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## Two new ammonite genera from the Lower Turonian of Venezuela

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### ABSTRACT

Two new ammonite genera *Mitonia* and *Nannovascoceras* are described. They are referred to the families Acanthoceratidae and Vascoceratidae. Both derive from the La Luna Formation (Cenomanian-Coniacian), exposed in the Chejendé syncline, between the villages Chejendé and Mitón in the State of Trujillo. The new genera form part of a rich assemblage of Lower Turonian ammonites.

### ZUSAMMENFASSUNG

Zwei neue Ammonitengattungen, *Mitonia* und *Nannovascoceras*, werden beschrieben. Sie werden den Familien Acanthoceratidae und Vascoceratidae zugeordnet. Beide stammen aus der La Luna-Formation (Cenomanian-Coniacian), die in der Synklinale von Chejendé zwischen den Dörfern Chejendé und Mitón im Staate Trujillo aufgeschlossen ist. Die neuen Gattungen wurden zusammen mit einer reichhaltigen Ammonitenfauna aus dem Unter-Turonian gefunden.

### Introduction

During March 1979 two new ammonite genera belonging to the family Acanthoceratidae and the family Vascoceratidae were collected by the authors. Both derive from the La Luna Formation in the State of Trujillo. In the northeastern Andes of Venezuela the formation is subdivided into three members which are from bottom to top: Aguada Member, upper most Albian and Cenomanian; Chejendé Member, Lower and Upper Turonian; Timbete Member, Coniacian (Léxico Estratigráfico de Venezuela 1970).

The Chejendé Member in the region investigated begins with a conspicuous zone of black shale which follows concordantly over the Aguada Member composed of resistant limestone layers with abundant elliptical concretions forming escarpments. The shale interval is interpreted as a wedge-like northeastern extension of the Seboruco shale Formation exposed in Táchira and Mérida. These shales are followed by alternating black, light grey to reddish weathered marls, intercalated by lenticular black limestone layers containing abundant, partly ferruginous limestone concretions of variable size.

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Within the Chejendé Member three assemblages of ammonites have been recognized. The new genera *Mitonia* and *Nannovascoceras* form part of the oldest assemblage 1. The ammonite rich lense has been found on the eastern flank of the Chejendé syncline within the region of the type section of the Chejendé Member, situated between the villages Chejendé and Mitón. For the exact location of the type section we refer to RENZ (1959, Fig. 15, 16).

The ammonite assemblage 1 derives from irregularly shaped concretions occurring about 2 m above the contact with the black shales. About 15 m higher in the

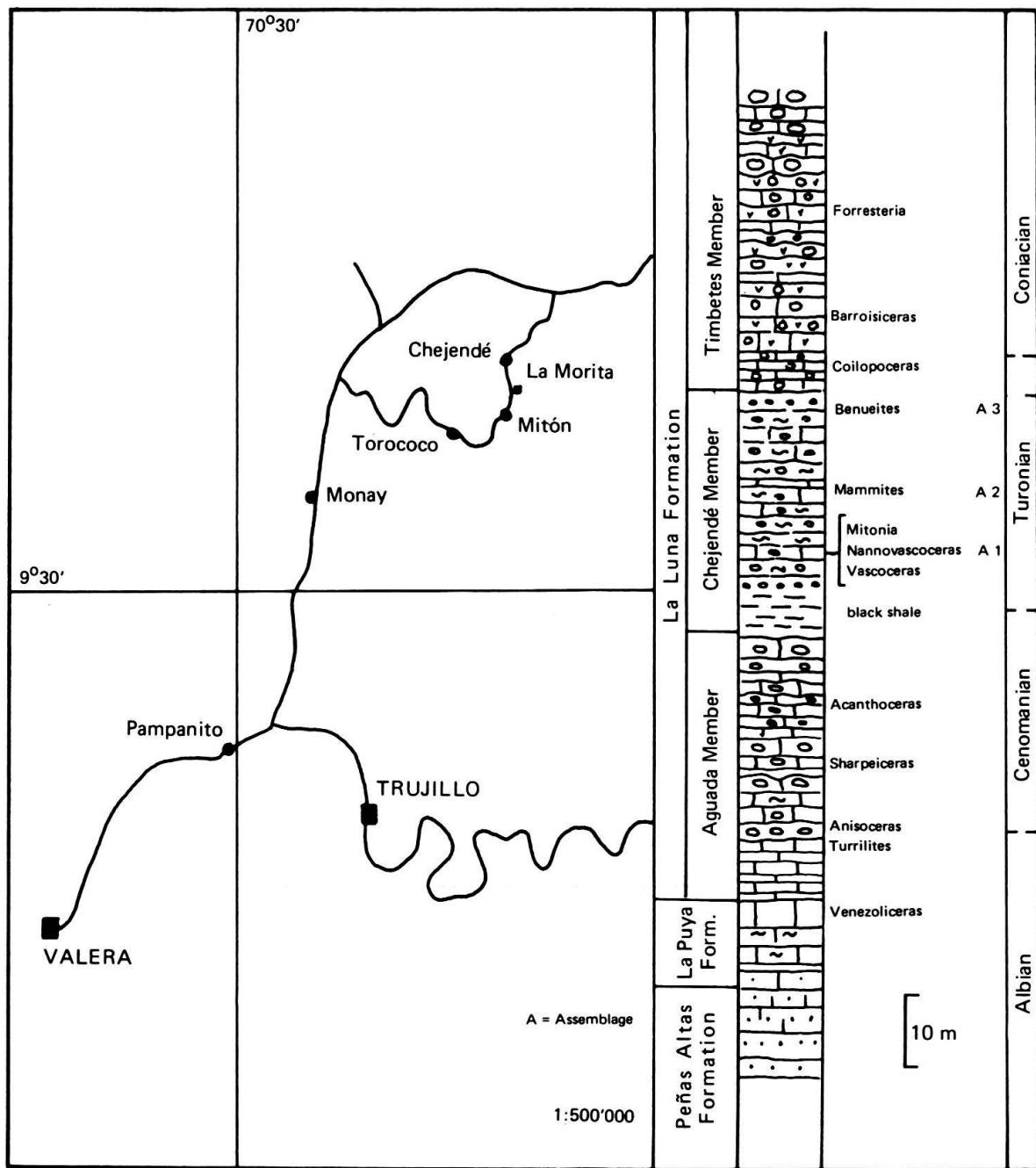


Fig. 1. Stratigraphic section of the Upper Cretaceous (Albian-Cenomanian) in the Chejendé Syncline, Estado Trujillo.

section occurs assemblage 2, which is composed predominantly of *Mammites nodosoides* (SCHLOTHEIM), *Nannovascoceras*, *Hoplitoides* and occasionally *Vascoceras*. Near the top of the Chejendé Member assemblage 3 characterized mainly by *Benueites benuensis* REYMENT, *Benueites reymendi* COLLIGNON and *Benueites mosquerae* (KARSTEN) have been recovered. Above follows the Upper Turonian, characterized by large *Coilopoceras* and the interesting genus *Hourcquia*, sofar only known from the Upper Turonian of Madagascar (COLLIGNON 1965, p. 77).

Assemblage 1 is composed of eight genera which are: *Fagesia* (3 species), *Vascoceras* (6 species), *Paramammites* (2 species), *Neptychites* (1 species), *Greenhornoceras* (5 species), *Mammites* (2 species), *Pseudaspidoceras* (2 species; *P. armatum* with exceptionally long spines ventrolaterally), *Hoplitoides* (2 species).

### Systematic descriptions

Family *Acanthoceratidae* HYATT 1900

Subfamily *Mammitinae* HYATT 1900

Subfamily attribution remains uncertain. Based on the peculiar simple suture line a separate subfamily *Mitoniinae* might be considered for those dwarfed ammonites.

Genus *Mitonia* n. gen.

*Type species.* – *Mitonia venezolana* n. sp.

*Derivatio nominis.* – After village Mitón (Estado Trujillo).

*Diagnosis of genus.* – Dwarf forms not exceeding 32 mm diameter. Body chamber three quarters of a whorl. Umbilicus 40 to 50% of diameter. Shallow broad ribs, getting irregular and indistinct toward body chamber, provided with bullate elevations below mid-flank and on ventrolateral shoulder. Venter on costal section slightly concave.

*Mitonia venezolana* n. sp.

Fig. 2 a-b, w

*Holotype.* – Re 6799-81 (Fig. 2 a-b), deposited in Maraven S.A., Caracas.

*Cast of holotype.* – Natural History Museum Basel, J 28 769.

*Locus typicus.* – Type section of Chejendé Member near houses La Morita along road Chejendé-Mitón.

*Age.* – Lower part of Chejendé Member, assemblage 1, lower Lower Turonian (Fig. 1).

*Description of holotype.* – Excellently preserved specimen with test preserved on phragmocone and without it on body chamber filled with sediment. Phragmocone remained void and later was filled by coarse grained calcite cement. Latest suture line exposed. Costal whorl section depressed, trapezoidal, greatest breadth on dorsal

bullae. Intercostal section about circular. Venter moderately concave between ventrolateral bullae. Sides rounded, sloping evenly towards umbilical seam, without forming pronounced edge. Umbilicus 43% of diameter. Ornament appears early in ontogeny. Ribs broad and flat, getting indistinct towards body chamber. 14 ribs on outer whorl arise above umbilical seam, and elevate in radially elongated bullae slightly below mid-flank. From 7 bullae indistinct branching occurs such that 20 ribs reach venter where all raise into bullate tubercles. Over venter ribs join straight ventrolateral bullae, following growth lines. Along siphonal line ribs distinctly subdued. External suture (Fig. 2w) simplified. We still endeavour to reveal the ontogenetic development of the suture, but recrystallization hampers the work.

*Measurements of holotype.* – Dm: 28 mm, Wh: 10 (0.36), Ww: 14 (0.50), U: 11 (0.43).

*Remarks.* – The species occurs abundantly, about 30 specimens could be isolated from the hard limestone.

*Mitonia gracilis* n.sp.

Fig. 2 c-d

*Holotype.* – Re 6799-67 (Fig. 2 c-d) deposited in Maraven S.A., Caracas.

*Cast of holotype.* – Natural History Museum Basel, J28770.

*Locus typicus.* – Houses La Morita along Chejendé-Mitón road.

*Age.* – Lower part of Chejendé Member, assemblage 1, lower Lower Turonian.

*Description of holotype.* – Dwarfed, still smaller than *M. venezolana*. Test continuously preserved on phragmocone, partly missing on body chamber. Whorl section slightly depressed, trapezoidal with rounded edges, widest on dorsal bullae. Sides convex, rounding into steep sloping umbilical wall and venter. Ribs begin from 22 elongated bullae on umbilical margin, then weaken near mid-flank and elevate again into equally elongated ventrolateral bullae, from where they project faintly forward towards venter crossing it about straight between opposite bullae. Along median line ribs markedly lower. Indistinct branching occurs from umbilical bullae, such that 32 ribs reach venter. Towards end of body chamber bullae get less conspicuous and lowering of ribs near mid-flank less pronounced. Suture not visible.

*Measurements of holotype.* – Dm: 18.5 mm, Wh: 7 (0.38), Ww: 8 (0.43), U: 8.5 (0.46).

*Remarks.* – The species is considerably less abundant; only two specimen are present.

Family *Vascoceratidae* SPATH 1925

Vascoceratidae are abundantly represented in the Turonian of the Venezuelan Andes and concentrate in the States of Trujillo and Lara. Among the material collected in March 1979 a new genus composed of highly variable dwarfed forms has been obtained by the authors. It is referred to as *Nannovascoceras*. The three species here described are connected by a wide range of intermediate varieties not named.

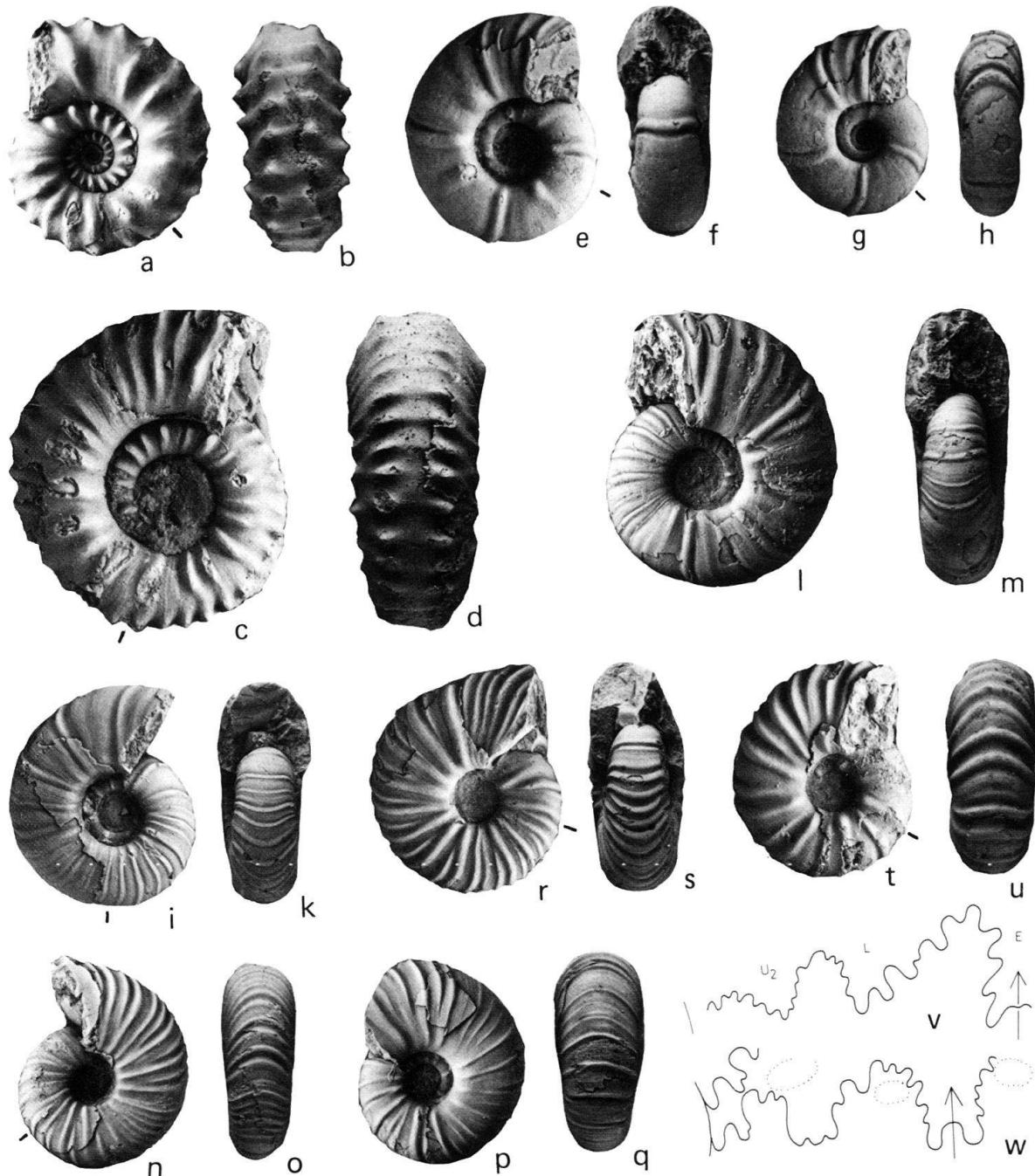


Fig. 2. All the specimens were collected near the houses La Morita between Chejendé and Mitón, State of Trujillo. La Morita lies in the area of the type section of the Chejendé Member of the La Luna Formation. Where visible the end of the phragmocone is indicated by a line. Artificial casts of the figured specimens are deposited at the Natural History Museum Basel (NMB).

a, b = *Mitonia venezolana* n.sp., holotype, Re6799-81,  $\times 1$ . Cast: NMBJ28769. c, d = *Mitonia gracilis* n.sp., holotype, Re6799-67,  $\times 2$ . Cast: NMBJ28770. e, f = *Nannovascoceras constrictum* n.sp., holotype, Re6799-50,  $\times 1$ . Cast: NMBJ28771. g, h = *Nannovascoceras constrictum* n.sp., paratype, Re6799-95,  $\times 1$ . Cast: NMBJ28772. i, k = *Nannovascoceras intermedium* n.sp., holotype, Re6799-49,  $\times 1$ . Cast: NMBJ28773. l, m = *Nannovascoceras intermedium* n.sp., paratype, Re6799-93,  $\times 1$ . Cast: NMBJ28774. n, o = *Nannovascoceras intermedium* n.sp., paratype, Re6799-97,  $\times 1$ . Cast: NMBJ28775. p, q = *Nannovascoceras intermedium* n.sp., paratype, Re6799-56,  $\times 1$ . Cast: NMBJ28776. r, s = *Nannovascoceras costatum* n.sp., holotype, Re6799-51,  $\times 1$ . Cast: NMBJ28777. t, u = *Nannovascoceras costatum* n.sp., paratype, Re6799-94,  $\times 1$ . Cast: NMBJ28778. v = External suture of *Nannovascoceras costatum* n.sp., Re6799-83,  $\times 5$ . Cast: NMBJ28779. w = External suture of *Mitonia venezolana* n.sp., holotype,  $\times 5$ .

Genus *Nannovascoceras* n. gen.

Type species. – *Nannovascoceras intermedium* n. sp.

*Diagnosis.* – Small sized ammonites, average diameter 28 mm, largest specimen obtained 34 mm. Early stages of growth constricted, lateron costation between constrictions with enlarged ribs behind and in front begins. Whorl section broad-oval to rounded, slightly compressed. Constrictions and ribs project forward over venter. Suture vascoceratid with shallow elongated lateral lobe.

Three species can be distinguished within the assemblage. 1. Constricted without intermediate ribs. 2. Constricted with intermediate ribs. 3. Constrictions superimposed by costation.

An alternative to the taxonomic interpretation here proposed is to establish a single new species (*N. intermedium*) and assign variety status to the remaining forms. KENNEDY & HANCOCK (1970) applied such a model for the population of *Acantoceras rothomagense* from Rouen in northern France.

*Nannovascoceras constrictum* n. sp.

Fig. 2 e-h

*Holotype.* – Re 6799-50 (Fig. 2 e-f) deposited in Maraven S.A., Caracas.

*Cast of holotype.* – Natural History Museum Basel, J 28 771.

*Locus typicus.* – Houses La Morita along type section of Chejendé Member of La Luna Formation. Mitón-Chejendé road.

*Derivatio nominis.* – Ornament restricted to constrictions.

*Age.* – Lower part of Chejendé Member, assemblage 1, lower Lower Turonian.

*Description of holotype.* – Test nearly continuously preserved. Body chamber three quarters of a whorl, filled with sediment, phragmocone with calcite cement. Peristome poorly indicated by a last wider, collared constriction. Whorl section markedly wider than high. Sides slightly convex, flattened, rounding into broadly arched venter without distinct shoulder. Umbilicus 36% of diameter. Umbilical wall low and steep. Ornament restricted to five periodic constrictions, preceded by a strong rounded rib curving slightly forward over venter. On umbilical margin constrictions elevated into blunt nodes. In between constrictions four such nodes occur but do not develop further into constrictions. Suture not exposed.

*Measurements of holotype.* – Dm: 28 mm, Wh: 10 (0.36), Ww: 11.5 (0.41), U: 10 (0.36).

*Nannovascoceras intermedium* n. sp.

Fig. 2 i-q

*Holotype.* – Re 6799-49 (Fig. 2 i-k) deposited in Maraven S.A., Caracas.

*Cast of holotype.* – Natural History Museum Basel, J 28 773.

*Locus typicus.* – Same as *N. constrictum*.

*Derivatio nominis.* – Intermediate between *N. constrictum* with only constrictions and *N. costatum* which is predominantly ribbed.

Age. - Lower part of Chejendé Member, assemblage 1, lower Lower Turonian.

*Description.* - Test retained on phragmocone, on body chamber partly preserved. Whorl section slightly wider than high. Sides flatly convex, grading into broadly rounded venter, widest below mid-flank. Umbilicus 30% of diameter, umbilical wall low and steep. Ornament consists of about nine constrictions at irregular intervals. They are preceded by a strong rib. On phragmocone constrictions rather indistinctly differentiated from ribs between constrictions. Over venter ribs and constrictions are projected forward. Suture not preserved.

*Measurements of holotype.* - Dm: 27 mm, Wh: 10 (0.37), Ww: 11.2 (0.41), U: 8 (0.30).

*Nannovascoceras costatum* n. sp.

Fig. 2 r-v

*Holotype.* - Re 6799-51 (Fig. 2 r-s), deposited in Maraven S.A., Caracas.

*Cast of holotype.* - Natural History Museum Basel, J 28 777.

*Locus typicus.* - Same as *N. constrictum*.

Age. - Lower part of Chejendé Member, assemblage 1, lower Lower Turonian.

*Description of holotype.* - Test retained on phragmocone, partly preserved on body chamber occupying three quarters of a whorl. Whorl section as wide as high. Flanks slightly flattened rounding into broad venter. Umbilical margin better pronounced on costal section, sides rounding into steep, low umbilical wall intercostally. Umbilicus 22% of diameter. On phragmocone costation is superimposed on constrictions which become visible on phragmocone. 13 strong primary ribs elevated into low bullae on umbilical margin arise on umbilical wall, then cross flanks straight, leaning slightly forward towards shoulder, crossing venter with a moderate forward projection. Incipient bifurcation occurs from primaries. Some secondary ribs end near mid-flank, others reach umbilical border. Suture not exposed.

*Measurements of holotype.* - Dm: 25 mm, Wh: 11 (0.44), Ww: 11 (0.44), U: 5.5 (0.22).

#### Acknowledgments

We thank Señor Cirilo Villalobos, supervisor of the laboratory of Maraven for having accompanied us during field work in the Chejendé region. Only with his help was it possible to assemble a useful paleontological collection for study at the Museum of Natural History Basel. After study the collection will be deposited with Maraven S.A., Caracas. The photographic work has been done by W. Suter in the Museum; we thank him for his collaboration.

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