Zeitschrift: Eclogae Geologicae Helvetiae

Band: 68 (1975)

Heft: 2

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DOI: https://doi.org/10.5169/seals-164397

Eclogae geol. Helv.	Vol. 68/2	Pages 457–460	2 Plates	Basle, July 1975

Two New Species of *Calpionellites* from the Valanginian of Mexico and Spain

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ABSTRACT

Two new species of *Calpionellites* are described.

Calpionellites coronata TREJO, n. sp., is reported from the Middle Valanginian – basal Hauterivian of Mexico. In Spain, France and the Swiss Prealps, this form is found to be restricted to the Lower–Middle Valanginian (F. A.).

Calpionellites caravacaensis ALLEMANN, n. sp., from the Lower–Middle Valanginian of Spain, France and the Swiss Prealps is regarded as reliable Valanginian guide form. It developes within a relatively short time interval from *C. coronata*.

Introduction

At the II. Planktonic Conference held 1970 in Rome, one of us (F. A.) had orally reported on two new species of *Calpionellites* from the Valanginian of southern Spain. The two species – described in this paper as *Calpionellites coronata* TREJO, n. sp., and *C. caravacaensis* ALLEMANN, n. sp. – are linked by a series of transitional forms. Working independantly, M. Trejo had discovered *C. coronata* n. sp. in Mexico. He presented the new species 1973 in Lyon at the "Colloque sur la limite Jurassique–Crétacé" where the identity of *C. coronata* with one of the above mentioned forms from the Spanish sections was recognized. It was then decided to publish the results in a joint article.

The samples in which the new species have so far been observed are from a borehole in Mexico whereas the European samples were collected from continuously exposed surface sections.

The thin section containing the holotype of *C. coronata* and thin sections with topotypes are deposited at the Instituto Mexicano de Petróleo, Subdirección de Tecnología de Exploración, Mexico.

The thin section with the holotype of *C. caravacaensis* and thin sections with topotypes are deposited at the University of Berne, Geologisch-Paläontologisches Institut, Switzerland.

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Paleontological description

Calpionellidae Bonet 1956

Calpionellites Colom 1948, emend. Allemann & Trejo 1975

Revised diagnosis: Lorica spheroid to cylindrical. The oral zone bears a simple or a complex inner collar, often separated from the main lorica by a fissure. Oral end of lorica and collar form a bifurcation. The collar may be short or elongate and in this case swings around and above the terminal part of the lorica. Wall end and collar show different optical orientation. Observed under crossed nicols, the extinction position differs by 45°.

Type species: *Calpionellites darderi* (Colom) (holotype not designated).

Calpionellites coronata Trejo, n. sp.
Pl. I, Fig. 1–6; Pl. II, Fig. 1–4

Holotype: Pl. I, Fig. 1.
Locus typicus: Well Tezonapa No. 1, core 9, 3500–3502 m depth, Estado de Veracruz, Mexico.

Diagnosis: Lorica acorn-goblet shaped with a short aboral appendix which is seen only in good axial sections (Pl. I, Fig. 1; Pl. II, Fig. 3–4). Wall rather robust and generally of invariable thickness. Near the oral end, the lorica bifurcates. As a whole, the inner prong of the bifurcation is shaped like a bull's horn. Its lower, blunt segment reaches the height of the lorica's end. The thin outer segment swings around and surpasses the end of the lorica. It forms a small crown above the oral end of the test.

Under crossed nicols, this species shows the same properties as *C. darderi*. In both instances, the extinction position of collar and lorica differs by about 45°. This is the main reason to assign the new species to the genus *Calpionellites*.

Dimensions: Length 87–99 microns in Mexican forms, 85–100 microns in European forms. Width 68–77 microns for Mexican, 65–68 microns for European forms.

Remarks: *C. coronata* appears shortly after the first *C. darderi* in the European sections. Subsequently, transitional forms appear which link *C. coronata* with the cylindrical *C. caravacaensis*.

Comparison: *C. coronata* may easily be mistaken for *C. darderi* due to the identical shape of their loricas. *C. coronata* differs only by its peculiar horn-like collar from *C. darderi*, which has a short, blunt collar. However, if badly preserved, the thin outer segment of the collar of *C. coronata* is hardly visible.

Associated forms: In Mexico: *C. darderi*, *L. hungarica*, *T. carpathica*, *T. longa*, *R. cadischiana*. In Europe: *C. darderi*, *C. caravacaensis*, *L. hungarica*, *T. carpathica*. *T. longa* and *T.* n. sp. are common. Worth mentioning is also a slight overlap with the last occurrence of *C. oblonga* and *R. dadayi*.

Stratigraphic range: Mexico: Middle Valanginian – basal Hauterivian (M.T.). Europe: Lower–Middle Valanginian: *Th. thurmanni* – *K. roubaudi* Zone in Spain, according to the ammonite determinations by J. Wiedmann, Tübingen [= *Th. pertransiens* Subzone – *K. roubaudi* Zone of LE HÉGARAT (1971) in SE-France].

Calpionellites caravacaensis ALLEMANN, n. sp.
Pl. II, Fig. 10–15

Derivatio nominis: Caravaca, town W of Murcia, S-Spain.
Holotype: Pl. II, Fig. 11.
Locus typicus: Rio Quipar, 3 km S of Cehegin, E of Caravaca.
Stratum typicum: Zone of *K. roubaudi*, Lower–Middle Valanginian, sample All. 71155-A.

Material: Thin sections from numerous samples of Valanginian sections in the Caravaca–Cehegin area in S-Spain, in SE-France and the Swiss Prealps.

Diagnosis: Lorica subcylindrical to cylindrical with short aboral appendix. Side-walls subparallel to parallel. Wall thickness varying from sample to sample but of almost equal thickness in a given specimen, with a slight thickening toward the oral end of the lorica. The horn-like collar bifurcates near the oral end and is usually separated from the lorica by a fissure. The lower, inner segment of the horn-like collar is thick, the thin outer segment is swinging around and above the oral end of the lorica. Under crossed nicols, *C. caravacaensis* shows the same features as *C. darderi* and *C. coronata*.

Dimensions: Length 125–140 microns, width 75 microns. Transitional forms from *C. coronata* to *C. caravacaensis* average 105–115 microns in length and 75 microns in width (Pl. II, Fig. 5–8), but rare forms with indermediate dimensions occur between these two groups.

Remarks: The extremely long form of *C. caravacaensis* with parallel, relatively thin side-walls is easy to separate from the short, thicker-walled *C. coronata* and *C. darderi* which both disclose convergent walls toward the aboral appendix.

The lorica's shape of *C. caravacaensis* is similar to that of *R. dadayi* KNAUER. However *R. dadayi* differs in having no S-shaped collar, but two separate collars, a shorter one placed inside and a longer one outside the terminal part of the lorica. In addition, *R. dadayi* exhibits a slight equatorial constriction (not deformation!) of the subparallel side-walls which is not seen in *C. caravacaensis*.

COLOM (1948) described a long, cylindrical form as *C. darderi* var. *major*. He emphasizes its constant dimensions of 115–130 microns in length and 65–70 microns in width. These dimensions and the shape correspond well to those of both *C. caravacaensis* and *R. dadayi*. The features of the collar, which only would make an assignment possible to either of these species, are not described in sufficient detail for *C. darderi* var. *major*. Therefore, it has to be dropped.

Occurrence: Subbetic zone of the Caravaca–Cehegin area (Prov. of Murcia) and Mallorca, Spain. – "Coupe d'Angles", N of Castellane, France. – Prealps S of Gruyères, Switzerland. – Mexico.

REFERENCES

ALLEMANN, F., WIEDMANN, J., & GRÜN, W. (1975): *The Berriasian of Caravaca (Prov. of Murcia) in the Subbetic Zone of Spain and its Importance for Defining this Stage and the Jurassic–Cretaceous Boundary.* – Colloque sur la limite Jurassique–Crétacé, Lyon–Neuchâtel, 1973 (in press).

BONET, F. (1956): *Zonificación microfaunistica de las calizas cretácicas del Este de Mexico.* – XX^{e} Congr. geol. int., Mexico.

COLOM, G. (1948): *Fossil Tintinnids: Loricated Infusoria of the Order of the Oligotricha.* – J. Paleont. *22.*

KNAUER, J. (1963): *Calpionellidea-rendszertani kerdesek (Problèmes systématiques des Calpionellidées).* – Magyar áll. földt. Intéz. évi Jel. *1961.*

LE HÉGARAT, G. (1971): *Le Berriasien du Sud-Est de la France.* – Doc. Lab. Géol. Fac. Sci. Lyon *43.*

LE HÉGARAT, G., & REMANE, J. (1968): *Tithonique supérieur et Berriasien de la bordure cévenole. Corrélation des Ammonites et des Calpionelles.* – Geobios *1.*

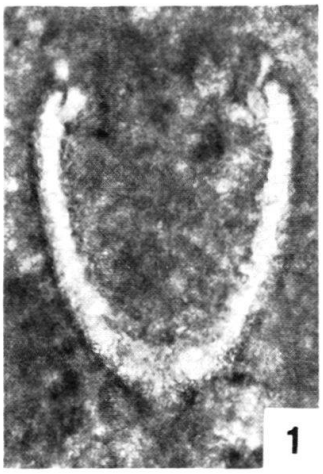
REMANE, J. (1971): *Les Calpionelles. Protozoaires planctoniques des mers mésogéennes de l'époque secondaire.* – Ann. Guébhard (Neuchâtel) *47.*

Plate I

All figures × 400

Fig. 1–6 *Calpionellites coronata* TREJO n. sp. – Well Tezonapa No. 1, core 9, Mexico.

1: Holotype, subaxial section.
3, 5: Subaxial sections.
2, 4, 6: Slightly oblique at aboral end.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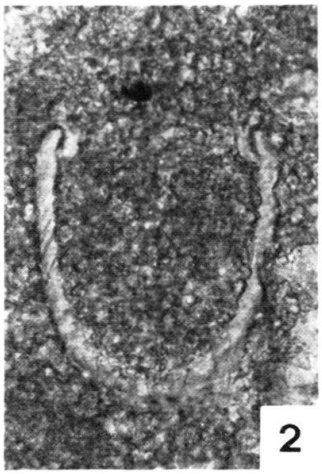
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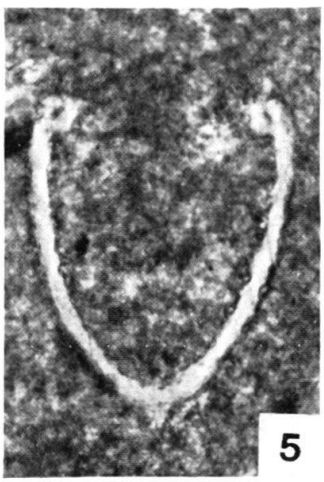
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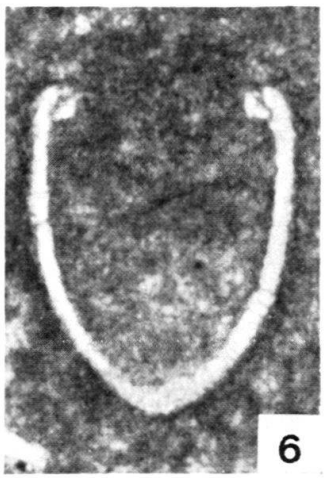
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Plate II

Fig. 1–4 *Calpionellites coronata* TREJO n. sp. – Sample All. 69152, S of Cehegin, Spain.

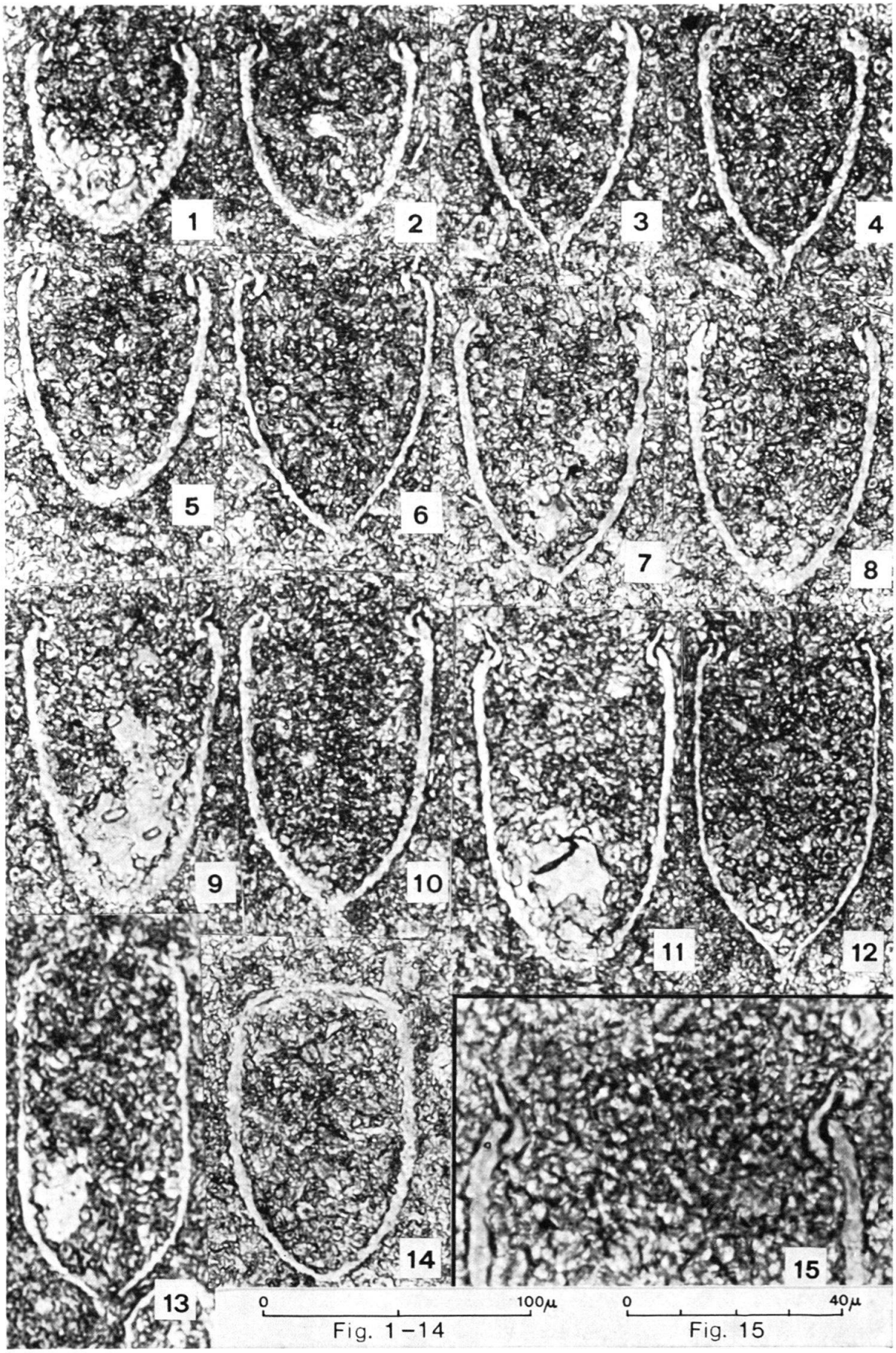
1–2: Slightly oblique sections, not axial at aboral side.
3–4: Axial sections.

Fig. 5–8 Transitional forms from *Calpionellites coronata* TREJO n. sp. to *Calpionellites caravacaensis* ALLEMANN n. sp. – Sample All. 69153, S of Cehegin, Spain.

5: Slightly oblique at aboral end.
6–8: Subaxial sections, aborally near appendix.

Fig. 9–15 *Calpionellites caravacaensis* ALLEMANN n. sp. – Sample All. 69155, S of Cehegin, Spain.

9: Oblique section of slightly deformed lorica.
10: Subaxial section with subparallel side-walls.
11: Holotype, slightly oblique near aboral end.
12: Axial section.
13: Subaxial section with parallel side-walls.
14: Diagonal section. The two broad parallel belts show intersected terminal lorica and collar.
15: Collar of holotype. Enlargement of Figure 11.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