca, Transition Aptian/Albian, 1×. p. 31



3b

1a

1b

2a

2b

3a

4

Plate 4

Albian in the Perijá river sections, continued

Fig. 1a–b
Mortoniceras aff. *pricei* Spath
Re2556, upper Lisure Formation, Quebrada La Gé, upper Albian, 1×. p. 32

Fig. 2a–b
?*Parengonoceras* sp.
Re2522 (J30495), top Machiques Formation, Quebrada Macoita, lower Albian, 1×. p. 32

Fig. 3a–b
Prolyelliceras flandrini (Dubourdieu)
Re2400 (J29129), top Machiques Formation, Quebrada Santa Rosita, lower Albian, 1×. p. 32

Lower and middle Albian in the Serranía del Interior.

Fig. 4a–b
Tetragonites rectangularis Wiedmann
Gu548, Chimana Formation, Mochima Peninsula, NE Puerto La Cruz, middle Albian, 1×. p. 34

Fig. 5a–b
Tetragonites rectangularis Wiedmann
Gu796, Chimana Formation, Mochima Peninsula, NE Puerto La Cruz, middle Albian, 1×. p. 34

Fig. 6a–b
Phylloceras (Hypophylloceras) moreti Mahmoud
Gu547, Chimana Formation, La Borracha Island, middle Albian, 1×. p. 33

Fig. 7a–b
Phylloceras (Hypophylloceras) thetis majoricense Wiedmann
Gu598, Chimana Formation, La Borracha Island, middle Albian, 1×. p. 33

Fig. 8a–b
Puzosia quenstedti (Parona and Bonarelli)
Gu377, Chimana Formation, La Borracha Island, middle Albian, 1×. p. 34

Fig. 9a–b
Puzosia media Seitz
Gu585, juvenile stage, Chimana Formation, La Borracha Island, middle Albian, 1×. p. 34

Fig. 10a–b
Puzosia lata Seitz
Gu590, Chimana Formation, La Borracha Island, middle Albian, 1×. p. 35

Fig. 11a–b
Puzosia media Seitz
Gu582, Chimana Formation, La Borracha Island, middle Albian, 1×. p. 34

Fig. 12a–b
Beudanticeras («Uhligella») walleranti (Jacob)
Gu827, Chimana Formation, Mochima Peninsula NE Puerto La Cruz, middle Albian, 1×. p. 35

Fig. 13a–b
Beudanticeras («Uhligella») walleranti (Jacob)
Gu838, Chimana Formation, Mochima Peninsula NE of Puerto La Cruz, middle Albian, 1×. p. 35

Fig. 14a–b
Beudanticeras («Uhligella») rebouli (Jacob)
Gu825, Chimana Formation, Mochima Peninsula, NE of Puerto La Cruz, middle Albian, 1×. p. 35

Fig. 15
Beudanticeras («Uhligella») rebouli (Jacob)
Gu855, Chimana Formation, Mochima Peninsula, NE of Puerto La Cruz, middle Albian, 1×. p. 35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14b
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11b

Plate 5

Lower and middle Albian in the Serrania del Interior, continued

Fig. 1a–b
Desmoceras latidorsatum complanatum Jacob
MBJ28808, Chimana Formation, road Caripe-Casanay near houses Arenales (Río San Juan), middle Albian, 1×. p.36

Fig. 2a–b
Desmoceras latidorsatum complanatum Jacob
Gu799, Chimana Formation, Mochima Peninsula near Puerto La Cruz, upper middle Albian, 1×. p.36

Fig. 3a–b
Desmoceras latidorsatum latidorsatum Michelin
Gu804, Chimana Formation, north end of La Borracha Island, shale zone on top of formation, middle Albian, 1×. p.37

Fig. 4a–b
Desmoceras latidorsatum latidorsatum Michelin
Gu798, Chimana Formation, north end of La Borracha Island, shale zone on top of formation, middle Albian, 1×. p.37

Fig. 5a–b
Desmoceras latidorsatum latidorsatum Michelin
Gu573, Chimana Formation, north end of La Borracha Island, shale zone on top of formation, middle Albian, 1×. p.37

Fig. 6a–c
Desmoceras latidorsatum inflatum Breistroffer
Gu572, top Chimana Formation, north end of La Borracha Island, middle Albian, 1×. p.37

Fig. 7a–b
Desmoceras latidorsatum latidorsatum Michelin
Gu800, top Chimana Formation, Mochima Peninsula, near Puerto La Cruz, middle Albian, 1×. p.37

Fig. 8a–b
Desmoceras latidorsatum inflatum Breistroffer
Gu540, top Chimana Formation, north end of La Borracha Island, middle Albian, 1×. p.37

Fig. 9a–b
Desmoceras latidorsatum inflatum Breistroffer
Gu607, top Chimana Formation, north end of La Borracha Island, middle Albian, 1×. p.37

Fig. 10a–b
Parasilesites kilianiformis (Fallot)
Gu637, top Chimana Formation, north end of La Borracha Island, middle Albian, 1×. p.37

Fig. 11a–b
Eubrancoceras aegoceratoides (Steinmann)
Gu109 b, top Chimana Formation, La Cieneguita, inlet on south coast of Chimana Grande Island, middle Albian, 1×. p.40

Fig. 12
Prolyelliceras peruvianum Spath
Gu616, top Chimana Formation, north end of La Borracha Island, middle Albian, 1×. p.38

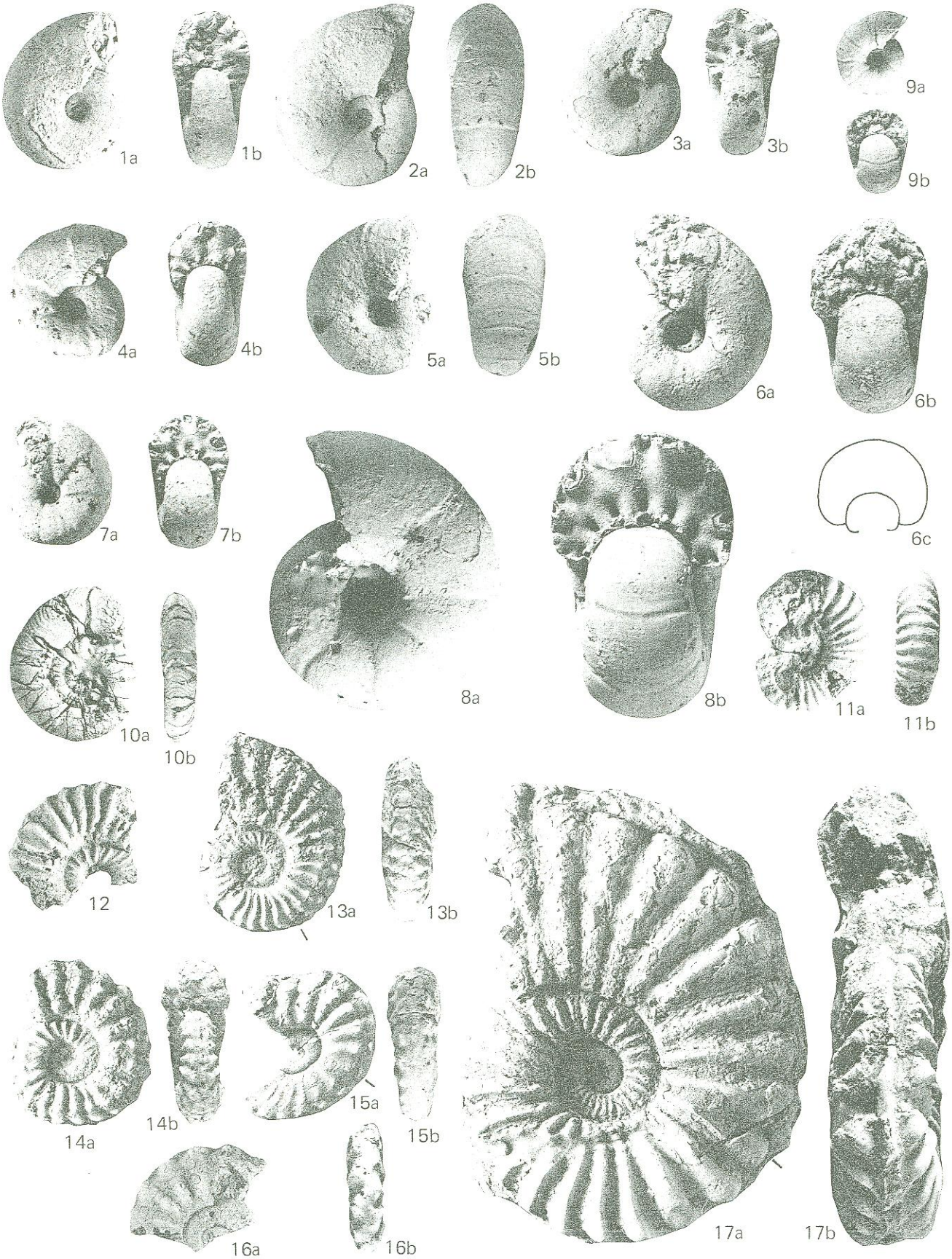
Fig. 13a–b
Prolyelliceras gevreyi (Jacob)
Gu623, top Chimana Formation, north end of La Borracha Island, middle Albian, 1×. p.38

Fig. 14a–b
Lyelliceras lyelli (Leymerie)
Gu238, top Chimana Formation, La Cueva, west coast of La Borracha Island, middle Albian, 1×. p.38

Fig. 15a–b
Lyelliceras pseudolyelli (Parona and Bonarelli)
Gu423, top Chimana Formation, Las Playuelas, inlet on east coast of Chimana Grande Island, middle Albian, 1×. p.39

Fig. 16a–b
Tegoceras gladiator (Bayle)
Gu791, top Chimana Formation, Mochima Peninsula near Puerto La Cruz, middle Albian, 1×. p.39

Fig. 17a–b
Mojsisovicsia evansi (Spath)
Gu416, top Chimana Formation, Las Playuelas, inlet on east coast of Chimana Grande Island, middle Albian, 1×. p.40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16a
16b
17a
17b

Plate 6

Lower and middle Albian in the Serrania del Interior, continued

Fig. 1
Parengonoceras aff. *pernodosum* (Sommermeier)
Gu29, upper Chimana Formation, west end Chimana Grande Island, upper lower Albian, 1×. p. 40

Fig. 2
Parengonoceras aff. *pernodosum* (Sommermeier)
Gu33, upper part Chimana Formation, west end Chimana Grande Island, upper lower Albian, 1×. p. 40

Upper Albian in the Andes (States of Trujillo and Lara)

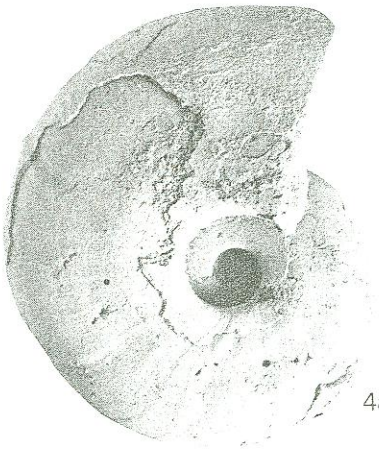
Fig. 3a–b
Desmoceras latidorsatum latidorsatum Michelin
MBJ21066, La Puya Formation, near houses La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 42

Fig. 4a–b
Bhimaites aontzyensis Collignon
MBJ28516, basal Aguada Member, about 1 km NW of Barbacoas, upper Albian, *H. orbignyi* Zone, 1×. p. 42

Fig. 5a–b
Bhimaites stoliczkai (Kossmat)
MBJ20747, La Puya Formation, between houses La Leona and Los Corales, upper Albian, *H. orbignyi* Zone, 1×. p. 43

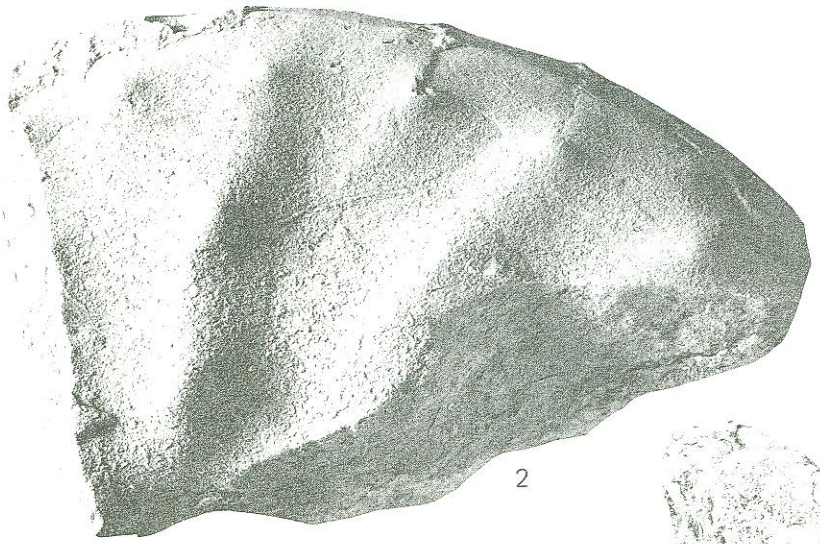
Fig. 6
Bhimaites aontzyensis Collignon
MBJ21053, La Puya Formation, near houses la Aguada, upper Albian, *H. orbignyi* Zone, ¾×. p. 42

1



4a

4b



2

3a

5a

5b

Plate 7

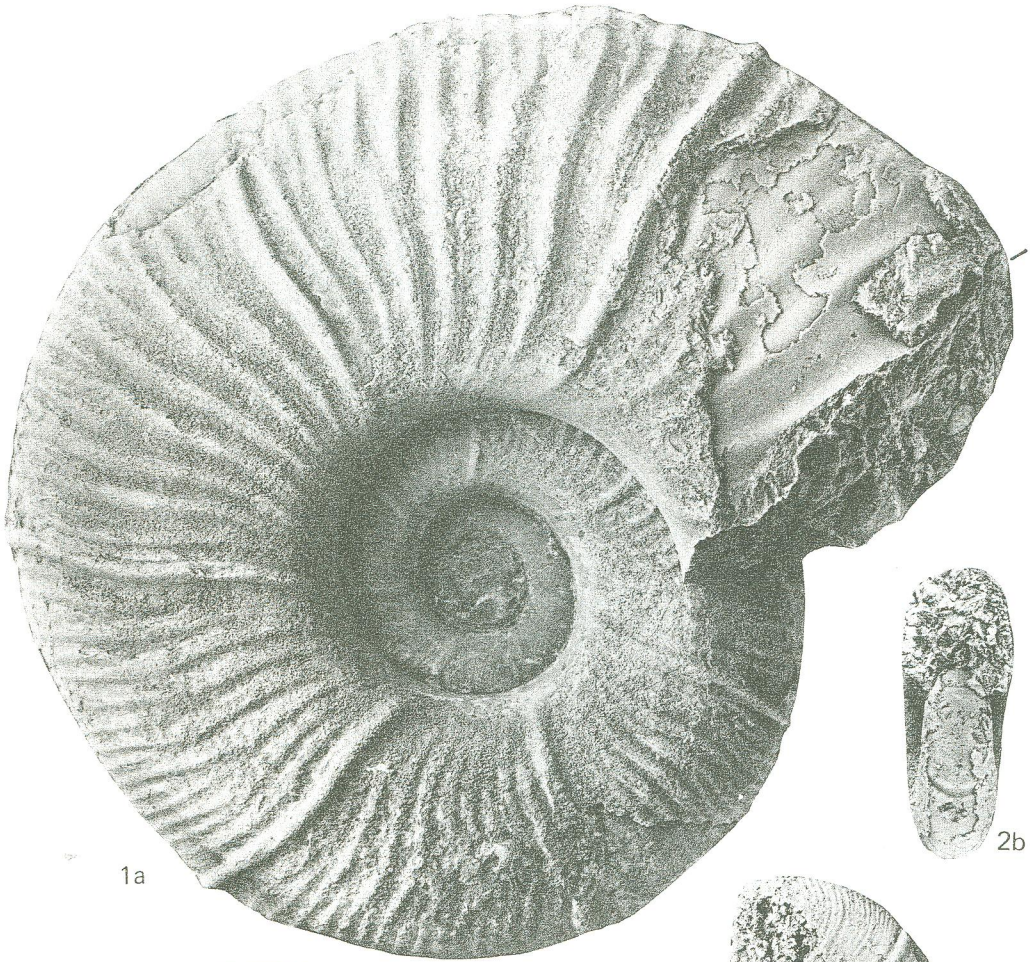
Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1a–b
Puzosia (Anapuzosia) tucuyensis (v. Buch)
MBJ20749, La Puya Formation, near houses La Aguada, upper Albian, *H. orbignyi* Zone; 1a: 1×; 1b ¾×. p. 43

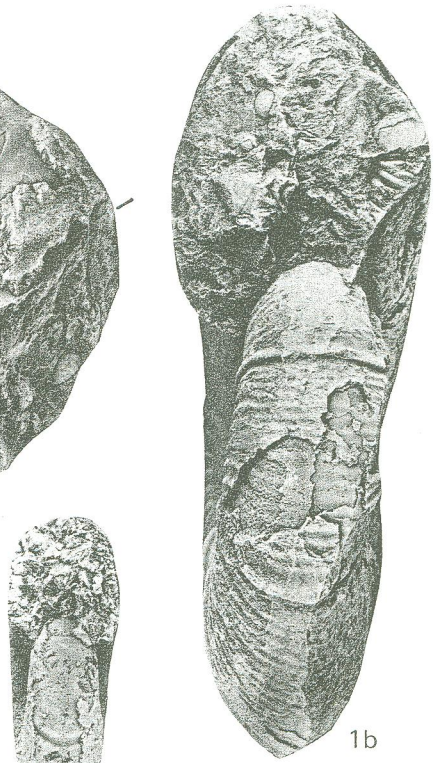
Fig. 2a–b
Puzosia (Anapuzosia) tucuyensis (v. Buch)
MBJ21044, La Puya Formation, near houses La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 43

Fig. 3a–b
Puzosia (Anapuzosia) saintoursi Collignon
MBJ20753, La Puya Formation, near houses La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 44

Fig. 4a–b
Puzosia (Anapuzosia) saintoursi Collignon
MBJ21052, juvenile stage, La Puya Formation, near houses Vano, upper Albian, *H. orbignyi* Zone, 1×. p. 44

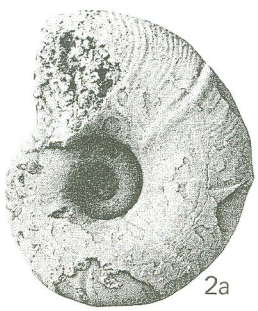


1a

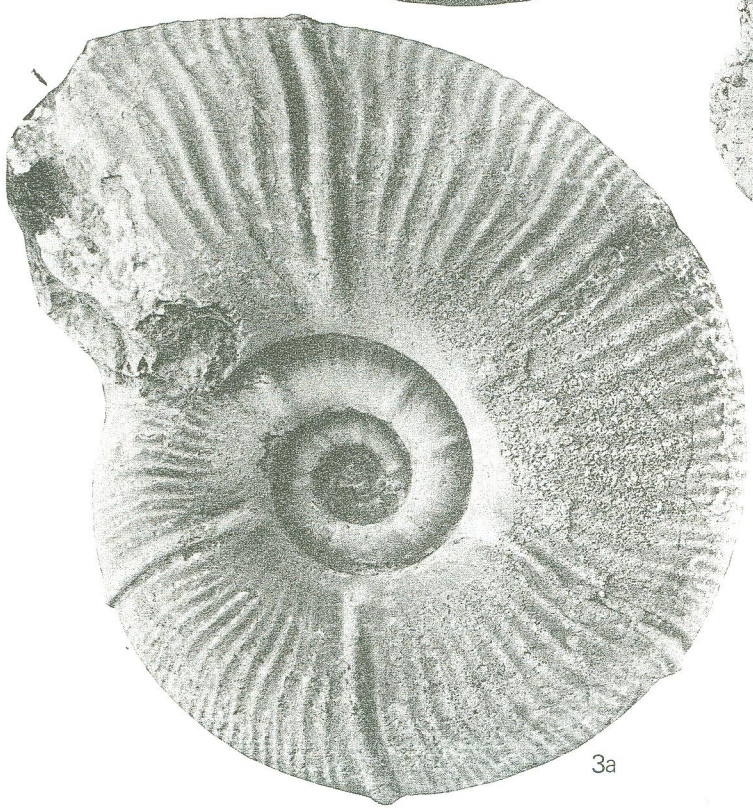


1b

2b



2a



3a

3b

4a

4b

Plate 8

Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1a–b
Parengonoceras duplicatum Renz
MBJ20693, La Puya Formation, near houses Vano, upper Albian, *H. orbignyi* Zone, ¾×. p.45

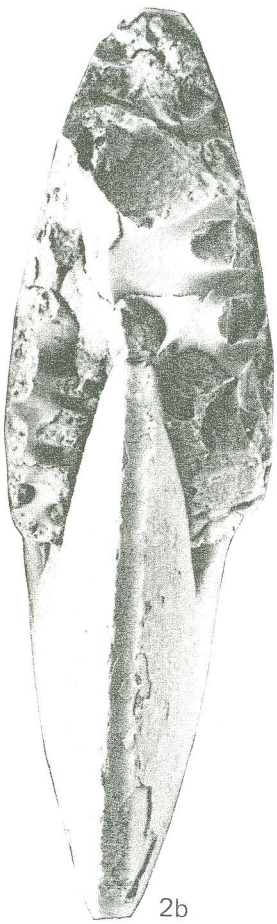
Fig. 2a–b
Parengonoceras discoides Renz
MBJ20689, La Puya Formation, near houses La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.44

Fig. 3
Parengonoceras elegans Renz
MBJ20688, La Puya Formation, near houses Vano, upper Albian, *H. orbignyi* Zone, ½×. p.45

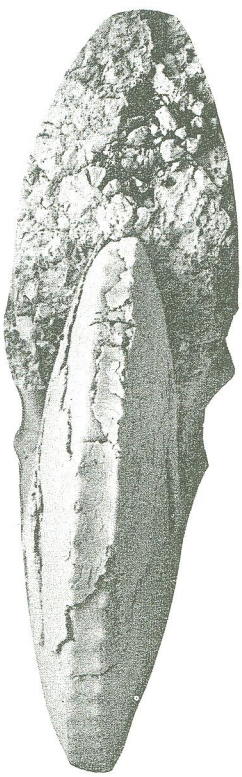
1a

3

2a



2b



1b

Plate 9

Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1a–c
Parengonoceras elegans Renz
MBJ20675, La Puya Formation, Cerro Gordo section, upper Albian, *H. orbignyi* Zone; a–b: inner whorl, 1×; c: outer whorl of phragmocone of same specimen with three isolated tubercles, ½×. p. 45

Fig. 2a–c
Parengonoceras discoides Renz
MBJ20664, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone; a–b: inner whorl, 1×; c: outer smooth whorl of phragmocone of same specimen ½×. p. 44

Fig. 3a–b
Parengonoceras duplicatum Renz
MBJ20692, juvenile stage, La Puya Formation, houses Vano, upper Albian, *H. orbignyi* Zone, 1×. p. 45

Fig. 4a–b
Parengonoceras duplicatum Renz
MBJ20706, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone; b: opposite side of same specimen with lateral tubercles, on inner whorl 1×. p. 45

1a

1b

1c

2a

2b

2c

3b

3a

4a

4b

Plate 10

Upper Albian in the Andes (States of Trujillo and Lara), continued

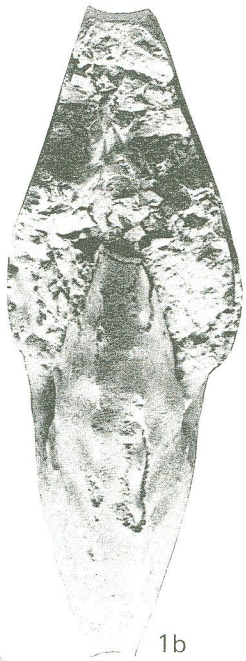
Fig. 1a–c
Parengonoceras barbacoense Renz, holotype
MBJ20685, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone; a–b: inner whorl, 1×; c: outer whorl of phragmocone of same specimen, ½×. p.46

Fig. 2a–b
Parengonoceras barbacoense Renz
MBJ20687, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.46

Fig. 3a–b
Knemiceras compressum Hyatt
MBJ20732, juvenile stage, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.46

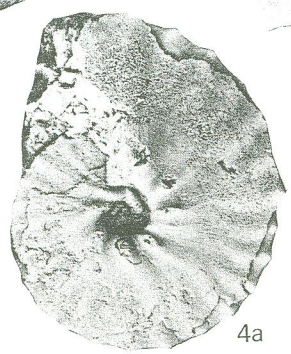
Fig. 4a–b
Knemiceras compressum Hyatt
MBJ20673, juvenile stage, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.46

1a



1b

1c

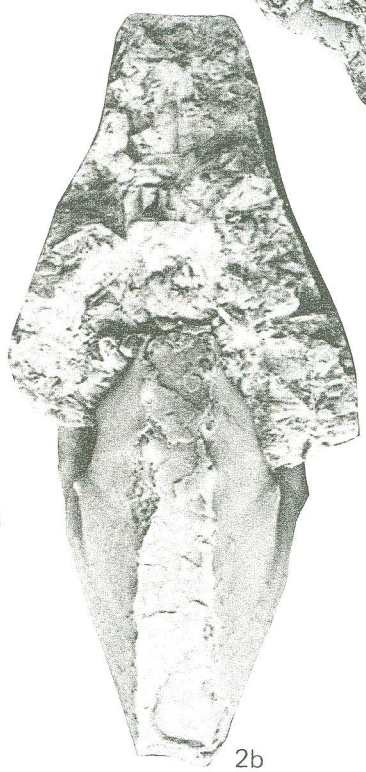


4a

4b

3a

2a



2b

3b

Plate 11

Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1a–b
Knemiceras compressum Hyatt
MBJ20672, La Puya Formation, houses La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.46

Fig. 2
Knemiceras laraense Renz, holotype
MBJ20667, La Puya Formation, houses La Aguada, upper Albian, *H. orbignyi* Zone, ¾×. p.46

Fig. 3
Neophlycticeras duffaudi Destombes
MBJ20738, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.48

Fig. 4a–b
Neophlycticeras madagascariense (Collignon)
MBJ20735, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.47

Fig. 5a–b
Neophlycticeras madagascariense (Collignon)
MBJ20736, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.47

Fig. 6a–b
Hysteroceras orbignyi (Spath)
MBJ20801, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.48

Fig. 7a–c
Hysteroceras aff. *aguilerae* Böse
MBJ20790, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.49

Fig. 8a–b
Hysteroceras aff. *aguilerae* Böse
MBJ20777, La Puya Formation, houses Vano, upper Albian, *H. orbignyi* Zone, 1×. p.49

Fig. 9a–b
Hysteroceras carinatum Spath
MBJ20769, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.49

Fig. 10a–b
Hysteroceras carinatum Spath
MBJ20792, La Puya Formation, houses Los Guayesitos, upper Albian, *H. orbignyi* Zone, 1×. p.49

Fig. 11a–b
Hysteroceras carinatum Spath
MBJ20783, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p.49

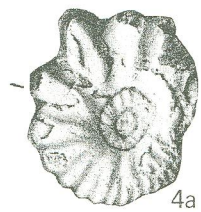
Fig. 12a–b
Hysteroceras aff. *subbinum* Spath
MBJ20772, La Puya Formation, houses Los Guayesitos, upper Albian, *H. orbignyi* Zone, 1×. p.49


1a


1b


3

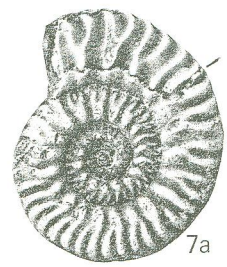

2


4a


4b

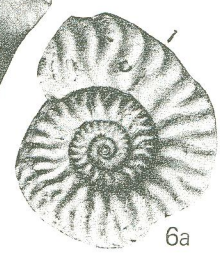

5a


5b

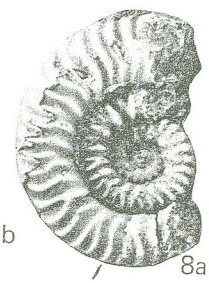

7a


7b


7c


6a

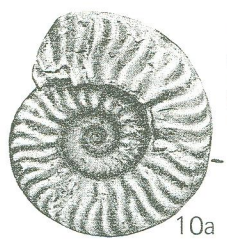

6b


8a


8b


9a


9b


10a


10b


11a


11b


12a


12b

Plate 12

Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1a–c
Hysteroceras andinum Renz
MBJ20767, holotype, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 50

Fig. 2a–b
Hysteroceras choffati Spath
MBJ20784, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 50

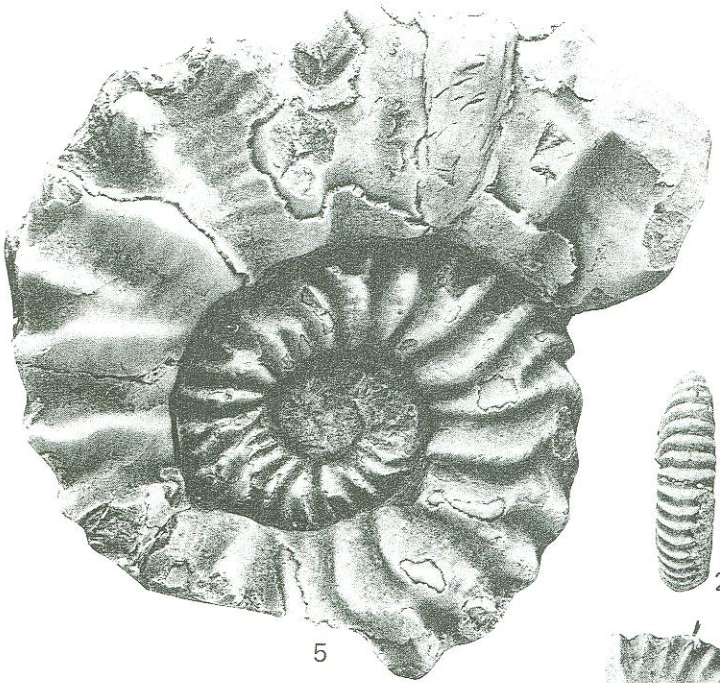
Fig. 3a–b
Hysteroceras bucklandi Spath
MBJ20775, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 50

Fig. 4a–c
Hysteroceras aff. *bucklandi* Spath
MBJ20794, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 50

Fig. 5
Mortoniceras (Deiradoceras) cf. *exile* (van Hoepen)
MBJ20800, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 54

Fig. 6a–b
Mortoniceras (Rusoceras) nothum (van Hoepen)
MBJ21038, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, ¾×. p. 55

Fig. 7
Prohysteroceras (Goodhallites) goodhalli (J. Sowerby)
MBJ20820, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone 1×. p. 51



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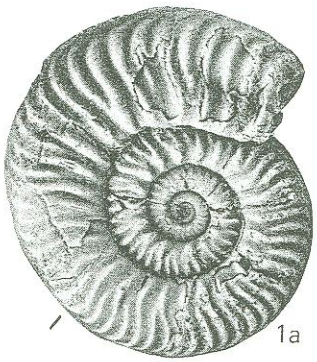
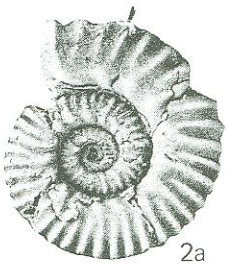


1a

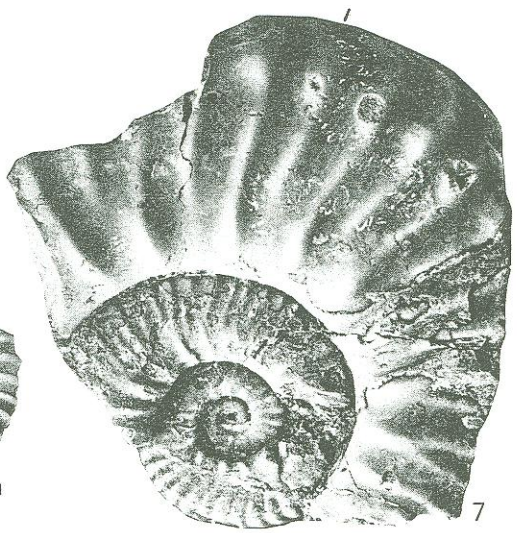
1b

1c

2b



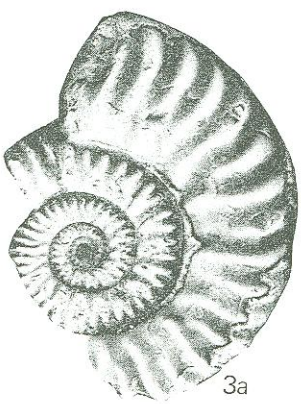
2a



7

6a

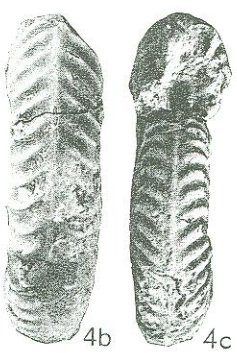
6b



3a

3b

4a



4b 4c

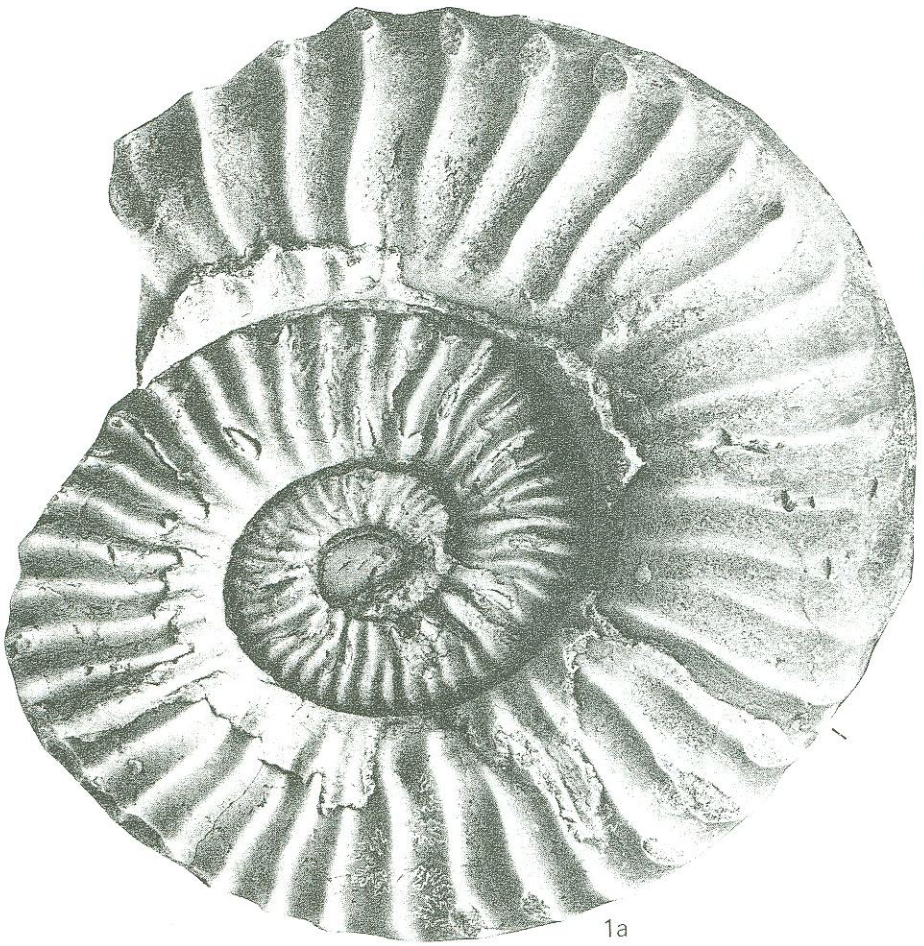
Plate 13

Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1a–b
Mortoniceras (Mortoniceras) arietiforme (Spath)
MBJ20827, La Puya Formation, section Quebrada Cerro Gordo, upper Albian, *H. orbignyi* Zone, ¾×. p. 53

Fig. 2a–b
Mortoniceras (Mortoniceras) pricei (Spath)
MBJ20824, La Puya Formation, houses Vano, upper Albian, *H. orbignyi* Zone, 1×. p. 52

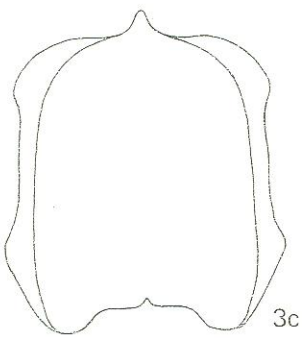
Fig. 3a–c
Mortoniceras (Mortoniceras) arietiforme andranofotsyense (Collignon)
MBJ20828, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 53



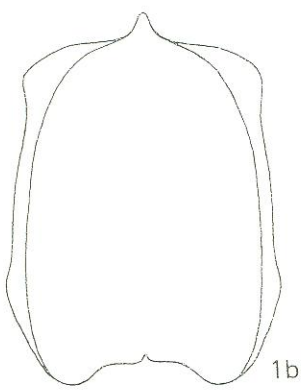
1a

2a

2b



3c



1b

3b

3a

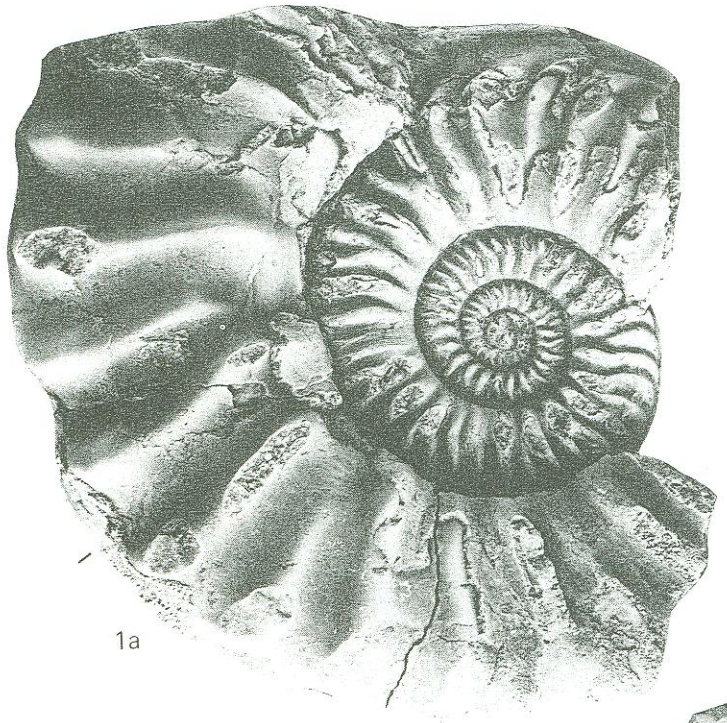
Plate 14

Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1a–b
Mortoniceras (Deiradoceras) mokarahaense (Collignon)
MBJ20825, La Puya Formation, houses Vano, upper Albian, *H. orbignyi* Zone, 1×. p. 54

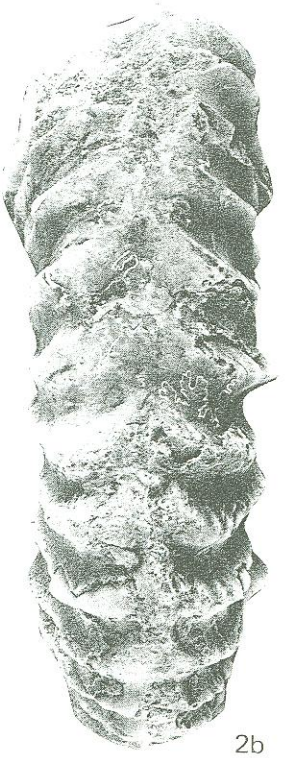
Fig. 2a–b
Mortoniceras (Deiradoceras) prerostratum (Spath)
MBJ20822, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, keel has been destroyed by compression, ¾×. p. 53

Fig. 3a–b
Mortoniceras (Mortoniceras) densecostatum (van Hoepen)
MBJ21041, ?La Puya Formation, between Río Mimbós and Río Buena Vista (Estado Trujillo), upper Albian, Coll. H.P. Schaub, ¾×. p. 52



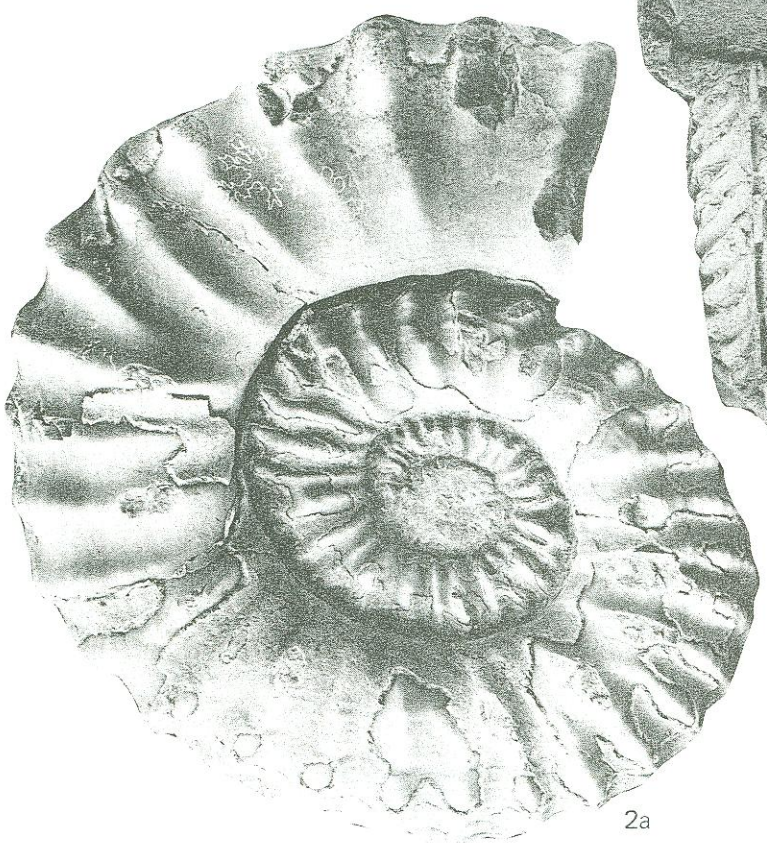
1a

3b

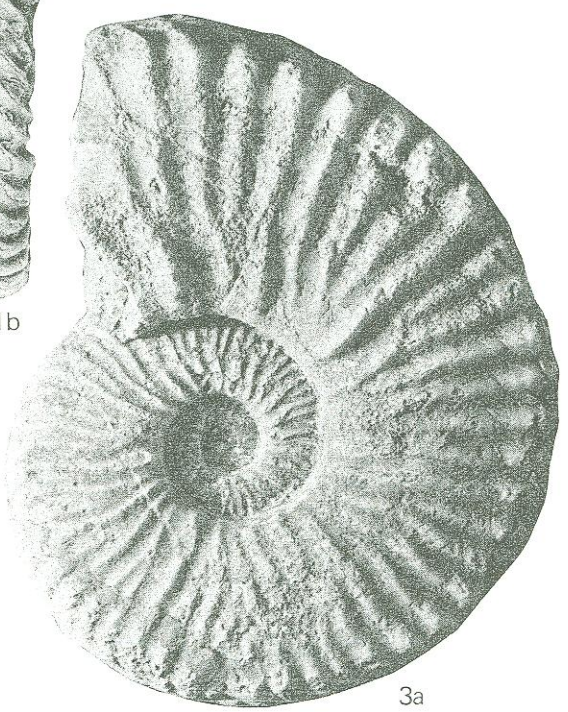


2b

1b



2a



3a

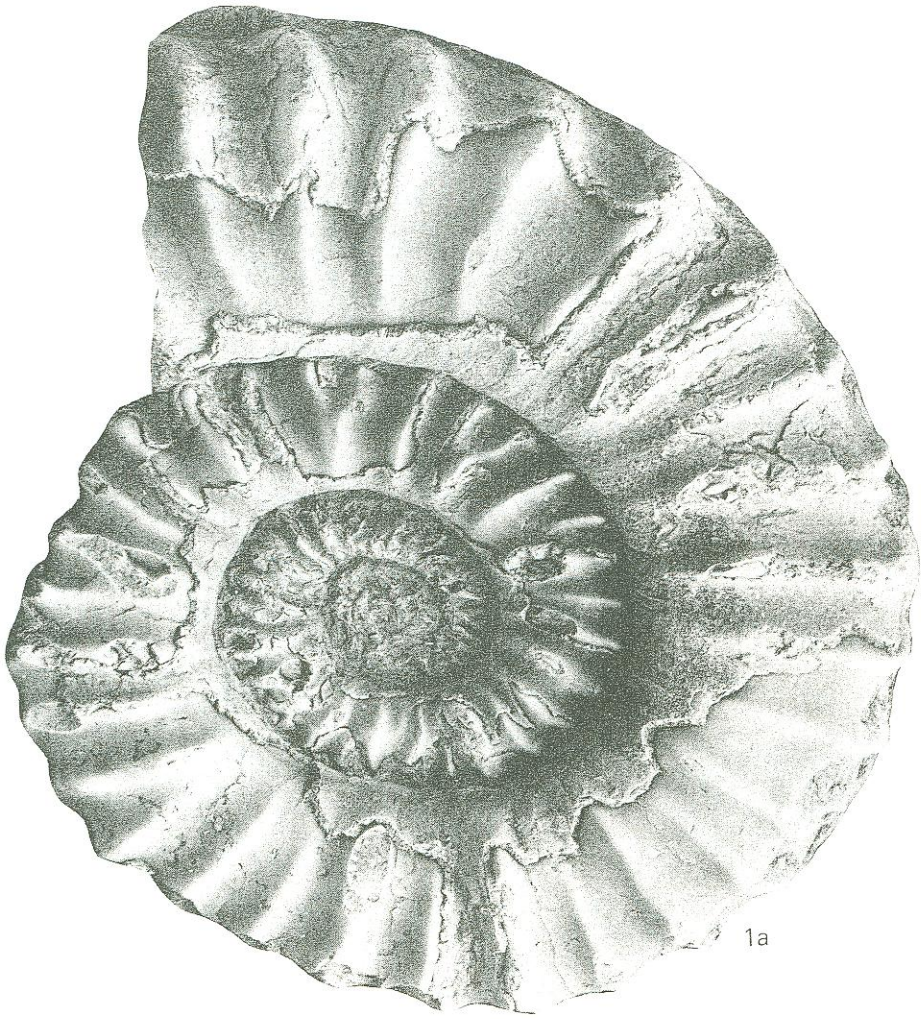
Plate 15

Upper Albian in the Andes (States of Trujillo and Lara), continued

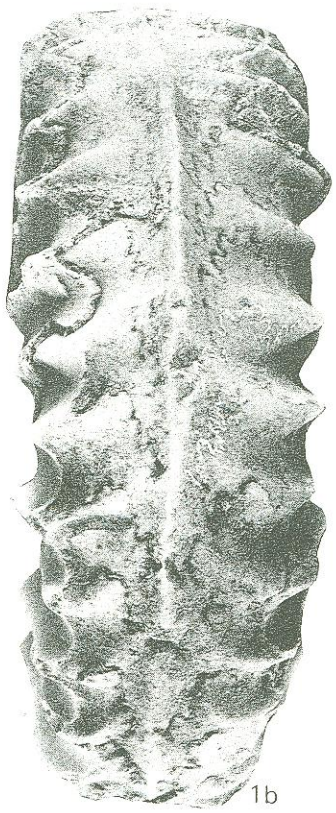
Fig. 1a–b
Mortoniceras (Deiradoceras) devonense Spath
MBJ20829, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, Fig. 1a = 1×, Fig. 1b = ¾×. p.54

Fig. 2a–b
Mortoniceras (Mortoniceras) aff. *pachys* (Seeley)
Re745 (J30571), type section of La Puya Formation southwest of Escuque, upper Albian, *H. orbignyi* Zone, ¾×. p.52

Fig. 3
Oxytropidoceras (Venezoliceras) sp.
JG475 (J30572), La Puya Formation, section along road Chejendé–Mitón, upper Albian, ¾×. p.58

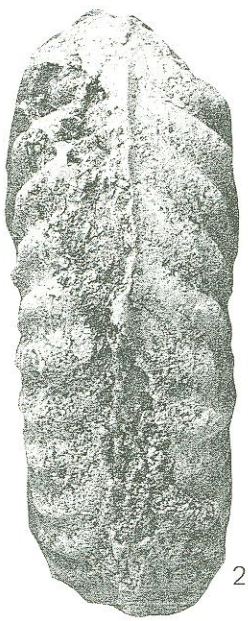


1a



1b

2a



2b

3

Plate 16

Upper Albian in the Andes (States of Trujillo and Lara), continued

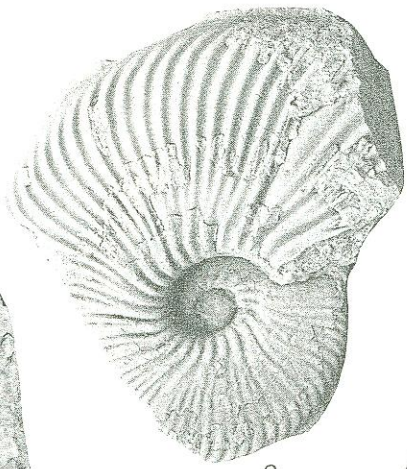
Fig. 1
Oxytropidoceras (Manuaniceras) peruvianum multifidum (Steinmann)
JG254, trail La Aguada–Curarigua, loose, ?middle Albian, 1×. p. 55

Fig. 2
Oxytropidoceras (Venezoliceras) karsteni Stieler
MBJ17852, juvenile stage, La Puya Formation, La Aguada, upper Albian, *orbignyi* Zone 1×. p. 56

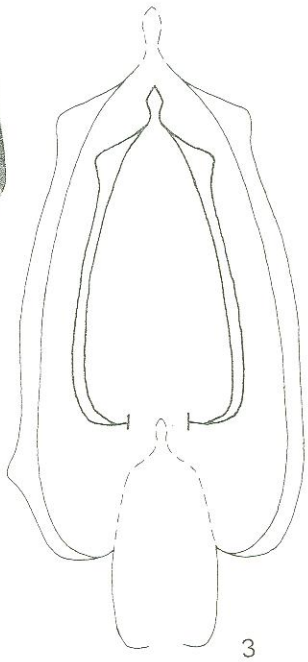
Fig. 3
Whorl section of *Oxytropidoceras (Venezoliceras) karsteni* Stieler
MBJ17827, La Puya Formation, La Aguada, upper Albian, see Pl. 17, Fig. 2, 1×. p. 56

Fig. 4a–b
Oxytropidoceras (Venezoliceras) multicostatum Renz, holotype
MBJ17817, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, Fig. 4a = ¾×, Fig. 4b whorl section, 1×. p. 56

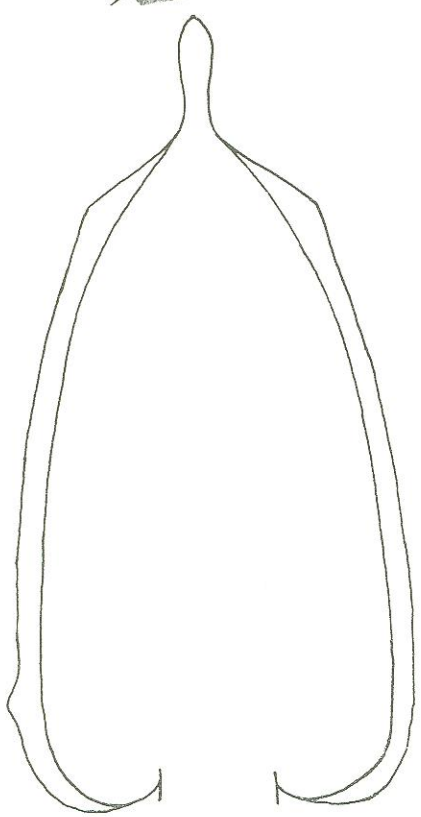
1



2



3



4b

4a

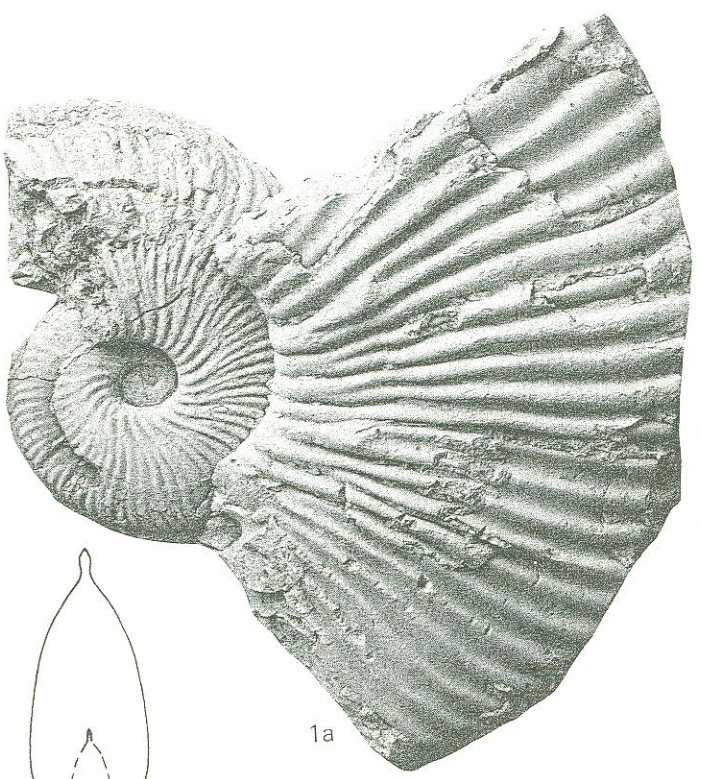
Plate 17

Upper Albian in the Andes (States of Trujillo and Lara), continued

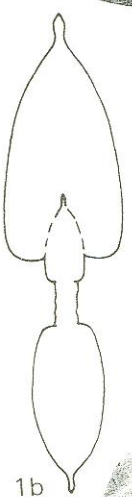
Fig. 1a–b
Oxytropidoceras (Venezoliceras) intermedium Renz
MBJ17824, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 56

Fig. 2a–b
Oxytropidoceras (Venezoliceras) karsteni Stieler
MBJ17827, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, ¾×. p. 56
Whorl section see Pl. 16, Fig. 3.

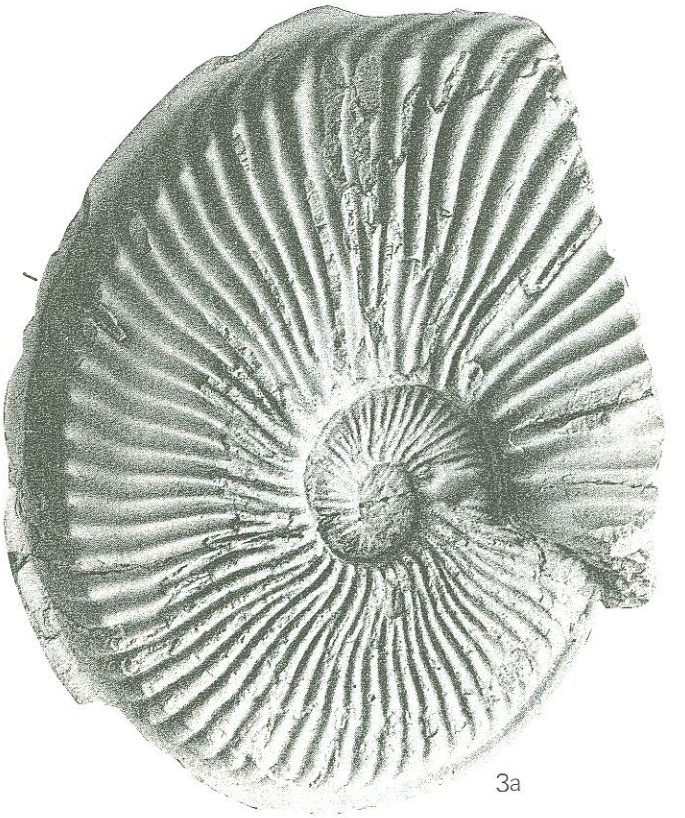
Fig. 3a–b
Oxytropidoceras (Venezoliceras) karsteni Stieler
MBJ17830, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, 1×. p. 56



1a

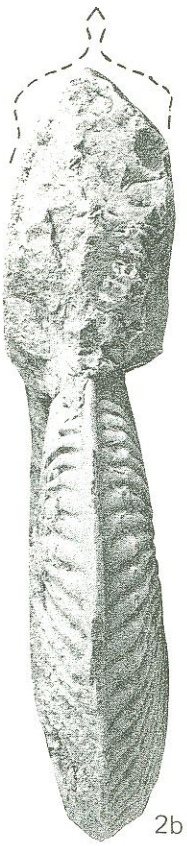


1b



3a

2a



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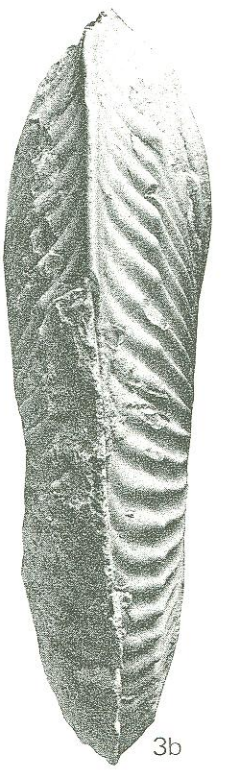


3b

Plate 18

Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1a–b
Oxytropidoceras (Venezoliceras) bituberculatum Collignon
MBJ 17842, La Puya Formation, section of Cerro Gordo, southeast of La Aguada, upper Albian, *H. orbignyi* Zone, Fig. 1a = ¾×, Fig. 1b = 1×. p. 57

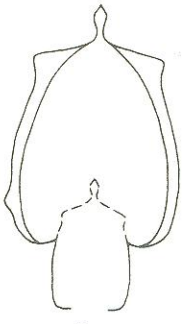
Fig. 2a–c
Oxytropidoceras (Venezoliceras) madagascariense Collignon
MBJ17848, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, Fig. 2a–b = ¾×, Fig. 2c = 1×. p. 57

Fig. 3a–c
Oxytropidoceras (Venezoliceras) venezolanum Stieler, neotype
MBJ17844, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zona, 1×. p. 57

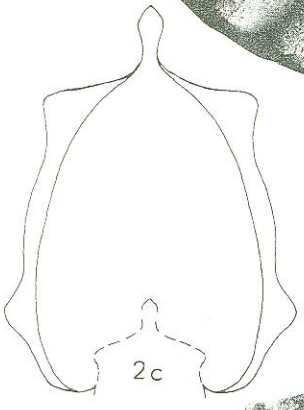
Fig. 4
Whorl section of *Oxytropidoceras (Venezoliceras) robustum* Renz,
La Puya Formation, La Aguada, upper Albian (see Pl. 19, Fig. 1), 1×. p. 58

1a

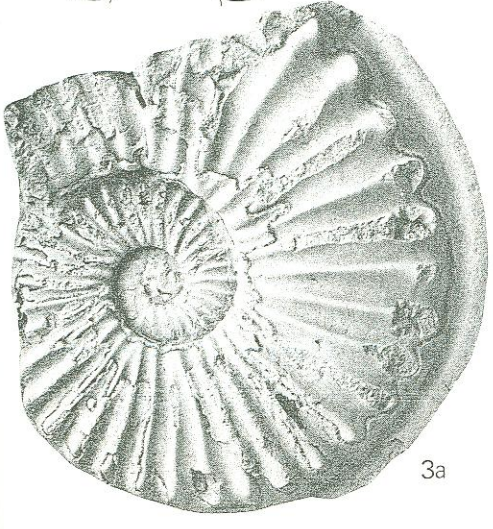
2a



3c



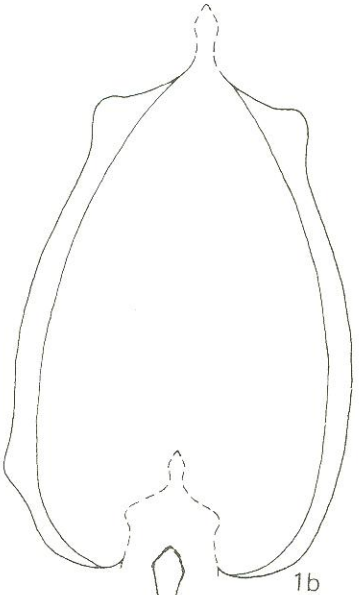
2c



3a

3b

2b



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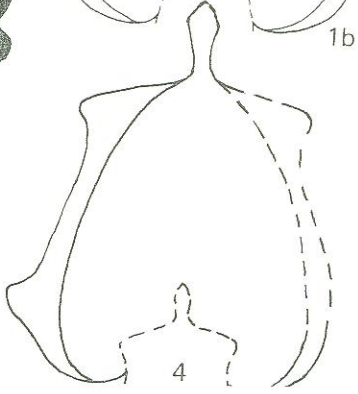


4

Plate 19

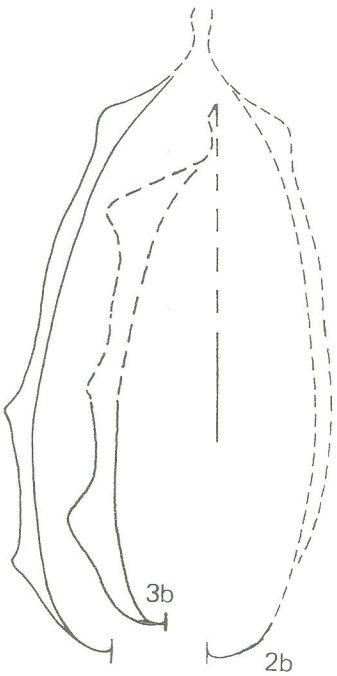
Upper Albian in the Andes (States of Trujillo and Lara), continued

Fig. 1
Oxytropidoceras (Venezoliceras) robustum Renz, holotype MBJ17856, whorl section, see Pl. 18, Fig. 4, La Puya Formation, La Aguada, upper Albian, *H. orbignyi* Zone, ¾ ×. p. 58

Fig. 2a–b
Oxytropidoceras (Laraiceras) laraense Renz, holotype MBJ17861, lower part of Aguada Member of La Luna Formation, Cerro Gordo, upper Albian, Fig. 2a = ¾ ×, Fig. 2b = 1 ×. p. 58

Fig. 3a–b
Oxytropidoceras (Laraiceras) nodosum Renz, holotype MBJ17862, lower part of Aguada Member, Cerro Gordo, upper Albian, 1 ×. p. 59

1



3b

2b

2a

3a

Plate 20

Transition Albian–Cenomanian (Vraconian) in Trujillo and Lara

Fig. 1a–b
Anisoceras (Anisoceras) perarmatum Pictet and Campiche
JG227 (J29139), type section Aguada Member, Barbacoas syncline, about 15 m above top La Puya Formation, 1×. p. 60

Fig. 2
Anisoceras (Anisoceras) sp. indet.
JG258a, type section Aguada Member, Barbacoas syncline, about 15 m above top La Puya Formation, 1×. p. 61

Fig. 3
Anisoceras (Anisoceras) perarmatum Pictet and Campiche
JG258b, fragment of body chamber, type section Aguada Member, Barbacoas syncline, 1×. p. 60

Fig. 4a–b
Anisoceras (Anisoceras) picteti Spath
JG216, type section Aguada Member, Barbacoas syncline, about 15 m above top La Puya Formation, 1×. p. 61

Fig. 5a–b
Hamites (Hamites) cf. *virgulatus* Brongniart
JG391a (J30486), Aguada Member, Chejendé syncline, Chejendé-Mitón road, above contact Peñas Altas–La Luna Formation, 1×. p. 60

Fig. 6a–c
Hamites (Hamites) sp. indet.
JG391b, lower Aguada Member, Chejendé syncline, San Felipe, 8×. p. 60

Fig. 7a–b
Lechites aff. *gaudini* Pictet and Campiche
JG436, base Aguada Member, Chejendé syncline, near houses La Ceiba west of Chejendé, 1×. p. 59

Fig. 8
Mariella (Mariella) worthensis (Adkins and Winton)
JG247 (J29140), type section Aguada Member, 10 m above top La Puya Formation, Barbacoas syncline, 1×. p. 61

Fig. 9a–b
Mariella (Mariella) sp. aff. *bergeri* (Brongniart)
Fig. 9a. JG213a (J30491), dextral and Fig. 9b. Re6910 sinistral, type section Aguada Member, 30 m above top La Puya Formation, Barbacoas syncline, 1×. p. 61

Fig. 10
Mariella (Plesioturrilites) brazoensis (Roemer)
Re6897, near type section Aguada Member, 15 m above top La Puya Formation, below road culmination Barbacoas–San Pedro, 1×. p. 62

Fig. 11
Hamites (Hamites) cf. *virgulatus* Brongniart
JG238 (J30483), type section Aguada Member, about 10 m above top La Puya Formation, Barbacoas syncline, 1×. p. 60

Fig. 12
Mortoniceras (Durnovarites) subquadratum venezolanum n. ssp., holotype
Re6821 (J30575), Chejendé syncline, south of La Morita, above road Chejendé-Mitón, base of Aguada Member, 1×. p. 62

Cenomanian

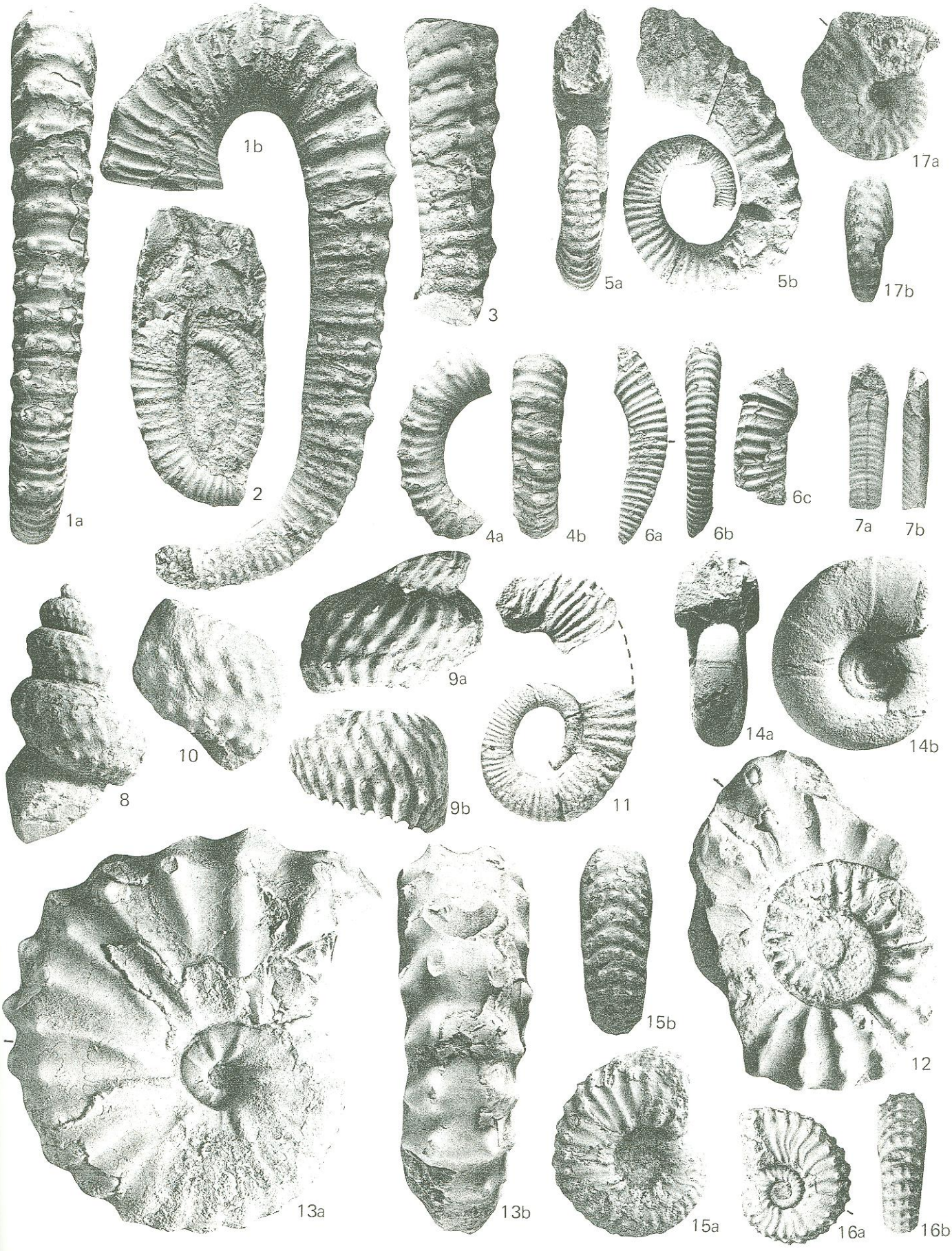
Fig. 13a–b
Acanthoceras (Pseudacanthoceras) wintoni Adkins
MBJ28503, type section Aguada Member near La Aguada, Barbacoas syncline, about middle part of Member, Cenomanian, 1×. p. 69

Fig. 14a–b
Anagaudryceras buddha Forbes
MBJ28508, Aguada Member, 15 m above top La Puya Formation, Barbacoas syncline, upper Cenomanian, 1×. p. 67

Fig. 15a–b
Protacanthoceras bunburianum (Sharpe)
JG439d (J30503), upper part Aguada Member, Chejendé syncline, between La Ceiba and Vichú, upper Cenomanian, 2×. p. 70

Fig. 16a–b
Protacanthoceras bunburianum (Sharpe)
Re6828 (J30468), ? base Chejendé Member, 1.5 km south of Chejendé, from loose concretion, upper Cenomanian, 1×. p. 70

Fig. 17a–b
Metoicoceras sp. indet.
JG213c (J29128), lower Aguada Member, Barbacoas syncline, La Aguada, together with *Turrilites*, Cenomanian, 1×. p. 70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9a
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12
13a
13b
14a
14b
15a
15b
16a
16b
17a
17b

Plate 21

Cenomanian, continued

Fig. 1
Sharpeiceras occidentale Benavides-Cáceres
JG394, Aguada Member, near San Felipe, along road Chejendé-Mitón, Cenomanian, 1×. p. 68

Fig. 2a–b
Niceforoceras umbulaziforme Basse
MBJ28511, type section Aguada Member, Barbacoas syncline, Cenomanian, 2×. p. 68

Fig. 3a–b
Desmoceras cf. *chimuense* Benavides-Cáceres
Re6824 (J30478), type section Aguada Member, Barbacoas syncline, 15 m above top La Puya Formation, lower Cenomanian, 1×. p. 67

Fig. 4a–b
Protacanthoceras bunburianum (Sharpe)
JG439c (J30504), Aguada Member, Chejendé syncline between La Ceiba and Vichú, upper Cenomanian, 2×. p. 70

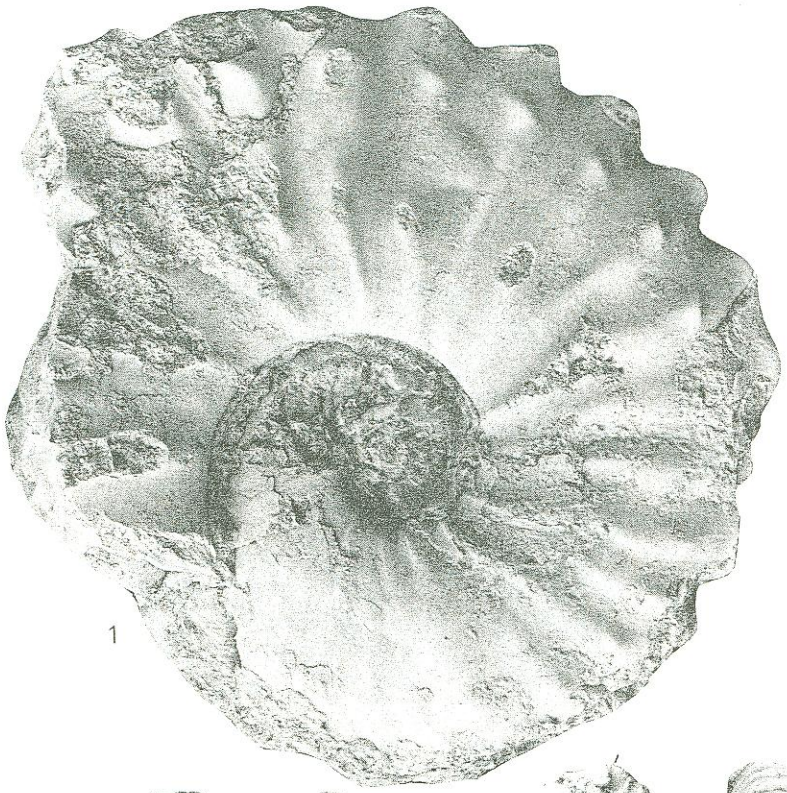
Fig. 5a–b
Protacanthoceras bunburianum (Sharpe)
JG439b (J30505), upper Aguada Member, Chejendé syncline, between La Ceiba and Vichú, upper Cenomanian, 2×. p. 70

Fig. 6a–b
Protacanthoceras bunburianum (Sharpe)
JG439a (J30502), upper Aguada Member, Chejendé syncline, between La Ceiba and Vichú, upper Cenomanian, 2×. p. 70

Lower Turonian

Fig. 7a–b
Romaniceras (Romaniceras) cf. *deverianum* (d'Orbigny)
Re2479, basal La Luna Formation, Perijá foothills, Río Yasa, 23 km southeast of Machiques, lower Turonian, ¾×. p. 69

Fig. 8a–b
Kanabiceras? septemseriatum (Cragin)
Re6827 (J30349), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 97


1


2a


2b


3a


3b


4a

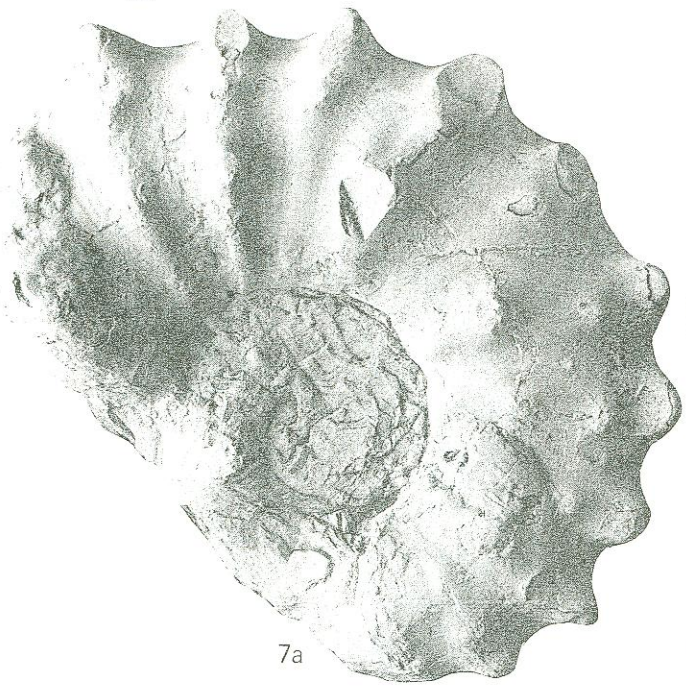

4b


5a


5b


6a


6b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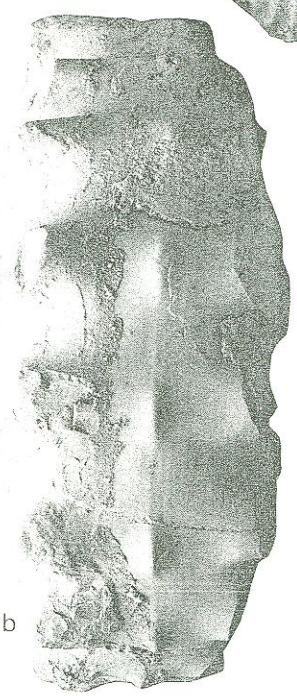
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8a

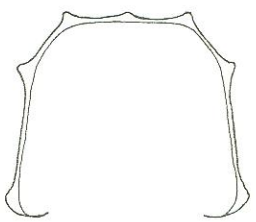
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Plate 22

Lower Turonian, continued

Fig. 1a–b
Anagaudryceras sp. indet.
Re6860 (J30430), faint ribbing on body chamber, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 2×. p. 74

Fig. 2a–c
Anagaudryceras sp. indet.
Re6898 (J30437), without sculpture, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 2a–b = 1×; 2c last suture lines. 5×. p. 74

Fig. 3a–b
Anagaudryceras sp. indet.
Re6859 (J30436), with shallow constrictions, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 74

Fig. 4a–b
Anagaudryceras sp. indet.
Re6857 (J30418), with faint constrictions, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 74

Fig. 5a–b
Anagaudryceras sp. indet.
Re6861 (J30421), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 74

Fig. 6a–b
Anagaudryceras sp. indet.
Re6858 (J30431), deeply constricted, type section Chejendé Member, La Paragua, Assemblage 2, mid lower Turonian, 1×. p. 74

Fig. 7
Glyptoxoceras cf. *indicum* (Forbes)
Re6881, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 73

Fig. 8
Glyptoxoceras cf. *indicum* (Forbes)
VK1283B-3, boulder in Guárico flysch, Los Robles de Ortiz, north of town of Ortiz, Turonian, 1×. p. 73

Fig. 9a–b
Puzosia aff. *orientalis intermedia* Matsumoto
Re6907 (J30322), type section Chejendé Member, La Morita, between Assemblage 1 and 2, lower to mid lower Turonian, 1×. p. 74

Fig. 10a–b
Nannovascoceras constrictum Renz and Alvarez
Re6799-128 (J30392), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 76

Fig. 11a–b
Nannovascoceras costatum Renz and Alvarez
Re6799-104 (J30399), type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 77

Fig. 12a–b
Nannovascoceras costatum Renz and Alvarez
Re6799-98 (J30405), type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 77

Fig. 13a–b
Nannovascoceras intermedium Renz and Alvarez
Re6799-130 (J30406), approaching *N. constrictum*, type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 76

Fig. 14a–b
Nannovascoceras constrictum Renz and Alvarez
Re6799-127 (J30419), type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 76

Fig. 15a–b
Fagesia cf. *thevestensis* Peron
JG408 (J30304), Chejendé Member, Chejendé-Mitón road, Quebrada San Felipe, lower Turonian, 1×. p. 79

Fig. 16a–b
Nannovascoceras intermedium Renz and Alvarez
Re6799-129 (J30391), type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 76

Fig. 17a–b
Nannovascoceras cf. *constrictum* Renz and Alvarez
Re6799-106 (J30400), type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 76

Fig. 18a–b
Nannovascoceras constrictum Renz and Alvarez
Re6799-126 (J30402), type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 76

Fig. 19a–b
Fagesia aff. *superstes* (Kossmat)
Re6799-1 (J30308), type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 78

Fig. 20a–b
Fagesia levis n. sp., paratype 2
Re6799-15 (J30318), type section Chejendé Member, Assemblage 1, La Morita, lower lower Turonian, 1×. p. 78

Fig. 21a–b
Phylloceras (Hypophylloceras) cf. *masiaposensum* (Collignon)
Re6936 (J30497), type section Chejendé Member, Assemblage 2a, La Paragua, upper lower Turonian, 1×. p. 73

Fig. 22a–b
Nannovascoceras sp. indet.
Re6937 (J30499), type section Chejendé Member, between Assemblage 2 and 2a from a concretion with only *Hoplitoides*, La Paragua, upper lower Turonian, 1×. p. 77


1a
1b
2a
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19b
18a
18b
20a
20b
21a
21b

Plate 23

Lower Turonian, continued

Fig. 1a–b
Fagesia levis n. sp., paratype 1
Re6799-17 (J30310), on left side venter of *Pseudoneoptychites,* type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 78

Fig. 2a–b
Fagesia levis n. sp., holotype
Re6799-109 (J3010), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 78

Fig. 3a–b
Fagesia levis n. sp., paratype 3
Re6799-119 (J30305), juvenile stage, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 78

Fig. 4a–b
Fagesia aff. *superstes* (Kossmat)
Re6799-111 (J30312), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 78

Fig. 5a–b
Vascoceras venezolanum n. sp., holotype
Re6799-20 (J30315), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 80

Fig. 6a–b
Vascoceras venezolanum n. sp., paratype 1
Re6799-21 (J30306), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 80

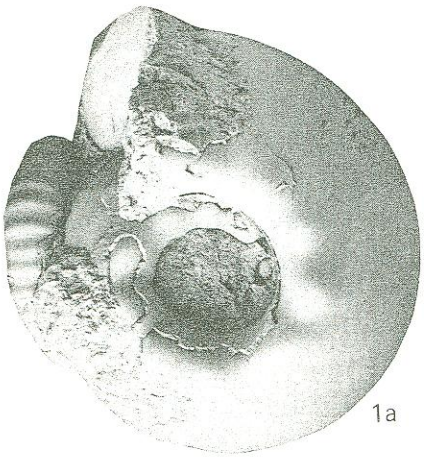
Fig. 7a–b
Vascoceras venezolanum n. sp., paratype 2
Re6799-19 (J30303), juvenile constricted stage, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 80

Fig. 8a–b
Vascoceras venezolanum n. sp., forma a
Re6799-33 (J30293), Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 80

Fig. 9a–b
Vascoceras venezolanum n. sp., forma a
Re6799-131 (J30290), Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 80

Fig. 10a–b
Vascoceras venezolanum n. sp., forma a
Re6799-28 (J30291), Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 80

Fig. 11a–b
Vascoceras venezolanum n. sp., forma a
Re6799-6 (J30292), Chejendé Member, La Morita, Assemblage 1, lower lower Turonian 1×. p. 80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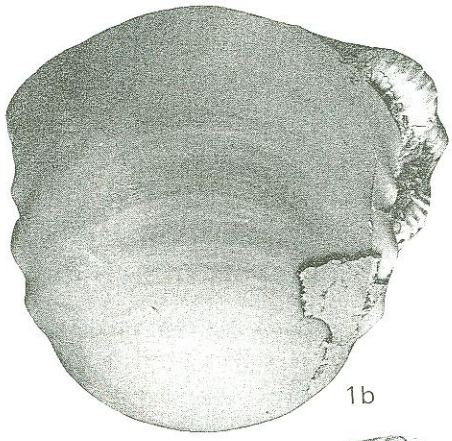
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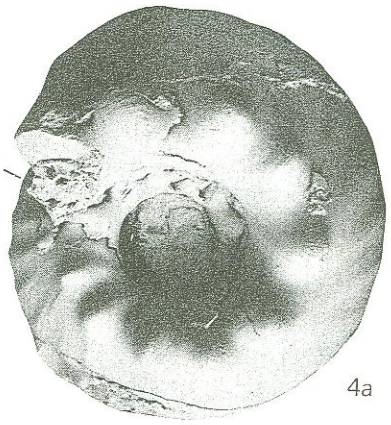
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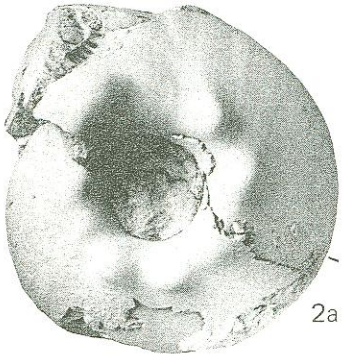
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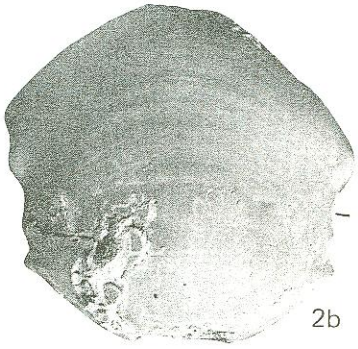
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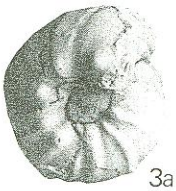
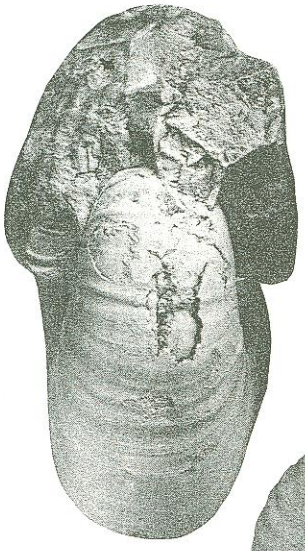

3a


3b


4b


5a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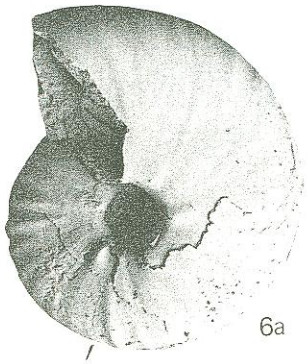
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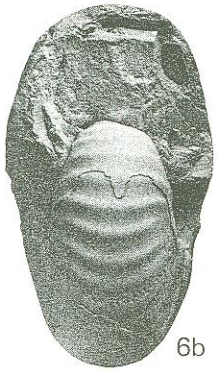

6b


7a


7b

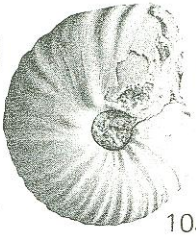

11a


8a


8b


9a


9b


10a


10b


11b

Plate 24

Lower Turonian, continued

Fig. 1a–b
Vascoceras venezolanum n. sp., forma b
Re6799-102 (J30319), adult stage, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 81

Fig. 2a–b
Vascoceras venezolanum n. sp., forma b
Re6799-132 (J30302), constricted juvenile stage, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 81

Fig. 3a–b
Vascoceras venezolanum n. sp., forma b
Re6799-4 (J30309), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 81

Fig. 4a–b
Vascoceras venezolanum n. sp., forma c
Re6799-18 (J30296), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 82

Fig. 5a–b
Vascoceras venezolanum n. sp., forma c
JG246 (J30287), Chejendé Member, Barbacoas syncline, La Aguada, lower lower Turonian, 1×. p. 82

Fig. 6a–b
Vascoceras venezolanum n. sp., forma c
Re6799-47 (J30297), type section Chejendé Member, Assemblage 1, lower lower Turonian, 1×. p. 82

Fig. 7a–b
Vascoceras venezolanum n. sp., forma c
Re6799-123 (J30298), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 82

Fig. 8a–b
Vascoceras venezolanum n. sp., forma d
Re6799-113 (J30314), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 82

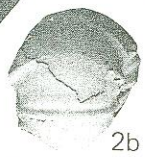
Fig. 9a–b
Vascoceras venezolanum n. sp., forma d
Re6799-101 (J30301), constricted juvenile stage, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 82

Fig. 10a–b
Vascoceras venezolanum n. sp., forma d
Re6799-115 (J30307), type section Chejendé Member, La Morita Assemblage 1, lower lower Turonian, 1×. p. 82

Fig. 11a–b
?*Fagesia* sp. indet.
Re6939 (J30501), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 79


1a


2a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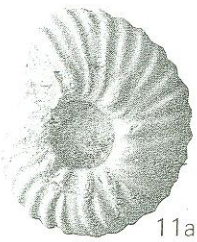
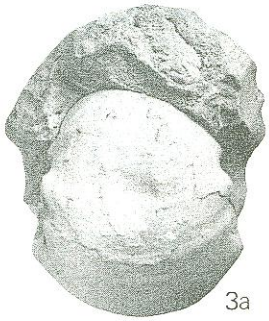
1b


11a


11b

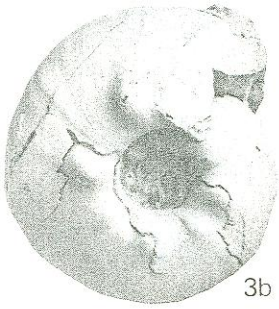

3a


4a


4b


5a


5b

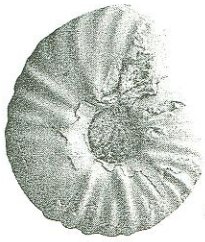

3b


9a


9b


6a


6b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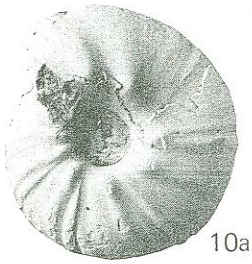

10a


10b


8a


8b

Plate 25

Lower Turonian, continued

Fig. 1a–b
Vascoceras venezolanum n. sp., forma d
Re6799-114, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 82

Fig. 2a–b
Vascoceras venezolanum n. sp., forma d
Re6799-76 (J30300), juvenile constricted stage, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 82

Fig. 3a–b
Vascoceras venezolanum n. sp., forma e
Re6799-30 (J30289), type section Chejendé Member, La Morita, Assemblage 1, lower Turonian, 1×. p. 84

Fig. 4a–b
Vascoceras venezolanum n. sp., forma e
Re6799-24, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 84

Fig. 5a–b
Vascoceras venezolanum n. sp., forma e
Re6799-37 (J30295), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 84

Fig. 6a–b
Vascoceras venezolanum n. sp., forma e
Re6799-25 (J30299), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 84

Fig. 7a–b
Vascoceras venezolanum n. sp., forma e
Re6799-23 (J30294), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 84

Fig. 8a–b
Vascoceras cf. *venezolanum* n. sp., forma e
Re6799-108 (J30288), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 84

Fig. 9a–b
?*Nannovascoceras* sp. indet.
Re6895, La Luna Formation, road Egido–Carbonera, Quebrada Azulita, Estado Mérida, lower Turonian, 1×. p. 77

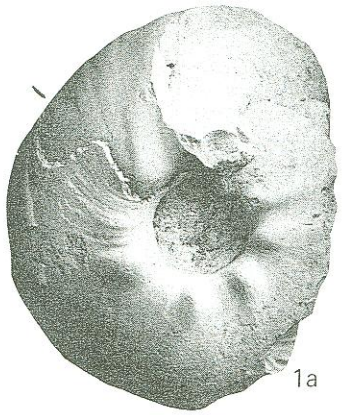
Fig. 10a–b
Paramammites polymorphus pinquis (Pervinquière)
Re6799-90 (J30342), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 84

Fig. 11a–b
Paramammites polymorphus pinguis (Pervinquière)
Re6799-91 (J30372), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 84

Fig. 12a–b
Paramammites polymorphus pinguis (Pervinquière)
Re6889 (J30378), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 84

Fig. 13a–b
Paramammites polymorphus gracilis (Pervinquière)
Re6890 (J30373), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 85

Fig. 14a–b
Paramammites polymorphus gracilis (Pervinquière)
(J30370), "Querecual Formation", Cerro El Peñon, southeast of Altagracia de Orituco, Estado Guárico, lower Turonian. Coll. Ch. Beck, 1×. p. 85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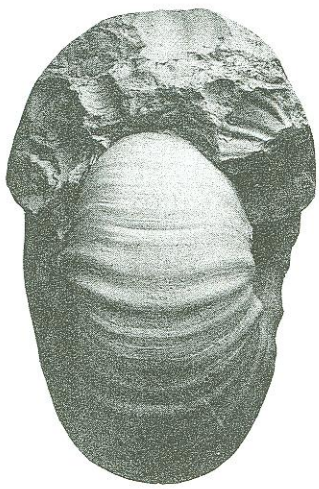
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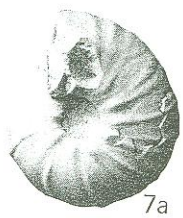
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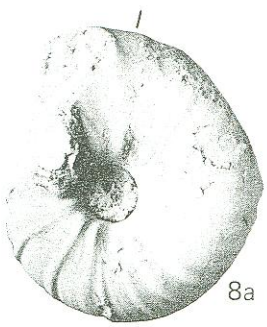
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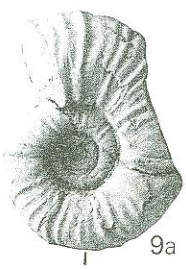
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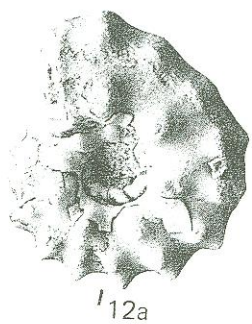
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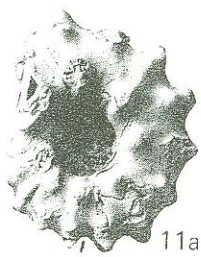
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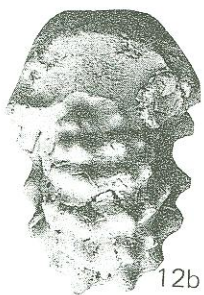
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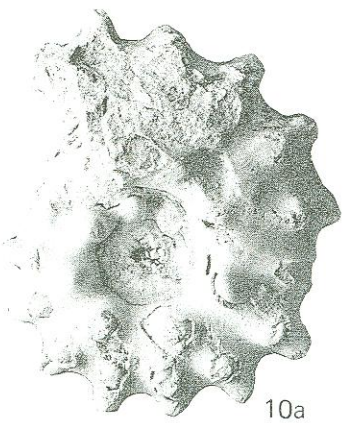
13a


10a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14a


14b


13b

Plate 26

Lower Turonian, continued

Fig. 1a–b
Pseudoneoptychites venezolanus n. sp., holotype
Re6799-9 (J30457), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 85

Fig. 2a–b
Pseudoneoptychites venezolanus n. sp., paratype 2
Re6799-78 (J30449), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 85

Fig. 3a–b
Pseudoneoptychites venezolanus n. sp., paratype 1
Re6799-77 (J30441), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 85

Fig. 4a–b
Pseudoneoptychites intermedius n. sp., paratype 1
Re6799-58 (J30448), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 5a–b
Pseudoneoptychites intermedius n. sp., holotype
Re6799-54 (J30450), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 6a–b
Pseudoneoptychites intermedius n. sp., paratype 2
Re6799-64 (J30447), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 7a–b
Pseudoneoptychites difficilis Leanza
Re6799-57 (J30443), *Mitonia gracilis* near peristome, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 8a–b
Pseudoneoptychites andinus Leanza
Re6799-74 (J30440), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 9a–b
Pseudoneoptychites andinus Leanza
Re6799-66 (J30451), juvenile stage with constrictions, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 10a–b
Pseudoneoptychites andinus Leanza
Re6799-136 (J30445), venter of *Mitonia* sp. near peristome, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 11a–b
Pseudoneoptychites andinus Leanza
Re6799-59 (J30444), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 12a–b
Pseudoneoptychites andinus Leanza
Re6799-70 (J30446), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 13a–d
Pseudoneoptychites difficilis Leanza
a–b Re6954, c–d Re6955, juvenile stages, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 86

Fig. 14a–b
Pseudoneoptychites sp. indet.
Re6799-71 (J30337), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 87

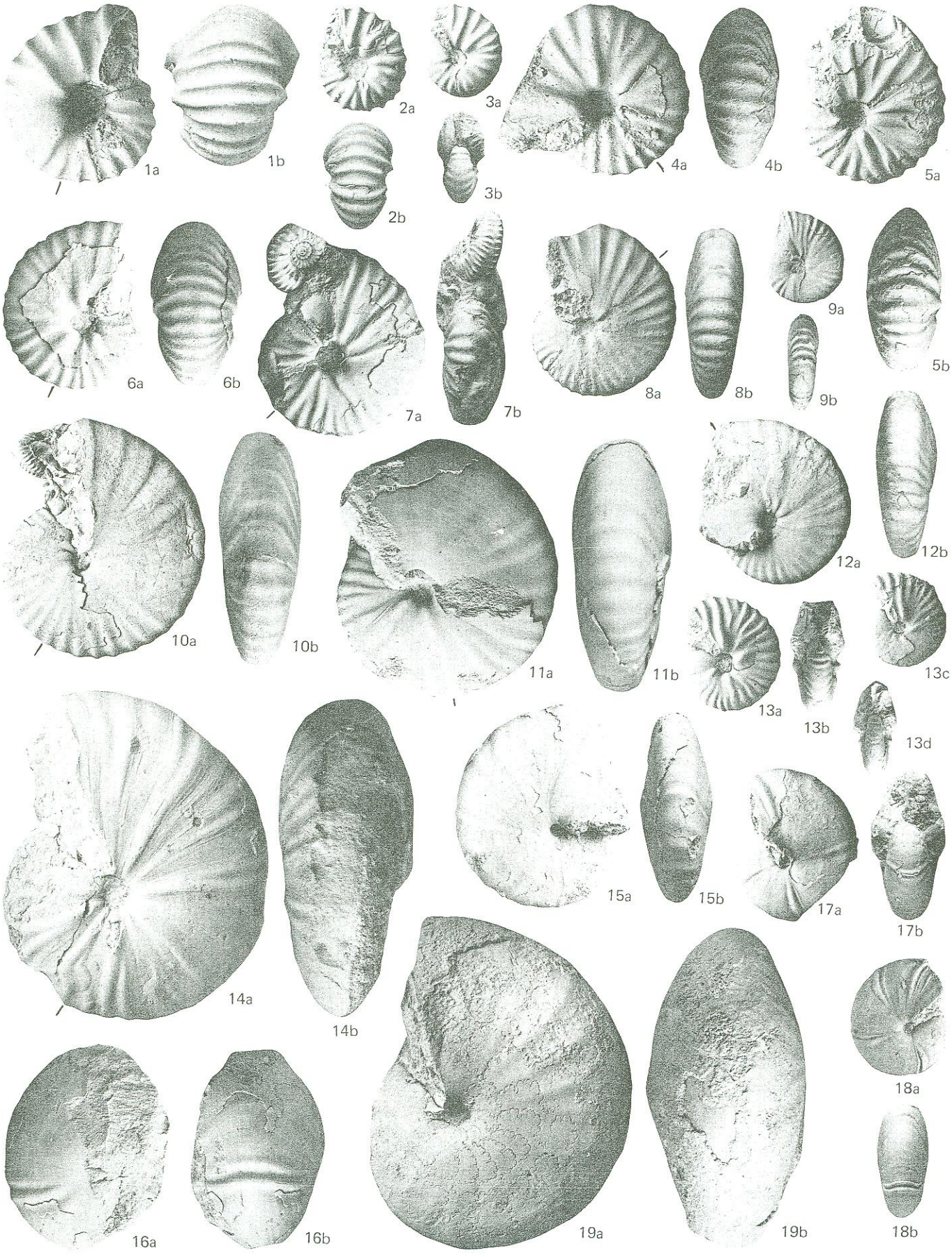
Fig. 15a–b
Neoptychites transitorius n. sp., paratype 1
Re6862 (J30452), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 87

Fig. 16a–b
Neoptychites aff. *crassus* Solger
JG457-1, Chejendé Member, along road to Alto de Bolivia, southeast from Santa Rosa, lower Turonian, 1×. p. 88

Fig. 17a–b
Neoptychites aff. *telingaeformis discrepans* Solger
JG458, Chejendé Member, Santa Rosa, lower Turonian, 1×. p. 88

Fig. 18a–b
Neoptychites transitorius n. sp., paratype 3
JG532 (J30442), Chejendé Member, Santa Rosa, lower Turonian, 1×. p. 87

Fig. 19a–b
Neoptychites xetriformis Pervinquière
Re6799-79 (J30344), transition Chejendé–Timbetes Member, La Morita, uppermost lower Turonian, 1×. p. 88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18b
19a
19b

Plate 27

Lower Turonian, continued

Fig. 1a–b
Mammites nodosoides (Schlotheim)
MBJ28504, Chejendé Member, culmination of road Barbacoas–San Pedro, lower Turonian, 1×. p. 89

Fig. 2a–b
Mammites nodosoides (Schlotheim)
Re6836 (J30345), broader variety with irregularly sized umbilical bullae, type section Chejendé Member, Assemblage 2, Los Mamones, mid lower Turonian, 1×. p. 89

Fig. 3a–b
Mammites nodosoides (Schlotheim)
Re6799-84 (J30394), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 89

Fig. 4a–b
Mammites nodosoides (Schlotheim)
Re6841 (J30416), juvenile stage, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 89

Fig. 5a–b
Mammites nodosoides (Schlotheim)
Re6837 (J30331), umbilical bullae turned backwards, transition towards *Mammites spinosus*, type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 89

Fig. 6a–b
Mammites nodosoides (Schlotheim)
Re6867 (J30438), with strong and distant upper ventrolateral clavi, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 89

Fig. 7a–b
Mammites nodosoides (Schlotheim)
Re6838 (J30453), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 89

Fig. 8a–b
Mammites? nodosoides (Schlotheim)
Re6960 (J30458), well developed costation and narrow venter points towards *Benueites*, type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 90

Fig. 9a–b
Mammites nodosoides (Schlotheim)
Re6869 (J30455), single exaggerated umbilical spine suggests approach to *Mammites spinosus*, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 89

Fig. 10a–b
Mammites nodosoides (Schlotheim)
Re6844 (J30454), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 89

Fig. 11a–b
Mammites spinosus Basse
Re6959 (J30323), adult specimen, type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 90


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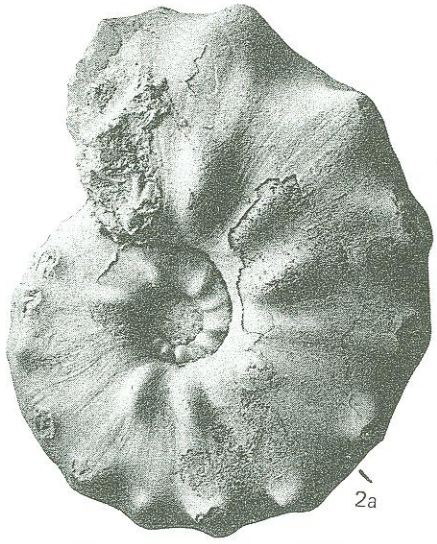
1b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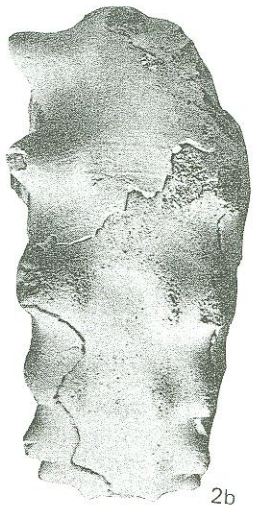
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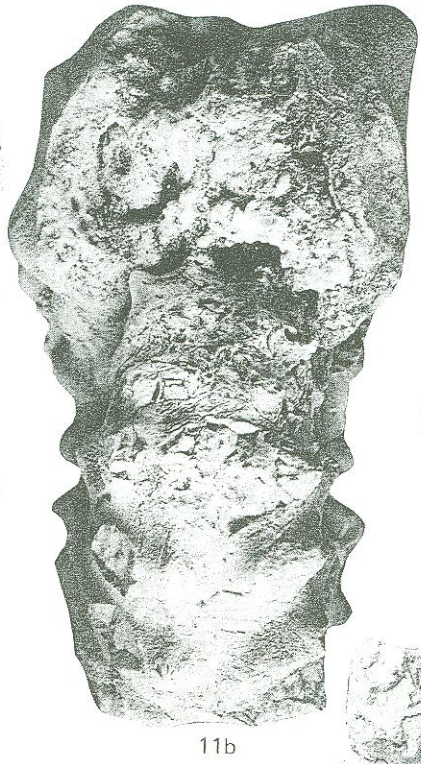
11a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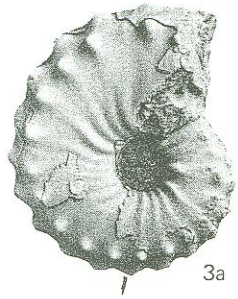
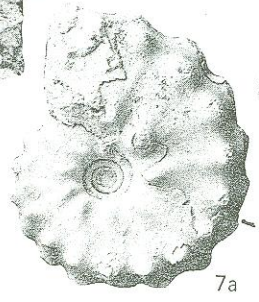
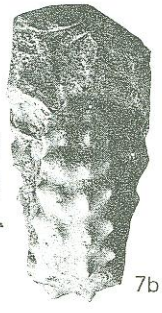

3a


3b


4a


4b


7a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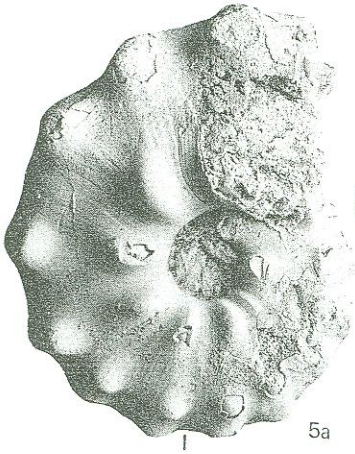
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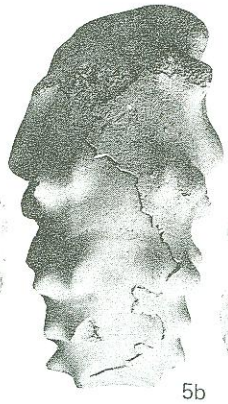
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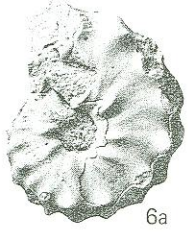
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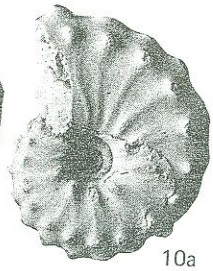
10a


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Plate 28

Lower Turonian, continued

Fig. 1a–b
Mammites spinosus Basse
MBJ28505, Chejendé Member, Barbacoas syncline, culmination of road Barbacoas–San Pedro, lower Turonian, 1×. p. 90

Fig. 2a–b
Mammites spinosus Basse
MBJ28506, pathologic, one row of upper ventrolateral clavi is missing, Chejendé Member, Barbacoas syncline, culmination of road Barbacoas–San Pedro, lower Turonian, 1×. p. 90

Fig. 3a–b
Mammites spinosus Basse
Re6835 (J30385), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 90

Fig. 4a–b
Mammites spinosus Basse
Re6868 (J30389), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 90

Fig. 5a–b
Mammites spinosus Basse
Re6866 (J30388), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 90

Fig. 6a–b
Mammites nodosoides aff. *wingi* Morrow
Re6799-87 (J30343), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 90

Fig. 7a–b
Benueites trinidadensis n. sp., paratype 9
Re6871 (J30395), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 91

Fig. 8a–b
Benueites trinidadensis n. sp., paratype 2
Re6849 (J30412), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 91

Fig. 9a–b
Benueites trinidadensis n. sp., paratype 3
Re6873 (J30410), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 91

Fig. 10a–b
Benueites trinidadensis n. sp., paratype 4
Re6908 (J30390), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 91

Fig. 11a–b
Benueites trinidadensis n. sp., paratype 5
Re6870 (J30387), passage to *Benueites reymenti*, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 91

Fig. 12a–b
Benueites trinidadensis n. sp., paratype 6
Re6872 (J30411), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 91

Fig. 13a–b
Benueites trinidadensis n. sp., paratype 7
Re6885 (J30386), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 91

Fig. 14a–b
Benueites trinidadensis n. sp., paratype 8
Re6874 (J30425), juvenile stage, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 91

Fig. 15a–b
Benueites reymenti Collignon
Re6887 (J30420), pathologic, one row of upper ventrolateral clavi missing, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 92

Fig. 16a–b
Benueites reymenti Collignon
Re6878 (J30396), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 92

Fig. 17a–b
Benueites reymenti Collignon
Re6877 (J30403), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 92

Fig. 18a–b
Benueites reymenti Collignon
Re6876 (J30409), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 92

Fig. 19a–b
Benueites reymenti Collignon
Re6896 (J30413), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 92

Fig. 20a–b
Benueites reymenti Collignon
Re6886 (J30414), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 92

Fig. 21a–b
Benueites reymenti Collignon
Re6875 (J30415), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 92

Fig. 22a–b
Benueites mosquerae (Karsten)
JG267 (J29134), Chejendé Member, section in Quebrada San Pedro, near Humocaro Bajo, Estado Lara, upper lower Turonian, 1×. p. 92

Fig. 23a–b
Benueites aff. *mosquerae* (Karsten)
Re6845 (J30397), flat variety, type section Chejendé Member, La Paragua, Assemblage 3, upper lower Turonian, 1×. p. 92

Fig. 24a–b
Benueites aff. *mosquerae* (Karsten)
JG259 (J30404), Chejendé Member, section in Quebrada San Pedro near Humocaro Bajo, Estado Lara, upper lower Turonian, 1×. p. 92

Fig. 25a–b
Benueites benueensis Reyment
Re6847 (J30429), type section Chejendé Member, La Paragua, Assemblage 3, upper lower Turonian, 1×. p. 93

Fig. 26a–b
Mammites spinosus Basse
Re6921 (J30426), juvenile, type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 90


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25b

Plate 29

Lower Turonian, continued

Fig. 1a–b
Benueites trinidadense Renz, paratype 1
MBJ28451, San Fernando Formation, boulder in Plaisance Conglomerate, Central Range of Trinidad, 2×. p. 91

Fig. 2a–b
Benueites benueensis Reyment
JG261-2 (J30407), Chejendé Member in Quebrada San Pedro, Humucaro Bajo, upper lower Turonian, 2×. p. 93

Fig. 3a–b
? *Watinoceras* aff. *coloradoense* (Henderson)
Re6888 (J30393), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 94

Fig. 4a–b
? *Watinoceras* aff. *coloradoense* (Henderson)
VK1283B-2 (J29136), juvenile *Hoplitoides* near peristome, from allochthonous boulder in Guárico flysch north of Ortiz, Los Robles de Ortiz, lower Turonian, 1×. p. 94

Fig. 5a–b
Watinoceras venezolanum n. sp., holotype
Re6958 (J30464), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 94

Fig. 6a–b
Watinoceras venezolanum n. sp., paratype 1
Re6879 (J30489), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 94

Fig. 7a–b
Watinoceras reesidei Warren
Re6825-1 (J30576), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 93

Fig. 8a–b
Watinoceras reesidei Warren
Re6825-2, type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 93

Fig. 9a–b
Watinoceras aff. *reesidei* Warren
Re6826, Chejendé Member, middle part, syncline of Barbacoas, La Aguada, mid lower Turonian, 1×. p. 94

Fig. 10a–b
Mitonia evoluta n. sp., holotype
Re6865 (J30417), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 96

Fig. 11a–b
Mitonia venezolana Renz and Alvarez
Re6799-61 (J30398), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 95

Fig. 12a–b
Mitonia venezolana Renz and Alvarez
Re6799-124 (J30408), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 95

Fig. 13a–b
Mitonia venezolana Renz and Alvarez
Re6799-60 (J30435), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 95

Fig. 14a–b
Mitonia sp. indet.
Re6892, type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 96

Fig. 15a–b
Mitonia venezolana Renz and Alvarez
Re6799-125 (J30401), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 95

Fig. 16a–b
Mitonia gracilis Renz and Alvarez
Re6799-85, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 96

Fig. 17a–b
Mitonia gracilis Renz and Alvarez
Re6799-82 (J30422), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 96

Fig. 18a–b
Mitonia constricta n. sp., holotype
Re6799-105 (J30423), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 96

Fig. 19a–b
Kamerunoceras ("Schindewolfites") ganuzai (Wiedmann)
Re6830, type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 98

Fig. 20a–b
Kamerunoceras ("Schindewolfites") andinum n. sp., holotype
Re6904 (J30463), type section Chejendé Member, Los Mamones, Assemblage 2, together with *Fagesia* aff. *haarmanni*, mid lower Turonian, 1×. p. 98

Fig. 21a–b
Mitonia gracilis Renz and Alvarez
Re6917 (J30433), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 96

Fig. 22a–b
Mitonia venezolana Renz and Alvarez
Re6918 (J30428), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 95

Fig. 23
Mitonia venezolana Renz and Alvarez
Re6920, surface of last septum, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 95


1a
1b
2a
2b
3a
3b
4a
4b
5a
5b
6a
6b
7a
7b
20a
20b
8a
8b
9a
9b
10a
10b
21a
21b
22a
22b
23
11a
11b
12a
12b
13a
13b
14a
14b
15a
15b
16a
16b
17a
17b
18a
18b
19a
19b

Plate 30

Lower Turonian, continued

Fig. 1a–b
Pseudaspidoceras armatum (Pervinquière)
Re6951 (J30462), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 97

Fig. 2a–b
Pseudaspidoceras armatum (Pervinquière)
Re6891, juvenile, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 97

Fig. 3a–b
Pseudaspidoceras armatum (Pervinquière)
JG457-2 (J30488), Chejendé Member, region of Santa Rosita, Chejendé syncline, lower Turonian, 1×. p. 97

Fig. 4a–c
Pseudaspidoceras armatum (Pervinquière)
Re6850 (J30487), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 97

Fig. 5
Pseudaspidoceras armatum (Pervinquière)
Re6853 (J30485), upper ventrolateral spine, end of body chamber, on left side small *Pseudoneoptychites*, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 97

Fig. 6a–b
Hoplitoides mirabilis Pervinquière
Re6854 (J30328), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 99

Fig. 7a–b
Hoplitoides mirabilis Pervinquière
Re6950 (J30369), juvenile, type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 99

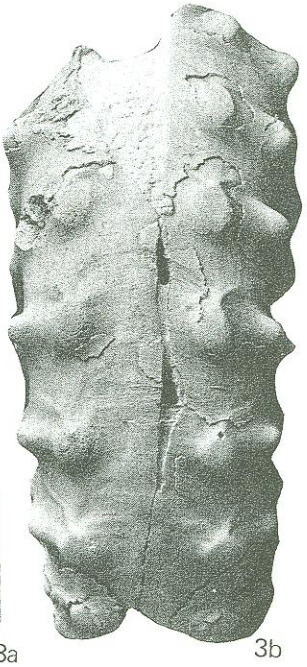
Fig. 8a–b
Hoplitoides wohltmanni v. Koenen
Re6922 (J30340), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 100

Fig. 9a–b
Pseudaspidoceras sp.
Re6938 (J30479), variety with closer costation, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 97


1a


1b


3a

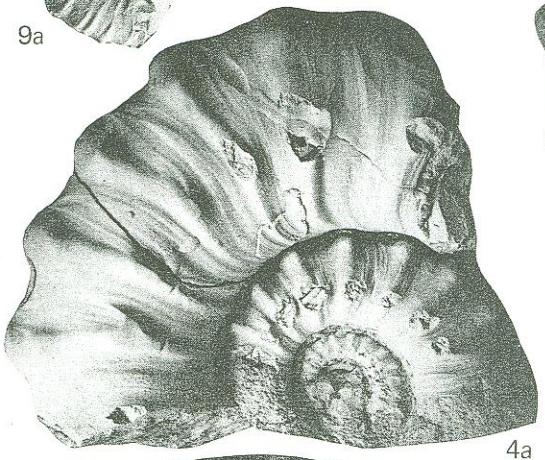

3b

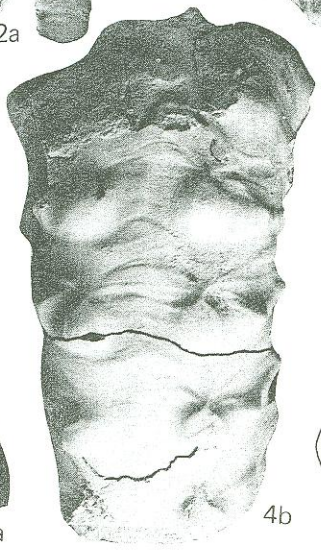

9a


9b


2a


2b


4a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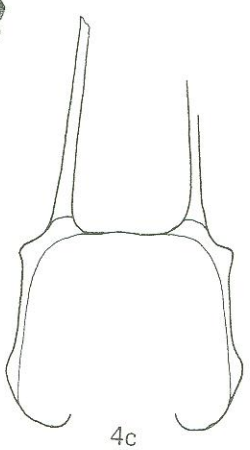
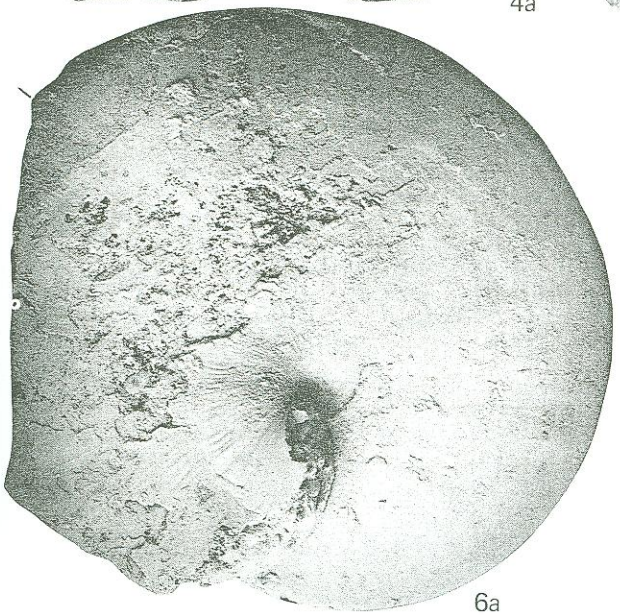
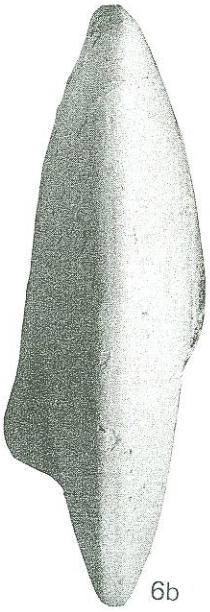

4c


5


6a


6b


7a

7b


8a


8b

Plate 31

Lower Turonian, continued

Fig. 1a–b
Hoplitoides aff. *wohltmanni* v. Koenen
MBJ28522, Chejendé Member, culmination of road Barbacoas–San Pedro, lower Turonian, 1×. p. 100

Fig. 2a–b
Hoplitoides aff. *wohltmanni* v. Koenen
VK1283B-1 (J30574), allochthonous boulder in Guárico flysch south of Ortiz, Los Robles de Ortiz, Estado Guárico, lower Turonian, 1×. See *Benueites reymenti* Collignon, VK 1283B-d, from opposite side of specimen. Text fig. 70, fig. e. p. 100

Fig. 3a–b
Hoplitoides munieri Pervinquière
Re6851 (J30341), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 100

Fig. 4a–b
Hoplitoides munieri Pervinquière
MBJ28524, Chejendé Member, culmination of road Barbacoas–San Pedro, lower Turonian, 1×. p. 100

Fig. 5a–b
Hoplitoides cf. *munieri* Pervinquière
Re6852 (J30368), type section Chejendé Member, La Morita, Assemblage 1, lower lower Turonian, 1×. p. 100

Fig. 6a–b
Hoplitoides munieri Pervinquière
Re6884 (J30348), type section Chejendé Member, La Morita, Assemblage 2a, upper lower Turonian, 1×. p. 100

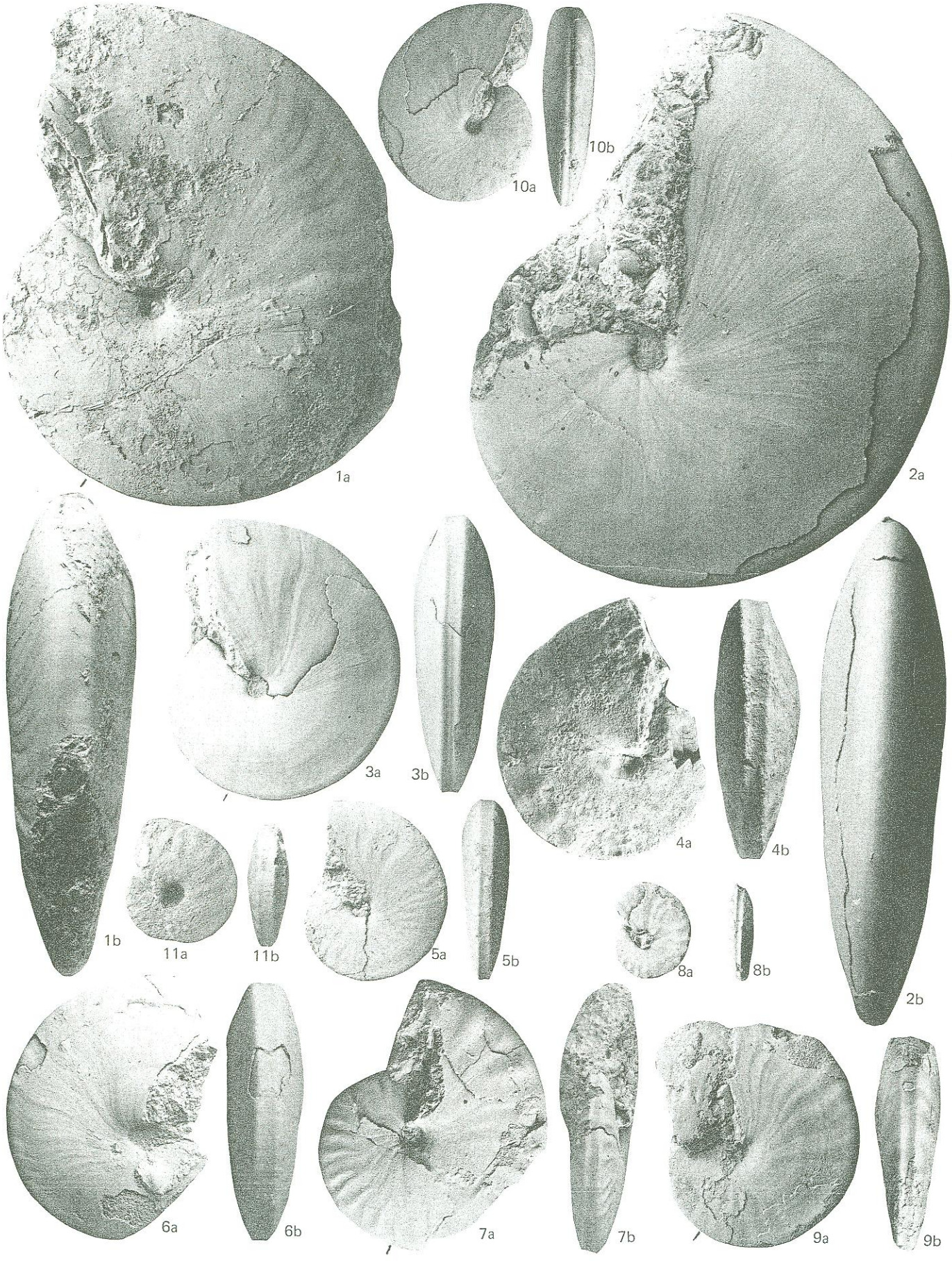
Fig. 7a–b
Hoplitoides aff. *mirabilis* Pervinquière
Re6882 (J30346), with weak folds, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 99

Fig. 8a–b
Hoplitoides aff. *mirabilis* Pervinquière
Re6883 (J30379), type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 99

Fig. 9a–b
Hoplitoides aff. *mirabilis* Pervinquière
Re6863 (J30363), with weak folds, type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 99

Fig. 10a–b
Hoplitoides mirabilis Pervinquière
Re6923 (J30364), variety with deeply grooved venter, type section Chejendé Member, La Paragua, Assemblage 2a, upper lower Turonian, 1×. p. 99

Fig. 11a–b
Hoplitoides munieri Pervinquière
Re6935 (J30482), type section Chejendé Member, Los Mamones, Assemblage 2, mid lower Turonian, 1×. p. 100


1a
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10b
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1b
3a
3b
4a
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11a
11b
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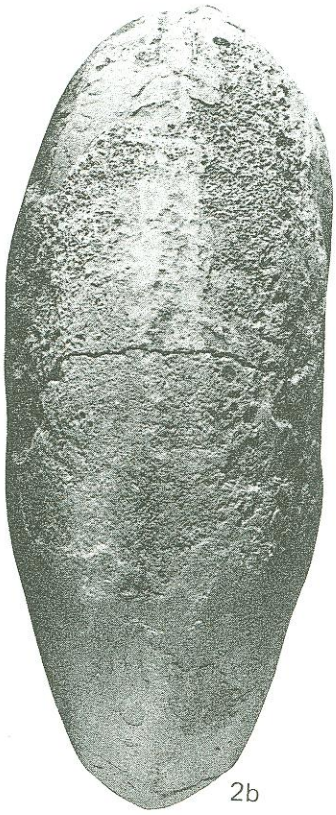
5b
8a
8b
6a
6b
7a
7b
9a
9b

Plate 32

Upper Turonian

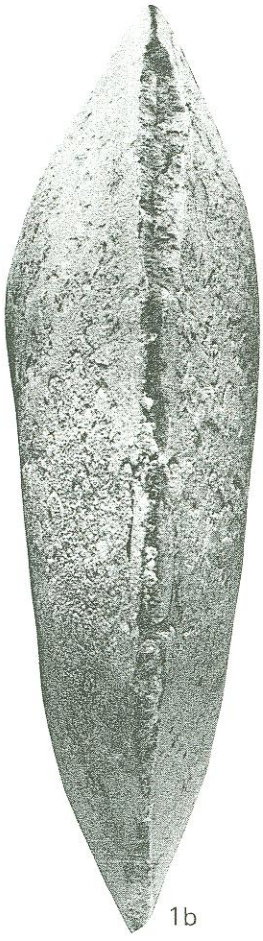
Fig. 1a–c
Coilopoceras stephani n. sp., holotype
MPI103-6 (J30459), Barquisimeto flysch basin, allochthonous mass of Cerro Grande southwest of village Humocaro Bajo, upper Turonian, ¾×. Coll. F. Stephan.
p. 103

Fig. 2a–b
Coilopoceras laraense n. sp., holotype
MPI105-4 (J30460), Barquisimeto flysch basin, allochthonous mass of Cerro Grande, southwest of Humocaro Bajo, upper Turonian, ¾×. Coll. F. Stephan. p. 103

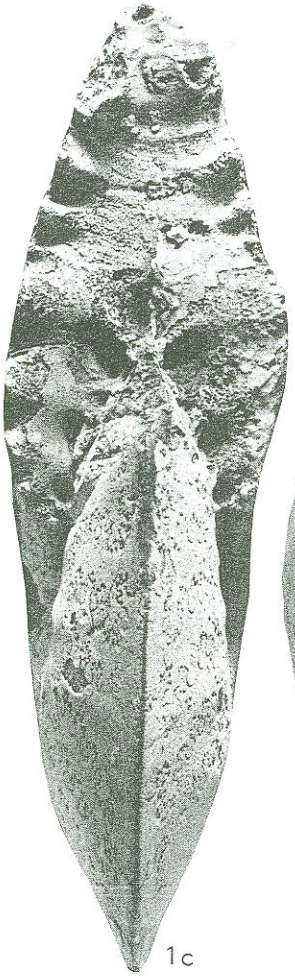


2b

1a



1b



1c

2a

Plate 33

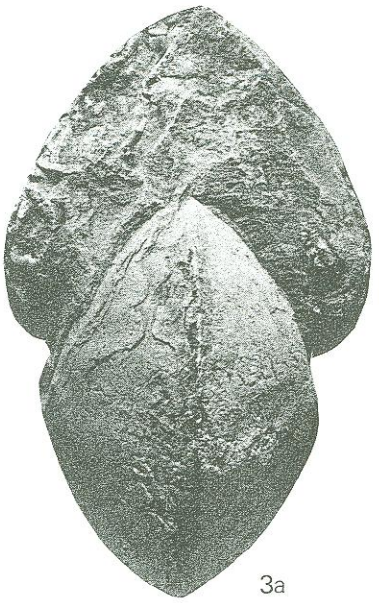
Upper Turonian, continued

Fig. 1
Coilopoceras aff. *newelli* Benavides-Cáceres
MBJ28806, Barquisimeto flysch basin, allochthonous slab near Puente Torres, old road Carora–Barquisimeto, upper Turonian, ¾×. p. 101

Fig. 2
Coilopoceras colleti Hyatt
MPI105-10 (J30461), Barquisimeto flysch basin, allochthonous slab of Cerro Grande, southwest of Humocaro Bajo, upper Turonian. 1×. Coll. F. Stephan. p. 102

Fig. 3a–b
Lenticeras andii (Gabb)
MBJ28525, La Luna Formation, south flank of Mucujun Uplift, Quebrada Chiriría (affluent of Río Lobaterita), State of Táchira, upper Turonian to lower Coniacian, 1×. p. 110

1



3a

2

3b

Plate 34

Upper Turonian, continued

Fig. 1a–b
Hourcquia krausei n. sp., holotype
Re6893 (J30466), type section Timbetes Member, basal part, together with large *Coilopoceras*, La Morita, upper Turonian, ½×. p. 104

Fig. 2a–b
Hourcquia moralesi n. sp., holotype
Re6806 (J30335), Timbetes Member, base of escarpment below caserío La Ceiba, west of Chejendé, upper Turonian, 1×. Coll. M. Morales. p. 104

Coniacian

Fig. 3
Baculites inornatus Meek
Re6819-2, type section Timbetes Member, lower part, La Paragua, lower Coniacian, 1×. p. 105

Fig. 4
Baculites inornatus Meek
Re6911, aperture partly preserved, type section Timbetes Member, lower part, La Paragua, lower Coniacian, 1×. p. 105

Fig. 5a–b
Baculites inornatus Meek
Re6819-3 (J30383), type section Timbetes Member, lower part, La Paragua, lower Coniacian, 1×. p. 105

Fig. 6
Baculites inornatus Meek
Re6819-1 (J30382), type section Timbetes Member, lower part, La Paragua, lower Coniacian, 1×. p. 105

Fig. 7a–b
Prionocycloceras sp. indet.
Re6926 (J30366), Timbetes Member, lower part, below caserío La Ceiba, lower Coniacian, 1×. p. 108