

Ammonicrinus wanneri SPRINGER, 1926 (Crinoidea, Flexibilia)
from the Portilla Formation, Givetian
(Cantabrian Mountains, Province Leon, Northern Spain)

by

Dipl.-Ing. Joachim Hauser, Von-Sandt-Straße 95, 53225 Bonn,

E-Mail: crinoiden-aus-dem-devon@arcror.de; Internet: www.devon-crinoiden.de

Fernando Gomez Landeta, C/Monte Cerrau 11 2° K, 33006 Oviedo, Espana, E-Mail: f.landeta@telecable.de

& Jeremy J. Savill, c/o WesternGeco, Schlumberger House, Buckingham Gate, Gatwick Airport, Gatwick. West Sussex, RH6 0NZ, United Kingdom, E-Mail: jsavill@slb.com

with 5 pages und 7 figures (published 19.02.2008)

1 Introduction (by Jeremy J. SAVILL)

In 2006 one of us (J.J.S.) found a single partly chruised specimen of the flexible crinoid *Ammonicrinus* in the Middle Devonian strata of the Cantabrian Mountains of northern Spain.

Schlüsselwörter: *Ammonicrinus*, Crinoidea, Flexibilia, Systematik, Kantabrisches Gebirge, Nordspanien, Portilla Formation, Givetium.

Key-words: *Ammonicrinus*, Crinoidea, Flexibilia, Systematic, Cantabrian Mountains, Northern Spain, Portilla Formation, Givetian.

Zusammenfassung: Mit diesem Aufsatz wird der Erstnachweis von *Ammonicrinus* im Kantabrischen Gebirge geführt. Das Verbreitungsgebiet von *Ammonicrinus* liegt sowohl im westlichen, mittleren als auch im südlichen Europa.

Abstract: This paper documents the first finding of this genus in the Cantabrian Mountains. The Spanish occurrence of *Ammonicrinus* expands the record of the genus from Central Europe (Germany) into Western Europe.

→ Figure 1: Photo of the E-W-Hill near Barrios de Gordon in September 2007. In the middle of the photo the small depression (see the arrow) with a typical fossiliferous shale.



2 Stratigraphy of the section of Barrios de Gordón (by Fernando Gómez Landeta in HAUSER & LANDETA, 2007:19-20)

2.1 Locality

The specimen was found on a steep slope (near the outcrops in Figure 1) above the eastern side of road (N-630), about 500m to the

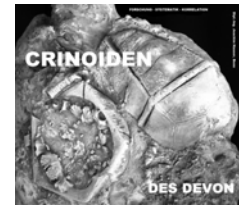
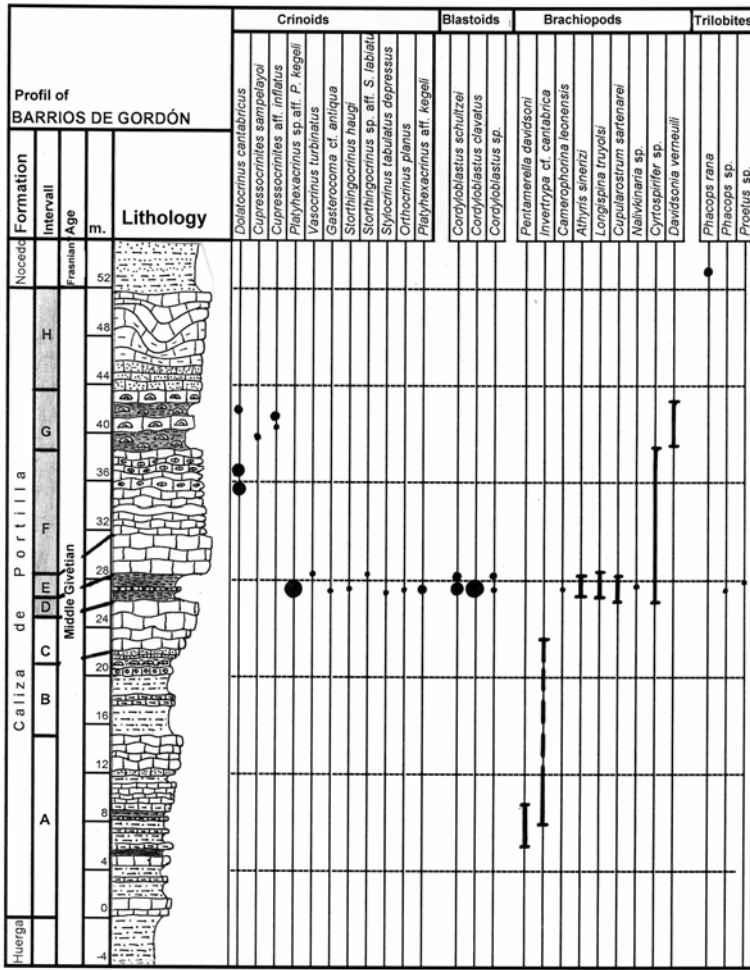
Chronology	FORMATION		Lithostratigraphy	Crinoidlevels after BREIMER, 1962	Crinoidlevels after HAUSER & LANDETA, 2007
	Asturias	Leon			
FAMENNIAN		Ermita			
		Fueyo			
FRASNIAN	Piñeres				
		Nocedo			
GIVETIAN	Candás	Portilla		Crin.4	Huergas - Barrios de Gordón
EIFELIAN	Naranco	Huergas		Crin.3	El Pical/Mugarón
EMSIAN	Moniello	Santa Lucía		Crin.2	
	Aguión	Coladilla		Crin.1	
		La Pedrosa Valporquero			
PRAGUIAN	Ladrona	Felmin			
LOCHKOVIAN	Bañugues				
	Nieva	Nieva			
Stur.	Furada	S. Pedro			

south of Huergas de Gordón (Geological 1:50.000 map 103, 13-7. Grid reference 43829169). The stratigraphy and general fauna of this locality was described ALCALDE et al., 1979.

← Figure 2: Age and correlation of the Devonian Formations in the Cantabric Area, with the crinoid levels cited in BREIMER, 1962 and HAUSER & LANDETA, 2007

2.2 Stratigraphy

A good section can be obtained of the formation in different points along the slope of the EW-hill (Fig. 1). The lower part rests conformably over the deep water shales of the Huergas formation (Fig. 2). The lower 25 metres of which is a shallowing upward succession with branching coral colonies living in a mud environment, and which culminates in a reefal Packstone. After a deepening of the basin the rest of the section is a new regressive, shallowing upward succession, culminated by a small biostrome. The sequence is capped by 2-3 metres of recrystallized grainstones. In an erosive contact with, this facies shows spectacular examples of slumps which can be interpreted as a channel which links the tidal lagoon to the North with the open basin to the South, cutting through the small reefal barrier.



← Figure 3: Stratigraphic column for the section of Barrios de Gordón.

2.3 Paleontology

The section is very fossiliferous, the brachiopods, corals and trilobites found and their ranges of existence are shown in figure 3. Notably fossiliferous is the small mudstone interval. All the fauna especially the brachiopods have a marked Givetian character. *Ammonicrinus* was found in the upper half of the section and is below.

2.4 Age

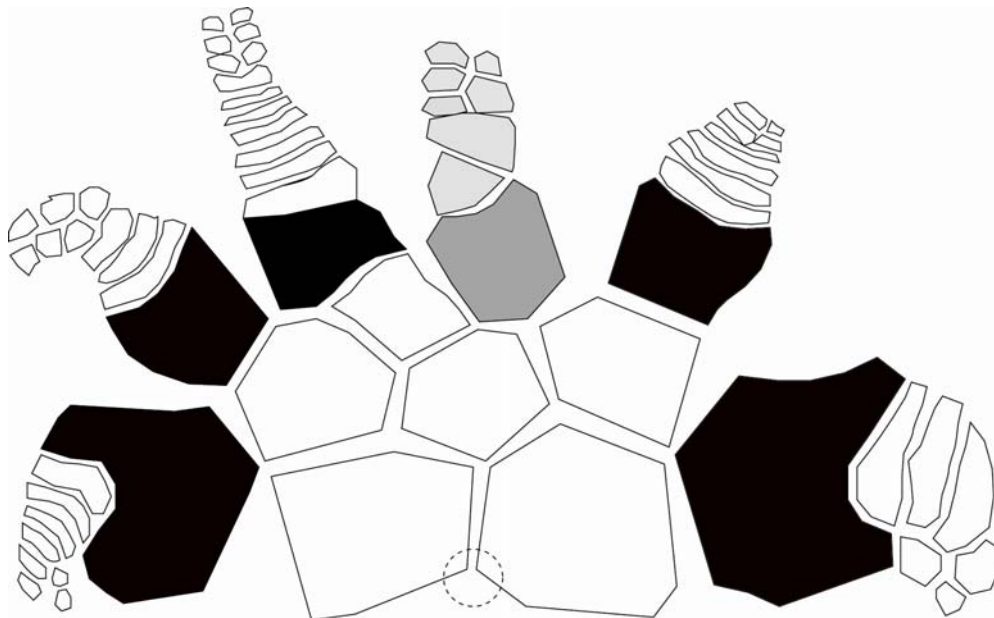
With reference to the ALCALDE et al., 1979, the Barrios section can be aged as Middle Givetian. In fact, in Huergas the conodonts allow the strata to be established as lower and middle *varcus* subbiozones (ISC) in all the exposed outcrops of the formation except its last metres which are already in the *hermanni* – *cristatus* zone. Lithologically, unit A of GARCÍA ALCALDE et al., 1979

can be correlated with unit on beds (A-B-C-D), in Barrios, and their unit B, with unit on beds (E-F-G). It is remarkable the difference in the thickness of the biostromal upper term in both sections, 13m in Huergas (terms 18b – 22), and merely 5m (G), in Barrios, due to the difference caused by the erosion of the channel mentioned above.

3 Systematics (by Joachim HAUSER)

- Clase Crinoidea J. S. MILLER, 1821
- Subclase Flexibilia ZITTEL, 1895
- Order Sagenocrinida SPRINGER, 1913
- Superfamily Lecanocrinacea SPRINGER, 1913
- Family Calycocrinidae MOORE & STRIMPLE, 1973
- Genus *Ammonicrinus* SPRINGER, 1926

Typ-species: *Ammonicrinus doliiformis*



Stratigraphical distribution:
Middle Devonian

Plate-Diagram of *Ammonicrinus*

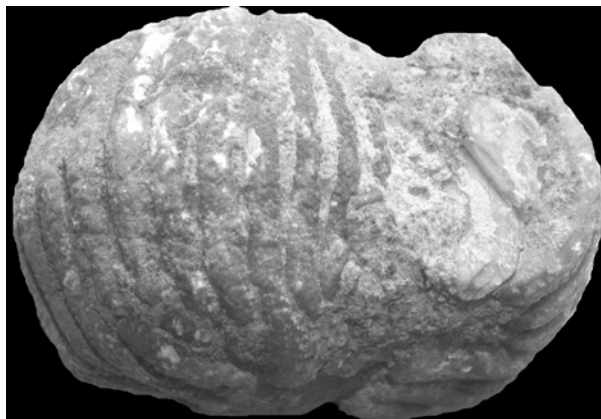
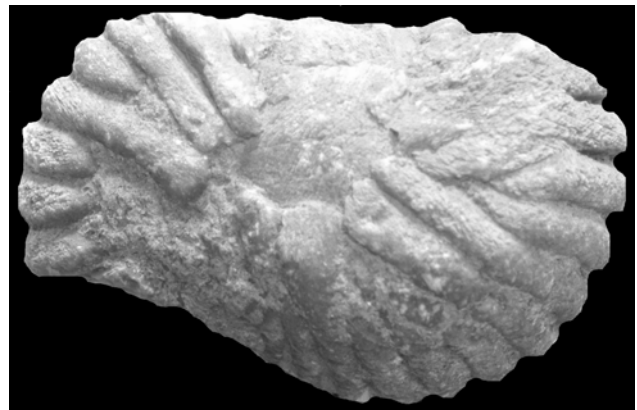
← Figure 4: Plate-Diagram of *Ammonicrinus* after UBAGHS, 1952:205, Fig. 1, black = Radialia, dark-grey = Anal X₁; other kind of grey = part of the analseries

Ammonicrinus wanneri SPRINGER, 1926
Figur 5-7



*	1926	<i>Ammonicrinus wanneri</i>	SPRINGER, S. 22, Taf. 6, Fig. 4-6
v non	1927	<i>Ammonicrinus wanneri</i>	KRAUSE, S. 448, Taf. 6. (= <i>A. wachtbergensis</i>)
	1930	<i>Ammonicrinus wanneri</i>	EHRENBERG, Taf. 16, Fig. 14-17
	1937	<i>Ammonicrinus wanneri</i>	WOLBURG, S. 235-241
	1941	<i>Ammonicrinus wanneri</i>	WANNER, S. 36
	1943	<i>Ammonicrinus wanneri</i>	BASSLER & MOODEY, S. 297
	1948	<i>Ammonicrinus wanneri</i>	CUENOT, S. 38, Fig. 49
v	1952	<i>Ammonicrinus wanneri</i>	UBAGHS, S. 216-219, Taf. 1 & 2
	1954	<i>Ammonicrinus wanneri</i>	WANNER, S. 231, Fig. 1
	1958	<i>Ammonicrinus wanneri</i>	KONGIEL, S. 31, Fig. 1-4
	1973	<i>Ammonicrinus wanneri</i>	WEBSTER, S. 48
	1989	<i>Ammonicrinus wanneri</i>	A.H. MUELLER, S. 391, Abb. 454 B
v e.p.	1997	<i>Ammonicrinus wanneri</i>	HAUSER, S. 116-117, Taf. 2, Fig. 2-4 (= <i>A. wachtbergensis</i> n.sp.), Taf. 2, Fig. 5-6, Taf. 3, Fig. 4 (= <i>A. wanneri</i>), Taf. 3, Fig. 1, Fig. 4-5 (= <i>A. wachtbergensis</i> n.sp.), Taf. 4, Fig. 2, 4
	2005	<i>Ammonicrinus wanneri</i>	HAUSER, Abbildung 17-22; Tafel 1, Figur 1, 2, 6; Tafel 2, Figur 2, 5; Tafel 3, Figur 1, 2, 4-6, 8-10; Tafel 4, Figur 1, 3-4, 6, 8-9; Tafel 5, Figur 1-5, 7-8; <u>aff.</u> Tafel 1, Figur 4, Tafel 3, Fig. 7, Tafel 4, Figur 2, 5, Tafel 2, Fig. 4

Material: One specimen from the Portilla Formation, Givetian of Northern Spain; more than 20 more or less complete specimens from the Ahbach Formation, Givetian of the Prüm Synclinorium of the Rhenish-Slate-Mountains and 5 specimens from the Hillesheim Synclinorium (Nollenbach and Steineberg section), Freilingen Formation, Eifelium.



← ↑ **Figure: 5-7:** *Ammonicrinus wanneri* from the section of Barrios de Gordón

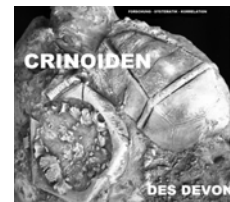
Description: A typical formed partly damaged and weathered *Ammonicrinus wanneri*. Specimen more or less elliptical, with coiled stem, proximal part of the columnals throughout midlength of stem strongly arched with transverse ridge. The surface of the specimen has small rounded tubercles. The single columnals are smooth from the middle of the hook to the distal side and they are uneven in form and dimension. The centre of the specimen shows only a very poorly preserved part of the calyce / crown. The distal part of the stem is not preserved.

Dimensions: max. length = 2,5 cm; max. height = 1,6 cm.

Stratigraphical and geographical distribution: *Ammonicrinus wanneri* is more or less common in the Nollenbach Member of the Freilingen Formation (Eifelian) (Hillesheim synclinorium) and in the ?Olifant Member of the Ahbach Formation (Givetian) (Prüm Synclinorium) of the Eifel-Hills (Rhenish Slate Mountains). The specimen we described here was collected in the Portilla Formation, Middle Givetian, of the Cantabrian Mountains, Province Leon, Northern Spain.

Other fossils of the outcrop: An overall view of the fossils in the section of Barrios de Gordón is shown in figure 3.

Acknowledgements: Our special thanks go to Fernando Gómez LANDETA, Oviedo, who wrote the stratigraphical part of this paper and Dr. Gary WEBSTER who reviewed the typescript.



References:

A

ALCALDE, J.L. et al. 1979: Guidebook of the field trip for the sub commission of Devonian stratigraphy. (unpublished).

B

BASSLER, R.S. & MOODEY, M.W. (1943): Bibliographic and faunal index of Paleozoic pelmatozoan echinoderms. - Geol. Soc. America, Spec. Paper, **45**: 734 S.; Baltimore.

BREIMER, A. (1962): 1962: A monograph on Spanish Palaeozoic crinoidea. - Leidse Geol. Mededel., **27**: 189 S., 16 Taf., 39 Abb; Leiden (Niederlande).

C

CUENOT, L. (1948): Anatomie, Éthologie et Systématique des Echinoderms. - IN: GRASSÉ, P.P., éd., Traité de Zoologie, Crinoïdes, **11**: 3-275, Abb. 1-312; Masson, Paris.

E

EHRENBERG, K. (1930): Die "Nebenformen" der Crinoiden, ihre stammesgeschichtliche Entwicklung und Bedeutung. - Paleobiologica, **7**(1): 257-324, Taf. 15-17; Wien & Leipzig.

G

GARCÍA-ALCALDE, J.L. (1996): El Devónico del Dominio Astur-Leonés de la zona Cantábrica (N de España). - Revista española de Paleontología, N° Extraordinario:58-71.

H

HAUSER, J. (1997): Die Crinoiden des Mittel-Devon der Eifler Kalkmulden. - Eigenverlag, 274 S., 20 Tab., 48 Abb., 76 Taf.; Bonn.

HAUSER, J. (2005): *Ammonicrinus* (Crinoidea, Flexibilia) aus dem Paläozoikum von Deutschland (Eifel, Sauerland) und dem Heilig-Kreuz-Gebirge (Polen). - 52 S., 6 Tafeln, 16 Tab., 68 Abb.; Bonn.

HAUSER, J. & LANDETA, F.G. (2007): Neue Crinoiden aus dem Paläozoikum von Nordspanien mit einem Beitrag zu *Lepidocentrus* aus dem mittleren Emsium. - 78 S., 2 Taf., 4 Tab., 113 Textfiguren; Bonn.

K

KONGIEL, R. (1958): Nowy gatunek *Ammonicrinus* i jego występowanie w Polsce. - Prace Museum Ziemi, Institute Geol., **2**: 31-40, Taf. 1, 6 Textfig.; Warszawa.

KRAUSE, P.G. (1927): Über *Ammonicrinus* aus dem Mitteldevon der Eifel. - Z. dt. geol. Gesell., **79**: 448-456, Taf. 8; Berlin.

M

MILLER, J.S. (1821): A natural history of the Crinoidea or lily-shaped animals, with observation on the genera *Astria*, *Euryale*, *Comatula*, and *Marsupites*. - 150 S., 50 Taf.; Bristol (Bryan & Co).

MOORE, R.C. & LAUDON, L.R. (1941): Evolution and classification of Paleozoic crinoids. - Geol. Soc. America, Spec. Pap., **46**: 153 S., 17 Textfig., 1 Tab., 14 Taf.; Baltimore.

MOORE, R. C. & STRIMPEL, H. L. (1973): Lower Pennsylvanian (Morrowan) crinoids from Arkansas, Oklahoma, and Texas. - Univ. Kansas Paleont. Contrib., Art. 60, Echinodermata, **12**: 1-84, Abb. 1-7, Taf. 1-23.

S

SPRINGER, F. (1913): Crinoidea. - IN: Text-book of paleontology (Macmillan & Co., Ltd.); London.

SPRINGER, F. (1926): Unusual forms of fossil crinoids. - Proc. United States National Mus., Nr. 2581, **67**(9): 95 S., 9 Textfig., 26 Taf.; Washington.

U

UBAGHS, G. (1952): *Ammonicrinus* SPRINGER. Crinoidea Flexibilia du Dévonien moyen d'Allemagne. - *Senckenbergiana*, **33**(4/6): 203-226, Taf. 1-3, 5 Textfig.; Frankfurt/Main.



W

WANNER, J. (1954): Die Analstruktur von *Ammonicrinus* SPRINGER nebst Bemerkungen über Aberranzen und Anomalien bei Krinoiden. - *N. Jb. Geol. Paläont., Monatsh.*, **5**(B): 231-236, Abb. 1-3; Stuttgart (Schweizerbart'sche).

WEBSTER, G.D. (1973): Bibliography and Index of Paleozoic Crinoids 1942-1968. - *The Geol. Surv. America, Mem.* **137**: 341 S., 1 Textfig.; Boulder, Colorado.
(neueste Ausgabe des Crinoiden-Index WEBSTER's im Internet unter: www.crinoid.gsajournals.org/crinoidmod/ or www.crinoid.gsajournals.org/crinoid-netscape.css)

WOLBURG, J. (1937): Bau und Biologie von *Ammonicrinus doliiformis* n.sp. - *Jb. preuß. geol. L.-A.*, **58**(A): 230-241, Taf. 17-18, 5 Textfig.; Berlin.

WOLBURG, J. (1938): Zur Frage der Lebensweise der eingerollten Crinoiden. - *Zentralbl. Min. Geol. Paläont., Abt. B*, **7**: 254-261, 2 Textfig.; Stuttgart.

Z

ZITTEL, K.A. von (1895): *Grundzüge der Palaeontologie (Palaeozoologie)*. - 1. Ausgabe, 971 S.; München (Oldenburg).
