

Additional ammonites from the Upper Campanian (Upper Cretaceous) of the Gschliefgraben (Ultrahelvetic; Austria)

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(With 1 text-figure, 1 table and 7 plates)

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Abstract

Four taxa from Late Campanian strata, three of them new for the Gschliefgraben (Gmunden, Upper Austria) are described: *Pseudophyllites teres* (VAN HOEPEN, 1920), *Hoplitoplacenticeras coesfeldiense* (SCHLÜTER, 1867) and *Parapuzosia* ? sp. indet. The best specimen of *Neancyloceras bipunctatum* (SCHLÜTER, 1872) from the Gschliefgraben is figured and described.

Zusammenfassung

Vier Taxa, drei davon neu für den Gschliefgraben (Obercampan, Österreich) werden beschrieben: *Pseudophyllites teres* (VAN HOEPEN, 1920), *Hoplitoplacenticeras coesfeldiense* (SCHLÜTER, 1867) und *Parapuzosia* ? sp. indet. Das bisher besterhaltene *Neancyloceras bipunctatum* (SCHLÜTER, 1872) wird abgebildet und beschrieben.

Introduction

32 taxa of ammonites were described from the Gschliefgraben near Gmunden (Upper Austria) by the authors in 1984 and 1999. The assemblage comes from the *phaleratum* Zone, the *polyplacum* Zone and the *hyatti* Zone of the Upper Campanian (KENNEDY & SUMMESBERGER 1984, 1999). The ammonite fauna is dominated by Pachydiscidae and heteromorphs; the composition suggests palaeobiogeographic connections to the Northern Temperate Realm of northwestern Europe with a few representatives from the Tethyan Realm. The stratigraphic age is confirmed by co-occurring echinoderms (JAGT 1999), inoceramids (TRÖGER, SUMMESBERGER & SKOUMAL 1999), and nannofossils (WAGREICH 1999). The environmental conditions indicated are relatively deep and cool water with a muddy sea floor (KENNEDY & SUMMESBERGER 1984, 1999; FRAAYE &

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SUMMESBERGER 1999). Geologically the alpine Ultrahelvetic unit (PREY 1983) is thought to have been originally situated on the southern slope of the European shelf region.

Natural outcrops are limited to an active mudflow. Most of the fossils were collected from the surface after rain. The ammonites described below were found recently by Mr. Ferdinand ESTERMANN (Pinsdorf near Gmunden, Upper Austria) and by Dr. Peter SKOUMAL (Vienna) and are stored in their collections. For location of the area see the sketch map in TRÖGER et al. (1999: text-fig. 1)

PIB Institute of Palaeontology, Bonn, Germany
 RE Ruhrland Museum, Essen, Germany.
 EST ESTERMANN collection, Pinsdorf near Gmunden, Austria.
 SK SKOUMAL collection, Vienna, Austria.

Systematic Palaeontology

Order Ammonoidea ZITTEL, 1884

Suborder Lytoceratina HYATT, 1889

Superfamily Tetragonitaceae HYATT, 1900

Family Tetragonitidae HYATT, 1900

Subfamily Tetragonitinae HYATT, 1900

Genus *Pseudophyllites* KOSSMAT, 1895

Type species: *Ammonites indra* FORBES, 1846 by original designation by KOSSMAT, 1895: 137.

***Pseudophyllites teres* (VAN HOEPEN, 1920)** (Plate 1, figs. 1-4; Text-fig. 1)

Synonymy:

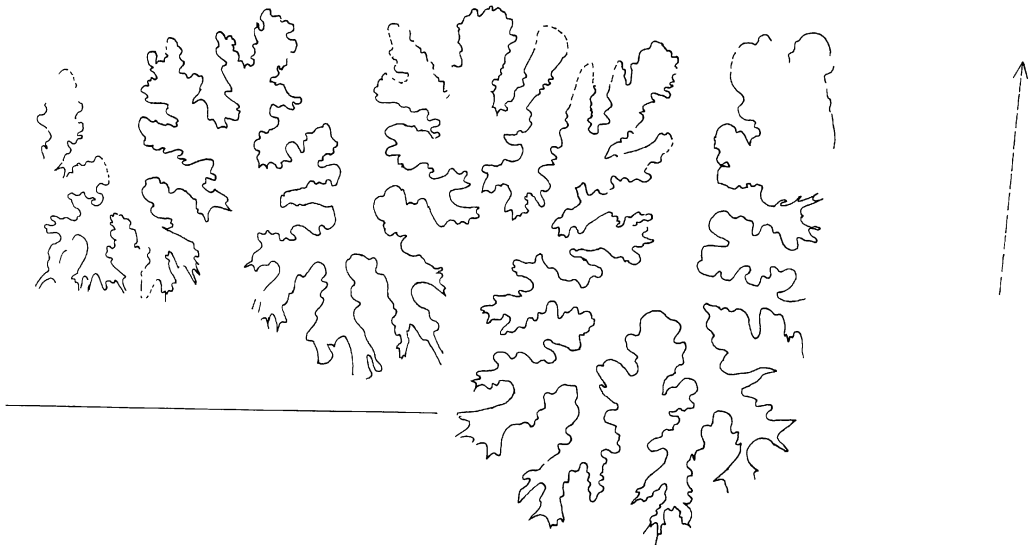
1920 *Tetragonites teres* VAN HOEPEN: 144, pl. 25, figs. 1, 2.

1977 *Pseudophyllites teres* (VAN HOEPEN, 1920); KENNEDY & KLINGER: 187, figs. 23a, b; 24a, b (with synonymy).

Holotype: by monotypy is the original of VAN HOEPEN, 1920: pl. 25, figs. 1,2.

Material: SK/G/2000/69, a single specimen

Description: The specimen is an undeformed composite mould of a phragmocone. It differs from earlier described Gschlifgraben ammonites in its preservation, showing a well preserved black suture (text-figs. 2,3) on a light grey matrix. Most of the ammonites from this locality do not show suture lines (but see p. 87). The collector and owner of the specimen DR. SKOUMAL (pers. comm.) has removed the black layer which originally covered the whole surface of the specimen. White sutures are visible on black internal moulds of *Pachydiscus perfidus* (DE GROSSOUVRE, 1894; KENNEDY & SUMMESBERGER 1984) from a distinctive concretionary preservation.



Text-fig. 1: Partial external suture of *Pseudophyllites teres* (VAN HOEPEN, 1920); SK/G/2000/69; Bar scale 10 mm.

The specimen is involute, the outer whorl covering about 50 percent of the preceding whorl. The expansion rate is low. The venter is rounded, the flanks feebly convex to subparallel, merging imperceptibly with the broadly rounded venter. The umbilicus is narrow, the umbilical wall steep to subvertical, the umbilical shoulder is narrowly rounded. There is no visible ornament. The suture (Text-fig. 1) is typical for *Pseudophyllites* with a high degree of subdivision.

Measurements:

D 59,7 Wh 28,5 Wb 24,0 Wb/Wh 0,84 U 12,6 U% 21 %

Damage: One of the chambers has suffered damage (post-mortem?), a break in the outer shell leaving a depression (pl. 1, figs. 2, 4) filled with a black substance.

Further damage of unknown origin (pl. 1, fig. 3) is visible on the left side of the specimen. A distinctly double-curved line gives the impression of injury, possibly caused by the bite of a predator or scavenger (crustacean?).

Discussion: Differences between *Pseudophyllites teres* (VAN HOEPEN, 1920) and other species of the genus are discussed at length by KENNEDY & KLINGER (1977: 190). Closely allied, and perhaps conspecific is the Upper Turonian *Pseudophyllites postremus* (REDTENBACHER, 1873) from Austria (see the discussion of SUMMESBERGER & KENNEDY 1996: 115).

Occurrence: KENNEDY & KLINGER (1977: text-fig. 27), show the range of *Pseudophyllites teres* from Upper Santonian to Lower Campanian. This range has to be extended to Upper Campanian on the basis of the Gschliefgraben specimen. The geographic range of the species is Pondoland (South Africa), Madagascar, and, possibly, Brazil.

Suborder Ammonitina HYATT, 1889
 Superfamily Desmocerataceae ZITTEL, 1895
 Family Desmoceratidae ZITTEL, 1895
 Subfamily Puzosiinae SPATH, 1922
 Genus *Parapuzosia* NOWAK, 1913

Type species: *Sonneratia daubréei* GROSSOUVRE, 1894: 154; pl. 28, by the subsequent designation of SPATH, 1922: 126.

***Parapuzosia* ? sp. indet.**

Plates 2, 3; 4, figs. 1, 2

Material: 1 fragment (EST A 33) from the ESTERMANN collection.

Description: EST A 33 is a fragment of an approximately 90° sector of a whorl of a huge phragmocone, with parts of the preceding whorl also preserved. The surface is corroded. Shell and original ornament (if present) have been destroyed. Parts of the sutures are visible (Pl. 2) but the deeply weathered surface makes decipherment impossible.

The whorl section is compressed oval, the whorl height expanding slowly. About 75 % of the preceding whorl is covered. The maximum whorl thickness is at the inner third of the flank. The flanks converge gently towards the venter, forming a blunt ventrolateral edge, with a weak but distinctly fastigiate mid-ventral keel.

Measurements: Length: 350 mm, Wh 209 mm, Wb 146 mm. The restored diameter including the body-chamber was at least 900 mm.

Discussion: General features and size are those of a *Parapuzosia* with the exception of the "keel". As the surface is generally corroded, the "keel" might be in fact the more resistant siphonal part of the venter.

Occurrence: Upper Campanian of the Gschlifgraben (Upper Austria).

Superfamily Hoplitaceae H. DOUVILLÉ, 1890

Family Placenticeratidae HYATT, 1900

Genus and Subgenus *Hoplitoplacenticeras* PAULCKE, 1907

Type species: *Hoplites-Placenticeras plasticus* PAULCKE, 1907: 186; ICZN Opinion 555, Name no. 1629

***Hoplitoplacenticeras (Hoplitoplacenticeras) coesfeldiense* (SCHLÜTER, 1867)**

Pl. 4, figs. 1, 2; pl. 5, figs. 1, 2

Synonymy:

1867 *Ammonites coesfeldiense* SCHLÜTER: 14 (pars); pl. 1, fig. 1, 4 (only).

1986 *Hoplitoplacenticeras coesfeldiense* (SCHLÜTER 1867); KENNEDY: 73; pl. 9, figs. 9-10; text-fig. 27 B,C.

1996 *Hoplitoplacenticeras (Hoplitoplacenticeras) coesfeldiense* (SCHLÜTER 1867); KAPLAN, KENNEDY & ERNST: 38; pl. 20, fig. 3; pl. 21, figs. 2, 3; pl. 23, fig. 3; pl. 25, figs. 1, 2; pl. 26, figs. 1-4; pl. 27, fig. 2. (With full synonymy).

L e c t o t y p e : by the subsequent designation of KENNEDY (1986, p. 64) is the original of SCHLÜTER (1867, pl.1, fig.1) from Coesfeld, Westphalia, PIB 19a, refigured by KAPLAN, KENNEDY & ERNST (1996, pl.25, fig.2), and figured here as pl.6, fig.1.

M a t e r i a l : A single unregistered specimen from the ESTERMANN collection.

D e s c r i p t i o n : The specimen is a flattened composite mould on a bedding plane preserved with the negative counterpart. Coiling is moderately evolute with about 30 % of the preceding whorl being covered. The whorl section seems to have been laterally compressed now exaggerated by diagenetic and possibly tectonic stresses. The umbilical wall is low and subvertical. Venter and ventrolateral shoulders are poorly preserved. The D_{max} in the meridian of the aperture is about 115 mm. Wh_{max} is about 45 mm, U 26,8 mm, $U\%$ is 23,3%. The flanks are covered with about 50 strongly prorsiradiate ribs, separated by somewhat narrower interspaces. Ribs arise from a small bulla at the umbilical edge, cross the flank in a very slight convexity, and pass over the venter strongly projected forward. Bifurcations below midflank are common. The style of juvenile ribbing is more regular, that of the body-chamber more irregular, with wider intercostal spaces. These are covered by lirae that are parallel to the ribs (pl.5, fig.2). The suture is not visible.

D i s c u s s i o n : This species has been discussed recently at length by KAPLAN, KENNEDY & ERNST (1996: 39). The lirae on the body-chamber are also visible on a specimen from Beckum (KAPLAN, KENNEDY & ERNST: pl. 21, fig. 3), figured here as pl. 6, fig. 2.

O c c u r r e n c e : The species occurs widely in the Northern Temperate Realm from the Aquitaine basin to Central Asia (KAPLAN, KENNEDY & ERNST: 39) and is described here for the first time from the Ultrahelvetic tectonic window of the Gschlifgraben, Austria.

Suborder Ancyloceratina WIEDMANN, 1966

Superfamily Turrilitaceae GILL, 1871

Family Diplomoceratidae SPATH, 1926

Subfamily Diplomoceratinae SPATH, 1926

Genus *Neancyloceras* SPATH, 1926

T y p e s p e c i e s : *Ancyloceras bipunctatum* SCHLÜTER (1872: pl. 29, figs. 1-3) by original designation by SPATH, 1926: 80.

***Neancyloceras bipunctatum* (SCHLÜTER, 1872)**

Pl. 6, figs.1-3

Synonymy:

1872 *Ancyloceras bipunctatum* SCHLÜTER: 98, pl. 29, figs. 1-3.

1999 *Neancyloceras bipunctatum* (SCHLÜTER, 1872); KENNEDY & SUMMESBERGER : 27; pl. 2, fig. 6 (with synonymy).

L e c t o t y p e : The original of SCHLÜTER (1872: pl. 29, fig. 2) by subsequent designation by BLASZKIEWICZ (1980).

M a t e r i a l : a single unregistered specimen in the ESTERMANN collection.

D e s c r i p t i o n : The specimen is a fragment of a composite mould. The preserved part is a circular whorl with a 55 mm long straight portion, possibly body chamber. The whorl section is little-deformed and seems to be laterally compressed. Ornament consists of about 75 single, recti- to slightly rursiradiate and feebly convex ribs, the ribs narrower than the interspaces. Slight irregularities are visible on the last quarter of the coiled whorl and the straight section. The rib section is rounded. Each rib bears two tiny tubercles on the venter. The suture is not visible.

M e a s u r e m e n t s :

D	Wh _{max}	Wh _{min}	U	U %
71,3	15,5	5,7	54,3	76,2 %

D i s c u s s i o n : See KLINGER (1982) and KENNEDY (1993) for discussion of the species.

O c c u r r e n c e : Upper Campanian of the Gschlifgraben (Upper Austria), Germany, Poland, Russia, France.

Conclusion

A diverse fauna of 35 taxa make the Gschlifgraben one of the best documented Upper Campanian ammonite occurrences. There is a strong palaeobiogeographic relationship to the faunas of the Northern Temperate Realm of NW Europe (KENNEDY & SUMMESBERGER 1984, 1999). Belemnites in contrast suggest an additional palaeogeographic connection with the eastern part of the Gosau occurrences (e.g. "Neue Welt"; CHRISTENSEN 1998).

Table 1. The ammonite fauna from Gschlifgraben, Upper Austria

<i>Phylloceras (Hypophylloceras) sp.</i>	<i>Didymoceras donezianum</i> (MIHAILOV)
<i>Gaudryceras jukesi</i> (SHARPE)	<i>Didymoceras binodosum</i> (KENNEDY & COBBAN)
<i>Tetragonites cf. obscurus</i> (SCHLÜTER)	<i>Neoglyptoxoceras cf. retrorsum</i> (SCHLÜTER)
<i>Saghalinites cf. cala</i> (FORBES)	<i>Neancyloceras bipunctatum</i> (SCHLÜTER)
<i>Pseudophyllites teres</i> (VAN HOEPEN)	<i>Pseudoxybeloceras (Schlueterella) pseudoarmatum</i> (SCHLÜTER)
<i>Desmophyllites larteti</i> (SEUNES)	<i>Pseudoxybeloceras (Schlueterella) sp. ?</i>
<i>Parapuzosia ? sp. indet.</i>	<i>Pseudoxybeloceras (Parasolenoceras) wernickei</i> (WOLLEMANN)
<i>Küchinites sp.</i>	<i>Pseudoxybeloceras (Parasolenoceras) interruptum</i> (SCHLÜTER)
<i>Puzosiinae gen. et sp. indet.</i>	<i>Pseudoxybeloceras (Parasolenoceras) phaleratum</i> (GRIEPENKERL)
<i>Hauericeras fayoli</i> De GROSSOUVRE	<i>Polyptychoceras (P.) obliquecostatum</i> (SCHLÜTER)
<i>Yokoyamaoceras ? sp.</i>	<i>Polyptychoceras (P.) cf. pseudogaultinum</i> (YOKOYAMA)
<i>Pachydiscus (P.) haldemsi</i> (SCHLÜTER)	Polyptychoceratinae indet.
<i>Pachydiscus (P.) perfidus</i> De GROSSOUVRE	<i>Baculites sp. 1</i>
<i>Pachydiscus (P.) cf. subrobustus</i> SEUNES	<i>Baculites sp. 2</i>
<i>Anapachydiscus arialoorensis</i> (STOLICZKA)	<i>Baculites sp. 3</i>
<i>Hoplioplacenticeras (H.) coesfeldiense</i> (SCHLÜTER)	<i>Trachyscaphites pulcherrimus</i> (ROEMER)
<i>Hoplioplacenticeras (H.) preyi</i> KENNEDY & SUMMESBERGER	
<i>Bostrychoceras polyplacum</i> (ROEMER)	
<i>Nostoceras (Nostoceras) sp.</i>	

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Plates

Plate 1

Figs. 1-4. *Pseudophyllites teres* (VAN HOEPEN, 1920),
Gschlifgraben, Upper Campanian; SK/G/2000/69; Fig. 1
ventral view; Figs. 2, 4, lateral view, right side;
Fig. 3, lateral view, left side. all are x 1, Figs. 3, 4 are uncoated.



Plate 2

Fig. 1. ? *Parapuzosia* sp. indet.; side view; uncoated, visibility of the sutures enhanced in pencil.
Gschlifgraben, Upper Campanian, ESTERMANN Collection A 33. x 0,5.



Plate 3

Fig. 1. ? *Parapuzosia* sp. indet.; ventral view, uncoated;
Gschlifgraben, Upper Campanian, ESTERMANN Collection A 33. x 0,5.



Plate 4

Figs. 1, 2. ? *Parapuzosia* sp. indet.; views of the septal surfaces, uncoated;
Gschlifgraben, Upper Campanian, ESTERMANN Collection A 33. x 0,5.



1



2

Plate 5

Fig. 1. *Hoplitoplacenticeras (Hoplitoplacenticeras) coesfeldiense* (SCHLÜTER, 1867); coated.

Fig. 2. *Hoplitoplacenticeras (Hoplitoplacenticeras) coesfeldiense* (SCHLÜTER, 1867).
Negative counterpart of Fig. 1; Uncoated.

All from the Upper Campanian, Gschlieffgraben (Upper Austria), ESTERMANN Collection. All x 1.

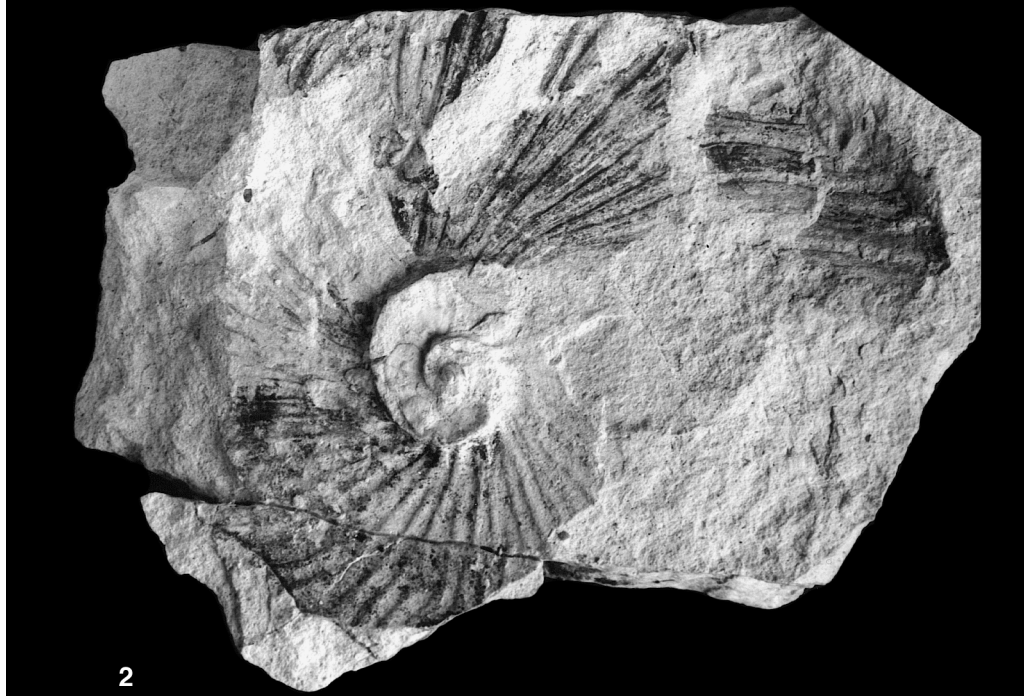
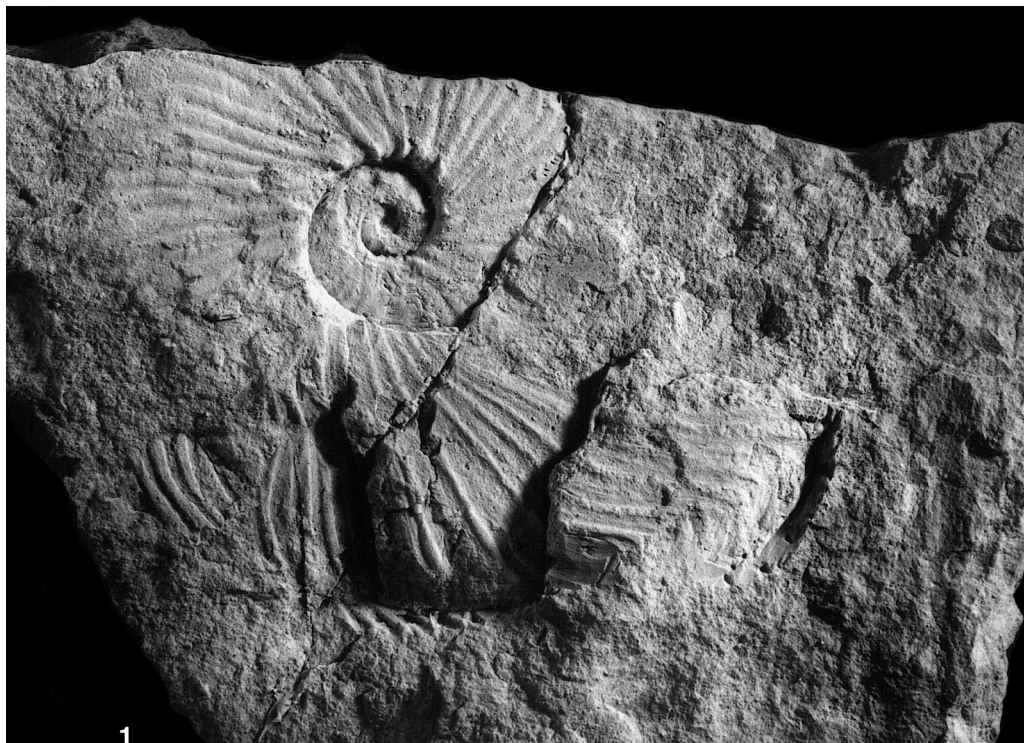


Plate 6

Fig. 1. *Hoplitoplacenticeras (Hoplitoplacenticeras) coesfeldiense* (SCHLÜTER, 1867).

Lectotype, the original of SCHLÜTER, 1867: pl. 1, fig. 1, PiB, SCHLÜTER collection, no. 19a, from the lower Upper Campanian of Coesfeld, Westphalia; Germany. x 1.

Fig. 2. *Hoplitoplacenticeras (Hoplitoplacenticeras) coesfeldiense* (SCHLÜTER, 1867).

Upper Campanian of Beckum, Westphalia, Germany; RE 2056 ex coll. GIERS 405. All coated; all x 1.

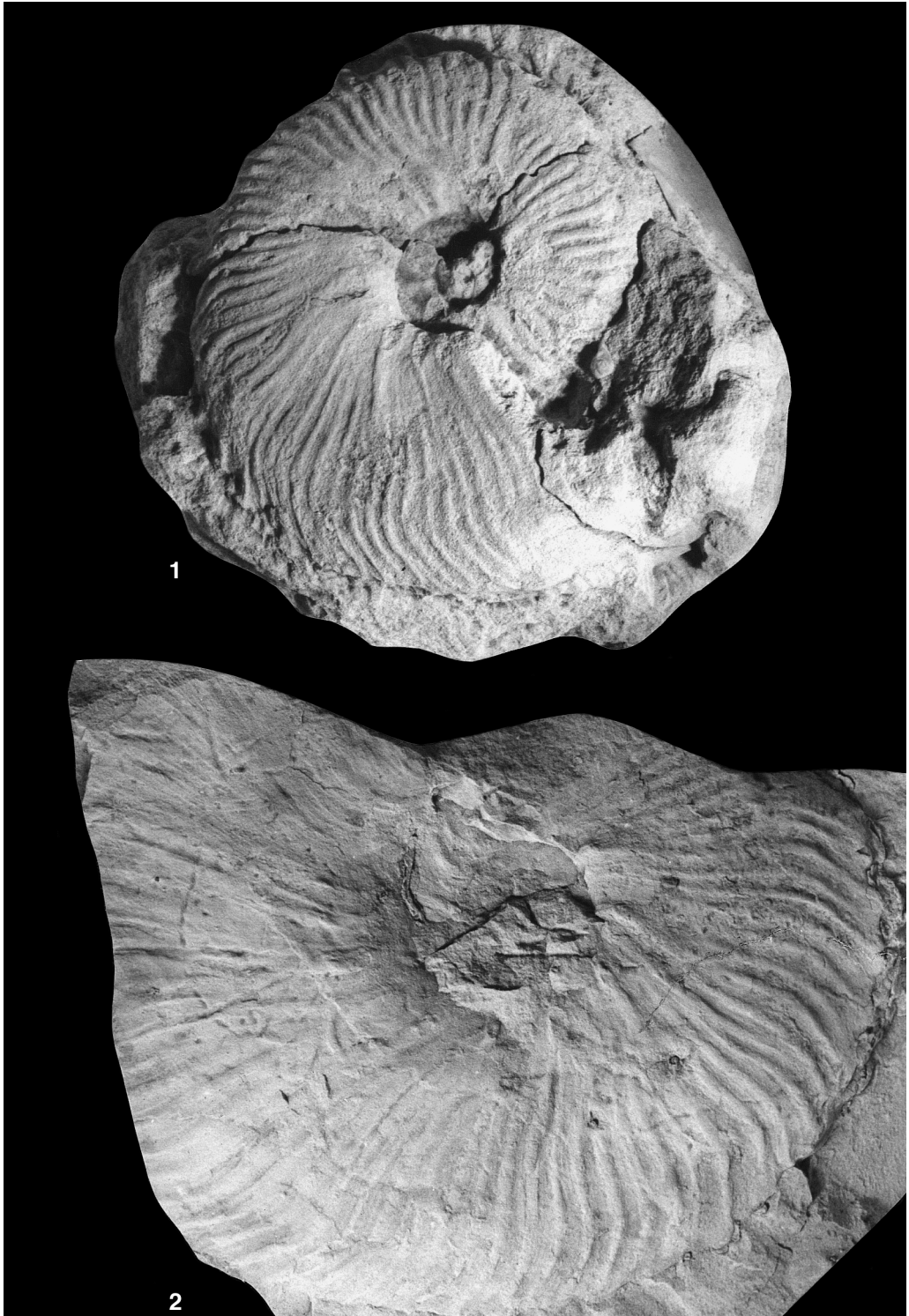


Plate 7

Fig. 1. *Neancyloceras bipunctatum* (SCHLÜTER, 1872); lateral view.

Fig. 2. *Neancyloceras bipunctatum* (SCHLÜTER, 1872); oblique view.

Fig. 3. *Neancyloceras bipunctatum* (SCHLÜTER, 1872); ventral view.

All from Gschlieflgraben, Upper Campanian, ESTERMANN Collection. all coated; all x 1.

